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Rio Tinto

Annual Report **2024**

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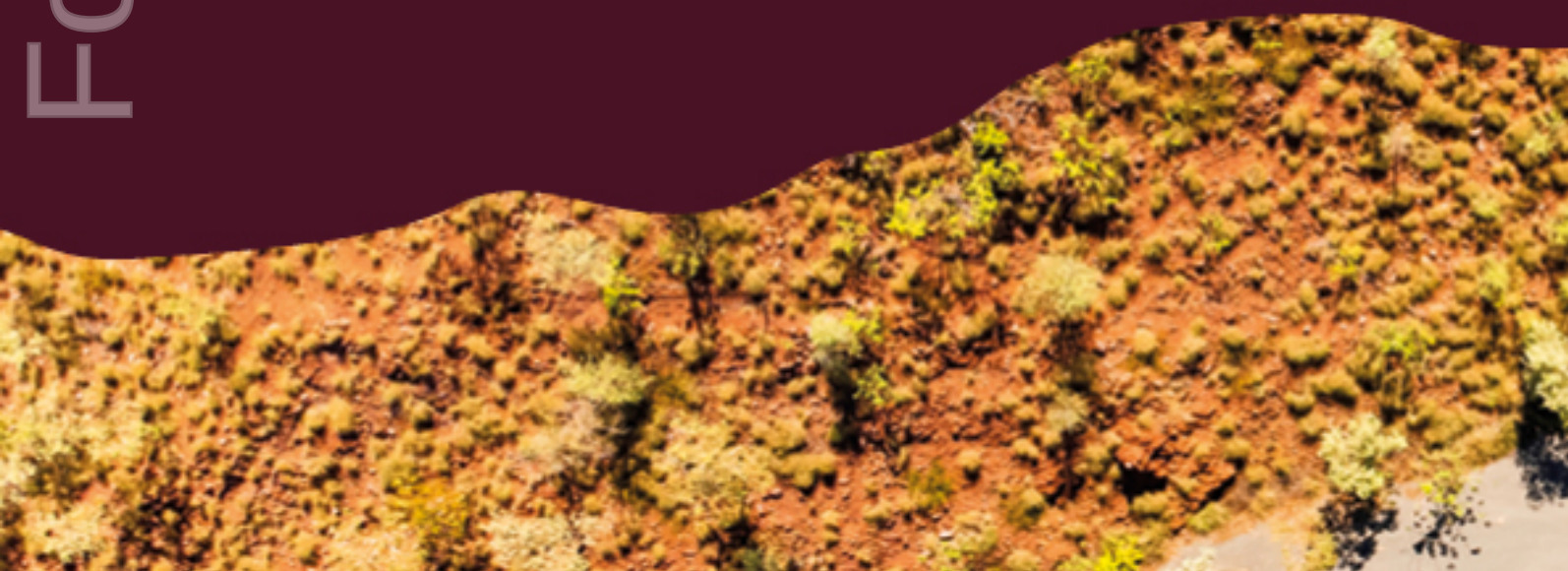
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Our 2024 reporting suite

Scan the QR code or visit riotinto.com/reports

On the cover: The Rincon Lithium Project, Argentina, which produced first lithium from the starter plant this year. Lithium is part of our portfolio of materials essential to a low-carbon future.



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Many of our operations are located on land and waters that have belonged to Indigenous and land-connected Peoples for thousands of years. We respect their ongoing deep connection to, and their vast knowledge of, the land, water and environment. We pay our respects to Elders, both past and present, and acknowledge the important role Indigenous and land-connected Peoples play within communities and our business.

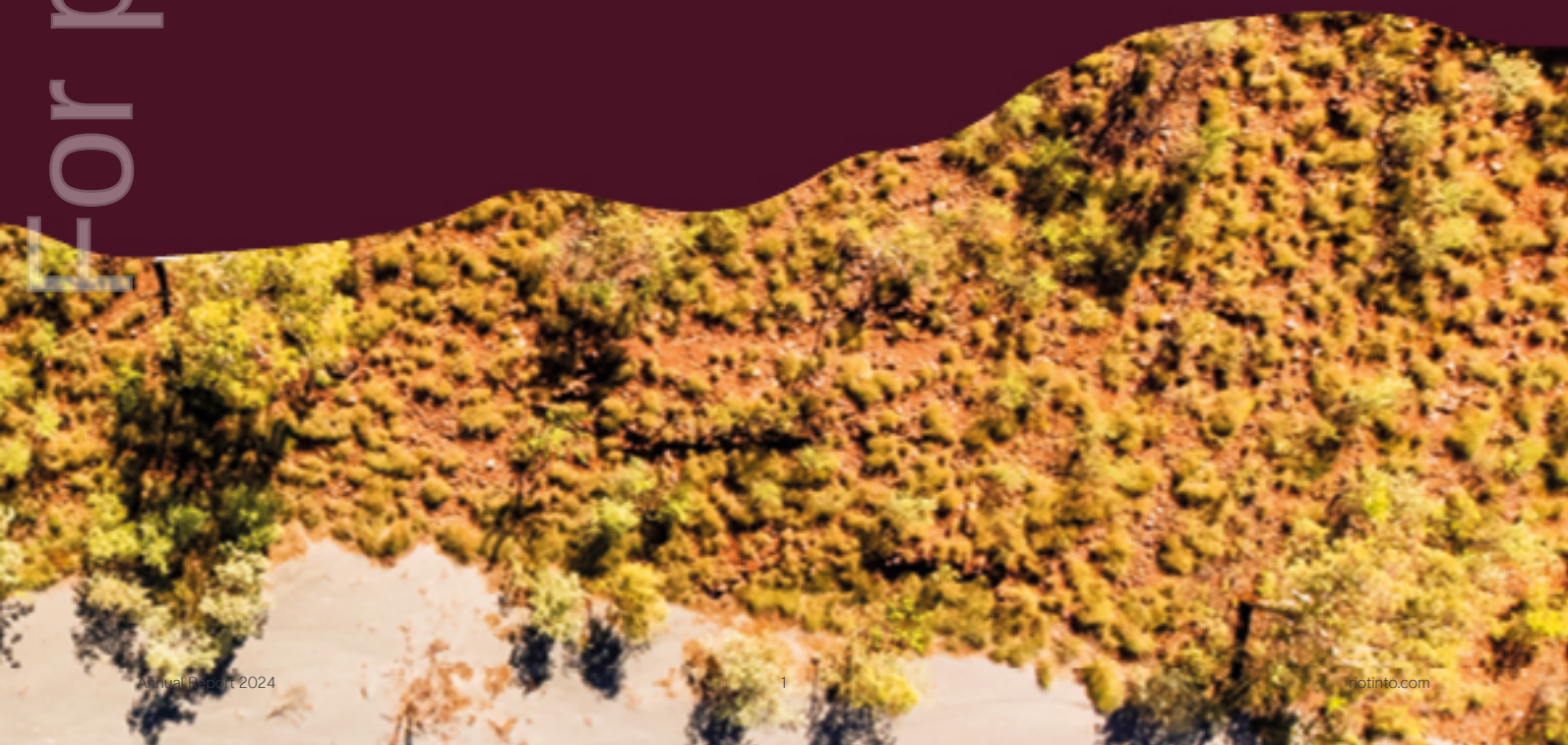
We are Rio Tinto, and we're **finding better ways™**

We live on a planet that's changing fast. The energy transition is an urgent, global challenge that calls for more of the metals and minerals we produce. This provides us with great opportunity, but we must supply that demand responsibly, and reduce emissions across our value chain. It's why we're working tirelessly to find solutions to complex questions, so we can help close the gaps, as we provide the materials the world needs.

Find out more about how we're ...

Accelerating growth	page 22
Innovating to net zero	page 41
Evolving our culture	page 78

On this page: We are rehabilitating the Argyle diamond mine on the traditional lands of the Miriwoong and Gija People in Western Australia.



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Our world today... and looking to the future

We are active in 35[1] countries, producing the metals and minerals the world needs to grow and decarbonise. Our materials are used in everyday life, helping people and societies build homes and infrastructure, travel and work, and learn and communicate.

Listen to our podcast, *Things You Can't Live Without*, to discover the role our metals and minerals play, and what needs to happen to create a sustainable future for the items we have come to rely on: riotinto.com/podcast

We have 60,000[2] employees worldwide, connected by our common purpose. Our exploration teams in the field, the colleagues at our project sites and operating our mines, processing facilities and infrastructure, those working in our offices and innovation centres – they bring our values of care, courage and curiosity to life.

We're focusing on the materials needed both now, and for the future. We continue to see strong traditional drivers of demand, and our core markets are growing. At the same time, emerging trends and the energy transition are opening up new opportunities for us to deliver profitable growth.

So we're unlocking the full potential of our assets, and growing and diversifying our portfolio, to become Best Operator for today and tomorrow.

We're investing in our people, our assets and our orebodies. We're exploring in 17 countries, and driving forward with our strong pipeline of projects so we can deliver the materials the world needs, safely, sustainably and for the long term. We're listening and partnering so we learn and improve. And we're strengthening our culture so our people feel safe and respected, and empowered to continue **finding better ways™**.

Rio Tinto across the globe

Our portfolio includes iron ore, aluminium, bauxite, alumina, copper, titanium dioxide, lithium, borates, salt and diamonds.

For more information on our mines and production facilities, Mineral Resources and Ore Reserves around the world, see pages 277 to 300.



1. Includes our mines and production facilities, main exploration activities and countries where we have a significant presence through activities including research and development, commercial, sales, and corporate functions.
2. This represents the average number of employees for the year, including the Group's share of non-managed operations and joint ventures. Refer to page 208 for more information.
3. The map indicates the location of our global operations and projects, however it does not identify all individual facilities included in an operation. It does not include our offices, research and development centres, and some processing and shipping facilities. The dots on the map are indicative and in some locations we have more assets than visually represented due to the size of the map. In Western Australia, for example, we operate 17 iron ore mines. For more detail, see the Mines and production facilities section on pages 274-319. Operations and projects are indicated according to their product group. The Iron Ore Company of Canada is an iron ore operation but is reported under Minerals due to the management structure. Management responsibility for the Simandou iron ore project in Guinea during the build phase of the project falls under the Chief Technical Officer and it is included in "Other operations".

2024 at a glance

Fatalities at managed operations
5
(2023: 0)

All-injury frequency rate
0.37
(2023: 0.37)

Women in our workforce
25.2%
(2023: 24.3%)

Completion rate of "Building Everyday Respect" employee learning module
97.4%
(2023: 83.5%)

Scope 1 and 2 greenhouse gas emissions
30.7Mt CO_2e
(2023: 33.9Mt CO_2e)
(gross adjusted equity emissions)

Profit after tax attributable to owners of Rio Tinto[1]
$11.6bn
(net earnings), (2023: $10.1bn)

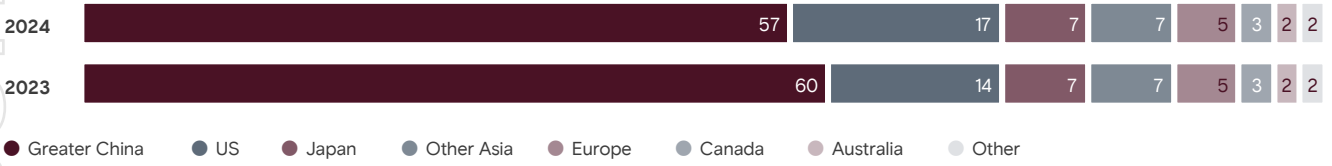
Net cash generated from operating activities
$15.6bn
(2023: $15.2bn)

Underlying EBITDA[2]
$23.3bn
(2023: $23.9bn)

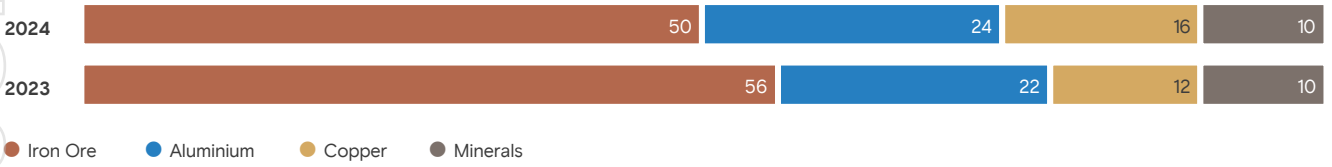
Total dividend per share
402.0 cents
(2023: 435.0 cents)

2024 consolidated sales revenue: $53.7bn (2023: $54.0bn)

By destination (%)



By reportable segments (%)



Iron Ore

Underlying EBITDA
$16.2bn
(2023: $20.0bn)

Pilbara iron ore
100% basis of production
328.0Mt
(2023: 331.5Mt)

Aluminium

Underlying EBITDA
$3.7bn
(2023: $2.3bn)

Bauxite
Rio Tinto share of production
58.7Mt
(2023: 54.6Mt)

Aluminium
Rio Tinto share of production
3,296kt
(2023: 3,272kt)

Copper

Underlying EBITDA
$3.4bn
(2023: $2.0bn)[3]

Mined copper
Consolidated basis of production
697kt
(2023: 620kt)

Minerals

Underlying EBITDA
$1.1bn
(2023: $1.4bn)

Titanium dioxide slag
Rio Tinto share of production
990kt
(2023: 1,111kt)

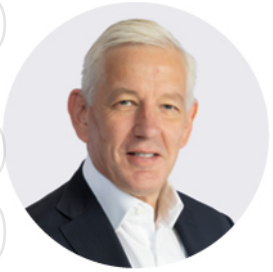
1. All financial values in this Annual Report are presented in US dollars unless otherwise stated.
2. Underlying EBITDA is a non-IFRS measure. A definition of underlying EBITDA and a reconciliation to its closest IFRS measure is presented in note 1 (page 168).
3. Comparative information has been adjusted to reflect the movement of Rio Tinto Guinea from the Copper product group to "Other operations". Refer to note 1 (page 167) for details.

For more information on our product groups' performance, see pages 24-31.

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Chair's statement

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> Rio Tinto is optimistic about the coming year. In 2024, we laid out the pathway to a decade of growth, gained clarity on the portfolio, and ensured we are in excellent financial health even as we execute more projects worldwide than ever before. Even with more global volatility, the underlying drivers of population growth, an expanding global middle class, the push for more localised manufacturing, artificial intelligence, and the energy transition continue to underpin demand for what we do.

The world needs the copper, aluminium, iron ore, and minerals we provide; our business is evolving in line with this demand, recently with our lithium business and the proposed acquisition of Arcadium. Our robust results and capital discipline demonstrate our ability to grow organically and inorganically, and to diversify and decarbonise our business while creating significant shareholder value. We have a lot of momentum, and I am confident we can deliver further value now and in the long term by following our strategy and continuing to focus on our 4 key objectives: to become Best Operator, striving for impeccable ESG credentials, to excel in development and to deepen our social licence.

That said, we are devastated that there were 5 fatalities in the year, a tragic reminder of why a relentless focus on safety is so important in our industry. We are committed to learning from these fatalities to improve our processes everywhere.

Our purpose in action

As a Board, we have spent a lot of time in 2024 focusing on Rio Tinto's strategy to ensure we have the right portfolio of commodities, clear milestones for success, and are building capacity to meet the increasing demand. We have seen this in action on many site visits. For example, in March, Ben Wyatt, Dean Dalla Valle and I visited the Simandou project in Guinea and witnessed early construction of the 620-kilometre railway. Less than a year on, we have signed the co-development agreements, crushed the first iron ore, built a 275-metre-long bridge, inaugurated 7 new schools and with a workforce of over 13,000 people, around 81% of whom are Guinean.

As we build, we are working with governments, communities and civil society groups on biodiversity and socioeconomic development. We are certainly not perfect, but we are taking the necessary steps to deepen our social licence. We cannot solve our biggest challenges alone, and it is important that our partnerships are mutually beneficial for all our stakeholders. A positive workplace culture is also key to operational performance. So, while there is still a long way to go, I am encouraged by the progress we are making on our culture change journey.

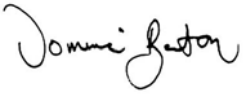
Well positioned in an uncertain landscape

We are clearly in a time of significant geopolitical volatility with conflict, trade tensions and polarisation at domestic and international levels. There will be further volatility in 2025, but we are working on what is within our control and Rio Tinto is well-positioned to manage risk. I am confident we have the right strategy to meet the many opportunities and navigate the challenges. Because, ultimately, what we do is increasingly in demand and will remain so, despite the hurdles we must deal with along the way, such as slow permitting.

Decarbonisation is core to our strategy. We have ambitious targets to reduce our emissions by 50% by 2030 and reach net zero by 2050, and getting there will be hard. But we have developed a roadmap that should enable us to achieve our targets while reducing energy uncertainty *and* improving the underlying economics for our assets. Our portfolio of decarbonisation initiatives is focused on value, giving us confidence that our investments here are not only better for the environment, but better for our business for the long term. Considering the complexity of the challenges before us, innovation is becoming an even more important part of our approach across Rio. This is being driven by our Chief Innovation Officer and our strong research and development team, who are testing future technologies and considering how we can scale them competitively.

A team effort

In 2025, Rio Tinto will continue to focus on building a culture where everyone feels safe, respected and empowered, because that is how an organisation delivers great performance. We will also continue to forge partnerships that enable us to grow and deliver further attractive shareholder returns. We cannot do this alone, and I want to thank every one of our partners, customers, suppliers, investors, governments, communities and Indigenous Peoples who supported us in 2024. Above all, I want to thank our colleagues across the globe who are helping us to find better ways to provide the materials the world needs.



Dominic Barton
Chair

19 February 2025

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From the Chief Executive

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> When I look back at 2024, I am proud of the progress our team has made. The portfolio is evolving, production is growing, and we are developing our technical skills and getting more disciplined at cost management as we focus on becoming Best Operator, learn from building major projects, and advance our decarbonisation agenda.

It is in Rio Tinto's DNA to deliver quality assets of scale, at the lowest part of the cost curve, and to find better ways to provide the materials the world needs. In 2024 we tapped into this DNA to deliver profitable, stable growth and significant shareholder value. We are unfolding the historic strength of Rio Tinto, and this strength is clear in our financial results.

However, we still have much to learn and improve, including on safety. We are heartbroken by the loss of our colleagues in 2024, and deeply committed to learning from every safety event.

Evolving our portfolio

We are continuing to align our portfolio with the commodities where demand growth is strongest, including lithium, a cornerstone mineral of the energy transition. At the Rincon project in Argentina, we went from greenfield to first lithium in only 32 months, and we are now expanding the plant. Along with the proposed acquisition of Arcadium, Rincon shows our commitment to building a world-class battery minerals portfolio.

Building major projects

We are becoming much more skilled as an organisation at executing projects at scale, on time and to budget. Simandou has progressed rapidly and is on track for first production at mine gate in 2025. At Oyu Tolgoi, we delivered first ore on the conveyor to surface in October, and production at the copper mine is expected to grow by more than 50% in 2025. In Canada, we are expanding the use of our low-carbon AP60 aluminium smelting technology. And these global teams of experienced project-building professionals are capturing and embedding their learnings.

Towards Best Operator

We are also determined to realise the full potential of our existing assets, which means accelerating the drive to become Best Operator. We made good progress on this objective in 2024, achieving consistent iron ore production in the Pilbara, and reaching nameplate capacity at the Amrun bauxite mine. Of course, Best Operator is not only about production but also cost competitiveness, and we are becoming more disciplined at managing our costs.

We will move further and faster on this objective in 2025, and seek to stabilise assets such as Iron Ore Company of Canada and Kennecott, which present huge opportunities to unlock value. As we go deeper into our sites with the Safe Production System (SPS), we see how much potential there is across our assets.

Impeccable ESG and social licence

Societal factors heavily influence our ability to operate, which is why we are continuing to move the dial on impeccable ESG and our social licence. Decarbonising our business is deeply physical and complex, but we are starting to deliver projects to reduce emissions while retaining value. We can only achieve our ambitious targets by working closely with stakeholders, so I was encouraged by the agreement with the Queensland Government to support Boyne Smelters, and our efforts to secure the long-term future of the Tiwai Point smelter in New Zealand. It is up to others to judge our progress, but I do sense we are becoming a partner of choice globally. We can win more hearts and minds by actioning our purpose, **finding better ways™**, that are more sustainable and are mutually beneficial.

Staying the course on culture change

Culture is fundamental to how we realise the full value of our assets. The release of the *Everyday Respect Progress Review* in November was important, helping us understand where we are on our culture change journey. It is unacceptable that colleagues are still experiencing harmful behaviours, but we are encouraged that many believe we are heading in the right direction. We will stay the course, creating a culture where everyone feels safe, respected and empowered.

Delivering growth while creating value

We have considerable momentum heading into 2025, and all the building blocks for an incredibly strong, diversified and growing business. We will continue taking actions that ensure we remain strong in the short, medium and long term, while paying attractive returns to our shareholders.

We will have a laser focus on unlocking the full potential of our assets as we go deeper with SPS, deliver improved cost management, and learn from executing complex projects. We will improve our culture and safety processes as part of an accelerated drive to become Best Operator. This way, we know we can afford to grow, decarbonise, and build a portfolio of materials the world needs, positioning us to be more competitive as we grow.



Jakob Stausholm
Chief Executive

19 February 2025

Follow Jakob on LinkedIn
linkedin.com/in/jakobstausholm

Strategic context

Our strategy is informed by a deep analysis of the interplay of global megatrends, explored through the lens of plausible scenarios. These allow us to explore potential futures for our industry and inform our portfolio decisions. Our success relies on our ability to strengthen our resilience to changing externalities while building partnerships and capabilities that enable us to capture emerging opportunities.

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Our scenario approach

We use global scenarios in our strategy and capital allocation processes to stress test our portfolio and investment decisions under alternative macroeconomic settings. These are created collaboratively, using Group-wide expertise to capture important market-specific trends and insights. Our scenario framework focuses on 2 prevailing forces: the speed of global economic growth and the trajectory of climate action, each heavily influenced by global geopolitics, governance and technology. In 2024, we updated our methodology, replacing our 2 former core scenarios (Competitive and Fragmented Leadership) with Conviction and Resilience scenarios, which inform our industry and project evaluations under 2 distinct macroeconomic settings:

- **Conviction Scenario** consists of elements of both our former core scenarios, envisaging a degree of industry fragmentation and increasing government intervention in key markets, but also significant progress in the development and deployment of energy transition technologies, in part driven by heightened global competition.
- **Resilience Scenario** represents a lower-growth world, where prevailing geopolitical uncertainty and populist and nationalist movements result in weaker governance, fragmented global trade, and less effective climate action.

Additional scenarios provide sensitivity analysis. These include our **Aspirational Leadership** scenario, which allows us to explore decisions in a world that remains on track to limit the global average temperature rise to 1.5°C (above pre-industrial levels) by 2100. We also test our analysis against consensus forecasts to explore our level of conviction against the market and identify emerging opportunities and risks.

These scenarios allow us to examine the robustness of our investment decisions, identify opportunities for protecting against the downside, gauge against market conviction and evaluate areas where we see upside potential beyond our peers.

Policy fragmentation and climate action

In 2024, we continued to see strong government intervention in the market and an increasingly fragmented policy landscape as countries competed to strengthen their position in key sectors. In the 2 years since the US *Inflation Reduction Act* was signed, tax credits have been announced for a range of sectors, and hundreds of billions of dollars of additional investments have been announced by US and foreign companies. Other regions have continued to respond with legislation designed to accelerate decarbonisation, bolster local manufacturing and enhance supply security (such as the recently announced EU *Net Zero Industry Act*).

While these initiatives have helped support the energy transition in some ways, such as by increasing electric vehicle (EV) production capacity and renewable projects, the fragmented climate policy landscape and current economic uncertainty have hindered global momentum on decarbonisation. Global CO_2 emissions are expected to increase moderately in 2024, in line with the past 2 years. This is particularly apparent for sectors that require significant capital to switch to fossil-fuel alternatives. In 2024, we have also seen policy support, particularly in the US, continue to drift away from climate action and towards sectors deemed critical to national security, such as defence, communications and computing.

Western reindustrialisation

To date, Western reindustrialisation in processing (smelting and refining) and manufacturing has been limited due to strong low-cost international competition and the widening capital intensity gap with China, where participants continue to hone their project development and technological capabilities. To address these challenges, Western governments have adopted increasingly protectionist approaches to support regional competitiveness and reduce import dependencies for strategic sectors.

In 2024, the US announced tariff increases on a range of Chinese goods, including semiconductors and solar cells (tariffs increased from 25% to 50%), EV batteries (from 7.5% to 25%) and EVs (from 25% to 100%). The EU also announced an increase in tariffs on imported EVs from a 10% base rate to up to 45.3% for some Chinese-built EVs. Importantly, both the US and EU have increased tariff and safeguard measures to ensure their remaining processing base in steel and aluminium smelting is preserved. This is vital in reducing raw material supply bottleneck risks.

Access to materials

In 2024, we also saw continued heightened fears around raw material supply disruptions, triggered by escalating conflicts and retaliatory trade measures (ie increased tariffs or export quotas on critical minerals). In response, governments and downstream participants in key demand jurisdictions (the US, EU, China, Japan and South Korea) have shown an appetite to partner with metals and mining companies to secure new sources of supply. We have seen 3 key approaches:

- **Reshoring of mining:** Governments have increased subsidy availability and state support for domestic mining projects to limit trade exposure risks. However, attempts to reshore mining have been limited due to resource quality and capital constraints and prevailing permitting challenges, particularly in developed economies.
- **New projects in the "Global South":** Governments have increased efforts to forge new bilateral and multi-lateral partnerships, to help access high-quality resources in developing economies. This trend is driving strong competition for high-quality projects and fuelling demand for metals and mining partners that can deliver projects while maintaining regionally aligned ESG priorities.
- **Recycling**: For governments and original equipment manufacturers, recycling provides a potentially low capital, low risk, and more socially acceptable pathway to secure additional supply while continuing to support the global decarbonisation agenda. While China has continued to build scrap-processing capacity and capabilities (including through the recently established *China Resources Recycling Group*), deindustrialisation, smelter closures and inadequate collection schemes in the West have weighed on progress. To address this, several governments initiated policies and strategies in 2024, including Germany's *National Circular Economy Strategy* and the US's *Battery and Critical Mineral Recycling Grant Program*.

Strategic framework

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Our purpose is

Finding better ways™
to provide the materials the world needs.

This reflects our ambition to grow profitably and take a lead in the energy transition by innovating and continuously improving.

See examples of how we're bringing our purpose to life at riotinto.com/purpose

Our strategy is how we achieve this.

Growing production of the materials the world needs for the energy transition while reducing operational emissions and partnering to decarbonise our value chains.

See how our strategy is moving us forward for profitable growth at riotinto.com/strategy

Our 4 objectives give us a clear pathway for driving progress and delivering results, in line with society's interests.

Become Best Operator, through great teams bringing their best every day, to safely and sustainably realise the full value of our assets.

Strive for impeccable ESG credentials by aligning our priorities with society's expectations and considering safety and sustainability in every decision.

Excel in development by shaping our portfolio for the future while progressing our existing project pipeline on time and to budget.

Strengthen our social licence by building meaningful partnerships, listening and learning, and earning trust.

See some of the ways we're progressing our objectives, on pages 10–11.

Our values define how we show up, to build a workplace where everyone, everywhere feels safe, respected and empowered to have a good day, every day.

We care about:

the safety of ourselves and others

•

creating an environment of trust

•

our impact on others.

We have the courage:

to show vulnerability

•

to speak up and challenge when we can do better

•

to take ownership of our actions and outcomes.

And we have the curiosity:

to learn and grow

•

to problem solve and find opportunities for everyday innovation

•

to be open to different perspectives.

Our business model helps us deliver value that matters to our stakeholders.

See how we do this, and the importance of partnerships in meeting our goals, on pages 8–9.

We ensure effective corporate governance to manage our performance responsibly and sustainably.

We track the progress we're making to deliver our strategy with measures of our financial, operational, safety and ESG performance.

See how we performed against these key performance indicators on pages 12–14.

Our Board oversees how we're managing risk and delivering our strategy.

Discover how our Board also monitors our culture to make sure it aligns with our values on page 106.

And we have a **Remuneration Policy** that supports us to deliver our strategy in line with our purpose and values.

Find out about the financial, safety, ESG and culture measures it takes into account on page 124.

Our business model

Across every stage of what we do, our business model helps us deliver value that matters to our stakeholders.

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1 Explore and evaluate

We use new and advanced technologies to explore, discover and deliver attractive growth opportunities, with a focus on materials essential for the energy transition.

2 Develop and innovate

We are an industry leader in research and development, and partner with customers, technology providers, academia and local communities to develop new projects and more efficient, safer and sustainable production pathways.

3 Mine and process

We own and operate mining and processing operations spanning a range of countries and commodities. We are a global industry leader, focused on safe, productive and environmentally responsible performance.

4 Market and deliver

We market our products to meet the diverse needs of our customers, with a focus on creating lower-carbon, responsibly sourced and traceable products that help our customers decarbonise. We maximise value for our business, delivering them safely, reliably and efficiently through our global logistics network.

5 Close and repurpose

We are responsible operators, delivering value at every stage from discovery to closure. We engage our stakeholders in rehabilitation and social transition planning and in preparation for closure. We review each site's closure plans annually.

Image: Argyle diamond mine tailings storage facility, Australia.

For more information about how we deliver value, see riotinto.com/ourbusiness

Our stakeholders

By engaging openly and transparently with our stakeholders, listening to and learning from them, we can better understand each other's priorities, and how we can work together for mutual benefit. We cannot solve all the challenges we face alone, and we value the strength these partnerships bring in helping us meet our goals.

Section 172(1) statement

This stakeholder section, together with our stakeholder pages in the Governance section (pages 106-108), explains how the Board takes account of stakeholder interests. These comprise our "Section 172(1) statement".

Our people

55,000[1]

Employees across 6 continents
(2023: 55,000)

We are building an environment of trust, where everyone, everywhere feels safe, respected and empowered to have a good day, every day. We do this by creating a safe and inclusive environment for everyone, by having a common way of doing what we do everywhere, and living and leading with our values every day. In 2024, we conducted the *Everyday Respect Progress Review* to understand the progress we have made, and areas we need to improve, towards a safe, respectful and inclusive work environment. We launched our global recognition program, RockStars, to celebrate colleagues who demonstrate our values in action, and Inclusive Voices, our Employee Resource Groups, to amplify diverse voices throughout Rio Tinto.

Our people survey is one of the tools that helps us understand how our employees experience working for us. In our most recent survey conducted in Q4 2024, our employee satisfaction rating (eSAT) was 74 points (Q4 2023: 74). For more information see page 78.

Communities

27.7%

Increase in spend with Indigenous businesses in Australia
(2024: A$926m, up from A$725m in 2023)

Communities are the places and the people who make up where we live, work and call home. We work in partnership with communities to understand how our activities impact their lives, culture, land and environment, and how we can help create better social outcomes such as more jobs and local procurement.

Over the past few years, we have focused on our own standards of open and transparent engagement. We are **finding better ways**™ to work with communities and Indigenous Peoples, promoting greater recognition and inclusion of Indigenous Peoples in our decision making. We are targeting for all sites to co-manage cultural heritage with communities and knowledge holders by 2027. And for all our people to complete annual human rights awareness training as part of our Code of Conduct learning.

Civil society organisations

20+

CSOs took part in our 2024 roundtables in Melbourne, London and Montreal, in person

One way we can help address the world's many complex environmental, social and governance (ESG) challenges, such as climate change, human rights violations, bribery and corruption, is through collaboration with civil society organisations (CSOs) and other stakeholders. Our senior leaders regularly engage with CSOs, and although our opinions may differ from time to time, we respect different views, and are open to constructive, fact-based feedback and challenge from civil society on our operations and performance across our business. Our yearly roundtable discussions with CSOs in Australia, Europe and North America are one of the ways we make sure we are listening to civil society perspectives.

Governments

$77bn

Paid in taxes and royalties globally over the past 10 years
(2023: $76bn)

Governments – national, state and provincial, and local – are important stakeholders for our business. They regulate our operations, are among our commercial partners, and receive revenue from our taxes and royalties. Our economic contribution can be significant for national budgets and local development priorities, such as job creation and skills training. We engage with officials on issues such as how we explore, mine and process ore; conditions of land tenure; health, safety and environment; taxation; intellectual property; competition and foreign investment; data privacy; conditions of trade and export; and infrastructure access.

Investors

$6.5bn

Total dividends declared to shareholders
(2023: $7.1bn)

Our investors include pension funds, global fund managers, bondholders, and tens of thousands of individuals around the world, including approximately 36,000 Rio Tinto employees.

It is important that we understand our investors' needs and their vision for the company. We therefore communicate and engage extensively with them throughout the year, both in person and through virtual forums across multiple jurisdictions. In addition to our annual general meetings in the UK and Australia, we also held our 2024 Investor Seminar in London, where our Executive Committee provided an update on our progress against our strategy and how we are advancing our decarbonisation program.

Customers

1,730

Customers across multiple industries and countries
(2023: 1,770[2])

Our customers' needs are central to our operational decision making. We leverage insights generated from everything we buy, sell and move around the world. We collaborate closely with customers to ensure we deliver products that meet their specific requirements and help accelerate their decarbonisation goals.

Where possible, we partner to co-develop solutions that support our ESG commitments. To address customer needs for supply chain traceability, we have expanded the scope of our START™ sustainability label to cover copper cathodes, metal powders and salt. Similar to our aluminium products, we are now providing ESG metrics associated with sourcing and producing these materials from mine to market.

Suppliers

$31bn

Spent with suppliers globally in 2024
(2023: $29bn[3])

By improving how, and what, we buy we are able to support our assets to become Best Operator. This means reducing costs and improving transactional efficiency while improving the quality of what we purchase. As part of this approach, we partner with local and Indigenous businesses where possible. This supports our efforts to have a positive impact where we operate, so that we help to create stronger communities that support our operations, while giving them the opportunity to share in our success.

Working in partnership with our suppliers helps us to advance our day-to-day operations to ensure we are delivering solutions that best support our product groups. These strong relationships will also allow us to decarbonise our business faster.

We work hard to build trusted relationships with our suppliers that align with our values and strategic objectives.

1. Includes our total workforce based on managed operations (excludes the Group's share of non-managed operations and joint ventures) as of 31 December 2024, rounded to the nearest 1,000.
2. 2023 data has been restated using an updated approach for obtaining customer numbers across product groups. Numbers are for managed entities only.
3. 2023 data has been restated to reflect a change in the definition of global supplier spend to include total contestable spend.

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Progressing our 4 objectives

Becoming Best Operator

What we are focusing on

- Eliminating fatalities, preventing catastrophic events and reducing injuries.
- Executing our strategy to deliver attractive shareholder returns and build a stronger, more diversified, and growing business.
- Safely and sustainably realising the full value of our assets, through our Safe Production System (SPS).

In 2024

Safety

- Our all-injury frequency rate (AIFR) was 0.37 in 2024 (consistent with 0.37 in 2023).
- Tragically, there were 5 fatalities in our business in 2024, and we continue to see serious events where people are exposed to potential fatal incidents.

Operational performance

Our overall operating performance improved, and we delivered 1% production growth and a 3% increase in sales volumes, both on a copper equivalent basis (based on long-term consensus pricing).

- Some assets continued to face challenges, particularly Iron Ore Company of Canada, Kennecott and Rio Tinto Iron & Titanium.

At the end of 2024, we had commenced deployment of SPS at 31 (80%) of our sites. These sites account for over 95% of the production uplift opportunity identified:

- At our Pilbara iron ore operations, we achieved our SPS target of 5 million tonnes, and Gudai-Darri reached 50Mtpa rates.
- 6% year-on-year increase in good anodes produced at Kennecott (excluding shutdowns and 2023 furnace rebuild).
- Record annual production at Amrun.

Our priorities for the future

Safety

- Continuing to support contractor safety, further integrating contractors into our safety culture and learning from them.
- Continuing to strengthen our safety control framework to align with our evolving risk profile.
- Improving the governance of our aviation safety and assurance programs.
- Further evolving our safety maturity model.

Operational performance

- Continuing to strengthen the business as we execute our strategy to deliver profitable growth.
- Driving further consistency across our global operations.

Our SPS priorities for 2025:

- Accelerating SPS deployment saturation and maturity.
- Embedding the mindsets and behaviours we need for lasting and positive cultural change.
- Locking in high performance through our management performance practices.

Striving for impeccable ESG

What we are focusing on

- Embedding sustainability in our decisions, to support our journey to becoming Best Operator.
- Striving for impeccable ESG credentials across our work, including in health, safety and wellbeing, environment and nature, decarbonisation, communities, diversity, and culture.
- Truly listening to communities so we can find better ways to work together, and building cultural competency across Rio Tinto.

In 2024

Environment

- We are turning strategy into action on decarbonisation, and this year committed to carbon abatement projects representing more than 3 million tonnes of annual emissions.
- We shared our support for the ICMM's Nature Position Statement, which sets out ICMM members' approach to contributing to a nature-positive future.
- We laid the foundation for our nature strategy and target program, through consultations with stakeholders.

Social

- We published the findings of an independent, external *Progress Review* on our work to deliver sustained workplace cultural change. It assessed our progress in the 2 years since we published the *Everyday Respect Report*, and identified areas that require our continued effort.
- We strengthened our approach to psychosocial risk management, running more risk assessments, and helping leaders identify hazards and implement controls.
- We developed a 3-year human rights learning strategy and a global learning program to support training for our people in higher-risk human rights roles.
- We launched Local Voices, our global community perception monitoring program, to help inform our planning and decision making.

Governance

- We launched new annual Code of Conduct training.
- We piloted a new Third-Party Risk Management system.

Our priorities for the future

Environment

- We will progress our plans to deliver on our emission-reduction targets, work with our partners to reduce theirs, and collaborate to drive meaningful change for our stakeholders.
- We will formalise our nature strategy and approach, and continue open dialogue on it with our stakeholders.
- Our nature target program will begin in 2025, with a Group target and site-based improvement programs.

Social

- We will focus on the next stage of our plan to accelerate culture change.
- We will continue to progress towards our Community and Social Performance targets, and strengthen our capabilities to become a better operator and partner.
- We are moving to a model of co-management of cultural heritage.

Governance

- We will explore new ways of providing support to our people, and encourage more people to speak up.

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Excelling in development

What we are focusing on

- Advancing a range of projects across the business.
- Developing options for the future through our project pipeline, exploration, mergers and acquisitions, and technology.

In 2024

Project development

- We made significant progress on the mine, rail and port infrastructure for the Simandou project in Guinea, in collaboration with our joint venture partners.
- We completed breakthroughs of Shafts 3 and 4 at Oyu Tolgoi, key to maximising the copper mine's underground potential.
- We advanced 5 replacement iron ore mine projects in the Pilbara. At Western Range, our newest mine in the Pilbara, first ore is on plan for the first half of 2025 and we are now operating our Autonomous Haulage System trucks. Construction began on our seawater desalination plant, which will support future water supply for our coastal operations and communities in the Pilbara.
- Construction began on the expansion of the AP Technology™ AP60 aluminium smelter in Quebec. AP60 smelting technology is among the most efficient and lowest-carbon technology currently available at commercial scale.
- The Rincon starter plant in Argentina delivered its first lithium.

Pipeline projects

- We approved the expansion of the Rincon lithium project in Argentina to 60,000 tonnes per year.
- We continued to advance a range of other studies, including Winu and Resolution.

Exploration

- We made strong progress on our advanced Exploration projects, including Kamiesburg (mineral sands), Texas (potash) and Chiri (diamonds).
- Our Nuevo Cobre project in Chile's Atacama region, a joint venture with Corporación Nacional del Cobre de Chile (Codelco), has delivered encouraging early results.

Innovation

- We established the Rio Tinto Innovation team to accelerate our innovation efforts, help shape our future business, and make our assets safer, more efficient and more sustainable. Our Group-wide approach enables us to focus on the highest impact projects, to innovate across and between product groups, functions and geographies, and to work with external partners to bring the outside world in.

Our priorities for the future

- We will carry on exploring new approaches, technologies, renewable energy and partnership opportunities. Our aim is to discover, progress and develop high-quality projects supporting future growth through the cycle, in close consultation with communities.
- In 2025, we will invest in new partnerships with Chinese suppliers to trial new construction methods, innovations and technologies – including artificial intelligence – to develop orebodies faster and reduce our capital intensity.
- We will manage our pipeline of opportunities to deliver high-quality growth options, focusing on materials needed in a decarbonising world, including:
  - delivering first ore at Simandou in line with our 2025 plan
  - optimising the next tranche of replacement mines in the Pilbara
  - completing the Western Range project in the Pilbara
  - managing key closure projects at Argyle, Gove and Ranger
  - beginning operations at the Rincon starter plant, and beginning construction of the Rincon expansion plant
  - completing the acquisition of Arcadium Lithium and integrating Arcadium Lithium's pipeline of development projects, subject to acquisition completion.
- We will continue building our teams' capabilities needed to achieve these.

Strengthening our social licence

Strengthening our social licence underpins each of our objectives, and our ability to operate.

Our social licence is the extent to which we have the acceptance, support, and trust of multiple categories of stakeholders in countries that are most relevant to us. These stakeholders include our workforce, the communities in which we operate, civil society organisations, governments, investors, customers and suppliers.

For more on who our stakeholders are, what is important to them, and how we engage and partner, see page 9, and pages 106-108.

And find out about our 2024 performance, and our future priorities, in relation to:
- our people and our culture change journey, on pages 78-79
- our community engagement and social performance, on pages 81-85
- our engagement with civil society and governments, on pages 86-87.

Key performance indicators

We use a range of financial and non-financial metrics to measure Group performance against our 4 objectives: to be Best Operator; to strive for impeccable ESG credentials; to excel in development; and to strengthen our social licence.

Alignment to our 4 objectives and associated risks key

● Best Operator ● Impeccable ESG ● Excel in Development ● Social Licence

All-injury frequency rate (AIFR)

per 200,000 hours worked



●●

Definition

We define AIFR as the number of injuries per 200,000 hours worked by employees and contractors at our managed operations. It includes medical treatment cases, restricted workday, lost-day injuries, and fatal injuries.

Relevance to strategy

The health, safety and wellbeing of our employees and contractors is at the heart of everything we do.

We are committed to a safe work environment by focusing on eliminating fatalities, preventing catastrophic events, and reducing injuries. To support this, we continue to implement and embed key programs, including our safety maturity model (SMM), critical risk management (CRM), and the Safe Production System (SPS) - all of which help us to build a physically and psychologically safe and healthy workplace, built on trust, transparency and collaboration.

We also continue to share lessons and strengthen our partnerships with industry and associated committees, contracting partners and local communities to improve health, safety and wellbeing outcomes.

Link to executive remuneration

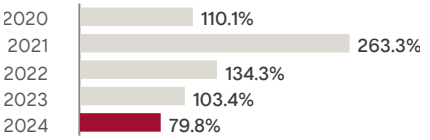
AIFR and SMM are included as performance metrics in the safety component of the short-term incentive plan (STIP) (see pages 130-133).

Our performance in 2024 and forward plan

Our AIFR remained at 0.37 in 2024, consistent with 2023 (2023: 0.37). However, tragically, there were 5 fatalities in our business. We remain deeply committed to learning from these events, while also continuing to renew our focus on our CRM program and further evolving our approach to SMM across our business.

Total shareholder return (TSR)[1]

measured over the preceding 5 years (using annual average share price)



●●●●

Definition

TSR is a combination of share price appreciation (using annual average share price) and dividends paid and reinvested to show the total return to the shareholder over the preceding 5 years.

Relevance to strategy

Our strategy aims to maximise shareholder returns through the commodity cycle, and TSR is a direct measure of that.

Link to executive remuneration

TSR is reflected in the long-term incentive plan (LTIP), measured against a mining-based index (the EMIX Global Mining Index historically and from 1 August 2023 the S&P Global Mining Index) and a broader-based index of large global corporates (the MSCI World Index) (see page 134).

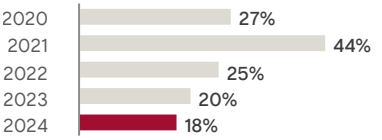
Our performance in 2024 and forward plan

TSR performance over the 5-year period was driven principally by movements in commodity prices and changes in the global macro environment. Rio Tinto outperformed the EMIX/S&P Global Mining Index and marginally underperformed against the MSCI World Index over the 5-year period.

We will continue to focus on generating free cash flow from our operations. This allows us to return cash to shareholders (short-term returns) while investing in the business (long-term returns).

Underlying return on capital employed (ROCE)

%



●●

Definition

Underlying ROCE is a non-IFRS measure defined as underlying earnings excluding net interest divided by average capital employed (operating assets). For more information and a reconciliation of underlying ROCE to the nearest comparable IFRS measure, see Alternative Performance Measures (pages 269-273).

Relevance to strategy

Our portfolio of low-cost, long-life assets delivers attractive returns throughout the cycle and has been reshaped significantly in recent years. Underlying ROCE measures how efficiently we generate profits from investment in our portfolio of assets.

Link to executive remuneration

In the near term, underlying ROCE is influenced by underlying EBITDA, which is included in the STIP. Underlying earnings as a component of ROCE influences TSR, which is included in the LTIP (see page 134).

Our performance in 2024 and forward plan

Underlying ROCE decreased by 2 percentage points to 18% in 2024, reflecting a decrease in underlying earnings, principally due to lower iron ore prices, combined with an increase in operating assets due to capital expenditure on key growth projects and maintaining our operating capacity.

We remain focused on delivering our strategy to generate attractive shareholder returns over the long term as we diversify our growing business and invest with confidence in the long-term demand for materials crucial to the global energy transition.

1. The TSR calculation for each period is based on the change in the calendar-year average share prices for Rio Tinto plc and Rio Tinto Limited over the preceding 5 years. This is consistent with the methodology used for calculating the vesting outcomes for Performance Share Awards (PSA). The data presented in this chart accounts for the dual corporate structure of Rio Tinto.

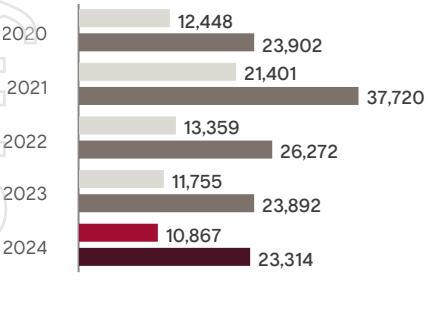
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Alignment to our 4 objectives and associated risks key

● Best Operator ● Impeccable ESG ● Excel in Development ● Social Licence

Underlying earnings and underlying EBITDA

$ millions



●

Definition

Underlying earnings and underlying EBITDA are non-IFRS measures.

Underlying earnings represents net earnings attributable to the owners of Rio Tinto, adjusted to exclude items that do not reflect the underlying performance of the Group's operations. For more information on these exclusions and a reconciliation to the nearest IFRS measures, refer to Alternative Performance Measures (pages 269-273).

Underlying EBITDA is a segmental performance measure and represents profit before taxation, net finance items, depreciation and amortisation, and adjusted for exclusions. Exclusions from underlying EBITDA and a reconciliation to the nearest IFRS measures can be found in note 1.

Relevance to strategy

These financial KPIs measure how well we are managing costs, increasing productivity and generating the most revenue from each of our assets.

Link to executive remuneration

Underlying EBITDA is reflected in the STIP. In the longer term, both measures influence TSR, which is the primary measure for the LTIP (see pages 130-134).

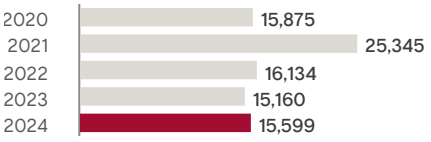
Our performance in 2024 and forward plan

Underlying earnings of $10.9 billion were $0.9 billion lower than in 2023. Underlying EBITDA of $23.3 billion was $0.6 billion lower than in 2023. The 2% decrease in underlying EBITDA was primarily due to lower iron ore prices, partly offset by higher prices for copper and aluminium, higher copper volumes and lower market-linked costs.

We remain disciplined and focused on managing costs across our portfolio as we continue to generate consistent margins and maintain attractive shareholder returns.

Net cash generated from operating activities

$ millions



●

Definition

This KPI refers to cash generated by our operations after tax and interest, including dividends received from equity accounted units and dividends paid to non-controlling interests in subsidiaries.

Relevance to strategy

This KPI measures our ability to convert underlying earnings into cash.

Link to executive remuneration

Net cash generated from operating activities influences the free cash flow measure included in the STIP. In the longer term, the measure influences TSR, which is included in the LTIP (see pages 130-134).

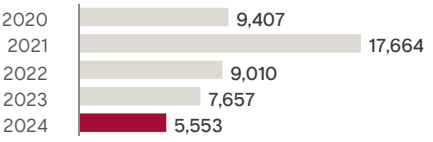
Our performance in 2024 and forward plan

Net cash generated from operating activities of $15.6 billion was 3% higher than 2023. This was driven by improved working capital management and higher dividends from Escondida, partly offset by the impact of a lower iron ore price.

We remain focused on our consistent cash flow generation as we execute our strategy to deliver organic growth through our major projects, while continuing to drive for efficiencies across our existing assets.

Free cash flow

$ millions



●●

Definition

Free cash flow is a non-IFRS measure defined as net cash generated from operating activities minus purchases of property, plant and equipment, intangibles, and payments of lease principal, plus proceeds from the sale of property, plant and equipment, and intangible assets. For more information and a reconciliation of free cash flow to the nearest comparable IFRS measure, see Alternative Performance Measures (pages 269-273).

Relevance to strategy

This KPI measures the net cash returned by the business after the expenditure of sustaining and growth capital. This cash can be used for shareholder returns, reducing debt and other investment.

Link to executive remuneration

Free cash flow is included in the STIP. In the longer term, the measure influences TSR, which is included in the LTIP (see pages 130-134).

Our performance in 2024 and forward plan

Free cash flow decreased by $2.1 billion to $5.6 billion in 2024, primarily due to increased capital expenditure as we ramp up several major growth projects, slightly offset by increased net cash generated from operating activities.

We remain focused on our consistent cash flow generation as we execute our strategy to deliver organic growth through our major projects, while continuing to drive for efficiencies across our existing assets.

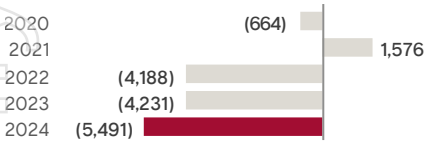
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Alignment to our 4 objectives and associated risks key

● Best Operator ● Impeccable ESG ● Excel in Development ● Social Licence

Net (debt)/cash

$ millions



Definition

Net (debt)/cash is a non-IFRS measure defined as total borrowings plus lease liabilities less cash and cash equivalents and other liquid investments, adjusted for derivatives related to net (debt)/cash (see note 19 of the financial statements). For more information and a reconciliation of net (debt)/cash to the nearest comparable IFRS measure, see Alternative Performance Measures (pages 269-273).

Relevance to strategy

This KPI measures how we are managing our balance sheet and capital structure. A strong balance sheet gives us the flexibility to take advantage of opportunities as they arise and return cash to shareholders.

Link to executive remuneration

Net (debt)/cash is, in part, an outcome of free cash flow, which itself is reflected in the STIP. In the longer term, net (debt)/cash influences TSR, which is reflected in the LTIP (see pages 130-134).

Our performance in 2024 and forward plan

Net debt increased by $1.3 billion to $5.5 billion. This was largely the result of free cash flow of $5.6 billion, offset by dividends of $7.0 billion.

We remain focused on our consistent cash flow generation as we execute our strategy to deliver organic growth through our major projects, while continuing to drive for efficiencies across our existing assets.

Gross Scope 1 and 2 greenhouse gas emissions

(adjusted equity Mt CO_2e)



Definition

We measure our Scope 1 and 2 greenhouse gas emissions on an equity basis. It includes the equity share of Scope 1 and 2 emissions from managed and non-managed operations expressed in million metric tonnes of carbon dioxide equivalent.

Relevance to strategy

Climate risks and opportunities have formed part of our strategic thinking and investment decisions for over 2 decades. The low-carbon transition is at the heart of our business strategy. We focus on growing production in the materials that enable the transition, decarbonising our operations and partnering with our customers and suppliers to decarbonise our value chains.

Link to executive remuneration

Climate change is included in our ESG metrics for executive remuneration with a weighting of 10% of the STIP (see page 130). We also have a decarbonisation measure as part of our LTIP with a 20% weighting. See pages 133-136 for further information.

Our performance in 2024 and forward plan

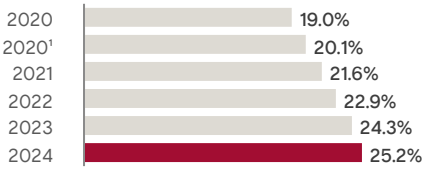
Our adjusted gross Scope 1 and 2 emissions were 30.7Mt CO_2e in 2024, which is 14% below our 2018 baseline of 35.7Mt CO_2e. In 2024 we made significant progress and reduced our emissions by 3.2Mt CO_2e. This has primarily been achieved by new renewable energy contracts, including the limited use of unbundled renewable energy certificates in locations where new generating assets are under development or where power purchase agreements have been agreed.

In addition we have made commitments to projects that are expected to deliver abatement of around 3.6Mt per year in future periods mostly through renewable electricity and biofuels. In addition, imminent investment decisions could deliver further abatement by 2030 and include new energy solutions at BSL and fuel-switching and electrification in the Queensland Alumina Limited (QAL) and Yarwun alumina refineries.

For more information, see our Climate Action Plan on pages 41-75.

Gender diversity

representation of women within our workforce



Definition

Includes our total workforce based on managed operations (excludes the Group's share of non-managed operations and joint ventures)[2].

Relevance to strategy

Our sustained performance and growth rely on having workforce diversity that is representative of the communities in which we operate and having a workplace where people are valued for who they are and encouraged to contribute to their full potential.

Link to executive remuneration

In 2024, our target was to have 25.8% of our workforce represented by women. This aspiration was included as a measure in our Group STIP scorecard with a 5% weighting. For more information see pages 130-133.

Our performance in 2024 and forward plan

The representation of women at Rio Tinto increased from 24.3% in 2023 to 25.2% in 2024, which is short of our target of 25.8%. We saw improvements across all levels of the organisation, with senior leaders increasing from 30.1% to 32.0%, and operations and general support increasing from 17.7% to 18.9%.

Our target to increase the proportion of women in our workforce year-on-year gives us continued focus on both the attractiveness of Rio Tinto to women and the environment they work in.

We continue to work to strengthen our applicant pipeline of women by partnering with external sector groups and local technical colleges, universities and communities, and building awareness of both Rio Tinto and the mining sector to encourage more women to apply for vacant roles and join us. We are working to more deeply understand the drivers of attrition of women across the organisation.

1. In 2020, we updated our definition of our total workforce to include those employees who were unavailable for work (eg on parental leave) and temporary contractors. Note: less than 1% of the workforce gender is undeclared.
2. Baseline reset with definition for 2020 to 2024 gender diversity.

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Chief Financial Officer's statement

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> "The consistency of our earnings and cash flows gives us confidence in our ability to invest in disciplined growth while remaining true to our shareholder returns policy and retaining a strong balance sheet.

Strategy execution delivering strong, consistent earnings and cash flows

2024 was another year of successful execution, with our total copper equivalent production increasing by more than 1% over 2023, on a copper equivalent basis (based on long-term consensus pricing). This reflected the ramp-up of the Oyu Tolgoi underground copper mine and further deployment of our Safe Production System. We have prioritised our Best Operator focus on operations that generate the most cash, with particular success at our Pilbara iron ore business and increased operational stability at our Aluminium operations, including record bauxite production at Amrun and Gove. We remain focused on our cost competitiveness while intensifying efforts to address system bottlenecks and strategic challenges at underperforming assets.

For 2024, we are reporting net cash generated from operating activities of $15.6 billion, underlying earnings of $10.9 billion and profit after tax attributable to owners of Rio Tinto of $11.6 billion.

We ended the year with net debt of $5.5 billion, which is modest relative to recent history. This balance sheet strength enables us to run our business consistently and maintain investment through the cycle, offering resilience and creating optionality, such as our proposed acquisition of Arcadium. We have chosen not to have a net debt target, but have a principles-based approach to anchor the balance sheet around a single A credit rating.

We are intensifying our focus on becoming Best Operator and how we are delivering profitable growth from major projects. We are derisking our assets through disciplined execution of our decarbonisation program, finding ways to lower capital intensity and increase overall returns. These actions are creating significant value, enhancing our cash flows and supporting consistent capital allocation and balance sheet strength.

Consistent and disciplined capital allocation

We will continue to allocate the capital generated by our operations with discipline and remain committed to attractive shareholder returns. We have consistently applied our financial framework, which has been in place for more than a decade. It is straightforward and serves us well, underpinned by our three priorities. Essential capital expenditure remains the first priority – sustaining capex to ensure the integrity of our assets, high-returning replacement projects and investment for decarbonisation. The second priority is the ordinary dividend within our well-established returns policy, where we now have a nine-year track record of paying out consistently at the top end of the policy range at 60% of underlying earnings. The third involves testing investment in compelling growth against debt management and further cash returns to shareholders.

In 2024, our share of capital investment rose to $9.5 billion, driven by increased investment in replacement projects, including Western Range in the Pilbara and AP60 in Quebec, and the accelerating development of the Simandou iron ore project in Guinea. We believe that Simandou's high-grade, high-quality product will position us well for the decarbonisation of the steel industry. It is critical to ensure we have the right, diversified portfolio to keep creating value for decades to come, so we can benefit from increased demand from both traditional sources and from the energy transition. We spent $0.9 billion on exploration and evaluation, with greenfield projects mainly focused on copper and lithium, while evaluation prioritised projects with near-term investment decisions.

We remain very committed to our capital framework including our dividend policy and practice. Our financial strength means that we can reinvest for growth, accelerate our decarbonisation and continue to pay attractive dividends through the cycle. For 2024, we are returning 60% of underlying earnings to shareholders, which equates to a full-year ordinary dividend of 402 US cents per share, or $6.5 billion.

Robust financial health as investments support future cash flows

Our existing business is generating strong cash flows, which will be enhanced by the delivery of our growth projects.

Our strategy is about growing in the materials the world needs. This will ensure Rio Tinto remains strong in the short, medium and long term with the ability to invest for the long term while also paying attractive returns.

Net cash generated from operating activities

$15.6 billion

(2023: $15.2 billion)

Profit after tax attributable to owners of Rio Tinto (net earnings)

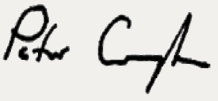
$11.6 billion

(2023: $10.1 billion)

Underlying earnings

$10.9 billion

(2023: $11.8 billion)



Peter Cunningham
Chief Financial Officer

19 February 2025

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Financial review

Key financial highlights

Year ended 31 December	2024	2023	Change
Net cash generated from operating activities (US$ millions)	**15,599**	15,160	3%
Purchases of property, plant and equipment and intangible assets (US$ millions)	**9,621**	7,086	36%
Free cash flow[1] (US$ millions)	**5,553**	7,657	(27%)
Consolidated sales revenue (US$ millions)	**53,658**	54,041	(1%)
Underlying EBITDA[1] (US$ millions)	**23,314**	23,892	(2%)
Profit after tax attributable to owners of Rio Tinto (net earnings) (US$ millions)	**11,552**	10,058	15%
Underlying earnings per share (EPS)[1] (US cents)	**669.5**	725.0	(8%)
Ordinary dividend per share (US cents)	**402.0**	435.0	(8%)
Underlying return on capital employed (ROCE)[1]	**18%**	20%	
	At 31 December 2024	At 31 December 2023	
Net debt[1] (US$ millions)	**5,491**	4,231	30%

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Financial performance

Income Statement

Net earnings and underlying earnings refer to amounts attributable to the owners of Rio Tinto. The net profit attributable to the owners of Rio Tinto in 2024 was $11.6 billion (2023: $10.1 billion).

Financial strength through greater diversification

To provide additional insight into the performance of our business, we report underlying EBITDA and underlying earnings. Underlying EBITDA and underlying earnings are non-IFRS measures. For definitions and a detailed reconciliation of underlying EBITDA and underlying earnings to the nearest IFRS measures, see pages 168 and 270, respectively.

The principal factors explaining the movements in underlying EBITDA are set out in this table.

	US$bn
2023 underlying EBITDA	**23.9**
Prices	(1.6)
Exchange rates	0.3
Volumes and mix	0.2
General inflation (including net impact on provisions)	(0.6)
Energy	0.2
Operating cash unit costs	0.6
Exploration and evaluation expenditure (net of profit from disposal of interests in undeveloped projects)	0.3
Non-cash costs/other	0.1
Change in underlying EBITDA	**(0.6)**
2024 underlying EBITDA	**23.3**

Financial figures are rounded to the nearest $100 million, hence small differences may result in the totals.

In 2024, we started to see the benefits of our diversified portfolio and operational improvements. Higher prices for copper, bauxite and aluminium together with rising copper and bauxite volumes, and our focus on cost discipline helped to offset much of the impact of the iron ore price decline, leading to underlying EBITDA of $23.3 billion.

Lower iron ore price partly offset by stronger copper, bauxite and aluminium

Movements in commodity prices resulted in a $1.6 billion decline in underlying EBITDA compared with 2023, reflecting the impact of a lower iron ore price, which was partly offset by higher prices for bauxite and LME copper and aluminium.

We have included a table of prices and exchange rates on page 330.

The monthly average Platts index for 62% iron fines converted to a Free on Board (FOB) basis was 11% lower, on average, compared with 2023.

Average LME prices for copper and aluminium were both 8% higher, the bauxite index was 26% higher and the gold price was 23% higher compared with 2023.

The Midwest premium duty paid for aluminium in the US declined by 17% to $427 per tonne.

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Marginal benefit from weaker local currencies

Compared with 2023, on average, the US dollar strengthened by 1% against the Australian and Canadian dollars. Currency movements increased underlying EBITDA by $0.3 billion relative to 2023.

Rising copper volumes

A 3% rise in copper equivalent sales volumes led to a $0.2 billion increase in underlying EBITDA. This was underpinned by 25% higher copper sales volumes, along with increases in gold, driven by the steady ramp-up of the Oyu Tolgoi underground mine and higher copper grades at Escondida, which, together with a 7% rise in bauxite volumes, offset the impact of 1% lower iron ore shipments from the Pilbara.

Impact of inflation partly offset by lower energy prices

The impact of inflation on our cost base lowered underlying EBITDA by $0.6 billion. The easing of diesel prices and lower prices for natural gas partly offset this, with a favourable impact to underlying EBITDA of $0.2 billion.

Lower market-linked raw material prices, in particular for aluminium and alumina

We remain focused on cost control, in particular maintaining discipline on fixed costs. Overall, lower operating cash unit costs benefited underlying EBITDA by $0.6 billion. This was driven by lower unit costs in Aluminium from the easing of market-linked raw materials prices, such as caustic, coke and pitch, in conjunction with higher bauxite volumes. Higher Copper volumes led to greater cost efficiencies, where we saw a 27% reduction in Copper C1 net unit costs. Partially offsetting these were slightly lower volumes in the Pilbara and Iron Ore Company of Canada (IOC), along with diamonds and titanium dioxide feedstocks as these businesses managed through weaker markets, leading to fixed cost inefficiencies.

Continued investment in exploration and evaluation

Our ongoing exploration and evaluation expenditure was $0.9 billion, compared with $1.4 billion in 2023. The decrease was mainly attributable to the capitalisation of exploration and evaluation expenditure for Simandou from October 2023. 2023 also included a gain on disposal of 55% of our interest in the La Granja copper project in Peru ($0.2 billion, pre-tax).

Net earnings

The principal factors explaining the movements in underlying earnings and net earnings are set out below.

	US$bn
2023 net earnings	**10.1**
Changes in underlying EBITDA (see above)	**(0.6)**
Increase in depreciation and amortisation (pre-tax) in underlying earnings	(0.8)
Decrease in interest and finance items (pre-tax) in underlying earnings	0.3
Decrease in tax on underlying earnings	0.5
Increase in underlying earnings attributable to outside interests	(0.3)
Total changes in underlying earnings	**(0.9)**
Changes in items excluded from underlying earnings (see below)	2.4
Movement in impairment charges net of reversals	0.1
Movement from consolidation and disposal of interests in businesses	0.9
Movement in closure estimates (non-operating and fully impaired sites)	1.0
Movement in exchange differences and gains/losses on derivatives	0.5
Other	(0.1)
2024 net earnings	**11.6**

Financial figures are rounded to the nearest $100 million, hence small differences may result in the totals.

Increase in depreciation

Higher depreciation was due to an increase in capital expenditure in prior years, production growth at Kennecott and lower capitalised depreciation, which resulted in underlying earnings being $0.8 billion lower than 2023.

Modest decrease in tax on underlying earnings

The effective tax rate on underlying earnings of 28% (2023: 30%) primarily reflects the mix of profits across different jurisdictions. This, coupled with lower profits, resulted in tax on underlying earnings being $0.5 billion lower than 2023.

Increase in underlying earnings attributable to outside interests

In 2024, expenditure at Simandou was capitalised whereas until September 2023 it was expensed, resulting in a year-on-year decrease in costs attributable to outside interests following the capitalisation.

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Items excluded from underlying earnings

The differences between underlying earnings and net earnings are set out in this table (all numbers are after tax and exclude amounts attributable to non-controlling interests).

Year ended 31 December	2024 US$bn	2023 US$bn
Underlying earnings	**10.9**	11.8
Items excluded from underlying earnings		
Net gains on consolidation and disposal of interests in businesses	**0.9**	–
Impairment charges net of reversals	**(0.5)**	(0.7)
Foreign exchange and derivative gains/(losses) on net debt and intragroup balances and derivatives not qualifying for hedge accounting	**0.2**	(0.3)
Change in closure estimates (non-operating and fully impaired sites)	**(0.1)**	(1.1)
Other	**0.2**	0.4
Total items excluded from underlying earnings	**0.7**	(1.7)
Net earnings	**11.6**	10.1

Financial figures are rounded to the nearest $100 million, hence small differences may result in the totals.

On page 270 there is a detailed reconciliation from net earnings to underlying earnings, including pre-tax amounts and additional explanatory notes. The differences between profit after tax and underlying EBITDA are set out in the table on page 168.

Net gains on consolidation and disposal of interests in businesses of $0.9 billion primarily related to a gain following the increase in ownership of Tiwai Point Smelter (NZAS), New Zealand, the sale of Sweetwater, a former uranium legacy site in Wyoming, United States, and the sale of Dampier Salt's Lake MacLeod operation in Western Australia.

We recognised impairment charges net of reversals of $0.5 billion (after tax), mainly related to our alumina refineries in Queensland: a review was triggered by studies for the double digestion project indicating increased capital costs. In 2023, we recognised impairment charges net of reversals of $0.7 billion (after tax), also mainly related to our alumina refineries. The full analysis is set out in note 4 to the consolidated financial statements.

Foreign exchange and derivative gains were $0.2 billion in 2024 compared to a loss of $0.3 billion in 2023. Exchange losses are largely offset by currency translation gains recognised in equity and vice-versa. The quantum of US dollar debt is largely unaffected and we will repay it from US dollar sales receipts.

In 2023, we excluded $1.1 billion of closure cost charges from underlying earnings, of which $850 million related to the closure update announced by Energy Resources of Australia (ERA) on 12 December 2023. This was considered material and was therefore aggregated with other closure study updates in the second half of 2023 which were similar in nature. These other updates were at legacy sites and at the Yarwun alumina refinery, which was expensed due to the impairment earlier in the year.

Net earnings and underlying earnings refer to amounts attributable to the owners of Rio Tinto.

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Underlying EBITDA and underlying earnings by product group

	Underlying EBITDA			Underlying earnings		
	2024	2023	Change	2024	2023	Change
Year ended 31 December	US$bn	US$bn	%	US$bn	US$bn	%
Iron Ore	**16.2**	20.0	(19%)	**9.1**	11.9	(23%)
Aluminium	**3.7**	2.3	61%	**1.5**	0.5	176%
Copper	**3.4**	2.0	75%	**0.8**	0.2	327%
Minerals	**1.1**	1.4	(24%)	**0.1**	0.3	(54%)
Reportable segments total	**24.4**	25.6	(5%)	**11.5**	12.9	(11%)
Simandou iron ore project	**–**	(0.5)	(96%)	**–**	(0.2)	(76%)
Other operations	**–**	(0.1)	–%	**(0.2)**	(0.3)	(27%)
Central pension costs, share-based payments, insurance and derivatives	**0.2**	0.2	(9%)	**0.2**	—	375%
Restructuring, project and one-off costs	**(0.3)**	(0.2)	34%	**(0.2)**	(0.1)	59%
Other central costs	**(0.8)**	(1.0)	(18%)	**(0.6)**	(0.9)	(29%)
Central exploration and evaluation	**(0.2)**	(0.1)	138%	**(0.2)**	(0.1)	260%
Net interest				**0.4**	0.3	24%
Total	**23.3**	23.9	(2%)	**10.9**	11.8	(8%)

Financial figures are rounded to the nearest $100 million, hence small differences may result in the totals and period-on-period change. Underlying EBITDA and underlying earnings are non-IFRS measures used by management to assess the performance of the business and provide additional information which investors may find useful. For more information on our use of non-IFRS financial measures in this report, see the section entitled "Alternative performance measures" (APMs) and the detailed reconciliations on pages 269 to 273.

Simandou iron ore project

We commenced capitalising qualifying costs attributable to the Simandou project in Guinea from the fourth quarter of 2023. In 2023, we expensed $0.5 billion.

Central and other costs

Pre-tax central pension costs, share-based payments, insurance and derivatives were a $0.2 billion credit, mainly associated with the premiums paid by the business to our Captive insurers. This was largely unchanged from 2023: although there was an insurance charge relating to the Captive's payout of the process safety incidents at Rio Tinto Iron and Titanium (RTIT) and the forest fires at IOC in 2024, this movement was offset by unrealised derivative gains recognised in 2024 (unrealised loss in 2023).

On a pre-tax basis, restructuring, project and one-off central costs increased modestly as we continue to drive productivity by investing in group-wide projects.

Other central costs of $0.8 billion(pre-tax) decreased by 18% compared to 2023, reflecting lower costs across a number of our functions together with higher central recoveries.

On an underlying earnings basis, net interest was a credit of $0.4 billion (2023: credit of $0.3 billion) with the variance between the two years being additional costs associated with the refinancing of Oyu Tolgoi in 2023.

Sustained investment in greenfield exploration

We have a strong portfolio of greenfield exploration projects in early exploration and studies stages, with activity in 17 countries across eight commodities. This is reflected in our pre-tax central spend of $0.2 billion. The bulk of this expenditure was focused on copper in Angola, Australia, Chile, Colombia, Kazakhstan, Papua New Guinea, Peru, the US and Zambia, nickel in Australia, Brazil, Canada and Finland, lithium in Australia, Brazil, Canada, Finland, Rwanda and the US, potash in Canada, diamonds in Angola, heavy mineral sands in South Africa and rutile-graphite in Malawi. The Rio Tinto operated Nuevo Cobre joint venture copper project in Chile continues to make good progress with permitting advancing alongside ongoing geological field programs.

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Strong cash flow generation as we invest for the future

Year ended 31 December	2024 US$bn	2023 US$bn
Net cash generated from operating activities	**15.6**	15.2
Purchases of property, plant and equipment and intangible assets	**(9.6)**	(7.1)
Lease principal payments	**(0.5)**	(0.4)
Free cash flow[1]	**5.6**	7.7
Dividends paid to equity shareholders	**(7.0)**	(6.5)
Net funding relating to Simandou (outside of free cash flow)	**0.5**	–
Non Simandou-related acquisitions (mainly Matalco in 2023)	**–**	(0.8)
Other	**(0.3)**	(0.4)
Movement in net debt[1]	**(1.3)**	–

Financial figures are rounded to the nearest $100 million, hence small differences may result in the totals.

- $15.6 billion in net cash generated from operating activities, which was 3% higher than 2023, reflects a 67% underlying EBITDA cash conversion (compared to 63% in 2023). This was driven by favourable working capital movements (+$0.1 billion in 2024; -$0.9 billion in 2023), along with higher dividends from Escondida ($1.0 billion in 2024; $0.6 billion in 2023). We managed our inventory levels down in 2024 to a more optimised level, which included processing concentrate at Kennecott following the smelter rebuild in 2023.
- Taxes paid of $4.2 billion, which were $0.5 billion lower than 2023, mainly reflected lower profits in Australia.
- Purchases of property, plant and equipment and intangible assets (capital expenditure) of $9.6 billion comprised $2.7 billion of growth, $2.5 billion of replacement, $4.2 billion of sustaining and $0.2 billion of decarbonisation capital (in addition to $0.3 billion of decarbonisation spend in operating costs). We funded our share of capital expenditure in 2024 from internal sources. We will continue to fund our capital program in accordance with our capital allocation framework.
- $7.0 billion of dividends reflected the 2023 final ordinary and the 2024 interim ordinary dividends.
- In 2024, we received $1.5 billion from CIOH for its share of cash expenditures for the Simandou project and we paid $1.0 billion to WCS to support funding development of the infrastructure.
- The above movements, together with $0.3 billion of other movements, resulted in an increase in net debt[1] of $1.3 billion in 2024 to $5.5 billion at 31 December 2024.

Year ended 31 December	2024 US$m	2023 US$m
Purchase of property, plant and equipment and intangible assets	**9,621**	7,086
Funding provided by the group to EAUs[(a)]	**965**	—
Less: Equity or shareholder loan financing received/due from non-controlling interests[(b)]	**(1,063)**	(125)
Rio Tinto share of capital investment	**9,523**	6,961

(a) In 2024, funding provided by the group to EAUs relates to funding of WCS rail and port entities (WCS) in relation to the Simandou project, consisting of a direct equity investment in WCS of US$431 million and loans provided totalling US$534 million

(b) In 2024, we received US$1,505 million from Chalco Iron Ore Holdings Ltd (CIOH), of which US$1,063 million relates to CIOH's 47% share of capital expenditure incurred on the Simandou project and associated funding provided by the Group to EAUs during the year, accounted for on an accrual basis.

- Our share of capital investment in 2024 was $9.5 billion, comprised of capital expenditure of $9.6 billion and funding provided by the group to equity accounted units for its share of investment of $1.0 billion, net of equity/shareholder loan financing received/due from non-controlling interests of $1.1 billion.

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Retaining a strong balance sheet

Net debt[1] of $5.5 billion at 31 December 2024 increased by $1.3 billion compared to 2023 year end.

Our net gearing ratio[1] (net debt to total capital) was 9% at 31 December 2024 (31 December 2023: 7%). See page 273.

Our total financing liabilities excluding net debt derivatives at 31 December 2024 (see page 198) were $13.8 billion (31 December 2023: $14.4 billion) and the weighted average maturity was 11 years. At 31 December 2024, 76% of these liabilities were at floating interest rates (84% excluding leases). The maximum amount within non-current borrowings maturing in any one calendar year is $1.67 billion, which matures in 2033.

We had $8.7 billion in cash and cash equivalents plus other short-term highly liquid investments at 31 December 2024 (31 December 2023: $10.5 billion).

Provision for closure costs

At 31 December 2024, provisions for close-down and restoration costs and environmental clean-up obligations were $15.7 billion (31 December 2023: $17.2 billion). There was a revision of the closure discount rate to 2.5% (from 2.0%), reflecting expectations of higher yields from long-dated bonds, including the 30-year US Treasury Inflation Protected Securities, a key input to our closure discount rate. This resulted in a $1.0 billion decrease, most of which was adjusted against capitalised closure costs, with a $0.2 billion credit reflected in underlying EBITDA relating to our closed and non-operating sites. The provision further reduced by $1.1 billion due to the strengthening of the US dollar against local currencies. During the year, there was a $1.1 billion spend against the provision as we advanced our closure activities at Argyle, ERA, the Gove alumina refinery and other legacy sites, along with progressive closure activity across our operations.

Our shareholder returns policy

The Board is committed to maintaining an appropriate balance between cash returns to shareholders and investment in the business, with the intention of maximising long-term shareholder value.

At the end of each financial period, the Board determines an appropriate total level of ordinary dividend per share. This takes into account the results for the financial year, the outlook for our major commodities, the Board's view of the long-term growth prospects of the business and the company's objective of maintaining a strong balance sheet. The intention is that the balance between the interim and final dividend be weighted to the final dividend.

The Board expects total cash returns to shareholders over the longer term to be in a range of 40% to 60% of underlying earnings in aggregate through the cycle. Acknowledging the cyclical nature of the industry, it is the Board's intention to supplement the ordinary dividend with additional returns to shareholders in periods of strong earnings and cash generation.

Nine-year track record of 60% payout on the ordinary dividend, at top end of range

	2024 US$bn	2023 US$bn
Ordinary dividend		
Interim[(a)]	**2.9**	2.9
Final[(a)]	**3.7**	4.2
Full-year ordinary dividend[(a)]	**6.5**	7.1
Payout ratio on ordinary dividend	**60%**	60%

(a) Based on weighted average number of shares and declared dividends per share for the respective periods and excluding foreign exchange impacts on payment. Financial figures are rounded to the nearest $100 million, hence small differences may result in the totals.

As announced on 26 July 2024, we determine Rio Tinto plc and Rio Tinto Limited dividends in US dollars, our reporting currency. Historically, we have declared and announced these dividends in pounds sterling and Australian dollars, respectively. However, following changes to Rio Tinto Limited's constitution approved by shareholders in 2024, we now declare and announce dividends in US dollars.

Ordinary dividend per share declared	2024	2023
Interim (US cents)	**177.0**	177.0
Final (US cents)	**225.0**	258.0
Full-year (US cents)	**402.0**	435.0

The 2024 final ordinary dividend to be paid to our Rio Tinto Limited shareholders will be fully franked. The Board expects Rio Tinto Limited to be in a position to pay fully franked dividends for the foreseeable future.

On 17 April 2025, we will pay the 2024 final ordinary dividend to holders of Rio Tinto plc and Rio Tinto Limited ordinary shares and holders of Rio Tinto plc ADRs (American Depositary Receipts) on the register at the close of business on 7 March 2025 (record date). The ex-dividend date for Rio Tinto plc and Rio Tinto Limited holders is 6 March 2025. For holders of Rio Tinto plc ADRs, the ex-dividend date is 7 March 2025.

Rio Tinto plc and Rio Tinto Limited shareholders may choose to receive their dividend in US dollars, pounds sterling, Australian dollars or New Zealand dollars. Currency conversions will be based on the prevailing exchange rates seven business days prior to the dividend payment date. Shareholders must register any changes to their currency elections by 27 March 2025.

ADR holders receive dividends at the declared rate in US dollars.

We will operate our Dividend Reinvestment Plans for the 2024 final dividend (visit riotinto.com for details). Rio Tinto plc and Rio Tinto Limited shareholders' elections to participate in the Dividend Reinvestment Plans must be received by 27 March 2025. Purchases under the Dividend Reinvestment Plans are made on or as soon as practicable after the dividend payment date and at prevailing market prices. There is no discount available.

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Capital projects

Project (Rio Tinto 100% owned unless otherwise stated)	Total capital cost (100% unless otherwise stated)	Status/Milestones
Iron ore		
Investment in the Western Range iron ore project in Western Australia, a joint venture between Rio Tinto (54%) and China Baowu Steel Group Co. Ltd (46%) in the Pilbara to sustain production of the Pilbara Blend™ from Rio Tinto's existing Paraburdoo hub.	$1.3bn (Rio Tinto share)[1]	Approved in September 2022, the mine will have a capacity of 25 million tonnes per year. The project includes construction of a primary crusher and an 18 kilometre conveyor connection to the Paraburdoo processing plant. Construction is now 90% complete, with fabrication and overland conveyor belt installation finalised. We continue to focus on completion of the new crushing and screening facilities, with first ore from that new system on plan for the first half of 2025.
Investment in the Simandou high-grade iron ore project in Guinea in partnership with CIOH, a Chinalco-led consortium (the SimFer joint venture) and co-development of the rail and port infrastructure with Winning Consortium Simandou[2] (WCS), Baowu and the Republic of Guinea (the partners) for the export of up to 120 million tonnes per year of iron ore mined by SimFer's and WCS's respective mining concessions.[3] The SimFer joint venture[4] will develop, own and operate a 60 million tonne per year[5] mine in blocks 3 & 4. WCS will construct the project's ~536 kilometre shared dual track main line, a 16 kilometre spur connecting its mine to the mainline as well as the WCS barge port, while SimFer will construct the ~70 kilometre spur line, connecting its mining concession to the main rail line, and the transhipment vessel (TSV) port. The conditions for this investment were satisfied in July 2024.	$6.2bn (Rio Tinto share)	Announced in December 2023, first production at the SimFer mine gate is expected in 2025, ramping up over 30 months to a 60 million tonne per year capacity (27 million tonnes Rio Tinto share)[5]. For the SimFer mine, bulk earthworks are progressing to plan. All mine construction contracts are complete, and the two initial crushers are now commissioned, with first ore crushed on 1 January 2025. For the SimFer infrastructure scope, all construction milestones for the period stipulated by the Government of Guinea were achieved. In connection with SimFer's construction of the ~70 kilometre spur line, which will connect Simandou's mine operations to the shared mainline, with the arrival of track laying locomotives, 8.5 kilometres of rail was installed. In October 2024, construction of the 275 metre Milo River bridge was completed. Tunnel excavation activity on the SimFer scope is now more than 75% complete, with construction at the port continuing to advance on the TSV wharf and rail car dumper infrastructure. Expectations for delivery of the first TSVs remain on plan.
Aluminium		
Investment to expand the low-carbon AP60 aluminium smelter at the Complexe Jonquière in Quebec. The investment includes up to $113 million of financial support from the Quebec government. Commissioning is expected in the first half of 2026, with the smelter fully ramped up by the end of that year. Once completed, it is expected to be in the first quartile of the industry operating cost curve.	$1.1bn	Approved in June 2023, AP60 expansion construction activities remain on schedule. Once completed, the project will add 96 new AP60 pots, increasing capacity by approximately 160,000 tonnes of primary aluminium per year by the end of 2026. This new capacity, in addition to 30,000 tonnes of new recycling capacity at Arvida expected to open in the fourth quarter of 2025, will offset the 170,000 tonnes of capacity lost through the gradual closure of potrooms at the Arvida smelter from 2024.
Copper		
Phase two of the south wall pushback to extend mine life at Kennecott in Utah by a further six years. The project largely consists of mine stripping activities and includes some additional infrastructure development, including a tailings facility expansion. The project will allow mining to continue into a new area of the orebody between 2026 and 2032.	$1.8bn	Approved in December 2019, stripping commenced in 2020 and will continue through 2027. In March 2023, a further $0.3 billion was approved to primarily mitigate the risk of failure in an area of geotechnical instability known as Revere, necessary to both protect open pit value and enable underground development.
Investment in the Kennecott underground development of the North Rim Skarn (NRS) area.	$0.6bn	Approved in June 2023, production from NRS[6] is expected to commence in mid-2025, delivering around 250,000 tonnes through to 2033[7]. A further $0.1 billion was approved in December 2024 for additional infrastructure and geotechnical controls.
Development of the Oyu Tolgoi underground copper-gold mine in Mongolia (Rio Tinto 66%), which is expected to produce (from the open pit and underground) an average of ~500,000 tonnes[8] of copper per year from 2028 to 2036.	$7.06bn	First ore on the conveyor to surface belt was achieved in October 2024, with the conveyor system now able to transport ore to the surface from a depth of 1,300 metres. Load and production testing of the conveyor system is progressing. Construction works for the concentrator conversion remain on schedule, with commissioning activities commencing in the fourth quarter of 2024 and forecast to be progressively completed through to the second quarter of 2025. Construction of primary crusher 2 is progressing to plan and remains on track to be completed by the end of 2025.
Minerals		
Expansion of the Rincon project in Argentina to 60,000 tonnes per year of battery grade lithium carbonate, comprised of the 3,000-tonne starter plant and 57,000-tonne expansion plant. The mine is expected to have a 40-year[9] life and operate in the first quartile of the cost curve.	$2.5bn	Approved in December 2024, construction of the expanded plant is scheduled to begin in mid-2025, subject to permitting. First production from the expanded plant is expected in 2028 followed by a three-year ramp-up to full capacity. We released the Rincon Project Mineral Resources and Ore Reserves statement on 4 December 2024.

1. Rio Tinto share of the Western Range capital cost includes 100% of funding costs for Paraburdoo plant upgrades.
2. WCS is the holder of Simandou North Blocks 1 & 2 (with the Government of Guinea holding a 15% interest in the mining vehicle and WCS holding 85%) and associated infrastructure. WCS was originally held by WCS Holdings, a consortium of Singaporean company, Winning International Group (50%) and Weiqiao Aluminium (part of the China Hongqiao Group) (50%). On 19 June 2024, Baowu Resources completed the acquisition of a 49% share of WCS mine and infrastructure projects with WCS Holdings holding the remaining 51%. In the case of the mine, Baowu also has an option to increase to 51% during operations. During construction, SimFer will hold 34% of the shares in the WCS infrastructure entities with WCS holding the remaining 66%.
3. WCS holds the mining concession for Blocks 1 & 2, while SimFer holds the mining concession for Blocks 3 & 4. SimFer and WCS will independently develop their mines.
4. SimFer Jersey Limited is a joint venture between the Rio Tinto Group (53%) and Chalco Iron Ore Holdings Ltd (CIOH) (47%), a Chinalco-led joint venture of leading Chinese SOEs (Chinalco (75%), Baowu (20%), China Rail Construction Corporation (2.5%) and China Harbour Engineering Company (2.5%)). SimFer S.A. is the holder of the mining concession covering Simandou Blocks 3 & 4, and is owned by the Guinean State (15%) and SimFer Jersey Limited (85%). SimFer Infraco Guinée S.A. will deliver SimFer's scope of the co-developed rail and port infrastructure, and is co-owned by SimFer Jersey (85%) and the Guinean State (15%). SimFer Jersey will ultimately own 42.5% of Compagnie du Transguinéen, which will own and operate the co-developed infrastructure during operations.
5. The estimated annualised capacity of approximately 60 million dry tonnes per annum iron ore for the Simandou life of mine schedule was previously reported in a release to the Australian Securities Exchange (ASX) dated 6 December 2023 titled "Investor Seminar 2023". Rio Tinto confirms that all material assumptions underpinning that production target continue to apply and have not materially changed.
6. The NRS Mineral Resources and Ore Reserves, together with the Lower Commercial Skarn (LCS) Mineral Resources and Ore Reserves, form the Underground Skarns Mineral Resources and Ore Reserves.
7. The 250 thousand tonne copper production target for the Kennecott underground mines over the years 2023 to 2033 was previously reported in a release to the Australian Securities Exchange (ASX) dated 20 June 2023 "Rio Tinto invests to strengthen copper supply in US". All material assumptions underpinning that production target continue to apply and have not materially changed.
8. The 500 thousand tonne per year copper production target (stated as recoverable metal) for the Oyu Tolgoi underground and open pit mines for the years 2028 to 2036 was previously reported in a release to the Australian Securities Exchange (ASX) dated 11 July 2023 "Investor site visit to Oyu Tolgoi copper mine, Mongolia". All material assumptions underpinning that production target continue to apply and have not materially changed.
9. The production target of approximately 53 kt of battery grade lithium carbonate per year for a period of 40 years was previously reported in a release to the ASX dated 4 December 2024 titled "Rincon Project Mineral Resources and Ore Reserves: Table 1". Rio Tinto confirms that all material assumptions underpinning that production target continue to apply and have not materially changed. Plans are in place to build for a capacity of 60 kt of battery grade lithium carbonate per year with debottlenecking and improvement programs scheduled to unlock this additional throughput.

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Future options

	Status
Iron Ore: Pilbara brownfields	
Over the medium term, our Pilbara system capacity remains between 345 and 360 million tonnes per year. Meeting this range, and the planned product mix, will require the approval and delivery of the next tranche of replacement mines over the next five years.	We continue to work closely with local communities, Traditional Owners and governments to progress approvals for these new mining projects. We continue to advance our next tranche of Pilbara mine replacement studies at Hope Downs 1 (Hope Downs 2 and Bedded Hilltop), Brockman 4 (Brockman Syncline 1), Greater Nammuldi and West Angelas. Funding for the full execution of the Brockman 4 project was obtained in fourth quarter of 2024. Early works and design are underway for the Brockman 4 and Hope Downs 1 projects. Environmental and heritage approvals are progressing and timelines remain subject to receiving these approvals. The Greater Nammuldi project continues to progress at a rate behind the original development schedule.
Iron Ore: Rhodes Ridge	
In October 2022, Rio Tinto (50%) and Wright Prospecting Pty Ltd (50%) agreed to modernise the joint venture covering the Rhodes Ridge project in the Eastern Pilbara, providing a pathway for development utilising Rio Tinto's rail, port and power infrastructure.	In December 2023, we announced approval of a $77 million pre-feasibility study (PFS). The PFS continues to progress with good engagement with Traditional Owners and government. The PFS, which is targeting an initial capacity of up to 40 million tonnes per year, subject to relevant approvals, remains on track to be completed in 2025. First ore is expected by the end of the decade. Longer term, the resource could support a world-class mining hub with a potential capacity of more than 100 million tonnes of high-quality iron ore a year.
Lithium: Jadar	
Development of the greenfield Jadar lithium-borates project in Serbia will include an underground mine with associated infrastructure and equipment, as well as a beneficiation chemical processing plant. The Board committed funding in July 2021, subject to receiving all relevant approvals, permits and licences. The studies and capital estimates will need to be updated before project approval.	On 16 July 2024, the Constitutional Court of Serbia issued a decision stating the 2022 decree by the Government of Serbia to abolish the Jadar project spatial plan was unconstitutional and illegal. Subsequently, the Government of Serbia has reinstated the spatial plan to its previously adopted form. Following the decisions, we have continued to focus on consultation with all key stakeholders, including providing comprehensive factual information about the project. The application process for obtaining the Exploitation Field Licence (EFL) continued during the fourth quarter of 2024. The EFL is essential for commencing fieldwork, including detailed geotechnical investigations, while cultural heritage and environmental surveys have resumed. The Environmental Impact Assessment process for the scoping and content for the mine progressed through the public consultation phase. This step includes legally mandated consultations, which the project supports, to encourage an open, fact-based dialogue.
Mineral Sands: Zulti South	
Development of the Zulti South project at Richards Bay Minerals (RBM) in South Africa (Rio Tinto 74%).	Approved in April 2019 to underpin RBM's supply of zircon and ilmenite over the life of the mine. The project remains on indefinite suspension, while a feasibility study refresh is underway.
Copper: Resolution	
The Resolution Copper project is a proposed underground copper mine in the Copper Triangle, in Arizona, US (Rio Tinto 55%).	We continue to await a decision from the U.S. Supreme Court on the petition filed by the Apache Stronghold requesting to hear its case to stop the land exchange between Resolution Copper and the federal government. Separately the Supreme Court denied a petition from the San Carlos Apache Tribe, asking the Court to review a decision by the Arizona Supreme Court regarding a water discharge permit issued to Resolution Copper. We continue to progress the Final Environmental Impact Statement with the United States Forest Service, however they have yet to advise on the date of republication. We also advanced partnership discussions with several federally-recognised Native American Tribes. While there is significant local support for the project, we respect the views of groups who oppose it and will continue our efforts to address and mitigate concerns.
Copper: Winu	
In late 2017, we discovered copper-gold mineralisation at the Winu project in the Paterson Province in Western Australia. In 2021, we reported our first Indicated Mineral Resource. The pathway remains subject to regulatory and other required approvals.	In December 2024, we signed a Term Sheet with Sumitomo Metal Mining for a Joint Venture to deliver the project. A pre-feasibility study with an initial development of processing capacity of up to 10 million tonnes per year is expected to be completed in 2025, along with the submission of an Environmental Review Document under the EPA Environmental Impact Assessment process. Project Agreement negotiations with Nyangumarta and the Martu Traditional Owner Groups remain our priority.
Copper: La Granja	
In August 2023, we completed a transaction to form a joint venture with First Quantum Minerals (FQM) that will work to unlock the development of the La Granja project in Peru, one of the largest undeveloped copper deposits in the world, with potential to be a large, long-life operation.	FQM acquired a 55% stake for $105 million and will invest up to a further $546 million into the joint venture to sole fund capital and operational costs to take the project through a feasibility study and toward development. All subsequent expenditures will be applied on a pro-rata basis in line with shared ownership. FQM is currently progressing community engagement and engineering studies.
Aluminium: ELYSIS	
ELYSIS, our joint venture with Alcoa, supported by Apple, the Government of Canada and the Government of Quebec, is developing a breakthrough inert anode technology that eliminates all direct greenhouse gases from the aluminium smelting process.	We will install carbon free aluminium smelting cells at our Arvida smelter in Quebec using the first technology licence issued by the ELYSIS joint venture. We will design, engineer and build a demonstration plant equipped with ten pots operating at 100 kiloamperes (kA), for a total investment of $285 million (Rio Tinto $179 million, Government of Quebec $106 million). The plant will have an annual capacity of 2,500 tonnes of commercial quality aluminium, with first production targeted by 2027. The joint venture is continuing its R&D program to scale up the ELYSIS™ technology. It has begun commissioning the larger prototype 450 kA cells at the Alma smelter, with the start-up sequence set to begin in 2025 (previously 2024).

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Iron Ore

We are one of the world's leading producers of iron ore, the primary raw material in steelmaking. In the Pilbara region of Western Australia, we operate a network of 17 iron ore mines, 4 port terminals and a rail network spanning nearly 2,000 kilometres. Steel remains essential for ongoing urbanisation and will support the global shift to decarbonise.

Snapshot of the year

AIFR
0.67
(2023: 0.61)

Employee numbers[1]
16,000
(2023: 16,000)

Net cash generated from operating activities
$11.7bn
(2023: $14.0bn)

Scope 1 and 2 GHG emissions (equity Mt CO_2e)
3.1Mt
(2023: 3.2Mt)

1. This represents the average number of employees for the year, including the Group's share of non-managed operations and joint ventures. Refer to page 267 for more information.

Safety

With a focus on preventing fatalities, we have an unwavering commitment to the safety and wellbeing of all workers across our operations.

We continue to learn, improve and focus on opportunities to verify and strengthen our critical risk management (CRM) to more effectively prevent fatality risks.

We have structured our fatality prevention around risk management to ensure we build capability when undertaking high risk work within our operations.

Overall, we maintained a lower frequency of potential fatal incidents (PFIs), which improved slightly to 12 in 2024. Falling objects and potential falls from height accounted for most of these events. Vehicle-related risks, previously our primary exposure, were successfully managed, resulting in zero PFIs related to this risk. Our all-injury frequency rate (AIFR) increased slightly to 0.67 (0.61 in 2023).

Our commitment to safety includes the contractor partners who represent a large part of our total workforce. Together, we are **finding better ways**™ of working safely – enhancing road safety in the Pilbara, introducing innovative tools to reduce injuries and ensuring consistency in training and qualifications.

We also continue our work to build a mentally healthy, safe, and supportive workplace. Our focus is fostering a strong reporting culture where our people feel safe to speak up.

We continue to develop the capability of our leaders, empowering them to identify and address psychosocial risks.

Our psychosocial incident investigation process and related tools have been developed and tested, with implementation across our operations now well underway, reflecting the importance of these risks.

Market insights

In 2024, global steel demand reversed its 2023 gains, contracting by -1% year-on-year, as weak construction steel consumption in China outweighed gains in other end-use sectors and regions.

China's steel exports exceeded 110 million tonnes for the first time since 2015, which supported crude steel production. China imported around 1.3 billion tonnes of iron ore for the 5th consecutive year, while port inventories accumulated to 3-year highs of 156 million tonnes. This dynamic was also driven by a record 1.6 billion tonnes of seaborne supply.

The major iron ore producers shipped almost 1.23 billion tonnes in 2024, up from 1.21 billion tonnes in 2023, but still below the 1.24 billion tonnes in 2018. Seaborne supply from all other, typically higher-cost, producers hit a new high of 340 million tonnes in 2024. Since around half of this supply was relatively high cost and price elastic, average annual iron ore prices were close to or exceeded $100/dmt FOB Western Australia for the 5th consecutive year.

Image: Marandoo iron ore mine, Pilbara, Australia.

For information about decarbonisation efforts in the Iron Ore group, see our 2025 Climate Action Plan, pages 41-75.

For more on our Iron Ore business, see riotinto.com/ironore

Iron Ore

Year ended 31 December	2024	2023	Change
Pilbara production (million tonnes — 100%)	**328.0**	331.5	(1%)
Pilbara shipments (million tonnes — 100%)	**328.6**	331.8	(1%)
Salt production (million tonnes — Rio Tinto share)[1]	**5.8**	6.0	(3%)
Segmental revenue (US$ millions)	**29,339**	32,249	(9%)
Average realised price (US$ per dry metric tonne, FOB basis)	**97.4**	108.4	(10%)
Underlying EBITDA (US$ millions)	**16,249**	19,974	(19%)
Pilbara underlying FOB EBITDA margin[2]	**65%**	69%	
Underlying earnings (US$ millions)	**9,097**	11,882	(23%)
Net cash generated from operating activities (US$ millions)	**11,652**	14,045	(17%)
Capital expenditure (US$ millions)[3]	**(3,012)**	(2,588)	16%
Free cash flow (US$ millions)	**8,561**	11,374	(25%)
Underlying return on capital employed[4]	**50%**	64%	

Production figures are sometimes more precise than the rounded numbers shown, hence small differences may result in the year on year change.

1. Dampier Salt is reported within Iron Ore, reflecting management responsibility. Iron Ore Company of Canada continues to be reported within Minerals. The Simandou iron ore project in Guinea reports to the Chief Technical Officer and is reported outside the Reportable segments.
2. The Pilbara underlying free on board (FOB) EBITDA margin is defined as Pilbara underlying EBITDA divided by Pilbara segmental revenue, excluding freight revenue.
3. Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment; capitalised evaluation costs; and purchases less sales of other intangible assets.
4. Underlying return on capital employed (ROCE) is defined as underlying earnings excluding net interest divided by average capital employed.

Financial performance

Underlying EBITDA of $16.2 billion was 19% lower than 2023, primarily due to lower realised prices ($2.7 billion) and marginally lower shipments.

Unit costs of $23.0 per tonne were $1.5 per tonne higher than 2023, driven by lower iron ore production and inflation.

Our Pilbara operations delivered an underlying FOB EBITDA margin of 65%, compared with 69% in 2023, largely due to the lower iron ore price and lower volumes.

We price the majority of our iron ore sales (78%) by reference to the average index price for the month of shipment. In 2024, we priced approximately 10% of sales with reference to the prior quarter's average index lagged by one month with the remainder sold either on current quarter average, or other mechanisms. We made approximately 75% of sales including freight and 25% on an FOB basis.

We achieved an average iron ore price of $89.6 per wet metric tonne (2023: $99.7 per wet metric tonne) on an FOB basis, equivalent to $97.4 per dry metric tonne, with an 8% moisture assumption (2023: $108.4 per dry metric tonne). This compares to the average price for the monthly average Platts index for 62% iron fines converted to a FOB basis of $98.4 per dry metric tonne (2023: $110.3 per dry metric tonne).

Segmental revenue for our Pilbara operations included freight revenue of $2.3 billion (2023: $2.1 billion).

Net cash generated from operating activities of $11.7 billion was 17% lower than 2023, driven by the same drivers as underlying EBITDA. After capital investment, which included $0.4 billion increased investment in Pilbara replacement projects, free cash flow of $8.6 billion was $2.8 billion lower than 2023.

Review of operations

Pilbara operations produced 328.0 million tonnes (100% basis), 1% lower than 2023. Shipments (100% basis) were also 1% lower. Production was affected by depletion, predominantly at Paraburdoo as we transition to Western Range and Yandicoogina, as well as higher than average rainfall. The Safe Production System target of 5 million tonnes for 2024 was achieved for the second consecutive year. Gudai-Darri demonstrated 50 million tonne per annum rates during the fourth quarter. Sustaining production at these rates is subject to the timing of approvals for planned mining areas and heritage clearances, and continuation of the debottlenecking program at the main plant.

We grew our portside business in 2024, with total iron ore sales in China of 29.9 million tonnes (23.3 million tonnes in 2023). At the end of December, inventory levels were 7.1 million tonnes (6.4 million tonnes at the end of December 2023), including 4.9 million tonnes of Pilbara product. In 2024, approximately 89% of our portside sales were either screened or blended in Chinese ports (86% in 2023).

In December 2024, we completed the sale of Dampier Salt Limited's Lake MacLeod operation to Leichhardt Industrials Group for consideration of A$375 million.

For more information about our capital projects and future growth options, see pages 22-23.

Valued partnerships positioning us for a more sustainable future

Together with the Ngarluma Aboriginal Corporation, we're progressing the development of an 80MW solar farm on Ngarluma Country, near Karratha, to supply renewable energy to our Pilbara operations. When complete, this project has the potential to reduce the amount of natural gas currently used for generation across our Pilbara operations by up to 11%, and could reduce Rio Tinto's emissions by up to 120kt CO_2e.

We're also exploring a renewable energy project with the Yindjibarndi Energy Corporation (YEC). Currently in development by YEC, the project includes 75MW of solar on a greenfield site located west of Millstream Chichester National Park on Yindjibarndi Country.

It's the first project we're exploring together since we signed a memorandum of understanding to collaborate on a range of potential renewable energy opportunities, including wind and solar power, as well as battery energy storage systems.

For more information see riotinto.com/pilbararenewables

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Aluminium

As a global leader in low-carbon aluminium, we are uniquely positioned to further decarbonise our business and support the world's transition towards a lower carbon footprint. A critical material – lightweight and highly recyclable – aluminium is set to play an increasingly vital role in our lives. We're providing a diversified portfolio of primary and secondary aluminium solutions used to manufacture a wide range of products, including solar panels and transmission lines, jet engines, electric vehicles and smartphones.

Snapshot of the year

AIFR

0.38

(2023: 0.33)

Employee numbers[1]

16,000

(2023: 15,000)

Net cash generated from operating activities

$3.0bn

(2023: $2.0bn)

Scope 1 and 2 GHG emissions (equity Mt CO_2e)

23.7Mt

(2023: 25.5Mt)

1. This represents the average number of employees for the year, including the Group's share of non-managed operations and joint ventures. Refer to page 267 for more information.
2. A proactive PFI is one where there was neither injury nor property damage. Proactive PFIs are leading indicators of safety performance and offer the opportunity to learn from near miss incidents. They reflect a psychologically safe culture.

Safety

In 2024, our all-injury frequency rate (AIFR) increased from 0.33 to 0.38, largely reflecting challenges at our Kitimat site in Canada. To help address these challenges, we engaged external safety consultants during Q4 to provide targeted support, focused on leadership and stabilising safety performance.

Overall, our safety performance generally improved across our Aluminium operations. We continued to focus on uncovering and addressing systemic weaknesses and the root causes of our potential fatal incidents (PFIs). In particular, the focus we started in 2023 to promote more proactive PFI[2] reporting, and to improve the quality of PFI investigations has helped move us from 5 worker injuries in PFI events in 2023 to 2 in 2024.

Looking ahead, we remain focused on reducing inherent risks in our business to drive lasting safety impacts for our workforce. By prioritising engineering design, strategic capital investment, and ongoing research, we will continue our work to eliminate hazards and remove people from the areas of greatest safety risk.

Market insights

After a relatively stable first quarter, the aluminium price rallied in the 2nd quarter due to sanctions against Russian metal but fell in the 3rd quarter on weaker global manufacturing data. The price rose at the end of the quarter after an interest rate cut by the US Federal Reserve and stimulus measures in China, and was supported in the 4th quarter due to high alumina costs.

World semi-fabricated demand rose 2% year-on-year. Primary aluminium demand increased at a similar rate. Scrap spreads tightened in 2024 on low inventories and tight availability, resulting in lower margins for secondary producers. Ex-China demand fell in building and construction, and remained weak in automotive, but performed well in packaging and power infrastructure. Global aluminium demand will continue to be driven by the energy transition, particularly electric vehicles, and renewable energy.

China is producing aluminium close to its self-imposed capacity cap of approximately 45 million tonnes, while growth in the rest of the world moderated on supply disruptions. Overall, the primary aluminium market was balanced in 2024, with visible inventories at low levels.

The alumina price reached a multi-year high in the 4th quarter due to closures, supply disruptions, and constrained bauxite supply in China. The price corrected at the end of the quarter as supply improved but remained at a high level compared to the historical norm. China is the largest import market for bauxite, and seaborne bauxite prices into China performed strongly in 2024. Guinea exports to China increased approximately 10% year-on-year, accounting for around 70% of bauxite exports to China. However, supply growth could not keep pace with demand and China import bauxite prices surged in the 4th quarter.

Image: Grande-Baie aluminium casting centre, Quebec, Canada.

For information about decarbonisation efforts in the Aluminium group, see our 2025 Climate Action Plan, pages 41–75.

For more on our Aluminium business, see riotinto.com/aluminium

Aluminium

Year ended 31 December	2024	2023	Change
Bauxite production ('000 tonnes — Rio Tinto share)	**58,653**	54,619	7%
Alumina production ('000 tonnes — Rio Tinto share)	**7,303**	7,537	(3%)
Aluminium production ('000 tonnes — Rio Tinto share)	**3,296**	3,272	1%
Segmental revenue (US$ millions)	**13,650**	12,285	11%
Average realised aluminium price (US$ per tonne)	**2,834**	2,738	4%
Underlying EBITDA (US$ millions)	**3,673**	2,282	61%
Underlying EBITDA margin (integrated operations)	**30%**	21%	
Underlying earnings (US$ millions)	**1,483**	538	176%
Net cash generated from operating activities (US$ millions)	**3,032**	1,980	53%
Capital expenditure — excluding EAUs (US$ millions)[1]	**(1,694)**	(1,331)	27%
Free cash flow (US$ millions)	**1,302**	619	110%
Underlying return on capital employed[2]	**10%**	3%	

1. Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment; capitalised evaluation costs; and purchases less sales of other intangible assets. It excludes equity accounted units (EAUs).
2. Underlying return on capital employed (ROCE) is defined as underlying earnings excluding net interest divided by average capital employed.

Financial performance

Overall we delivered a significant uplift in profitability for our Aluminium business with a 61% increase in underlying EBITDA to $3.7 billion, underlying EBITDA margin rising nine percentage points to 30% and underlying ROCE of 10%. We saw an 8% increase in the average LME price with price support from high alumina costs and the cancellation of Chinese VAT rebates on the export of semi-finished goods. Market-related costs for key materials such as caustic, coke and pitch moderated with some of this flowing through to underlying EBITDA, offsetting some of the impact of a higher alumina price. Higher bauxite volumes from record annual production at Gove and Amrun and increased bauxite pricing were partially offset by lower alumina production following the breakage of a third-party gas pipeline in Queensland.

We achieved an average realised aluminium price of $2,834 per tonne, 4% higher than 2023. The average realised aluminium price comprises the LME price, a market premium and a value-added product (VAP) premium. The cash LME price averaged $2,419 per tonne, 8% higher than 2023, while in our key US market, the Midwest premium duty paid, which is 59% of our total volumes (2023: 57%), decreased by 17% to $427 per tonne (2023: $512 per tonne). Our VAP sales represented 46% of the primary metal we sold (2023: 46%) and generated product premiums averaging $295 per tonne of VAP sold (2023: $354 per tonne).

Our cash generation also improved significantly, with net cash generated from operating activities of $3.0 billion, a rise of 53%, compared with 2023. Free cash flow of $1.3 billion reflected capital investment in the business of $1.7 billion.

Review of operations

Bauxite production of 58.7 million tonnes was 7% higher than 2023, exceeding our guidance. We delivered record annual production at Gove and Amrun following implementation of the Safe Production System.

We shipped 40.9 million tonnes of bauxite to third parties, 10% higher than 2023. Segmental revenue for bauxite increased 28% to $3.1 billion. This includes freight revenue of $0.5 billion (2023: $0.5 billion).

Alumina production of 7.3 million tonnes was 3% lower than 2023, due to the impacts to our Gladstone operations from the breakage of the third-party operated Queensland Gas Pipeline in March. Gas supplies to our Gladstone operations from the third-party operated Queensland Gas Pipeline were meeting 100% of our requirements by year-end.

As the result of sanction measures by the Australian Government, Rio Tinto has taken on 100% of capacity of Queensland Alumina Limited (QAL) for as long as the sanctions continue. This results in use of Rusal's 20% share of capacity by Rio Tinto under the tolling arrangement with QAL.

This additional output is excluded from the production tables in this report as QAL remains 80% owned by Rio Tinto and 20% owned by Rusal.

Aluminium production of 3.3 million tonnes was 1% higher than 2023. At our New Zealand Aluminium Smelter (NZAS), production continued to ramp up following a previous call from Meridian Energy to reduce electricity usage in August 2024, for which we are compensated. As previously reported, we expect the ramp-up to run through to the second quarter of 2025.

We completed the previously announced acquisition of Sumitomo Chemical Company's (SCC's) 20.64% interest in NZAS on 1 November 2024 and now fully own the Tiwai Point aluminium smelter.

We also completed the previously announced acquisition of SCC's 2.46% stake in Boyne Smelters Limited (BSL). The completion of this transaction, along with the recently completed acquisition of Mitsubishi's 11.65% stake in BSL, brings Rio Tinto's total interest in BSL to 73.5%.

Production is reported including these changes in ownership from 1 November 2024.

For more information about our capital projects and future growth options, see pages 22-23.

Installing ELYSIS™ carbon-free smelting technology

Our ELYSIS joint venture with Alcoa is progressing the development of a breakthrough inert anode technology that eliminates all direct greenhouse gas (GHG) emissions from the aluminium smelting process.

In 2024, we announced a $285 million investment, including $106 million from the Government of Québec, to build a demonstration plant equipped with 10 ELYSIS pots at our Arvida smelter. These pots, operating at 100kA, replicate the technology that has successfully produced commercial-purity aluminium at the ELYSIS Industrial Research and Development Center. The demonstration plant will have the capacity to produce up to 2,500 tonnes of aluminium per year, with first production targeted by 2027.

This project is part of our phased approach to support the development of the technology. It will allow us to conduct further tests and to build expertise in installing and operating the ELYSIS™ technology towards future industrial-scale implementation.

For more information see riotinto.com/elysis

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Copper

Copper is an essential material for electrification and the global energy transition. By the end of the decade, we aim to deliver 1 million tonnes of copper per year from our global portfolio of assets and projects spanning 4 continents. We are focused on maximising value from our existing assets, delivering profitable growth by unlocking projects, and investing in quality partnerships across the copper value chain.

Snapshot of the year

AIFR

0.33

(2023: 0.35)

Employee numbers[1]

9,000

(2023: 8,000)

Net cash generated from operating activities

$2.6bn

(2023: $0.6bn)[2]

Scope 1 and 2 GHG emissions (equity Mt CO_2e)

1.0Mt

(2023: 1.0Mt)

1. This represents the average number of employees for the year, including the Group's share of non-managed operations and joint ventures. Refer to page 267 for more information.
2. Comparative information has been adjusted to reflect the movement of Rio Tinto Guinea from the Copper product group to "Other operations". Refer to note 1 (page 167) for details.

Safety

In 2024, we recorded 24 potential fatal incidents (PFIs), an increase from 22 in 2023. Notable critical risks associated with these events were: fall from height, uncontrolled releases of energy, and falling objects.

Our all-injury frequency rate (AIFR) dropped slightly to 0.33, a modest decrease from 0.35 in 2023, with an AIFR of 0.27 for employees, and 0.37 for our contractor workforce. Ongoing monitoring to identify continuous improvement opportunities includes two-way learning with our contractor partners.

Our Critical Risk Management program and Safety Maturity Model underpin our absolute focus on preventing fatalities and serious events. During the year, key achievements included simplification of critical control tools, as well as capability building through our Leadership in the Field program.

At the asset level, we progressed site-specific hazard exposure reduction strategies, which involved mitigating the potential for exposure to silica dust at Oyu Tolgoi, and to sulphur dioxide at Kennecott. Our Winu project team also piloted a psychosocial risk management framework, reinforcing our commitment to a safe, healthy workplace.

In 2025, we will look to prioritise building care, capability and trust to further improve ongoing risk management efforts and first line assurance implementation. Assurance plans are in progress for Oyu Tolgoi and Kennecott, while Resolution and Winu will also move to implement first line assurance plans for key critical risks.

Market insights

Copper prices climbed to a record high in late May following a series of high-profile supply disruptions and strong Chinese imports. Financial flows into copper amplified this rally, with copper demand seen as a major beneficiary of both the energy transition and data centre investment for AI. Prices subsequently retreated as supply outperformed expectations, US rate cuts continued to be delayed, and exchange inventory rose to a 4-year high.

The refined copper market was in a small surplus across 2024. Supply rose modestly, despite high-profile disruptions early in the year. Production growth from the Democratic Republic of the Congo was notably strong. Demand from data centre and energy-transition exposed segments remained positive despite some headwinds from substitution and thrifting as technologies mature. Traditional segments such as residential construction had a more challenging year. Despite this, copper prices averaged 415 US cents per pound in 2024, up 8% from 385 US cents per pound in 2023.

In contrast, copper concentrate was undersupplied in 2024, due to significant smelter capacity additions in China and other Asian countries. Treatment and refining charges fell sharply as a result and turned negative from April until August as smelters competed for material.

Image: Oyu Tolgoi, Mongolia.

For information about decarbonisation efforts in the Copper group, see our 2025 Climate Action Plan, pages 41-75.

For more on our Copper business, see riotinto.com/copper

Copper

Year ended 31 December	2024	2023	Change
Mined copper production ('000 tonnes — consolidated basis)	**697**	620	13%
Refined copper production ('000 tonnes — Rio Tinto share)	**248**	175	42%
Segmental revenue (US$ millions)	**9,275**	6,678	39%
Average realised copper price (US cents per pound)[1]	**422**	390	8%
Underlying EBITDA (US$ millions)[2]	**3,437**	1,960	75%
Underlying EBITDA margin (product group operations)	**49%**	42%	
Underlying earnings (US$ millions)[2]	**811**	190	327%
Net cash generated from operating activities (US$ millions)[3]	**2,590**	596	335%
Capital expenditure — excluding EAUs[4] (US$ millions)	**(2,055)**	(1,976)	4%
Free cash flow (US$ millions)[2]	**526**	(1,386)	
Underlying return on capital employed (product group operations)[5]	**6%**	3%	

1. Average realised price for all units sold. Realised price does not include the impact of the provisional pricing adjustments, which negatively impacted revenues by $92 million (2023: $2 million positive).
2. Accountability for Rio Tinto Guinea, our in-country external affairs office, remains with Bold Baatar, and has therefore moved from the Copper product group to "Other operations" following his change in role to Chief Commercial Officer. Accordingly, prior period amounts have been adjusted for comparability.
3. Net cash generated from operating activities excludes the operating cash flows of equity accounted units (EAUs) but includes dividends from EAUs (Escondida).
4. Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment, capitalised evaluation costs and purchases less sales of other intangible assets. It excludes EAUs.
5. Underlying return on capital employed (ROCE) is defined as underlying earnings (product group operations) excluding net interest divided by average capital employed.

Financial performance

Improved financials benefited from the steady ramp-up at Oyu Tolgoi, the strong performance at Escondida and the successful restart of the Kennecott smelter, following the rebuild in 2023, releasing working capital through the drawdown of inventories, enhancing operating cash flow. Underlying EBITDA increased by 75% compared with 2023 and free cash flow turned positive supported by a strong LME copper price and higher volumes. Overall, mined copper production rose by 13% and refined copper production by 42%.

Copper C1 net unit costs, at 142 cents per pound, reduced by 53 cents per pound, or 27%, from 2023, reflecting cost efficiencies on the higher mined copper production at Oyu Tolgoi and Escondida, and higher refined copper production at Kennecott, following the smelter rebuild in 2023.

We generated significantly higher net cash from operating activities of $2.6 billion, which included higher dividends from Escondida.

Review of operations

Mined copper production, at 697 thousand tonnes, was 13% higher than 2023, reflecting the ramp-up of Oyu Tolgoi underground and increased production from Escondida due to higher grades fed to the concentrator (0.99% versus 0.83%). This offset geotechnical challenges at Kennecott as instabilities in the pit wall impacted the mining sequence from the second quarter of 2024.

Refined copper production increased by 42% to 248 thousand tonnes with the Kennecott smelter and refinery returning to normal operations following the successful rebuild in 2023.

Oyu Tolgoi underground project

In 2024, we delivered 6.5 million tonnes of ore milled from the underground mine at an average copper head grade of 1.94% and 34.5 million tonnes from the open pit with an average grade of 0.39%. The ramp-up remains on track to reach 500 thousand tonnes of copper production per annum (100% basis and stated as recoverable metal) for the Oyu Tolgoi underground and open pit mines for the years 2028 to 2036[1].

We continue to see good performance from the underground mine. We completed drawbell construction at Panel 0, with a total of 124 drawbells opened. The sinking of ventilation Shafts 3 and 4 was completed in April 2024 following the breakthrough to surface. Both shafts were commissioned in the second half of 2024.

In November 2024, Oyu Tolgoi successfully concluded Collective Agreement negotiations, marking a historic milestone as the first agreement involving two trade unions at the operation. The agreement will remain in effect for the next three years.

For more information about our capital projects and future growth options, see pages 22–23.

1. The 500 thousand tonne per year copper production target (stated as recoverable metal) for the Oyu Tolgoi underground and open pit mines for the years 2028 to 2036 was previously reported in a release to the Australian Securities Exchange (ASX) dated 11 July 2023 "Investor site visit to Oyu Tolgoi copper mine, Mongolia". All material assumptions underpinning that production target continue to apply and have not materially changed.

Advancing Winu with Sumitomo Metal Mining

In December, we announced a new partnership with Sumitomo Metal Mining (SMM) to deliver the Winu copper-gold project in Western Australia. Under the Term Sheet signed between the partners, Rio Tinto will continue to develop and operate Winu as the managing partner, with SMM to acquire a 30% equity share. Located in the Great Sandy Desert, near our Pilbara iron ore operations, Winu is a low-risk, long-life deposit that is highly prospective for expansion. In 2025, alongside finalising the joint venture definitive agreements, we will advance regulatory approvals for an initial processing capacity up to 10Mtpa.

Environmental Review Document preparation under the Environmental Protection Authority of Western Australia's Environmental Impact Assessment process will take place in parallel with ongoing Project Agreement negotiations with the Nyangumarta People, Traditional Owners of the land on which the Winu deposit is situated, and the Martu People, Traditional Owners of the land home to the Karlkayn airstrip.

As part of our renewed relationship with SMM, we have also entered into a letter of intent to explore broader value chain opportunities for commercial, technical, and strategic collaboration across copper, other base metals and lithium.

For more information see riotinto.com/winu

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Minerals

Our Minerals portfolio produces materials essential to a low-carbon future from a global suite of assets and projects well-positioned to support the electrification of the world's economies.

We are developing and growing a world-class lithium business at an accelerated pace: producing first lithium from our Rincon Project, Argentina in December. We also produce long-life, high-grade, low-impurity iron ore pellets and concentrate, titanium dioxide, speciality borates and diamonds from our operations in Canada, Madagascar, South Africa and the US.

Snapshot of the year

AIFR

0.31

(2023: 0.24)

Employee numbers[1]

10,000

(2023: 10,000)

Net cash generated from operating activities

$0.7bn

(2023: $0.5bn)

Scope 1 and 2 GHG emissions (equity Mt CO_2e)

2.3Mt

(2023: 3.7Mt)

1. This represents the average number of employees for the year, including the Group's share of non-managed operations and joint ventures. Refer to page 267 for more information.

Safety

Tragically 4 of our colleagues and 2 crew members lost their lives in a plane crash while travelling to our Diavik diamond mine on 23 January. We are currently awaiting the investigation findings from the Transportation Safety Board of Canada, which are expected in 2025.

In 2024, the number of potential fatal incidents (PFIs) dropped to 26, compared to 27 in 2023 with the most common involving risk of vehicle collision or rollover and falling objects. We continue to focus our efforts on mitigating these risks, implementing targeted safety measures and corrective actions informed by thorough investigations.

Our all-injury frequency rate (AIFR) increased to 0.31, compared to 0.24 in 2023, reflecting an increase in injuries among both employees and contractors. The rate of injuries in our contractor workforce increased from 0.20 in 2023 to 0.27 in 2024, and our employee injury rate rose from 0.28 in 2023 to 0.35 this year. In 2025, we will continue to build on our progress by leveraging the safety maturity model to drive further enhancements. Along with this, we will place a stronger emphasis on health, environmental responsibility, and security to ensure a safer, more productive environment for both our employees and contractor partners. Our commitment to these areas will be key to achieving our goals.

Market insights

Titanium dioxide market fundamentals stabilised in 2024, with downstream and midstream producers noting improving sales and margins. Elevated inventories limited feedstock purchases and put downward pressure on prices.

Borates demand improved in 2024, evidenced by increasing shipments into key consuming regions. Weakness in pricing resulted from stronger supply availability after supply chain disruptions were cleared.

A softer demand and pricing environment for steel impacted the high-grade iron ore fines and pellets segments in 2024. Blast Furnace (BF) steelmakers sought to reduce exposure to higher quality, higher cost inputs, with seaborne pellet consumption falling year-on-year. This resulted in lower BF-grade pellet premiums than seen in 2023. Meanwhile, Direct Reduction grade pellet premiums were supported by stable demand in the MENA (Middle East and North Africa) region which, although cooler than the previous year, continued to support seaborne demand and prices.

Lithium carbonate prices remained subdued in 2024, largely due to slower growth in electric vehicle (EV) production despite record sales of 17 million units. While lithium demand and supply grew by about 25% year-on-year, the market faced an oversupply. Increased supply from earlier investments contributed to this imbalance, leading to the suspension of several lithium projects and production cuts by existing producers. Nonetheless, long-term market fundamentals remain strong, supported by government policies and expanding EV adoption. Additional investment will be essential to address future supply shortfalls.

Image: Richards Bay Minerals operation, South Africa.

For information about decarbonisation efforts in the Minerals group, see our 2025 Climate Action Plan, pages 41-75.

For more on the minerals we produce, see riotinto.com/products

Minerals

Year ended 31 December	2024	2023	Change
Iron ore pellets and concentrates production[1] (million tonnes — Rio Tinto share)	**9.4**	9.7	(2%)
Titanium dioxide slag production ('000 tonnes — Rio Tinto share)	**990**	1,111	(11%)
Borates production ('000 tonnes — Rio Tinto share)	**504**	495	2%
Diamonds production ('000 carats — Rio Tinto share)	**2,759**	3,340	(17%)
Segmental revenue (US$ millions)	**5,531**	5,934	(7%)
Underlying EBITDA (US$ millions)	**1,080**	1,414	(24%)
Underlying EBITDA margin (product group operations)	**26%**	30%	
Underlying earnings (US$ millions)	**143**	312	(54%)
Net cash generated from operating activities (US$ millions)	**705**	548	29%
Capital expenditure (US$ millions)[2]	**(798)**	(746)	7%
Free cash flow (US$ millions)	**(126)**	(229)	45%
Underlying return on capital employed (product group operations)[3]	**8%**	13%	

1. Iron Ore Company of Canada (IOC) continues to be reported within Minerals.
2. Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment; capitalised evaluation costs; and purchases less sales of other intangible assets.
3. Underlying return on capital employed (ROCE) is defined as underlying earnings (product group operations) excluding net interest divided by average capital employed.

Financial performance

Underlying EBITDA of $1.1 billion was 24% lower than 2023, primarily due to lower pricing across most commodities, in particular titanium dioxide feedstocks, borates and iron ore. Underlying demand for titanium dioxide feedstocks remains soft while the borates market is recovering from supply chain disruptions.

Net cash generated from operating activities of $0.7 billion was 29% higher than 2023, when a build in working capital took place. Further investment is being made to develop our battery minerals business, resulting in negative free cash flow of $126 million.

Underlying EBITDA and net cash generated from operating activities in 2024 include $0.2 billion[1] insurance proceeds relating to the process safety incidents at RTIT and the forest fires at IOC which took place in 2023.

Review of operations

Production of iron ore pellets and concentrate at IOC of 9.4 million tonnes was 2% lower than 2023 primarily due to an 11-day site-wide shutdown driven by forest fires in mid-July, resulting in a revised mine plan and maintenance schedule. We also experienced operational challenges in the mine and concentrator throughout the year. Annual rail haulage was 36.4 million tonnes, 7% higher than in 2023, driven by continued operational improvements to meet increasing third-party and IOC demand. Our focus going forward is to stabilise the operation and achieve safe, cost-effective and consistent production.

TiO_2 slag production of 990 thousand tonnes was 11% lower than 2023, primarily due to reduced market demand. A furnace reconstruction, starting in the first quarter of 2024, continues at our RTIT Quebec Operations. Through 2024, we operated six out of nine furnaces in Quebec and three out of four at Richards Bay Minerals (RBM).

Borates production was 2% higher than 2023 supported by recovering market demand, and despite unplanned plant downtime in April 2024.

Our share of carats recovered was 17% lower than 2023. Diamond production was impacted by the tragic plane crash earlier in 2024, as well as cessation of A21 open pit mining in the third quarter of 2023.

First lithium was produced from the Rincon project starter plant in Argentina in November 2024. First commercial production is targeted for the first half of 2025.

For more information about our capital projects and future growth options, see pages 22-23.

1. There is no overall financial impact to the Rio Tinto Group, with the offset reflected centrally.

BlueSmelting's game-changing potential

In 2024, we continued developing BlueSmelting™, a groundbreaking ilmenite reduction technology. BlueSmelting has the potential to reduce up to 70% of the Rio Tinto Iron & Titanium (RTIT) Quebec Operations' global greenhouse gas (GHG) emissions, representing a decrease of approximately 670,000 tonnes of CO_2 equivalent compared to 2021 emissions.

BlueSmelting™ technology creates the possibility of producing high-grade titanium dioxide feedstock, steel, and metal powders with a drastically reduced carbon footprint.

The BlueSmelting process being demonstrated at RTIT Quebec Operations is a world-first technology, developed in-house, that adds a step before the traditional smelting process – pre-reduction – leading to an overall decrease in the site GHG emissions. It combines mature in-house technology, found in other processes used on-site, with new innovations.

BlueSmelting uses fluid bed reactors to reduce the coal required for the traditional smelting process, meaning less coal and electricity are used to complete the ore reduction.

The BlueSmelting demonstration plant – the largest of its kind in the world – is capable of producing up to 40,000 tonnes of ilmenite ore a year, with drastically fewer emissions.

For more on BlueSmelting, see riotinto.com/bluesmelting

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Our approach to ESG

As stewards of the lands where we operate, we have a responsibility to safely and sustainably access the world's essential materials.

This responsibility underpins everything we do and drives our commitment to embedding sustainability considerations into every stage of our business – from exploration to closure.

To do this, we align our priorities and performance with society's evolving expectations. Each year we complete a materiality assessment to understand what ESG topics matter most to our stakeholders and our business. This process includes gathering information from internal and external stakeholders through interviews, surveys and publicly available information to understand what impacts, risks and opportunities are important now and what they think will be important in the medium to long term.

It's essential we manage these ESG topics well as we strive for impeccable ESG credentials and a strong social licence, with the insights gathered through this process helping us to strengthen our approach and contribute to the long-term sustainability and success of our business for all stakeholders.

For more information see riotinto.com/sustainabilityapproach

The United Nations Sustainable Development Goals (UN SDGs)

Our ESG framework describes how we manage and report externally on these topics and how we contribute to the UN SDGs, which are recognised as the global blueprint for a sustainable future.

The SDGs are a useful reference point, helping us to prioritise our efforts to align with society's expectations and deliver meaningful impact. We focus on goals we feel are most relevant to operating our business responsibly and where we can make the greatest difference. Our 2 lead goals are SDG 12 (responsible consumption and production) and SDG 8 (decent work and economic growth).

Our operations also contribute to 8 supporting SDGs (3, 4, 5, 6, 9, 10, 13 and 15), while SDG 17 (partnerships for the goals) reflects our approach to sustainability and is fundamental to the way we run our business.

What's important now

Our internal and external stakeholders are broadly aligned on 4 highly material ESG topics: climate change[1]; respecting human rights; cultural heritage management; and health, safety and wellbeing.

Additional material topics for us as we strive to build a sustainable business include: biodiversity and ecosystems; business integrity and governance; ESG transparency and disclosure; inclusion, diversity and equity; local community relations, tailings and mineral waste management; business performance; and water management.

What will be important in the future

Stakeholders feel climate change will continue to increase in importance over the next decade, alongside biodiversity and ecosystems; the impact of technology; respecting human rights; risk management and cyber security; business integrity and governance; supply chain transparency; and end-to-end materials management. Water management will also remain an important topic due to the reliance of local communities and our operations on this increasingly scarce resource.

1. Includes greenhouse gas emissions reduction, climate resilience and adaptation, and just transition.

Our ESG framework

Environment			Social					Governance
Low-intensity materials	Environment and nature	Mining & metals practices	Heritage, culture & Indigenous Peoples	Human rights	Talent, diversity & inclusion	Health, safety & wellbeing	Supporting social & economic opportunity	Transparent, values-based ethical business
Climate change	Water management	Tailings & mineral waste management	Cultural heritage management	Respecting human rights	Inclusion, diversity & equity	Health, safety & wellbeing	Local community relations	Business integrity & governance
End-to-end materials management	Biodiversity & ecosystems	Closure, post-mining & land rehabilitation			Employment & talent retention	Pandemic response & public health	Impact of technology	ESG transparency & disclosure
Future-proof assets	Industrial environment impacts							Business performance
								Risk management & cyber security
								Responsible tax & royalty payments
								Supply chain transparency

Key

- Higher materiality
- Medium materiality
- Lower materiality

Each material topic above appears under either the environment, social or governance theme to which it primarily relates. However, there is crossover among ESG themes, meaning some material topics can be relevant to 2 or even all 3 themes. Accordingly, we work with themes and topics holistically, not in silos.

Reporting our performance

Our materiality assessment records the threshold at which an issue or topic becomes important enough for us to report on externally. The importance of a topic is based on the significance of its impacts on, and risks and opportunities for, stakeholders. Our ESG materiality assessment considers our impacts externally and, conversely, the effect of external factors on our business.

As an ICMM member, we commit to reporting on our ESG performance against the Global Reporting Initiative (GRI) standards and implementing the ICMM Performance Expectations (PEs). The ICMM Mining Principles framework focuses on the implementation of systems and practices related to a broad range of ESG areas. In 2022, we disclosed that we prioritised 26 of our 29 operating assets for validation within the 3-year cycle (2023-2025). There are now 30 operating assets and we have prioritised one additional asset for validation in 2025, thereby resulting in a total of 28 out of our 30 operating assets being prioritised for validation. Since 2022, we have been progressing the validations according to plan.

In 2024, on-site third-party validations were completed for 12 of our priority operating and refining assets. The validation reports demonstrate a high level of alignment between the self-assessment and validation outcomes, with identification of relevant areas for improvement. Information for the 2023 and 2024 validation results is presented in the ICMM PE Summary tab in the *2024 Sustainability Fact Book*. In 2024, we have also introduced a new tab showing the Towards Sustainable Mining (TSM) outcomes for 3 of our Canadian sites and all of our Pilbara iron ore sites. We have continued to improve our reporting to meet additional disclosure requirements, including the ICMM Social and Economic Reporting Framework (SERF). In 2024, we have disclosed our performance against the SERF indicators in the ICMM SERF tab.

The majority of our ESG reporting is incorporated into this Annual Report and supplemented by our *2024 Sustainability Fact Book*, containing current and historical data on topics including health, safety, environment, climate, communities, human rights, responsible sourcing, ICMM PEs and transparency.

Governance and assurance

The Sustainability Committee oversees strategies to manage social and environmental impacts, risks and opportunities, including management processes and standards. The Sustainability Committee reviews the effectiveness of management policies and procedures relating to safety, health, employment practices (apart from remuneration, which is the responsibility of the People & Remuneration Committee), relationships with neighbouring communities, environment, tailings, security and human rights, land access, political involvement and sustainable development. Given its strategic significance, climate change is overseen directly by the Board.

For more information about our Sustainability Committee see pages 117-118.

This year, the Group's auditor, KPMG, was engaged to provide the Directors of Rio Tinto with assurance on selected sustainability subject matters. KPMG's limited assurance statement satisfies the requirements of subject matters 1 to 4 of the ICMM assurance procedure.

For more information about our external auditors and internal assurance see pages 321-324.

Non-financial and sustainability information statement

The ESG section includes information required by regulation in relation to:

- Environmental and climate matters, including Task Force on Climate-Related Financial Disclosures (TCFD) disclosures (pages 41-75)
- Our employees (pages 78-80)
- Social matters (pages 76-84)
- Human rights (page 85)
- Corruption and bribery (pages 86-87)

Other related information can be found here:

- Our business model (page 8)
- Non-financial key performance indicators (page 34)
- Principal risks and how they are managed (pages 91-98).

Notes on data

The data summarised in this ESG section relates to calendar years. Unless stated otherwise, parameters are reported for all managed operations without adjustment for equity interests. Where possible, we include data for operations acquired before 1 October of the reporting period. Divested operations are included in data collection processes up until the transfer of management control.

For more information see our *2024 Sustainability Fact Book* at riotinto.com/sustainabilityreporting

How we report

	Annual Report	Tax reports[1]	Human rights statements[2]	Sustainability Fact Book
Linking sustainability to purpose and strategy	●			
Materiality and material topics	●			
Climate change	●			●
Economic contribution	●	●		●
Human rights	●		●	●
Indigenous Peoples	●			●
Memberships and certifications				●
Sustainability data and trends				●

1. Includes our *Taxes and Royalties Paid Report* and *Country-by-Country Report*.
2. Includes our *Modern Slavery Statement* and our *Voluntary Principles on Security and Human Rights* report.

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2024 performance against ESG targets

Targets	2024 performance
Reach zero fatalities and eliminate workplace injuries and catastrophic events.	5 fatalities at managed operations. (2023: 0 fatalities). – All-injury frequency rate (AIFR) at 0.37 (target: 0.38). (2023: 0.37). – 1.78 million critical risk management (CRM) verifications. (2023: 1.53 million).
Have all of our businesses identify at least one critical health hazard material to their business and demonstrate a year-on-year reduction of exposure to that hazard.	In 2024, 6 of our assets across Rio Tinto achieved an exposure reduction to known health risks (airborne contaminants and noise). (2023: 6 assets).
Reduce the rate of new occupational illnesses each year.	44% increase in the rate of new occupational illnesses since 2023. (2023: 15% increase).
Reduce our absolute Scope 1 and 2 greenhouse gas emissions by 15% by 2025 and by 50% by 2030 (when compared to 2018 levels), and achieve net zero emissions from our operations by 2050.[1]	The 2024 adjusted gross Scope 1 and 2 baseline emissions are 30.7 Mt CO_2e, a reduction of 5.0 Mt CO_2e (14%) relative to our 2018 base year. After carbon credits are applied, the net Scope 1 and 2 emissions are 29.6 Mt CO_2e, a reduction of 17% against our target.
Achieve our global Communities and Social Performance (CSP) targets[2] as follows: – Year-on-year increase in contestable spend sourced from suppliers local[3] to our operations. – All sites to co-manage cultural heritage with communities and knowledge holders by 2027. – 70% of total social investment to be made through strategic, outcomes-focused partnerships by 2027. – All employees in high-risk human rights roles to complete job-specific human rights training annually by 2024. – All employees to complete general human rights training by 2027. – 100 Indigenous leaders in Australia (managers and above) by 2026.	– We sourced 14.75% of contestable spend from suppliers local to our operations, a decrease[4] from 16.80% in 2023. Progress for each product group is included in the *2024 Sustainability Fact Book*. – More than 25 sites have completed a Cultural Heritage Maturity Framework self-assessment, to identify existing gaps and establish actions to progress along the maturity continuum[5]. Two assets matured in their performance in 2024 (others maintaining their performance from 2023) and 14 assets assessed themselves as L4 (Integrated) or above. – In 2024, more than 44% of current Group-wide social investment initiatives were identified as strategic partnerships, assessed against the strategic partnering self-assessment tool. – In 2024, a new mandatory Human Rights in Action learning program was assigned to higher risk roles, with 85% completions recorded for the year. Other progress updates on human rights learning initiatives are in the *2024 Sustainability Fact Book*. – At the end of 2024, we had 61 Indigenous leaders in our business in Australia.
Improve diversity[6] in our business by: – Increasing women in the business (including in senior leadership[7]) each year. – Aiming for 50% women in our graduate intake. – Aiming for 30% of our graduate intake to be from places where we are developing new businesses.	– 25.2% of our workforce were women, up 0.9% from 2023. – 33.3% of our executive leaders were women, up 8.3% from 2023. – 32% of senior leadership were women, up 1.9% from 2023. – 42.8% of Board roles were held by women, up 12% from 2023. – 56.6% of our graduate intake were women, up 5% from 2023. – 20% of our graduate intake were from places where we are developing new businesses[8], down 17.6% from 2023.
Improve our employee engagement and satisfaction.	No change to our employee satisfaction (eSAT[9]) score since 2023 (score remains 74). (2023: 1 point increase).

1. Refer to the Climate Action Plan in our 2024 *Annual Report* for details on how we are progressing towards our greenhouse gas emissions targets.
2. In 2024, we progressed initiatives towards our 2026 CSP targets. We also extended those targets for one year, to conclude in 2027, to accommodate Group-wide productivity and culture initiatives.
3. We take a site-centric view of the definition of local, which allows operations to establish their own definition, based on a set of common principles. These principles require that each operation, in defining "local" takes into consideration its geographic, social and economic area of impact as well as ownership. For example, suppliers located within the Pilbara region of Western Australia are defined as "local" for our iron ore product group's Pilbara Operations. This approach is consistent with international best practice and aligns with the ICMM SERF guidance.
4. The decrease is due to reductions in commodity rates, cost reduction initiatives, and changes in the supplier mix at some operations.
5. The cultural heritage co-management maturity framework sets out a maturity model consisting of five levels of maturity – from "learning the practice" to "leading practice". A rating of Level 4 (Integrated) reflects functioning co-management with a shared vision and common purpose.
6. From 2021, the definition used to calculate diversity was changed to include people not available for work and contractors (those engaged on temporary contracts to provide services under the direction of Rio Tinto leaders), excluding project contractors.
7. We define senior leadership as Managing Directors, General Managers, Group Advisers and Chief Advisers.
8. Identifying with a nationality is not mandatory. More than 48% of our graduates have not formally reported a nationality.
9. eSAT (Employee Satisfaction) is a measure of "how happy an employee is to work at Rio Tinto". It is calculated by averaging the responses on a 1–7 scale and expressing this out of 100.

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Environment

We know our operations, throughout their life cycle and associated value chains, can impact nature and surrounding environments both directly and indirectly. We also depend on healthy, functioning ecosystems to provide the resources we need for our operations and supply chains.

We focus on being responsible stewards of these shared natural resources, ensuring we protect the health, safety and livelihoods of local communities, Indigenous Peoples, our suppliers and our customers. This includes managing risks to minimise adverse environmental impacts from our operations and playing our part to sustain these shared ecosystems and natural resources for future generations.

While mining activities use less than 0.1%[1] of the world's land, they are often in ecologically and culturally sensitive areas. That is why – in addition to our Environmental Performance Standards, which apply to all of our business units and managed operations from exploration through to post-closure – we have shared our support for the ICMM's Nature Position Statement, and actively engage in several partnerships that address both our own and broader regional challenges in the areas where we operate.

Nature strategy

The global threat of biodiversity loss and ecosystem collapse is an urgent global challenge, with the United Nations (UN) Biodiversity Conference and the Kunming-Montreal Global Biodiversity Framework (GBF) underscoring the need for bold action. Given our extensive land holdings and the nature of our activities, we have the opportunity and responsibility to ensure our environmental performance both aligns with society's expectations and contributes to the restoration of the natural environment. We are committed to playing our part in contributing to nature-positive outcomes for industry and society.

In January 2024, we shared our support for the ICMM's Nature Position Statement. This position sets out ICMM members' approach to contributing to a nature-positive future, guided by GBF 2030 targets and ICMM's existing commitments in relation to Indigenous Peoples, climate change, water, and respecting human rights in line with the UN Guiding Principles on Business and Human Rights (UNGPs).

> At its most fundamental level, nature positive means "ensuring more nature in the world in 2030 than in 2020 and continued recovery after that".[1]

In addition to our support for the ICMM's Nature Position Statement, and our role in contributing to a nature-positive future, our operations and decision-making is guided by the following clear environmental-related commitments:

- We contribute to the global nature-positive goal of "halting and reversing biodiversity loss by 2030 from a 2020 baseline, with a full recovery by 2050".
- We do not explore or extract resources within the boundaries of UNESCO World Heritage sites.
- All reasonable steps will be taken to ensure future operations adjacent to World Heritage sites are not incompatible with the outstanding universal value for which these sites are listed and do not put the integrity of these sites at risk.
- We respect legally designated protected areas and ensure any new operations or changes to existing operations are not incompatible with the objectives for which the protected areas were established.
- We do not undertake deep-sea mining, and believe it should not take place unless comprehensive scientific research refutes currently held evidence that it will create significant environmental and socioeconomic implications.

Building on our commitments and recognition of the critical need for action, in 2024 we laid the foundation for our nature strategy through consultations with Indigenous Peoples groups, investors, civil society organisations, conservation groups, and our employees. This strategy will direct our nature-related activities, detailing our ambitions, commitments, and targets program, ensuring we take a focused and measurable approach.

As we formalise the strategy and approach in 2025, we will continue to maintain an open dialogue with stakeholders to ensure society's expectations inform our actions.

We also continue to develop and invest in a global portfolio of nature-based solutions to help address climate change and nature loss, while generating positive outcomes for communities in the regions where we operate.

Nature target program

Our nature target program is a core component of our nature strategy, acknowledging the interconnectedness of the 4 natural realms – land, ocean, freshwater, and atmosphere – and their ties to biodiversity and society.

Building on the work of our 2023 water target program, which was recognised externally as industry-leading, we are widening our focus to encompass nature more broadly. The expanded program includes a Group-level strategic target combined with a set of locally focused, site-based improvement programs, developed in collaboration with host communities, Indigenous Peoples groups, investors, civil society organisations, and conservation groups.

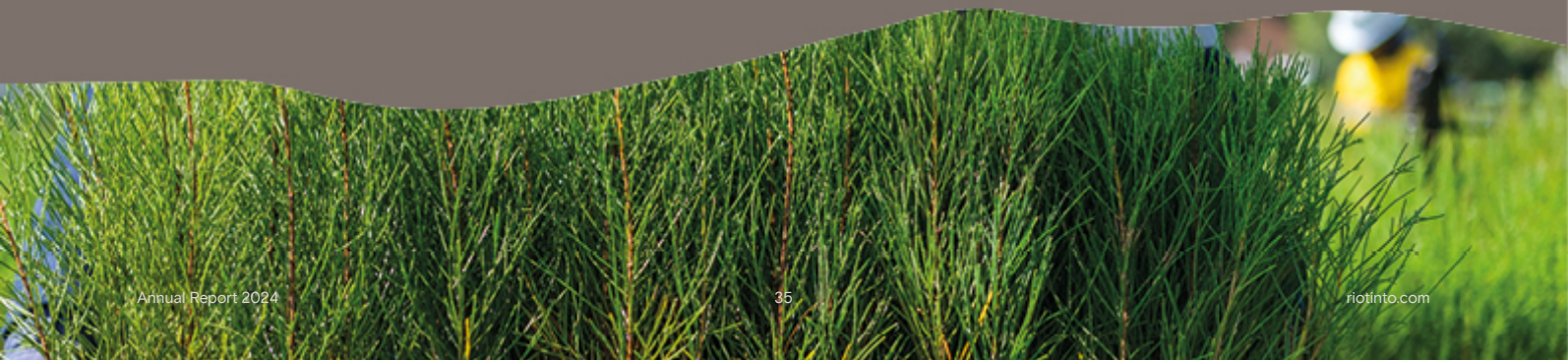
Our Group target

Our Group target will focus on the health of our receiving environments and surrounding ecosystems for all managed operations through an online dashboard, focusing on biodiversity and the realms of nature. This expands upon our interactive water disclosure platform, released in 2023.

If we identify areas for improvement in the receiving environment or ecosystem health, we may also consider additional context-based improvement programs as part of our future focus.

Image: The nursery at Richards Bay Minerals, South Africa.

1. ICMM Nature Hub.



Our site-based improvement programs

Our site-based improvement programs, developed in consultation with stakeholders, represent a subset of initiatives to drive performance at operational sites.

These projects will be selected based on their risk profile, current performance, external commitments and the interdependencies of local communities and the environment.

Our nature target program helps us to enhance the transparency of our nature risk profile, challenges and management. Progress on both the Group target and site-based improvement programs will be reported annually.

This approach, along with the data needed to track progress, will help us contribute to a nature-positive future.

Water

Water is a shared resource critical to sustaining biodiversity, people and economic prosperity. Increasingly disrupted weather patterns and more extreme weather events due to climate change and a growing world population, mean efficiently managing water is more important than ever.

The way we think about water and manage associated risks reflects the diversity of our operations and geographic locations. A small proportion of our assets operate in water-scarce regions, while others must remove excess water to allow safe mining operations. These are examples of the many potential risks we manage across the life cycle of our diverse operations.

We share water with the communities and ecosystems surrounding our operations, and we aim to avoid permanent impacts on those water resources by carefully managing the quality and quantity of the water we use and return to the environment. This means balancing the needs of our operations with those of the local communities and ecosystems. We do this while considering the impact of climate change, already felt in the level of rainfall and water security at some of our operations. We understand this responsibility extends beyond the life of our operations.

To address this complexity, we adopt a catchment-level approach to developing potential solutions and managing our operational risks and impacts. We use 2030 water stress as determined by the World Resource Institute (WRI) to identify operational catchments of most concern.

Group water risk profile (percentage of managed operations[1])

Water resource

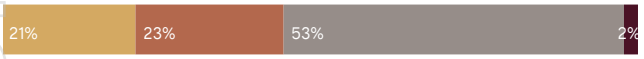
Is there enough water available for environment needs, community needs and our operational use?



Our aluminium operations in Gladstone, Queensland, Australia, are supplied with water from Awoonga Dam. Water restrictions could be imposed on the supply in the event of a persistent drought. The water resource risk for these operations is assessed as high.

Water quality and quantity

Does the way we manage water on site, or discharge excess water, cause environmental impacts or operational constraints?



Our ilmenite mine near Havre-Saint-Pierre (HSP), in Quebec, Canada is surrounded by ecologically and socially significant lakes and water features. The quality and quantity risk for HSP mine is assessed as high and excess water from the mine needs to be carefully managed. To ensure water is released to the environment at a suitable quality, we are working on a multi-year water management improvement project.

Dewatering

Does the removal of water from the operational areas of our sites impact regional aquifers or our mine plans?



Impacts associated with dewatering and water supply activities in the Pilbara, Western Australia, Australia are recognised as a very high risk for our business. Returning water to the aquifers impacted by our mining activities in a controlled manner is the focus of a number of ongoing studies. We are also continuing to work with Traditional Owners on water management.

Long-term obligations

Do our operational activities generate long-term or ongoing obligations related to water?



We may sometimes generate impacts that we are required to manage over the long term, such as post-closure pit lakes in the Pilbara, or potential seepage from our waste rock or tailings facilities in our aluminium and copper sites. Our systems and standards aim to ensure that risks are identified early and managed appropriately and responsibly throughout the asset life cycle.

Not applicable | Low risk | Moderate risk | High risk | Very high risk

1. Due to rounding, the sum may not total 100%.

To manage our water impacts, we first need to understand the specific risks at more than 50 operating sites, as well as our overall Group impacts. To do this, we have developed a water risk framework that considers 4 risk categories:

- water resource
- water quality and quantity
- dewatering
- long-term obligations.

We use this framework to identify, assess and manage water risks. This comprehensive approach extends beyond our mandatory reporting obligations and allows us to have relevant conversations about water risks internally and with stakeholders in the communities where we operate. In 2024, we continued to embed the Group water control library, a suite of critical controls and associated performance requirements, to manage our water risks.

Our Group water risk profile shows the level of exposure against each of the 4 risk categories. Most of our water risks sit in the low to moderate range. There are some in very high and high categories for each. Regardless of the level of risk, we apply rigorous standards and processes to manage them. Above, we give examples of how the risk framework has been applied across some of our assets.

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2024 progress

Our water balance

Our Group water balance outlines where water was withdrawn from, discharged to, recycled or reused and consumed at our operations.

The reported categories correlate with the requirements of ICMM and the GRI.

We also report on our aggregated water balance for sites in water-stressed areas. We assess water stress using the WRI's Aqueduct Water Risk Atlas mapping tool.

For more information see our *2024 Sustainability Fact Book* at riotinto.com/sustainabilityreporting

Our water numbers

Our total operational withdrawals for 2024 were 1,230 gigalitres (GL) (2023: 1,169GL). Freshwater, or category 1 quality, withdrawals accounted for 412GL or 33% of this total (2023: 424GL). Freshwater is generally suitable for consumption with minimal treatment required. Where possible, we aim to minimise our extractions from water sources of this quality.

Total discharges for 2024 were 668GL (2023: 692GL). Total water recycled or reused for 2024 was 300GL (2023: 303GL).

Our activity

In 2024, we completed our 2019-2023 water targets program by incorporating 2023 water usage data into our Surface Water Allocation Disclosure dashboard. We will continue adding new data to this dashboard to maintain a rolling 5-year history. We have also been working on preparing an expansion of the same dashboard to include groundwater data, with an aim to release this update in 2025.

We progressed work on improving our understanding of the cultural value of water as part of an initiative being advanced by our Australian Advisory Group. We also continued to develop our Water Risk Framework by enhancing our Group water control library, as part of our Group-wide refreshed assurance program.

For more information see riotinto.com/water

Biodiversity

We depend on healthy ecosystems to run a sustainable business, and recognise our responsibility to minimise and mitigate our impacts on nature. We seek opportunities to achieve no net loss of biodiversity, and protect and restore ecosystems where we operate.

We recognise that the interconnected impacts of climate change and nature loss pose significant risks both to people and the environment on which we all rely. Biological diversity (biodiversity) is the foundation of healthy ecosystems, which provide valuable services that directly benefit the environment, society and industries, including ours. Healthy ecosystems support vital processes such as water purification, soil stabilisation and climate regulation – key aspects that underpin safe and efficient mining and processing practices.

We also embrace, and are responding to, increasing societal expectations for improving our environmental performance, societal engagement, transparency and accountability across our value chain.

Managing biodiversity risk

Biodiversity impacts and dependencies are crucial concepts in understanding the interconnected relationship between people and the natural environment, and addressing these impacts and dependencies are essential to developing sustainable practices that conserve biodiversity and support society.

Biodiversity impacts refer to the effects of activities on the variety of life in a particular habitat or ecosystem. While some impacts are positive, there are several pressures that need to be managed, including:

- **Ecosystems alteration**: Urbanisation, agriculture and industrialisation can change water course, drainage patterns and soil composition, affecting ecosystem functions.
- **Pollution:** Contaminants such as chemicals, plastics, or discharges to air and water can degrade ecosystems, posing a risk to the health of species.
- **Climate change:** Shifting climate patterns and extreme events can disrupt habitats, forcing species to migrate, adapt or face extinction.
- **Overexploitation:** Practices like excessive fishing, hunting, and plant harvesting, can reduce species populations and diversity.
- **Invasive species:** The introduction of non-native species can disrupt ecosystems by out-competing native species, predating on them, or introducing new diseases.
- **Fragmentation:** The division of habitats into smaller, isolated patches can reduce species' range and hinder their ability to reproduce, find food or adapt to environmental changes.

Biodiversity dependencies consider how people and society rely on, or hold connections to, ecosystems, which are vital for both biodiversity and supporting various industries, such as mining and processing. Examples can include:

- **Natural regulation:** Processes such as pollination, disease and pest regulation, water purification, climate regulation, carbon sequestration and soil stability.
- **Essential services:** Access to food and agriculture, raw materials, medicinal resources, and fresh water.
- **Cultural connection:** The deep connection Indigenous and land-connected Peoples have to, and their vast knowledge of, the land, water and environment, as well as the role nature plays in cultural traditions, identity, and heritage.
- **Supporting foundations:** Nutrient cycling, photosynthesis and soil formation.

Understanding these impacts and dependencies, we continue to assess our nature-related risks across our operations and associated activities.

2024 progress

We are active members of ICMM and other industry associations and working groups seeking to drive improvements for our industry. Our involvement in the ICMM Taskforce on Nature-related Financial Disclosures (TNFD) Working Group, GRI Biodiversity Technical Committee and the ICMM Nature Working Group have also contributed to the development of important industry resources, including the ICMM's Nature Position Statement, the GRI Biodiversity Standard, the draft Consolidated Mining Standard, and the TNFD framework.

We are stronger together in tackling these challenges. For example, through our ongoing membership of the ICMM Nature Working Group and continued engagement with the Proteus Partnership - a unique partnership agreement between major businesses and the UN Environment Programme World Conservation Monitoring Centre (UNEP WCMC), which aims to make global environmental information available to support better decisions - and our longstanding partnership with BirdLife International.

Progress highlights for 2024 include:

- Revised biodiversity priority site assessment of our operating asset potential impacts in the areas where we operate by using global datasets of threatened species, key biodiversity areas, and protected areas, developed by the UNEP WCMC. Refer to the *2024 Sustainability Fact Book* for the assessment outcomes.
- Natural capital assessment pilot for our Gove operations in the Northern Territory, Australia to inform the understanding and development of the natural capital decision-making process to support nature value accretion for all stakeholders through the mine closure process.
- Development of a systematic methodology and a consultative approach in understanding biodiversity material exposures and opportunities across our value chain.

For more information see riotinto.com/biodiversity

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Land

In 2024, we rehabilitated 37 square kilometres (km^2) of land, mostly at our bauxite mines in Australia and iron ore mines and exploration areas in the Pilbara, Western Australia. We also developed a geospatial dashboard for internal use that displays each asset's disturbance and rehabilitation footprint, to help our business better understand the impacts of our land stewardship performance.

In Mongolia, we have rehabilitated 2.1km^2 of abandoned mine workings based outside our operational footprint, along valley floors and river beds in the Darkhan-Uul province. This is part of Oyu Tolgoi's commitment to the Government of Mongolia's national movement to plant one billion trees by 2030.

We built and transitioned to the community 2 tree nurseries in the South Gobi, with a capacity to produce 750,000 saplings a year. We planted one million trees and distributed 80,000 trees to Oyu Tolgoi's employees, and provided 4 scholarships to students to study forestry.

In 2024, our land footprint – total disturbed area – was 1,762km^2, a decrease of 51km^2 compared to 2023. This includes all disturbances at our operating assets and activities, such as exploration activities, smelters, mines and supporting infrastructure.

Our rehabilitation teams continue to partner with research centres and universities to refine our rehabilitation approaches and improve outcomes.

At our bauxite mines and refineries, we have continued trials focusing on transforming stored tailing material into soils that will support plant growth. We also continued trials using satellite and unmanned aerial vehicle-derived data to test methodologies aimed at providing insights to support on-ground monitoring for vegetation and erosion monitoring of rehabilitation. In addition, 13 of our operations completed rehabilitation trials to improve seed germination, erosion and topsoil quality.

For more information about our closure work see page 39.

Waste

Waste and residues from our operational activities are key areas of our environmental risk management. In 2024, we continued to focus on managing potential contamination from these sources.

At some of our long-life assets, we continue to evaluate waste management practices of the past that have led to a need for remediation in the present. We focus on **finding better ways™** to extract maximum value and to transform waste and by-products from our operations into materials the world needs. One example is our work to sustainably extract and produce high-purity scandium oxide at Sorel-Tracy and tellurium at Kennecott.

We also continue to look for opportunities to repurpose items we purchase at the end of useful life. For example, over the last 2 years, we have partnered with a local business to recycle end-of-life tyres and conveyor belts used to move ore from our operations across northern Australia. Following a successful trial at the Argyle diamond mine in 2023, we have expanded the trial to Yarwun, Weipa and Boyne Smelters Limited in Queensland.

Some of our assets generate mineral waste with the potential to be chemically reactive, requiring careful management to prevent environmental impacts. We conduct independent reviews every 4 years to assess the effectiveness of our risk management programs and identify areas for improvement. In 2024, we completed this at 2 sites – Iron Ore Company of Canada (IOC) mining operations in Labrador City, Newfoundland and Labrador in Canada, and QIT Madagascar Minerals (QMM) near Fort Dauphin in the Anosy region of south-eastern Madagascar. Further opportunities to improve mineral waste management will continue at both sites in the short and long term.

For more information about tailings see page 39.

Air quality

Clean air is critical for the health of host communities and the surrounding ecosystems. We are working to improve air quality management, focusing on emissions of particulate matter and gases from our operational activities, including mining, materials handling, processing and transportation. The potentially hazardous emissions we monitor at operations are:

- sulphur oxides (SOx), mainly at our aluminium and copper smelters
- nitrogen oxides (NOx), mainly from burning fossil fuels
- gaseous fluoride emissions from aluminium smelters
- respirable particulate emissions (PM_{10} and $PM_{2.5}$), very fine particles from mining and processing operations and from burning fossil fuels.

We focus on reducing emissions at source by upgrading equipment to use the most appropriately available technologies, adding air pollution control equipment, implementing mitigation measures and using renewable energy or alternative feed material where possible. Our air quality management programs include monitoring, sampling at source, incident tracking and risk assessments.

Many of our assets have multi-year air quality improvement projects in place. For example, at IOC, there is a multidisciplinary working group focused on assessing dust abatement options. We are mitigating dust at the source by introducing new dust control technology. The working group is also exploring new mitigation options to further limit fugitive dust emissions from our operations.

We have expanded our air quality monitoring network at IOC's mine in Labrador City and at our Rio Tinto Iron & Titanium Quebec Operations Sorel-Tracy plant.

In some instances, we exceeded permissible dust levels at nearby air quality monitoring stations. We investigated all high dust concentration events. Most resulted from unusual forest fires, such as those close to our operations in Labrador City, Canada, where exceedances were observed over a large region. Where IOC was found to have caused the reporting exceedance, it was due to calm winds and atmospheric inversions when contaminants from the induration stacks cannot disperse in the atmosphere and remain close to ground level. Improving our air quality monitoring network over the coming years will help us to prevent dust incidents in the future.

Operational environment overview

	2024	2023	2022	2021	2020
Significant environmental incidents[1]	**0**	1	1	2	0
Fines and prosecutions – environment ($'000)[2]	**604.8**	987.0	109.8	7.4	27.4
Land footprint – disturbed (cumulative square kilometres)[3]	**1,762**	1,813	1,775	1,700	1,595
Land footprint – rehabilitated (cumulative square kilometres)	**587**	552	522	494	490
Mineral waste disposed or stored (million tonnes)	**979**	983	978	1,005	987
Non-mineral waste disposed or stored (million tonnes)	**0.66**	0.73	0.75	0.65	0.47
SOx emissions (thousand tonnes)	**74.3**	72.8	66.2	70.2	75.7
NOx emissions (thousand tonnes)	**64.9**	67.2	64.6	62.3	65.2
Fluoride emissions (thousand tonnes)	**2.26**	2.61	2.36	2.36	2.27
Particulate (PM_{10}) emissions (thousand tonnes)	**169.0**	169.5	146.3	142.3	143.2

1. Significant environmental incident is an incident with an actual consequence rating of high or very high. We measure and rate incidents according to their actual environmental and compliance impacts using 5 severity categories: very low, low, moderate, high and very high. Very high and high environmental incidents are usually reported to the relevant product group head and the Rio Tinto Chief Executive as soon as possible.
2. In 2024, we paid environmental fines from damage to water resources and pollution caused by using sub-standard seepage water for dust suppression on roads at Oyu Tolgoi, Mongolia; penalty infringement notices associated with maintenance of a failed coke unloader, maintenance of a failed roof manifold, and release of a prescribed water contaminant at Boyne Smelters Limited, Australia; contaminants release at an unauthorized point and failure to install and maintain required equipment, leading to non-compliance with environmental authority conditions at Yarwun, Australia; facility acquired equipment without obtaining the required air permit approval at Boron operations, USA; discharge of pollutants into storm drains and surface waters at Wilmington operations, USA; release of a contaminant into the environment exceeding the legal limit at Havre-Saint-Pierre, Canada; non-compliance with Environmental Quality Act at Vaudreuil plant, Canada.
3. A reduction in cumulative disturbance from 2023-2024 is a result of the sale of Dampier Salt Limited's Lake MacLeod operation.

Note: The numbers may change year to year and retrospectively due to reconciliations of data.

Mining and metals practices

Tailings

We engage with stakeholders throughout the life cycle of our tailings storage facilities, from design to closure. We also collaborate closely with external bodies to improve the way tailings are managed across our industry.

We operate 104 tailings storage facilities (TSFs) across our global assets. Thirty-eight are active TSFs, 24 are inactive and 42 are closed.

We work through technical committees and joint venture relationships to support leading practice in tailings management. Our full tailings disclosure is available on our website. We periodically update the list of TSFs to reflect operational and ownership changes. These include changes due to the transition to closure or remediation obligations for legacy assets, and reclassification of facilities.

Our facilities are regulated and permitted and have been managed for many years to comply with local laws, regulations, permits, licences and other requirements. Tailings management has been included in the Group risk register since 2010, and our Group safety standard for tailings and water storage facilities has been in place since 2015. Our internal assurance processes verify that our managed TSFs operate in accordance with this standard, which we updated in 2021.

Our TSFs have emergency response plans – tested through training exercises in collaboration with stakeholders such as local emergency services – and follow strict business resilience and communication protocols.

2024 progress

We have continued to progress our implementation of the Global Industry Standard on Tailings Management (GISTM). This focuses on preventing tailings facility failures, reducing the social and environmental impacts of tailings facilities, and improving engagement and transparency on tailings with local communities. We have also assessed our progress on implementation through self-assessment and independent audits, using ICMM's GISTM Conformance Protocols.

In 2024, we completed implementation work for the tailings facilities that have a "Very High" or "Extreme" consequence classification, except where longer-term engineering works are required. However, there is still work to do to embed the changes made. The product group and Closure implementation teams continue to work towards full conformance for the remaining tailings facilities by August 2025.

In August 2024, in accordance with Principle 15 of the GISTM, we updated our public tailings disclosures for the "Very High" and "Extreme" tailings storage facilities we operate.

We also updated our disclosures for the other tailings facilities we operate that have lower GISTM consequence classifications, based on the Investor Mining and Tailings Safety Initiative (IMTSI) request for public disclosures on tailings.

For more information see riotinto.com/tailings

In 2024, we:

- Continued to regularly convene the Tailings Management Committee with our designated Accountable Executives. This provides coordinated governance of tailings management practices across the Group.
- Conducted multidisciplinary risk assessments for all our "Very High" and "Extreme" consequence facilities.
- Continued to play an active role in the ICMM tailings working group, which provides guidance to support the safe, responsible management of tailings with the goal of eliminating fatalities and catastrophic events.

Closure and repurposing

We are committed to being responsible operators throughout the entire life of our assets, delivering value at every stage – from discovery to closure.

Today, we plan for the end right from the beginning, incorporating closure in each stage of the asset lifecycle in the way we design, build and operate.

We work with communities, governments and other stakeholders to complete closure activities and repurpose and renew sites for their next use.

At the end of 2024, closure provisions on our balance sheet totalled $15.7 billion (2023: $17.2 billion).

2024 progress

In 2024, we continued to mature our closure practices and develop our expertise through our approach.

Argyle diamond mine

We are rehabilitating the Argyle diamond mine on the traditional lands of the Miriwoong and Gija People in Western Australia. We have made significant progress on reprofiling the former processing plant area and waste rock dumps, as well as capping the tailings storage facility. We have reached over 60% overall project completion, and plans are underway to start removing the Argyle mine accommodation facilities, airport and utilities infrastructure in 2025.

We are continuing to review our contracting strategy to increase work awarded to Traditional Owner businesses and increased our spend to A$44.9 million in 2024 (2023: A$37 million).

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Gove refinery and residue disposal areas

In 2024, we reached the halfway mark for the demolition works at the Gove alumina refinery in the Northern Territory, which is Australia's largest demolition project. We have removed the refinery's liquor purification units and other structures, processing around 63,000 tonnes of scrap steel for recycling.

The majority of the rehabilitation of the former tailings dam, Pond 5, is complete, with the opening of 3 spillways to allow appropriate drainage from the newly capped surface. We continue to work closely with Gumatj and Rirratjingu Traditional Owners, and the Northern Territory Government, to plan for a future beyond mining. In 2024, we spent A$85.5 million with Traditional Owner businesses (2023: A$94 million).

Ranger Rehabilitation Project

In April 2024, we entered into a Management Services Agreement (MSA) with Energy Resources of Australia (ERA) to manage the Ranger Rehabilitation Project with oversight from the ERA board. The MSA builds on ERA's existing rehabilitation work and allows us to directly share our technical expertise in designing, scoping and executing closure projects, including stakeholder and delivery partner relationships.

In November 2024, ERA concluded its entitlement offer and shortfall bookbuild, which raised A$766.5 million (before costs) to fund planned rehabilitation activities of the Ranger Project Area until approximately the third quarter of 2027. As a result of Rio Tinto taking up its pro rata entitlements in the entitlement offer and the level of participation by other ERA shareholders, we hold approximately 98.43% of ERA's shares. As previously stated, we intend to move forward with compulsory acquisition of all remaining ERA shares we do not currently own.

Since commencing management of the Ranger Rehabilitation Project in July 2024, we have progressed work in Pit 3, preparing the area for capping using amphirollers to dry the area and starting the geotextile laying.

We remain committed to the successful rehabilitation of the Ranger Project Area to a standard that will establish an environment similar to the adjacent Kakadu National Park, a World Heritage site. We continue to work with all key stakeholders, including the Mirarr People to complete this important rehabilitation project.

Legacy assets

We manage over 90 legacy assets in 9 countries and 35 tailings storage facilities across our portfolio. For more information on tailings management, see page 39. In 2024, we progressed our study program to look for opportunities to further optimise the long-term management of our legacy portfolio.

Our approach

We proactively manage closure across our business and make decisions based on the full picture. This starts with strong governance and a common approach across our assets globally.

In 2023, we made it easier for operating assets to fund progressive closure work to reduce our impact. In 2024 we saw an increase in progressive closure spend of 40%. This important work helps to reduce our impact and reduces closure costs long term.

We develop asset closure strategies to identify potential future land uses and focus on opportunities to reduce closure costs and risks over the asset life cycle. We completed 4 additional asset closure strategies in 2024, and now have these in place for 62% of our active operations. All of our operating sites have closure plans, and we are developing closure plans for assets that have an indefinite life, such as some port facilities. We review these plans regularly to align with stakeholder expectations and to incorporate lessons learned from other closure projects. At operations with joint ownership structures, we endeavour to work in partnership with other asset owners to ensure we consider closure through asset design, planning and operations.

A Closure Steering Committee, with senior representatives from across our business and chaired by Kellie Parker, Chief Executive Australia, provides oversight to our approach and finds opportunities for improvements and alignment across the business.

We actively manage risk and find commercial opportunities within our portfolio. In 2024:

- We sold our interests in Sweetwater, a former uranium legacy site in Wyoming, US, for cash proceeds of $175 million. This supports the local economy with a new owner who is actively expanding operations in the region.
- We signed an agreement with Alteo for Rio Tinto to be the last operator of the Mange-Garri bauxite residue disposal area in France to manage rehabilitation and support repurposing. Alteo will continue to operate and retain responsibility for the Gardanne refinery.

Through targeted research and development, we work to solve the challenges of the future to reduce our liabilities and create better outcomes.

We continued partnering with research and academic organisations, start-ups and technology solutions providers to find better ways to close and repurpose our assets. These include opportunities to reprocess mineral and industrial residues, selectively recover minerals from mine-influenced waters, augment our knowledge base for closure, and improve the rehabilitation and revegetation execution and monitoring.

- We have been progressing our research and development program, seeking to remediate and unlock value from our mine-influenced waters. The initiative rethinks widely established chemical water treatment practices. It explores instead the possibility of extracting selected constituents, including potentially high-value ones, in a high-quality form that can be commercialised. We are building a testbed facility at our Kennecott copper operations in Utah, US, to conduct the first technology trials in a real environment.
- We started a project with the University of Queensland to develop new ways to monitor mine residues using drones and ground sensors, improving safety and land rehabilitation across mine sites.
- We initiated a broad-acre field trial investigating the scalability of converting bauxite tailings into technosol, a growth medium used for rehabilitation. The objective is to provide an alternative to imported topsoil during progressive rehabilitation activities. The trial builds on previous greenhouse studies and incorporates local knowledge to define success criteria.
- We are developing digital tools that help us track our progress and predict trajectories towards rehabilitation and closure completion criteria on mine sites, and combine in situ and remote sensing.

For more information about our closure risks see page 94.

Partnering for the future

To meet our commitments now and into the future we work in partnership:

- We announced two new 5.25MW solar farms in the Northern Territory, Australia at our Gove operations, to secure a more sustainable power supply for the region beyond mining.
- We progressed our partnership with the University of British Columbia and Curtin University to develop the capabilities needed to support closure in the future through launching a third unit in the micro-credentials program. Since the program launched in late 2023, 141 Rio Tinto students have completed it, and there has been good uptake from other mining companies and government agencies.
- We partnered with Curtin University to support the development of the Undergraduate Certificate in Land, Sea, and River First Nation Ranger Management and Practice, designed to enhance the skills of Australian Traditional Owner and Ranger Groups through a comprehensive range of capability development options.
- We expanded an end-of-life tyres and belts recycling trial to Yarwun, Weipa and Boyne Smelters Limited in Queensland, Australia to proactively reduce our waste inventory and explore circular economy opportunities. This follows successfully recycling 800 tonnes of end-of-life tyres and conveyor belts from the Argyle diamond mine in 2023.

For more information about closure provisions and financial statements see page 189.

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Our 2025 Climate Action Plan

The materials we produce and the way we provide them to society matter. We have ambitious emissions reduction targets and are now delivering against those.

Decarbonisation is good for our business and gives us confidence in the future. We are a significant energy user and parts of our portfolio are hard-to-abate, so it is exciting to see some real momentum this year, in both reductions in emissions and project approvals.

Since we set our targets, we have delivered 5Mt CO_2e in operational emissions abatement, and our gross emissions are now 14% below 2018 levels, primarily from renewable electricity contracts. Additionally, in 2024 we have committed to abatement projects, totalling 3.6Mt CO_2e which are expected to contribute to our target to reduce net emissions by 50% by 2030.

The challenge is not straightforward – we need to navigate a complex, rapidly evolving regulatory landscape – but we are making progress and maintaining financial discipline while we do this. Despite the fragmented policy landscape, decarbonisation can still be good economics. Our projects are typically net present value positive or neutral and enhance the value of our business by reducing our exposure to volatile fossil fuel prices and higher carbon penalty costs. Our decarbonisation investment process is rigorous and rational and it aims to secure structural, long-term, cost-efficient, low-carbon alternative energy supplies.

We are also supporting our customers and suppliers in reducing emissions from our value chain, particularly those from steelmaking. We are acting now and investing in breakthroughs such as Biolron™ and electric smelting to scale up these new technologies.

While we still have a long way to go, I am proud of the progress our teams have made so far. Our Climate Action Plan creates long-term value for our shareholders which is why we are recommending it for their approval at our annual general meetings.



Jakob Stausholm
Chief Executive

About this Climate Action Plan and our reporting obligations

Our first Climate Action Plan (CAP) was approved by investors at our 2022 AGMs. At that time, we included a commitment to report on our progress annually and update the CAP every 3 years. This updated 2025 CAP retains our commitments to decarbonise our assets and work with customers and suppliers to reduce our value chain emissions. It also shows how the energy transition is at the heart of our strategy.

The Board will put this updated CAP to shareholders for a non-binding advisory vote at the 2025 AGMs.

In 2024, for the first time, we have fully integrated climate disclosures into our Annual Report. This aligns with our commitment to continually improve our reporting and align with emerging standards, including the International Sustainability Standards Board (ISSB) International Financial Reporting Standard (IFRS) for climate-related disclosures (S2).

We support the ISSB's goal to harmonise disclosures about transition plans, and have also considered the key principles of the Transition Plan Taskforce (TPT) Framework in setting out our CAP. Our reporting is also guided by the CA100+ Net Zero Company Benchmark and their Standard for mining companies.

Image: The solar photovoltaic and wind power plants at our Diavik diamond mine in Canada's Northwest Territories.

2024 at a glance

Gross Scope 1 and 2 emissions

30.7Mt CO_2e
(adjusted equity),
(2023: 33.9Mt CO_2e)

Scope 3 emissions

574.6Mt CO_2e
(2023: 572.5Mt CO_2e)

Percentage electricity from renewable sources

78%
(2023: 71%)

Total decarbonisation spend

$589m
(2023: $425m)



Our 2025 Climate Action Plan at a glance

Grow production of materials essential for the energy transition

26 Fe Iron	29 Cu Copper	03 Li Lithium	13 Al Aluminium
287.7Mt	624kt	3kt*	3,296kt

2024 production (Rio Tinto share basis, *2025 capacity at Rincon)

Grow production by ~3% per year



Ambition for compound annual growth rate for copper equivalent production from 2024 to 2033, including inorganic lithium growth.

Reduce emissions from our own operations

50% by 2030, net zero by 2050

Increase **renewable power to >90%**



Develop **low-carbon technologies** for minerals and metals processing, refining and smelting



Invest in sustainable **biofuel supply** chains. Transition to **zero emissions** mining vehicles



Estimated $5-6 billion decarbonisation capex by 2030



Invest in and develop nature-based solutions projects in the regions where we operate



Partner to decarbonise our value chains

Helping our customers and suppliers to achieve their targets earlier and reach net zero by 2050

Steel value chain



Develop **existing, emerging and future technologies** to decarbonise steel production



Invest $200-350m in steel decarbonisation between 2025-2027

Shipping

Reach net zero shipping by 2050



Working across our value chains



Drive decarbonisation at **50 of our highest-emitting suppliers**

Partner with bauxite customers to reduce emissions

Policy



Actively engage on climate and energy policy aligned with net zero ambitions

People



Embedding just transition principles in our decarbonisation strategy

Governance



Decarbonisation in short- and long-term incentives

Board engagement on climate

Enhancing our physical resilience to a changing climate

Supporting the viability of our assets, our people and communities

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Grow production of materials essential for the energy transition

Our portfolio

Copper, lithium, aluminium and high-quality iron ore are fundamental to renewable energy infrastructure, electric vehicles, and energy storage solutions. This global shift to a low-carbon economy is driving unprecedented demand for our commodities. Our ambition is to grow total production by ~3% per year on a copper equivalent basis[1].

Highlights across our portfolio

Iron ore

- High-grade iron ore from Iron Ore Company of Canada (IOC) and Simandou in Guinea is essential for the production of low-carbon steel.
- Investment in the development of our Pilbara operations and the technology needed to produce low-carbon steel.

Minerals

- The Rincon lithium project in Argentina achieved first production.
- Acquisition of the Burra™ Scandium Project in Australia.
- Our recent agreement to acquire Arcadium Lithium plc will, subject to acquisition completion, enable us to provide many of the key materials that go into electric vehicle batteries.

Aluminium

- Acquisition of a 50% stake in Matalco in 2023 supports the growing demand for low-carbon and recycled products.
- A US$1.1 billion investment in expanding the AP Technology™ AP60 aluminium smelter in Quebec.
- Investment in ELYSIS™ technology development and trials.

Copper

- Having increased our equity in 2022, the expansion of the Oyu Tolgoi underground mine in Mongolia is a cornerstone of our copper strategy.
- Expanding underground mining at Kennecott, targeting an additional 250,000 tonnes of copper production over the next decade[2].
- Joint venture with First Quantum Minerals on the La Granja project in Peru, one of the world's largest undeveloped copper deposits.

1. Ambition for compound annual growth rate (CAGR) for copper equivalent production from 2024 to 2033, including inorganic lithium growth.
2. The production target of around 250,000 tonnes of additional mined copper over the next 10 years (2023 to 2033) at Kennecott was previously reported in a release to the Australian Securities Exchange (ASX) dated 20 June 2023 titled "Rio Tinto invests to strengthen copper supply in US". Rio Tinto confirms that all material assumptions underpinning that production target continue to apply and have not materially changed.

Using scenarios to identify climate risks and portfolio opportunities

Although climate change presents clear growth opportunities for our commodities, it also presents both physical and transition risks to our portfolio if we fail to align our business with a net zero future. The transition to a low-carbon economy impacts the commodities we produce and how they are processed in our value chains – particularly for carbon-intensive steel and aluminium production. Carbon pricing regulation is currently applied to our operations and our customers. Increasing climate policy ambition can therefore affect our operational costs, markets and technology development. Physical risks such as extreme weather events, rising sea levels and temperature fluctuations can disrupt our supply chains, damage infrastructure and impact the availability and cost of raw materials.

We use scenarios to identify and assess risks and opportunities, including climate, that may affect our business in the medium and long term. To assess transition risks, we use market analysis for our short-term outlook, and our Conviction and Resilience scenarios for our medium- and long-term assessment. For physical risks, we use an intermediate and high emissions scenario. For planning purposes, we define short-term as up to 2 years, medium-term as 2 to 10 years and long-term as beyond 10 years.

Our short-term timeframe aligns with our annual planning process. The medium-term timeframe aligns to extended planning horizons for our growth projects and emissions abatement projects. Our long-term timeframe considers the full lifespan of our mining assets and infrastructure, and the continued impact climate risks and opportunities are expected to have on the business. Inevitably there is increasing uncertainty in the assumptions and projections further into the future, so there is inherent uncertainty in the assessment of risks and opportunities presented below.

Short-term assessment: While scenarios provide a valuable long-term perspective, our short-term outlook is guided by market analysis. This allows us to respond swiftly to immediate market conditions and trends, ensuring we are agile and competitive in the near term.

Medium- and long-term assessment: We use these scenarios to:

- **Identify and evaluate risks:** These include climate-related physical and transition risks, both of which can impact our business model, financial performance and market positioning.
- **Assess opportunities:** Explore opportunities for innovation and adaptation, such as the development of low-carbon technologies and the transition to renewable energy sources.
- **Inform strategic planning:** Inform our strategic decisions and investments, ensuring our business remains resilient and able to adapt to, and mitigate, the challenges posed by climate change.

Our scenario approach is reviewed every year as part of our Group strategy engagement with the Board. We do not undertake climate modelling ourselves, rather we determine the approximate temperature outcomes in 2100 by comparing the emissions pathways to 2050 in each of our scenarios with the Shared Socio-Economic Pathways (SSP) set out in the Intergovernmental Panel on Climate Change (IPCC) Sixth Assessment Report. We also consider the carbon budgets associated with different temperature outcomes which are inevitably uncertain.

In 2024, we updated the scenario framework used to assess the resilience of our business under different transition-related scenarios.

Our Conviction and Resilience scenarios translate our beliefs of the future into macroeconomic drivers and improve our understanding of policy impacts. These scenarios underpin our fundamental assumptions about long-term trends and we believe they cover a realistic range of future outcomes. They reflect what we anticipate will happen rather than our aspirations. Our core scenarios are crucial in guiding our investment strategies and overall portfolio strategy.

Additional scenarios (including our 1.5°C-aligned Aspirational Leadership scenario) are used to further evaluate the positive and negative effects of the energy transition across our portfolio. By considering various future scenarios, we can identify risks and opportunities, adapt to changes, and maintain a resilient portfolio.

Our short-term carbon pricing assumptions align with consensus price forecasts in each region, accounting for transitional assistance, such as free allocation, where appropriate. Medium- to long-term carbon prices are determined by national climate targets, and our understanding of the marginal abatement costs and objectives for each scheme.

The temperature outcomes of scenarios and sensitivities are derived from complex modelling which continues to evolve and is inherently uncertain. The emissions pathways in Conviction and Resilience limit temperature rises to around 2.1°C, and around 2.5°C by 2100 respectively, roughly aligning with IPCC's intermediate emissions scenario (SSP2-4.5). We also use the SSP2-4.5 and highest emissions scenario (SSP5-8.5) in our bottom-up asset-level physical risk and resilience assessments. See pages 66-69 for more information.

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Our core scenarios

Conviction

This is our "central case" scenario and underlies strategic planning and portfolio investment decisions across the Group. Consequently we limit disclosure of our assumptions in Conviction. In this scenario, countries will decarbonise at a moderate pace, with greater awareness of climate-related physical damage triggering more radical climate action over time. Real gross domestic product (GDP) grows at 2.5% between 2023-2050, but energy intensity of GDP reduces approximately 2.7% per year due to sectoral shifts and greater efficiency. For the next decade, greenhouse gas (GHG) emissions are slightly higher than those in the Resilience scenario due to a higher GDP, but emissions then decline at a rapid rate due to increased low-carbon electrification which supplies around half of final energy by 2050. In Conviction, climate policies become more ambitious and effective over time resulting in a temperature rise of around 2.1°C in 2100. The impact on corporate balance sheets will be mixed - overall, although carbon pricing varies by region, it will increase costs. GDP growth and the global energy transition are expected to increase demand for copper, lithium and aluminium through to 2050. Steel demand is expected to grow more modestly, and incentives to recycle scrap increase. Lower quality iron ore products are expected to receive greater discounts.

Resilience

Although described as a scenario, Resilience is simply a sensitivity analysis that is designed to test our annual plan and investment proposals. Weaker governance, declining global trade, and lower economic growth lead to less effective climate action. Real GDP growth only averages 1.6% between 2023 and 2050. Lower economic growth and a slower energy transition lead to lower commodity demand and prices across all time periods compared to Conviction. Lower policy ambition and the inability of the international community to tackle carbon leakage without resorting to protectionism leads to climate policies advancing sporadically and in an uncoordinated way. Overall there is only a 30% reduction in GHG emissions by 2050. The result is a temperature rise of around 2.5°C by 2100. Consequently, climate-related weather events and natural disasters become more frequent and severe in this scenario but are met by fragmented and variable policy responses.

Aspirational Leadership scenario 1.5°C

This scenario reflects our view of a world of high economic growth, significant social change and accelerated climate action that achieves net zero emissions by mid-century. While GDP growth is similar to that in our Conviction scenario, significantly more ambitious climate policy limits warming to 1.5°C (aligning with SSP1-1.9). This scenario affects our balance sheet in different ways and is subject to great uncertainty. Overall, in Aspirational Leadership the Group's economic performance would fall between Conviction and Resilience. While higher scrap use reduces the medium-term demand for Pilbara products, increased carbon pricing and penalties boost long-term demand for high-grade iron ore. Aluminium demand growth is limited in the short term, but increases in the longer term. Copper demand grows due to increasing electrification, strong GDP growth, and accelerated electric vehicle (EV) penetration. These trends also support minerals projects.

Despite global agreements reached in Glasgow and Dubai, emissions today continue to rise, making the 1.5°C goal of the Paris Agreement unlikely to be achieved. Our operational emissions targets align with 1.5°C, and consequently, so do our decarbonisation investment decisions. However, we do not use Aspirational Leadership in our broader strategic or investment decision-making and so did not update all the assumptions Aspirational Leadership in 2024. Overall, based on the Aspirational Leadership scenario pricing outcomes, and with all other assumptions remaining consistent with those applied to our 2024 financial statements, we do not currently envisage a material adverse impact of the 1.5°C Paris-aligned sensitivity on asset carrying values, remaining useful life, or closure and rehabilitation provisions for the Group. It is possible that other factors may arise in the future, which are not known today, that may impact this assessment.

Additional scenario parameters

The next table shows some of the key data points that define our scenarios. The new central case "Conviction" scenario assumes climate policy ambition is almost equal to that in our previous scenario "Competitive Leadership". This reflects our observation of higher carbon price expectations and more concrete national mitigation plans. These data points are derived from our internal macroeconomic and energy models and form the basis for all our long-term commodity analysis.

Key scenario metrics	Base year	Conviction		Resilience	
	2023	2030	2023–2050 CAGR	2030	2023–2050 CAGR
Average exposed carbon price, (2023 US$/t CO_2e)[1]	35	78	8%	66	5%
Global GHG emissions, Gt CO_2e	54	55	-3.2%	51	-1.8%
Global CO_2 combustion emissions, Gt CO_2[2]	33	32	-4.6%	31	-2.7%
Global final energy demand, exajoule (EJ)	398	423	0.1%	414	0.2%
Electricity share of final energy, %	27%	32%	3.8%[3]	32%	2.2%[3]
Non-fossil share of electricity generation, %	46%	63%	6.5%[3]	60%	4.2%[3]

1. Simple unweighted average across Australian, European and North American national carbon schemes.
2. While total GHG emissions is the primary metric for estimating global warming, CO_2 combustion emissions give a clearer picture of the energy transition in the power and industrial sectors.
3. Indicates annual % growth of total electricity generation and non-fossil electricity generation.

Transition risks and opportunities are broadly higher in the Conviction scenario than in the Resilience scenario due to greater volatility. In addition to the demand outlook, the main factors which influence whether operations stand to gain or lose from the energy transition include how emission-intensive an operation is relative to its industry peers, its geographical location (affecting which climate policies it will be subject to), and how suitable the product is for downstream decarbonisation.

There are no portfolio adjustments made to the Group's medium to long-term plan under the various scenarios. Additionally, as our macroeconomic modelling involves a range of variables, isolating and measuring the impact of specific climate risks and opportunities is challenging. Therefore, the potential quantitative financial impacts are not disclosed. Furthermore, we do not publish our commodity price forecasts as this would weaken our position in commercial negotiations and might give rise to concerns from regulators and market participants. As good practice on scenario analysis and climate modelling evolves, we will continue to evaluate the robustness of our assessments of climate-related risks and opportunities drawing on more recently published studies and analysis.

Portfolio risks and opportunities in the low-carbon transition

Impact ● Opportunity/positive impact ● Neutral/no or minimal impact ● Risk/negative impact

	Short-medium term (0–10 years)	Long-term (beyond 10 years)
Cross-commodity	● The energy transition contributes to near-term demand growth across most of our commodity portfolio, especially in Conviction. Our ambition is to grow total production by ~3% per year on a copper equivalent basis from 2024 to 2033. ● Climate policy-related costs are rising in all regions, but considerably faster in OECD countries. These are likely to rise quickly in Conviction, creating financial incentives to undertake decarbonisation at many of our operations. In Resilience, carbon prices in developing countries increase more slowly. ● By 2030, carbon penalties are projected to cost $0.3 billion annually, rising to $0.6 billion by 2040 assuming there is no reduction in our emissions.	● Recycling and end-use efficiency improvements put downward pressure on demand, especially in Conviction, displacing some high-cost supply in our key markets. This will not be enough to offset growth in demand for primary supply. ● In Conviction, decarbonisation will become increasingly important to gain a social licence to develop new greenfield projects and for existing operations to remain profitable. However, carbon costs will be offset by higher commodity prices, and the potential for low-carbon operations to gain a competitive advantage in some markets. In Aspirational Leadership, demand for transition materials in the long-term offsets slightly lower demand for lower grade iron ore.
Iron ore	● Carbon costs are expected to rise at our Australian operations, but they represent a small component of our overall costs, and will therefore only have a limited impact on our margins during this time period. ● Steel producers are protected from rising carbon prices by transitional assistance (eg Europe) or exemption mechanisms (eg China), resulting in a slower rate of transitioning to low-carbon steelmaking. This limits any potential impact on consumer preferences for different kinds of iron ore. ● There is lower GDP growth and lower demand for iron ore in Resilience compared with Conviction in the medium and long-term.	● Rising carbon prices, especially in Conviction, will become more material at our Australian and Canadian operations, and at the Simandou project approximately a decade later. In Resilience, Simandou is likely to remain unaffected by carbon costs for several decades. ● As carbon prices rise, and transitional assistance is phased out, carbon costs on steel producers will increasingly favour low-carbon steelmaking and higher-quality ores. This will increase demand for our high-grade iron ore from the Simandou and Canadian operations which also has lower energy requirements when used in a blast furnace. ● The impact of low-carbon steelmaking on the relative economic value of different iron ore products, particularly lower grades, depends on the different technologies that reach a mature phase of development. Although consumer preferences may change, we also have some flexibility to alter our products' technical specification.
Aluminium	● Carbon costs are expected to rise, particularly at our refineries and smelters in Eastern Australia which currently rely on emission-intensive electricity. This will result in increased energy costs. ● Policies to prevent carbon leakage are likely to emerge, supporting the continued production of aluminium in OECD countries, but the implementation is highly uncertain. ● The contribution of aluminium to Group EBITDA averaged 11% over the period 2019-23 (using long-run consensus pricing). Given our ambition to diversify our portfolio, we expect its contribution to rise to around 15% by 2033 (on a consistent basis).	● In Conviction, carbon prices will push aluminium producers in OECD countries to switch to renewable and zero-carbon power and look for alternatives to current anode technology (eg ELYSIS™). Lower prices in Resilience may delay hard-to-abate decarbonisation by a decade or more ● Our hydro-based production in Canada and decarbonisation projects in Australia will find markets in regions with a low-carbon premium such as Europe. ● Annual demand for low carbon aluminium in Conviction is projected to be approximately 1.8 times greater by 2050, while demand in demand in Aspirational Leadership is expected to be higher than this.
Copper	● Electrification is supportive of near-term demand for copper, which is crucial to products such as renewable energy infrastructure and electric vehicles. Electric vehicles use 3-4 times more copper than conventional vehicles. ● Carbon costs at our operations (in the US, Mongolia, and Chile) are currently low and unlikely be to material until the mid to late 2030s in all scenarios. ● The contribution of copper to Group EBITDA averaged 9% over the period 2019-23 (using long-run consensus pricing). Given our ambition to increase copper production, we expect its contribution to rise to around 20% by 2033 (on a consistent basis).	● Electrification continues to support copper demand in both scenarios, supporting prices and incentivising growth projects. Electricity consumption growth is almost twice as strong in Conviction due to a higher GDP and a faster energy transition. ● Annual copper demand in Conviction is projected to be approximately 1.8 times greater by 2050, while demand in demand in Aspirational Leadership is expected to be higher than this. ● Copper smelting is less energy-intensive relative to other metals, further supporting demand.
Minerals	● Increasing use of EVs supports strong growth in the demand for battery minerals such as lithium. ● Carbon costs are expected to rise at our mineral operations in South Africa. ● Higher demand and prices for transition materials in Conviction and Aspirational Leadership than in Resilience in the medium to long term. ● The net impact of climate policy on our diamond business is likely to be minimal as carbon costs are unlikely to be a large fraction of their market value. ● Lithium is expected to significantly contribute to the Group's production growth, and we expect its contribution to rise to over 10% of Group EBITDA by 2033 (using long-run consensus pricing, including inorganic lithium growth).	● Even though battery technologies will develop over time, demand for primary lithium supply will be robust, with EVs dominating the market in Conviction over the next couple of decades, especially in China and Europe. ● Long-duration energy storage may support demand for lithium and other battery materials, but there are competing alternative technologies. ● Carbon costs will increase at energy-intensive titanium dioxide mining and processing operations in South Africa and Canada, making continued use of fossil fuels economically unattractive. ● Digital technologies and ride sharing may lower the demand for personal vehicle ownership in some markets. ● Lithium demand is expected to grow more than 6 times by 2050 in Conviction.

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Strategic alignment with the low-carbon transition

With higher GDP growth and a faster low-carbon transition, our economic performance is stronger in Conviction than in Resilience. Higher carbon penalties and the potential impact on demand for mid and lower grade iron ore result in weaker economic performance in Aspirational Leadership than in Conviction. Overall, our portfolio is resilient under scenarios aligned with 1.5°C, 2.1°C and 2.5°C outcomes. The low-carbon transition is at the heart of our strategy. This mitigates risks associated with stricter carbon regulations and changing consumer preferences and positions us to capitalise on the growing demand for transition materials.

Transition materials metrics

Our products are classified as key transition materials (KTM) and other transition materials (OTM), aligning with the CA100+ Net Zero Standard for Diversified Mining Companies. Iron ore and gold are classified as transition neutral materials (TNM). We divested the last of our coal assets in 2018. Production of KTMs and OTMs increased by 11% and 2% respectively in 2024 on a copper equivalent basis.

Commodity	Classification	Year ended 31 December	Emissions Mt CO_2e[5,6]	Production[1]	Consolidated sales revenue[2] US$millions	Capital expenditure[3] US$millions	Operating assets[4] US$millions	2025 guidance Rio Tinto production share, unless otherwise stated
Lithium ('000 tonnes)	KTM	**2024**	–	–	–	**155**	**1,098**	–
		2023	–	–	–	27	834	–
Copper[7] (mined) ('000 tonnes)	KTM	**2024**		**624**				Copper (mined and refined, consolidated basis): 780 to 850kt
		2023		562	**2024: 4,728**			
Copper[7] (refined) ('000 tonnes)	KTM	**2024**		**248**	2023: 3,218			
		2023		175				
Silver (mined) ('000 ounces)	OTM	**2024**		**4,236**				
		2023		3,811	**2024: 98**			
Silver (refined) ('000 ounces)	OTM	**2024**	**2024: 1.0**	**2,314**	2023: 53	**2024: 2,055**	**2024: 22,124**	
		2023	2023: 1.0	1,407		2023: 1,976	2023: 21,050	
Molybdenum ('000 tonnes)	OTM	**2024**		**3**	**2024: 159**			
		2023		2	2023: 130			
Gold (mined) ('000 ounces)	TNM	**2024**		**282**				
		2023		282	**2024: 797**			
Gold (refined) ('000 ounces)	TNM	**2024**		**144**	2023: 476			
		2023		74				
Aluminium[8] ('000 tonnes)	OTM	**2024**	**16.0**	**3,296**	**9,363**	**1,256**	**12,017**	3.3 to 3.5Mt
		2023	17.4	3,272	9,239	847	11,919	
Alumina[8] ('000 tonnes)	OTM	**2024**	**5.7**	**7,303**	**1,522**	**279**	**804**	7.4 to 7.8Mt
		2023	5.8	7,537	1,204	325	1,315	
Bauxite[8] ('000 tonnes)	OTM	**2024**	**1.0**	**58,653**	**2,110**	**159**	**2,289**	57 to 59Mt
		2023	0.9	54,619	1,533	159	2,649	
Minerals[9] ('000 tonnes/carats)	OTM/TNM	**2024**	**1.7**	See footnote 10	**2,954**	**379**	**3,662**	Titanium dioxide slag: 1.0 to 1.2Mt
		2023	3.2		3,242	380	4,063	
Iron ore ('000 tonnes)	TNM	**2024**	**3.7**	**287,676**	**30,804**	**5,108**	**20,903**	IOC[11] iron ore pellets and concentrate: 9.7 to 11.4Mt Pilbara iron ore (shipments, 100% basis): 323 to 338Mt
		2023	3.7	290,171	33,772	3,193	20,594	
Thermal and metallurgical coal	Not applicable	**2024**	–	–	–	–	–	–
		2023	–	–	–	–	–	–

Further notes on production and capacity

Mined copper: On track for 1Mt copper production within 5 years.
Lithium carbonate (Rincon 3000): System capacity of 60kt; first production in 2028 with 3 year ramp up to full capacity. The production target of approximately 53kt of battery grade lithium carbonate per year for a period of 40 years was previously reported in a release to the ASX dated 4 December 2024 titled "Rincon Project Mineral Resources and Ore Reserves: Table 1". Rio Tinto confirms that all material assumptions underpinning that production target continue to apply and have not materially changed. Plans are in place to build for a capacity of 60kt of battery grade lithium carbonate per year with debottlenecking and improvement programs scheduled to unlock this additional throughput.
Iron ore (Pilbara System): System capacity of 345-360Mt mid-term.

Notes:

1. Production figures are measured according to Rio Tinto's ownership % share of each site. For further details on the % share, see pages 275 and 276 where these have been highlighted.
2. Consolidated sales revenue by product, as defined within Consolidated sales revenue by product on page 179, include 100% of subsidiaries' consolidated sales revenue and Rio Tinto's share of the consolidated sales revenue of joint operations but exclude equity accounted units. The product analysis above does not include certain other products and freight services disclosed in note 6 on page 179, which are not considered material.
3. Capital expenditure by product is the net cash outflow on purchases less sales of property, plant and equipment, capitalised evaluation costs and purchases less sales of other intangible assets as derived from the Consolidated Cash Flow Statement. The details provided include 100% of subsidiaries' capital expenditure and Rio Tinto's share of the capital expenditure of joint operations but exclude equity accounted units. The product analysis above excludes amounts that are not directly attributable to individual commodities.
4. Operating assets by product recorded above are the net assets of subsidiaries, joint operations and the Group's share relating to equity accounted units adjusted for net (debt)/cash and post-retirement assets and liabilities, net of tax, after the deduction of non-controlling interests. The product analysis above excludes amounts that are not directly attributable to individual commodities.
5. Scope 1, 2 and 3 emissions are measured on an equity basis and align to the Rio Tinto ownership % share used to record production values. For additional information on our emissions methodology, see our *2024 Sustainability Fact Book*.
6. The emissions in this table are Scope 1 and 2 GHG emissions (market-based) for the operating sites producing the commodity listed. The total differs from the full Group share reported numbers as these exclude development, closure sites, marine and corporate emissions.
7. Copper production from Oyu Tolgoi, Rio Tinto Kennecott and Escondida has been certified under the Copper Mark system. The Copper Mark certification for Escondida has been obtained via BHP which is the majority partner.
8. For a list of assets certified under the Aluminium Stewardship Initiative, see our *2024 Sustainability Fact Book*.
9. Minerals comprise titanium dioxide slag (OTM), borates (TNM), salt (TNM) and diamonds (TNM).
10. 2024 mineral production is as follows:
    (a) Titanium dioxide slag ('000 tonnes): 990 (2023:1,111)
    (b) Borates ('000 tonnes): 504 (2023: 495)
    (c) Salt ('000 tonnes): 5,823 (2023: 5,973)
    (d) Diamonds ('000 carats): 2,759 (2023: 3,340)
11. Iron Ore Company of Canada continues to be reported at Rio Tinto share.

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Scope 1 and 2 emissions: Reduce emissions from our own operations

We aim to reduce our net Scope 1 and 2 emissions by 50% by 2030 (relative to 2018 levels), and to reach net zero by 2050.

We follow the principles of the mitigation hierarchy, prioritising abatement of emissions from electricity generation and use, process emissions and direct fuel consumption. In line with the IFRS standard on climate-related disclosures (S2), we report gross and net emissions separately. Our target applies to our net operational emissions on an equity share basis. Our gross Scope 1 and 2 emissions reductions are expected to be at least 40% by 2030, and the use of carbon credits towards our target will be limited to 10% of our 2018 baseline. In 2024, our net emissions include the use of Australian Carbon Credit Units (ACCUs) by our Australian assets to comply with the Safeguard Mechanism in the calendar year 2024[1]. Our targets cover more than 95% of our operational emissions and are calculated using the market-based Scope 2 method. To ensure a focus on real reductions and comparability over time, we adjust our 2018 baseline to exclude emissions reductions achieved by divesting assets and allow increases associated with acquisitions.

While there is no universal standard for determining the alignment of targets with the Paris Agreement goals, we concluded that our Scope 1 and 2 target for 2030 was aligned with efforts to limit warming to 1.5°C when we set it in 2021. At that time, KPMG provided limited assurance over the alignment of this target with efforts to limit warming to 1.5°C. Our targets were not set using a sectoral decarbonisation approach as there was no sector-specific methodology then. This remains the case today.

We use emissions metrics and other measures to track our progress towards our targets. We monitor and report this progress to the Executive Committee through an internal quarterly reporting process, which includes operational emissions and progress on abatement projects across our decarbonisation programs. KPMG provided limited assurance over our 2024 progress reporting against our Climate Action Plan in addition to its reasonable assurance of our Scope 1 and 2 emissions, and limited assurance of Scope 3 emissions. KPMG's statement is included at the end of the report.

The 4 most significant sources of operational emissions are:

- electricity (purchased and generated) - 37%
- carbon anodes in aluminium and reductants in titanium dioxide furnaces - 25%
- fossil fuels for heat at our processing plants and alumina refineries - 23%
- diesel consumption by our mining equipment and rail fleet - 13%.

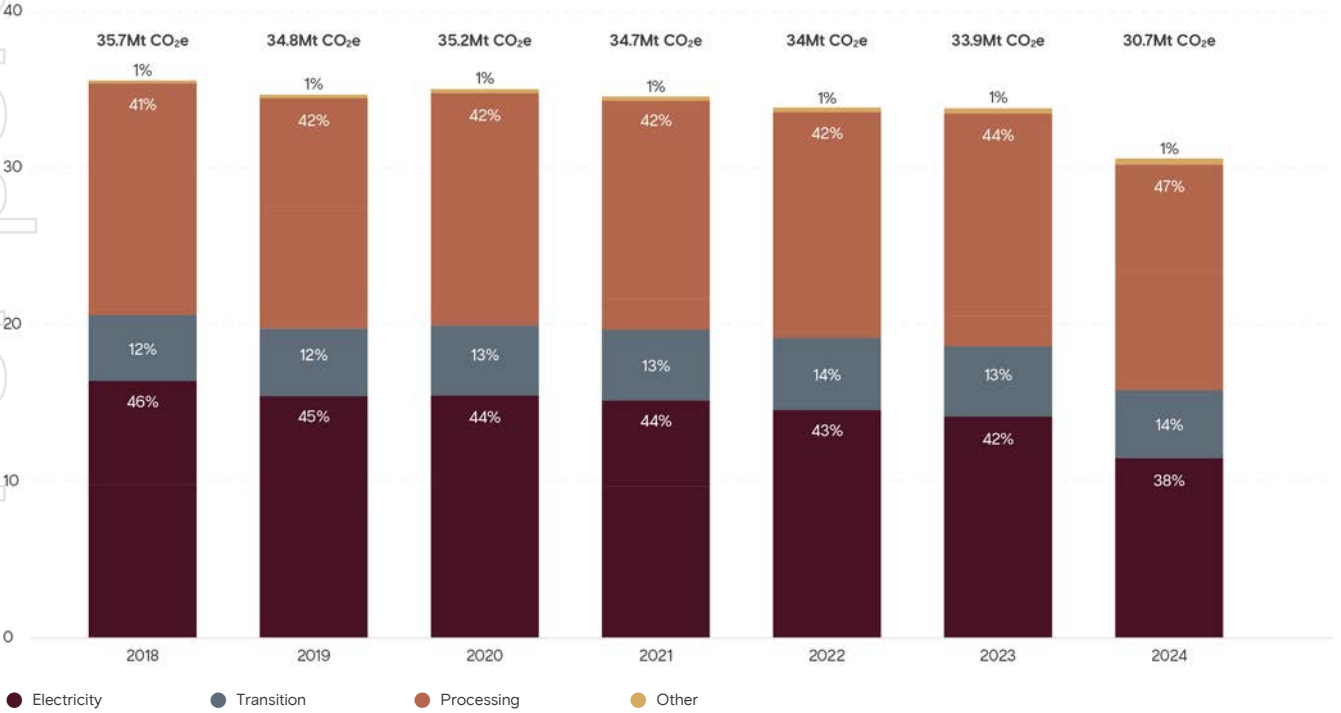
While our asset portfolio has evolved since 2018, as we orient our growth to transition materials, the share of emissions from our different commodities has remained stable. Today, approximately two-thirds of our emissions are generated from our Aluminium business.

Our Group-wide consumption of electricity is approximately 4 times that of other global diversified mining majors, due to the high energy intensity of the Aluminium business. However, 78% of the electricity we use is from renewable sources and we are making investment and supply decisions to increase this to around 90% by 2030.

2024 gross Scope 1 and 2 emissions (adjusted equity basis)

30.7Mt CO_2e

2023: 33.9Mt CO_2e (adjusted for acquisitions)



Note: Emissions are presented on an adjusted equity basis.

1. The compliance period for the Safeguard Mechanism is from 1 July to 30 June and does not align with our calendar year reporting. So the carbon credits used towards our 2024 net emissions calculation include Australian Carbon Credit Units (ACCUs) that were retired for compliance for the period 1 January to 30 June 2024 plus a projection of the number of ACCUs we expect to retire for the period 1 July to 31 December 2024. See Nature-based solutions section on pages 56-57 for further detail.

Progress, lessons learned and our approach today

Our approach to decarbonising our operations has evolved since 2021 when we first set our targets and CAP. This is partly due to the challenge of developing new technologies and implementing large-scale physical infrastructure projects. We have also found opportunities to contract renewable electricity and use renewable diesel.

Highlights from our 2021 CAP	Progress, lessons learned and our approach today
Aim to install 1GW of wind and solar capacity in the Pilbara (using our capital)	The emissions reductions we have achieved since 2018 are mostly the result of decarbonising power, but developing large-scale renewables projects in the Pilbara has taken longer. We need time to engage with Traditional Owners and to find appropriate sites. In addition, as we do not expect to deploy battery-electric haul trucks in the Pilbara before 2030, we now estimate we require approximately 600-700MW of renewable power capacity to displace 80% of our gas consumption for power generation. We are making progress and have now completed construction of a 34MW solar power plant at Gudai-Darri along with battery storage at Tom Price. Together with the Ngarluma Aboriginal Corporation, we are progressing the development of an 80MW solar PV facility near Karratha. We are also exploring a renewable energy project with the Yindjibarndi Energy Corporation (YEC) consisting of 75MW of solar on a greenfield site near Millstream Chichester National Park. Beyond the Pilbara, we have made substantial progress on renewables deployment around the world with our own capital investments and through commercial agreements. This includes projects at Kennecott and Diavik, PPAs at Gove, Amrun, QIT Madagascar Minerals, Richards Bay Minerals, Escondida and in the US. In addition, we have procured and retired bundled and unbundled energy attribute certificates (EACs, including Renewable Energy Certificates and Guarantees of Origin) for select locations around the world, though these represent less than 5% of our total electricity use.
Develop green repowering solutions for the Boyne Island and Tomago smelters	For our Gladstone assets, we have signed PPAs for a combined 2.2GW of renewable energy, catalysing the development of new large-scale renewable energy in Queensland. Government support for repowering is needed to maintain competitiveness of the highly energy-intensive, low-margin smelters. We secured a standalone support agreement with the Queensland Government in August 2024, and in early 2025, the Australian Government announced an aluminium production credit to help sustain and grow aluminium smelting in Australia. Together these initiatives provide critical support for our Gladstone aluminium operations' transition to renewable energy. Early in 2024, Tomago launched a Request for Proposal process seeking proposals from market participants for renewable energy and storage solutions. The process highlighted significant cost and schedule complexities in the New South Wales energy market, introducing risks to finding a competitive repowering solution for the Tomago smelter. We continue to partner with industry, energy market participants and governments to identify repowering pathways for a competitive, low-carbon future for aluminium in New South Wales.
Advance the deployment of zero emissions trucks	We continue to work with BHP, Caterpillar and Komatsu to accelerate the development of battery-electric haul trucks. In addition we have invested in the deployment of 8 smaller-sized battery-swap electric trucks at Oyu Tolgoi. However, we do not expect wide-scale deployment if large-scale electric trucks before 2030 due to technology maturity globally. Given this slower pace of technology development, we are developing alternative solutions in the interim. We have invested in renewable diesel with Kennecott switching to this in 2024, following the successful transition at our Boron mine in California the year before. We have also started to develop our own biofuel supply with an investment in 3,000 hectares in Queensland, Australia to plant Pongamia saplings.
Advance the use of hydrogen in our alumina refineries	Research, development, scale-up and deployment of new low-carbon technology can take decades and can also take longer than expected, particularly for industrial heat and process emissions that are hard to abate. Even if successful developments are unlikely to contribute substantial emissions abatement before 2030 target but will need to be commercially viable for widespread deployment to reach net zero by 2050. We are working with Sumitomo and the Australian Renewable Energy Agency (ARENA) to build a 2.5MW electrolyser at our Yarwun refinery to supply more than 125 tonnes of hydrogen per year and test its use in alumina calcination. In addition, we are progressing double digestion technology at Queensland Alumina Limited. This will involve process changes that can lower the temperature of the process and reduce energy consumption and carbon intensity. Beyond alumina refining, we are also trialling BlueSmelting™ at our RTIT Quebec Operations - a pre-reduction process for ilmenite. Our new joint venture with Aymium, Évolys Québec Inc. will manufacture a biocarbon product sourced from biomass residues, as an alternative for anthracite currently used in ilmenite smelting processes at Rio Tinto's Critical Minerals and Metallurgical Complex in Sorel-Tracy.
Bring ELYSIS™ to commercial scale by 2024 at our Alma smelter	ELYSIS™ is a breakthrough technology that removes the carbon anodes in aluminium smelting - a process that has been used globally for over 100 years. It continues to experience the scaling challenges and learning rates typical of major technology changes. We continue to make progress in developing ELYSIS™ technology with our partners and in 2023 commissioned prototype (100kA) cells at Alma. We continue work to commission commercial scale 450kA cells - this is now expected in 2025, having originally aimed for commissioning in 2023. In addition, we are also investing in the deployment of 10 smaller-scale 100kA cells at Arvida.
Build capability to invest in and develop nature-based solutions projects	Our abatement projects continue to be complemented by investment in nature-based solutions and the purchase of high-quality carbon credits. We are also applying our integrity screening criteria to the ACCUs we procure to meet our Safeguard Mechanism obligations in Australia. The IFRS S2 reporting standard now requires that companies with net emissions targets should be explicit about the gross reductions they are targeting and provide the reader with detail on the quality of the carbon credits that are used towards the net emissions targets. The use of carbon credits towards our 2030 target is limited to up to 10% of our 2018 emissions baseline. For more information about our use of offsets, see pages 56-57.
We estimated capital investment in decarbonisation of $7.5bn by 2030	Our target to reduce emissions by 50% by 2030, relative to 2018 levels, remains unchanged. However, we believe achieving this will require less capital investment, which is now estimated at the lower end of $5-6bn over the period 2022-2030, and more operating expenditure. We need to be disciplined about our capital investment and make a commercial case for each mitigation project. Our experience shows that we cannot solve this simply by allocating capital. To accelerate our emissions we will take advantage of commercial solutions that can be ready in the market this decade which includes the use of renewable diesel in our mining fleets, or PPAs for renewable electricity alternatives. Since 2021, our energy contracts have underpinned new investment in wind, solar and energy systems with an aggregate value of over $8bn.
Incorporate climate into the Chief Executive's short-term incentive plan (STIP) up to 5% of the total	Decarbonisation makes up 10% of our STIP today and now applies to 27,000 of our people, including our CEO. It has also been incorporated into senior leadership Performance Share Awards in the long-term incentive plan (LTIP).
Report emissions using a hybrid of location- and market-based approaches	In 2023, we updated our reporting methodology and now use market-based Scope 2 emissions in our primary metric and target. Consequently, the Bell Bay Aluminium and ISAL smelters, which are physically co-located and contracted with hydropower facilities, now report emissions under this new methodology.

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We face two underlying challenges in delivering net reductions in absolute emissions. First, production growth increases emissions and we need additional abatement to address this. This growth may be brownfield (such as in the Pilbara) or greenfield (such as Simandou). And secondly, in our existing mining operations, increasing work indexes, with longer haul distances and declining ore grades, typical for the mining sector, mean that more energy is required to achieve the same level of production output.

Our adjusted gross Scope 1 and 2 emissions were 30.7Mt CO_2e in 2024. In 2024 we made significant progress and reduced our emissions by 3.2Mt CO_2e. This has primarily been achieved by new renewable energy contracts, including the limited use of unbundled renewable energy certificates in locations where new generating assets are under development or where power purchase agreements have been agreed.

In addition we have made commitments to projects that are expected to deliver abatement of around 3.6Mt CO_2e per year in future periods mostly through renewable electricity and biofuels. In addition, imminent investment decisions could deliver further abatement by 2030 and include new energy solutions at BSL and fuel-switching and electrification in the Queensland Alumina Limited (QAL) and Yarwun alumina refineries.

Our 2025 target is to reduce net emissions by 15% below 2018 levels. In 2023, we reported that while we expected to have committed to abatement projects representing more than 15% of group emissions, that delivered abatement would lag this target. Since then, we have executed a number of commercial partnerships and transactions that have allowed us to decarbonise faster. We have now reduced gross operational emissions, by 14% below our 2018 levels. After applying high integrity offsets our net Scope 1 and 2 emissions are 17% below our 2018 baseline.

Progress on abatement will not be linear. Delays are the result of a range of factors, including engineering and construction challenges, pace of development of new technology and energy systems in the locations in which we operate, and the need to carefully balance our ambitions with the needs of our local communities and stakeholder groups. In response to this, we continue to work with our partners, governments and others to progress abatement opportunities, and, in parallel, we are adopting commercial solutions, such as PPAs and biofuels, that can deliver emissions reductions faster. We anticipate abatement from these to rise between 2025 and 2030.

Our roadmap to 2030

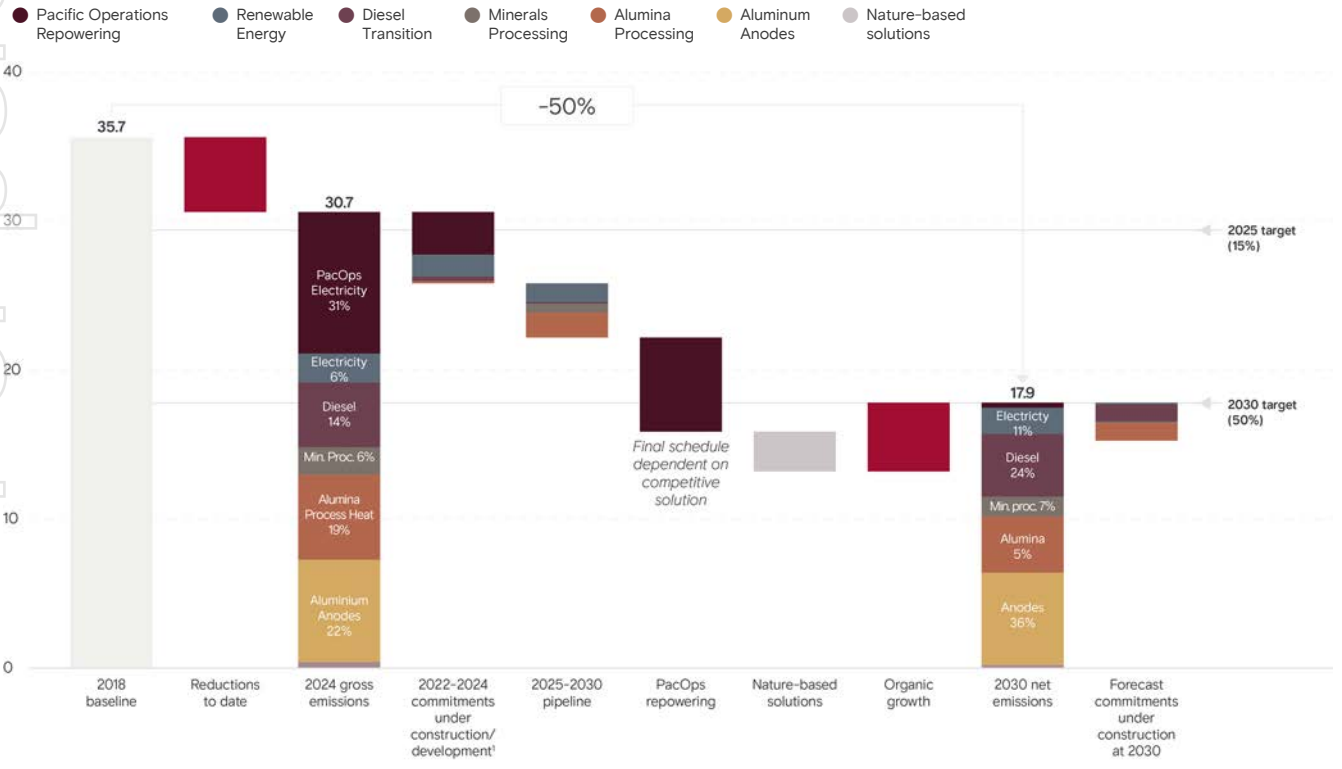
Between now and 2030, the most significant opportunities to reduce our Scope 1 and 2 emissions are to switch the electricity we generate or purchase to renewables, and to address process heat emissions from our alumina refineries. We have a pipeline of projects and committed investments that support our 2030 target of a 50% reduction in emissions. To reach our 2030 target, our single largest lever – accounting for around one-quarter of our emissions – is at the Boyne and Tomago aluminium smelters in our Pacific Aluminium Operations.

We must also make progress with other key projects in our pipeline related to renewable electricity contracts (for example Richards Bay Minerals PPAs) and alumina processing heat reductions (for example QAL double digestion), to meet our 2030 target. Production growth and growth from new projects also need to be accommodated within our absolute emissions reduction target. Collectively, this represents around 4.6Mt CO_2e to our baseline to 2030.

In addition, we now expect to use high-quality carbon credits from nature-based solutions towards our Scope 1 and 2 net emissions target to 2030. These will be limited to up to 10% of our 2018 baseline emissions and are expected to be predominantly carbon credits (ACCUs) used by our Australian operations for compliance with the Safeguard Mechanism. Our emissions reporting will continue to transparently distinguish between our gross operational emissions and net emissions for the Group, as well as meeting transparency standards regarding the volume and type of carbon credits retired.

Pathway to 2030 target

(Mt CO_2e equity basis)



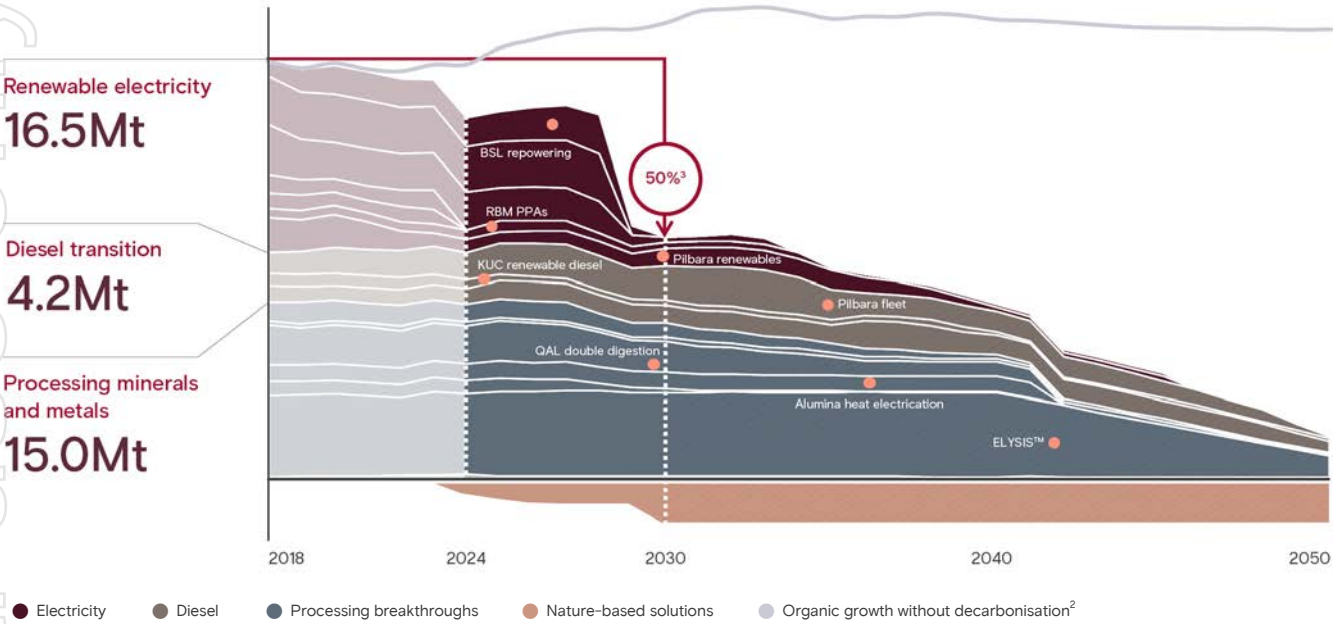
1. 2022-2024 commitments exclude 1Mt abatement for projects either fully or partially captured in 2024 actuals, including Oyu Tolgoi RECs, Kennecott renewable diesel, Boron renewable diesel and Gudai-Darri solar.

Our roadmap to 2050

We are targeting net zero emissions from our operations by 2050, with a pathway to net zero for each area of our carbon footprint. This is challenging given approximately half of our Scope 1 and 2 emissions will require technology breakthroughs, but we are determined to be a catalyst for their development.

Group decarbonisation pathway[1]

(Mt CO_2e equity basis, 2018 baseline)



1. Totals shown represent 2018 baseline emissions, reflecting increased equity at BSL, NZAS.
2. Baseline emissions extended post-2040 using assumed asset life extensions.
3. Represents net emissions reduction vs 2018 baseline.

By 2030, we expect to have made significant reductions in our electricity-related emissions (both Scope 1 and Scope 2). Beyond 2030, the outlook for emissions abatement is more uncertain. However, we have achieved breakthroughs in low-carbon technology that provide us with at least one visible pathway to net zero for all our major sources of emissions. This is a significant achievement. However, technology development is complex and these breakthroughs may not all turn out to be scalable and competitively deployable. As such, we continue to pilot and demonstrate these technologies with our partners, while maintaining research and development initiatives across industry to find alternatives that may prove more promising. Given the uncertain timing of suitable, proven and commercial-scale technology, our roadmap to 2050 allows for future opportunities to be defined post-2040.

Carbon removals

By 2050, small sources of hard-to-abate emissions may remain and will therefore require carbon removals to achieve net zero. This may be through natural or technological removals and storage.

In the short to medium term, we are investing in high-integrity nature-based solutions in the regions where we operate, and will voluntarily retire carbon credits to complement other decarbonisation investments (see pages 56-57 for further detail).

In the medium to long term, technological removals may offer a more permanent solution to any remaining emissions from fossil fuel consumption. We are also exploring the potential of carbon capture and mineralisation technologies. In 2024, we focused on finding the best technologies to capture the low concentration carbon dioxide (CO_2) from our aluminium smelters' flue gas. This requires either the adaptation of direct air capture technologies to higher concentration CO_2 or the adaptation of point source technologies to lower concentrations. In both cases, the technology readiness level is often low.

In early 2025, we signed a partnership agreement with Hydro to identify and evaluate carbon capture technologies for future implementation in the aluminium smelting process. Separately, in partnership with Carbfix, the characterisation of the ISAL site for mineralisation is progressing, aiming for first injection in 2028.

The assessment of the CO_2 mineralisation potential of our co-owned Tamarack project in Minnesota has progressed with the completion of a 1,137 meter exploratory well. More work is planned in 2025 to investigate the carbonation behaviour of the rock.

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Action to reduce our emissions

The three main areas of our abatement work are: firstly, developing renewable electricity solutions at our Pacific Aluminium Operations and other assets that rely on gas or coal-based power; secondly, transitioning away from diesel in trucks, trains and mobile equipment; and thirdly, tackling hard-to-abate emissions from processing minerals and metals. Additionally, we are developing and investing in nature-based solutions projects.

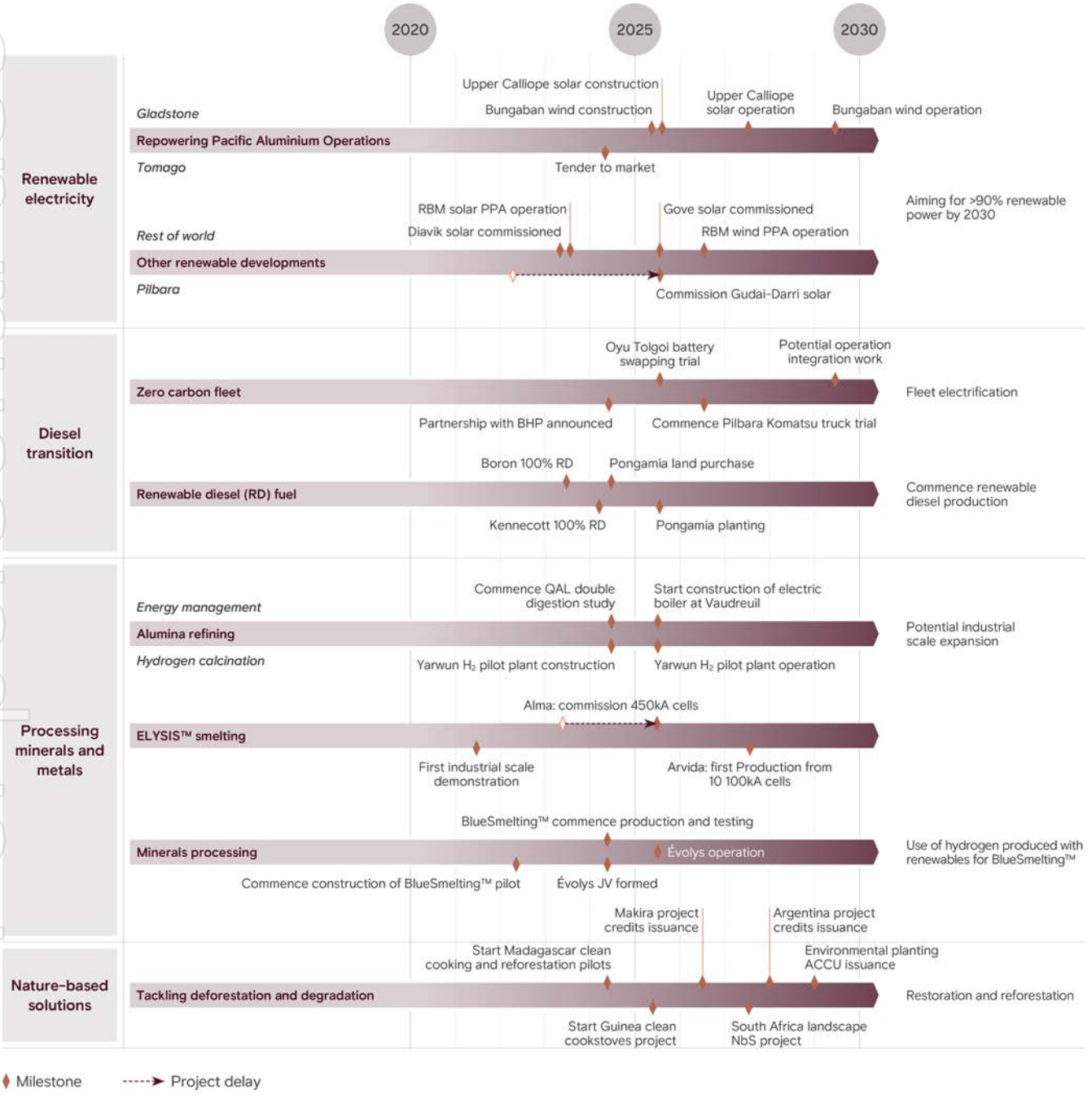
Progress in 2024	Action in 2025
Renewable electricity	
Repowering Pacific Aluminium Operations	
– Announced 2 renewable PPAs for 2.2GW to supply our Boyne aluminium smelter in Gladstone and secured in-principle Queensland government support. – Further explored commercial sourcing strategy at Tomago to secure an energy solution for the energy supply contract which expires on 31 December 2028. – Signed long-term PPAs to supply our New Zealand Aluminium Smelters with electricity generators for a total of 572MW of hydro electricity.	– Secure remaining renewable and firming portfolio for Boyne smelter, pending government support. – Continue to engage with governments and energy market participants on the future energy supply for Tomago. – Develop a renewable energy strategy for Gladstone alumina refineries (previously 2024).
Other renewable electricity developments	
– Commenced construction of solar PV at Gove (10MW) and Amrun mine (12MW). – Executed wind Virtual Power Purchase Agreement (VPPA) (78.5MW) at Monte Cristo in the US to abate our regional Scope 2 emissions. – Completed construction and commenced operating Diavik diamond mine solar plant (3MW). – Commissioned a 5MW solar plant and commenced construction of Kennecott solar Phase 2 (25MW). – Signed a 230MW wind PPA at Overberg for Richards Bay Minerals (RBM). – Signed a 140MW wind PPA at Khangela for RBM. – Construction was progressed on the 148MW solar PV project at Bolobedu for RBM (PPA signed in 2022). – Commenced a pilot program for rooftop solar installation at our operations in the Pilbara. – Executed new contracts for EACs across global assets while developing new PPAs and Build Own Operate (BOO) solutions.	– Complete commissioning of solar PV at Amrun and Gove. – Complete construction of Kennecott solar Phase 2 (25MW). – Complete construction of the 16MW wind facility at QIT Madagascar Minerals. – Commence construction of the 230MW wind PPA at Overberg for RBM. – Finalise an agreement to secure energy from a 75MW solar farm being developed by Yindjibarndi Energy Corporation. – Progress development of Karratha Solar Farm (80MW) with Ngarluma Aboriginal Corporation. – Execute additional renewable energy PPAs, while construction continues on the 78.5MW US wind VPPA.
Diesel transition	
– Transitioned 100% of Kennecott heavy mining equipment to renewable diesel (95% of operations transitioned). – Collaborated with BHP on battery-electric haul trucks pilot program, including receipt of trucks for local options and assembly in Western Australia. – Acquired land to pilot production of renewable diesel in Australia, using Pongamia trees. – Developed a partnership with China's State Power Investment Corporation (SPIC) to demonstrate a fleet of battery swap electric haul trucks and associated infrastructure at Oyu Tolgoi.	– Progress Caterpillar battery-electric haul truck trial at BHP Jimblebar mine site in the Pilbara. – Deploy fleet of battery swap electric trucks at Oyu Tolgoi. – Progress planting of Pongamia saplings in Queensland, Australia.
Processing minerals and metals	
Aluminium anodes	
– Progressed start-up of the industrial scale 450kA ELYSIS™ cells at Alma. – Announced the project at Arvida for 10 ELYSIS™ cells operating at 100kA, a $285 million investment in partnership with Investissement Québec. Significantly progressed on site preparation and ordering long lead items for this project.	– Commission an industrial scale 450kA cell at Alma (previously 2024). – Perform further tests of the 100kA cell at Arvida. Finalise technical package, site preparation and building construction at Arvida for the additional 10 cells.
Alumina processing	
– Completed double digestion pre-feasibility study at QAL. – Completed 95% of detailed design and engineering for the Yarwun Alumina refinery hydrogen calcination project, including awarding major construction packages and commencing electrolyser site works. – Progressed feasibility study for electric boiler project at Vaudreuil after delays due to power requirements and scope changes. – Progressed electric steam and thermal energy storage (TES) studies for refineries. – Executed bio-pellet trials at Yarwun and progressed energy crop growing trials.	– Start QAL double digestion feasibility study (previously 2024). – Begin hydrogen calcination trials at Yarwun. – Final approval of, and commence work on, electric boiler project in Vaudreuil. – Commence small-scale electric calcination pilot in Vaudreuil.
Minerals processing	
– Validated phase 1 of BlueSmelting™ technology for ilmenite ore and safely transitioned from smelter gas to hydrogen. – Established new joint venture Évolys™ to manufacture biocarbon products. – Completed long-term 5% replacement trials to qualify biocarbon as a raw material at RBM and RTIT Quebec Operations. – Completed an industrial trial of replacing coke with biocarbon (25% replacement) for pelletisation.	– Develop bioenergy supply sources (biofuel and biocarbon) to support the industrial ramp-up of the new joint venture Évolys™. – Complete phase 2 of the BlueSmelting™ technology validation. – Complete the installation and commissioning of an electric boiler at IOC.

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Progress in 2024	Action in 2025
Nature-based solutions	
– Feasibility studies completed in Guinea, with South Africa study delayed by elections and now due in mid-2025. – Dual pilot-feasibility approach continued in Madagascar for the protection and restoration of the Tsitongambarika Forest including clean cooking, reforestation and conservation activities, with learnings to be applied to other regions in 2025. – Voluntary agreements finalised, including an investment in the Makira Natural Park REDD+ Project in Northern Madagascar, through a partnership with the Wildlife Conservation Society and Everland. – Finalised ACCU offtake agreements for high-quality human-induced regeneration and with savanna fire management project developers. Invested in the Silva Carbon Origination Fund securing access to large-scale, high-integrity environmental planting ACCUs. – Published details on our project development and carbon credit sourcing strategy, including our due diligence process and planned volumes.	– Assess South Africa feasibility study and move into pilot phase if feasible. – Deliver first cookstoves for Guinea and Madagascar clean cooking pilots. – Begin pilot programs for reforestation in Guinea and Madagascar. – Initiate pilot-feasibility study for a sustainable agro-forestry project in Guinea. – Secure offtake agreement for Argentina native grasslands management carbon project. – Expand our environmental planting ACCU pipeline in Australia.

Operational decarbonisation project tracker



Milestones post-2025 are indicative, based on current goals and plans, subject to investment decisions and so they may change – there is increasing uncertainty further into the future.

Renewable electricity

11.5Mt CO_2e
emissions from power generation (2023: 14.2Mt CO_2e)

28%
percentage of Group emissions from electricity at Boyne and Tomago smelters and Gladstone Power Station

78%
percentage of electricity from renewable sources (2023: 71%)

$79m
decarbonisation spend on renewable electricity projects in 2024

Repowering Pacific Aluminium Operations

Our Boyne and Tomago Smelters operate in a third-party-operated coal-based power grid which is undergoing a complex transition to renewable generation sources.

Securing long-term renewable power solutions for the smelters supports the energy transition required for the Gladstone region to maintain jobs and increase opportunities for industrial growth.

Emissions reduction across the aluminium value chain in Australia is complex. It relies heavily on the availability of large-scale, competitive, firmed renewable power, alongside significant investment, collaboration and partnership with governments, technology developers and industry peers to support innovation breakthrough. We cannot do this alone.

Contracts for the current supply of electricity to our Boyne smelter expire in 2029, and for Tomago by end of 2028, and the smelters must develop low-cost renewable energy solutions to maintain their long-term viability. Decarbonising these assets requires solutions supported by state and federal governments.

Our Boyne smelter requires up to 975MW of power, equivalent to 3-4GW of high-quality wind and solar capacity paired with appropriate and competitive firming assets and contracts.

In 2024, we announced PPAs for a combined 2.2GW of renewable energy to repower BSL, catalysing the development of new large-scale renewable energy in Queensland. These comprise 1.1GW of solar electricity from European Energy's Upper Calliope solar farm to be built near Gladstone and 1.1GW from Windlab's Bungaban wind project. Once the projects are developed, they could generate energy equivalent to 10% of Queensland's current power demand.

In August, we made arrangements with the Queensland Government on a support package for Boyne Smelter to assist with the transition to a competitive and repowered future. These arrangements would come into effect in 2029. They are supported by the Australian Government's aluminium production credit as announced in early 2025, and contingent on our investment in further renewable energy and the approval of our joint venture partners.

Other renewable electricity developments

We rely on renewable and non-renewable electricity to power our mines, processing plants and supporting infrastructure. We are working to displace gas and coal-fired power with solar PV, wind and other renewable technologies.

We are focusing on the transition to renewable energy sources in 5 main regions: the Pilbara in Western Australia, RBM in South Africa, bauxite operations in Weipa, Australia, Kennecott in the US, and Oyu Tolgoi in Mongolia. Total electricity-related emissions from these assets were 0.9Mt CO_2e in 2024.

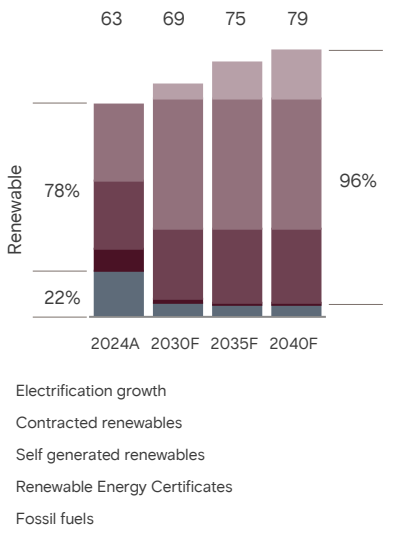
In 2024, RBM signed two renewable energy agreements: a 20-year 140MW wind PPA at Khangela and a 20-year 230MW wind PPA at Overberg. We also purchased EACs to cover the period until these assets are commissioned. At Kennecott, a 78.5MW wind VPPA and a 25MW solar PV facility were approved. Additionally, commissioning of a 5MW solar PV plant was completed in 2024, after undergoing rectification works and commissioning throughout the year. Construction on a second 25MW plant started in late 2024. At Amrun, a 12MW solar farm is under construction, and at Gove, 10MW of solar is being built.

Decarbonising the electricity at each of these locations has varying degrees of complexity, including whether the power is externally or internally generated, land access requirements (including permitting and Traditional Owner engagement) and availability of commercial solutions. A 100MW solar PV facility can require a land area of approximately 200 hectares, equivalent to the operating footprint of one of our mines in the Pilbara. Although renewables benefit from established construction methods, are lower technical risk and relatively low impact on the ground, the sheer scale of the renewables footprint means that we must take the time required to find suitable sites and engage with Traditional Owners.

We invest our own capital in renewable energy projects while also using other renewable energy procurement methods (such as PPAs and EACs) that align with global standards and practices. Under the GHG Protocol, renewable electricity must either have an EAC or be derived from renewable generation that is not contractually committed to another party. In alignment with the GHG Protocol we report eligible energy supplies as renewable and include them in our Scope 2 emissions reporting.

Group electricity use

(TWh, equity basis)



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Diesel transition

4.4Mt CO_2e
Scope 1 and 2 emissions in 2024 (3% decrease from 2023). The Diesel Transition program also addresses marine fuel and some other smaller emissions sources.

$64m
decarbonisation spend on diesel transition programs in 2024

5%
percentage of global diesel supply transitioned to renewable diesel

1.6 billion litres
diesel consumed at our major managed operations in 2024

Diesel use from our mobile equipment and rail fleet represents around 13% of our total Scope 1 and 2 emissions.

Although electrification is the preferred long-term solution for reducing diesel emissions, it is not technically or financially feasible at all mining operations today, or for all types of equipment. Electrification is well suited to our greenfield applications where we have large fleets, but less so to brownfield operations with smaller fleets, shorter mine life or other operational complexities. Complementary pathways are therefore in development and include the use of renewable diesel to more immediately reduce diesel-sourced emissions.

Electrification

The electric vehicles required to support meaningful emissions reductions for the mining industry are unique from those deployed in the transportation or logistics sectors, or consumer vehicles with fixed routes and operating conditions. Mining solutions must be adaptable to changing mine plans, supported by flexible charging locations and powerful enough to support intense work cycles with high operating hours and loads. Most importantly, they need to be safe, reliable and have sufficient battery capacity and run-time between charging cycles.

Charging infrastructure must also be dynamic and support evolving mine plans and equipment routes which may mean that charging stations cannot remain permanently in one location or must be complemented by mobile solutions. The charging network requires access to sufficient and reliable renewable energy.

In 2024, we progressed the following electrification activities:

1) **Battery-electric haul truck Pilbara collaboration**: We progressed our partnership with BHP to test battery-electric haul trucks in the Pilbara region. In 2025 and 2026 we will collect data on battery performance, charging systems, and overall productivity in Pilbara conditions, and share the information so we learn faster.
2) **China's State Power Investment Corporation (SPIC) partnership:** Battery swapping technology allows a battery-electric vehicle to quickly exchange a discharged battery pack for a fully charged one, instead of recharging the vehicle at a static charging station. The technology is already applied on haul trucks in mining operations across China. The 2-year project will demonstrate 8 mining haul trucks (91 tonne payload), 13 batteries (800kWh), and a robotic battery swap and charging station in non-production activities at the Oyu Tolgoi open pit copper mine in Mongolia.

Renewable diesel

Renewable diesel is a drop-in replacement fuel that can be used in existing equipment to significantly reduce emissions. While renewable diesel presents a compelling option, widespread adoption depends on development of a liquid market of sustainable feedstock. To support this, we are developing a sourcing strategy for commercially available renewable diesel from third-party suppliers while also developing organic supply options by identifying and cultivating sustainable feedstocks focusing on Australian-based options such as Pongamia.

In 2024, we progressed the following renewable diesel activities:

1) **Transitioned Kennecott operations to renewable diesel,** achieving 95% diesel displacement including all heavy mining equipment across the mine, concentrator, smelter, refinery and tailings.
2) **Continued renewable diesel use at Boron** following successful trials initiated in 2022.
3) **Purchased land for Pongamia seed oil feedstock generation pilot.** We acquired approximately 3,000 hectares of land in north Queensland to assess Pongamia viability and yield. We are partnering with Midway to oversee the planting and management of the Pongamia seed farms.

Given the potential timeframes and challenges associated with large-scale development and deployment of battery vehicles in some industries, policies must support market development and competitiveness of alternative fuels. The lack of a liquid market is a key constraint to widespread and accelerated use of alternatives to diesel fuels, both physically and economically. Support is needed to incentivise the production and use of biofuels at volume and grow this industry. Incentives could include support for research and development, pilot programs and direct support to landowners to develop advanced biofuel feedstock crops in suitable areas.

For further information see our climate briefing paper on transitioning our diesel fleet riotinto.com/climatechange

Processing minerals and metals

Aluminium anodes
6.9Mt CO_2e
(2023: 7.1Mt CO_2e)

Alumina refining
5.7Mt CO_2e
(2023: 5.8Mt CO_2e)

Minerals processing
1.8Mt CO_2e
(2023: 1.9Mt CO_2e)

$144m
decarbonisation spend on processing minerals and metals programs in 2024.

Aluminium anodes

We are working to develop a breakthrough aluminium smelting technology with no direct greenhouse gas emissions.

The ELYSIS™ partnership was established in 2018 with Alcoa, with support from Apple and the governments of Canada and Quebec, to develop the world's first direct emissions-free aluminium smelting process using inert anodes to replace carbon ones.

Work at Alma is now focused on scaling up the ELYSIS™ technology towards the demonstration of commercial-size cells. The smelting cells will operate on an electrical current of 450kA, which is the commercial scale for many large, modern aluminium smelters. As noted above, research and development is complex and sometimes takes longer than planned. Commissioning these cells was originally anticipated in 2023 but is now expected to be in 2025 due to delays in installing and commissioning some equipment. A plan is now in place to complete these crucial steps, and the fundamentals of the technology remain sound.

We also aim to grow capacity for our ELYSIS™ low-carbon smelting technology. Before 2030 our use of ELYSIS™ carbon free smelting technology will support new production and will not address emissions from existing carbon anodes. For all of our smelters, the deployment of ELYSIS™ technology is inextricably tied to the long-term plans for the underlying assets. For this reason, associated abatement is not currently reflected in the forecast 2030 plan, but we expect to phase out the use of carbon anodes at our smelters beyond 2030.

In June 2024, we announced an investment of $285 million to build a demonstration plant using the first ELYSIS™ technology licence, in partnership with the Government of Quebec. This plant will be built at the Arvida smelter in Quebec equipped with 10 carbon-free aluminium smelting cells operating at 100kA. The investment will support the ongoing development of the breakthrough ELYSIS™ technology and allow us to build expertise in its installation and operation.

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Alumina processing

The alumina refineries in Gladstone; Yarwun and QAL are the largest source of process heat emissions in the Group. The refineries are currently reliant on coal and gas to generate heat for digestion (75% of refinery emissions) and use in the calcination phase (25% of refinery emissions) of the process.

The successful reduction of emissions in our Australian alumina refineries relies heavily on technology development, capital investment and the availability of large-scale renewable energy. Our preferred decarbonisation strategy, based on technical merit and commercial viability, is a combination of energy management, fuel switching and electrification.

We are focused on reducing the emissions of the digestion phase through 3 main projects:

1) **Reducing baseload energy requirements through double digestion.** In 2024, we completed a double digestion pre-feasibility study at QAL. The feasibility study was approved in Q4 2024 and therefore commencement of the study work will now occur in 2025.
2) **Upgrading energy with heat pumps and mechanical vapour recompression (MVR).** At QAL, the order of magnitude study for waste heat recovery using MVR will commence in Q1 2025 and is planned to complete in Q2 2025. The project is expected to commence pre-feasibility in Q3 2025.
3) **Fuel switching through electric steam generation (including electric boilers and thermal energy storage)**:
   - Final approval of the electric boiler project in Vaudreuil is now expected in 2025.
   - At Yarwun, the thermal energy storage (TES) industrial demonstration project has seen continued discussion with the technology supplier Rondo and Australian Renewable Energy Agency (ARENA). This project is expected to move to a feasibility study in 2025, pending additional support from ARENA.
   - At Yarwun, we executed a bio-pellet trial. A feedstock growing trial continues in North Queensland. We are progressing several partnership opportunities for bio-based energy supply to Gladstone.

To reduce emissions in the calcination phase, we are focused on 2 main projects:

1) **Substituting natural gas with green hydrogen.** At Yarwun, the design and engineering for the hydrogen calcination project have been completed and construction is in progress. Trials to burn hydrogen in the calcination process are planned to commence in the second half of 2025.
2) **Electric calcination.** At Vaudreuil, an electric calcination pilot is planned to commence in 2025.

For our climate briefing paper on decarbonising our Australian alumina refineries, see riotinto.com/climatechange

Minerals processing

A large source of our process emissions arises from processing titanium dioxide feedstocks (TiO_2) in Canada and South Africa.

Finding new and innovative technologies to support the decarbonisation of these facilities represents both a challenge and an opportunity. Carbon abatement can be partially realised by transitioning from fossil fuels to renewable energy sources for heating and operating these facilities.

We are partnering with the governments of Canada and Quebec to support technological innovations to decarbonise our operations by up to 70% and strengthen the critical minerals and metals value chains through the production of titanium metal and scandium. The BlueSmelting™ demonstration plant, which started in April 2023, employs world-first technology developed by Rio Tinto, to reduce emissions from RTIT Quebec Operations.

If successful, the technology could be applied to our RBM operations in South Africa, which use the same smelting process. There are other potential applications for BlueSmelting™ technology in decarbonising steelmaking.

In 2024, the BlueSmelting™ technology was fully validated for QMM ilmenite ore at our RTIT Quebec Operations, and reduction gas was safely transitioned from smelter gas to hydrogen. Several ilmenite ores were tested with hydrogen and the first tests with iron ore from IOC have been successfully completed.

Scaling up low carbon technology for minerals and metals processing is expected to require significantly more renewable energy. Access to hydroelectric power in Quebec requires support from the government-owned provider. In a tight market, access to this supply could be limited and the negotiation period can be time-consuming. Support to streamline discussions and consideration of the supply of additional renewable energy to hard-to-abate Canadian industries, where it can have the greatest impact, could underpin further investment in breakthrough technologies.

In 2024, we announced a new joint venture with Aymium named Évolys. We will manufacture a metallurgical biocarbon product to reduce carbon emissions in large-scale industrial processes. The biocarbon product will be used at RTIT Quebec Operations as an alternative to anthracite.

Biocarbon trials were successfully carried out at RBM and RTIT Quebec Operations sites this year, thus completing industrial qualification. And, at IOC, we completed a plant trial of substituting coke with biocarbon.

In 2025, we aim to develop bioenergy supply sources (biofuel and biocarbon) to support the industrial ramp-up of the new joint venture Évolys™. We also plan to complete phase 2 of the BlueSmelting™ technology validation and the installation and commissioning of an electric boiler at IOC.

For further information, see our climate briefing paper on decarbonising our minerals processing riotinto.com/climatechange

Nature-based solutions

Nature-based solutions and carbon credits decarbonisation spend[1]

$70m

(2023: $45m)

In 2022, we set up a team dedicated to developing and investing in nature-based solutions near our operations, because we believe they are a win for people, nature and climate. Over the last 2 years, we developed our high-integrity criteria – based on our own standards as well as international best practice, guidance and principles. We have identified new projects to develop and existing ones to scale up, and partnered with NGOs and other experts to deliver our program. Today, we are on track to enable 500,000 hectares of high-integrity nature-based solutions across Argentina, Australia, Guinea, Madagascar and South Africa by the end of 2025.

These projects are enablers for activities that support sustainable livelihoods for the communities where we operate, while protecting and restoring nature, and delivering high-quality carbon credits. Our projects complement structural abatement.

How we use carbon credits

We anticipate that we will retire approximately 1.1 million Australian Carbon Credit Units (ACCUs) for compliance with the Safeguard Mechanism for the calendar year 2024.

In alignment with our updated CAP, we will limit the use of voluntary and compliance carbon credits towards our 2030 climate target to up to 10% of our 2018 baseline emissions (~3.6 million). Carbon credits retired as offsets towards our climate targets must pass our due diligence assessment, including meeting our high-integrity criteria.

See our *2024 Scope 1, 2 and 3 Emissions Calculation and Climate Methodology* report and our *2024 Sustainability Fact Book* for further detail on our carbon credits retirement methodology.

How we source carbon credits

We source carbon credits in 3 ways[2]:

- We develop new projects – we work with local partners and communities to develop and implement new nature-based solutions projects that address nature loss, while generating carbon credits and delivering benefits for local communities.
- We invest in and scale up existing projects – through commercial investments with project partners, we provide capital and support the development and scale-up of nature-based solutions projects in our operating regions.
- We source high-integrity carbon credits through spot carbon credit purchases and long-term offtake agreements from nature-based solutions projects that meet our high-integrity criteria. We aim to source the highest quality credits available in the market.

All our investments and purchases are subject to our high-integrity criteria, which forms the basis of our due diligence process[3]. To assess projects, we analyse publicly available data, geospatial data, and data and models from project developers. We also hold question and answer sessions with developers, combined with site inspections. This information is assessed against our requirements, and if at any stage the project fails to meet our criteria, we do not proceed with the investment.

Our criteria include an assessment of the potential impact of our projects, seeking to ensure that they do not result in negative unintended consequences for people, communities, their heritage or natural ecosystems. The risks and opportunities identified in the assessment must be addressed, managed, tracked and assessed periodically during the project.

In 2024, approximately 15% of all projects assessed met our criteria, highlighting our commitment to building a high-integrity and diverse project pipeline for Rio Tinto, including a variety of methodologies across a wide range of ecosystems and land uses.

Our high-integrity criteria

In 2024, we updated and expanded our high-integrity criteria[4], using our own learnings and the latest international best practice, guidance and principles, including the Core Carbon Principles by The Integrity Council for the Voluntary Carbon Market and the International Union for Conservation of Nature Global Standard.

1) **Additionality:** The project and its outcomes are made possible by climate finance and would not have happened otherwise.
2) **Quantification:** The project can generate real carbon reductions, removals, or both, supported by robust accounting practices.
3) **Permanence:** The project can deliver permanent carbon reductions, removals, or both, and reversal risks are realistic and well-managed.
4) **Governance, Social and Ecological Safeguards:** The project takes an integrated approach to protecting or restoring nature, or both, while supporting community livelihoods and respecting human rights.
5) **Sustainable Development and Nature Positive Outcomes:** The project supports multi-decade sustainability outcomes and a diverse project pipeline for Rio Tinto.

We also published more detail about our due diligence process, including the questions we ask project developers to evaluate their projects.

This information, including specific steps we take when assessing ACCU projects, is available at riotinto.com/naturesolutions

Our voluntary projects

Our development and scale-up projects include landscape-level protection and conservation, restoration and land-use management activities, covering clean cooking initiatives, reforestation and afforestation, forest and grassland management, sustainable forestry and agro-forestry. These projects follow the latest available voluntary carbon market methodologies.

In 2024, in partnership with The Government of Madagascar, BirdLife International, Asity Madagascar and other partners, we continued to support the development of the Tsitongambarika Forest REDD+[5] project in Southeastern Madagascar through a $2.1 million investment. And we committed $16 million to the Makira Natural Park REDD+ Project in the north, through a new partnership with the Wildlife Conservation Society and Everland.

In South Africa, we partnered with Peace Parks Foundation, Sayari Earth and WILDTRUST to carry out a feasibility study for a large-scale, landscape level nature-based solutions project in KwaZulu-Natal Province. The feasibility report will be delivered by mid-2025, when we will decide on the investment.

In Guinea, we completed feasibility work for a clean cooking, fuel-switching program, now preparing to move into pilot phase. We also identified a high-quality reforestation project, and we are working with local partners to investigate REDD+ and mangrove restoration projects.

Through a $2.1 million investment over 2 years, we are also working with BirdLife International and Aves Argentinas to scale up a large native grasslands management carbon project in Argentina.

In Mongolia, we partnered with EarthShot, URECA and the Wildlife Conservation Society to investigate opportunities for sustainable forest management projects.

1. Spend on carbon credits is initially treated as capital and expensed when these are retired. See pages 157-160 where we describe our accounting policies and the classification of climate-related items.
2. In 2024, we updated the way we outline our sourcing strategy, relative to 2023, in which we referred to the following 3 pathways to securing carbon credits: investment in Australian Carbon Credit Units; the development of our own voluntary projects; and commercial agreements with voluntary carbon credit developers.
3. Compliance market projects delivering credits for retirement against our net emissions target are tested to the extent possible with information available. If available project information is not sufficient to make an informed assessment, the project will not be considered further or will be excluded from consideration until such time as sufficient information becomes available.
4. In addition to Additionality, Quantification, Permanence, and Social and Ecological Safeguards, we now consider Governance (within the latter) and added Sustainable Development and Nature Positive Outcomes.
5. United Nations Climate Change: 'REDD' stands for 'Reducing emissions from deforestation and forest degradation in developing countries. The '+' stands for additional forest-related activities that protect the climate, namely sustainable management of forests and the conservation and enhancement of forest carbon stocks.

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Meeting our regulatory obligations

We operate in many jurisdictions that have implemented carbon pricing regulations that cover our Scope 1 emissions. These include Australia, Canada, California, the EU and New Zealand where approximately 83% of our Scope 1 emissions or 64% of our total emissions are covered by these regulations.

Australia – Safeguard Mechanism

We have significant emissions in Australia, and are required to comply with the Safeguard Mechanism. We source high quality ACCUs from savanna fire management, human-induced regeneration (HIR) and environmental planting (EP) projects, while seeking to:

- **Partner for the long term with Indigenous project developers.** These projects can bring multiple benefits in addition to fire management and nature repair, with carbon finance reinvested into the communities to support training, employment and enhanced connection to Country. For example, near our operations in the Northern Territory we are supporting Arnhem Land Fire Abatement, an Aboriginal-created, owned and operated not-for-profit carbon business. Closer to our operations in Far North Queensland, we are supporting several projects, including the Aurukun Savanna Burning Project and the Oriners & Sefton Savanna Burning Project.
- **Continuously strengthen our due diligence process.** We use a range of geospatial tools and approaches to assess the design and performance of HIR and EP projects, including satellite imagery analysis and land cover classification. This enables us to assess the integrity of projects by monitoring, verifying and quantifying vegetation growth and land cover changes over time. Our site visits and engagement with developers give us additional information to support these assessments.
- **Invest in project development to reduce our overall reliance on spot transactions, move ACCU costs closer to the cost of development and have greater oversight of the integrity of projects.** This includes investing in carbon developers, such as Australian Integrated Carbon (in which we have a 14.15% interest) and the Silva Carbon Origination Fund, one of the first in Australia to provide investors with access to large-scale, high-quality carbon credits from land reforestation projects integrated with sustainable agriculture.

Other countries

Canadian Provinces have implemented different carbon pricing regulations, including the British Columbia Output-Based Pricing System and the Quebec Cap-and-Trade System which is linked with California's. In the California-Quebec system, offsets may be used for compliance purposes (limited to a fixed percentage of the allowances allocated to each installation).

Our aluminium smelters in Iceland and New Zealand are covered by Emissions Trading Systems. Offsets are not eligible for compliance use under these carbon pricing regulations.

Carbon credits retired towards net emissions calculation

Project description	Carbon credit type	Project type	Mitigation activity type	Certification scheme	Location	Vintage	Quantity retired for 2024 compliance	Quantity held for planned 2024 compliance (retired in 2025)[1]
Savanna fire management with Traditional Owner co-benefits	ACCU	Nature-based	Avoidance	Clean Energy Regulator	Australia	VY21-25	134,838	137,615
Human-induced regeneration	ACCU	Nature-based	Removal	Clean Energy Regulator	Australia	VY21-25	362,344	464,962
Total							**497,182**	**602,577**
Total credits counted towards net emission for the current reporting period (year-ended 31 December 2024)								**1,099,759**

1. This is estimated based on our Scope 1 emissions for the period 1 July – 31 December 2024. See our *2024 Sustainability Fact Book* and our *2024 Scope 1, 2 and 3 Emissions Calculation and Climate Methodology* for further detail.

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Scope 3 emissions: Partner to decarbonise our value chains

In 2024, our Scope 3 emissions were 574.6Mt CO_2e (equity basis), approximately 19 times higher than our Scope 1 and 2 emissions. This is compared to a restated 2023 number of 572.5 Mt CO_2e (equity basis).

The majority of these emissions (94%) stem from customers processing our products, particularly iron ore (69%) and bauxite and alumina (23%).

Specifically, emissions related to iron ore processing were 395.9Mt CO_2e in 2024, compared to 399.9Mt CO_2e in 2023. Emissions related to bauxite and alumina processing increased from 127.1Mt CO_2e (restated) in 2023 to 134.0Mt CO_2e in 2024, mostly as a result of increased bauxite sales.

Many of our customers have set public targets for their Scope 1 and 2 emissions (our Scope 3). About 55%[1] of our steel-producing customers by direct iron ore sales volume have set public targets to reach net zero or carbon neutrality by 2050. Meanwhile, nearly 33%[1] of our bauxite sales are to customers with net zero emissions targets, though only 11% of customers are aiming for net zero by 2050.

As things stand today, our analysis of our customers' targets and their governments' commitments to reduce their emissions shows a trajectory for those processing emissions that approaches net zero by around 2060. This is driven in large part by China (80% of Scope 3 emissions), which has pledged to be carbon neutral by 2060. Approximately 20% of our emissions come from countries such as South Korea and Japan, which have pledged to be net zero by 2050.

We are committed to partnering with customers and suppliers to help them achieve their targets earlier, reaching net zero by 2050. We have not set an overall Scope 3 emissions target due to the limited direct influence we have on the decarbonisation activities of our customers, required maturation of technology adoption and grid decarbonisation in customers' host countries. Instead, we are holding ourselves accountable on real and measurable commitments in the near term, which will ensure technologies are available to accelerate the longer-term transition.

Therefore, we have set near-term, action-oriented, and measurable targets in the areas where we believe we have agency and can support meaningful change. We take accountability and track our progress on individual projects and partnerships, and stay deeply connected across the value chain, ensuring we are up to date on developments and maintaining ambitious decarbonisation goals.

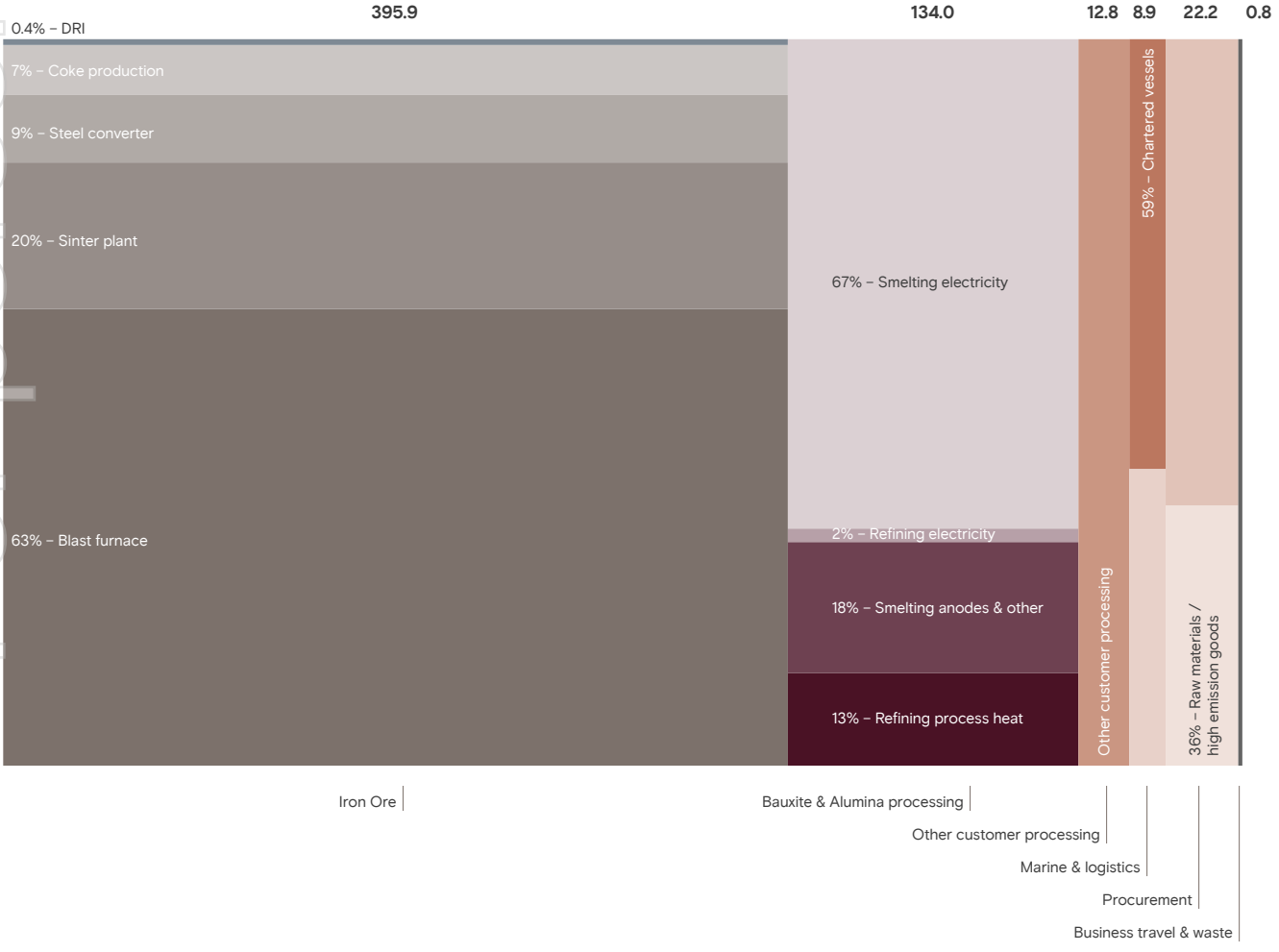
Our Scope 3 targets have not been derived using a sectoral decarbonisation approach. Instead, we have set these targets based on what we can achieve practically and effectively under each category. We engage KPMG to provide limited assurance on our Scope 3 emissions calculations and progress made in relation to the 4 most significant categories of our Scope 3 footprint: steel and aluminium value chains, shipping and procurement. The assurance statement is available on page 321.

1. This figure is dependent on our sales mix, so is not comparable year-on-year.

2024 Scope 3 emissions

574.6Mt CO_2e

(2023: 572.5Mt CO_2e)



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Steel value chain

Steel decarbonisation targets

- Support our customers' ambitions to reduce their carbon emissions from blast furnace–basic oxygen furnace (BF–BOF) process by 20–30% by 2035[1].
- Reduce our net Scope 3 emissions from IOC high-grade ores by 50% by 2035 relative to 2022[2].
- Commission the Biolron™ pilot plant by 2026[2].
- Commission a shaft furnace (DRI) + Electric Smelting Furnace (ESF) pilot plant by 2026, in partnership with a steelmaker.
- Finalise study on a beneficiation pilot plant in the Pilbara by 2026.

Steel is one of the most cost-efficient construction materials and is essential in low-carbon infrastructure, transportation and buildings. With approximately 2 billion tonnes of crude steel produced globally in 2024, the industry overall emits over 3.5 billion tonnes of CO_2e annually, equivalent to around 8% of global carbon emissions.

As one of the world's largest iron ore producers, we have a key role to play in decarbonising the steel value chain. We aim to accelerate the development and adoption of low-carbon emissions technologies that both reduce our Scope 3 emissions and future-proof our iron ore business. Our approach is built on a platform of collaboration across the value chain. We are partnering with over 40 partners in about 10 countries to build a portfolio of options, from iron ore processing to iron and steelmaking.

We prioritise our project portfolio based on parameters such as ore suitability, technical and commercial feasibility, and emissions abatement potential, to ensure a disciplined approach to investing capital and effort.

Our strategy is framed under 3 pathways across different time horizons:

1. Existing pathways

We are actively working with our customers to help reduce their carbon emissions from the current blast furnace (BF) process. Our initiatives include optimising BF burden, improving energy efficiency, BF slag optimisation, and carbon capture, utilisation and storage (CCUS).

2. Emerging pathways

We are supporting early development and proliferation of emerging low-carbon DRI projects that use high-grade iron ores, such as those we produce at IOC, and, in the future, Simandou. We are committed to supporting these low-carbon projects that may otherwise face significant headwinds.

Our approach includes bringing together the right group of partners, supplying high-grade ore, bringing our technical and sales and marketing expertise, and investing in early-stage projects.

In November 2024, we entered agreements with GravitHy – an industrial start up establishing 2 Mtpa production of ultra-low-carbon DRI in Fos-sur-Mer, France. GravitHy's hydrogen-based DRI plant is expected to start production in 2028. The facility will feature ultra-low-carbon hydrogen production infrastructure, enabled by access to grid-connected nuclear power. By processing our iron ore with GravitHy, emissions are reduced by up to 90% compared to a typical BF-BOF pathway.

3. Future pathways

While low-carbon DRI technology is established for high-grade ores, there is currently no economic low-carbon iron and steelmaking technology for low- and medium-grade ores, such as those produced in the Pilbara. Low- and medium-grade iron ore accounts for more than 80% of global iron ore supply. Full decarbonisation of the steel industry therefore depends on the development and commercial proliferation of low-carbon ironmaking technologies that use low- and medium-grade ores.

We are supporting the development of these technologies with a focus on:

- Beneficiating our ores to remove impurities before ironmaking.
- Pelletising our ores to improve their suitability to proven shaft furnace technology
- Evaluating emerging fluidised bed technology. This technology may be a suitable process for our iron ore fines products, removing the need to pelletise prior to ironmaking.
- Developing a proprietary ironmaking process called Biolron™ which uses raw biomass[3], along with microwave energy, to convert Pilbara ores into metallic iron. This has potential to reduce carbon emissions by up to 95% compared to the BF-BOF if combined with renewable energy and fast-growing biomass.
- Jointly developing ESF technology, which is required for all of the above ironmaking pathways. The ESF removes impurities inherent in low- and medium-grade ores, as a second stage of ironmaking. We are progressing our partnership with BlueScope and BHP to build an ESF pilot facility in Australia. This will initially use natural gas to reduce iron ore to DRI, but once operational, the project aims to use lower-carbon emissions hydrogen to reduce iron ore. Reductions of up to 80% in carbon emissions are potentially achievable, compared to a typical BF-BOF. We are also working with Baowu to build an ESF pilot facility in China.

In 2024, we spent $65 million on steel decarbonisation initiatives. Over the next 3 years, 2025–2027, we plan to spend $200–350 million across our steel decarbonisation portfolio.

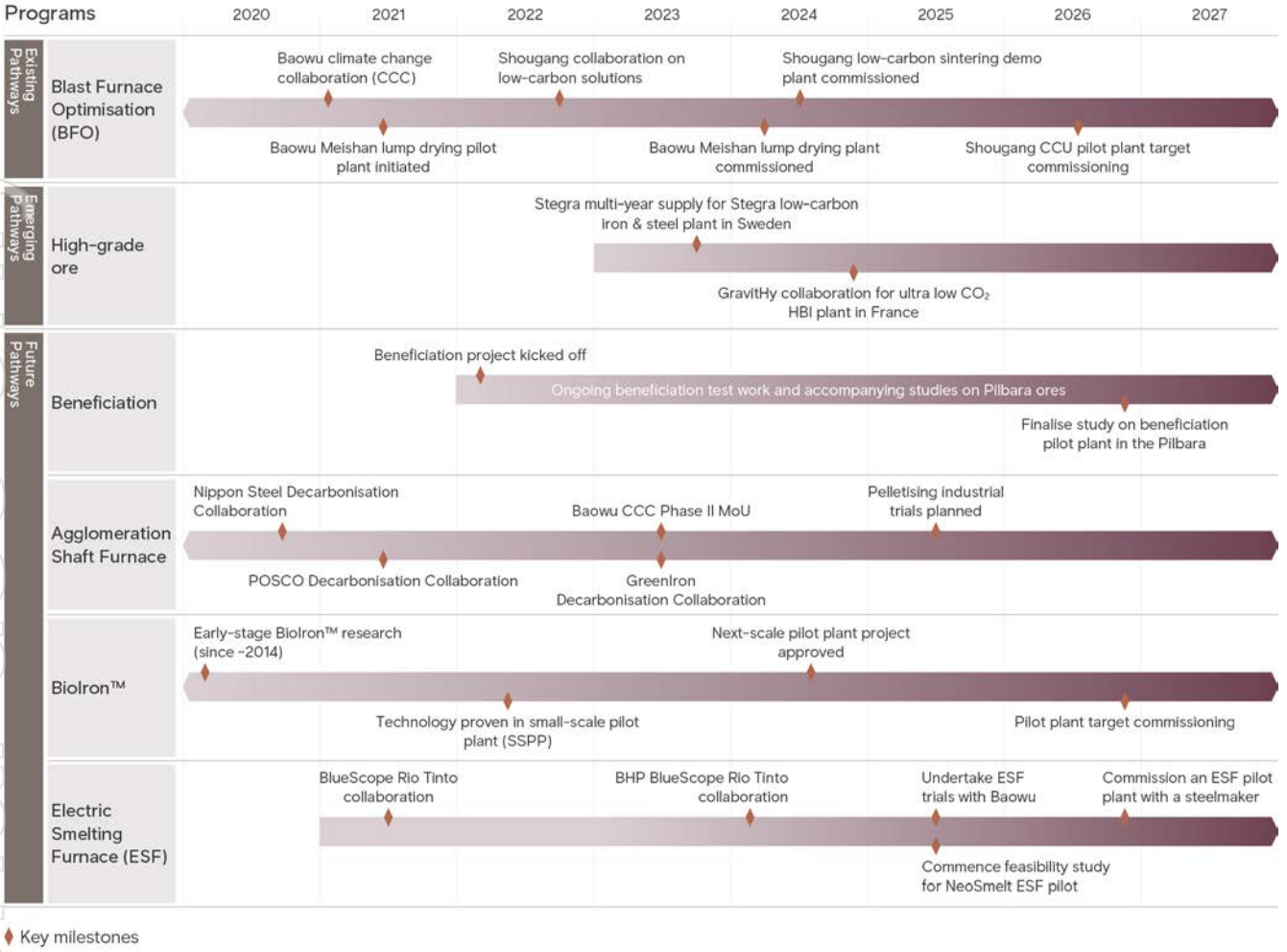
Decarbonisation of the steel sector will not happen in isolation; all stakeholders along the steel value chain will need to work together. Ultimately, Scope 3 emissions reductions are dependent on the deployment of these lower-carbon steelmaking technologies by our customers. A range of different policies is needed to support research and development, first-of-a-kind projects and commercial deployment of low-carbon steelmaking.

For more information see our climate briefing paper on decarbonising our iron ore value chain at riotinto.com/climatechange

1. The support will be in the form of direct technical support and co-developing technology solutions.
2. Subject to funding approval and technical feasibility.
3. Rio Tinto is aware of the complexities around the use of biomass supply and is working to ensure only sustainable sources of biomass are used.

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Steel decarbonisation projects tracker



Aluminium value chain

Alumina decarbonisation targets

- In 2025, partner with at least 2 bauxite customers with the goal of improving energy efficiency and reducing emissions, focusing on digestion improvement technology; controlling or removing organic compounds from the refining process; and technical options to reduce moisture content in our bauxite.

We regularly engage with our customers to understand their ESG priorities and requirements, and identify and agree on collaboration opportunities aligned with our capabilities. Energy efficiency is a key priority for our customers due to its direct impact on emissions.

In the alumina refinery process, steam is used to heat the bauxite slurry in the digestion unit to high temperatures, dissolving the alumina in the bauxite. This digestion process is a crucial aspect of the overall energy efficiency of the refinery. In addition, effective organic control is essential for achieving production rates and producing quality alumina, especially when processing Australian bauxites.

More than 85% of our 134.0Mt CO_2e Scope 3 emissions in the aluminium value chain come from the electricity- and emissions-intensive aluminium smelting process. However, the majority of our product is processed in China using coal-fired refining and smelting processes, where we have little influence over the power source for these electricity grids.

Our short- to medium-term focus is to help our customers improve the alumina refining process to increase energy efficiency and optimise use of our bauxite[1].

Strong demand for bauxite has resulted in almost double the number of refineries processing Rio Tinto bauxite over the past 3 years. As some of our bauxite sales are made through intermediaries, we have limited direct interaction with the end customer. Consequently, we have less influence and ability to engage on matters relating to decarbonisation with these refineries.

In 2024, digestion improvement technology was successfully implemented at one of our bauxite customers' operations. We also completed an overview and opportunity assessment of organics technologies, and conducted customer visits to present the portfolio of control options.

Another key ESG priority for our bauxite customers is the significant challenge of managing bauxite residue. We are supporting our customers in the development of processing and reuses for this residue to reduce the environmental and safety impact of residue storage. In 2024, we pursued a testing program with one of our customers on converting bauxite residue into soil products for agriculture.

1. This is mostly via sweetening and improved digestion. In the longer term, this will be mostly through using renewable energy for the heat source, via hydrogen calcination and electric boilers.

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Shipping

Shipping decarbonisation targets

- Reach net zero shipping by 2050 across our shipping footprint.
- Fulfil First Movers Coalition (FMC) pledge of 10% of time-chartered fleet to be running on low-carbon fuels[1] by 2030 and progressing to 100% of time-chartered fleet by 2040[2].
- Reduce emissions intensity by 40% by 2025 (5 years ahead of the target set by the International Maritime Organization [IMO]), and deliver 50% intensity reduction by 2030[3].
- Enhance accuracy of emissions reporting by using actual voyage data for more than 95% of our cargo shipments by 2024.

Our Scope 3 emissions from shipping and logistics are 8.9Mt CO_2e. Of this, 5.2Mt CO_2e (59%) is generated by our chartered fleet, and around 1.9Mt CO_2e (21%) comes from shipping our products, where freight has been arranged by the purchaser. The remaining 1.8Mt CO_2e (20%) comprises other logistics elements such as truck, rail, container movement and other logistics-related emissions. An additional 0.4Mt CO_2e of Scope 1 shipping-related emissions is attributed to the vessels we own.

As a major charterer transporting over 300Mt of bulk products annually with a fleet of 230 chartered vessels and 17 owned ships, we recognise our vital role in decarbonising shipping and partnering with industry stakeholders to accelerate this journey.

To reduce emissions from shipping, we focus on:

Energy efficiency: While in mid-2024 we achieved a 40% reduction in emissions intensity against the IMO's intensity target baseline year 2008, we ended 2024 with a 39% reduction (up from 37% at end 2023), primarily by:

- **Incorporating larger vessels** such as Newcastlemax (210k deadweight tonnage (DWT), which have ~10% lower emissions intensity than standard Capesize (170-180k DWT).
- **Technical modifications** to the hull, propeller, and engine. As we improve the energy efficiency of our own vessels, we are also prioritising chartering vessels with design improvements, including those with energy-saving devices installed.
- **Speed and route optimisation:** We deploy sophisticated weather routing software and seek to continually optimise scheduling and reduce unneeded time waiting in port.

We have completed a recent dry dock program and energy-saving device installations on all 17 owned vessels. In 2025, we plan to trial further energy efficiency technologies such as shaft generators and air lubrication systems, while exploring opportunities to apply these to our chartered fleet.

Transitional fuels: We continue to explore opportunities for biofuels and liquefied natural gas (LNG). In 2024, we introduced 4 additional LNG Newcastlemax dual-fuelled vessels to our fleet (current total of 9 in the fleet), capable of delivering up to 15% to 20% CO_2e emissions reductions compared to traditional fuel oil.

We continue to work with our partners to progress commercially viable biofuel bunkering solutions as well as recycled fuel deployment.

End-state fuels: To achieve our aim of net zero shipping by 2050, our Marine team is focusing on end-state fuels. Although there is no clear, single end-state fuel solution for the shipping industry, low-carbon methanol and low-carbon ammonia are considered the more promising options[4]. We progress the availability and business case for end-state fuels (including value-chain split of opportunity/risk) through industry collaboration such as our leadership in the West Australia – East Asia Iron Ore Green Corridor.

Additionally, regulation is essential to facilitate the drive towards net zero shipping. In 2023, the IMO announced a heightened ambition, including guidance for net zero shipping "by or around 2050", with interim non-binding emissions reduction targets set for 2030 and 2040. To deliver on the reduction targets, the IMO is currently working on the development of a basket of candidate mid-term GHG reduction measures (eg fuel standard with GHG pricing mechanism), with a view to finalising these in 2025, with entry into force in 2027.

Through a range of industry partnerships and via direct government engagement we seek to positively shape regulatory measures that are sufficiently robust to catalyse and accelerate shipping's energy transition.

In 2024, we met our target to use actual voyage data (eg actual fuel consumption) rather than industry estimates for more than 95% of our cargo shipments[5].

1. Although the FMC currently employs the terminology "zero-emission" rather than "low-carbon", with a guiding principle of delivering a well-to-wake GHG emission reduction of 80% or more compared to fuel oil, we have updated our terminology to reflect that these fuels are unlikely to be fully net zero emissions on a lifecycle basis over the coming years. While we endeavour to achieve the guiding principle proposed by the FMC, we may initially consider fuel pathways with a lesser emission reduction with consideration to factors such as supply, availability of technology and regulatory developments from the IMO.
2. Subject to the availability of technology, supply, safety standards and a reasonable price premium.
3. Relative to IMO's 2008 baseline.
4. A range of fuels and technologies are likely to comprise shipping's "end state", which may also include drop-in biofuels, bio/e-LNG and even fossil fuels which may be complemented by carbon capture technology.
5. Where Rio Tinto manages the freight (excluding free on board shipments).

Procurement

Upstream Scope 3 emissions from procurement were 22.2Mt CO_2e (excluding business travel) in 2024, split between purchased fuels, goods and services. The goods and services are further divided between emissions related to operational expenditure purchases (such as caustic, explosives, coke, pitch) of 14.8Mt CO_2e, and capital expenditure purchases (such as machinery, electrical equipment) of 3.0Mt CO_2e. Due to the nature of our businesses, many of our purchased inputs are from hard-to-abate sectors, such as caustic, coke, pitch and steel.

Procurement decarbonisation targets

- Engage with 50 of our highest-emitting suppliers on emissions reduction, focused on driving supplier accountability for setting and delivering against their decarbonisation targets.
- Implement decarbonisation evaluation criteria for new sourcing in high-emitting categories[1].

In accordance with Rio Tinto's stated position to put the energy transition at the heart of our strategy, in 2024 we launched our Sustainable Procurement Principles and revised *Supplier Code of Conduct*, outlining the expectations we have for ourselves and our suppliers to strive to ensure that the procurement of our goods and services aligns with our commitment to strive for impeccable ESG credentials and responsible business practices. We expect our suppliers to share this commitment to environmental responsibility.

We work with more than 20,000 suppliers across complex multi-layered supply chains. To address upstream emissions, we are taking a systematic approach, prioritising engagement with 50 of our highest-emitting suppliers (representing over 40% of our procurement-related emissions), and referencing decarbonisation as evaluation criteria for new sourcing in high-emitting categories. The prioritisation of suppliers and categories followed the assessment of the sources of emissions across the Global Procurement portfolio (and available abatement pathways) and deliberately focuses our efforts on the largest sources. Ongoing refinement of the measurement and reporting methodology will inform our priorities in future.

In 2024, we issued a baseline questionnaire to inform our engagement with 50 high-emitting suppliers, and returned a 100% response rate. We validated and discussed responses in follow-up supplier engagements with a focus on understanding maturity, opportunities for partnership and improvement opportunities. We have now developed and implemented decarbonisation criteria to evaluate new sourcing in high emissions categories.

In 2025, we will sustain and deepen engagements with the 50 high-emitting suppliers, building on 2024 engagements and continue to reference decarbonisation criteria to evaluate new sourcing in high emissions categories.

1. High emitting categories: Raw materials, explosives, global equipment.

Progress in 2024	Action in 2025
Scope 3 emissions goals and customer engagement We are committed to partnering with customers and suppliers to help achieve their targets earlier, reaching net zero by 2050.	
Steel value chain	
Existing pathways	
– Commissioned lump drying plant using innovative microwave technology in Meishan, China with Baowu. – Commissioned low-carbon sintering demonstration facility with Shougang. The facility has proven a ~10% reduction in CO_2 emissions per tonne of sinter and is replicable across the industry. – Commissioned small-scale carbon capture and utilisation (CCU) pilot facility (100m^3/hr) with Shougang.	– Complete construction of large-scale (3,000 m^3/hr) CCU facility with Shougang. – Implement learnings on blast furnace burden optimisation and slag recycling to additional steel mills.
Emerging pathways	
– Entered into an agreement with GravitHy, an early-stage industrial company in France that will produce ultra-low carbon Hot Briquetted Iron (HBI). We will supply high-grade pellets from IOC and manage the sales and marketing of GravitHy's HBI production.	– Continue to support early development of low-carbon DRI projects that utilise high-grade iron ore, with a focus on locations that are proximate to our operations.
Future pathways	
– Approved spend of US$143 million to build a 1 tonne per hour research and development facility for Biolron™ in Western Australia. Secured location and progressed detailed design and engineering for the pilot plant. – Entered into the NeoSmelt collaboration with BlueScope, Australia's largest steel maker, and BHP to jointly develop Australia's first Electric Smelter Furnace (ESF) pilot plant. Commenced pre-feasibility study and confirmed the pilot plant's location in the Kwinana Industrial Area, Western Australia. – Began lab trials for pelletisation of Pilbara ores with Baowu. – Completed conceptual studies on building a beneficiation plant in the Pilbara.	– Progress construction of the Biolron™ pilot plant in Western Australia. – Complete pre-feasibility study and commence feasibility study for the NeoSmelt ESF pilot plant, subject to stage gate approval. – Undertake ESF trials with Baowu, utilising DRI produced from pellets containing Pilbara ores. – Begin next stage of studies and test work for a beneficiation pilot plant in the Pilbara.
Aluminium value chain	
– Digestion improvement technology successfully implemented at one of our bauxite customers' operations. – Completed organics technologies overview and opportunity assessment. – Customer visits completed in Q4 2024 to present the portfolio of control options. – Supported Pacific Aluminium Operations in looking at options to reduce bauxite moisture, and provided data and input from a customer perspective. A commercially available technology has been identified for a vacuum stockpile drainage system. A pre-feasibility study has been approved for implementation for Amrun's bauxite.	– Work with a further customer on implementing digestion improvement technology in 2025. – Work with select customers to improve organics management capabilities. – Continue to support Pacific Aluminium Operations in progressing technical options to reduce moisture content in our bauxite.
Shipping	
– Progressed to a 39% reduction in emissions intensity (from 37% end 2023; relative to IMO's intensity baseline year 2008). – Completed energy saving device installation program across fleet of 17 owned vessels. Introduced 4 more LNG dual-fuelled vessels into the fleet, bringing our current total to 9. – In conjunction with the Western Australia–East Asia iron ore green corridor, engaged with industry on a process safety deep dive on ammonia used as fuel and supported a ship-to-ship ammonia transfer trial in Western Australia. – Improved emission transparency using actual voyage data for over 95% of our cargo shipments for which we manage shipping, achieving our target.	– Accelerate energy efficiency drive, including through incentivising value-accretive energy saving device installations on chartered vessels. – Partner with stakeholders to progress economic frameworks for the development of the Western Australia–East Asia iron ore green corridor. – Mature ammonia health, safety, environment and communities (HSEC) risk and control framework, ahead of potential ammonia dual-fuel vessel charter.
Procurement	
– Engaged with 50 of our highest-emitting suppliers on emissions reduction, focused on driving supplier accountability for setting and delivering against their decarbonisation targets. – Implemented decarbonisation as evaluation criteria for new sourcing in high-emitting categories.	– Sustain engagements with 50 high-emitting suppliers. – Continue to embed and sustain decarbonisation criteria in standard processes to evaluate new sourcing in high emissions categories.

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Capital allocation and investment framework

Total decarbonisation spend[1]	Capital expenditure, investments and carbon credits	Operational expenditure
$589m (2023: $425m)	**$283m** (2023: $191m)	**$306m** (2023: $234m)

Decarbonisation spend refers to the total cost of delivering our global decarbonisation projects, nature-based solutions and carbon credits, and select scope 3 activities. Expenditure must be incurred for decarbonisation purposes and can be either capital or operating in nature, based on financial accounting principles.

1. Total decarbonisation spend includes costs related to the purchase of offsets, renewable energy certificates, decarbonisation team costs and external decarbonisation investments.

Decarbonisation investment is derived from the Group's capital allocation framework and aligned to our 2025 and 2030 Scope 1 and 2 emissions targets. We make decisions under a dedicated evaluation framework which considers the following:

- impact of the investment on shareholder value and asset cost base
- level of emissions abatement
- maturity of the technology and delivery risk
- competitiveness of the investment as per the marginal abatement cost curve (MACC) and external benchmark
- policy context
- alternative options on the pathway to net zero.

We also assess projects against our approach to a just transition, with consideration to the impact on employees, local communities and industry. In line with our other investment decisions, governance of decarbonisation investments depends on the nature and size of the project.

Using this framework, we maintain our capital expenditure guidance of $5-6 billion between 2022 and 2030 and $0.5-1 billion in the period 2024-2026. This includes voluntary carbon credits and investment in nature-based solutions projects but excludes the cost of carbon credits bought for compliance purposes. We are also transitioning many of our significant fossil fuel contracts into various commercial contracts for renewable PPAs and biofuels.

Rio Tinto applies an internal cost of carbon when making our investment decisions. This includes current legislated carbon penalties, which apply to approximately half of our emissions, principally in Australia and Canada, plus future policies that could be introduced in the regions where we operate. See page 44 for more detail on our carbon prices used in our climate change scenarios and page 73 for our Scope 1 emissions covered by emissions-limiting regulations.

Our decarbonisation project portfolio is constantly evolving as new projects are added following further technical and commercial assessment. We are targeting a value accretive pathway to 2030 across the portfolio. The large scale investment in zero emissions technologies that is needed to progress towards our net zero target will require global carbon pricing or green premiums.

2030 decarbonisation spend

Our target to reduce emissions by 50% by 2030 relative to 2018 levels remains unchanged. We see decarbonisation as a key business imperative to manage our exposure to volatile fossil fuel prices and to mitigate the impact of inflationary carbon penalty costs. Meeting our 2030 targets will diversify our energy portfolio away from volatile, globally traded fossil fuels and towards structurally secure, long-term, cost efficient, low-carbon alternatives.

As per our 2023 climate change-related reporting, we believe achieving this will require less capital investment and an increasing number of commercial partnerships than expected when we set our targets in 2021.

To further accelerate our emissions abatement, we will take advantage of non-capital-intensive solutions that can be ready in the market this decade and avoid lengthy project development schedules. We anticipate that approximately 90% of our abatement by 2030 will be delivered by non-capital intensive solutions, including several renewable PPA contracts executed over the past 12 months.

For projects delivering on our 2030 abatement target, we anticipate incremental operating expenditure at a portfolio level to be breakeven, before application of carbon costs and savings. A significant amount of abatement will be delivered through entering into PPAs that can be cost-neutral or offer a cost saving relative to the fossil fuel alternative. This is offset by other contracts such as biofuels where we anticipate a cost premium will prevail this decade.

We also continue to make ongoing investments in studies, pilots and demonstration plants targeting long-dated and uncertain carbon reduction outcomes. Operational expenditure varies year on year, but across the decade we anticipate on average annual spend to be in the order of $0.2-$0.3 billion.

Pre-2030 abatement projects are predominantly expected to be delivered through non-capital-intensive solutions and proven technologies, while post-2030 abatement projects are generally characterised as high-cost, capital-intensive projects that require industry breakthroughs.

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Just transition

We acknowledge that the low-carbon transition requires substantial investment and significant changes to our current energy systems and supply chains. These transition activities introduce new social risks and opportunities to host communities, employees, contractors and customers, and have the potential to disproportionately affect those that are most vulnerable to change.

Through our *Human Rights Policy* we have committed to "support a low-carbon transition that is rights-respecting, socially inclusive and just". We will embed just transition principles into our decarbonisation strategy, working to minimise impacts and optimise socioeconomic opportunities.

Our progress on our 2024 commitments was largely through establishing strong partnerships and working transparently with local communities.

Partnering to facilitate a just transition

The quantum of minerals needed to realise the global energy transition will require new mines, many of which will be located on the lands of Indigenous or land-connected peoples, or in vulnerable socioeconomic regions. Large areas of land will also be required for developing renewable energy projects. Respectful and ongoing engagement will be at the centre of these new developments.

In Australia, our agreements with the Yindjibarndi Energy Corporation and the Ngarluma Aboriginal Corporation are the first Indigenous partnerships in our renewable energy portfolio, and are important pathways into future energy projects.

We also have a growing portfolio of nature-based solutions projects, where we work with local partners to deliver high integrity projects which foster positive outcomes for people, nature, and climate. These partnerships are co-designed with communities to secure resilient and improved livelihoods through the protection, sustainable management, and restoration of nature.

Managing impacts and opportunities

When we make decisions on decarbonisation projects across our work streams (eg renewables, diesel transition, nature-based solutions) we aim to optimise environmental and social outcomes, while effectively managing expected and unintended impacts.

For communities more broadly, our Group social investment framework has an "economic opportunity and just transition" investment pillar supported by the regional economic development framework. There are multiple projects underway worldwide to strengthen regional economic diversification and equip communities to tackle the challenges of climate change. Through the social investment reporting system, data is already collected around how we contribute to "stable, beneficial work and economic opportunities" and delivering "diverse, inclusive and secure economies".

We also apply local and Indigenous participation requirements throughout our energy and other procurement processes. This ensures that local and Indigenous employment and procurement are optimised, thereby building capability within these groups to take advantage of transition-related opportunities.

For our workforce, this means we need to support affected employees to transition to other opportunities either within our business, with other resource companies in different locations, or to new industries altogether.

As an example, the introduction of the ELYSIS™ technology in Canada or battery-electric haul trucks at our mines will create an ecosystem of new opportunities and jobs. We will work closely with our employees and host communities to plan for these changes.

Engagement and transparency

We are currently rolling out an annual sentiment survey through our Local Voices program which was initiated in 2023. This survey includes questions around climate change and communities' understanding of the potential impacts and opportunities associated with decarbonisation.

We also facilitate civil society organisation roundtable events in 3 locations each year. These events provide a space for engagement around our work towards a just transition.

Action in 2025

Our future actions will focus on the following objectives:

- further embedding just transition principles and commitments into our project decision-making processes
- better understanding the social impacts of our decarbonisation strategy
- providing greater transparency for workers and communities affected by our transition activities.

Climate policy and advocacy

We support the goals of the Paris Agreement to pursue efforts to limit the global average temperature increase to 1.5 degrees, and do not advocate for policies that undermine this or discount Nationally Determined Contributions. Our high-level policy positions are:

- Business has a role to play in climate policy development; this should be ***effective, fair, pragmatic, market-based and support free trade.***
- ***Carbon pricing is the most effective incentive*** for business to reduce emissions, but may not be sufficient for hard-to-abate parts of our carbon footprint (for example carbon anodes, minerals processing).
- Climate policy ***should not undermine competitiveness*** and result in carbon leakage - carbon border adjustment mechanisms or alternative policies are necessary.
- Other policy tools are necessary to decarbonise minerals and metals: grant funding and tax incentives for research and development; product standards and procurement obligations to drive the deployment of pre-commercial technology.

While business has a vital role in managing the risks and uncertainties of climate change, governments can support the challenge by providing enabling frameworks, including policies and programs, which increase momentum to shared net zero goals.

Rio Tinto's direct engagement on climate policy is underpinned by the climate commitments and principles which represent a guide to the positions taken in both direct and indirect advocacy. Overall advocacy positions will balance the commitment to these principles and the climate targets set with the need for an efficient permitting process that is essential for project development. This includes projects that decarbonise our operations or those that produce transition materials and support local communities and jobs in the regions where we operate.

We actively engage on climate and energy policy with governments, industry and civil society in the countries where we operate in different ways to help shape policy, regulation and frameworks. We post all standalone submissions to government consultation processes on our website.

For more information on our climate position and advocacy, see riotinto.com/climateposition

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We encourage industry associations to align all climate related advocacy with the goals of the Paris Agreement. We publish our review of the climate advocacy of industry associations annually.

Our approach to policy advocacy has been informed by our regular engagement with investors and stakeholders.

Our climate related advocacy is focussed on policy and other measures which enable decarbonisation of operational emissions, production of metals and minerals required for the energy transition and support for the goals of the Paris Agreement.

Below are examples of the focus areas and objectives for engagement on key climate policy areas.

Industry associations and civil society

Industry associations and civil society organisations play an important role in policy development and reform.

Industry associations' views will not always be the same as ours, so we periodically review our memberships in individual associations. This assessment may include:

- the purpose of the association and the value the membership may provide to our business and our investors
- appropriate governance structures within the industry association policy positions and advocacy of the industry association.

Where our membership is significant, we will work in partnership with industry associations with the aim of aligning these policy positions with our climate and energy policy. Where significant differences in policy positions arise we may:

- provide greater clarity on our own policy positions, through standalone direct company submissions on policy issues or direct engagement with policy makers
- work as part of that industry association to understand alternative points of view and to seek common ground or seek a broader balanced response to areas of difference
- seek a leadership position in the governance body of that industry association to further influence the policies and perspectives of that association, or
- suspend our membership, if it seems formal dialogue processes undertaken for more than 12 months will not resolve our differences in positions. In making this decision we would also consider other benefits (unrelated to climate change) membership of such associations brings to our business, our investors and other stakeholders.

For more information for more information on our work with industry associations, including our review of their climate change advocacy activities, see riotinto.com/industryassociations

Climate policy and advocacy governance

Our Climate Policy and Advocacy team engages with industry associations, civil society organisations, investors, government bodies, and other stakeholders on climate-related policies, regulations, and reporting.

Submissions to direct government consultations on climate related policy are typically developed by this team in conjunction with subject matter experts or decarbonisation project leads, reviewed by our government relations and legal teams, and then approved by the relevant country Director or senior executive.

The Board approves our positions on climate change policy, our approach to engaging with industry associations and our annual review of indirect advocacy. Management is responsible for comparing our positions with those of individual industry associations on a "comply or explain" basis.

	2024 Activities
Decarbonising energy systems Government's sectoral decarbonisation plans and policies should support investment certainty and drive an orderly transition of energy systems while supporting operational decarbonisation through the delivery of sufficient supply of competitively priced, reliable, low-carbon energy.	– In Australia, we participated directly and indirectly through industry associations in the development of the Electricity and Energy Sector Plan and conducted extensive engagement with a range of government bodies on the critical role of renewables in our operational decarbonisation pathways. – In Canada, we had industry-level discussion with Federal and Territory authorities on the importance of clean energy for the development of critical mineral mining projects. We have also proposed the expansion of inter- and intra-provincial power lines to provide renewable electricity for projects needed for the low-carbon industrial transition, as well as for the clean electricity tax credit to include intra-provincial power lines.
Development of carbon pricing schemes to support the transition In the absence of global carbon prices, country level carbon pricing or emissions reductions schemes must balance shared net zero emissions with competitiveness of our operations and risks of carbon leakage.	– We supported the transition of British Columbia's carbon tax scheme to an output-based pricing scheme while ensuring the competitiveness of our recently modernised aluminium smelter in Kitimat. Through industry associations, we also supported the use of high-quality regulated credits as an additional tool to meet compliance obligations and to support emissions reduction outside the scope of the Quebec Cap-and-Trade System.
Development of a sustainable low-carbon liquid fuels industry Displacing diesel use requires a range of options, including fleet electrification and the use of renewable diesel alternatives. Government policies are required to support the development of a competitive and sustainable low-carbon liquid fuels market.	– We published a briefing paper on Transitioning our Diesel Fleet, including outlining policy support required. – In Australia, we advocated for supply side mechanisms to support the development of a competitive renewable diesel market in our submission to the Future Made in Australia: Low Carbon Liquid Fuels consultation process, and the development of sectoral decarbonisation plans, and provided technical input into the development of an Australian renewable diesel standard. – We submitted support for the development of a new Australian Carbon Credit Unit methodology to incentivise sustainable biogenic feedstock projects in Australia. – We advocated for reporting frameworks that enable recognition of emissions reduction from biofuels use and certification of full value chain carbon intensity.

	2024 Activities
Progressing decarbonisation plans for the aluminium industry Decarbonisation of hard to abate energy intensive processing activities requires significant investment in technology development and deployment, and support which ensures global competitiveness of these sectors through the transition in the absence of a global carbon price.	– In Australia, we undertook extensive engagement with state and federal government departments to increase awareness of the aluminium value chain, decarbonisation pathways and economic considerations. We advocated for support for the transition and decarbonisaton of these industries in our submissions to the Future Made in Australia: Unlocking Green Metals Opportunities consultation and the development of the Industrial Sector Plan (ongoing).
Climate-related financial reporting We support the development of frameworks that encourage transparency and provide the key disclosures required for investors and other external stakeholders to compare progress against climate ambitions, enhance competitiveness in global markets, attract investment and accelerate the transition of economies.	– We provided feedback by our Australian industry associations on Treasury's Exposure Draft Legislation and the AASB S2 Exposure Draft supporting alignment with international standards to balance increased transparency with efficiency of reporting and comparability of data.
Providing the materials and minerals essential to the energy transition	– In Australia, we advocated for the inclusion of copper, aluminium, alumina and bauxite into Australia's revised Critical Minerals List as they are central to the clean energy transition (high-purity alumina was already on the list). Subsequently, aluminium and copper were included in a newly formed Strategic Materials List. – In Canada, we advocated for the inclusion of high purity iron ore on Canada's Critical Minerals List as a key input into low-carbon steel manufacturing.
	Additional areas of focus for 2025
Growing demand for low carbon products	– We will engage with the Australian government's development of the Renewable Energy and Product Guarantee of Origin certifications, to promote transparent and consistent disclosure of carbon intensity. – We will engage with the government of Quebec through public consultation on the future of the Cap-and-Trade scheme in Quebec, and support the inclusion of indirect emissions in the EU Carbon Border Adjustment Mechanism to support the production of low carbon aluminium.

Physical climate risk and resilience

We will continue to enhance our resilience to a changing climate, aiming to ensure the long-term viability of our assets, our people, communities and broader value chains. We will:

- Monitor risks across our operations and adapt our processes to make sure our sites are managed responsibly and safely for our people, surrounding communities, and the environments we work in, now and in the future.
- Undertake physical climate risk financial modelling and enhance the accuracy and completeness of the data used for the analysis where possible.
- Refine our physical resilience program based on the outcomes of the physical risk analysis.

Physical climate risk refers to the negative effects of extreme weather and changing climate conditions, classified as 2 main types:

- **Acute climate risks:** Sudden, severe events like tropical cyclones, wildfires, heatwaves, extreme rainfall, flooding, and hail. These can disrupt operations, damage infrastructure, impact communities, and increase operational costs.
- **Chronic climate risks:** Gradual changes such as rising sea levels, increasing temperatures, and altered precipitation patterns. These can reduce resource availability, increase costs, affect productivity and workforce health, and impact supply chain resilience.

Building resilience involves anticipating, adapting to, and recovering from these impacts to ensure the long-term viability of assets, people, communities and value chains.

Our strategy and approach

Our approach to physical climate risk and resilience is centred around 4 pillars that guide our risk management and our work on adaptation:

1. Weather/climate analytics and insights

Across the Group, we use advanced weather and climate data products. These include short-term weather forecasts and severe weather forecasts that aid in operational planning and emergency responses. Climate outlooks support mine planning and resilience by providing insights into rainfall and cyclone patterns. Catastrophe modelling estimates financial impacts from extreme events. Long-term climate change projections assess future extreme events and inform risk and resilience assessments, operational strategies and financial planning.

Climate change projections are available for every site in our portfolio (including non-managed assets). Down-scaled climate change projections are available for over 60 climate change variables and future emission scenarios from the IPCC Coupled Model Intercomparison Project 5 and 6 (CMIP5 and CMIP6). We have completed flood risk modelling for 100% of our managed and non-managed assets. These span present-day, medium and long-term time horizons.

2. Physical risk identification and assessment

Our approach to quantifying and assessing physical risk covers individual assets (bottom-up) and Group level (top-down). We first identify climate risks and opportunities across varying time horizons and emission scenarios. Next, we evaluate their potential financial and non-financial consequences and likelihood, then we prioritise these risks by materiality for effective risk management and appropriate resource allocation. This process is integrated within the Rio Tinto Risk Management Information System. The scope of our assessments includes our operations and the environments in which we operate, our people, the communities who host us and our supply chain.

3. Resilience planning and adaptation

Our resilience planning identifies the most appropriate resilience measures to manage climate risks and adapt to them. We comprehensively evaluate an investment decision before funding is approved. This includes prioritising projects and engaging key stakeholders to seek alignment on the investment and its implementation.

4. Monitoring and evaluation

We actively and regularly monitor risks, with clearly defined roles and responsibilities. We continually evaluate the latest generation of climate change data and emerging technologies to assess the risk profile of our assets and infrastructure over time. Where we have identified a material change to the economic, social, environmental or physical context of the risk, we revisit the assessment process.

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Risks and impacts

We have identified 8 Group-level material physical climate risks.

The table below takes into account both the short-term risk that could emerge during current operations and the long-term risk associated with climate change.

Key ● Short term (0-2 years) ● Medium term (2-10 years) ● Long term (10+ years)

Risk, impact and time horizon	Environmental triggers	Risk management
Tailings storage facility (TSF) containment breach/failure due to geotechnical instability or significant erosion event ●●	Extreme rainfall, flooding	Our facilities comply with local laws and regulations and have risk management protocols in place, including a Group safety standard for tailings and water storage facilities. We regularly update this standard and undergo internal and external assurance checks. Our operational TSFs have, or are developing, tailings response plans and follow strict business resilience and communications protocols.
Water shortages, supply and availability impacting operations and production, water treatment and environmental compliance, dust control and community relations ●●	Rainfall, temperature	We use a water risk framework to identify, assess and manage water risks across our portfolio of managed operations (see page 36). The framework requires us to consider whether sufficient water is available to supply both our operational demands and the demands of other stakeholders within the broader catchment. We apply rigorous standards and processes to ensure effective controls are in place at all sites. This includes our Group water quality protection and water management standard, and a standardised Group water management control library which describes all controls identified to manage our water risks. Asset-specific climate change risk and resilience assessments further enable continued improvement of water risk management over time.
Damage to critical coastal infrastructure (shipping berths, ship loaders, stackers/reclaimers, conveyors) resulting in operational and supply chain disruption ●●●	Tropical cyclone/storm, wind, storm surge	Our coastal infrastructure is designed to withstand the wind loading and other impacts associated with extreme events, including severe tropical cyclones. Established business resilience management plans offer frameworks for response, continuity, and recovery in the event of a natural catastrophe scenario, aiming to minimise damage and resume operations swiftly. Our engineering risk assessment program, including asset-level critical risk assessments, considers natural catastrophe modelling and associated risks, if appropriate.
Damage and outages of critical electrical (motors, generators, cooling systems) **and power** (substations, transformers, transmission lines) **infrastructure** leading to operational downtime and damage to equipment ●●●	Tropical cyclone/storm, extreme rainfall, flooding, extreme temperatures, lightning	Electrical and power infrastructure is designed in accordance with local engineering and design standards and internal electrical safety standards and is considered in our asset-specific climate change risk and resilience assessments. Flood risk modelling (surface water, riverine and coastal inundation) incorporating future climate change projections has been completed across our portfolio of managed and non-managed operations.
Damage to critical mining and production infrastructure (eg fixed plant, conveyors) resulting in operational disruption ●●●	Tropical cyclone/storm, extreme rainfall and/or flooding	Critical mining and production infrastructure is designed in accordance with local engineering and design standards and considered in our asset-specific climate change risk and resilience assessments. Assets located in tropical cyclone-affected regions have appropriate controls to minimise damage and operational downtime. Flood risk modelling incorporating future climate change projections has been completed across our portfolio of managed and non-managed operations.
Health and safety and productivity of workforce resulting in reduced productivity, dehydration and impaired ability to work safely and efficiently ●●	Extreme heat	Controls are in place to manage the risk of extreme heat for our workforce, including adequate acclimatisation prior to starting work. Those undertaking high-risk heat tasks are monitored daily for signs or symptoms of heat illness and stress. Operator checklists ensure adequate hydration and work area management. Provision is made for cool rest areas with access to cool drinking water. Our workforce is able to self-pace their workload ensuring regular breaks.
Disruption to transport routes (maritime, rail, air and road access) **and supply chain** (supplies and critical spares and access to direct customers) ●●●	Tropical cyclone/storm, extreme heat, extreme rainfall, flooding	We are working to better understand the interdependencies across our entire operation. We operationalised analytics that provide real-time natural hazard impacts for over 50% of our tier 1-3 goods suppliers. Being alerted to potential supply disruption in real-time allows our teams to make informed decisions to reduce supply chain disruption. This work aims to identify critical components of our product group supply chains and manage the potential adverse impacts from physical climate risk.
Acute and chronic climate change impacting closure objectives ●●	Tropical cyclones/storm, temperature, rainfall, flooding, sea level rise	We consider these impacts when planning and executing closure. We use latest-generation climate change projections specific to the site to inform appropriate landform design, water management and vegetation selection. This is to support modelling per local regulatory requirements and internal closure standards. Ongoing and regular monitoring and maintenance of the site is essential to ensure the effectiveness of closure measures, including monitoring water quality, soil erosion, vegetation growth and any potential contamination or instability issues.

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Modelling financial exposure to physical climate risk

In 2022, we launched the Physical Resilience Program, starting with resilience assessments in the Pilbara and Saguenay–Lac-St-Jean. In 2023, we expanded to a Group-wide assessment to understand climate risks and financial impacts. We continue to improve financial risk modelling and enhance asset-level climate resilience assessments.

We update our scenario analysis for physical risk assessments in line with our strategic planning cycles or when there are significant changes to our assets or sites. This year, there have been no material changes to our business or operations, so our current assessment remains relevant. However, we have revised our assessment to confirm our business remains resilient to the identified physical risks.

Our climate physical risk modelling analysis, performed in collaboration with Marsh, estimated the expected financial losses from damage to individual assets, across various time horizons and emission scenarios caused by physical climate hazards. This analysis used modelling from XDI (Cross Dependency Initiative). Losses associated with business interruption or productivity loss were excluded due to the complexity of our value chain and the increased subjectivity of loss attribution.

This modelling process and methodology considers the following:

1) **Asset portfolio:** Includes a significant breadth of assets, including mining assets and critical infrastructure components integral to our operations. Only active industrial and mining facilities were modelled, including non-managed operations. Corporate offices and remote operation centres have been modelled but are not presented in this analysis. Assets in our closure portfolio have not been modelled, but are considered in bottom-up physical risk and resilience assessments.
2) **Climate scenarios, time horizons and hazards:**

Emission scenario	Description and outcome
Intermediate emissions scenario IPCC Representative Concentration Pathway 4.5 (RCP4.5)	Emissions peak around 2040, then decline. Relative to the 1986–2005 period, global mean surface temperature changes are likely to be 1.1°C–2.6°C by 2100.
High emissions scenario IPCC Representative Concentration Pathway 8.5 (RCP8.5)	Emissions continue to rise throughout the 21st century and is considered a worst-case climate change scenario. Relative to the 1986–2005 period, global mean surface temperature changes are likely to be 2.6°C–4.8°C by 2100.

Multiple future time horizons are modelled, including 2030 (medium term), 2040 and 2050 (long term). Eight climate hazards are modelled in this analysis, including flooding (riverine and surface water), coastal inundation, including sea level rise, extreme heat, cyclonic wind, extreme wind, forest fire and freeze-thaw.

3) **Annualised damage (AD)**: The output of the modelling is calculated for each asset under various climate scenarios, time horizons and hazards. AD, expressed as a percentage, represents the expected average annual damage to an asset attributable to climate-related hazards relative to a fixed value (eg $1 million). As such, an AD of 0.5% would mean that for every $1 million of exposure, $5,000 could be damaged, on average, in any given year.

   Asset-specific outputs have been aggregated to the site, region and Group level. Risk categorisation is based on the AD values, with thresholds set at <0.2% for low AD risk, 0.2–1% for medium AD risk, and >1% for high AD risk.

   Estimates consider a stationary "do nothing" approach for our operating assets and do not consider present or future controls, or adaptation or resilience projects that will likely materially impact our AD cost.

Annualised damage risk scores

At the Group level, present day AD losses fall within the initial range of the medium AD risk category (0.2–1%). Considering projected future emission scenarios by 2050, we expect increases in AD. This places the Group's AD in the intermediate range of the medium AD risk category, potentially exceeding a two-fold rise from present values.

Currently, across 9 core climate geographies where we operate, the risk of AD is low in 3 regions, medium in 5 and high in 2. Notably, sites in Asia, the Middle East and Guinea are the primary contributors to the highest risk classification. In both the intermediate and high emissions scenarios, by 2050, eastern Australia and New Zealand are also expected to be classified as high risk with up to a four-fold increase in AD. This is principally due to the potential effects of coastal inundation, surface water flooding and cyclonic winds. Other notable increases in risk are in Europe and the Middle East (an approximate 60% increase). The risk trend in Asia is steady through time.

In assessing the risk of various hazards under different emissions scenarios projected for 2050, there is a notable shift in the risk profile for various perils across our operating sites. The number of sites at risk from coastal inundation, riverine flood and surface water flood increase under both future emission scenarios. Of all hazards, riverine flood sees the largest increase by 2050 under a high emissions scenario. The number of operating sites at risk from cyclonic wind, extreme wind, forest fire, freeze-thaw and soil subsidence is not expected to materially change with future emissions scenarios.

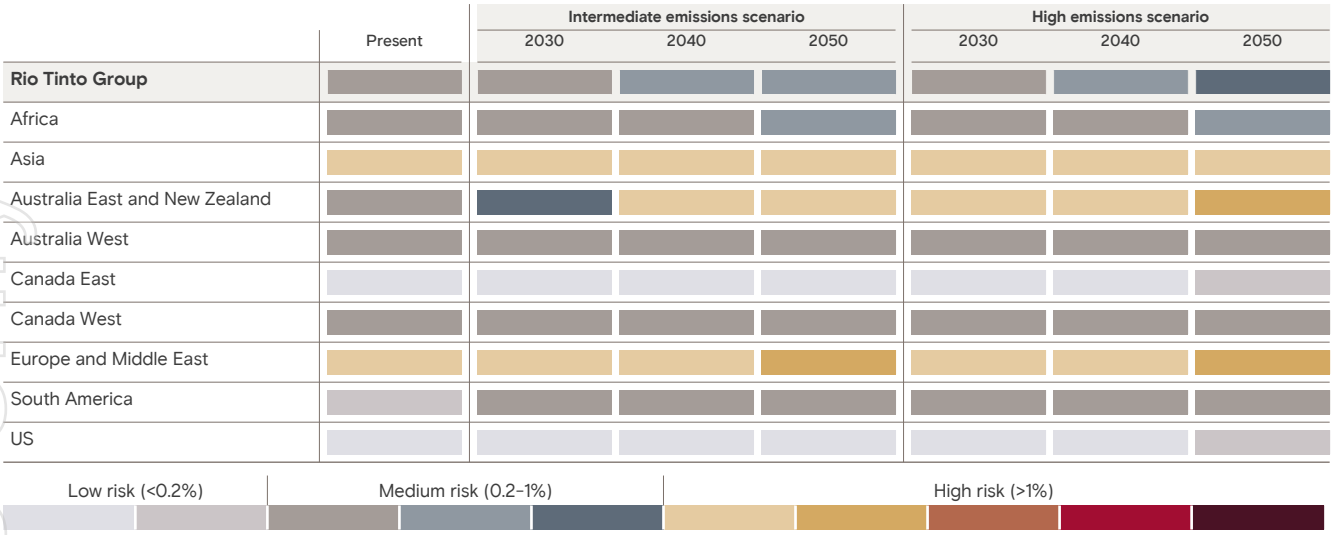
Considerations and limitations

Our climate physical risk modelling acknowledges limitations and uncertainties due to the dynamic nature of the Earth's climate and unpredictable future GHG emissions. These models represent plausible futures, not predictions, and are useful for assessing risks and informing strategic decisions.

The accuracy of our analysis depends on the quality of asset data and assumes no changes in operations or design standards. Each asset is assigned an archetype, which may not fully capture its unique characteristics, affecting the risk profile.

This analysis is iterative, evolving with new insights and projections. We plan to update it regularly to reflect changes in our asset base, guiding our physical resilience program.

Annualised damage risk | Group and regional



We remain resilient to identified physical climate risks due to our robust adaptation and resilience measures. See page 158 for more on our resilience to physical risk impacts.

2024 progress

Throughout 2024, we made progress on managing and adapting to our physical climate risks.

- **Global Industry Standard on Tailings Management (GISTM):** In accordance with GISTM guidelines, we continue to make progress on the climate resilience assessment process for our tailings storage facilities (TSFs). This approach tests the design basis of each TSF component, considering future climate change. We have completed assessments for high priority TSFs and are continuing to progress with assessments for all remaining facilities, which are expected to be completed by August 2025.
- **Supply chain:** This year, we operationalised analytics that provide real-time natural hazard monitoring for 50% of our supply chain (tier 1-3 goods suppliers). Being alerted to potential supply disruption in real time provides our teams with the opportunity to make informed decisions to reduce supply chain disruption.
- **Water supply:** In 2024, we continued to enhance our water risk management by evaluating our ability to maintain a reliable power supply from external hydropower providers. This includes assessing power generation and electricity transmission. To support this, we conducted a climate risk assessment at our ISAL smelter.

Action in 2025

In 2025, we will progress our bottom-up physical risk and resilience assessments across our operating sites and TSFs, in accordance with the GISTM. We will continue to refine and enhance the data inputs and estimates used in our modelling to generate more accurate and meaningful results that will help focus our activities in 2025 and beyond.

- **Extension of Value at Risk (VaR) analysis/financial risk:** We advanced the Global VaR top-down risk assessment with more detailed financial risk modelling at a product group level. We have completed the assessment of our Iron Ore product group and have started work on the Aluminium product group and expect to complete this in 2025. In addition to asset damage, the product group level assessment also evaluates the impacts of business interruption on Group revenue.
- **Bottom-up risk assessments:** Asset-level climate resilience assessments are advancing across all product groups as part of a broader multi-year program. In 2025, we plan to perform a comprehensive review of the methodologies and governance processes supporting climate risk management and resilience measures. This will focus on strengthening the integration of climate resilience analysis and planning into asset-level risk assessment frameworks and processes.
- **Water supply:** In 2025, we will conduct 2 climate risk assessments on non-managed hydropower supply for the NZAS and Bell Bay aluminium smelters. We will also assess our water supply at our operations in Gladstone.

For more information on physical risk and resilience, see riotinto.com/climaterisk

Climate-related governance

The Board

The Board has ultimate responsibility for our overall approach to climate change. This includes the oversight of climate-related risks, opportunities, strategy, projects, partnerships, physical resilience, engagement, reporting, and advocacy as per the Schedule of Matters. Climate change and the low-carbon transition present material risks and opportunities for our business, forming a key part of our strategy and ESG objectives. The Board approves our overall strategy, policy positions, and climate disclosures within this report, delegating specific responsibilities to committees and the Chief Executive. These factors are considered in strategy discussions, risk management, financial reporting, investment decisions, and executive remuneration.

The Board regularly receives updates on climate-related matters at board meetings. The CFO presents a performance report, including a dashboard of KPIs and a detailed decarbonisation scorecard covering, but not limited to, operational emissions, offsets, abatement projects and Scope 3 emissions.

In the past 12 months, the board agendas have included climate-related items, such as discussions on the Boyne Smelter repowering solutions and NZAS electricity arrangements. The Board balances environmental goals with financial and social implications. For example, we secured 2.2 GW of renewable energy for the Boyne Island smelter through PPAs. Although the Pacific Aluminium Operations average is in the 4th quartile of the aluminium cost curve, repowering the smelter should help it move lower down the cost curve. This decision highlights the trade-offs between advancing decarbonisation goals and supporting local employment in the Gladstone region. Climate-related matters are also a key part of the biannual strategy sessions.

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In 2022, our shareholders supported the CAP put forward to them by the Board, in a non-binding advisory vote on our ambitions, emissions targets and actions to achieve them. The Board further committed to repeating this vote every 3 years, at a minimum, unless there were significant changes in the interim, in which case the CAP would be returned to the next immediate AGM. The principles which formed the basis for the development of the 2025 CAP were presented to the Board in October and approved as part of the Annual Report preparation and review process.

Progress against commitments in the CAP is reported once a year to our stakeholders via the climate disclosures in the Annual Report. These disclosures are supplemented with briefing papers, our Quarterly Operations Review, press releases and other reports on our progress. In addition, we consulted our shareholders and CSOs during the work to update this 2025 Climate Action Plan.

Given the importance of climate-related matters, we have specifically considered candidates with experience in climate and renewable energy when hiring directors. When considering the composition of the Board, we used an external consultant to identify where we need particular strengths and skills on the Board in relation to climate and the Group's forward strategy. We also request updates from our Directors biannually regarding any training they have undertaken, maintaining a register of this information. We expect our Directors to remain informed and up to date on relevant matters.

To further support the Board's strategic oversight of climate risk, we also conduct teach-in sessions for new projects and key updates on decarbonisation initiatives. These sessions are focused on strategic priorities and are also held when critical decisions need to be made. For example, during the Pacific Aluminium Operations repowering project, the Chief Decarbonisation Officer briefed the Board on our objectives. While these teach-ins contribute to capacity building, there is a need for more formal training. We will define measures taken to further enhance Board competencies with respect to managing climate-related matters.

For additional information see our Strategic context and strategy sections on pages 6-7.

Summary of 2024 activities:

- Updated the Group's operational decarbonisation pathway and associated expenditure.
- Engaged with investors and civil society organisations following the publication of our 2023 Climate Change Report.
- Approved the 2023 Climate Change Report and climate-related disclosures in the 2023 Annual Report notes to the financial statements.
- Approved the principles for inclusion in our 2025 CAP.
- Approved various projects that support the growth in production of transition materials and our internal decarbonisation objectives.
- Approved the Group's strategy and scenarios, including the use of climate scenarios and the impact and opportunities arising from the energy transition.
- Incorporated new long-term decarbonisation metrics in the 2024 Performance Share Awards (PSAs) to incorporate 20% of the award being based on decarbonisation (People & Remuneration Committee).
- Approved Group physical resilience program (Sustainability Committee).

For more information on the Board, their activities and composition see pages 100-118.

Sustainability Committee

The Sustainability Committee is responsible for the oversight of key sustainability issues including social and environmental matters that are impacted by climate change, particularly those relating to water and biodiversity. An updated Terms of Reference has been drafted to reflect these responsibilities including oversight of physical resilience to climate change.

For more information see pages 117-118.

Audit & Risk Committee

The Audit & Risk Committee is responsible for risk management systems and internal controls, financial reporting processes and the relationship with the external auditors as noted in its committee charter. This involves the oversight of significant issues of judgement relating to the financial statements including those relating to climate, consideration of climate policies, and stress testing our strategy against selected scenarios. It also includes appointing and maintaining our relationship with the external auditors who assure GHG emissions and ensure the effectiveness of the risk management framework.

People & Remuneration Committee

The role of the People & Remuneration Committee includes the oversight of the Group's remuneration structure, including the use of short- and long-term incentive plans for the Executive Directors, as reflected in its charter. This will include performance against strategic measures linked to decarbonisation. In 2024, 10% of the short-term incentive plan (STIP) and 20% of the long-term incentive plan (LTIP) were weighted towards decarbonisation, including the progress of our carbon abatement projects. See pages 119-145 for four 2024 remuneration outcomes and the incorporation of climate-related measures in the STIP and LTIP.

Management role

Investment Committee

The Investment Committee reviews and approves the Group's capital expenditure in relation to abatement projects and climate change research and development. Decarbonisation investment decisions are made under a dedicated evaluation framework that considers the value of the investment and impact on cost base, the level of abatement, the maturity of the technology, the competitiveness of the asset and its policy context, and alternative options on the pathway to net zero. Projects are also assessed against our approach to a just transition, with consideration of the impact on employees, local communities and industry.

For more information see our Capital allocation and investment framework on page 63 for more detail.

Chief Executive and Executive Committee

The Chief Executive is responsible for delivering the CAP, as approved by the Board, with the Executive Committee supporting this role. Risk management, portfolio reviews, capital investments, annual financial planning and our approach to government engagement are integrated into our approach to climate change and emissions targets. The annual financial planning process focuses on the short term (up to 2 years). The new growth and decarbonisation strategy is part of the medium-term planning process.

Remuneration: Our Chief Executive's performance objectives in the STIP include delivery of the Group's strategy on climate change. These are cascaded down into the annual objectives of relevant members of the Executive Committee, including the Chief Technical Officer, and other members of senior management. Decarbonisation is also included as a performance measure in the STIP and LTIP as described above. See pages 119-145 for our 2024 remuneration outcomes and the incorporation of climate-related measures in the STIP and LTIP.

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As part of our updated evaluation approach approved by ExCo and the Board in April 2024, we will hold a decarbonisation review session once or twice a year as part of the regular ExCo schedule to discuss the overall decarbonisation roadmap and abatement portfolio. This will also cover projects and investment proposals related to mitigating Scope 3 emissions. The review session will consider any future changes to our targets or commitments should they be necessary. The Chief Decarbonisation Officer and Rio Tinto Energy and Climate team will organise and facilitate the forums, with inputs from our Commercial team on Scope 3 projects.

Energy and Climate team

In 2022, we established a central team, Rio Tinto Energy and Climate (RTEC), to deliver progress on our CAP. This is led by the Chief Decarbonisation Officer, who reports to the Chief Technical Officer and is accountable for all aspects of the CAP. The RTEC team is structured according to the main areas of our abatement work that drive decarbonisation across our operations, including a Nature-based Solutions team.

Two additional teams complete the RTEC organisation: a Decarbonisation Office that monitors and forecasts GHG emissions, tracks investment decisions and coordinates our approach to physical climate risks; and a Climate Policy and Advocacy team that is responsible for engaging with industry associations, civil society organisations, investors, government and other stakeholders on climate related policies, regulation and reporting. Rio Tinto Commercial drives the approach to Scope 3 emissions, given its responsibility for procurement, shipping and sales to our customers. The Decarbonisation Office prepares a quarterly progress report for the Executive Committee, which includes operational emissions and progress on abatement projects and other areas of our CAP.

Management of climate-related risks and opportunities

The Board approves our risk appetite and oversees our principal risks, and is supported in monitoring material risks by the Audit & Risk and Sustainability committees.

Climate-related risks and opportunities are integrated in our enterprise-wide risk management framework. These are identified by the product group or supporting functions, then included in the appropriate risk register. These will be assigned a Risk owner and evaluated on the maximum reasonable consequence and likelihood of the risk. Consequences may include the impact on Group free cash flow or business value, or reputation and licence to operate. These risks are escalated to the appropriate level of management for oversight and action. See pages 88-91 for more detail on our risk management process, emerging risks, materiality matrix and assessment of principal risks.

We actively monitor and assess the potential impact of climate risks and opportunities on our operations and business through scenario planning. See pages 43 and 66 for more detail on how we use scenarios to identify climate-related transition and physical risks and portfolio opportunities.

Climate change and the low-carbon transition remain critical emerging risks, with potential to have a significant impact on our business and the communities where we operate. Emerging risks that could materially impact strategic objectives are incorporated within our principal risks and, where possible, we develop responses to mitigate threats and create opportunities for the Group. Climate-related risks and opportunities linked to several of these principal risks are listed below:

- 2. Preparing our Iron Ore business to meet the demand for low-carbon steel.
- 4. Minimising our impact on the environments we work in and building resilience to changes in those environments, including climate change and natural hazards.
- 7. Delivering on our growth projects.
- 8. Achieving our decarbonisation targets competitively.
- 10. Conduct our business with integrity, complying with all laws, regulations and obligations.

See pages 91-98 where we have described the risk or opportunity, the key regions impacted, our risk management responses, and the relevant groups with oversight of each process.

These risks or opportunities, if material, are linked to one of the above Group principal risks and reviewed on a quarterly basis by the Risk Area of Expertise and the Risk Management Committee (RMC). All employees are empowered to own and manage the risks that arise within their area of responsibility. Our Centres of Excellence, comprising our 2nd line of defence, provide deep subject matter expertise, for example steel decarbonisation. Our Internal Audit function provides independent assurance. Where required by law, or where deemed appropriate, we also engage third parties to provide independent assurance. Where risks are material to the Group, they are escalated to the RMC and, as appropriate, to the Board or its committees.

For more information see pages 88-98 on our approach to risk.

Climate-related metrics and data

We have established key metrics to help us track our progress against our decarbonisation targets, ensuring we are advancing towards a sustainable and low-carbon future.

Our metrics help us manage and monitor our climate risks and opportunities including metrics for transition-related opportunities (the increased demand for transition materials) provided on page 46 (transition materials metrics), and physical risks metrics including the financial exposure metric and annualised damage metric detailed on pages 68-69.

We have also disclosed other ESG-related KPIs, metrics and targets that integrate with our objective of striving for impeccable ESG credentials within the respective Environment, Social, and Governance sections of this Annual Report. A summary of these metrics is found on page 34 with other Group KPIs on pages 12-14.

Scope 1 and 2 emissions:

Our operational emissions targets are ambitious - to reduce emissions by 50% by 2030 relative to 2018 levels, reaching net zero by 2050. Our targets cover more than 95% of our reported Scope 1 and 2 emissions and are aligned with 1.5°C pathways. We adjust our baseline to exclude reductions achieved by divesting assets and to account for acquisitions.

Our definition of net zero applies to our operational (Scope 1 and 2) emissions on an equity basis. See pages 49-57 for detail on how we are reducing emissions in our own operations.

Scope 1 emissions are direct GHG emissions from facilities fully or partially owned or controlled by Rio Tinto. They include fuel use, on-site electricity generation, anode and reductant use, process emissions, land management and livestock. Scope 2 emissions are GHG emissions from the electricity, heat or steam brought in from third parties (indirect emissions). This is consistent with the World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD)'s Greenhouse Gas (GHG) Protocol: A Corporate Accounting and Reporting Standard (Revised Edition) (2015).

Performance against target: Scope 1 and 2 GHG emissions – adjusted equity basis (Baseline[1])

Equity GHG emissions (Mt CO_2e)	2024	2023	2018
Adjusted (Baseline) Scope 1 and 2 emissions[2]	30.7	33.9	
Carbon credits[3]	1.1	0	
Baseline net Scope 1 and 2 emissions	29.6	33.9	
Emissions target base year (Baseline, adjusted for acquisitions and divestments)			35.7

See our *2024 Scope 1, 2 and 3 Emissions Calculation and Climate Methodology* report and our *2024 Sustainability Fact Book* for further detail on our emissions reporting methodology. We engaged KPMG to provide reasonable assurance over the 2024 Scope 1 and 2 data. The assurance statement can be found on page 321.

Changes to our 2018 baseline include: Review of Scope 1 emissions factors and greater alignment with regional factors specified in government reporting (<1% change to emissions).

Acquisitions and divestments: Addition of Matalco aluminium metal recycling assets into reporting and baseline. Acquisition of Mitsubishi's interest in Boyne Smelters (11.65%), Sumitomo Chemical's interest in New Zealand Aluminium Smelter (20.64%) and Boyne Smelters (2.46%), taking NZAS equity to 100% and BSL to 73.5%. Equity increase for the Ranger mine to 98.43%. Divestment of Lake MacLeod Dampier salt operations (removal from the baseline).

1. Rio Tinto share (equity basis) as a Baseline represents emissions from our benefit or economic interest in the activities resulting in the emissions. Emissions accounted for represent current equity and ownership for the full year.
2. The baseline value is based on the current equity in each asset, including zero equity in divested assets. Scope 2 emissions in the baseline are calculated using the market-based method.
3. Carbon credits used towards our 2024 net emissions calculation include Australian Carbon Credit Units (ACCUs) that were retired for compliance for the period 1 January to 30 June 2024 plus a projection of the number of ACCUs we expect to retire for the period 1 July to 31 December 2024. This projection is based on our Scope 1 emissions for the period 1 July – 31 December 2024. Rio Tinto retires ACCUs for liability under the Australian Safeguard Mechanism. Baselines for sites are calculated using known production intensity factors combined with actual reported production. Liability is determined when actual emissions exceed these baselines. Due to the misalignment of timing (Safeguard being July-June), carbon credits reported against the net emissions number include actual ACCUs retired for liability in the Jan-Jun 2024 part of the reported NGER FY24, and calculated liability using actual production and emissions for Jul-Dec 24. For details, refer to the table "Carbon credits retired towards net emissions (equity basis)" in our *2024 Sustainability Fact Book*.

2024 actual equity GHG emissions (Mt CO_2e)	Scope 1	Scope 2	Total
Consolidated accounting group	13.6	0.6	14.1
Other investee (e.g. investment in associate and joint venture)	9.4	6.3	15.7
Total (equity share method)	**23**	**6.9**	**29.8**

This table is the disaggregation of Scope 1 and Scope 2 GHG emissions between the consolidated accounting group and other investees. The grouping is determined by the financial definitions, but the emissions are calculated using the equity share method and percentages of emissions per site align with the carbon accounting protocol.

Scope 1, 2 and 3 GHG emissions – actual equity basis

Equity greenhouse gas emissions (Mt CO_2e)	2024	2023	2022	2021	2020
Scope 1 emissions[1]	23	23.3	22.7	22.8	22.9
Scope 2: Market-based emissions[2]	6.9	9.3	9.6	10.1	10.4
Total gross Scope 1 and 2 emissions	29.8	32.6	32.3	32.9	33.4
Carbon credits[3]	1.1	0	0	0	0
Total net Scope 1 and 2 emissions (with carbon credits retired)	28.7	32.6	32.3	32.9	33.4
Scope 2: Location-based emissions[4]	7.8	7.8	8.2	8.5	8.6
Scope 3 emissions	574.6	572.5	572.3	558.3	576.2
Operational emissions intensity (t CO_2e/t Cu-eq)(equity)[5]	6.1	6.8	7	7.2	6.9
Direct CO_2 emissions from biologically sequestered carbon (eg CO_2 from burning biofuels/biomass)[6]	0.05	0.03	0	0	0

Queensland Alumina Limited (QAL) is a tolling company and is 80% owned by Rio Tinto and 20% owned by Rusal. However, as a result of the Australian Government's sanction measures, QAL is currently prevented from tolling for Rusal and Rio Tinto is currently utilising 100% of the tolling capacity at QAL. Our 2024 equity emissions and our 2018 baseline include QAL emissions on the basis of Rio Tinto's 80% ownership. In 2024, the additional emissions associated with Rio Tinto's additional tolling capacity were 0.8Mt.

1. Scope 1: Emission factors are consistent with the most applicable national or regional reporting guidance or schemes. For emissions not covered by government reporting, factors from the Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories are used. A full list of references is included in the *2024 Scope 1, 2 and 3 Emissions Calculation and Climate Methodology* report. In 2024 as part of the implementation of a new GHG reporting tool, the Scope 1 factors for all sites were re-visited. Some adjustments were made to provide greater alignment with government reporting and regional factors.
2. Scope 2: Market-based method counts commercial decisions to purchase the unique rights to renewable energy as zero emissions and applies a residual mix factor (or similar) to the remaining MWh purchased. The residual mix factor is typically equivalent to the grid intensity with renewable attributes that have been sold removed from the factor. Scope 2 emission factors are consistent with the Australian National Greenhouse and Energy Reporting Measurement Determination 2008 for Australian operations location-based reporting. For non-Australian operations, where possible, factors are sourced from public grid level data or electricity retailers. For market-based reporting, Scope 2 includes the use of renewable electricity certificates (RECs) and all contracts where we have the exclusive rights to the renewable energy attributes.

   Market-based emissions reported as zero include Oyu Tolgoi, ISAL aluminium, Resolution Copper, Weipa, Richards Bay Minerals and Kennecott Copper with surrendered RECs. Escondida and QMM have renewable energy PPA contracts with energy attributes.
3. Carbon credits used towards our 2024 net emissions calculation include Australian Carbon Credit Units (ACCUs) that were retired for compliance for the period 1 January to 30 June 2024 (retired) plus a projection of the number of ACCUs we expect to retire for the period 1 July to 31 December 2024 (planned). This projection is based on our Scope 1 emissions for the period 1 July – 31 December 2024. For details, refer to the table "Carbon credits retired towards net emissions (equity basis)" in our *2024 Sustainability Fact Book*.
4. Location-based method reflects the emissions grid intensity of the location which the operation is located and includes the percentage of renewables that make up the total unadjusted grid intensity. Scope 1 and 2 equity emissions total – location-based: 30.8Mt CO_2e.
5. Historical information for copper equivalent intensity has been restated in line with the 2023 review of commodity pricing to allow comparability over time.
6. GHG Protocol Corporate Accounting and Reporting Standard recommends disclosure of CO_2 emissions from biologically sequestered carbon for transparency. These are from biofuel use and are not classified as our Scope 1 emissions.

2024 actual equity GHG emissions by location (Mt CO_2e)	Scope 1 Emissions (Mt CO_2e)	Scope 2 Emissions[1] (Mt CO_2e)	Total Emissions (Mt CO_2e)
Australia	12.9	6.7	19.6
Canada	6.1	0.1	6.2
Africa	0.6	0	0.6
US	0.9	0	0.9
Europe	0.3	0	0.3
South America	0.6	0	0.6
Mongolia	0.2	0	0.2
New Zealand	0.5	0	0.5
Other	0.9	0.1	0.9
Total	23	6.9	29.8

1. This table is a breakdown of Scope 1 and 2 equity emissions. Credits are not included in these values. Scope 2 emissions are calculated using the market-based method.

Note: The sum of the categories may be slightly different to the Rio Tinto total due to rounding.

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Scope 1 GHG emissions covered under an emissions-limiting regulation (Mt CO_2e), equity based	2024
Total gross global Scope 1 GHG emissions (CO_2e) covered under emissions-limiting regulations (Mt CO_2e)	19.2
Total gross global Scope 1 GHG (Mt CO_2e)	23
% Global Scope 1 GHG emissions covered under an emissions-limiting regulation	83%

Emissions limiting regulations applicable to Rio Tinto are listed in the *2024 Scope 1, 2 and 3 Emissions Calculation and Climate Methodology* report.

2024 equity GHG emissions by GHG type (Mt CO_2e)	CO_2	CH_4	N_2O	HFCs	PFCs	SF_6	NF_3	Total
	22.24	0.03	0.06	0.01	0.62	0	0	22.97

Note: The sum of the categories may be slightly different to the Rio Tinto total due to rounding. GHG emissions are the 6 groups of gases we report against as included in the Kyoto Protocol: carbon dioxide, hydrofluorocarbons, methane, nitrous oxide, perfluorinated carbon compounds and sulphur hexafluoride. Nitrogen trifluoride emissions are not present/ applicable in Rio Tinto's inventory.

Total energy use (PJ), equity basis	2024
Renewable electricity generated and consumed [1]	72
Contracted renewable electricity purchased and consumed [2]	
– Renewable electricity with surrendered RECs or GOs	23
– Renewable electricity contracted with energy attributes	6
Grid electricity purchased[3]	
– Grids that are materially all renewables	76
– Other grids	27
Renewable energy from biomass based fuels	4
Non-renewable energy (generated electricity)	70
Other non-renewable energy[4]	211
Total energy consumed (PJ)	**490**

Energy consumption includes energy from all sources, including energy purchased from external sources and energy produced (self-generated). Energy reported excludes exports of energy to third parties.

1. Includes our equity share of renewable energy generated and consumed.
2. Contracted renewable electricity is split into energy where we have purchased and surrender Renewable Energy Certificates (RECs), and contracts where we have the unique rights to the energy attributes.
3. Grid electricity includes all grid consumed electricity (grids contain a mixture of renewable and non-renewable energy sources). Energy consumed from grid electricity purchased was 21%.
4. Other renewable energy includes stationary fuels, heat, anodes and reductants.
   Renewable energy consumed as per the IFRS S2 Climate Related Disclosures guidance includes renewable energy the entity purchased under PPAs with RECs or GOs surrendered or cancelled, and renewable energy consumed from biomass based fuels. The renewable energy % under this definition is 5%.
   Unlike the GHG Protocol, this guidance does not recognise the following as renewable energy: 1) renewable energy contracts where unique energy attributes are contracted without a certificate or 2) where renewable electricity such as our hydro power generation assets supply our sites as it must be supplied specifically with RECs and GOs.

Scope 3 GHG emissions – equity basis

Total equity Scope 3 greenhouse gas emissions (Mt CO_2e) [1]	2024	2023	2022	2021	2020
Scope 3 emissions – upstream	29.8	29.5	30.1	32.3	30.4
Scope 3 emissions – downstream	544.8	543	542.2	526	545.8
Total	**574.6**	**572.5**	**572.3**	**558.3**	**576.2**

See pages 58-62 for detail on progress made against our Scope 3 targets and objectives and our main actions for 2025. Scope 3 emissions are prepared on an equity basis, taking into account our economic interest in all managed and non-managed operations. Scope 3 emissions are indirect greenhouse gas (GHG) emissions generated as a result of activities undertaken across the value chain. Scope 3 emissions are divided into 15 categories, covering activities both upstream and downstream of our operations. Of these categories, Category 10 – Processing of sold products – accounts for about 94% of the identified emissions across our value chains. For further details, refer to our *2024 Scope 1, 2 and 3 Emissions Calculation and Climate Methodology* report.

We engaged KPMG to provide limited assurance on Scope 3 emissions estimates in 2024. The assurance statement can be found on page 321.

1. To identify and calculate Scope 3 emission sources across our operations, we have used the WRI and WBCSD, Greenhouse Gas (GHG) Protocol: A Corporate Accounting and Reporting Standard (Revised Edition) (2015), GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard (2013) and the Technical Guidance for Calculating Scope 3 Emissions (version 1.0).
   We estimate the emissions from our customers' processing of iron ore, bauxite, alumina, titanium dioxide, salt and copper concentrate using a combination of internal emissions modelling, regional and industry level emissions factors and production and sales data. Third party shipping and transportation of our products to our customers, intercompany transport of products and transport of fuel and other supplies are also calculated and reported. Emissions associated with the manufacture and supply of purchased and capital goods are included in the Scope 3 inventory.
   Scope 3 emissions deemed to be material at Group level are reported on an equity basis as part of our disclosures in the Annual Report and our submission to the Carbon Disclosure Project. Where there are significant changes to the calculation methodology of Scope 3 categories to improve the maturity and accuracy of reported emissions, an approximate equivalent to the historical reported numbers using the new methodology will be provided.

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Sources of Scope 3 equity GHG emissions (Mt CO_2e)	2024	2023	2022	2021	2020
Upstream emissions					
1. Purchased goods and services	14.8	15.2	16.7	19.5	19.3
2. Capital goods	3.0	2.2	1.8	1.9	1.4
3. Fuel and energy-related activities	4.4	4.4	4.5	4.5	4.5
4. Upstream transportation and distribution	6.8	6.8	6.5	5.9	5.1
5. Waste generated in operations	0.1	0.1	0.1	0.1	0
6. & 7. Business travel and employee commuting	0.7	0.8	0.5	0.4	0.1
Downstream emissions					
9. Downstream transportation and distribution	2.1	2.4	2.3	2.7	3.0
10. Processing of sold products					
– Iron ore	395.9	399.9	386.6	364.6	376.4
– Bauxite and alumina	134.0	127.1	138.2	144.5	152
– Titanium dioxide feedstock	4.5	4.9	5.9	4.9	5.8
– Copper concentrate	0.7	0.5	0.5	0.5	0.6
– Salt	6.6	7.0	7.1	7.2	6.0
– Other	1.0	1.2	1.6	1.6	2.0
Total	**574.6**	**572.5**	**572.3**	**558.3**	**576.2**

Note: The sum of the categories may be slightly different to the Rio Tinto total due to rounding.

The following categories are excluded for the reasons provided:

Category 8: Upstream leased assets. Rio Tinto does not lease significant upstream assets.

Category 11: Use of sold products. This category is not applicable since Rio Tinto does not produce any fossil fuels or manufacture products applicable to this category.

Category 12: End-of-life treatment of sold products. Rio Tinto's products include metals and minerals with minimal emissions at end of life. This category is not applicable since Rio Tinto does not produce any fossil fuels or manufacture products applicable to this category. Final products related to Rio Tinto's material value chains (steel, aluminium and copper) produce materials with established recycling industries.

Category 13: Downstream leased assets. This category is not applicable since Rio Tinto does not lease significant downstream assets.

Category 14: Franchises. This category is not applicable since Rio Tinto does not have franchised operations.

Category 15: Investments. This category is for reporting emissions from company investments not already reported in Scope 1 and 2. Rio Tinto reports using the equity share approach, so all Scope 1 and 2 emissions from managed and non-managed investments are included in Scope 1 and 2 reporting and Scope 3 emissions within other applicable categories of Scope 3 reporting.

In 2024, emissions have been restated to ensure comparability with the material change in the spend-based emissions methodology. Amendments have been made in Category 10 bauxite and alumina processing due to identified double counting of emissions for non-equitable bauxite and alumina. For further details on Scope 3 reporting refer to the *2024 Scope 1, 2, and 3 Emissions Calculation and Climate Methodology.*

Calculation methodology – Scope 3 emissions categories

The calculation methodology for Scope 3 emissions categories associated with a target or goal is provided below. See our *2024 Scope 1, 2 and 3 Emissions Calculation and Climate Methodology* report for detail on all Scope 3 emissions categories.

Category	Calculation boundary	Calculation methodology and notes
1. Purchased goods and services, and 2. Capital goods	– Includes emissions associated with relevant purchased goods and services. – Excludes emissions associated with other Scope 3 categories (fuel, energy and transport). – Includes emissions associated with the upstream goods purchased or acquired by the business for capital projects.	– Spend data method using operating business costs for managed sites on equity basis using EXIObase, US Environment Protection Agency, UK Government spend-based factors. – Scope 3 emissions are calculated for major consumables and raw materials using quantity based reporting. – Where unavailable, non-managed site costs are estimated using costs from similar production facilities.
3. Fuel and energy-related activities	– Includes emissions from the production and transportation of purchased fuels, including natural gas, diesel, coal and energy sources not included in Category 1. This includes transmission losses from purchased electricity.	– Fuel and energy consumption data from Rio Tinto business systems. Factors are sourced from the Australian National Greenhouse Accounts Factors (Australian NGA), UK Government, International Energy Agency (IEA) and National Renewable Energy Laboratory (NREL).
4. Upstream transportation and distribution	– Total Scope 3 GHG emissions from upstream transportation and distribution of Rio Tinto products. – Includes all inbound transport, all inter-company transport paid for by Rio Tinto and all outbound product transport paid for by Rio Tinto (e.g. under cost, insurance and freight (CIF, CRF) or similar terms). – Includes emissions from bulk marine shipping, containerised shipping, road and rail transport of sold products and inbound transport emissions of major consumables. – Excludes emissions from Rio Tinto owned vessels (this is included in Scope 1 emissions).	– For our managed fleet (period-chartered and spot), actual emissions are derived from consumed fuel reported from each individual voyage. Estimated emissions from non-managed voyages (FOB and similar terms) are calculated using the Energy Efficiency Operational Indicator (EEOI) guidelines including vessel type-size, cargo volumes and distances. Generic EEOIs are sourced from the 4th International Maritime Organization (IMO) GHG Study. – For containership, road, rail and air, UK Government conversion factors have been utilised. Transport emissions estimated by spend data and EXIObase emission factors are also included in this section.
10. Processing of sold products	– Includes emissions related to the processing of iron ore, bauxite, alumina, TiO_2 feedstocks, copper concentrate and salt. "Other" includes an estimate for processing emissions related to Rio Tinto's other products, including molybdenum and minor minerals.	– Emissions calculated as described in this report. – High purity products like gold, silver and diamonds, which are low volume and have minimal amounts of further processing, are considered not material.

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Task Force on Climate-related Financial Disclosures Index

This section complies with the requirements of the Financial Conduct Authority's Listing Rule UKLR 6.6.6(8)R by reporting in line with the Task Force on Climate-related Financial Disclosures' (TCFD) recommendations and recommended disclosures. To determine that we comply with all 11 of the TCFD recommendations and recommended disclosures, we have considered section C of the TCFD "Guidance for All Sectors" and section E of the "Supplemental Guidance for Non-Financial Groups".

These disclosures also comply with the requirements of the Companies Act 2006 as amended by the Companies (Strategic Report) (Climate-related Financial Disclosure) Regulations 2022. We aim to continually improve our reporting and align with emerging standards, including the International Sustainability Standards Board (ISSB) International Financial Reporting Standard (IFRS) for climate-related disclosures (S2). In addition, climate change matters are integrated into other parts of the Annual Report, such as in the Key performance indicators, Principal risks and uncertainties and Notes to the financial statements.

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Recommended disclosure

Governance

Describe the Board's oversight of climate-related risks and opportunities.

- Climate-related governance, pages 69-71.
- Board of Directors (including Executive Committee) composition, skills, and experience, pages 102-105 and 112.
- Board activities specifically related to climate activities, page 109.
- Directors' attendance at scheduled Board and committee meetings, page 110.
- Nominations Committee report (including ESG expertise assessment), page 111.
- Audit & Risk Committee report, page 113.
- Sustainability Committee report, page 117.
- Remuneration report, page 119.

Describe management's role in assessing and managing climate-related risks and opportunities.

- Climate-related governance, pages 69-71.
- Management of climate-related risks and opportunities, page 71.
- Our approach to risk management, pages 88-98.
- Group governance framework, page 101.
- Remuneration report, page 119.

Strategy

Describe the climate-related risks and opportunities the organisation has identified over the short, medium, and long term.

- Using scenarios to identify climate risks and portfolio opportunities, pages 43-44.
- Portfolio risks and opportunities in the low-carbon transition, page 45.
- Physical climate risk and resilience, pages 66-69.
- Emerging risks, pages 89-90.
- Principal risks and uncertainties, pages 91-98.

Describe the impact of climate-related risks and opportunities on the organisation's businesses, strategy and financial planning.

- Strategic context and our strategic framework, pages 6-7.
- Progressing our 4 objectives, pages 10-11.
- Using scenarios to identify climate risks and portfolio opportunities, pages 43-44.
- Portfolio risks and opportunities in the low-carbon transition, page 45.
- Strategic alignment with the low-carbon transition, page 46.
- Scope 1 and 2 emissions: Reduce emissions from our own operations, pages 47-49.
- Progress, lessons learned and our approach today, pages 48-49.
- Action to reduce our emissions, pages 51-52 and 62.
- Scope 3 emissions: Partner to decarbonise our value chains, page 58.
- Capital allocation and investment framework, page 63.
- Physical climate risk and resilience, pages 66-69.
- Impact of climate change on the Group, pages 157-160.

Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.

- Strategic alignment with the low-carbon transition, page 46.
- Scope 1 and 2 emissions: Reduce emissions from our own operations, pages 47-57.
- Scope 3 emissions: Partner to decarbonise our value chains, pages 58-62.
- Capital allocation and investment framework, page 63.
- Physical climate risk and resilience, pages 66-69.
- Impact of climate change on the Group, pages 157-160.

Risk management

Describe the organisation's processes for identifying and assessing climate-related risks.

- Using scenarios to identify climate risks and portfolio opportunities, pages 43-44.
- Physical climate risk and resilience, pages 66-69.
- Management of climate-related risks and opportunities, page 71.
- Our approach to risk management, pages 88-90.
- Emerging risks, pages 89-90.
- Principal risks and uncertainties, pages 91-98.

Describe the organisation's processes for managing climate-related risks.

- Physical climate risk and resilience, pages 66-67.
- Management of climate-related risks and opportunities, page 71.
- Our approach to risk management, pages 88-90.
- Principal risks and uncertainties, pages 91-98.

Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organisation's overall risk management.

- Management of climate-related risks and opportunities, page 71.
- Our approach to risk management, pages 88-90.
- Principal risks and uncertainties, pages 91-98.

Metrics and targets

Disclose the metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process.

- Key performance indicators, page 12.
- 2024 performance against ESG targets, page 34.
- Environment, pages 35-40.
- Transition materials metrics, page 46.
- Scope 1 and 2 emissions: Reduce emissions from our own operations, pages 47 and 53-57.
- Annualised damage risk scores, pages 68-69.
- Scope 3 emissions: Partner to decarbonise our value chains, page 58.
- Climate-related metrics and targets, pages 71-74.
- STIP measures, pages 130-133.
- LTIP, pages 134-136.

Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 GHG emissions, and the related risks.

- Climate-related metrics and targets, pages 71-74.

Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets.

- Key performance indicators, page 12.
- 2024 performance against ESG targets, page 34.
- Environment, pages 35-40.
- Grow production of materials essential for the energy transition, page 43.
- Scope 1 and 2 emissions: Reduce emissions from our own operations, page 47.
- Scope 3 emissions: Partner to decarbonise our value chains, pages 58-62.
- Climate-related metrics and targets, pages 71-74.
- STIP measures, pages 130-133.
- LTIP, pages 134-136.

Social

Our values of care, courage and curiosity define who we are. They shape how we behave, how we operate and how we solve problems. By putting these values into action, we will continue to build trust, from the inside out.

The health, safety and wellbeing of our employees, contractors and communities is core to our values, and to what we stand for as a company. Nothing matters more.

We are on a multi-year journey to create a workplace where everyone feels safe, respected and empowered to have a good day, every day. Long-term, transformational cultural change is a complex process, and the *Everyday Respect Progress Review*, which we conducted in 2024, confirms there remain serious challenges we must continue to address. But our people believe we are heading in the right direction, and we are determined to stay the course in strengthening our work culture. Everyone deserves to feel physically and psychologically safe at work, without exception.

Wherever we operate, we work with communities to understand the social, cultural, environmental and human rights impacts of our activities. We work hard to avoid, mitigate and manage adverse impacts, and to respect human rights throughout our value chain. And we engage respectfully to listen and respond to concerns and contribute to positive outcomes for host communities and society.

Living and working with care, courage and curiosity will help us deliver the future we want for our people and to be the best operator and partner we can be.

Safety

It is with deep sadness that we reflect on the tragic fatal events at our managed operations in 2024.

On 23 January, a plane crashed shortly after takeoff near Fort Smith, Northwest Territories, Canada, resulting in the loss of 6 of the 7 people on board, including 4 Diavik team members and 2 airline crew members. We remember our colleagues who lost their lives - Diane Balsillie, Howard (Howie) Benwell, Joel Tetso, and Shawn Krawec. Another member of our Diavik team survived, was treated in hospital and subsequently released.

The Transport Safety Board of Canada continues to investigate this tragic event, with the investigation expected to be completed in 2025.

Following this event, we critically evaluated our aviation management approach across the Group to identify and implement opportunities for improvement.

On 26 October, Morlaye Camara, an employee of one of our contractors, was injured at the SimFer Port Project in Morebaya, part of the Simandou project, and subsequently passed away from his injuries. Following a thorough review to understand the circumstances that led to the event, we have shared the lessons learned with our leaders and partners, encouraging them to reflect on how these relate to their teams and workplaces, and act upon what we have learned.

We are also saddened by serious safety events reported across our industry more broadly, including 2 fatal events at our non-managed operations.

Additionally, we remain concerned for Gel Aguaviva, a crew member aboard our bulk carrier RTM Zheng He, managed by Anglo Eastern, who was reported missing on 26 December. A search and rescue operation led by the Philippine Coast Guard is ongoing.

We care deeply about the health, safety and wellbeing of everyone involved in our business, and these tragedies highlight the ongoing need to prioritise these aspects every shift, every day.

Guided by our firm belief that all fatalities are preventable, we are committed to applying the lessons learned across our business to continuously improve our practices and prevent similar future events. This includes focusing on identifying, managing and, where possible, eliminating risks so everyone goes home safely.

We also recognise cultural and operational contexts vary across the regions where we operate, and fostering a strong safety culture is a commitment we share with our partners. In 2024, we internally shared lessons from past fatal event investigations conducted by our non-managed operation partners, as we believe two-way sharing and learning is key to supporting our collective safety maturity journey. We also continue to work together to prioritise health and safety in ways that resonate locally and uphold our standards globally.

Image: Gers in grasslands, Mongolia.



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Across our managed operations, we continue to see serious events where people are exposed to potential fatal incidents (PFIs). The main safety risks at our managed operations relate to falling objects, falling from heights and vehicle-related incidents, which account for 62% of total PFIs and remain at the forefront of our safety maturity efforts.

Our all-injury frequency rate (AIFR) remained at 0.37 in 2024, consistent with 2023. We continue to see a disparity in safety performance for employees compared to contractors, and remain focused on supporting contractor safety by further integrating teams into our safety culture, and learning from them.

In 2024, we experienced 5 significant potential process safety events: 3 at Richards Bay Minerals in South Africa, one at Bell Bay Aluminium in Australia, and one at New Zealand's Aluminium Smelter in New Zealand. We continue working to mature our management system and culture, through our process safety improvement plan.

Critical risk management (CRM)

CRM remains our primary fatality elimination tool, making sure critical controls are in place and working where there is a fatal risk. In 2024, our teams continued to reconnect with why we have CRM and enhance the quality of verifications by checking the right critical controls are in place for each task.

In 2024, we began work to strengthen our safety control framework to align with our evolving risk profile, which will extend into 2025. This will enable us to improve safety and enhance assurance. By offering visibility into the performance of the framework, we can proactively identify improvement areas and adapt before something goes wrong.

Safety maturity model

Leadership and strong processes are critical in driving a sustained improvement of our safety performance and safety culture. This is evident in the implementation of our safety maturity model (SMM), introduced in 2019. SMM is our blueprint for safety, integrating best practices in leadership, engagement, learning, risk management and work planning, as well as operational ownership of health and environmental risks.

In 2024, we continued to work closely with our assets to evaluate and evolve their safety maturity and foster both physical and psychological safety. Through this, we have refined our assessor training program, placing more emphasis on elements such as mindsets, behaviours and felt experiences. This supports our belief that all employees and contractors should feel empowered to work safely, speak up and make decisions that prioritise their wellbeing.

While we acknowledge cultural transformation is a long-term journey, we are encouraged by our SMM assessments outcomes in 2024. These have significantly deepened our understanding of each site's safety culture and support actionable insights to guide us towards creating an even safer work environment.

In 2025, we are looking to further evolve SMM to improve safety across our value chain and support our Best Operator focus.

Safety and health performance

	2024	2023	2022	2021	2020
Fatalities at managed operations	**5**	0	0	0	0
All-injury frequency rate (per 200,000 hours worked)	**0.37**	0.37	0.40	0.40	0.37
Number of lost-time injuries	**270**	236	225	216	187
Lost-time injury frequency rate (per 200,000 hours worked)	**0.23**	0.23	0.25	0.25	0.22
Safety maturity model score[1]	**5.4**	5.2	4.7	5.7	5.4
Rate of new cases of occupational illness (per 10,000 employees)[2]	**29.1**	20.1	17.6	15.4	17.3
Number of employees[3]	**60,000**	57,000	54,000	49,000	47,500
Noise-induced hearing loss[4]	**82**	45	37	20	26
Musculoskeletal disorders[4]	**49**	45	32	38	35
Mental stress[4]	**9**	7	6	5	2
Others[4]	**7**	6	7	2	7
Fines and prosecutions – safety ($'000)[5]	**873.0**	363.8	339.0	706.3	25.4
Fines and prosecutions – health ($'000)	**0.0**	0.9	0.0	5.0	0.0

1. Figures in the table represent the Rio Tinto Group average SMM score at the end of each year. Each year, assets are added or removed from the SMM program based on project and closure cycles. New assets to the program are baselined in the first quarter of each year and added to the Group average at the end of the year.
2. Rate of new cases of occupational illness = number of all new cases of occupational illnesses x 10,000/number of employees (based on average monthly statistics).
3. This is the average number of employees for the year and includes the Group's share of joint ventures and associates (rounded).
4. There can be one or more illness reported for each employee/contractor. Illness sub-categories have been restated across all the years following a review of the data collection process
5. In 2024, we paid safety fines resulting from non-compliances identified during MSHA inspections at our Kennecott Copper, Resolution Copper and Boron Operations in the US; OSHA citation with fine at Kennecott Copper, US; CNESST fine at RTA Alma, Canada; administrative penalty resulting from a safety incident at RTA Kitimat; citation with fine on Rio Tinto Exploration, Canada; fine for contravening the OHS Act at Havre-Saint-Pierre, Canada.

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Health and wellbeing

Occupational health

We aim to ensure everyone goes home safe and healthy every day. In 2024, we recorded 147 new occupational health illnesses (2023: 103), reflecting our increased focus on identifying, investigating and preventing health conditions arising directly from work. Many occupational illnesses develop over a long and continuous period, requiring sustained efforts to reduce exposure reduction over time.

In 2024 we:

- Completed occupational and industrial hygiene monitoring at our operational and managed assets, assessing noise, airborne particulates, gas and other contaminants. These insights provide valuable insights into our exposure profile and help us to prioritise actions to ensure effective controls are in place.
- Redesigned fit-for-purpose medical assessments at our Australia-based operations, with a plan to expand to our assets across the rest of the world in 2025.
- Continued to standardise how occupational health and hygiene data is digitally collected and accessed, transitioning from manual to more secure and streamlined digital collection processes that deliver improved risks and trends insights to support our health management initiatives.
- Implemented 7 projects at 6 assets to successfully reduce exposures to known health risks for our employees and contractors.

For more information see riotinto.com/health

Mental health and wellbeing

Mental health is a core part of our health and safety culture, with a responsibility to support all aspects of our people's wellbeing. We pay particular attention to creating a psychologically healthy and safe work environment, while providing support to our people for their mental health needs, wherever they may arise.

In 2024 we:

- Conducted an increasing number of psychosocial risk assessments and provided leader training to better address psychosocial hazards in the workplace and improve the experience of work for our people.
- Supported the principles of good work for worker wellbeing through our People Experience programs, such as improving inclusion and diversity, providing fair pay and flexible work, consulting and communicating with our people, and supporting career progression and job adjustments over the employee lifecycle.
- Used insights from our twice-yearly People Survey to inform our approach to mental health.
- Furthered our efforts to develop a psychologically healthy and safe workplace by designing our facilities, teams and culture to eliminate psychosocial risk, and raising awareness and delivering training to our leaders to help them recognise and support people experiencing mental ill-health.
- Provided employees with tools and skills to support their mental health, such as our global Employee Assistance Program (EAP) and our global Peer Support Program, where 100% of our 1,650 peer supporters are trained in mental health support. We also continued to offer domestic violence support programs to all employees.
- Raised awareness of mental health in the workplace through global campaigns such as World Mental Health Day and our company-wide Mental Health Week, which included a program of activities, wellbeing resources and an external video series.
- Continued several partnerships with mental health organisations, including Lifeline Australia, a new 5-year partnership with Western Australia-based Telethon, and our continuing support for the Fondation Jeunes en Tête in Quebec over the last 29 years.
- Maintained our Tier 2 rating in the 2024 CCLA Corporate Mental Health Benchmark Global 100+, ranking as the 4th top improver in the last 3 years (out of 100).
- Contributed to industry-wide improvements of psychosocial risk management as an active member of the Minerals Council of Australia (MCA) Psychosocial Risk Management Working Group, and through our participation in the ICMM Psychosocial Risk and Worker Wellbeing Management Working Group, which is helping to build a standard for our industry and shape a new definition of psychological health.

For more information on how we're creating an environment where everyone feels safe, respected and empowered, see pages 78-80 and 86-87.

Talent, diversity and inclusion

We are committed to building a culture where everyone, everywhere feels safe, respected and empowered to have a good day, every day.

Insights from 2024

Listening to our people

In 2024, we held 2 People Surveys to gain insights from the voices of our employees across the company to better understand the steps we can all take to make Rio Tinto a better place to work.

We heard from more than 41,000 employees in our fourth quarter People Survey, who shared over 100,000 comments. Our employee satisfaction score (eSAT) was 74 and our Recommend Rio score 72, both consistent with the 2023 score. The second highest score (77) was in response to "I am treated with respect at work", and "I feel safe at work" had the highest score (78). From the feedback, we recognise we can improve the way we take meaningful action as a result of the survey (58) and how people collaborate to get things done (62).

We have an expectation that every leader will review the results and discuss them with their teams, and generate an action plan to create improvements. This year we introduced a new culture metric as part of our Group performance scorecard. Using our People Survey results, we are tracking an average over time of all questions to target and improve the overall experience for everyone working at Rio Tinto.

In April, 2 years after publishing the *Everyday Respect Report*, we launched a *Progress Review*, conducted again independently by Elizabeth Broderick & Co. (EB&Co.). More than 10,050 individuals completed the survey, 1,318 participated in virtual and in-person listening sessions and 342 submitted confidential written contributions.

On 20 November, we published the findings of the *Progress Review*. Change is happening and we are making progress. However, people are still experiencing behaviours and attitudes in our company that are unacceptable and harmful. We are greatly troubled by this and sincerely apologise to anyone affected. Safety, both physical and psychological, remains our number one priority and supporting our people when harm happens always comes first. And there is still more to do. We must continue to focus on ensuring that the workplace experience reflects our values consistently.

The survey data in the *Progress Review* was an important temperature check for us. Nearly half of survey respondents reported an improvement in relation to bullying, sexual harassment and racism, with a majority of employees expressing confidence that

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Rio Tinto will make a meaningful difference in these areas in coming years.

Achieving the sustained change we want to see in our workplace will require ongoing focus and effort from everyone at Rio Tinto. We remain committed to cultural transformation and will accelerate our efforts.

To be successful, we must take the time to listen to everyone in Rio Tinto and understand all perspectives. Our efforts will be focused on increasing our opportunities to listen to understand and ensure our workplaces support everyone.

For more information about Everyday Respect, and to read the *Progress Review*, see riotinto.com/everydayrespect

Building respect

More than 99% of our leaders have completed the "Building Everyday Respect" training, along with 97.4% of employees globally, strengthening everyone's understanding of what good looks like and how to be an upstander.

For more information about our work to support employees' psychological health and safety see the health and wellbeing section on pages 78.

Creating an inclusive workplace

We are committed to ensuring our workforce reflects the communities where we operate and offering a workplace that is inclusive of everyone, everywhere.

In 2024, we set a target on our Group scorecard to continue to build women's representation. Our target was 25.8% of our workforce, and we achieved 25.2%. We were pleased to see senior leaders increase from 30.1% to 32.0% and operations and general support from 17.7% to 18.9%. We are not satisfied with this result and remain committed to increase the representation of women in our workplace.

We are making progress on our ambition to increase representation of ethnic minorities in our global senior leadership population (Executive Committee direct reports) to 18% by 2027. We currently have 14.3%, which represents a small increase from our baseline. Aligned to the requirement of the Parker Review[1] we have also set a target of 17% representation of ethnic minorities in our UK-based senior management population by end 2027. We monitor the diversity of succession plans for all senior roles and ask that our executive search partners provide diverse candidate slates. The introduction of Workday this year will help us gain a more complete global data set, enabling us to more accurately monitor progress on increasing representation.

Inclusive Voices, our Global Employee Resource Groups (ERGs) communities, was launched to elevate the voices of underrepresented groups and allies, and address barriers to diversity. These ERGs are employee-led and ExCo-sponsored, kicking off with LGBTQ+ Voices, Gender Equal Voices and Neurodiverse Voices, joining the Elevating Voices Network in Australia, established in late 2023. We recently announced champions for 4 new Inclusive Voices ERGs that will launch in quarter one 2025 to improve the experiences of our people with disabilities and amplify our cultural diversity.

Developing our talent

This year we launched a new talent framework, Career Conversations, to give our people greater agency in their future careers and development. It centres around our people, their values-based performance, motivations and experiences, supporting them to plan their career and development in collaboration with their leader. Launched to senior leaders in 2024, Career Conversations will be rolled out more broadly across the organisation in 2025 and 2026.

We continued our commitment to support individuals at the start of their career with 235 graduates and 280 interns joining the organisation in 2024. Our graduate program provides stretching development opportunities, including our Innovation Challenge, and enables interns to build business skills and experience while studying. This year we launched a new development curriculum, recognising the different learning preferences for these graduates. Grad Tok uses technology, video and digital resources to provide development resources in short, easily digestible formats that can be accessed as needed as part of a curated learning journey.

In 2024, 6,084 new hires joined the business, of which 1,821 were contractors becoming permanent employees (2023: 9,166 new hires of which 2,718 were contractors).

Investing in leadership development

To best equip our most senior cohort to lead culture change, we have now had over three-quarters of the senior leadership group (77%) complete the Voyager program. This program encourages leaders to reflect deeply, role model psychological safety, understand empathy and build connection to lead in a complex environment.

We have maintained a sustained focus on the importance of coaching, with a further 523 leaders completing our Leader as Coach program which supports our Safe Production System roll out.

To support our frontline leaders, this year we launched Leadership Fundamentals, designed to build core leadership skills, with individual modules focused on key areas such as how to build a team and how to create a safe environment. More than 695 frontline leaders have participated in the program.

There have been 31 Safe Production System deployments at operational sites this year, bringing a focus to mindsets, behaviours and skill development for our leaders.

For more information about how we are increasing Indigenous leadership in our business see the CSP commitments section on page 83.

Equality through pay equity

Ensuring that employees with similar skills, knowledge, qualifications, experience and performance are paid equally for the same or comparable work is intrinsically linked to our commitment to inclusion and diversity.

We remain committed to eliminating any residual pay inequities based on gender or other non-legitimate dimensions of difference.

Our equal pay gap, the primary lens we use when assessing gender pay, measures the extent to which women and men employed by our company in the same location, and performing work of equal value, receive the same pay. Our 2024 equal pay gap was less than 1.5% in favour of men.

Our gender pay gap is a measure of the difference between the average earnings of women and men across the Group (excluding incentive pay), regardless of role, expressed as a percentage of men's earnings. Our 2024 gender pay gap was less than 1% in favour of women.

For more information about our commitment to pay equity see riotinto.com/payequity

1. A UK business-led and Government-backed review that has established targets relating to the number of directors, and required companies to set a target relating to the number of senior management, who identify as minority ethnic in UK-listed companies.

Workforce data by region[1][2]

Region	Average employee headcount[3]	Headcount distribution %	Absenteeism[4]	Average contractor headcount[5]	Headcount distribution %
Africa	3,294	6.2%	2.9%	165	3.8%
Americas	16,134	30.4%	0.9%	734	17.0%
Asia	6,681	12.6%	1.5%	215	5.0%
Australia/New Zealand	25,724	48.5%	5.9%	3,132	72.7%
Europe	1,206	2.3%	0.5%	64	1.5%
Total[6]	**53,039**	**100.0%**	**3.4%**	**4,310**	**100.0%**

1. Includes our total workforce based on managed operations (excludes the Group's share of non-managed operations and joint ventures) as of 31 December 2024.
2. Rates have been calculated based on average monthly headcount in the year.
3. Employee headcount excludes Non-Executive Directors and contractors.
4. Absenteeism includes unplanned leave (sick leave, disability, parental and other unpaid leave) for populations on global, centralised HR systems. Excludes Non-Executive Directors and contractors.
5. Contractors include those engaged on temporary contracts to provide services under the direction of Rio Tinto leaders.
6. The sum of the categories may be slightly different to the Rio Tinto total shown due to rounding.

Workforce data by category and diversity[1][2]

		Gender[3]					Age Group[4]				Region[4]				
Category	Headcount distribution %	Women (count)	Men (count)	Undeclared (count)	Women %	Men %	Under 30	30-39	40-49	Over 50	Africa	Americas	Asia	Australia /NZ	Europe
Senior leaders	1.0%	179	380	1	32.0%	67.9%	0.2%	4.8%	44.0%	51.0%	5.3%	27.1%	10.7%	41.9%	15.0%
Managers	8.7%	1,692	3,061	13	35.5%	64.2%	0.6%	25.2%	44.4%	29.8%	5.3%	32.9%	11.7%	44.2%	5.9%
Supervisory and professional	37.1%	6,270	14,042	46	30.8%	69.0%	10.6%	37.4%	30.6%	21.4%	7.0%	24.8%	17.5%	48.7%	2.0%
Operations and general support	52.3%	5,434	23,218	27	18.9%	80.9%	18.5%	29.0%	26.2%	26.2%	5.8%	34.6%	8.8%	49.4%	1.4%
Graduates	0.9%	269	227	0	54.2%	45.8%	84.3%	13.9%	1.6%	0.2%	6.2%	24.4%	15.2%	53.6%	0.6%
Total	**100.0%**	**13,844**	**40,928**	**87**	**25.2%**	**74.6%**	**14.5%**	**31.4%**	**29.4%**	**24.8%**	**6.2%**	**30.7%**	**12.4%**	**48.6%**	**2.1%**

1. Includes our total workforce based on managed operations (excludes the Group's share of non-managed operations and joint ventures) as of 31 December 2024.
2. Excludes Non-Executive Directors, Executive Committee, contractors and people not available for work 2017-2020. From 2021, the definition used to calculate diversity was changed to include people not available for work and contractors (those engaged on temporary contracts to provide services under the direction of Rio Tinto leaders) excluding project contractors.
3. In 2024, 87 individuals' gender was undeclared.
4. Representation by Age and Region includes employees only, excludes contractors.

Employee hiring and turnover rates[1][2][3]

		Gender[4]			Age group				Region				
	Total	Women	Men	Undeclared	Under 30	30-39	40-49	Over 50	Africa	Americas	Asia	Australia/NZ	Europe
Employee hiring rate[5][6]	**11.3%**	38.8%	61.0%	0.2%	43.3%	31.2%	16.6%	8.8%	5.4%	28.9%	11.8%	49.6%	4.3%
Employee turnover rate[7]	**8.8%**	9.5%	8.6%	–%	10.2%	8.2%	6.7%	11.2%	5.8%	7.2%	5.0%	11.1%	8.7%

1. Includes our total workforce based on managed operations (excludes the Group's share of non-managed operations and joint ventures) as of 31 December 2024.
2. Excludes Non-Executive Directors and contractors.
3. Rates have been calculated based on average monthly headcount in the year per category.
4. In 2024, 87 individuals' gender was undeclared.
5. Total hiring rate is calculated as total employee hires over average employee headcount for the year.
6. Hiring rate includes total employee hires per category over total hires for the year.
7. Turnover rate excludes temporary workers and the reduction of employees due to business divestment. Turnover rate includes total terminations per category over average monthly headcount in the year per category.

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Community engagement and social investment

The strength of our relationships with the communities who host us, and broader society, is central to our business.

Our Communities and Social Performance (CSP) teams work across our entire business. They provide technical expertise to continually evolve and improve our approach to engaging with communities where we operate. These teams include experts ranging from archaeologists, anthropologists, social scientists and economic development experts to human rights specialists and operational leaders.

Our teams and assets operate in line with our global Communities and Social Performance Standard, which we revised and strengthened in 2022. Our standard provides clear direction on the minimum requirements expected and how we can deliver better social outcomes and strengthen our social licence.

We aim to build enduring relationships with Indigenous Peoples and communities that host our operations. We respect the deep physical, spiritual and cultural connection that Indigenous Peoples have to the land, waterways, culture and nature. Investing in genuine partnerships is critical to unlocking the socio-economic opportunities created by our decarbonisation strategy. By listening to understand, being transparent and willing to learn from our mistakes, we will help build lasting outcomes for host communities and society.

2024 progress

We continue to strengthen our social performance capacity and capability to become a better operator and partner. In 2024, our CSP practitioners continued to increase their knowledge through online and face to face learning and knowledge sharing.

It is essential that we listen to, and act on, the views of communities that host our operations. In 2024, together with Voconiq, a third-party engagement science research company, we launched our global Community Perception Monitoring program, Local Voices. The program will help us to engage more effectively and better understand communities' perceptions, leading to improved data-driven decisions.

CSP targets

In 2024, we progressed initiatives towards our 2026 CSP targets. We also extended those targets for one year, to conclude in 2027, to accommodate Group-wide productivity and culture initiatives. We launched our Human Rights in Action learning program for employees in higher-risk human rights roles, with an 85% completion rate. We continued to implement management frameworks for cultural heritage management and strategic social investment partnerships, and to increase Indigenous leadership in Australia.

For more information about our CSP targets see page 34 or visit riotinto.com/communities

Social investment

We partner with host communities to deliver positive and lasting outcomes. Engaging local services, employing local people, buying local products and investing in thriving regional economies creates real value for host communities and our business.

In 2024, our total voluntary global social investment was $95.9 million, covering a wide range of social and economic programs.

Our goal for social investment is to contribute to strong and resilient communities in thriving regional economies. We are doing this by applying a more strategic approach to how we partner with communities so we can deliver the outcomes that are important to them.

For more information about our social investment, see riotinto.com/socialperformance and the *2024 Sustainability Fact Book*.

Country updates

QIT Madagascar Minerals (QMM), Madagascar

In 2023, QMM increased its community commitment to $4 million per year over 25 years, with half to be spent locally and half in the region. This was part of the fiscal agreement between the Government of Madagascar and Rio Tinto announced in August 2023. In September 2024, following several community engagements, the list of projects was submitted to the representatives of the Government of Madagascar and approved by the Council of Ministers.

In 2024, QMM completed the regional rollout of backpacks for children in the District of Fort-Dauphin. A total of 38 primary schools, with more than 11,000 children, benefited from these critical school supplies. QMM also supported the community health mission of the NGO Médecins de l'Océan Indien (MOI), an initiative that aims to facilitate free access to essential medical care for more than 19,000 patients in Fort-Dauphin and the surrounding area.

In April 2024, Rio Tinto plc received a "letter of claim" from UK law firm Leigh Day representing 64 individuals living in the Mandena region of Madagascar where QMM operates. We are taking the letter seriously. Although we cannot comment on the letter itself given the initiation of a legal process, QMM's published independent studies on water quality and radiation within the community, taken over the last 3 years (available on Rio Tinto's website), do not support the allegations raised in the letter.

Resolution Copper project, Arizona, US

At our Resolution Copper project, we remain committed to preserving Native American and local cultural heritage while delivering long-term benefits to the region. In 2024, we continued building relationships with Native American Tribes and local communities, strengthening partnerships focused on cultural preservation, youth recreation, and economic development. We also advanced and signed the Good Neighbor Agreement with the Town of Superior, local communities and stakeholders from the Pinal and Gila counties to support a lasting, collaborative relationship.

For more information visit riotinto.com/projects

Simandou project, Guinea

We are committed to delivering significant and tangible economic and social benefits to the local communities surrounding the Simandou iron ore project in Guinea. We continue to work closely with community representatives to understand their priorities and concerns, and to design and deliver social investment programs that contribute to improving living conditions.

Earlier this year, we reached an important milestone with the approval of SimFer's Land Acquisition and Resettlement Framework and the associated site-specific Resettlement and Compensation Action Plans. This framework covers our operations on the mine, the rail spur and port, and has been developed following extensive consultation with impacted communities and the Government of Guinea. We have ensured that our plans benefit from their knowledge and experience and that all possible steps are being taken to minimise disruption, provide appropriate compensation, and restore the livelihoods of the people and communities affected. We recognise our ability to positively contribute to Guinea's long-term social and economic development beyond the immediate impact of our operations. Our dedicated social and regional economic development programs focus on partnering to build essential capacity, including in health and education, and to foster strong economic linkages and a more resilient, diversified economy. We are also contributing to important infrastructure such as the development of the Conakry Urban Park.

Together with all our partners, we are committed to developing the Simandou project in line both with national regulations and internationally recognised environmental, social and governance standards.

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Oyu Tolgoi, Mongolia

At Oyu Tolgoi, we are working in partnership with communities and government, contributing to sustainable social and economic change through long-term strategic partnerships. Since 2015, we have invested $52 million to the Gobi Oyu Development Support Fund (DSF) for long-term sustainable development in Umnugovi aimag and partner soums.

In 2024, the fund provided $6.4 million towards a waste recycling facility; a heating sub-station; the extension of sewage pipelines; improved medical and educational services and a cultural heritage preservation initiative. In 2023, Oyu Tolgoi committed $50 million over 5 years to support the Khanbogd soum town development by 2040. In 2024, the renovation of the Galba park was completed as well as a 7.16km road construction project in the town centre. Other projects began, including a recreational sports complex, and education, health and business development initiatives.

Oyu Tolgoi works in partnership with the Khanbogd soum administration and the herder community as part of The Tripartite Council. In 2024, there was significant progress in delivering community projects relating to sustainable herder livelihoods, student scholarships, and pastureland water access. In late 2023, Rio Tinto and UNESCO established a long-term partnership to foster sustainable development initiatives in Mongolia. In 2024, the first joint initiative started which focuses on preserving Mongolia's unique cultural heritage and paleontological sites, empowering local communities and creating responsible tourism practices.

Panguna mine, Bougainville, Papua New Guinea

The Panguna Mine Legacy Impact Assessment (PMLIA) was published in December 2024.

The independent report assesses the environmental impacts and directly connected social and human rights impacts caused by the Panguna mine since Bougainville Copper Limited (BCL) ceased operations in 1989.

Conducted by independent consultants Tetra Tech Coffey over the past 2 years, the entire PMLIA process was overseen by the Oversight Committee which is made up of representatives from the Government of Papua New Guinea, the Autonomous Bougainville Government (ABG), landowner and community representatives, BCL, Rio Tinto and the Human Rights Law Centre (HRLC). The report is available on the Panguna Mine Legacy Impact Assessment Oversight Committee's website.

We welcomed the release of the PMLIA as a critical step forward in building understanding of the long-term legacy impacts of BCL's former mine in Bougainville.

In November 2024, Rio Tinto, BCL and ABG signed a Memorandum of Understanding (MoU) to discuss ways forward. The MoU parties plan to address the PMLIA findings and develop a remedy mechanism consistent with the UN Guiding Principles on Business and Human Rights (UNGPs).

Rio Tinto has acknowledged a class action lawsuit filed in July 2024 in Papua New Guinea's National Court of Justice, naming both Rio Tinto and its former subsidiary Bougainville Copper Limited (BCL) as defendants. On 20 September 2024, Rio Tinto submitted its defence against the legal claim. The company will strongly defend its position in this case.

For more information on our ongoing commitments, see riotinto.com/panguna

Rincon Lithium Project, Argentina

In 2024, the Rincon project remained committed to responsible mining and community engagement.

We are working together with the local communities, listening to their needs and aspirations and ensuring their voices are heard in decisions that affect them.

Our support for community development initiatives includes:

- supporting higher education scholarships through a partnership with Fundación Anpuy and UCASAL University and other institutions
- initiating an urban forestry project, donating 60 trees and protective planters crafted by local people using repurposed pallet wood from the project's waste
- supporting employability through training 67 individuals for operator and laboratory positions.

These programs help ensure we are contributing to a sustainable and long-term positive impact for the region.

China partnerships

We extended our partnership with the China Development Research Foundation for the next 3 years, supporting rural revitalisation in Bijie, Guizhou Province, through early childhood development, renewable energy utilisation and cultural heritage preservation. We continued supporting Daying Qijiang Foreign Language School in Sichuan Province, a partnership since 2008, and strengthened our partnerships with a number of leading Chinese universities to explore innovative solutions to climate change and environmental challenges.

Update on our CSP commitments

We continue to find better ways to improve our cultural competency, processes and engagement after the tragic destruction of the rock shelters at Juukan Gorge in May 2020. This includes reviewing our mine plans, improving agreements, strengthening our social performance governance, capacity, and capability, and building strong relationships with Indigenous Peoples and communities.

In this section, we provide an update on our progress on some of the commitments we made as part of the Rio Tinto Board Review in 2020 on cultural heritage management. This progress is summarised under 3 areas: relationships, governance and process, and leadership and inclusion.

For more information see our *2021* and *2022 Communities and Social Performance Commitments Disclosures* at riotinto.com/cspreport

Relationships

We have been changing the way we work and engage with communities and Indigenous Peoples in every part of our business. Our approach aims to enhance our understanding and appreciation of Indigenous cultural heritage and ensure that Indigenous voices inform our planning and decision making.

While we have made progress, some relationships with Indigenous communities remain challenged. We are committed to working together to achieve positive, long-term outcomes for the communities where we operate.

Protecting and preserving Yinhawangka culture, Pilbara, Australia

We have partnered with the Yinhawangka Aboriginal Corporation to design a program aimed at protecting and preserving Yinhawangka culture.

The "Living Cultures Program" will deliver projects to record, preserve and transfer cultural knowledge. This includes language, living history and heritage, women's business, arts and culture, songlines and traditional stories. The partnership also aims to increase local economic development opportunities, improve social and emotional wellbeing for community, enhance cultural land management by Yinhawangka and develop and deliver cultural awareness training.

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Exploration agreements

In 2024, we implemented agreements with local communities at some of our advanced exploration projects in Chile and Angola.

At the Nuevo Cobre copper exploration project in northern Chile, a joint venture with state-owned Codelco, we reached framework agreements with 5 Indigenous communities of the Colla People.

In Angola, we signed an agreement with 5 villages around the Chiri site, which is an advanced diamond exploration project and joint venture with the state-owned Endiama. The agreement focuses on promoting community development in agriculture, adult literacy and local employment.

Shared vision with Indigenous partners at our Diavik diamond mine

In October 2024, we hosted a closure workshop for Tłı̨cho Government participants to discuss the mine's closure plans and integration of Traditional Knowledge. The workshop allowed Traditional Knowledge holders and Tłı̨cho Government's technical staff to engage with Diavik employees and view the site. The meeting focused on water quality, vegetation and land considerations.

Progressing renewable energy with Ngarluma, Pilbara, Australia

In July 2024, together with the Ngarluma Aboriginal Corporation, we announced plans to progress the development of an 80MW solar farm on Ngarluma Country, near Karratha, Western Australia to supply renewable energy to our Pilbara operations.

When complete, this project has the potential to reduce the amount of natural gas currently used for generation across our Pilbara operations by up to 11% and could reduce Rio Tinto's emissions by up to 120kt CO_2e.

This project demonstrates our commitment to working together with Indigenous communities towards a more sustainable future.

For more information read the story at riotinto.com/pilbararenewables

Governance and process

We continue to implement our Communities and Social Performance Standard, and revise systems and processes to help us meet external expectations and deliver better social and human rights outcomes. In 2024, we continued to strengthen our risk management processes, using a structured approach to risk identification and management. This included the development of Group level "bow ties" (analysis tools for risk management) and updating our critical controls to better prevent and mitigate cultural heritage and social impact risks across our operations.

Australian Advisory Group

We established the Australian Advisory Group (AAG) in 2022 to provide independent expert advice to our executives on matters impacting our relationship with Indigenous Peoples and communities in Australia.

In 2024, discussions focused on care for Country and culture, complex social transitions, and implementing the UN Declaration on the Rights of Indigenous Peoples.

As part of the AAG's staggered terms of engagement, inaugural members Michelle Deshong and Shona Reid stepped down, and we welcomed June Oscar AO and Dr Teagan Shields. June is a proud Bunuba woman from Western Australia and a strong advocate for social justice and women's issues. Teagan is a proud Arabana woman who is passionate about Indigenous-led use of traditional knowledge in biodiversity conservation.

The AAG is made up of 5 other leaders including Professor Peter Yu AM (AAG Chairman), Djawa Yunupingu, Nyadol Nyuon OAM, Cris Parker and Dr Yarlalu Thomas.

The Oxford Leading Sustainable Corporations Programme

In 2024, 223 senior leaders successfully completed the Leading Sustainable Corporations Programme. This is the third year we have partnered with the Oxford Saïd Business School.

The 12-week course helps our leaders build their understanding of current and emerging environmental, social and governance issues and how best to embed sustainable thinking into broader business activities and planning. It is essential that we understand our impacts better, in order to achieve our objectives and future growth aspirations, and be a more sustainable and responsible business.

Cultural heritage management

In 2024, our assets that took part in the Independent Cultural Heritage Management audit in 2021 and 2022 completed a self-assessment against our maturity framework, to identify gaps for improvement. We also launched a template to help standardise our assets' Cultural Heritage Management Plans. This will ensure a consistent approach to protecting and managing cultural heritage across our business.

These actions are part of our target to co-manage cultural heritage with communities and knowledge holders by 2027.

Find out more about our approach to cultural heritage at riotinto/culturalheritage

Leadership and inclusion

We want Indigenous Peoples to have a stronger voice in our company and in the decisions that affect their rights and interests. This will help us shape, influence and challenge our decisions for the better.

Indigenous leadership

Our Indigenous Leadership Program in Australia focuses on advancing and empowering Indigenous leaders. To help grow Indigenous leadership, we are improving pathways to employment, increasing the number of employment opportunities and providing positive experiences for current and future employees so they can actively grow their career.

We now have 61 Indigenous leaders in our business in Australia, in areas such as Finance, Information Technology, Human Resources, Projects, Legal, Commercial, Government Relations, Risk and Audit. And these Indigenous leaders sit at the decision-making tables, contributing to the future direction of our company.

RioInspire

In 2022, we partnered with the Australian Graduate School of Management at the University of New South Wales to deliver the RioInspire Indigenous Leadership program. RioInspire is a ground-breaking, globally recognised program that focuses on developing executive-ready Indigenous future leaders. In 2023 and 2024, 37 Indigenous leaders graduated from the program, with 7 of them continuing to complete graduate certificates and MBAs. In 2024, we introduced the program globally, with 4 Indigenous leaders from Canada and the US taking part.

Cultural Connection

To create an inclusive, culturally safe and respectful environment for Indigenous People we need to ensure our employees have a good understanding of the culture, heritage and history of Indigenous Peoples in Australia.

Our Cultural Connection program ensures our leaders have an informed understanding of Indigenous culture, and know how to build strong, trusted relationships with the Indigenous community and Indigenous employees.

In Australia, around 90% of our senior leaders have completed the program and we are now delivering it to our next cohort of leaders.

In 2024, we recruited a Global Chief Advisor Indigenous Relations and plan to expand our Indigenous leadership program to North America in 2025.

Cultural safety

We are committed to creating culturally safe environments where people of diverse cultural and ethnic backgrounds can feel respected and safe – spiritually, socially, emotionally and physically.

In 2024, we introduced new resources to support our leaders in talking about the importance of cultural safety and strengthening it within their teams. We also continued to expand our Elevating Voices Network which is led by a small group of Indigenous and non-Indigenous employees who activate events, activities and conversations for its members.

Living Languages Living Cultures

Our Living Languages Living Cultures program promotes and invests in preserving, reviving, and celebrating Indigenous cultures and languages in Australia.

In 2024, the Australian Institute of Aboriginal and Torres Strait Islander Studies (AIATSIS) unveiled the AIATSIS Centre for Australian Languages and the Our Languages Keep Us Strong program. With our support, this initiative is dedicated to protecting Indigenous Australian cultures and knowledge, and increasing understanding about the value of Australia's first languages.

Supporting Indigenous businesses

We support local businesses, employ local people and buy local products, especially from Indigenous, small and regional businesses. In 2024, we spent more than A$926 million with Indigenous businesses across Australia – an increase of 27.7% on the year before. We are also increasing our spend with local and Indigenous businesses in North America. In 2024, we spent $216 million with Indigenous suppliers in this region. We have many success stories of the positive impact we are having on local Indigenous communities. One example is in Canada, where our Aluminium Quebec Operations partnered with an Indigenous sawmill company, Sciages GP, from the Pekuakamiulnuatsh community, to supply essential wood parts for shipping our aluminium globally. This contract has created a significant number of jobs in Mashteuiatsh and supports the local economy.

Truth and reconciliation

We continue to commemorate and celebrate Indigenous events and observance days across our business. In 2024, we ran a global communications and engagement campaign around International Day of the World's Indigenous Peoples. Raising awareness through stories, messaging and materials helps our people better understand and respect Indigenous history, culture and People, which contributes to a safer and more inclusive workplace.

Economic contributions ($ million)

	2024	2023	2022	2021	2020
Consolidated sales revenue	**53,658**	54,041	55,554	63,495	44,611
Net cash generated from operating activities[1]	**15,599**	15,160	16,134	25,345	15,875
Profit after tax for the year	**11,574**	9,953	13,048	22,597	10,400
Underlying earnings	**10,867**	11,755	13,359	21,401	12,448
Underlying earnings per share (US cents)	**669.5**	725.0	824.7	1,322.4	769.6
Net (debt)/cash	**(5,491)**	(4,231)	(4,188)	1,576	(664)
Purchases of property, plant and equipment and intangible assets	**(9,621)**	(7,086)	(6,750)	(7,384)	(6,189)
Employment costs	**(7,055)**	(6,636)	(6,002)	(5,513)	(4,770)
Payables to governments[2]	**(8,214)**	(7,881)	(9,313)	(12,789)	(8,224)
Amounts paid by Rio Tinto	**N/A[3]**	(8,524)	(10,779)	(13,334)	(8,404)
Amounts paid by Rio Tinto on behalf of its employees	**N/A[3]**	(1,755)	(1,622)	(1,486)	(1,353)

1. Data includes dividends from equity accounted units, and is after payments of interest, taxes and dividends to non-controlling interests in subsidiaries.
2. Payables to governments includes corporate taxes, government royalties and employer payroll taxes.
3. Our Taxes and Royalties Paid Report will be published later this year on riotinto.com.

	2024	2023	2022	2021	2020
Social investment[1] (discretionary)	**95.9**	84.0	62.6	72.1	47.0
Development contributions[2] (non-discretionary)	**23.3**	17.6	18.2	19.1	12.8
Payment to landowners[3] (non-discretionary)	**221.9**	231.9	299.0	222.9	165.9

1. Social investments (referred to as "community investments" prior to 2023) are voluntary financial commitments, including in-kind donations of assets and employee time, made by Rio Tinto managed operations to third parties to address identified community needs or social risks.
2. Development contributions are defined as non-discretionary financial commitments, including in-kind donations of assets and employee time, made by Rio Tinto to a third party to deliver social, economic and/or environmental benefits for a community, which Rio Tinto is mandated to make under a legally binding agreement, by a regulatory authority or otherwise by law.
3. Payment to landowners are non-discretionary compensation payments made by Rio Tinto to third parties under land access, mine development, native title, impact benefit and other legally binding compensation agreements.

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Human rights

Respecting human rights is core to our values and to delivering our business strategy.

Commitment

We are committed to treating everyone with dignity and respect – from our employees, contractors and workers in our value chain, to the communities we partner with, and others affected by our activities and business relationships. We know that our activities, and those of our partners, can have both a positive and a negative impact on human rights. By embedding rights-respecting and ethical behaviour throughout our business, we will be better able to prevent human rights harm. To do this, we rely on:

- empowering people through an inclusive and supportive business culture that aligns with our values
- embedding human rights due diligence into business processes and systems
- engaging with stakeholders to identify and address root causes of human rights harm.

Regardless of the operating context, our approach to human rights remains consistent and aligned with the UN Guiding Principles on Business and Human Rights, and other international standards and frameworks.

For more information see our *Human Rights Policy* at riotinto.com/humanrights

2024 progress

Governance

We continue to evolve our human rights performance to help prevent our involvement in adverse human rights impacts. We regularly review and update internal standards, systems and processes to integrate human rights due diligence and promote more responsible and ethical ways of working. In 2024, we provided the Sustainability Committee with an update on our human rights performance.

Salient human rights issues

We identify the priority human rights issues that could severely impact people through our activities or business relationships. These issues consider our operational footprint, value chain and external contexts and include:

- land access and use
- Indigenous Peoples' rights
- security
- inclusion and diversity
- community health, safety and wellbeing
- workplace health and safety
- labour rights (including modern slavery)
- climate change and just transition

We continue to identify issues related to water and environment, and nature as emerging salient issues. In 2025, we will review our Group-wide salient issues.

Assets conduct self-assessments to enable a more complete understanding of their risk context. There has been a significant increase in the quantity and quality of human rights risk self-assessments at assets (59 completed in 2024 compared to 24 in 2023). These self-assessments – whether standalone or integrated into broader enterprise risk assessments – help assets prioritise and take action to prevent human rights harm that is, or may be, connected to our activities. Examples of assessments included at our Pacific Aluminium assets as part of the Aluminium Stewardship Initiative certification; at 26 closure assets; and an independent human rights impact assessment at Simandou. Security and human rights assessments are ongoing at assets in more complex security contexts that involve both private and public security arrangements.

For more information see our *2024 Sustainability Fact Book* at riotinto.com/sustainabilityreporting

Our business relationships

We partner with communities, business partners and other stakeholders to advance respect for human rights in line with international standards and our values.

Our joint venture partners

We continue to work with joint venture partners to provide human rights technical support and monitor human rights performance, including through Board and Committee roles for non-managed operations.

Suppliers

Using a risk-based approach through our third party due diligence process, we pre-screen our potential business partners and complete desktop human rights reviews. In 2024, 6,359 third party due diligence reviews were completed, and 174 were escalated for human rights review. For higher-risk suppliers, we have developed action plans to support ongoing monitoring and evaluation of identified risks.

We expect our suppliers (including subcontractors) to adhere to our *Supplier Code of Conduct* (SCOC), which includes respecting human rights. We updated our SCOC in 2024, alongside a new set of Sustainability Procurement Principles. The updated SCOC better reflects our commitments to sustainability, ethics and social responsibility with updated requirements on labour and human rights.

In 2024, we focused due diligence efforts on higher-risk supplier categories, including logistics and renewables, due to operating contexts, and potentially higher-risk workforces. Our approach focuses on influencing broader industry change through trusted partnerships, rather than avoidance and termination of relationships. We also appointed a panel of independent human rights auditors to assess the labour rights performance of suppliers in high-risk categories and completed 3 pilot audits across key operating regions.

For more information see our annual *Modern Slavery Statement* at riotinto.com/modernslavery

Grievance and remedy

Effective grievance management can enable more trusted relationships and help prevent human rights harm from occurring in the first place. Every asset is required to have a grievance mechanism.

We are committed to providing for, or cooperating in, remediation when we identify we have caused or contributed to human rights harm. We may also play a role in remediation where we are directly linked to harm through our products, services or operations. Receiving feedback, complaints or grievances from stakeholders is an important part of ongoing human rights due diligence. In 2024, the human rights team provided support on a range of internal investigations and assessments with a focus on grievance and remedy processes, including at Oyu Tolgoi, Kennecott and in Laos.

Capacity building on human rights

Since everyone has a role in respecting human rights, our people are our first line of defence. In 2024, we developed a 3-year learning strategy which focuses on respect for human rights.

We also launched a global learning program called Human Rights In Action to support our target to train everyone identified in higher-risk human rights roles by the end of the year. Higher-risk roles identified included a large proportion of our senior leaders across a range of functions and assets.

The program included virtual events, a mandatory self-directed e-module and a toolkit to cascade learnings throughout the business. We will consider how this program continues to evolve in 2025. Our broader human rights training records are available in the *2024 Sustainability Fact Book*.

Collaboration

It is crucial that we collaborate with peers, civil society organisations and others, given the systemic nature of human rights issues. We identify and embrace initiatives that work to mitigate the root causes of human rights harm. We advocate on public policy efforts that help businesses further respect human rights. We continue to engage with peers, investors, civil society organisations, workers' organisations and business partners on issues relating to human rights.

In 2024, we continued to support ICMM's Human Rights working group, the Human Rights Resources and Energy Collaborative, and the Mining Association of Canada's International Social Responsibility Committee. We actively participate in the Voluntary Principles Initiative and UN Global Compact networks and attend regional business and human rights forums in Africa, Asia and Europe.

For more information about how we engaged with key stakeholders, including civil society organisations, see pages 9 and 106-108.

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Governance

Our reputation as a business that operates with high levels of integrity depends on the actions we take and decisions we make each day. We expect our people and partners to uphold the highest standard of integrity, act ethically and do the right thing.

Transparent, values-based, ethical business

We empower our people to seek guidance when faced with ethical or business dilemmas – both to prevent incidents from occurring, and to protect them and others from harm. The way we treat our people, our partners, the environment and the communities where we work, and how we conduct business, are what makes us a responsible partner of choice.

2024 progress

Compliance program developments

Business integrity is core to how we build trust with our stakeholders. It forms the foundation of our ability to run our operations and maintain an ethical culture. We have continued to evolve our compliance program to align with leading industry practice, changes to the regulatory landscape and business integrity risks we face across the countries where we operate. During the year, we undertook a maturity assessment of our program, which concluded our program has a higher level of maturity than benchmarked peers.

In 2024, we delivered several compliance program improvements:

- We refined our online disclosures system for gifts and entertainment from, and to, third parties, conflicts of interest and sponsorship and donations. This increases transparency, promotes simplification, and allows us to automate approvals and workflow.
- We launched a new Compliance Champions program, developing and leveraging a site-level network of employees to promote ethical behaviours.
- We uplifted the maturity of our Data Privacy Compliance Program. This included implementing a refined Privacy Impact Assessment process and a new Privacy Statement, and reinvigorating the Data Privacy Lead network across the Group, while continuing to ensure compliance with new and changing privacy legislation across the jurisdictions where we operate.
- We continued to enhance our Third-Party Risk Management (TPRM) framework. We piloted a new TPRM system to increase automation and improve risk management exposure from third parties. We expect the new system to launch across the Group in 2025.
- We continued to invest in our Sanctions Compliance Program through enhanced sanctions screening processes of third parties, deep dive reviews for parts of the business with higher sanctions exposure, and increased training of employees.

Code of Conduct and annual training

To help equip our workforce to navigate uncertain areas and spot ethical and compliance-related risks, in 2024, we launched a new annual Code of Conduct training. This training sets the foundation for the way we work, guiding ethical decision making and reflecting the safe and respectful environment we want to achieve for our people. Based on our Code of Conduct, it is designed to help all employees and contractors live our values of care, courage and curiosity.

For information on our Code of Conduct, see riotinto.com/ethics

The new Code of Conduct training incorporates topics across all areas of our Code, providing examples of the values, commitments and behaviours we expect of our people. The online training has been completed by 27,050 of our people, and 21,406 have completed the offline version. Our Executive Committee attended an immersive face-to-face session.

In addition to online Code of Conduct training, the Ethics and Compliance team delivered tailored risk-based face-to-face training on anti-bribery and corruption, data privacy, anti-trust and trade sanctions. A total of 7,624 employees received this training in 2024. We also provided business integrity training to our third parties on a risk basis.

myVoice, our confidential reporting program

A respectful and inclusive workplace, with a strong ethical culture that reflects our values, must include a safe space where individuals can speak up with confidence and without fear of retaliation. A strong culture of speaking up enables us to identify and address potential issues swiftly, respond appropriately, minimise risk, and ensure care for our people and the communities where we operate.

The myVoice program enables confidential and anonymous reporting, including protected whistleblower disclosures. myVoice is operated by the Business Conduct Office (BCO), which reports to our Chief Legal, Governance and Corporate Affairs Officer. The BCO provides regular program insights to the Board and the Group Ethics and Compliance Committee.

For information on how we manage cyber security, see riotinto.com/cybersecurity

Image: Our Integrated Operations Centre, Brisbane.



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Care Hub

In 2023, BCO launched Care Hub, a confidential service designed to provide more channels for our people to raise concerns, and greater access to a range of support as well as non-investigative resolution options. It is available to anyone directly or indirectly impacted by disrespect and harmful behaviours at work, such as bullying, harassment, sexual harm, racism and discrimination. Care Hub has been widely accessed across Rio Tinto, supporting over 675 individuals during 2024 (and around 250 in 2023), as well as facilitating resolution options other than investigations.

Continuous improvement

The number of concerns raised through myVoice continues to increase yearly, with 1,920 reports in 2024 (2023: 1,614). Our new mobile intake route was introduced in June to supplement existing web based, phone and proxy reporting. The web-based route remains the most used (61% of reports).

The reporting rate per 100 headcount rose to 3.4 in 2024 from 2.9 in 2023, with over half of reporters (54%) happy to reveal their identity, despite the small increase seen in anonymity rates in 2024 (46%, up from 40% in 2023).

BCO substantiated more reports in 2024 (283) than in 2023 (267). However, the substantiation rate has declined: 44% of 642 reports investigated and closed in 2024, down from 53% of 500 reports in 2023.

The median average case closure time for all cases closed in 2024 was 30 days, consistent with 30 days in 2023. The mean average case closure time in 2024 was 91 days from 65 days in 2023, the increase being influenced by a drive to close aged cases.

In 2024, we delivered several enhancements to the BCO program. The BCO is looking to improve access to information and is exploring options to better share data on our website.

As an organisation we recognise there is more work to do to improve our culture. Each person's experience of misconduct is unique. We are committed to holding ourselves accountable and having controls in place to identify where our business processes may have created an opportunity for misconduct to arise. This is critical to ensuring our people feel safe and respected in the workplace.

Transparency

We believe greater transparency and accountability are key to earning and building trust, encouraging sustainable business practices, and translating taxes and royalties into beneficial outcomes for communities who host our operations.

Being transparent about our tax payments, mineral development contracts, beneficial ownership, and our stance on a range of other sustainability issues – like climate change – allows us to enter into open, fact-based conversations with our stakeholders. This leads to a better understanding of everyone's roles and responsibilities.

We are a founding member of the Extractive Industries Transparency Initiative (EITI), and a signatory to The B Team Responsible Tax Principles. We report in full the requirements of the "Tax" standard (GRI 207) of the Global Sustainability Standards Board of the Global Reporting Initiative, including full country-by-country reporting.

Political integrity

We do not favour any political party, group or individual, or involve ourselves in party political matters. We prohibit the use of company funds to support political candidates or parties. Our business integrity procedure includes strict guidelines for dealing with current and former government officials and politicians. They cannot be appointed to senior employee positions or engaged as consultants, without the approval of executive management and our Chief Ethics and Compliance Officer. We regularly engage with governments and share information and our experiences on issues that affect our operations and our industry.

We join industry associations where membership provides value to our business, investors and other stakeholders. We outline the principles that guide our participation and the way we engage, and a list of the top 5 associations by membership fees paid at riotinto.com/industryassociations. We also track and disclose how we engage on climate policy issues, disclosing when the policies and advocacy positions adopted by industry associations differ materially from ours. We continue to strengthen our approach and disclosures on industry associations.

Voluntary commitments, accreditations and memberships

We take part in global, national and regional organisations and initiatives that inform our sustainability approach and standards, helping us better manage our risks. These independent organisations and initiatives assess and recognise our performance, and we participate in industry accreditation programs for some of our products.

For more information about our voluntary commitments, accreditations and memberships see riotinto.com/sustainabilityapproach

myVoice by case class (and % of substantiated reports)

	2024		2023		2022		2021		2020	
Case rate[1] (number of reports per 100 headcount)	**3.38**		2.91		2.81		2.57		1.45	
Reports received[2]	**1,920**		1,614		1,459		1,246		748	
	Reports received	**Reports substantiated[3]**	Reports received	Reports substantiated	Reports received	Reports substantiated	Reports received	Reports substantiated	Reports received	Reports substantiated
Business integrity	**307**	**42%**	249	52%	210	52%	154	36%	102	51%
Personnel	**1,340**	**46%**	1,201	55%	1,034	65%	819	57%	421	38%
Health, safety, environment	**139**	**52%**	107	61%	120	47%	186	22%	68	35%
Communities	**8**	**0%**	5	0%	10	0%	6	0%	25	0%
Information security	**55**	**40%**	22	0%	17	67%	18	36%	99	47%
Finance	**7**	**25%**	3	50%	1	0%	0	0%	2	67%
Other	**64**	**40%**	27	0%	67	33%	63	14%	31	50%

1. To better represent data for smaller parts of the organisation, BCO now reports on 'reports per 100 headcount', and not 'per 1,000'.
2. Can include multiple reports relating to the same allegation. Where figures in this table slightly differ from previous reported periods, this can be due to factors including re-opening of cases, case class re-classification, internal reviews and quality assurance processes.
3. Applies to all 'substantiation %' rates in this table, and it is based on all cases investigated and closed in the relevant reporting year; can include cases reported in previous year.

Our approach to risk management

Taking risks responsibly is key to delivering our strategy in a way that creates value for our customers, shareholders, employees and partners.

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To deliver our strategy, in a way that creates value for our customers, shareholders, employees and partners, it is essential that we take risks responsibly.

Our risk culture fosters awareness, transparency, and informed decision-making. It reflects our values, is consistent with our Code of Conduct, *The Way We Work*, and is implemented through our risk management framework.

Our risk management framework includes our risk appetite, which outlines the level of uncertainty we are willing to accept to achieve our strategic objectives. It is developed with input from our leadership, approved by the Board, and is used throughout our Risk Management Process.

This integration ensures we are effectively managing threats and opportunities to our business and host communities, as well as protecting nature.

Our risk management process



Our risk management process follows international standards and operates as a Plan-Do-Check-Act cycle. This provides a systematic yet flexible approach to respond to the dynamic business environment we operate in.

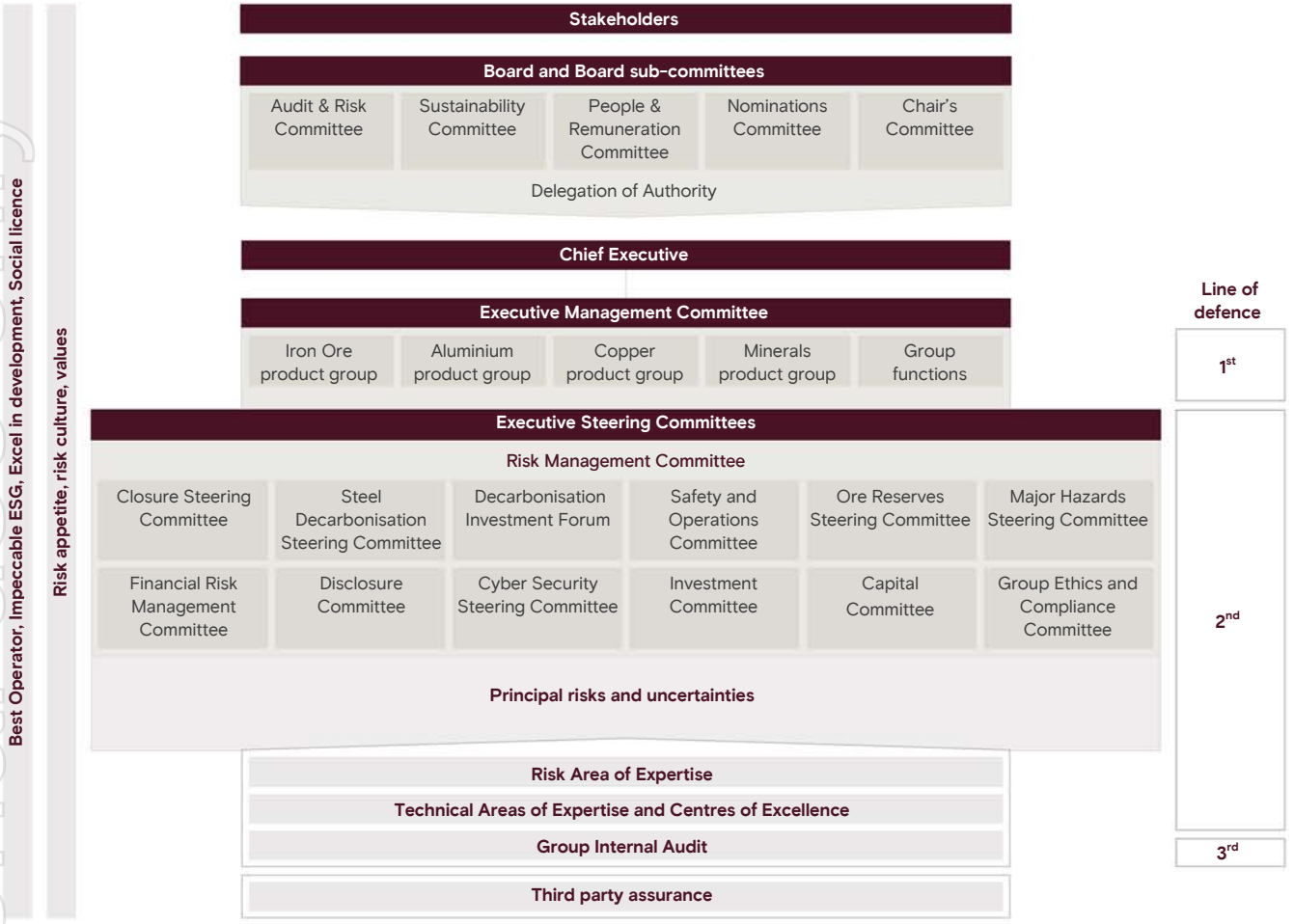
When identifying and assessing risk, we take into account both financial and non-financial impacts on our business, the environment and communities where we operate. We assess the materiality of each risk, enabling us to escalate when necessary and prioritise resources where they are most needed.

We actively monitor how well we manage risks that are material to our objectives by verifying that the design of our response (actions and controls) remains resilient to changing conditions, and by checking the implementation of the response against our actual performance. We enhance the check-and-verify step by applying the 3 lines of defence approach, which remains a core part of our risk management framework. We look to continually improve and strengthen our risk culture and framework through enhancing processes, tools and training.

We use an enterprise-wide risk management information system (RMIS) with integrated tools and applications to capture, manage and communicate material business risks. These tools support decision making and prioritisation through transparent, up-to-date data.

Our risk management governance structure

Our risk management framework is structured to assign accountability for risks to leaders who are in the best position to address them, while offering support via Centres of Excellence (CoE) and Areas of Expertise (AoE), along with independent review and oversight.



The Board approves our risk appetite and oversees our principal risks. The Board is supported in monitoring a range of material financial and non-financial current and emerging risks by the Audit & Risk and Sustainability committees. The Audit & Risk Committee also monitors the overall effectiveness of our risk management and internal control frameworks and principal risks. Pages 113 to 118 detail the committee's activities in 2024. The Board's extensive range of skills, experience, and knowledge contributes to a well-rounded perspective on risk management.

The Board has delegated responsibility for day-to-day management of the business to the Chief Executive, and through him, to other members of the Executive Committee under a Group delegation of authority framework. Our product groups and Group functions, along with several risk-oversight-focused executive and operational committees, support the Chief Executive in the effective management of our material risks. Our Risk AoE is responsible for the design and implementation of our risk management framework globally, supporting risk assessments and delivering timely insights to executives and the Board.

Under our 3 lines of defence model, all employees are empowered to own and manage the risks that arise within their area of responsibility. Our CoEs, comprising our 2nd line of defence, provide deep subject matter expertise and objective challenge. Our Internal Audit function provides independent assurance. Where required by law, or where deemed appropriate, we also engage third parties to provide independent assurance. Where risks are material to the Group, they are escalated to the Risk Management Committee and, as appropriate, to the Board or its committees.

Emerging risks

Emerging risks are new or evolving risks that are highly uncertain by nature and have the potential to significantly impact the Group. Emerging risks are typically less predictable and lack precedents, making them challenging to assess or mitigate. Given our diverse portfolio and geographical footprint, we are exposed to many highly uncertain, complex and often interrelated risks. We remain vigilant to the leading indicators of emerging risks, potential impact and responses. Our analysis is anchored on our global scenarios as outlined in the Strategic context section on page 6.

Emerging risks that could materially impact strategic objectives are incorporated within our principal risks and, where possible, we develop responses to mitigate threats and create opportunities for the Group. We monitor these risks closely for changes in the external factors and reassess them as they evolve and new information is discovered. The Board reviews these risks periodically.

Geopolitical risks continue to shape the global economy. They create uncertainty through changing trade policies, tensions between major economies, regional conflicts, and sanctions which could disrupt supply chains and market access. We monitor global developments closely and stress-test the resilience of our business model, including our supply chains, through scenario planning to identify potential management responses. These include, but are not limited to, developing our capability to settle and receive renminbi (RMB). Please refer to principal risk 11 and 14 on pages 97 and 98 for further details of our key management responses.

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Climate change and the low-carbon transition remain critical emerging risks, with potential to have a significant impact on our business and the communities where we operate. Physical risks such as extreme weather events, water scarcity, and shifting temperature patterns have the potential to disrupt production, damage infrastructure or increase costs. Transitional risks continue to be a global agenda, with governments and regulatory bodies increasingly implementing stricter emissions regulations and targets. We actively monitor and assess the potential impact of these on our operations and business through scenario planning. Where appropriate, we take a proactive approach to responding to the uncertainty. This includes committing to decarbonisation targets and associated capital expenditure, optimising our portfolio for future demand, and developing deeper understanding of exposure across the business using the latest generation climate analytics. Please refer to principal risks 2, 4 and 8 on pages 92, 93 and 95 and the Climate Action Plan on pages 41-75 for further details.

Generative Artificial Intelligence (AI) and advancing technologies have the potential to unlock transformative opportunities for businesses through enhancing efficiency, and data-driven insights to support decision making, driving pace and breadth of innovation. It is also in its infancy, which carries significant unknown risks. Our focus is on robust monitoring and internal upskilling to understand this evolution, supported by strong governance processes to support its use.

Longer-term viability statement

Context

Our business model underpins our ability to deliver on our strategy. This is outlined on page 8. Our business planning processes include modelling a series of macroeconomic scenarios and using various assumptions that consider internal and external factors. As part of our risk management framework, we closely track, monitor and mitigate principal risks to our business plan and model.

Viability assessment process and key assumptions

The assumptions underlying our business plan and macroeconomic forecast have the greatest level of certainty for the first 3 years. Our longer-term viability assessment examines the first 5 years (2025-29) of the business plan. This allows for a detailed analysis of the potential impacts of risks materialising in the first 3 years, and enables us to further stress test the business plan for risks materialising towards the end of the time period, although with less certainty.

The principal risks and uncertainties section outlines risks that could materially affect our performance, prospects or reputation. For the viability assessment, we have considered principal risks that could severely impact the Group's liquidity and solvency in addition to non-financial impacts.

Assessment of viability

The risks and key assumptions considered in our longer-term viability assessment are as follows:

Risk A: Remaining competitive through economic cycles or shocks

Scenario assumptions: An economic shock arising in 2025, caused by escalating geopolitical tensions, a trade war or military actions, leading to a sustained loss of confidence in financial markets and supply chain disruptions. It assumes commodity prices experience large negative pricing shocks in 2025 through 2029 and a short-term supply disruption for key commodities. The scenario relates to principal risk 11 (Remaining competitive through economic cycles or shocks by maintaining strong financial and operating performance underpinned by a healthy inventory of high-quality reserves).

Risk B: Group material major hazard or cyber risk

Scenario assumptions: A catastrophic event occurs, resulting from a major operational failure such as a tailings or water storage facility failure, extreme weather event, underground or geotechnical event or a cyber event that impacts operational systems. It assumes multiple fatalities, cessation of operations and significant financial impacts. We have assumed 3 such events occur within the assessment period, each with significant but varied impacts. The scenario relates to principal risks 1 (Preventing loss of operational control that may lead to potential fatalities, permanent disablements, or material production disruption) and 12 (Preventing material business disruption and data breaches due to cyber events).

Risk C: Delivery of our growth projects

Scenario assumptions: A risk driven by evolving societal expectations and changing laws affecting the timelines for delivering sustaining or growth projects. We have assumed an impact on our near-term key projects and considered available alternatives. The financial impact assumed here is in addition to any non-financial impact, such as reputational harm. The scenario relates principal risks 3 (Building trusted relationships with communities), 6 (Building trusted relationships with Indigenous Peoples) and 7 (Delivering on our growth projects).

Results of assessment

We quantify the expected financial impact of each risk based on internal macroeconomic and business analysis, as well as internal and external benchmarking on similar risks. We apply a probabilistic approach to quantify risks and impacts where relevant.

The first 5 years of the Group's business plan has been stress-tested for each risk to assess the impact on the Group's longer-term viability, including whether additional financing facilities would be required. In addition to liquidity and solvency, the assessment considered other financial performance metrics and dividend payments. These metrics are subject to robust stress tests.

The most "severe" scenario, albeit unlikely, considers the financial impact of all 3 risks materialising in the 5-year period. Without management action, this scenario would create both an immediate and a prolonged severe impact.

However, we have a suite of management actions available to preserve resilience through the period of assessment, including accessing lines of credit, reducing organic and inorganic growth capital expenditure, and raising capital. Our financial flexibility could be limited during the peak of the crisis. The viability of the Group under all the scenarios tested remained sound.

The resilience of the Group's business model is largely underpinned by 4 factors:

- the competitive position and diversification of our commodities portfolio
- our disciplined capital allocation framework and commitment to prudent financial policy
- the pay-out shareholder return policy being based on earnings
- the focus on striving for impeccable ESG credentials and therefore strengthening our social licence, which allows for growth and maintaining access to debt capital and bank loan markets.

Therefore, considering the Group's current position and the robust assessment of our emerging and principal risks, the Directors have assessed the prospects of the Group over the next 5 years (until 31 December 2029) and have a reasonable expectation that we will be able to continue to operate and meet our liabilities as they fall due over that period.

In the long term, there are 4 principal risks with long-dated consequences that could have a material impact on our viability:

- preparing our iron ore business to meet demand for low-carbon steel (principal risk 2)
- minimising our impact on the environments we work in and building physical resilience to changes in those environments, including climate change and natural hazards (principal risk 4)
- being responsible operators throughout the entire life of our assets – from discovery to closure (principal risk 5)
- delivering our growth projects (principal risk 7).

The principal risks and uncertainties section provides further details, including current management responses.

Principal risks and uncertainties

The principal risks and uncertainties outlined in this section could materially affect our ability to meet our strategic objectives. They could materialise from a combination of external or internal factors and manifest or escalate from any part of the business as an opportunity or threat.

To ensure we can prioritise our efforts and resources, we regularly assess the materiality of our principal risks in terms of potential consequence and likelihood. This allows us to implement responses that reduce negative impacts and realise the benefits of opportunities. These assessments, and the effectiveness of our associated responses, reflect management's current expectations, forecasts and assumptions. They involve judgement and can be affected by unexpected changes in our external environment. While we endeavour to reduce negative impacts to our business, some inherent risks remain.

However, we closely monitor these threats and have developed business resilience plans.

The principal risks and uncertainties mapped below are based on our managed operations. We are also exposed to risks associated with our non-managed joint ventures which, if they arise, may have consequences on our reputation or finances. We seek to bring an equal level of rigour and discipline to our managed and non-managed joint ventures as we do to our wholly-owned assets, through engagement with partners, embedded representatives and influence, in line with applicable laws.

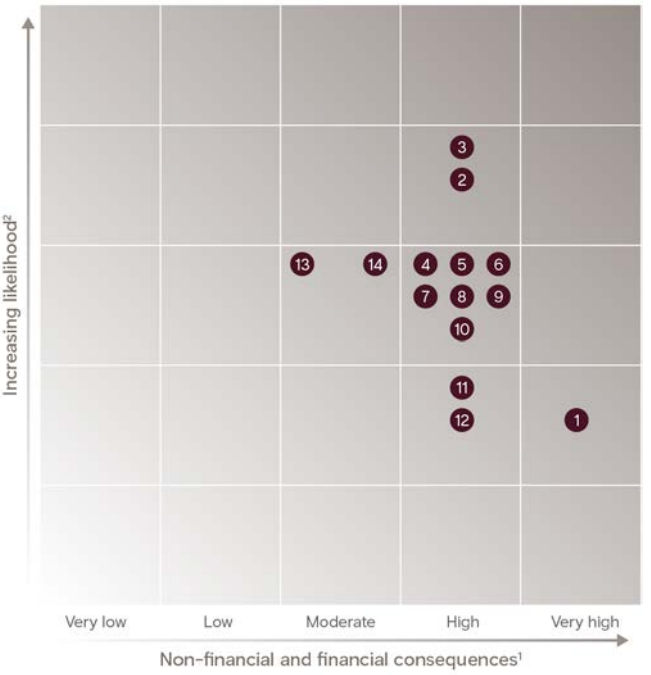
The timeframe of our principal risks and uncertainties is within 5 years, unless explicitly stated otherwise. We frame our principal risks and uncertainties in the context of our overarching strategic objectives: to become Best Operator; to strive for impeccable ESG credentials; to excel in development; and to protect our social licence. These are summarised in the table below in order of maximum reasonable consequence and likelihood.

The principal risks and uncertainties have not been assessed for the impact of the recently announced proposed acquisition of Arcadium Lithium plc (Arcadium). We will assess this once the acquisition closes and Arcadium is fully integrated within the Group.

Current assessment of principal risks and uncertainties

As of February 2025

	Principal risk	Key objective	Oversight
1	Preventing loss of operational control that may lead to potential fatalities, permanent disablements, or material production disruption	Best Operator & Impeccable ESG	Sustainability Committee
2	Preparing our iron ore business to meet demand for low-carbon steel	Best Operator	Board
3	Building trusted relationships with communities	Social Licence	Sustainability Committee
4	Minimising our impact on the environments we work in and building physical resilience to changes in those environments, including climate change and natural hazards	Impeccable ESG	Sustainability Committee
5	Being responsible operators throughout the entire life of our assets – from discovery to closure	Social Licence	Sustainability Committee
6	Building trusted relationships with Indigenous Peoples	Social Licence	Sustainability Committee
7	Delivering on our growth projects	Excel in Developmen	Board
8	Achieving our decarbonisation targets competitively	Impeccable ESG	Board
9	Transforming our culture, enabling us to live our values	Best Operator	Board
10	Conducting our business with integrity, complying with all laws, regulations and obligations	Impeccable ESG	Board
11	Remaining competitive through economic cycles or shocks by maintaining strong financial and operating performance, underpinned by a healthy inventory of high-quality reserves	Best Operator	Audit & Risk Committee
12	Preventing material business disruption and data breaches due to cyber events	Best Operator	Audit & Risk Committee
13	Attracting, developing and retaining people with the requisite skills	Best Operator	People & Remuneration Committee
14	Withstanding impacts of geopolitics on our trade or investments	Best Operator	Board



1. Free cash flow or business value (NPV)
2. Considering effectiveness of existing controls.

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1. Preventing loss of operational control that may lead to potential fatalities, permanent disablements, or material production disruption

Nothing is more important than the safety and wellbeing of our employees, contractors and communities where we operate. The mining industry is inherently hazardous, with the potential to cause fatalities, illness or injury, damage to the environment, disruption to communities or major loss of production or revenues. Our objective is to have zero fatalities or permanent disablements. We believe all fatalities are preventable, so our focus is on identifying, managing and, where possible, eliminating hazards. Safe and stable operations are critical to delivery of our objective to be Best Operator, and maintaining close control of our operating assets ensures reliable productive outputs.

Best Operator	Change vs 2023: Increasing
Impeccable ESG	

Opportunities

Demonstrating our ability to meet or exceed our commitments in safety and hazard management supports incident prevention, and our ability to achieve predictable operating results and maintain our social licence to operate. This allows us to deliver on our objective of being Best Operator and striving for impeccable ESG credentials.

Threats

Our operational environment is exposed to major hazards, including processing, underground mining, slope geotechnical, functional safety (eg sinking shafts and autonomous operations) and tailings management. Inability to manage these hazards could result in a catastrophic event or other long-term damage to the Group or the environment and communities where we operate. Loss of technical capability at complex operations poses increased risk. In addition to major hazards, our operations are exposed to safety risks which could result in single or multiple fatalities. These include risks from vehicles and driving, aviation, falling objects, electricity and explosives.

Key exposures

Underground risks at Oyu Tolgoi, Kennecott, Diavik and Resolution. Slope geotechnical risk at Kennecott and QIT Madagascar Minerals (QMM). Tailings and water storage facilities at our Aluminium, Iron Ore and Closure assets. Process safety at Copper and Aluminium smelters and refineries. Functional safety at Oyu Tolgoi and across our Iron Ore assets. Mass passenger transport at Oyu Tolgoi, Simandou and Rincon.

Risk oversight: Major Hazards Steering Committee, Safety and Operations Committee, Risk Management Committee, Sustainability Committee

Key management response includes:

- Strengthening the First line of defence through enhanced Group controls that standardise and systematise how we identify, manage and verify control performance for major hazard and safety risks across the Group.
- Technical capability within the Development & Technology Centres of Excellence for major hazards and asset management, including assurance against Group standards and procedures and learning from industry incidents.
- Comprehensive control frameworks (risk bowties, standards, procedures, guidelines, tools and templates, control library) for our major hazards.
- For our tailings facilities with “Very High” and “Extreme” consequence classifications, we have published a Tailings Facility Disclosure under Principle 15 of the Global Industry Standard on Tailings Management (GISTM). This provides information on implementation status and summaries of our tailings management processes.
- We continue to implement the Process Safety improvement plan across the Group.
- Future Technical Asset Management program aimed at improving asset management performance across the business, which is a key driver of major hazard events.
- Continued focus on fatality elimination through our Critical Risk Management program.
- Established Mass Transport and Aviation Communities of Practice to build capability, and understanding and management of risks.

2. Preparing our iron ore business to meet demand for low-carbon steel

Decarbonisation of iron and steelmaking may affect the future relative values of our iron ore products. We have the opportunity to unlock business value through optimising our iron ore product strategy, partnering with technology providers and universities, and innovating with our customers to position ourselves favourably for the future demand for low-carbon steel.

Best Operator	Change vs 2023: Stable

Opportunities

By proactively engaging with customers, technology providers and research institutes, we can develop low-carbon steelmaking pathways suited to our low-medium grade ores, protecting the future value of our Pilbara ores.

Threats

Uncertainty remains around the pace of transition across the steel value chain, and the implications for the quality of iron ore products required to support future low-carbon technologies. While the market is expected to continue to require Pilbara iron ores, decarbonisation of the steel value chain will require the development and proliferation of economic low-carbon technologies suited to low-medium grade ores.

Key exposures

Pilbara low-medium grade ores.

Risk oversight: Steel Decarbonisation Steering Committee, Risk Management Committee, Board

Key management response includes:

- Optimising our iron ore portfolio to bring additional high-grade ore to the market (eg Simandou).
- Establishing the Rio Tinto Steel Decarbonisation team to identify and develop technical and commercial options through deep partnerships across the steel value chain, with a specific focus on economic low-carbon solutions for our Pilbara ores.
- Exploring beneficiation and modular concentrators with technology partners to upgrade Pilbara ores, to reduce impurities and increase amenability to future low-carbon steelmaking technology.
- Developing long-term strategic research and development partnerships with key iron ore customers, including Baowu, Nippon Steel, BlueScope, POSCO, Zenith and Shougang to explore a range of economic new low-carbon technologies suited to low-medium grade iron ores. Key areas of focus include the development of electric smelting furnace technology, fluidised bed technology, carbon capture, as well as optimisation of existing blast furnaces.
- Developing BioIron™ in partnership with the University of Nottingham and Metso. The BioIron™ process uses sustainable biomass and microwave energy to convert Pilbara ores into metallic low-carbon iron.

3. Building trusted relationships with communities

We strive to be a trusted partner to communities, stakeholders and broader society, leading to improved performance, future prospects and reputation.

Social Licence — Change vs 2023: Stable

Opportunities

Strong relationships with the communities where we operate provide stable operating environments and a foundation for growth. Positive and trusted relationships with communities, governments and other stakeholders can support preferential access to new resources, create predictable investment, promote human rights, and help shape mutually and equitably beneficial economic, social and environmental outcomes.

Threats

Access to land and resources may be impacted if we are not considered a trusted partner that respects host communities and human rights, mitigates adverse social and environmental impacts and sustainably improves social and economic outcomes in communities that host our operations. Other potential impacts can include operational disruption, security incidents, expropriation, export or foreign investment restrictions, increased government regulation and delays in approvals, which may threaten the investment proposition, title, or carrying value of assets.

Key exposures

Communities surrounding the Simandou project, Pilbara operations, Richards Bay Minerals, Resolution, QIT Madagascar Minerals, Jadar and Oyu Tolgoi.

Risk oversight: Risk Management Committee, Sustainability Committee

Key management response includes:

- Applying minimum operating standards through the Code of Conduct, Communities and Social Performance (CSP) Standard and Human Rights Policy (publicly available), applicable throughout the asset lifecycle.
- Developing and implementing CSP plans to drive consistent performance and monitor outcomes. Strengthening community engagement through appropriately resourced and skilled asset CSP teams and leaders. Measuring and reporting on our performance through the Group-wide Local Voices community perception monitoring program and clear accountability for relationships with host communities residing with the asset leader.
- Delivering sustainable, long-term social outcomes through strategic social investment, regional economic development and mutually beneficial partnerships.
- Implementing local procurement policies and targets, including local content commitments for major capital projects.
- Improving the quality of our complaints and grievance processes through training and guidance materials.
- Investigating and sharing learnings from CSP incidents, including community wellbeing and safety.

For more information on how we are developing and investing in nature-based solutions near our operations, see our 2025 Climate Action Plan on page 41.

4. Minimising our impact on the environments we work in and building physical resilience to changes in those environments, including climate change and natural hazard

Producing the materials the world needs means we have an impact on the environment. Our operations and projects require proactive management to minimise potential impact to water resources or biodiversity in new asset developments, existing operations and closures. Our assets, infrastructure, communities and broader value chains are exposed to the impacts of extreme weather events, and climate change is expected to impact the frequency, intensity and likelihood of extreme events across different regions globally.

Impeccable ESG — Change vs 2023: Stable

Opportunities

By understanding specific exposures across our portfolio, our capital programs can incorporate measures to minimise environmental impact and improve resilience in the event of an extreme climatic event.

Development of high-integrity nature-based solutions, in collaboration with local partners and communities, generates high-quality carbon credits while restoring ecosystems, protecting existing pristine areas and supporting the development of associated socioeconomic opportunities independent of mining (thus helping to address dependencies).

Threats

A number of our operations and future development opportunities exist within, or close to, sensitive biodiverse regions. Our licence to operate and develop requires us to demonstrate our capability to protect ecosystems through improved practices and technological solutions.

Natural hazards or extreme weather events can endanger our employees and communities, damage our assets or cause significant operational interruption. A direct impact of a Category 5 cyclone could lead to a significant disruption to Pilbara port operations. Longer-dated exposure to chronic changes in climate is less well understood given the inherent uncertainty in future climate projections.

Key exposures

Our operations in the Pilbara and Saguenay–Lac-Saint-Jean regions, QIT Madagascar Minerals and the Simandou project.

Risk oversight: Risk Management Committee, Sustainability Committee

Key management response includes:

- Annual Environmental Certification across all assets endorsed by product group Chief Executives.
- Business endorsement for the development of a nature strategy, incorporating a target program.
- Understanding our exposure at each asset through programs such as our critical risk assessment (CRA) program and asset integrity assurance, and climate change resilience assessments (CCRAs) to identify vulnerabilities across our portfolio. Reporting against the Task Force on Climate-Related Financial Disclosures (TCFD) requirements.
- Actively supporting, and reporting our practices against, the commitments outlined in ICMM's position statement on water stewardship.
- Continuing to disclose our operations' surface water allocation, latest annual water usage and average catchment rainfall runoff and a 5-year view on historical annual water usage.
- Utilising the latest generation climate analytics (weather forecasts, climate outlooks, catastrophe modelling and projections) to gain quantitative insights into short-, medium-, and long-term physical climate risks.
- Developing technical guidance to inform physical climate risk identification, management and adaptation.
- Business Resilience Plans and Emergency response plans, training and annual exercises to prepare for a natural disaster event, including established communication plans and coordination with local, regional and state agencies.

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5. Being responsible operators throughout the entire life of our assets – from discovery to closure

We are committed to being responsible operators throughout the entire life of our assets, from discovery to closure. We do this in partnership with our internal and external stakeholders, such as host communities, Indigenous Peoples, regulators and joint venture partners, embedding closure considerations throughout the entire lifespan of our assets – in the way we design, build, run, close and transition them.

Social Licence | Change vs 2023: Stable

Opportunities

Finding innovative ways of managing through the operation phase over the long term can improve the cost profile or capital intensity of closure. Investing in research and development over the life of the asset to find innovative ways of managing long-term closure risks can also improve closure outcomes.

We actively assess opportunities to repurpose and reuse sites for future economic or social resilience and work collaboratively with our stakeholders throughout the life of the asset. We seek mutually beneficial solutions through relinquishment or divestment of closed or legacy assets.

Threats

Closure obligations may increase over time due to changes in the Group's portfolio, stakeholders' and community expectations, regulations, standards, technical understanding and techniques.

The manifestation of exposures at a closed or legacy asset, due to a lack of historic information, could impact our licence to operate, the cost of closure and negatively impact on the human rights of communities where it is located.

Key exposures

Pilbara near-term closures (including Channar and Eastern Range), Gove, Argyle, Energy Resources of Australia (ERA), Mange-Garri, Diavik and legacy sites.

Risk oversight: Closure Steering Committee, Risk Management Committee, Sustainability Committee

Key management response includes:

- Development and maintenance of the end-to-end closure global process, closure group controls and ongoing support to implement the Closure Standard.
- An Asset Closure Strategy (ACS), closure plan and cost estimate that have been developed at 61% of our assets and are to be updated every 5 years
- Closure studies completed for sites that plan to close in the next 10 years. Notable studies include Pre-feasibility study (PFS) Closure Study in 2024 for Channar and Eastern Range (closing in 2027), PFS for Gove Mine (closing in 2029), PFS for Partial Closure Hope Downs 1 (closing in 2033), and Order of Magnitude Closure Study for Weipa Northern Operations (closing in 2029).
- Incentivising progressive closure activities by removing approved spend from product group free cash flow performance metrics. This contributes to increased annual progressive rehabilitation and helps deliver our closure commitments to regulators, Indigenous Peoples and other stakeholders.
- Actively exploring cost-effective solutions to common challenges through targeted research and development projects, and improvements in closure planning, studies, execution, socioeconomic transition and legacy management.
- Developing and implementing management plans for tailings facilities as legacy assets are prioritised by Global Industry Standard on Tailings Management (GISTM) consequence classifications.

6. Building trusted relationships with Indigenous Peoples

Our relationships with Indigenous Peoples play a material role in delivering our operational and strategic goals and in our ability to operate. A breakdown in these critical relationships may have a significant impact on our business. We aim to build respectful and enduring relationships with Indigenous partners and communities, enabling them to realise their goals and aspirations and to create long-term shared benefits.

Social Licence | Change vs 2023: Stable

Opportunities

We have the opportunity to work closely with Indigenous Peoples to realise long-term socioeconomic, cultural and environmental benefits. Our capacity to deliver value to host communities and Indigenous Peoples supports our current and future growth plans, including in the Pilbara, Weipa, Saguenay, Arizona and Argentina and existing partnerships at Iron Ore Company of Canada and in British Columbia.

Threats

Mining activities may strain relationships with Indigenous Peoples, particularly where actual or perceived damage of significant cultural values (cumulative or acute) occurs without appropriate consultation and consent. This may result in loss of trust with Indigenous Peoples, impacting our social licence to operate.

Key exposures

Indigenous Peoples near Resolution, in the Pilbara, Cape York (Weipa), Canada (Quebec, Labrador, British Columbia), and Argentina.

Risk oversight: Risk Management Committee, Sustainability Committee

Key management response includes:

In addition to those captured under principal risk 3, Building trusted relationships with communities, are the following key responses:

- Developing a global approach to Indigenous Relations.
- Building cultural responsiveness and competencies (including for cultural heritage) across our leadership teams and workforce.
- Strengthening consultation, meaningful engagement and free, prior and informed consent (FPIC) processes.
- Progressing Indigenous leadership, employment and economic development efforts.
- Strengthening integrated cultural heritage management systems and embedding social considerations in approvals and decision-making processes at all levels of the organisation.
- Strengthening cultural heritage critical controls and verification requirements in our First line of defence.
- Reviewing risks to Indigenous Peoples across the project lifecycle, mergers, acquisitions and development projects.
- Investing in strategic partnerships that address the needs and aspirations of Indigenous organisations and those impacted by the investment activity.
- Elevating the voices of our Indigenous employees and engaging with, and learning from, the Australian Advisory Group.

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7. Delivering on our growth projects

Delivering our growth strategy relies on our ability to develop resources faster and more competitively than others, while striving for impeccable ESG credentials, and on the success of our exploration (greenfield and brownfield) and acquisition activities to secure those resources. Developing projects requires complex multi-year study and execution plans and carries significant delivery risk.

Excel in Development — Change vs 2023: Stable

Opportunities

Active and focused exploration and business development efforts have the potential to increase or diversify our commodity resource base. Through operational efficiencies, deployment of new technologies or improved understanding of our orebodies, we may convert a greater proportion of resources to reserves more competitively. Through strengthening partnerships with emerging regions, we may improve both speed of project delivery and capital.

Threats

New high-quality deposits are increasingly scarce, and those that are known require advances in processing technology, significant capital investment, or may negatively impact our ESG credentials. Additionally, as studies and projects progress, they are susceptible to changes in approvals, societal expectations, or changes in underlying commercial or economic assumptions which could impact economic viability.

Key exposures

Simandou, increasing approval timeframes in the Pilbara, Oyu Tolgoi underground expansion, Rincon, Resolution and Jadar.

Risk oversight: Investment Committee, Ore Reserves Steering Committee, Risk Management Committee, Board

Key management response includes:

- Having deep in-house capabilities (eg in exploration, technical research and development centres, business development, global and specialised projects, and our studies division) and strengthening partnerships with emerging regions for project delivery.
- Having a comprehensive talent strategy to ensure we have the right organisational strength and capacity to deliver the growth portfolio.
- Focusing growth capital expenditure on energy transition commodities, such as copper, battery materials, high-grade iron ore, and critical minerals (rhenium, tellurium, scandium, selenium, and gallium).
- Joint venture partnerships to enhance development capabilities and reduce funding requirements.
- Broadening our scope to include jurisdictions and targets that can grow and create optionality or are a strategic fit to the Group.
- Stage-gate approval process including in-flight monitoring of project progress, with enhanced projects governance using industry best practices.
- New country entry reviews to ensure robust understanding of risks, including ESG and human rights due diligence during exploration, studies or mergers and acquisitions.

8. Achieving our decarbonisation targets competitively

Ensuring our ability to deliver longer-term strategic objectives encompasses our ability to achieve our Scope 1 and 2 targets between now and 2050, and deliver on our focus area of striving for impeccable ESG credentials, while balancing the need to invest for growth, deliver superior shareholder returns and remain competitive.

Impeccable ESG — Change vs 2023: Stable

Opportunities

Decarbonising our assets has the potential to enhance our competitive advantage (tariffs and access to markets). It also provides opportunity to decouple our operating cost basis from emerging carbon taxes and fossil fuel markets. Creative deployment of new assets and value chains can benefit our host communities, with Traditional Owner owned renewables and emerging new value chains such as biofuels and biocarbon providing early successful examples. Renewable energy projects will likely provide energy in excess of our needs at certain times, improving the availability of renewable energy in the communities where we operate.

We are well placed to be a leading supplier of materials to support the energy transition, for example aluminium for solar panels and copper for electric vehicles.

Threats

Delays in priority initiatives will threaten our Scope 1 and 2 target delivery and ability to respond proactively and competitively. A key uncertainty is our ability to successfully engage, and partner where appropriate, with governments and other external parties to progress grid decarbonisation in a timely manner, with large scale grid solutions in Australia planned for final delivery very late this decade already. Furthermore, our 2030 targets remain achievable through a mix of renewable penetration, biodiesel, small process heat modifications and use of offsets. Successful research and development investment in areas such as electric fleets, hydrogen calcination, ELYSIS™, and BlueSmelting™ is required to support the decarbonisation pipeline post 2030.

Adhering to our social and human rights standards during implementation of decarbonisation projects will be critical to avoid adversely impacting people and stakeholder relationships. However, this may limit our available sourcing options and lead to delays in meeting our targets.

Key exposures

Our Aluminium group's Pacific Operations smelter repowering and alumina processing.

Risk oversight: Decarbonisation Investment Forum, Risk Management Committee, Board

Key management response includes:

- We maintain our capital expenditure guidance of $5-6 billion between 2022 and 2030 and $0.5-1 billion in the period 2024 to 2026, relating to the delivery of our targets through 6 large abatement programs focused on renewables (such as in the Pilbara, and at Richards Bay Minerals and Aluminium's Pacific Operations), ELYSIS™, alumina processing (Yarwun and Queensland Aluminium Limited), minerals processing and diesel transition; supplemented by nature-based solutions and offsets.
- Announcing 2 renewable power purchase agreements for 2.2GW to supply our Boyne aluminium smelter in Gladstone, Australia, and securing in-principle Queensland government support.
- Establishing the Rio Tinto Energy & Climate team accountable for decarbonisation decision making, funding and resource prioritisation, data collection and analysis.
- Having our Office of the Chief Scientist support decarbonisation research and development to identify pathways for hard-to-abate areas, required to meet our targets.
- Developing partnerships with external parties to leverage broader capabilities and accelerate decarbonisation.

For more information, see our 2025 Climate Action Plan on page 41.

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9. Transforming our culture, enabling us to live our values

Living our values goes to the heart of our Group's performance, prospects and reputation. Sharing and demonstrating our values unlocks opportunities in all that we do, every day. We are focused on building a culture where all our people are trusted and empowered to be their best selves and help drive change. This begins with a workplace where everyone feels safe, respected and empowered every day.

Best Operator — Change vs 2023: Stable

Opportunities

Our reputation, and our ability to build respectful and trusting partnerships, depends on our business conduct being consistent with our corporate values. Our corporate values inspire our people to contribute in ways that align with our purpose and strategic direction.

Threats

Not living our values has the potential for decisions to prioritise production over safety. As societal expectations are changing, and higher standards are being placed on organisations, the role we play in society requires us to ensure we are consistently displaying and living our values. The 2022 final reports of the Western Australia Parliamentary Inquiry into the mining industry and the *Everyday Respect Report* into the workplace culture at Rio Tinto highlighted the scale of change required internally and across the resources sector.

Risk oversight: Risk Management Committee, Board

Key management response includes:

We embarked on a cultural change program led by the refresh of our corporate values in 2021 and have accelerated this through the Everyday Respect task force. In 2023, we refreshed and updated our Code of Conduct, *The Way We Work*, to be more comprehensive and act as the blueprint of key principles, driving policy position, setting out our commitments to stakeholders, helping our people live our values, and clarifying what is expected of all employees. During 2024, we have been evaluating our progress and gaining insight to inform the next stage of our journey through the *Everyday Respect Progress Review*, which we published in November (see page 78). We have introduced the following changes to support our leaders and teams in living our values:

- We refreshed our purpose and values and have been following a program of activity to support how these are embedded.
- The *Everyday Respect Progress Review*, published in November 2024, will inform our future plan of activity alongside the results of our biannual people survey and annual values scorecard which is also reviewed by our Executive Committee and our Board.
- Our internal whistleblowing program (myVoice) is open to employees and external stakeholders, to report on conduct inconsistent with our values and Code of Conduct.
- Care Hub comprises a team of Support Partners who facilitate trauma informed, people-focused support, care and non-investigative resolution options to individuals affected by harmful behaviours at work.
- We have people management processes that support alignment with our strategy and values, to increase respect and transparency. These include values-based performance management processes and a career management framework (Career Conversations).
- We implemented new Code of Conduct mandatory training in July 2024, which all employees are required to complete on an annual basis.

For more information on our culture change journey, see pages 78-80.

10. Conducting our business with integrity, complying with all laws, regulations and obligations

Our determination to become Best Operator and have impeccable ESG credentials is underpinned by our commitment to ensure compliance with our operational procedures, laws and our obligations. These expectations are outlined in our Group policies, standards and procedures, published on our website.

Impeccable ESG — Change vs 2023: Stable

Opportunities

Good corporate citizens that operate to high ethical standards are known to have a healthy culture, outperform peers and retain and attract better talent. This leads to greater success in securing access to resources and investment opportunities.

Threats

A serious breach in our operations or in our value chain of anti-corruption legislation or sanctions, data privacy, human rights, anti-trust rules, or inappropriate business conduct, could result in serious harm to people and significant reputational, legal and financial damage.

Key exposures

Exposures exist in Argentina (Rincon), Guinea (Simandou) and Mongolia (Oyu Tolgoi).

Risk oversight: Group Ethics & Compliance Committee, Risk Management Committee, Board

Key management response includes:

- Maintaining management oversight and reporting through risk, assurance and compliance forums with operational and functional teams. This is supported by ethics and compliance risk management review forums.
- Implementing an effective risk-informed Business Integrity Compliance Program across the Group.
- Having dedicated legal teams to help our businesses identify, understand and comply with current and emerging regulatory obligations.
- Having a dedicated Third-Party Risk Management team within Ethics & Compliance, and a Third-Party Risk Management Committee that oversees third-party risk management policy and risk appetite decisions at a Group level.
- Having a Litigation & Regulatory team and Areas of Expertise for anti-bribery, corruption, data privacy and competition.
- Providing training and raising awareness about the requirements of our compliance program and regulatory obligations, both for employees working in high-risk roles and high-risk third parties.
- Integrating our commitments to core business and human rights standards, including the UN Guiding Principles on Business and Human Rights, into our business plans and actions.
- Assuring compliance with our policies, standards and procedures, including the Business Integrity Standard and procedure, and the third-party and human rights due diligence processes in the supply chain.
- Implementing the Voluntary Principles on Security and Human Rights and a strong security management framework.
- Looking into all concerns that are raised, promptly and in a confidential manner, and keeping reporters safe from retaliation. Our whistleblowing program is managed by our Business Conduct Office.

For more information on our Group policies, standards and procedures, see riotinto.com/policies

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11. Remaining competitive through economic cycles or shocks by maintaining strong financial and operating performance, underpinned by a healthy inventory of high-quality reserves

Our business model depends on our ability to convert existing Mineral Resources to Ore Reserves available for mining when required. The viability of our orebodies, and business, is most sensitive to the complexity of our orebodies and associated orebody knowledge base, combined with commodity economics which are greatly influenced by macroeconomic and geopolitical developments. We aim to remain competitive, preserve resilience and maintain access to funding by having cost-competitive assets, a diversified commodities portfolio, a strong balance sheet, prudent financial policies and strong ESG credentials.

● Best Operator — Change vs 2023: Stable

Opportunities

Favourable market conditions and strong internal capital discipline allow us to maintain our balance sheet strength. This enables us to invest in growth opportunities, pay down debt and enhance returns to shareholders.

Through operational efficiencies, deployment of new technologies or improved understanding of our orebodies, we may convert a greater proportion of our Mineral Resources to Ore Reserves.

We can reduce unscheduled loss and improve mining and processing equipment availability through implementing a targeted asset management uplift program that embeds good work management practices, increasing planned and scheduled work, and reducing reactive maintenance.

Threats

A deteriorating economic or political environment could lead to falling commodity prices (reduced cash flow, limiting profitability), trade actions (increased tariffs, retaliations, and sanctions), and governments' efforts to exert more control over their natural resources or to protect their domestic economies by changing contractual, regulatory or tax measures. This can potentially impact our key markets, operations, investments, tax obligations, financial results and access to funding.

Input cost inflation and escalation could increase pressure on operating costs and margins.

Orebody health remains challenged with Ore Reserve depletion driven by expanded production and ongoing resource development challenges. Failure to secure access and approvals could limit collection of required orebody knowledge that may reduce the volume of existing Ore Reserves and the future conversion of Mineral Resources to Ore Reserves in the required timeframe.

Risk oversight: Financial Risk Management Committee, Ore Reserves Steering Committee, Risk Management Committee, Audit & Risk Committee

Key management response includes:

- Implementing the Safe Production System which aims to transform how we operate our assets, manage performance, and develop and empower our people. This enables us to consistently deliver outstanding safety, engagement and production results, and improve our asset and equipment reliability and maintenance.
- The Orebody Knowledge Centre of Excellence (OBK CoE) within Group Technical maintains and assures compliance with the Group's Resources and Reserves Standard and monitors performance to track variation from expected asset production plans.
- Annual review of the Group's Ore Reserves and Mineral Resources, and orebody health used to drive long-term planning assumptions and activities. The Group maintains capital discipline and a strong balance sheet through robust investment governance processes, prudent financial policies and a pay-out-based shareholder returns policy. A strong investment grade credit rating ensures access to diverse funding sources.

12. Preventing material business disruption and data breaches due to cyber events

Managing cyber security events allows us to avoid disruption to our operations, comply with data privacy requirements and keep sensitive information related to customers, contractors or suppliers safe

● Best Operator — Change vs 2023: Stable

Opportunities

The value of a robust cyber security capability extends beyond the protection of our information, assets, and people. Requests for information to substantiate Rio Tinto's cyber security capabilities are becoming more frequent and detailed as our customers look to validate their supply chain risk.

In parallel, the expectations from regulators and ratings agencies are increasing, and new obligations for public disclosure of cybersecurity incidents are emerging. This generates opportunity to enhance our ESG credentials and customer value proposition.

Threats

Cyber incidents can occur due to malicious external or internal attacks, but also inadvertently through human error.

Although the extent and frequency of cyber security threats remain in line with growth expectations, the external threat landscape continues to evolve at a rapid pace.

The rise of digitisation has driven greater convergence and connectivity between our information technology (IT), and industrial and operational environments. The increased use of emerging or disruptive technologies to inform and automate decisions also amplifies the threat of loss of control systems or autonomous functions.

Key exposures

Our greatest exposures continue to be through our global ecosystem of third-party suppliers, and the rapid development of new projects, with an increasing reliance on technology.

Risk oversight: Cyber Security Steering Committee, Risk Management Committee, Audit & Risk Committee

Key management response includes:

- Operating a perpetual cyber security function and program of work ensures our controls remain relevant to the threat environment which is constantly evolving and adapting. This informs the Group business resilience and recovery plans for cyber breaches across critical sites and assets.
- Engaging external expertise to assess and benchmark our environment against the National Institute of Standards and Technology's Cybersecurity Management Framework. This recurring assessment is used to inform and monitor the uplift of our maturity in cyber security risk management.
- Continuing investments into strengthening endpoint detection, network segregation and access management within operational technology environments.
- Programs to further the awareness and skills of IT professionals who play a part in maintaining the integrity and resilience of our IT environments.
- Providing training to our people to enhance awareness of cyber threats and their role in keeping our environment safe.
- Operating a Cyber Security Steering Committee to monitor performance and drive investments in mitigation of key cyber security risk exposures.

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13. Attracting, developing and retaining people with the requisite skills

Our ability to achieve our business strategy depends on attracting, developing and retaining a wide range of internal and external skilled and experienced people.

Best Operator | Change vs 2023: Stable

Opportunities

Investing in critical skills required now and for the future – and "building" through a focus on early careers and reskilling our people, rather than "buying in" talent – can enhance productivity, innovation and business resilience. Increasing local employment and career pathways supports our social licence to operate. And creating partnerships, including joint ventures, presents opportunity to acquire talent.

Threats

Business interruption or underperformance may arise from a lack of access to capability. Tight labour markets, and entry into new countries where mining capabilities are in limited supply or the Rio Tinto brand is less established, can lead to heightened competition for diverse talent and critical skills. This may include skills in climate, energy, decarbonisation, technical mining and processing, licence to operate, and new commodities and projects. Changing societal expectations are placing pressure on our corporate and employer brand in terms of who we are and what we stand for. Since the pandemic, talent is less inclined to relocate, forcing the reliance on local or national recruitment, which significantly reduces the market size for sourcing talent.

Key exposures:

Turnover rate in process safety management and technology roles.

Risk oversight: Risk Management Committee, People & Remuneration Committee

Key management response includes:

- Creating the Rio Tinto Leadership team and implementing a robust schedule of talent practices. This aims to ensure we are effectively developing and deploying our best talent into our most critical roles, and building strong and diverse pipelines for our general manager and managing director level roles.
- Capability in strategic workforce planning, with a focus on critical roles and critical future capabilities, including decarbonisation.
- Planned development offerings to build the capability of leaders at all levels, and increase our ability to retain key skills and talent.
- Launching a refreshed approach to talent management (Career Conversations) and development plans in July 2024, which will be expanded across the organisation in the first quarter of 2025.
- Talent planning globally for critical technical capabilities.
- Ongoing monitoring of the global talent market, developments and trends, including Rio Tinto brand awareness, reputation and talent mobility.
- Ongoing monitoring of turnover data, to identify patterns, trends and priority areas for focus.
- Biannual people survey, engagement strategy and retention modelling.
- Group-wide employee value proposition, tailored by labour market and talent segment.
- A talent acquisition strategy that targets multiple labour markets and a diverse range of skills.
- A global graduate program and strategic partnerships for mutually beneficial relationships with universities.
- Local trainee (apprenticeship) programs and other future skill development partnerships.
- Implementing the Workday platform to increase access to, and consistency of, people data, and support us in effectively monitoring employee movement and retention, and understanding the experience of our workforce and their capabilities.

For more information, see pages 78-80.

14. Withstanding impacts of geopolitics on our trade or investments

Geopolitics has the potential to increase trade tensions, undermining rule-based trading systems. Possible trade actions can impact our key markets, operations or investments, and may limit the benefits of being a multinational company with a global footprint. We continue to build resilience through diversification, and identify opportunities for engagement with governments, civil society, industry associations and international bodies.

Best Operator | Change vs 2023: Stable

Opportunities

Working closely with governments on balanced domestic policy proposals has potential to bring long-term economic and social benefits for the country, while supporting growth and investments for us.

Global geopolitical realignments include the creation of new strategic alliances between countries that could create partnership and growth opportunities (eg in the security of critical minerals supply).

Threats

A deteriorating economic and political environment could lead to falling commodity prices (reduced cash flow, limiting profitability, reducing reserve inventory), trade actions (increased tariffs, retaliations, and sanctions), and governments' efforts to exert more control over their natural resources or to protect their domestic economies by changing contractual, regulatory or tax measures. This can potentially impact our key markets, operations, investments, tax obligations, financial results and access to funding.

Key exposures

A highly uncertain and unstable global macro environment, including China-US tensions and the indirect impacts of the war in Ukraine and conflict in the Middle East.

Risk oversight: Financial Risk Management Committee, Risk Management Committee, Board

Key management response includes:

- Continuing to further diversify our portfolio of commodities (focused on materials that enable the low-carbon transition), markets and jurisdictions to reduce exposure to specific geopolitical events, such as with the Rincon lithium project in Argentina, Simandou high-grade iron ore project in Guinea, and the proposed acquisition of Arcadium.
- A fully resourced external affairs function to closely monitor the political and geopolitical environment, coordinate our engagement with stakeholders and to identify possible opportunities for the Group through engagement with governments, civil society, industry associations and international bodies.
- Maintaining strong relationships with stakeholders across the countries and sectors we operate in.
- The New Country Entry Procedure, which focuses on cross-functional, real-time engagement.
- Regularly assessing and quantifying changes in political and country risk to inform strategic, operational and investment decisions.
- The Sanctions Standard and Export Control Procedure, to mitigate against potential breach of economic sanctions and trade controls. Ongoing monitoring of the political environments where we operate and engagement with government in those areas.
- Capability to settle and receive renminbi (RMB), including management of central bank digital currency (CBDC) transactions in line with industry standards, to mitigate potential trade tensions impact on key Chinese customers' access to credit and USD.

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Five-year review

Selected financial data

The selected consolidated financial information below has been derived from the historical audited consolidated financial statements of the Rio Tinto Group. The selected consolidated financial data should be read in conjunction with, and qualified in their entirety by reference to, the 2024 financial statements and notes thereto. The financial statements as included on pages 153–230 have been prepared in accordance with International Financial Reporting Standard (IFRS) as defined in "The basis of preparation" section to the financial statements on page 154.

Rio Tinto Group

Income statement data

For the years ending 31 December Amounts	2024 $m	2023 $m	2022 $m	2021 $m	2020 $m
Consolidated sales revenue	53,658	54,041	55,554	63,495	44,611
Group operating profit[1]	15,653	14,823	19,933	29,817	16,829
Profit after tax for the year	11,574	9,953	13,048	22,597	10,400
Basic earnings for the year per share (US cents)	711.7	620.3	765.0	1,304.7	604.0
Diluted earnings for the year per share (US cents)	707.2	616.5	760.4	1,296.3	599.8
Dividends per share					
Dividends declared during the year					
US cents					
– interim	177.0	177.0	267.0	376.0	155.0
– interim special	–	–	–	185.0	–
– final	225.0	258.0	225.0	417.0	309.0
– special	–	–	–	62.0	93.0
Dividends paid during the year (US cents)					
– ordinary	435.0	402.0	684.0	685.0	386.0
– special	–	–	62.0	278.0	–
Weighted average number of shares basic (millions)	1,623.1	1,621.4	1,619.8	1,618.4	1,617.4
Weighted average number of shares diluted (millions)	1,633.4	1,631.5	1,629.6	1,628.9	1,628.6
Cash flow statement data					
Net cash generated from operating activities	15,599	15,160	16,134	25,345	15,875
Own shares purchased from owners of Rio Tinto	–	–	–	–	208
Balance sheet data					
Total assets	102,786	103,549	96,744	102,896	97,390
Share capital/premium	7,593	7,908	7,859	8,097	8,302
Total equity/net assets	57,965	56,341	52,741	57,113	51,903
Equity attributable to owners of Rio Tinto	55,246	54,586	50,634	51,947	47,054

1. Group operating profit includes the effects of charges and reversals resulting from impairments (other than impairments of equity accounted units) and profit and loss on consolidation and disposal of interests in businesses. Group operating profit amounts shown above exclude equity accounted operations, finance items, tax and discontinued operations.

Directors' approval statement

This Strategic report is delivered in accordance with a resolution of the Board, and has been signed on behalf of the Board by:



Dominic Barton
Chair

19 February 2025

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Directors' report

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Chair's introduction

As a Board, we have spent a lot of time in 2024 focusing on Rio Tinto's strategy to ensure we have the right portfolio of commodities, clear milestones for success, and are building capacity to meet the demand for our products. In an increasingly volatile world, having a well-defined strategy, strict capital allocation and good governance is essential for success.

In this report, we describe some of the well-established governance processes that support effective decision-making at the Board. Like everyone at Rio Tinto however, it is important that we continuously review and improve our structure and processes to make sure we are efficient and effective. The report explains how we assessed our effectiveness and the results of the 2024 review.

Our Board members have diverse backgrounds, and each brings their unique and valuable experience to our work. Directors are encouraged to challenge each other's assumptions and push to understand different perspectives to reach an objective view. This has been especially important in a year in which we made several significant decisions related to the execution of Rio Tinto's strategy, for example, the decision to proceed with the proposed acquisition of Arcadium Lithium.

The Board has also reviewed and approved the proposed Climate Action Plan, which will be put to shareholders for approval at our 2025 AGMs. We are retaining our commitments to decarbonise our assets and work with customers and suppliers to reduce our value chain emissions. We are doing this in a way that creates value for shareholders and the Board recommends it for approval.

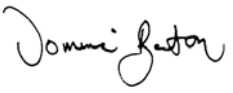
The Board also studied the Everyday Respect Progress Review in 2024, which was another significant step in Rio Tinto's culture journey. As the Board oversees and monitors our organisational culture, it was valuable to understand where the challenges remain in aligning our culture with our purpose, values and strategy. The findings of the Progress Review and People Surveys have informed our view that Rio Tinto is heading in the right direction, but still has significant work to do to improve its culture.

Half of the Non-Executive Directors have been appointed within the last 2 years. In recognition of this, the Board held 2 dedicated sessions where we got to know each other more deeply to accelerate our team forming and dynamic, alongside our regular meetings.

In addition, Board members made a series of individual and group site visits to help deepen our understanding of the business and progress on our culture and operating performance.

These visits are always invaluable opportunities for the Board to engage directly with the teams on site and take these learnings back into our boardroom discussions. I am grateful to my colleagues for their continued energy and enthusiasm to learn, and to everyone who has taken the time to share their insights with us.

Finally, there will be a number of Board changes in 2025, with Kaisa Hietala, Simon Henry and Sam Laidlaw all stepping down. Simon will hand over his chairship of the Audit & Risk Committee to Sharon Thorne, and the People & Remuneration Committee will pass from Sam to Ben Wyatt. A huge thank you to Kaisa, Simon and Sam for the dedication they have shown Rio Tinto. I believe they leave our business in a strong position, with a good mix of seasoned Directors on the Board.



Dominic Barton
Chair

19 February 2025

Governance framework

Our Board is structured to support good governance, which means considering the right things, at the right time, with the right people and insights. Our framework also helps the Board support the executive team, and strengthen our strategic focus.

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Board of Directors

We are **finding better ways™** to provide the materials the world needs. By doing this efficiently, effectively and sustainably, we aim to create long-term value for all stakeholders. Our purpose is supported by 3 core values: care, courage and curiosity. The Board is collectively responsible for pursuing our purpose and approves the strategy, budget and plans proposed by the Chief Executive to achieve this.

Board Charter

See the Board Charter for more information on the Board's role and the delegation to management.

Audit & Risk Committee

Helps the Board monitor decisions and processes designed to ensure the integrity of financial reporting, the independence and effectiveness of the external auditors, and robust systems of internal control and risk management.

See page 113

Nominations Committee

Helps the Board determine its composition, and that of its committees. These are regularly reviewed and refreshed, so they can operate effectively and have the right mixture of skills, experience and background.

See page 111

People & Remuneration Committee

Helps the Board ensure the Remuneration Policy and practices reward employees and executives fairly and responsibly, with a clear link to corporate and individual performance, and a focus on people and culture.

See page 119

Sustainability Committee

Helps the Board oversee the Group's integrated approach to sustainability and strategies designed to manage health and safety, and social and environmental risks, including management processes and standards.

See page 117

Chair's Committee

Supports the functioning of the Board and will consider urgent matters between Board meetings.

Chief Executive

Has delegated responsibility for the executive management of Rio Tinto, consistent with the Group's purpose and strategy, and subject to matters reserved for the Board, as set out in the Schedule of Matters Reserved for the Board and in accordance with the Group's delegation of authority framework.

Executive Committee

The Executive Committee supports the Chief Executive in delivering strategy, annual plans and commercial objectives, and in managing the financial and operational performance of the Group.

The following management committees support the Chief Executive in the performance of his duties.

Investment Committee

Reviews proposals on investments, acquisitions and disposals. Approves capital decisions within delegated authority limits, and otherwise recommends matters for approval to the Board, where appropriate.

Capital Committee

Reviews proposals for investments that are not strategically complex. Focused on capital approvals supporting the continuity, asset health, decarbonisation and closure programs of existing businesses and approved growth projects.

Risk Management Committee

Oversees the management and mitigation of the principal risks that could materially impact the Group's business objectives and exceed its risk tolerances.

Ore Reserves Steering Committee

Responsible for standards and control procedures in the Mineral Resources and Ore Reserves estimation and disclosure process. Ensures that they are effective in meeting internal objectives and regulatory requirements.

Closure Steering Committee

Oversees the process and controls designed to manage the material risks related to rehabilitation, closure and legacy operations.

Disclosure Committee

Reviews and approves the release of all significant public disclosures on behalf of the Group. Oversees the Group's compliance with its disclosure obligations in accordance with all relevant legal and regulatory requirements, including processes to ensure such disclosures are accurate and timely.

For more information and to view the Board charter, the schedule of matters reserved for the Board and committee terms of reference see riotinto.com/corporategovernance

Board of Directors

Rio Tinto plc and Rio Tinto Limited have a common Board of Directors. The Directors are collectively responsible for the stewardship and long-term sustainable success of the Group.

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Dominic Barton BBM
Chair

BA (Hons), MPhil. Age 62. Appointed April 2022; Chair from May 2022.

Skills and experience

Dominic spent over 30 years at McKinsey & Company, including 9 years as the Global Managing Partner, and has also held a broad range of public sector leadership positions. He has served as Canada's Ambassador to China, Chair of Canada's Advisory Council for Economic Growth, and Chair of the International Advisory Committee to the President of South Korea on National Future and Vision. Dominic brings a wealth of global business experience, including deep insight of geopolitics, corporate sustainability and governance. His business acumen and public sector experience position him to provide balanced guidance to Rio Tinto.

Current external appointments

Chair of LeapFrog Investments.



Jakob Stausholm
Chief Executive

Ms Economics. Age 56. Appointed Chief Financial Officer September 2018; Chief Executive from January 2021.

Skills and experience

As Chief Executive, Jakob brings strategic and commercial expertise and governance experience. He is committed to building trust with communities, building a strong workplace culture, and to continuously improving operational performance while delivering attractive returns to shareholders. Jakob joined Rio Tinto in 2018 as Chief Financial Officer. He has over 20 years' experience, primarily in senior finance roles at Maersk Group and Royal Dutch Shell plc, including in capital-intensive, long-cycle businesses, as well as in innovative technology and supply chain optimisation. He was also a Non-Executive Director of Woodside Petroleum and Statoil (now Equinor).

Current external appointments

None.



Peter Cunningham
Chief Financial Officer

BA (Hons), Chartered Accountant (England and Wales). Age 58. Appointed June 2021.

Skills and experience

As Chief Financial Officer, Peter brings extensive commercial expertise from working across the Group in various geographies. He is strongly focused on the decarbonisation of our assets, investing in the commodities essential for the energy transition, and delivering attractive returns to shareholders while maintaining financial discipline.

During over 3 decades with Rio Tinto, Peter has held a number of senior leadership roles, including Group Controller, Chief Financial Officer – Organisational Resources, Global Head of Health, Safety, Environment & Communities, Head of Energy and Climate Strategy, and Head of Investor Relations.

Current external appointments

None.



Dean Dalla Valle
Independent Non-Executive Director

MBA. Age 65. Appointed June 2023.

Skills and experience

Dean brings over 4 decades of operational and project management experience in the resources and infrastructure sectors. He draws on 40 years' experience at BHP where he was Chief Commercial Officer, President of Coal and Uranium, President and Chief Operating Officer Olympic Dam, President Cannington, Vice President Ports Iron Ore and General Manager Illawarra Coal. He has had direct operating responsibility in 11 countries, working across major mining commodities and brings a wealth of experience in engaging with a broad range of stakeholders globally, including governments, investors and communities. Dean was Chief Executive Officer of Pacific National from 2017 to 2021.

Current external appointments

Chair of Hysata.



Simon Henry
Independent Non-Executive Director

MA, FCMA. Age 63. Appointed April 2017.

Skills and experience

Simon has significant experience in global finance, corporate governance, mergers and acquisitions, international relations, and strategy. He draws on over 30 years' experience at Royal Dutch Shell plc, where he was Chief Financial Officer between 2009 and 2017.

Current external appointments:

Senior Independent Director of Harbour Energy plc, Adviser to the Board of Oxford Flow Ltd, member of the Board of the Audit Committee Chairs' Independent Forum, member of the Advisory Board of the Centre for European Reform and Advisory Panel of the Chartered Institute of Management Accountants (CIMA), and trustee of the Cambridge China Development Trust.



Kaisa Hietala
Independent Non-Executive Director

MPhil, MS. Age 54. Appointed March 2023.

Skills and experience

Kaisa is an experienced executive with a strong track record of helping companies transform the challenges of environmental megatrends into business opportunities and growth. She began her career in upstream oil and gas exploration and, as Executive Vice President of Renewable Products at Neste Corporation, she played a central role in its commercial transformation into the world's largest and most profitable producer of renewable products. She was formerly a Board member of Kemira Corporation from 2016 to 2021.

Current external appointments

Senior Independent Director of Smurfit Westrock, Non-Executive Director of Exxon Mobil Corporation, Chair of Greencode Ventures Ltd and a member of the Supervisory Board of Oulu University.



Sam Laidlaw
Independent Non-Executive Director

MA, MBA. Age 69. Appointed February 2017; Senior Independent Director from May 2019.

Skills and experience

Sam has more than 40 years' experience of long-cycle, capital-intensive industries in which safety, the low-carbon transition, and stakeholder management are critical. Sam has held a number of senior roles in the energy industry, including as CEO of both Enterprise Oil plc and Centrica plc. He was also a member of the UK Prime Minister's Business Advisory Group.

Current external appointments

Chair of AWE Plc, Chair of Neptune Energy DE, Chair of the National Centre of Universities & Business, Board member of Oxford Saïd Business School.



Susan Lloyd-Hurwitz
Independent Non-Executive Director

BA (Hons), MBA (Dist). Age 57. Appointed June 2023.

Skills and experience

Susan brings significant experience in the built environment sector with a global career spanning over 30 years. Most recently Susan was Chief Executive Officer and Managing Director of Mirvac Group for over a decade. Prior to this, she was Managing Director at LaSalle Investment Management, and held senior executive positions at MGPA, Macquarie Group and Lendlease Corporation.

Current external appointments

President of Chief Executive Women, Chair of the Australian National Housing Supply and Affordability Council and the Australian Centre for Gender Equality and Inclusion @ Work Advisory Board, Non-Executive Director of Macquarie Group and Spacecube, Member of the Sydney Opera House Trust and Global Board member at INSEAD.

Board changes

Simon McKeon stepped down as director on 2 May 2024.

Sam Laidlaw and Kaisa Hietala will step down from the Board at the conclusion of the Rio Tinto Limited AGM on 1 May 2025.

Past external appointments over the last 3 years

For details of each Director's previous directorships of other listed companies see the Directors' report on page 149.

Board committee membership key

- Committee Chair
- Audit & Risk Committee
- Nominations Committee
- People & Remuneration Committee
- Sustainability Committee



Martina Merz

Independent Non-Executive Director

B.Eng. Age 61. Appointed February 2024.

Skills and experience

Martina brings over 38 years of extensive leadership and operational experience, most recently as CEO of industrial engineering and steel production conglomerate ThyssenKrupp AG. She has held numerous leadership roles, including at Robert Bosch GmbH and at Chassis Brakes International. Martina also has extensive listed company experience and is known for her expertise in the areas of strategy, risk management, legal/ compliance and human resources.

Current external appointments

Member of the Supervisory Board at AB Volvo and Member of the Shareholder Council of the Foundation Carl-Zeiss-Stiftung as the owner of Zeiss AG and Schott AG.



Jennifer Nason

Independent Non-Executive Director

BA, BCom (Hons). Age 64. Appointed March 2020.

Skills and experience

Jennifer has over 38 years' experience in corporate finance and capital markets. She was the Global Chair of Investment Banking at JP Morgan, based in the US, and for the past 20 years, led the Technology, Media and Telecommunications global client practice. During her time at JP Morgan, she worked in the metals and mining sector team in Australia and co-founded and chaired the Investment Banking Women's Network and sat on the Executive Committee for the Investment Bank.

Current external appointments

Co-Chair of the American Australian Business Council, Non-Executive Director at Accenture. Trustee of Dodge and Cox.



Joc O'Rourke

Independent Non-Executive Director

BSc, EMBA. Age 64. Appointed October 2023.

Skills and experience

Joc has over 35 years' experience across the mining and minerals industry. He was the Chief Executive Officer of The Mosaic Company, the world's leading integrated producer and marketer of concentrated phosphate and potash, from 2015 to 2023. He also served as President of Mosaic until recently, and previously held roles there including Executive Vice President of Operations and Chief Operating Officer. Prior to this, he was President of Australia Pacific at Barrick Gold Corporation, leading gold and copper mines in Australia and Papua New Guinea. Joc is known for his deep knowledge of the mining industry, and passion for improving safety and operational performance.

Current external appointments

Non-Executive Director at the Toro Company and The Weyerhaeuser Company.



Sharon Thorne

Independent Non-Executive Director

BA (Hons), FCA, Chartered Accountant (England and Wales). Age 60. Appointed July 2024.

Skills and experience

Sharon has extensive experience of auditing and advising clients across a broad range of sectors. She had a 36-year career with Deloitte, becoming an audit partner in 1998. During her time at Deloitte, she held numerous Executive and Board roles before becoming Deputy CEO Deloitte North-West Europe in 2017 and Global Chair from 2019, before retiring at the end of 2023. Sharon is an advocate for collective action on environmental sustainability and climate change and is a strong believer in the need for greater diversity, equity, and inclusion in business and civil society, and she has long championed greater diversity in senior leadership roles.

Current external appointments

Governor, London Business School; Trustee, Royal United Services Institute; Advisory Board Member, Common Goal; and Advisory Council Member, Deloitte Centre for Sustainable Progress.



Ngaire Woods CBE

Independent Non-Executive Director

BA/LLB, DPhil. Age 62. Appointed September 2020.

Skills and experience

Ngaire is the founding Dean of the Blavatnik School of Government, Professor of Global Economic Governance and the Founder of the Global Economic Governance Programme at Oxford University. As a recognised expert in public policy, international development and governance, she has served as an adviser to the African Development Bank, the Asian Infrastructure Investment Bank, the Center for Global Development, the International Monetary Fund, and the European Union.

Current external appointments

Trustee of the Schwarzman Education Foundation, and Member of the Conseil d'administration of L'Institut national du service public.



Ben Wyatt

Independent Non-Executive Director

LLB, MSc. Age 50. Appointed September 2021.

Skills and experience

Ben had a prolific career in the Western Australian Parliament before retiring in 2021. He held a number of ministerial positions and became the first Indigenous treasurer of an Australian parliament. His extensive knowledge of public policy, finance, international trade and Indigenous affairs brings valuable insight and adds to the depth of knowledge on the Board. Ben was previously an officer in the Australian Army Reserves and went on to have a career in the legal profession as a barrister and solicitor.

Current external appointments

Non-Executive Director of Woodside Energy Group Ltd, Telethon Kids Institute and West Coast Eagles, and member of the Advisory Committee of Australian Capital Equity.



Andy Hodges

Group Company Secretary

ACG, MBA. Age 57. Appointed August 2023.

Skills and experience:

Andy joined Rio Tinto in 2018 and became Group Company Secretary in 2023. Andy has nearly 20 years' experience in senior company secretarial roles, including as Deputy Company Secretary at Anglo American and Assistant Company Secretary at Aviva.

Current external appointments

None.



Tim Paine

Company Secretary, Rio Tinto Limited

BEc, LLB, FGIA, FCIS. Age 61. Appointed January 2013.

Skills and experience

Tim joined Rio Tinto in 2012 and became Joint Company Secretary of Rio Tinto Limited in January 2013. He has over 30 years of experience in corporate counsel and company secretary roles, including as General Counsel and Company Secretary at Mayne Group, Symbion Health and Skilled Group. Tim also spent 12 years at ANZ Bank, including as Acting General Counsel and Company Secretary.

Current external appointments

Joint Company Secretary for Australia-Japan Innovation Fund and member of the Governance Institute of Australia's Legislation Review Committee.

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Executive Committee

Day-to-day management of the business is delegated by the Board to the Chief Executive and, through him, to other members of the Executive Committee and to certain management committees.



Jakob Stausholm
Chief Executive
Biography can be found on page 102.



Peter Cunningham
Chief Financial Officer
Biography can be found on page 102.



Bold Baatar
Chief Commercial Officer

Bold became Chief Commercial Officer in September 2024.

Since joining Rio Tinto in 2013, Bold has held a number of leadership positions across operations, Marine, Iron Ore sales and marketing, and Copper. He joined the Executive Committee in 2016 as the Chief Executive of the Energy & Minerals product group, and became Chief Executive, Copper in February 2021.

Bold brings deep experience across geographies, commodities and markets. A passionate advocate for integrating ESG into decision-making across the business landscape, he combines strong commercial and business development expertise with a focus on developing markets and partnerships with our host communities and nations.



Georgie Bazette
Chief People Officer

Georgie began her role as Chief People Officer in January 2025. With 25 years' experience as a global leader, Georgie is dedicated to finding better ways to unlock the full potential of our people. Since joining Rio Tinto in 2008, she has held diverse leadership roles within the People (HR) function in various product groups, Group Functions and at the Group level. Most recently, Georgie served as Chief Operating Officer, People, where she led the transformation agenda for the function.

Georgie is passionate about continuing to build a Rio Tinto where everyone, everywhere feels safe, respected and empowered by developing talent, evolving our culture, and creating inclusive environments that foster growth and innovation.



Mark Davies
Chief Technical Officer

Mark was appointed to the Executive Committee in 2020 and became Chief Technical Officer in October 2021. He joined Rio Tinto in 1995 as a Senior Mechanical Engineer and has worked in operational and functional leadership roles, including Iron and Titanium, Group Risk, and Global Procurement.

Mark leads Development & Technology where he is responsible for exploration, studies and major capital construction, and Group-wide decarbonisation. Mark also manages our Safe Production System and Rio Tinto's Technical Centres of Excellence, covering asset management, orebody knowledge, underground mining, surface mining and processing. He is also responsible for Rio Tinto's global research and development activities.

Mark is our representative on the Champions of Change Coalition.



Isabelle Deschamps
Chief Legal Officer, Governance & Corporate Affairs

Isabelle joined Rio Tinto in November 2021. She leads the global Legal, Communication, and External Affairs teams, overseeing governance functions including the Company Secretariat, Ethics & Compliance, and Technical Evaluation. With extensive international experience, Isabelle is a non-executive Director of the Japanese conglomerate Hitachi and previously worked as General Counsel and member of the Executive Committee at AkzoNobel, following her tenure at Unilever.

Isabelle is a pragmatic and transparent leader who champions respect at work and drives our social licence agenda. She is passionate about inclusion, diversity, continuous learning, and promoting a culture of integrity.



Katie Jackson
Chief Executive, Copper

Katie was appointed Chief Executive, Copper in September 2024. Before this, Katie was President of National Grid Ventures, responsible for financing, developing and operating large-scale energy infrastructure assets, including electricity interconnectors, LNG solutions, renewables, and competitive transmission.

With a career spanning 3 continents at Shell, UBS, Anadarko, Equinor and BG Group, Katie brings strong operational, commercial and strategy experience. She has a passion for solving technical, operational and financial challenges to make complex global projects work.

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Sinead Kaufman
Chief Executive, Minerals

Sinead became Chief Executive, Minerals in March 2021. Since Sinead joined Rio Tinto in 1997 as a geologist, she has held senior leadership and operational roles across Aluminium, Copper & Diamonds, Energy & Minerals, and Iron Ore. She joined the Executive Committee in early 2021.

Sinead brings strong operational expertise combined with a track record of delivering future-focused sustainability outcomes. Sinead has led the Minerals business to play a central role in driving growth and decarbonisation.



Kellie Parker
Chief Executive, Australia

Kellie was appointed Chief Executive, Australia in 2021, after a 20-year career at Rio Tinto. Before this, Kellie was Managing Director, Pacific Operations, Aluminium, a role she took after more than a decade of leadership, safety and operational roles across the Iron Ore and Aluminium businesses.

Kellie represents our Australian interests with all stakeholders and brings her operational experience and community values to listen, respond and set the direction for the business. Kellie also has company-wide responsibility for Health, Safety, Environment & Security, Communities & Social Performance and Closure.



Jérôme Pécresse
Chief Executive, Aluminium

Jérôme joined Rio Tinto in October 2023. He is leading a bold strategy to decarbonise the entire aluminium value chain and drive sustainable growth.

With extensive experience from global executive roles at GE, Alstom, and Imerys, Jérôme is committed to value creation for shareholders and brings leading expertise in energy, mining, and strategic transformation. His vision centres on low-carbon innovation, operational excellence, and meeting rising demand for low-carbon materials. Equally central in his leadership is fostering a culture of diversity, excellence, and continuous improvement, while strengthening industry and community partnerships for shared value and lasting impact.



Simon Trott
Chief Executive, Iron Ore

As Chief Executive – Iron Ore, Simon leads the world's largest and most innovative integrated bulk commodity producer, achieving exceptional financial performance by finding better ways to provide the materials the world needs.

Drawing on 25 years' mining industry experience across operating, commercial and business development roles, Simon is driving the Iron Ore business to develop a values-based performance culture and reach its vision to become the world's most valued resource business.

Former Executive Committee members

Alf Barrios stepped down as Chief Commercial Officer on 31 August 2024. On 1 September 2024 Bold Baatar succeeded him in this role. Alf Barrios continued as Chair for China, Japan and Korea and as an Executive Committee member until his retirement at the end of 2024.

James Martin stepped down as Chief People Officer on 31 December 2024, ahead of his retirement from Rio Tinto.

Our stakeholders

This stakeholder section, together with the information on page 9, constitutes our Section 172(1) statement.

The Board is required by the UK *Companies Act 2006* to promote the success of the company for the benefit of our shareholders, and in doing so, take into account the interests of our wider stakeholders. Our key stakeholders are our people, the communities where we operate, civil society organisations, governments, our investors, our customers and our suppliers.

Our people

Engaged people are key to our success.

How our Board engages

- Susan Lloyd-Hurwitz, our designated Non-Executive Director for workforce engagement, oversees our program of workforce engagement events.
- In-person and virtual town halls with the Board and Executive Committee members.
- The Board engaged with our workforce while visiting several sites and offices throughout the year, including in Melbourne, Brisbane and Montreal. Engagements have included town halls and Q&A sessions with smaller groups of employees to exchange insights and reflections about the business.
- Employees are informed of the Group's production and financial results, and in the event of any significant events, Group-wide communications are made through a number of channels.

What was important in 2024

- Improving company culture and continuing the implementation of the Everyday Respect recommendations
- Business growth, operational performance
- Societal issues

How the Board has taken account of these interests

- An engaged and diverse workforce is imperative to the success of the business. As part of the regular program, the Board reviews the results of the twice-yearly people surveys and oversees myVoice, our confidential whistleblowing program. This year the Board considered the outcomes of the *Everyday Respect Progress Review* Survey.
- The health, safety and wellbeing of our people is a key priority for the Board. The Board considers this in all decisions to ensure we continually evolve our assets' safety maturity and aim to create a physically and psychologically safe workplace.
- The Board considers our workforce when making decisions on new ventures, projects and other growth opportunities, and aims to support job opportunities and fair work.

Communities

The strength of our relationships with host communities, and broader society, is fundamental to our business. Without their support we cannot operate successfully.

How our Board engages

- We continue to strengthen our social performance capacity and capability to be better operators and partners. We have increased engagement between Indigenous Peoples and our senior operational leaders and teams.
- In December 2024, Ben Wyatt and Susan Lloyd-Hurwitz met with several Indigenous Leaders in Montreal as part of our Stakeholder Sessions. The roundtable provided insights to the Board on the evolving dynamics of Indigenous partnerships, particularly in the context of the potential shift in government policies on Indigenous rights and land use.
- In 2024, together with Voconiq, a third-party engagement science research company, we launched a global Community Perception Monitoring program, Local Voices. The program will help us to more effectively engage and better understand communities' perceptions, leading to improved data-driven social performance. Progress and insights of the program are overseen by the Sustainability Committee.

What was important in 2024

- Job creation and procurement opportunities
- Land access
- Socioeconomic development projects
- Environmental management, tailings storage facilities, operational impacts and potential site closures
- Security

How the Board has taken account of these interests

- The Board oversees and receives regular updates on many projects and the impact they have, or will have, on communities. Supporting economic opportunities for host communities and regions is a key priority for us and, in addition to our social investment programs, we strive to employ local people and engage local services.
- We have undertaken independent cultural management audits to help us improve our cultural heritage management and performance, and our engagement with Indigenous communities.
- The Australian Advisory Group guides us on current and emerging issues, which helps us better manage policies and positions important to Australian communities and our broader business.

For more information about our work with communities, see pages 81-84.

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Civil society organisations

Civil society organisations (CSOs) play an important role in society. They hold us to account and help us understand societal expectations across environmental, social and governance (ESG) issues, and identify risks and opportunities to collaborate.

How our Board engages

- We engage regularly with a wide range of CSOs to understand and respond to areas of interest and concern, communicate progress, share challenges and advance common goals. In 2024, we expanded our outreach to CSOs in Europe, Guinea, the US and Canada. In 2024, these included 2 sessions on progress towards our Group nature strategy, meetings on our Climate Action Plan, and on QIT Madagascar Minerals and Simandou.
- We engage locally, nationally and globally on specific issues related to an operation.
- We attend industry forums where CSOs are present to understand the latest trends and expectations on ESG issues.
- Since 2018, we have held annual roundtables with CSO leaders and members of the Board and Executive Committee. The roundtables provide a dedicated forum for our most senior leaders to engage directly with CSOs and discuss strategic issues.

What was important in 2024

- Decarbonisation, carbon offsets and Scope 3
- Water management, biodiversity protection and nature targets
- The Panguna Mine Legacy Impact Assessment
- Australia's nature-positive plan and reforms
- Indigenous Peoples' rights in the energy transition
- The Jadar project

How the Board has taken account of these interests

- The Board and its sub-committees consider issues raised by CSOs throughout the year, particularly through the Sustainability Committee. The Board is represented at the CSO roundtables through the Chair and other Directors.
- The Board considers ESG issues and our social licence to operate when making decisions on new ventures, projects and other growth opportunities.
- The Chair and executives engaged extensively with investors on the topic of environment.

Governments

Governments – national, state and provincial, and local – are important stakeholders for our business. They provide the legal and policy framework that supports our businesses, and ensures that our communities and people are protected.

How our Board engages

- We participate in multi-stakeholder organisations, initiatives and roundtables, such as the Extractive Industry Transparency Initiative (EITI), and ICMM.
- We have innovative partnerships with governments, such as ELYSIS with the Governments of Canada and Quebec. We also partner with governments on projects, such as with the Government of Guinea on the Simandou iron ore deposit.
- Government representatives regularly visit our sites.
- In Australia, we engage with governments on issues such as project approvals and cultural heritage protection.
- In the US, we advocate on public policy related to the North American supply chain and alignment on climate change, critical minerals and materials, renewable energy and trade.
- In China, we partner and engage with a range of government and state-owned entities on issues related to climate change, innovation, training, procurement and product supply.
- We contribute to UK and EU public policy development.

What was important in 2024

- Tax and royalty payments
- Compliance with laws and regulations
- Local employment, procurement, health and safety
- ESG issues, decarbonisation opportunities and socioeconomic development projects
- Operational environmental management
- Transparency and human rights
- Industrial policy
- New technology
- Security

How the Board has taken account of these interests

- We engage with government officials to understand their expectations, concerns, and policies. This helps us align our activities with government interests. The Board receives regular updates regarding all our projects and, in doing so, oversees our engagement with governments.
- The Board oversees our financial management to ensure we comply with tax obligations and make a fair contribution to our host country's revenue. We comply with regulations and contribute positively to the economic and social development of the regions where we operate.

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Investors

Our strategy and long-term success depend on the support of our investors.

How our Board engages

- We held 2 annual general meetings (AGMs), one in Australia and one in the UK, where institutional and retail investors could engage directly with the Board and management, giving them the opportunity to ask questions and vote on our Remuneration report.
- In 2024, our Chair, Dominic Barton, met with investors from the UK, the US and Australia to convey how our strategy integrates the net zero transition into our business, including our portfolio, capital investment decisions and business planning.
- Regular calls, one-on-one meetings and group events, roadshows, presentations and attendance at investor conferences.
- Webinars and online Q&A sessions.
- Our corporate reporting suite and regular updates on our website and social media.

What was important in 2024

- Financial and operational performance
- Our ESG performance, including the impact of climate change and how we are decarbonising our business
- Compliance with laws and regulations
- Human rights
- Remuneration policy

How the Board has taken account of these interests

- With regard to capital allocation and shareholder returns, the Board is committed to maintaining an appropriate balance between cash returns to shareholders and investment in the business, with the intention of maximising long-term shareholder value.
- Given investor interest in ESG issues, including climate change and our work with communities around the world, the Board considers these issues during its yearly strategy sessions when assessing our portfolio positions.
- The Board's engagement in CSO roundtables and some investor events provides a sounding board as we implement our strategy, respond to requisitioned resolutions and develop our reporting.

Customers

The needs of our customers are central to our operational decision-making.

How our Board engages

- In December 2024, Jakob Stausholm, Kaisa Hietala and Dean Dalla Valle met with several of our customers in Montreal as part of our Stakeholder Sessions. The roundtable enabled discussion of the critical challenges facing Canada's supply chains, including the impact of climate change, extreme weather events and geopolitical developments.
- Our Commercial team connects with customers through direct engagements and via business and industry forums. In addition, we periodically seek their feedback and gather insights through our customer survey. The results of our customer survey conducted in 2024 have been shared with the Board.
- Decarbonisation of the value chain is one of our customers' biggest challenges. We partner to find innovative solutions to help produce sustainable products that support their net zero ambitions.

What was important in 2024

- Product quality
- Product delivery management
- Innovation for decarbonisation solutions
- Strategic partnerships
- Access to ESG traceability data
- Supply security
- Responsible sourcing and supply

How the Board has taken account of these interests

- The Board receives updates on the key priorities for Commercial, its role in supporting the Group strategy, and our market development and customer engagement initiatives.

Suppliers

Our suppliers are critical to our ability to run efficient and safe global operations.

How our Board engages

- In December 2024, Peter Cunningham, Sharon Thorne and Simon Henry met with several of our suppliers in Montreal as part of our Stakeholder Sessions. The roundtable explored anticipated challenges and innovations in sustainable supply amid intensifying competition and electrification trends. The session also enabled discussion of the evolving role of Canadian suppliers in meeting the rising global demand for critical minerals.
- Similar to our customers, we periodically seek comparative feedback from our suppliers through a survey. The results of our supplier survey conducted in 2024 have been shared with the Board.
- We partner with suppliers to co-develop technologies and applications, such as collaborating with Caterpillar and Komatsu on the testing of large battery-electric haul truck technology in the Pilbara to accelerate its potential future use.

What was important in 2024

- Payment terms and processes
- Partnership and collaboration
- Contract terms and conditions
- Sustainability and ethical practices
- Efficiency and simplification
- Support and engagement
- Innovations and improvement

How the Board has taken account of these interests

- The Board receives updates on the Group's activities with suppliers, including metrics regarding how the Group has supported initiatives aimed at suppliers that are owned and operated by Indigenous groups.
- Our Chair met with the Chair of Wuxi-Boton, a key supplier of conveyor belts to our global operations, located outside Shanghai, China. Our deep collaboration helps them continue to innovate in areas such as improving product performance and longevity, reducing carbon emissions in both manufacturing and operations, end of life recycling, and social projects.

Board activities in 2024

The Board had 7 scheduled meetings in 2024. At every Board meeting, the Chief Executive and Chief Financial Officer report on the safety, operating, and business performance of the Group, and people, culture and values.

In 2024, the Board reviewed its forward agenda of matters to be discussed, considered its constitution, composition, and performance, and reviewed any new or amended Group policies. The Board has ultimate oversight of ESG matters but has delegated responsibility for certain matters to the Sustainability Committee.

Set out below are some of the specific matters that the Board considered during the year.

In February, the Board:

- Reviewed and approved the Group's 2023 full-year results and final shareholder returns, which had been considered by the Audit & Risk Committee.
- Approved the Group's 2024 Funding Plan.
- Approved a proposal for the Group to manage the rehabilitation of Energy Resources of Australia's Ranger Project Area.
- Approved a proposal that New Zealand Aluminium Smelters sign 20-year electricity arrangements.
- Considered an update on the renewable power purchase agreements in Queensland to support the repowering of Boyne Smelters Limited.
- Approved an agreement to support the future environmental rehabilitation and remediation of the Gardanne industrial complex.
- Approved notice to proceed for the development of the Simandou high-grade iron ore deposit in Guinea.
- Considered an update on the Jadar Project.
- Received updates on compliance: program developments, effectiveness, risks, and business integrity myVoice insights.

In April, the Board:

- Discussed a report covering the Group's progress on cultural change.
- Considered Board succession planning.
- Reviewed detailed reports on lithium and exploration.
- Received an update on the Simandou project.

In May, the Board:

- Approved an updated delegated authority framework.
- Discussed a progress update on the *Everyday Respect Report*.
- Approved the *2023 Modern Slavery Statement*.

In July, the Board:

- Discussed an update on the Group's culture, results and insights from the People Survey, and the *Everyday Respect Progress Review*.
- Reviewed an update on asset management performance.
- Considered a summary of key risks to the Simandou project and mitigation actions.
- Approved the Group's 2024 half-year results statement and interim shareholder returns, which had been considered by the Audit & Risk Committee.
- Approved the Boyne Smelters Limited energy strategy.
- Reviewed an Ethics and Compliance, and Business Conduct Office update.
- Approved the mid-year confirmation of principal risks.

In September, the Board:

- Discussed an update on the Jadar Project and committed to continue to engage the community and other stakeholders on a fact-based dialogue about the Project.
- Considered an update regarding the Energy Resources of Australia Ranger rehabilitation project.

In October, the Board:

- Received and considered an overview of the Arcadium Lithium business and an update on the transaction process.
- Discussed the outcomes of the *Everyday Respect Progress Review*.
- Received a progress update on the development of the 2025 Climate Action Plan.

In December, the Board:

- Met stakeholders, customers and suppliers in Montreal.
- Visited Matalco, aluminium operations in Saguenay-Lac-Saint-Jean, and Rio Tinto Iron & Titanium Quebec Operations Sorel-Tracy plant.
- Approved a proposal for $2.5 billion to expand the Rincon project in Argentina.
- Considered an assessment of the Group's principal risks, associated controls, and management responses deployed in 2024.
- Approved the Group's 2025 Annual Plan.
- Discussed initial results from the annual Board evaluation.

Strategy and risk

The Board holds dedicated two-day strategy sessions each year as part of the May and October Board meetings. A high-level summary of the main themes discussed is below:

May

- The global strategic context, including the division of markets and supply chain challenges, and the Group's core projects in this context.
- The evolution of the Group's strategy and opportunities for value creation.
- Analysis of the industry structure and drivers of change for products.
- Global energy markets and long-term dynamics.
- Opportunities to simplify.

October

- Delivery against the Group's strategic objectives and the way forward.
- Processes standardisation, simplification, and continuous improvement.
- Detailed reviews of the strategies for the iron ore, copper, and aluminium product groups.
- Learnings and levers regarding the objective to become Best Operator.

How the Board monitors culture

The Board monitors the Group's culture by receiving regular updates from the Executive Committee and management. They monitor progress of the implementation of the recommendations of the *Everyday Respect Report*, review data from the myVoice confidential whistleblowing program and twice-yearly People Survey results, and receive a quarterly report on the Group's cultural journey.

For more information on how the Board monitors culture and engages with our people, see page 106.

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Evaluating our performance

This year, the Board's annual performance evaluation was led internally. This aligns with the corporate governance principles for both the UK and Australia.

Every 3 years, we engage a professional external adviser to undertake an independent evaluation of the Board's effectiveness, and, in 2023, Jan Hall, of business advisory company No.4, carried this out. This external evaluation took an in-depth look at Board dynamics and how the Board operated. The Board agreed actions for improvement from this evaluation, which were detailed in our *2023 Annual Report* and we have worked to implement these during 2024.

The objectives of the 2024 internal evaluation were then to:

1) Assess progress against the actions from the 2023 external evaluation, and determine if more work is needed to close these out.
2) Understand where the Board is doing well and where improvements could be made, taking into account 2023's detailed review.
3) Set a benchmark against which effectiveness can be assessed in future years.

How the 2024 evaluation worked

All Board members completed an anonymous questionnaire that looked at:

- progress against the specific actions from the 2023 evaluation
- the performance of the Board during the year
- the performance of its committees
- feedback on the performance of the Chair and individual Directors.

In addition to the questionnaire, each Director had an externally facilitated interview to capture deeper and more nuanced feedback on board effectiveness.

What the evaluation found

The evaluation concluded that the Board and its Committees were working well, and that the performance of the Chair and individual Directors was effective.

The consensus from the questionnaire and the interviews was very positive. Feedback noted the improvement over the year in terms of structuring the Board's agendas and papers to allow more time to be focused on discussion and on material strategic topics. The external evaluation in 2023 had identified this as an improvement area. There was agreement however that further improvement is required, and work will be undertaken on the format of the Board's materials to ensure they allow the Board to consider matters in a focused and concise way.

With a number of newly appointed Directors, the Board spent 2 dedicated sessions in 2024 on team dynamics and accelerating the process of getting to know one another more deeply. The evaluation results reflected that these sessions were considered very valuable and will be repeated.

The Non-Executive Directors, led by the Senior Independent Director, are responsible for the performance evaluation of the Chair and met separately in 2024 to discuss this. The externally facilitated interview process also captured feedback on the Chair and Directors, all of whom were considered to be performing efficiently.

Directors' attendance at scheduled Board and committee meetings during 2024[1]

	Committee Appointments	Board	Audit & Risk	Nominations	People & Remuneration	Sustainability
Chair and Executive Directors						
Dominic Barton	C ● ●	7/7		2/2	5/5	4/4
Jakob Stausholm		7/7				
Peter Cunningham		7/7				
Non-Executive Directors						
Dean Dalla Valle	● ● C	7/7		2/2	5/5	4/4
Simon Henry	C ●	7/7	6/6	2/2		
Kaisa Hietala[4,8]	● ●	7/7	4/4	2/2		4/4
Sam Laidlaw[11]	● C ●	7/7		2/2	5/5	3/4
Susan Lloyd-Hurwitz[2,8]	●	7/7		2/2	4/5	
Simon McKeon - retired 2 May 2024[3]		3/3	2/2	2/2	2/2	
Martina Merz - joined 1 February 2024[7,8]	●	7/7		2/2		2/2
Jennifer Nason[8,12]	● ●	7/7		2/2	5/5	
Joc O'Rourke[4,8,10]	●	7/7	4/4	2/2		2/2
Sharon Thorne - joined 1 July 2024[5]	●	4/4	3/3			
Ngaire Woods[9]	● ●	7/7		2/2	2/2	4/4
Ben Wyatt[6,8]	● ●	7/7	6/6	2/2	3/3	

1. In addition to the scheduled meetings of the Board and Committees for 2024, in order to attend to urgent matters, 2 ad hoc meetings of the Board were convened. Other than as expressly noted below, these meetings were attended by each member of those committees.
2. Susan Lloyd-Hurwitz was unable to attend a meeting of the People & Remuneration Committee in February due to medical reasons.
3. Simon McKeon stepped down from the Board with effect from 2 May 2024.
4. Kaisa Hietala and Joc O'Rourke became members of the Audit & Risk Committee with effect from 1 June 2024.
5. Sharon Thorne became a member of the Audit & Risk Committee with effect from 1 July 2024.
6. Ben Wyatt became a member of the People & Remuneration Committee with effect from 1 June 2024.
7. Martina Merz became a member of the Sustainability Committee with effect from 1 June 2024.
8. Kaisa Hietala, Susan Lloyd-Hurwitz, Martina Merz, Jennifer Nason, Joc O'Rourke and Ben Wyatt ceased to be members of the Nominations Committee with effect from 31 May 2024.
9. Ngaire Woods ceased to be a member of the People & Remuneration Committee with effect from 31 May 2024.
10. Joc O'Rourke ceased to be a member of the Sustainability Committee with effect from 31 May 2024.
11. Sam Laidlaw was unable to attend a meeting of the Sustainability Committee in December due to a pre-existing commitment.
12. Jennifer Nason became a member of the Audit & Risk Committee with effect from 17 February 2025.

Board committee membership key

- C Committee Chair
- ● Audit & Risk Committee
- ● Nominations Committee
- ● People & Remuneration Committee
- ● Sustainability Committee

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Nominations Committee report

The Nominations Committee ensures appointments to the Board are subject to a formal, rigorous and transparent procedure, and oversees succession planning for the Board and senior management.

As we reported last year, the size of the Board peaked at 14 Directors as we retained the expertise and experience of our longer-serving Directors during a transitional period as newer Directors familiarised themselves with the Group. This transitional phase is now largely concluded so we will make the following changes to the Board during 2025.

With effect from the conclusion of the Rio Tinto Limited annual general meeting in May 2025, Sam Laidlaw will step down as a Director of the Company. Sam was appointed to the Board in February 2017 and has served as Chair of our People & Remuneration Committee and as the Senior Independent Director. I would like to express my sincere thanks to Sam, on behalf of the Board, for his outstanding contribution to Rio Tinto. Ben Wyatt will succeed Sam as Chair of the People & Remuneration Committee. Sharon Thorne will become our Senior Independent Director.

In the second half of 2025, Simon Henry will step down as a Director. Simon was appointed to the Board in April 2017 and has served as Chair of the Audit & Risk Committee since May 2019. We are grateful to Simon for his invaluable contribution to the Group. Sharon Thorne will succeed Simon as Chair of the Audit & Risk Committee.

Kaisa Hietala will also step down as a Director with effect from the conclusion of the Rio Tinto Limited annual general meeting in May 2025. The recent growth in our lithium business has increasingly created potential conflicts of interest with Kaisa's non-executive directorship with Exxon Mobil. Out of an abundance of caution, Kaisa has offered to resolve this potential conflict by stepping down from the Rio Tinto Board. Kaisa has been a very welcome and valuable addition to the Board since her appointment in March 2023, and her guidance on energy transition and business transformation in particular have contributed significantly and insightfully to our discussions.

While she will be greatly missed, we have accepted the decision to step down and wish Kaisa well for the future.



Dominic Barton
Nominations Committee Chair

19 February 2025

Board induction

Following a significant refresh of our Board through 2023 and 2024, we reviewed our induction process and made improvements to make it more efficient and tailored to the interests and requirements of each new director so that they can quickly build an understanding of Rio Tinto, our markets and stakeholders.

The induction aims to add greater depth to Directors' existing knowledge of the company, enabling them to become more effective members of the Board as quickly as possible. Initially this can be achieved through access to written information, which is provided on appointment. The Company Secretary then works with the Director to build a focused set of engagements with leadership and management to allow for discussion on key topics and further information to be provided. Specific briefings are often included as part of the regular teach-in sessions that are provided for the Board.

The induction typically takes several months and the Company Secretary works closely with the Director to ensure it is relevant. Site visits are important to our induction process and this year Dean Dalla Valle, Susan Lloyd-Hurwitz and Joc O'Rourke visited Kennecott, Martin Merz and Joc O'Rourke travelled to Yarwun and QAL, and Sharon Thorne visited our aluminium operations in Saguenay-Lac-Saint-Jean. Our new Directors also visited Matalco and Rio Tinto Iron & Titanium Quebec Operations' Sorel-Tracy plant.

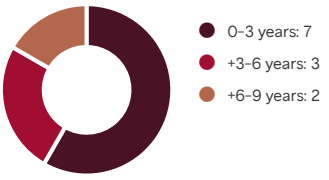
For more information about our new Non-Executive Directors, see the Board biographies on pages 102-103.

Nominations Committee members[1,2]

Dominic Barton (Chair)	Sam Laidlaw
Dean Dalla Valle	Ngaire Woods
Simon Henry	

1. Simon McKeon was a member of the Committee until his retirement from the Board on 2 May 2024.
2. Kaisa Hietala, Susan Lloyd-Hurwitz, Martina Merz, Jennifer Nason, Joc O'Rourke and Ben Wyatt stepped down from the Nominations Committee on 31 May 2024.

Length of tenure of Non-Executive Directors



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Our key responsibilities

The purpose of the Nominations Committee is to review the composition of the Board. The Committee leads the process for appointments, making recommendations to the Board as part of succession planning for Non-Executive Directors. It also approves proposals for appointments to the Executive Committee.

Membership of the Committee

The members of the Committee are all independent Non-Executive Directors, and their biographies can be found on pages 102-103.

The Chief Executive and the Chief People Officer are invited to attend all or part of meetings, as appropriate. The Committee is chaired by the Chair of the Board, unless the matter under consideration relates to the role of the Chair.

The Committee had 2 formal meetings in 2024. Attendance at the formal meetings is included in the table on page 110.

Appointments to the Board – our policy

We base our appointments to the Board on merit, and on objective selection criteria, with the aim of bringing a range of skills, knowledge and experience to Rio Tinto. This involves a formal and rigorous process to source strong candidates from diverse backgrounds, and conducting appropriate background and reference checks on the shortlisted candidates. We aim to appoint people who will help us address the operational and strategic challenges and opportunities facing the company and ensure that our Board is diverse in terms of experience, gender, nationality, social background and cognitive style. As such, we engage only recruitment agencies that are signed up to the Voluntary Code of Conduct on diversity best practice.

We believe that an effective Board combines a range of perspectives with strong oversight, combining the experience of Directors who have developed a deep understanding of our business over several years with the fresh insights of newer appointees. We aim for the Board's composition to reflect the global nature of our business – we currently have 8 different nationalities (including dual nationalities) on a Board of 14.

The Committee engaged Spencer Stuart to support the search for our new Non-Executive Directors, Martina Merz and Sharon Thorne. The Committee is satisfied that Spencer Stuart does not have any connections with the company or individual Directors that may impair their independence.

When recruiting government or former government officials to join the Rio Tinto Board, we comply with any restrictions and obligations existing pursuant to relevant laws and regulations, including with respect to confidentiality, lobbying and conflicts of interest.

The key skills and experience of our Board are set out on this page of the report.

Diversity

The Board recognises that it has a critical role to play in creating an environment in which all contributions are valued, different perspectives are embraced, and biases are acknowledged and overcome. The Board shares ownership with the Executive Committee of the Group's Respect, Inclusion & Diversity Policy, which can be found at riotinto.com/policies.

The proportion of women on the Board is currently 43% (6 women and 8 men). As at the date of this report, we do not currently meet the UK Listings Rules target to have a female Chair, Chief Executive, Chief Financial Officer or Senior Independent Director, however effective 1 May 2025 we will meet this target when Sharon Thorne becomes Senior Independent Director.

The Group has continued to set measurable gender diversity objectives for the composition of senior leadership and graduate intake and achievement of these targets contributes to the variable remuneration of senior executives. Progress on diversity is shown in the Our approach to ESG section on page 34, where we show a breakdown by seniority.

The number of Directors who identify themselves as being from an ethnic background is one (Ben Wyatt), aligned to the objectives of The Parker Review in the UK.

For further information on the gender and ethnic diversity of the Board and Executive Committee please see page 148 of the Additional statutory disclosure section.

Progress on diversity is shown in the Talent, diversity and inclusion section on pages 78-80.

Skills and experience of the Chair and Non-Executive Directors

Skills and experience	Some experience	Extensive experience	Total
Chief Executive experience Chief Executive-level experience of a major corporation	3	5	**8**
Chief Financial Officer and audit experience Experience in financial accounting and reporting, corporate finance, internal controls, treasury and associated risk management	3	2	**5**
Mining and broader industrial operations Senior executive experience in a large, global mining or industrial organisation	1	5	**6**
Major projects Experience in developing large-scale, long-cycle capital projects	5	5	**10**
Corporate governance Experience on the Board of a major quoted corporation subject to rigorous corporate governance standards	1	9	**10**
Global experience, including multinational and geopolitical experience Experience working in multiple global locations, exposed to a range of cultural, business, regulatory and political environments and/or in-depth understanding of public policy and government relations	1	9	**10**
Relevant country/regional expertise Knowledge of countries or regions of strategic relevance to the Group	7	1	**8**
Downstream customer markets Understanding of value chain development, including consumers, customers and marketing demand drivers	5	3	**8**
ESG Experience of issues associated with environmental and social responsibility, including communities and social performance, government relations, workplace health and safety and stakeholder engagement	6	6	**12**
Energy transition Knowledge and experience of managing climate-related threats and opportunities including climate science, the low-carbon transition and public policy	8	1	**9**
Industrial technology and innovation Experience of nurturing and harnessing research, development and innovation, including digital technology and cybersecurity	5	2	**7**
Mergers and acquisitions and private equity/investing Experience of mergers, acquisitions, disposals, joint ventures, private equity and investing	7	1	**8**

Audit & Risk Committee report

The Committee supports the Board in discharging its governance responsibilities and oversees the integrity of the Group's financial reporting and associated narrative statements.

The Committee undertakes a regular schedule of work each year. It discusses and oversees the significant issues of judgement relating to the financial statements. We reviewed the new standards and amendments applicable for the year to understand how these would be implemented by the Group. We also undertook a forward-looking analysis of amendments to standards that have been issued, but are not yet effective. The Committee works with management and the external auditors to understand and agree how these will be applied.

The Committee considered the Group's internal controls of financial reporting for the *Sarbanes-Oxley Act* (SOX). It also looked at the internal process in place that will allow the Board to meet the requirement of the new UK Corporate Governance Code, with regard to the effectiveness of internal controls.

This year the Committee considered the steps that are being taken to implement a "Material Control and Assurance Plan" to address the requirements of the new UK Corporate Code Provision 29, effective 1 January 2026. This is a top-down, risk-led methodology to support the new disclosures required with effect from the 2026 financial year. We aim to achieve a proportionate and practical response to the new declaration, and key to this is the identification of "material controls". The foundation of the work we undertook was looking at the definition of material control, and we have worked with peers, accountancy firms and our auditors to understand emerging best practice in this area of corporate governance. We have an existing SOX program and have therefore considered the interaction between the two, ensuring that the frameworks are complementary. Throughout 2025, the team will review the mapping of controls to principal risks and the Committee have oversight of this process.

In 2024, the Committee, together with the Sustainability Committee, have continued to follow the landscape of environmental, social and governance (ESG) reporting requirements. This year we are adopting new climate disclosures in our reporting, and we are aiming to align with IFRS S2 on climate-related disclosures. We think this will place us in a good position for future years when reporting becomes mandatory.

I have appreciated the support I have received from my fellow Committee members this year. In particular I would like to thank Simon McKeon for the insight and challenge that he brought as a member of the Audit & Risk Committee. The membership of the Committee was reviewed following Simon's departure and as part of the planned refreshment of the Board.

I am pleased that Kaisa Hietala, Joc O'Rourke and Sharon Thorne joined the Committee in 2024. Jennifer Nason also joined the Committee with effect from 17 February 2025. This has brought depth to the Committee both in number of members and the range of experience each Director brings.

I trust you find this report a useful account of the work of the Committee during the year.



Simon Henry
Audit & Risk Committee Chair

19 February 2025

Audit & Risk Committee members[1,2,3,4]

Simon Henry (Chair)	Joc O'Rourke
Kaisa Hietala	Sharon Thorne
Jennifer Nason	Ben Wyatt

1. Simon McKeon stepped down from the Board on 2 May 2024.
2. Joc O'Rourke and Kaisa Hietala joined the Committee on 1 June 2024.
3. Sharon Thorne joined the Committee on 1 July 2024.
4. Jennifer Nason joined the Committee on 17 February 2025.

Membership

The members of the Committee are all independent Non-Executive Directors, and their biographies can be found on pages 102-103. The Chair of the Board is not a member of the Committee.

As Rio Tinto's securities are listed in Australia, the UK and the US, we follow the regulatory requirements and best practice governance recommendations for audit committees in each of these markets.

Australian listing requirements

In Australia, the members, and the Committee as a whole, meet the independence requirements of the Australian Securities Exchange (ASX) Principles. Specifically, the Committee members between them have the accounting and financial expertise, and a sufficient understanding of the industry in which the company operates, to be able to discharge the Committee's mandate effectively.

UK listing requirements

In the UK, the members meet the requirements of the Financial Conduct Authority's (FCA) Disclosure Guidance and Transparency Rules, and the provisions of the UK *Corporate Governance Code* relating to audit committee composition. Simon Henry, the Chair of the Committee, and Sharon Thorne are considered by the Board to have recent and relevant financial experience.

Simon Henry, Kaisa Hietala and Joc O'Rourke have extensive experience in the natural resources sector. Ben Wyatt and Jennifer Nason have gained experience in the mining sector by serving on the Board and through regular site visits, reports and presentations. Sharon Thorne has undertaken site visits and teach-ins as part of her induction programme. The Committee as a whole has competence relevant to the sector in which the company operates.

The Committee complies with the Audit Committees and the External Audit: Minimum Standard.

US listing requirements

In the US, the requirements for the Committee's composition and role are set out in the Securities and Exchange Commission (SEC) and New York Stock Exchange (NYSE) rules. The members of the Committee meet the independence requirements set out under Rule 10A-3 of the *US Exchange Act* and under Section 303A of the *NYSE Listed Company Manual*. The Board has designated Simon Henry as an "audit committee financial expert". The Board also believes that the other members of the Committee are financially literate by virtue of their wide business experience.

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Committee remit

The Committee's objectives and responsibilities are set out in our Terms of Reference (see riotinto.com/corporategovernance). These follow the relevant best practice recommendations in Australia, the UK and the US.

Our main duties

Financial reporting – we review the key judgements needed to apply accounting standards and to prepare the Group's financial statements. We also review the narrative reporting that goes with them, with the aim of maintaining integrity in the Group's financial reporting. And we monitor exclusions made in deriving alternative (non-GAAP) (Generally Accepted Accounting Principles) performance measures such as underlying earnings.

- **External audit:** We oversee the relationship with the external auditors and review all the non-audit services they provide and their fees, to safeguard the auditors' independence and objectivity. We also assess the effectiveness of the external audit and, when necessary, carry out a formal tender process to select new auditors.
- **Framework for internal control and risk management:** We monitor the effectiveness of the Group's internal controls, including those over financial reporting. We also oversee the Group's risk management framework.
- **Group Internal Audit (GIA):** We oversee the work of GIA and its head, who reports functionally to the Committee Chair.
- **Mineral Resources and Ore Reserves:** We oversee the reporting and assurance of Mineral Resources and Ore Reserves, and consider the impact on financial reporting.
- **Distributable reserves:** We provide assurance to the Board that distributable reserves are sufficient, and in the correct corporate entities, to support any dividend proposals.

These duties feed into an annual work plan that ensures we consider issues on a timely basis. The Committee has authority to investigate any matters within its remit. We have the power to use any Group resources we may reasonably require, and we have direct access to the external auditors. We can also obtain independent professional advice at the Group's expense, where we deem necessary. No such advice was required during 2024.

The Committee Chair reports to the Board after each meeting on the main items discussed, and the minutes of Committee meetings are circulated to the Board.

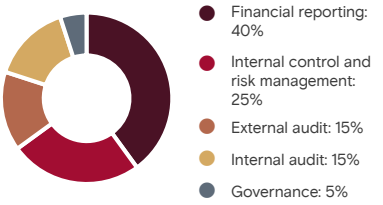
We had 6 Committee meetings in 2024. Attendance at these meetings is included in the table on page 110. The Committee has met twice to date in 2025.

The Chair of the Board, the Chief Financial Officer, the Group Financial Controller and the heads of GIA and Risk regularly attend Committee meetings, as does the Chief Legal Officer, Governance & Corporate Affairs. Other senior executives and subject-matter experts are invited as needed.

The external auditors were present at all of the Committee meetings during the year. The auditors review all materials on accounting or tax matters in advance of each meeting, and their comments are included in the papers circulated to Committee members. The audit partners also meet with the Committee Chair ahead of each meeting to discuss key issues and raise any concerns.

The Committee meets regularly in private sessions. We also hold regular private discussions with the external auditors. Management does not attend these sessions. The Committee Chair also has regular contact and discussions with these stakeholders outside the formal meetings.

Use of Committee meeting time in 2024



Other focus areas in 2024

In addition to the scheduled workload, the Committee also:

- Received an update on internal projects to simplify how we work. This included the transition to the HR IT platform Workday and the Future Finance project, which is standardising, simplifying and automating our financial processes and controls.
- Received an update on the development of the framework that will be used to determine Material Controls, the testing approach and the 2025 milestones.
- After a robust process, in early 2025, recommended to the Board that the draft *2024 Annual Report* should be taken as whole, fair, balanced and understandable.
- Reviewed the quality and effectiveness of the Group's internal control and risk management systems. This review included the effectiveness of the Group's internal controls over financial reporting, and the Group's disclosure controls and procedures in accordance with sections 404 and 302 of the US *Sarbanes-Oxley Act* 2002. The Committee also considered reports from GIA and KPMG on their work in reviewing and auditing the control environment.
- The Committee considered cyber risk at the December meeting. This included the external threat landscape and the defences, processes and response capabilities in place to manage risk.

Significant issues relating to financial statements

There were 4 significant issues considered by the Committee in relation to the financial statements.

Matters considered	Conclusion
Review of carrying value of cash-generating units and impairment charges/ reversals	The Committee assessed management's determination of cash-generating units, review of impairment triggers, and consideration of potential impairment charges and reversals over the course of the year. The key assets discussed included Rio Tinto Kennecott, where the revised mine plan was identified as an impairment trigger and, following the impairment test, management concluded that the carrying value remained supportable, and in Pacific Aluminium where decarbonisation activities resulted in an impairment charge for Queensland alumina refinery.
Application of the policy for items excluded from underlying earnings and underlying EBITDA	The Committee reviewed the Group's policy for exclusion of certain items from underlying earnings and confirmed the consistent application of this policy year on year. The pre-tax items excluded from underlying earnings comprised charges of $0.8 billion and income of $1.5 billion. A reconciliation of net earnings to underlying earnings is presented in the Alternative Performance Measures section.
Estimate for provision for closure, restoration and environmental obligations	The Committee reviewed the significant changes in the estimated provision for closure, restoration and environmental obligations by product group and Rio Tinto Closure. The Committee received updates on the closure studies completed in the period and reviewed economic assumptions assessed by management, including changes to the discount rate.
Climate change	The Committee received an overview of the work that management is undertaking in relation to climate change and the potential financial reporting implications thereof. The Committee reviewed the accounting for long-term renewable power purchase agreements entered into during the period and the climate change disclosure in the Annual Report, with particular emphasis on the impact to impairment charges and the related disclosure of sensitivities.

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Climate change-related financial reporting

The Directors have considered the relevance of the risks of climate change and transition risks associated with achieving the goals of the Paris Agreement when preparing and signing off the Company's accounts. The narrative reporting on climate-related matters is consistent with the accounting assumptions and judgements made in this report. The Audit & Risk Committee reviews and approves all material accounting estimates and judgements relating to financial reporting, including those where climate issues are relevant. The Group's approach to climate change is supported by strong governance, processes and capabilities.

This year, we updated the scenario framework used to assess the resilience of our business under different transition-related scenarios. Conviction scenario is now our central case. It underlies strategic planning across the Group, is used in commodity price forecasts, valuation models, reserves and resources determination, and in determining estimates for assets and liabilities in our financial statements, including impairment testing, estimating remaining economic life, and discounting closure and rehabilitation provisions. Resilience scenario is our sensitivity analysis designed to test our annual plan and investment proposals.

Neither of the Conviction or Resilience scenarios above are consistent with the expectation of climate policies required to accelerate the global transition to meet the stretch goal of the Paris Agreement. Despite global agreements on climate change reached in Glasgow and Dubai, emissions today continue to rise, making the 1.5°C goal of the Paris Agreement unlikely to be achieved. As our operational emissions targets are in line with 1.5°C, so too are our decarbonisation investment decisions. In 2022, we developed a Paris-aligned scenario, referred to as the Aspirational Leadership scenario, which helps us better understand the pathways to meet the Paris Agreement goal, and what this could mean for our business.

Overall, based on our internally developed pricing outlooks, we do not envisage a material adverse impact of the 1.5°C Paris Agreement-aligned sensitivity on asset carrying values, remaining useful life, closure and rehabilitation provisions for our Group.

During the year, the assessment performed under the Physical Resilience Programme, together with our ongoing review processes, including impairment assessments, did not identify any material accounting impacts as a consequence of the physical risks associated with climate change.

For more information on climate change impact on our Group, see our *2025 Climate Action Plan* on pages 41 to 75 in this report.

Contact with financial regulators during 2024

During the year, the Company did not receive any formal correspondence from financial regulators.

External auditors

Engagement of the external auditors

For the 2024 financial year, KPMG served as our auditors. Their appointment was approved by shareholders at our AGMs in 2024. The UK entity of KPMG audits Rio Tinto plc, and the Australian entity audits Rio Tinto Limited. The UK audit engagement partner, Jonathan Downer, was appointed in March 2021 and the Australian partner, Trevor Hart, was appointed in 2020. Graham Hogg will replace Trevor Hart for the 2025 audit. This is a planned partner rotation, in line with the requirements of the Australian Accounting Professional & Ethics Standards Board and SEC requirements.

We agreed on the scope of the auditors' review of the half-year accounts, and of their audit of the full-year accounts, taking into consideration the key risks and areas of material judgement for the Group. We also approved the fees for this work and the engagement letters for the auditors.

The Group has fully complied with the Statutory Audit Services Order.

Safeguarding independence and objectivity, and maintaining effectiveness

In our relationship with the external auditors, we need to ensure that they retain their independence and objectivity, and are effective in performing the external audit.

Use of the external auditors for non-audit services

The external auditors have significant knowledge of our business and of how we apply our accounting policies. That means it is sometimes cost-efficient for them to provide non-audit services. There may also be confidentiality reasons that make the external auditors the preferred choice for a particular task.

However, safeguarding the external auditors' objectivity and independence is an overriding priority. For this reason, and in line with the Financial Reporting Council's (FRC) Ethical Standard and the SEC independence rules, the Committee ensures that the external auditors do not perform any functions of management, undertake any work that they may later need to audit or rely upon in the audit, or serve in an advocacy role for the Group.

We have a policy governing the use of the auditors to provide non-audit services. The cap on the total fees that may be paid to the external auditors for non-audit services in any given year is 70% of the average of the audit fees for the preceding 3 years. This is in line with the FRC's Ethical Standard. Non-audit assignments fall into 2 broad categories:

- Audit, audit-related or other "pre-approved" services where we believe there is no threat to auditors' independence and objectivity, other than through the fees payable.
- Other services approved under delegated authority.

We apply different approval regimes to these areas of work. Approval of "pre-approved" services is as follows:

- Up to $50,000: subject to prior notification to management, this work can be awarded.
- From $50,001 to $100,000: requires the Chief Financial Officer's approval.
- Over $100,000 and with a tender process: if the external auditors are successful in the tender, the appointment requires the Chief Financial Officer's approval.
- From $100,001 to $250,000 without a tender process: requires the Chief Financial Officer's approval.
- Over $250,000 without a tender process: requires the Committee's or Committee Chair's approval.

In each case, the nature of the assignment and the fees payable are reported to the Committee.

The Chief Financial Officer can approve other services up to the value of $50,000 and an aggregate value of no more than $100,000. Fees exceeding $100,000 in aggregate require approval from the Committee or the Committee Chair.

At the half-year and year-ends, the Chief Financial Officer and the external auditors report to the Committee on non-audit services performed and the fees payable. Individual services are also reported to the Committee at each meeting that have either been approved since the previous meeting, or that require approval for commencement following the meeting.

Non-audit services provided by KPMG in 2024 were either within the predetermined approval levels or approved by the Committee and were compatible with the general standard of independence for auditors and the other requirements of the relevant regulations in Australia, the UK and the US regulations.

Fees for audit and non-audit services

The amounts payable to the external auditors, in each of the past 2 years, were:

	2024 $m	2023 $m
Audit fees	**28.1**	26.6
Non-audit service fees:		
Assurance services	**5.2**	4.1
All other fees	**0.2**	0.1
Total non-audit service fees	**5.4**	4.2
Non-audit: audit fees (in-year)	**19 %**	16 %

For further analysis of these fees, please see note 38 on page 228.

None of the individual non-audit assignments was significant, in terms of either the work done or the fees payable.

We have reviewed the non-audit work in aggregate. We are satisfied that neither the work done, nor the fees payable, compromised the independence or objectivity of KPMG as our external auditors.

Independence of the external auditors

KPMG are required to provide a declaration to the Directors in relation to their compliance with the independence requirements of the Australian *Corporations Act 2001* and the professional code of conduct for external auditors. A copy of this is on page 265.

No person who served as an officer of Rio Tinto during 2024 was a Director or partner of KPMG at a time when they conducted an audit of the Group.

Effectiveness of the external auditors

We review the effectiveness of the external auditors annually. We consider the results of a survey containing questions on the auditors' objectivity, quality and efficiency. The survey, conducted in June 2024, was completed by a range of operational and corporate executives across the business, and by Committee members.

We are satisfied with the quality and objectivity of KPMG's 2023 audit.

Audit Quality Review

As part of the annual inspection of audit firms, the Audit Quality Review ('AQR') team of the Financial Reporting Council ('FRC') reviewed KPMG's audit of the Group accounts for the year ended 31 December 2023. The AQR routinely monitors the quality of audit work of certain UK audit firms through inspections of sample audits and related procedures, at individual audit firms. The Committee and KPMG LLP have discussed the report, which included a number of good practice observations. Overall, the result of the review raised no issues which caused doubt on the quality of our external audit and the Committee remains satisfied with the efficiency and effectiveness of the external audit.

Appointment of the auditors

The Committee has reviewed the independence, objectivity and effectiveness of KPMG as external auditors in 2024 and in the year to date. We have recommended to the Board that KPMG should be retained in this role for 2025, which the Board supports.

KPMG have indicated that they are willing to continue as auditors of Rio Tinto. A resolution to reappoint them as auditors of Rio Tinto plc will be proposed as a joint resolution at the 2025 AGMs, together with a separate resolution seeking authority for the Committee to determine the external auditors' remuneration.

Subject to the approval of the above resolution, KPMG will continue in office as auditors of Rio Tinto Limited.

Risk management and internal controls

We review Rio Tinto's internal control systems and the risk management framework. We also monitor risks falling within our remit, including those relating to the integrity of financial reporting. A summary of the business's internal control and risk management systems, and of the principal risks and uncertainties we face, is available in the Strategic report on pages 88-98.

Importantly, responsibility for operating and maintaining the internal control environment and risk management systems sits with leaders who are in the best position to address them, while offering support to them via Centres of Excellence and Areas of Expertise. Leaders of our businesses and functions are required to maintain adequate internal controls, to verify that these are operating effectively and are designed to identify any failings and weaknesses that may exist, and that any required actions are taken promptly.

The Audit & Risk Committee also regularly monitors our risk management and internal control systems (including internal financial controls). We aim to have appropriate policies, standards and procedures in place, and ensure that they operate effectively.

As part of considering the risk management framework, the Committee receives regular reports from the Group Financial Controller, the Chief Legal, Governance & Corporate Affairs Officer, the Head of Risk, the Head of Group Internal Audit (GIA) and the Head of Tax on material developments including with respect to the legal, regulatory and fiscal landscape in which the Group operates.

The Board, supported by the Audit & Risk Committee, has completed its annual review of the effectiveness of our risk management and internal control systems. This review included consideration of our material financial, operational and compliance controls. The Board concluded that the Group has an effective system of risk management and internal control.

Internal control over financial reporting

The main features of our internal control and risk management systems in relation to financial reporting are explained on page 151.

Internal audit program structure

GIA provides independent and objective assurance of the adequacy and effectiveness of risk management and internal control systems. It may also recommend improvements.

While the Head of GIA reports administratively to the Chief Financial Officer, appointment to, or removal from, this role requires the consent of the Audit & Risk Committee Chair. The Head of GIA is accountable to the Chairs of the Audit & Risk and the Sustainability Committees, and communicates regularly with both.

Our GIA team therefore operates independently of management. Its mandate is set out in a written charter, approved by the Audit & Risk Committee. GIA uses a formal internal audit methodology that is consistent with the Institute of Internal Auditors' (IIA) internationally recognised standards.

When needed, the team brings in external partners to help achieve its goals. There is a clear policy to address any conflicts of interest, which complies with the IIA's standards on independence. This policy identifies a list of services that need prior approval from the Head of GIA.

Governance of the annual plan

Each year's internal audit plan is approved by the Audit & Risk Committee and the Sustainability Committee. The plan is focused on higher-risk areas and any specific areas or processes chosen by the committees. It is also aligned with any risks identified by the external auditors. Both committees are given regular updates on progress, including any material findings, and can refine the plans, as needed.

Effectiveness of the internal audit program

The Audit & Risk Committee monitors the effectiveness of the GIA function throughout the year at its meetings. During 2024, the function continued its journey to mature GIA to a "trusted adviser level" and embedding the improvements initiated in 2023, demonstrating improvements in the function's effectiveness and delivery.

We are satisfied that the quality, experience and expertise of GIA are appropriate for the business and that GIA was objective and performed its role effectively. We are satisfied that GIA is appropriately resourced. We also monitored management's response to internal audits during the year. We are satisfied that improvements are being implemented promptly in response to GIA findings, and believe that management supports the effective working of the GIA function.

Committee effectiveness

The Committee reviews its effectiveness annually. In 2024, this was accomplished through an internally-facilitated evaluation of the Board and its committees.

The performance of the Committee was highly rated, with no areas of concern raised and no significant changes recommended.

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Sustainability Committee report

The Sustainability Committee monitors and supports Rio Tinto's processes and practices to ensure we supply the materials the world needs safely and sustainably.

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The prevention of fatalities, and the health, safety and wellbeing of our employees, contractors and communities, is the Committee's first priority. The Committee also oversees other key sustainability risks, including in particular our environmental and social performance risks.

We are deeply saddened by the tragic fatal events at our managed operations in 2024. In January, 4 colleagues from our operations at Diavik and 2 airline crew members lost their lives in a devastating plane crash near Fort Smith, Northwest Territories, Canada. And in October, an employee of a contracting partner tragically lost his life after he was injured at the SimFer Port Project, part of the Simandou iron ore project. The Committee's sympathies go out to the families and team members of each of these colleagues who lost their lives.

Sadly, in 2024 we also saw fatalities more broadly across our industry, including at the operations of 2 of our non-managed joint venture partners.

Our thoughts also remain with the family and colleagues of a crew member aboard a Rio Tinto bulk carrier who was reported missing in December.

These events are a solemn reminder of the safety risks in our business. We firmly believe all fatalities are preventable, driving us to learn from these tragedies and ensuring we share insights widely to prevent future events and inform ongoing improvements to our safety practices.

Following the charter flight incident in January, while awaiting the outcome of the official investigation by the Transport Safety Board of Canada, the Committee oversaw a review of the Group's aviation activities and standards, and a benchmarking of the Group's aviation practices against industry best practice.

In addition to reviewing the lessons learned from these fatalities, the Committee continues to review potential fatal incidents (PFIs) with business leaders to share important lessons from these events across the Group. In 2024, the Committee undertook closer analysis of PFIs involving an exchange of energy, with major contributors to these incidents including falling objects, vehicles and driving, and contact with electricity.

Critical risk management also continues to be a key fatality elimination tool, helping to ensure critical controls are in place and operating effectively where there is a critical risk of fatality. And the Committee continues to review the progress through our safety maturity model, which is a key tool for supporting and enhancing our safety culture.

In 2024, the Committee strengthened its focus by dedicating a meeting to each of the 3 key themes in its scope: health and safety (including fatality prevention); environment (including closure); and social performance (including human rights and Indigenous Peoples). A fourth meeting received presentations from each of the product group Chief Executives, our Chief Commercial Officer, and our Chief Technical Officer on the key sustainability and operational risks, opportunities, trends and controls for each product group, and for Rio Tinto Marine, Exploration and Projects, including the Simandou project.

We continued to oversee our progress towards implementation of the Global Industry Standard on Tailings Management (GISTM), and to directly engage with executives who have accountability for the safety of tailings facilities across the Group. We have received progress updates from management on the pathway to full conformance with GISTM.

The Committee reviewed the progress of Rio Tinto's program for managing its physical resilience to climate change, and for the Group's compliance with the disclosure requirements set out by the Task Force on Climate-Related Financial Disclosure (TCFD).

At each meeting, the Group's Internal Audit (GIA) function reports to the Committee on matters within the Committee's scope. In addition, in February 2024 the Group's auditors, KPMG, reported to the Committee on their assurance procedures over our 2023 sustainable development reporting.

Other key areas of focus for the Committee in 2024 included:

- **Health and safety performance:** Receiving regular updates on health and safety performance.
- **Environment and nature:** Receiving a report on the Group's environmental performance and endorsement of our approach to our nature strategy, as well as undertaking a deep dive on the Group's physical resilience to climate change and natural disasters, and the real-time modelling being done to manage this risk.
- **Water:** Receiving an update on the Bungaroo aquifer in the Western Pilbara and the decision to invest in the construction of the Dampier desalination plant, which will supply water to Rio Tinto's coastal communities and operations from 2026.
- **Social performance:** Receiving an overview of the emerging socio-political landscape and an update on Communities and Social Performance 2024 priorities and initiatives, including our global program to collect and respond to host community feedback, social contributions, Indigenous leadership and participation, cultural heritage and agreements.
- **Human rights:** Reviewing management of human rights risks, tracking global trends in human rights policy and regulation, commercial and asset human rights due diligence, and overseeing our modern slavery reporting.
- **Security:** Receiving updates on ongoing security challenges across the Group.

Site visits play an important role in providing Committee members with a deeper understanding of our sustainability risks across our business. This year, there were full Board site visits in Canada to our Iron and Titanium Operations in Sorel-Tracy, Quebec and our Matalco joint venture's operations in Ontario. In addition, our Committee members also made either individual or group visits:

- in Canada, to our Aluminium operations in Saguenay–Lac-St-Jean in Quebec, and our aluminium operations in Kitimat, British Columbia
- in Australia, to our Iron Ore operations in the Pilbara, Western Australia, the Yarwun and Queensland Aluminium Limited alumina processing facilities in Gladstone, and our Technical Development Centre in Bundoora, Victoria
- in Africa, to the Simandou iron ore project in Guinea, and our mineral sands joint venture at Richards Bay in South Africa
- in the US, to our operations at Resolution Copper in Arizona, and our Kennecott copper operations in Salt Lake City, Utah.

I look forward to continuing the work of the Sustainability Committee in 2025 to contribute to the long-term sustainable success of the Group.



Dean Dalla Valle
Sustainability Committee Chair

19 February 2025

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Sustainability Committee members[1,2]

Dean Dalla Valle (Chair)	Sam Laidlaw
Dominic Barton	Martina Merz
Kaisa Hietala	Ngaire Woods

1. Joc O'Rourke stepped down from the Committee on 31 May 2024
2. Martina Merz became a member of the Committee on 1 June 2024

The role of the Committee

The Committee's scope and responsibilities are set out in its Terms of Reference, which can be found at riotinto.com/corporategovernance.

Activities in 2024

The Committee met 4 times in 2024. During these meetings, the Committee undertook the following activities:

- Received presentations from each of the product group Chief Executives, our Chief Commercial Officer, and our Chief Technical Officer on the key ESG and operational risks and trends for their respective product group or function.

Health and safety

- Briefed on Rio Tinto's aviation management approach following the death of 4 Diavik colleagues and 2 crew members in the charter flight crash in Canada in January 2024, and the findings from the investigation relating to the death of a contractor working at the Simandou iron ore project in Guinea, and reviewing actions identified from these internal briefings.
- Received regular updates on the Group's performance across key health and safety metrics.
- Conducted regular reviews of PFIs occurring across the Group.
- Received regular updates on Major Hazard incidents across the Group.
- Conducted deep dives into key safety risks and controls, including: a major underground event; and major tailings or water storage facility failure.

Environment

- Reviewed the Group's performance across key environmental metrics.
- Conducted a deep dive into the Group's physical resilience to climate change.
- Received updates on the Group's implementation of GISTM, and engaged with Accountable Executives in line with the Standard's requirements.
- Endorsed an approach for the Group's nature strategy and a targets program to support that strategy.

Communities and social performance

- Received progress updates on the Group's CSP Strategy.
- Received a report from the Chair of the Australian Advisory Group, an advisory forum on implications for our Australian business from emerging developments, policies or initiatives.
- Reviewed progress on development of the Group's 2024 Statement on Modern Slavery.

Assurance, risk management and global sustainability trends

- Reviewed the emerging focus on nature and biodiversity from regulators, communities, investors and other stakeholders.
- Received a report from KPMG on their sustainability external assurance program for 2023.
- Approved the external assurance plan for the Group's sustainability reporting, and for the performance data supporting the safety and ESG performance outcomes under the short-term incentive plan.
- Received reports from GIA on their audits relating to matters within the Committee's scope, including:
  - audits of controls associated with mass transportation across the Group, including for bus travel, ferries and helicopters
  - an audit to assess adequacy of controls at Bell Bay to address hot metal transport risks
  - an audit of Rio Tinto Iron Ore's controls and processes for the mitigation of dust emissions and the management of health and community impacts
- Reviewed recommendations for the Group's 2025 sustainable development internal assurance plan.

Governance and disclosure

- Reviewed various sustainability disclosure materials.
- Reviewed an assessment of the Group's most material sustainability topics to be reported on in the *2024 Annual Report*.
- Received an update on the global governance and ESG reporting landscape, and Rio Tinto's proposed approach to meet relevant evolving requirements.

Other (including closure and security)

- Received an update on the Group's closure strategy and work program.
- Received regular updates on security issues across the Group and key insights on risk assessments and controls.

The chart below represents the allocation of the Committee's meeting time during 2024:



- Health and safety: 31%
- Communities and social performance (including cultural heritage and human rights): 25%
- Environment, including tailings management, water, and biodiversity: 20%
- Assurance, risk management, global sustainability trends: 13%
- Other (including closure and remediation, and security): 6%
- Governance and disclosure: 5%

The Committee Chair reports to the Board after each meeting and our minutes are tabled before the Board. All Directors have access to the Committee's papers.

Sustainability disclosures

Our sustainability framework and performance is described in detail on pages 32–87.

For more information and to access our *2024 Sustainability Fact Book* see riotinto.com/sustainability

Our *2023 Communities and Social Performance Commitments Disclosure* can be found at riotinto.com/cspreport

Our *2023 Modern Slavery Statement* can be found at riotinto.com/modernslavery

Remuneration report

Annual statement by the People & Remuneration Committee Chair

The Committee's overarching purpose is to ensure the people, culture and remuneration policies, frameworks and practices are aligned with the Group's strategy, objectives and values.

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Dear shareholders,

On behalf of the Board, I am pleased to present our 2024 Directors' Remuneration report.

Nothing is more important than the health, safety and wellbeing of our people. We tragically lost 5 colleagues in 2024. In January, 4 colleagues and 2 employees of the contractor's airline crew died in a plane crash en route to our Diavik mine. In October, an employee of one of our contractors was injured at the SimFer Port Project and subsequently passed away.

We are also deeply concerned about a crew member aboard a Rio Tinto bulk carrier who was reported missing in December.

These events have all had a devastating impact and learnings from these tragic events will be used to inform ongoing improvements to safety practices to prevent such incidents in the future.

Operational performance and our balance sheet remained robust in 2024, allowing US$6.5 billion to be declared as dividends to shareholders. This underpinned our ability to reach an agreement in October for the proposed acquisition of Arcadium Lithium in an all-cash deal. Subject to completion, this transaction will give us the platform to create a world-class lithium business. We expect the deal to close in March 2025.

Our operational performance in 2024 has been facilitated by progress in deploying our Safe Production System (SPS). SPS deployment has commenced at 31 (81%) of our sites and underlines our commitment to become Best Operator with improved safety and operational performance across our global assets. During the year, we also progressed against our other objectives – striving for impeccable environment, social and governance (ESG) credentials, excelling in development and strengthening our social licence.

Our commitment to decarbonise our business, and to develop products and services to help our customers decarbonise, continues at pace. 2024 was a record year for investment approvals towards our 2030 target, underwritten by significant progress in repowering our Gladstone assets. We signed 2 power purchase agreements for a combined 2.2GW of renewable energy, catalysing the development of new large-scale renewable energy in Queensland. We also reached an agreement with the Queensland Government on a support package to assist Boyne Smelters Limited (BSL) with the transition to a competitive and repowered future. In June, we announced the installation of carbon-free aluminium smelting cells in Quebec to support the ongoing development of the ELYSIS™ technology, with the first production of aluminium without direct greenhouse gas emissions targeted by 2027. We entered into a joint venture with Aymium to manufacture renewable metallurgical biocarbon product to help reduce carbon emissions in large-scale industrial processes.

Across our existing portfolio, copper production at Oyu Tolgoi continues to ramp up, the first lithium production from Rincon in Argentina was delivered in November 2024, and progress at the world-class Simandou iron ore project in Guinea continues at pace, with first high-grade iron ore production scheduled during 2025.

Remuneration Policy

Our 2024 Remuneration Policy (Policy) received strong support with over 97% of shareholders voting in favour. Throughout this process, I was able to meet with many of our shareholders and the key UK and Australian advisory bodies to discuss and shape our proposals. The open dialogue with investors and advisory bodies was welcomed and I would like to again thank those who took part in this consultation.

One of the asks from investors was to provide transparency on our progress against the new decarbonisation scorecard for our long-term incentive plan (LTIP). While we are only 12 months into the first 3-year performance period, we have provided an update on our progress against each measure. We do not expect progress against the scorecard to be linear, and some volatility for one or more measures throughout the performance period is likely, but we will provide annual updates on progress, noting that specifics may be subject to confidentiality.

Overview of pay and performance in 2024

The single total figure of remuneration for the Chief Executive in 2024 is 57% lower than the equivalent figure for 2023. This is primarily driven by lower outcomes under the LTIP.

Short-term incentive plan

For 2024, we made a change to the financial measures, replacing underlying earnings with underlying EBITDA but retaining STIP free cash flow. These measures, assessed on a flexed and unflexed basis, account for half of the outcome against the STIP scorecard. Outcomes against the other half of the STIP scorecard are linked to a range of strategic measures covering performance around safety, carbon reduction, diversity and inclusion, and progress on our objectives to excel in development and strengthen our licence to operate. An individual multiplier is in place to be used sparingly in cases of exceptional performance.

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STIP fatality deduction

During 2024 there were 2 tragic incidents in which 5 colleagues lost their lives which were the first work-related fatalities since 2018. Accordingly, it was determined that the STIP fatality deduction should be applied and this resulted in a reduction equivalent to 10% of the final STIP scorecard outcome for all STIP eligible employees.

The Committee assessed Group performance against the STIP scorecard and determined an overall scorecard outcome of 49.5% of maximum, post fatality deduction.

STIP scorecard performance

2024 was a strong year for the Group in terms of financial performance and progress on implementation of the Group's strategy.

For the financial component of the STIP scorecard, we reported underlying EBITDA of $23.3 billion and STIP free cash flow of $11.6 billion. Despite challenges at a number of our operations, these financial outcomes were in line with plan, underpinned by improved operational stability across most of our operations.

Overall, our reported 2024 result for the financial component of the STIP scorecard was 46% of maximum.

The strategic component of the STIP scorecard comprises 4 separate measures - Impeccable ESG, People & Culture, Excel in Development and Social Licence. The outcome against our Impeccable ESG measure, which includes safety, was above target for the year. Progress on decarbonisation and the approval of specific abatement projects has continued over the year, as we continue to shape our roadmap to our 2030 ambition and beyond.

Our People & Culture measures reflect scores from the second of our bi-annual employee engagement surveys, as well as gender diversity aspirations. While both dimensions showed improvement during 2024, the outcomes fell short of the targets set by the Committee.

Overall performance against the Excel in Development measure was above target for the year, reflecting exciting progress in exploration and studies, and continued strong delivery across a number of projects despite some challenging weather events during the year.

The Social Licence measure assesses changes in how we are perceived by the general public using RepTrak, a third-party survey provider, plus a qualitative review. In 2024 our global reputation score showed improvement, resulting in an above target outcome.

Under the STIP, an individual multiplier can be used for selected participants each year to reflect exceptional performance. The Committee considered the individual performance of each Executive Director during 2024 and did not apply an individual multiplier to the STIP outcomes.

Further details on the individual performance and STIP outcomes for the Executive Directors can be found on page 129-133.

Long-term incentive plan

The performance period for the 2020 Performance Share Award (PSA) concluded in December 2024 and awards will vest on 20 February 2025. As well as reviewing the formulaic outcome, the Committee also considered the vesting outcome in the context of underlying business performance and the consequence management framework and felt it reflected the shareholder experience.

Rio Tinto delivered a strong Total Shareholder Return (TSR) of 80% over the performance period. While this was sufficient to trigger vesting under the element measuring performance relative to our mining peers, the result was marginally behind the performance of the MSCI World Index (TSR: 81%), and subsequently this element lapsed in full. The overall formulaic vesting outcome for the 2020 PSA was 12.75% of maximum. The Committee recognises that Rio Tinto has delivered strong returns for shareholders over the past 5 years, and that the TSR performance of a handful of very large technology companies, especially in the last 12 months, had a material impact on the performance of the MSCI World Index. The Committee however approved the formulaic outcome and no discretion was exercised.

2025 remuneration decisions

As we explained to investors as part of establishing our Policy, the main policy changes focused on the structure of pay, resulting in an increase in our LTIP award levels to be more aligned with peers in the market. We undertook extensive benchmarking during 2024 to assess overall competitiveness and pay positioning relative to our peers and those we compete with for talent. This review confirmed prior analysis that salaries and target remuneration remained below median market levels for certain critical positions. Therefore, a targeted salary adjustment has been approved for the Chief Executive, to better reflect the talent market and most importantly ensure pay levels remain more aligned with the size of the role.

Since his appointment in January 2021, the Chief Executive has demonstrated exceptional leadership. He has led significant improvements in restoring trust with the local communities in which we operate while delivering shareholder returns of $38 billion through dividends and buybacks. Under his leadership, Rio Tinto has progressed several critical projects to sustain, diversify and build on the returns already delivered.

The Chief Executive's current salary is positioned at the lower end of FTSE 10 peer companies. Considering his development as an established FTSE 10 Chief Executive and proven performance since his appointment, we have reset his salary to £1,410,700. This represents an increase which is at a premium of 6.8% to the 3% general increase applied to the UK workforce in 2025. The Committee are mindful of the changes made to the Policy last year and are keen to maintain a measured approach to pay. It should be noted that even after this adjustment, the Chief Executive's salary remains below median against FTSE 10 peers. Further details on the increase for the Chief Executive are provided on page 122.

As part of making this change we engaged extensively with a number of our major shareholders regarding the proposed adjustments to salary. I want to thank those investors whom I met and consulted with during the year.

Executive changes

Alf Barrios, a member of the Executive Committee since 2014, decided to retire and stepped down from his role as Chief Commercial Officer on 31 August 2024. James Martin also decided to retire and stepped down from his role as Chief People Officer on 31 December 2024. On behalf of the Board, I want to thank Alf and James for their service to Rio Tinto and wish them lengthy and enjoyable retirements.

Bold Baatar, previously Chief Executive, Copper, succeeded Alf as Chief Commercial Officer, with effect from 1 September 2024. We welcomed Katie Jackson to the role of Chief Executive, Copper on 1 September 2024. Both Bold and Katie were appointed to their roles on terms consistent with our Policy. Details of their appointment terms are included on page 138. Georgie Bezette was also appointed to the role of Chief People Officer and the Executive Committee on 1 January 2025.

People

During the year, we worked with the Executive Committee to set the direction for a workplace culture that aligns with our purpose, reflects our values, and supports the delivery of our strategy. To that end, we continue to support a performance management framework that places as much emphasis on how results are delivered as it does on what is achieved. This further builds on our decision in 2023 to change the STIP scorecard to apply consistently across 27,000 colleagues.

The Committee monitored culture progression through visits to our sites and offices, operational deep-dives and management presentations. It considered trends and findings from our bi-annual employee engagement survey, succession and talent plans for our most senior roles, as well as our ability to attract and retain a diverse workforce. The overall representation of women in our business remains a key aspect of our broader agenda on diversity and inclusion, and will continue to be an area of focus in 2025.

While the published findings of the *Everyday Respect Progress Review* show people are still experiencing behaviours and attitudes in the company that are unacceptable and harmful, the public release of the 2022 *Everyday Respect Report* was a critical catalyst for culture change. We are more committed than ever to continue to transform our culture on what will be a multi-year journey. This change started with the implementation of recommendations outlined in the 2022 *Everyday Respect Report*, with longer-term actions, such as continued investment in facilities, ongoing. We firmly believe that our response to the 2022 *Everyday Respect Report* has established a solid foundation for building a more diverse workforce and inclusive culture. While there remains much to be done, we are encouraged by the progress and genuine effort across Rio Tinto and recognise culture change takes sustained effort.

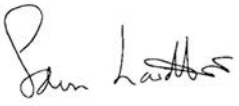
Pay in the broader context

Our focus on pay equity is evident in our gender pay metrics. We continue to focus on fair and equal pay with a view to eradicating any pay gaps. Further details on our equal pay gap and gender pay gap, along with a wider discussion on diversity and inclusion, are provided in the ESG section of this report on pages 78-80.

In 2024, we achieved accreditation from the Fair Wage Network as a Living Wage Employer, following a Group-wide assessment of our employee remuneration. The living wage review showed that Rio Tinto employees, regardless of the work they undertake or where in the world they perform their work, are not paid less than what is considered a living wage. This reinforces our pay principles of fairness and equity, as well as competitiveness.

As always, I welcome shareholder feedback and comments on our 2024 Directors' Remuneration report.

Yours sincerely,



Sam Laidlaw
People & Remuneration Committee Chair

19 February 2025

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People & Remuneration Committee Chair Q&A

What is the rationale for increasing salaries this year?

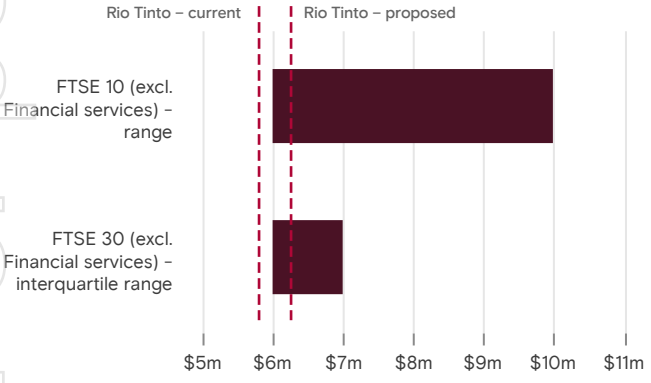
Last year we communicated to shareholders that a significant gap remains between our executive pay and the companies against which we compete for the best talent. This poses significant risks to our ability to retain our executives.

The Committee has a track record of taking a measured and conservative approach to remuneration and being mindful of shareholder expectations. Our conservatism usually means deferral of any significant changes to make sure of our assessments, and to allow us to engage with as many stakeholders as we can for feedback prior to implementation. We have found this has contributed to the high levels of trust we have built internally and externally that we will do what is appropriate and make sure it is well executed. Nevertheless, in recent years we have experienced unwanted executive turnover.

The Policy changes made at the 2024 AGMs were supported by more than 97% of shareholders. These were structural changes that applied to the entire executive team and were a first step to ensuring that our framework remained competitive and fit for purpose while providing further alignment to our ambitious decarbonisation goals. The targeted salary increase we are making for the Chief Executive in 2025 addresses specific issues identified and flagged to many stakeholders in prior consultations as also needing attention, but was deferred until after the Policy review as part of a measured approach to pay.

The Chief Executive's salary no longer reflects the size and complexity of the company or the talent market in which we operate. His base salary and, consequently, target pay have fallen significantly behind the market with gaps now too large to ignore. Nevertheless, and consistent with our conservative approach, we have not sought to match the market at similar-sized and globally complex FTSE 10 companies and our key mining peers, but rather to reduce the pay gap to these market peers. For the avoidance of doubt, we have not attempted to replicate materially higher US pay levels, instead we have benchmarked to equivalent FTSE 10 and non-US global resources companies. Therefore it is incumbent upon the Committee to ensure the positioning of executive remuneration is appropriate for both retention and attraction. Seeking to pay a competitive market rate for all our employees, including executives, without exception, is consistent with and maintains our pay philosophy.

CEO total remuneration at target (US$, excluding benefits)



Have you reduced incentives to reflect the tragic fatalities that occurred during the year?

Safety remains the top priority for Rio Tinto and the Board. The Committee was deeply saddened by the tragic deaths of our colleagues in a plane crash while travelling to the Diavik mine at the start of the year; and by the loss of a contractor at our Guinea operations in October. These incidents were classified as work-related, representing the first work-related fatalities since 2018. In accordance with our STIP rules, the Committee determined a fatality deduction should apply to all STIP eligible employees and applied a reduction equivalent to 10% of the STIP outcome. Given the specific nature of the incidents, the Committee believes this is an appropriate reduction to be applied across all STIP eligible participants.

How do the bonus outcomes reflect the *Everyday Respect Progress Review*?

The public release of the 2022 *Everyday Respect Report* was a catalyst for cultural change at Rio Tinto and marked a significant step towards greater transparency. We have an ongoing commitment to transparency, and in November 2024 published the *Everyday Respect Progress Review*. The Board and our employees were disappointed and, naturally, saddened to see that some colleagues are still experiencing behaviours and attitudes that are unacceptable and harmful. Changing a company's culture to be ahead of the societies in which our employees live is a challenge and change will need our continued commitment and attention every day. The 2024 *Everyday Respect Progress Review* also showed, while not as much as we hoped and worked very hard for, that change is being achieved.

Under the STIP framework, we have People & Culture metrics which seek to measure the progress we are making. The way in which we measure our progress will evolve. In 2023, the People & Culture targets were linked to gender diversity and completion rate of an employee training program following the publication of the 2022 *Everyday Respect Report*. For 2024, we applied ambitious gender diversity targets, and measured this alongside targets for scores under our employee engagement survey which seek to capture how our culture is changing. While both metrics showed progress during the year, overall performance fell short of our ambitions and therefore outcomes under the People & Culture component of the STIP scorecard were below target, with payouts of 12.5% of maximum. While similar metrics will apply in respect of 2025, we expect that the objectives will further evolve in future years.

As part of the holistic assessment of our performance, the Committee carefully considered the contents of the 2024 *Everyday Respect Progress Review* and the actions that have been taken during the year. Ultimately, the Committee concluded that the outcomes provided a fair assessment of performance. Rio Tinto remains more committed than ever to transforming our culture, but it is recognised that this will be a multi-year journey, and the Board firmly believes that the response to the 2022 *Everyday Respect Report* has established a solid foundation for building a more diverse workforce and inclusive culture. This will continue to be an area of focus.

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Remuneration at a glance

Our Remuneration Policy applies to our Executive and Non-Executive Directors and to the Chair. In accordance with Australian law, it also sets out the Remuneration Policy principles that apply to key management personnel (KMP) who are not directors. Our Remuneration Policy, as approved at our 2024 annual general meetings (AGMs), can be found at riotinto.com/annualreport. When developing the Remuneration Policy, the Committee considered the pay arrangements from the perspective of clarity, simplicity, risk, predictability, proportionality and alignment to culture. Further detail is set out on pages 119-126 of the *2023 Annual Report*. The Remuneration Policy applicable to our executives and its implementation in 2024 and 2025 is summarised below.

Fixed pay

Base salary

- Base salaries are set to reflect broad alignment with comparable roles in the global external market and the executive's qualifications, responsibilities and experience.
- Base salaries are reviewed annually by the Committee. Any increase is normally aligned with the wider workforce, with no cap on individual salary increases to better align with market practice and to provide sufficient flexibility where appropriate.
- Above average increases may be made in specific circumstances, such as promotion, increased responsibilities or market competitiveness.

Pension or superannuation

- Rio Tinto may choose to offer participation in a pension plan, superannuation fund, or a cash allowance in lieu.
- The maximum annual benefit is set to reflect the pension arrangements for the wider employee population and is currently capped at 14% of base salary.

Other benefits

- Executives are eligible to receive benefits which may include private healthcare cover, life and accident insurances, professional advice, and other minor benefits.
- Secondment, relocation and localisation benefits may also be made to and on behalf of executives living outside their home country.

STIP

- Measures and weightings for the scorecard are selected by the Committee for each financial year. At least 50% of the measures will relate to financial performance, and a significant component will relate to safety. Other strategic, environmental, social and governance (ESG) and individual business outcomes may be included.
- EBITDA and free cash flow are used for the financial measures, half of which are adjusted for commodity prices.
- For financial performance, threshold performance results in a nil award (25% of award pays out for threshold performance for non-financial measures) and outstanding performance results in maximum payout. The payout for specific metrics may be varied to reflect the stretch of the underlying target.
- Maximum opportunity is capped at 200% of base salary for each executive.
- Normally, 50% of the STIP is delivered in cash and the balance is delivered in shares that are deferred for 3 years as a Bonus Deferral Award (BDA).
- Dividends (or equivalents) may accrue in respect of any BDA that vest.
- The Committee retains the right to exercise discretion to ensure that the level of award payable is appropriate.
- Malus, clawback and suspension provisions apply to the STIP and BDA.

LTIP

- 80% of the award is subject to performance measured against Total Shareholder Return (TSR) relative to the constituents of the S&P Global Mining Index and the MSCI World Index, and 20% is assessed against a decarbonisation scorecard (for Performance Share Award (PSA) grants made from 2024).
- The Committee will set performance conditions aligned with the Group's long-term strategic objectives for each PSA grant. Relative TSR has been chosen as the predominant measure of long-term performance. The Committee retains the discretion to adjust the performance measures and weightings as appropriate.
- Awards have a maximum face value of 500% of base salary (of which one-fifth of 2024 and 2025 awards is linked to a tangible decarbonisation scorecard). Threshold vesting is 22.5% of face value. Target is 50% of face value.
- Dividends (or equivalents) may accrue in respect of any PSA that vest.
- The Committee retains the right to exercise discretion and seeks to ensure that outcomes are fair and reflective of the overall performance of the company during the performance period.
- Performance period of 3 years, followed by a holding period of 2 years (for PSA grants made from 2024).
- Malus, clawback and suspension provisions apply to LTIP awards (noting clawback provisions comply with SEC requirements).

Shareholding requirements

- Over a 5-year period, executives should reach a share ownership in Rio Tinto shares (expressed as a fixed number of shares and subject to review every 2 years). The shareholding requirement for 2024 and 2025 is:
  - Chief Executive: 120,000 Rio Tinto plc shares
  - Chief Financial Officer: 60,000 Rio Tinto plc shares
  - Other executives (requirement varies by individual): 46,000-54,000 Rio Tinto plc shares or 40,000-46,000 Rio Tinto Limited shares
- Longer periods may be accepted for new appointments.
- Executive Directors are required to retain a holding for 2 years after leaving the Group, in line with the shareholding requirements.

Recruitment policy

- No form of "golden hello" will be provided upon recruitment. In the case of internal appointments, existing commitments will be honoured.
- Our approach concerning "buy-outs" is to determine a reasonable level of award, on a like-for-like basis, consisting primarily of share-based awards, but also potentially cash, taking into consideration the quantum of forfeited awards, their performance conditions and vesting schedules.
- Other elements of remuneration are to be consistent with the Policy applicable to other executives.

Termination policy

- An Executive Director's notice period is normally 12 months, during which they will receive their base salary and other benefits.
- Ineligible leavers forfeit their unvested LTIP and STIP entitlements.
- An eligible leaver may receive the following:
  - A discretionary STIP award on a pro-rata basis, payable on the normal STIP payment date in cash.
  - Any unvested BDA from prior year awards will normally vest on the scheduled vesting date.
  - Unvested LTIPs will normally be retained and vest on the scheduled vesting date, subject to performance conditions where applicable.
- PSA and Management Share Awards (MSA), where applicable, will be reduced if the executive leaves within 36 months of grant.
- STIP and LTIP awards are subject to malus, clawback and suspension following termination.

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Consequence management framework

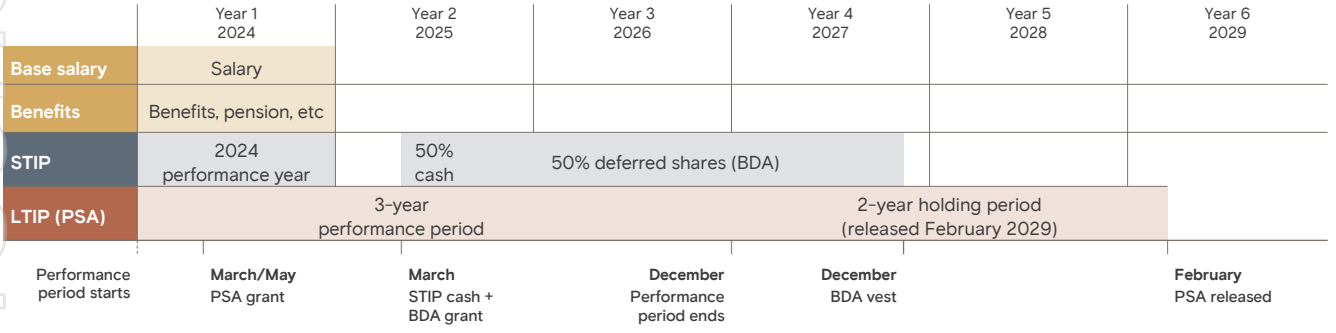
- Under both the malus and clawback provisions, where the Committee determines that an exceptional circumstance has occurred, it may, at its discretion, reduce the number of shares to be received on vesting of an award, or, for a period of 2 years after the vesting, the end of any holding period or payment of a share or cash award, the Committee can claw back value from a participant.
- The Committee will apply the consequence management framework, and the circumstances under which the Committee exercises such discretion may include, inter alia:
  - fraud, misconduct or an exceptional event which has had, or may have, a material effect on the value, or reputation, or social licence of any member of the Group
  - an error in the Group's financial statements which requires a material downward restatement
  - personal performance and leadership behaviour of a participant, of their product group, or of the Group, which does not justify vesting; or where the participant's conduct or performance has been in breach of their employment contract, any laws, rules or codes of conduct applicable to them; or the standards or demeanour reasonably expected of a person in their position
  - misstatement or misrepresentation of performance
  - where any team, business area, member of the Group or profit centre in which the participant works (or worked) has been: found guilty in connection with any regulatory investigation; or has been in breach of any laws, rules or codes of conduct applicable to it; or the standards, leadership behaviour or demeanour reasonably expected of it
  - where the Committee determines that there has been material damage to the Group's social licence to operate
  - a catastrophic safety or environmental event..
- Under the suspension provisions, the Committee may suspend the vesting of an award for up to 5 years until the outcome of any internal or external investigation is concluded, and may then reduce or lapse the participant's award based on the outcome of that investigation. Where suspension applies, the 24-month clawback period will not extend beyond the period commencing from the original vesting date, or the end of any holding period.
- Remuneration delivered under the Policy is subject to SEC-compliant clawback policies for up to 3 financial years requiring the clawback of erroneously awarded incentives as a result of material misstatements.

Discretion

- The Committee reserves the right to review all remuneration outcomes arising from mechanistic application of performance conditions, and to exercise discretion to make adjustments where such outcomes do not properly reflect underlying performance or the experience of shareholders or other stakeholders.
- The Committee may at its discretion adjust, or change performance measures, or both, if events occur which cause the Committee to determine that the measures are no longer appropriate or in the best interests of shareholders or other stakeholders, and that amendment is required so that the measures, as far as possible, achieve their original purpose. Such discretion will be exercised judiciously and clearly disclosed and explained in the Implementation report.

When remuneration is delivered

The following chart provides a timeline of when remuneration is delivered, using 2024 as an example.



How are performance metrics for incentives aligned with our strategy?

Approximately 27,000 employees who participate in the STIP have one Group scorecard. The metrics in the STIP design were chosen to drive the implementation of our strategy and are based around our areas of focus: our 4 objectives together with the delivery of strong financial performance and accelerating our culture change.

The PSA is targeted at our most senior leaders, with consistent metrics applied for all participants. The award is intended to capture how we create sustainable value for our shareholders over the longer term. LTIP awards are based on relative TSR performance both against sector peers and the wider market, plus a scorecard linked to the Group's long-term decarbonisation ambitions.

	Incentive	Reflection in scorecard
Strategic priorities		
People & Culture	STIP	Focuses on how we do things as well as what we achieve, as a critical lever of accelerating our culture change and building an inclusive workplace environment.
Excel in Development	STIP	Measures progress in relation to exploration, studies and project execution.
Impeccable ESG	STIP	Safety in all its aspects remains a key priority, alongside progressing the work on our decarbonisation pathways towards achieving our 2030 ambition.
	LTIP	The decarbonisation scorecard in the LTIP is structured around our multi-year and ambitious decarbonisation strategy, with a focus on a combination of offensive and defensive metrics to incentivise long-term competitive advantage.
Social Licence	STIP	Measures our progress in building trust and meaningful relationships with our community of stakeholders.
Best Operator – Flexed Financials	STIP	Focuses on achievement of financial plan commitments.
Shareholder experience		
Unflexed Financials	STIP	Aligned to market conditions for our commodities.
Total Shareholder Return	LTIP	Measures share price and shareholder return performance relative to sector peers and wider market.

2024 remuneration outcomes

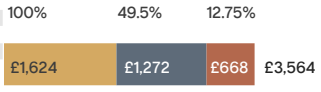
Executive Director remuneration (£'000)

The charts below set out the actual and maximum executive remuneration, as calculated under the UK regulations. As explained on page 127, there are differences in both the reporting of remuneration and the methodology for measuring remuneration under the Australian regulations.

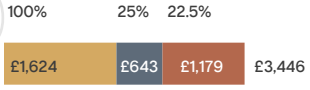
Chief Executive

Jakob Stausholm

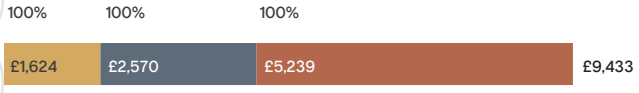
2024 Actual remuneration (percentage of maximum)



2024 Threshold remuneration (percentage of maximum)



2024 Maximum remuneration

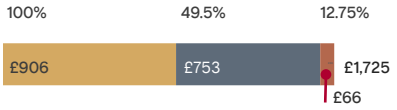


Fixed STIP LTIP

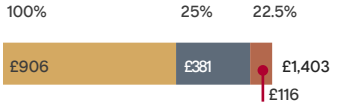
Chief Financial Officer

Peter Cunningham

2024 Actual remuneration (percentage of maximum)



2024 Threshold remuneration (percentage of maximum)



2024 Maximum remuneration



2024 short-term incentive plan



Group financial scorecard

Weighting	50%
Weighted performance	23.1%

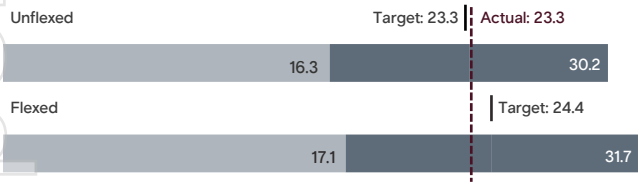
Group strategic scorecard

Weighting	50%
Weighted performance	31.9%

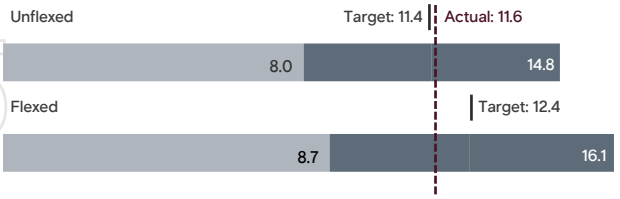
Financial scorecard performance

In 2024, the Group financial STIP outcome was below target at 46% of maximum.

Underlying EBITDA target range (threshold to outstanding) – US$bn

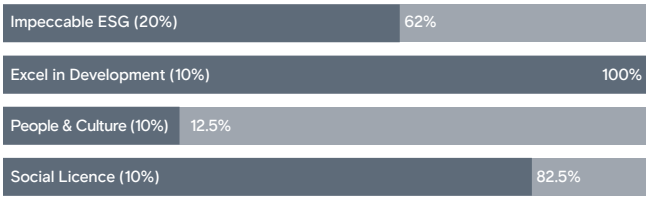


STIP free cash flow target range (threshold to outstanding) – US$bn



Strategic scorecard performance

In 2024, the Group strategic scorecard outcome was above target at 64% of maximum.



The STIP outcome post fatality deduction was 49.5% of maximum.

2020–2024 long-term incentive plan



TSR relative to EMIX/S&P Global Mining Index

Weighting	50%
Weighted performance	12.75%

TSR relative to MSCI World Index

Weighting	50%
Weighted performance	0%

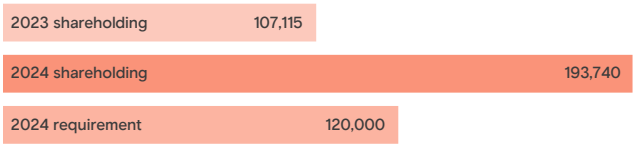
LTIP

We outperformed the EMIX/S&P Global Mining Index by 0.2% per annum, resulting in 25.5% vesting of this component, but our TSR was slightly below the MSCI World Index by 0.2% per annum resulting in nil vesting of this component. Overall vesting for the 2020 PSA was 12.75%.

Share ownership requirements

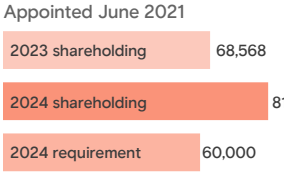
Jakob Stausholm

Appointed January 2021 (Rio Tinto plc shares)



Peter Cunningham

Appointed June 2021 (Rio Tinto plc shares)



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Remuneration principles

How is the Remuneration Policy applied to the wider employee population?

The remuneration framework that applies to the wider employee population is inspired by, and consistent with, the Remuneration Policy that applies to executives. This allows the reward offering to employees to be competitive and strongly linked to performance, while staying aligned with the company culture.



Consistency	– We take a consistent approach in how we implement our Policy to enable transparency and fairness. – Our STIP design uses one scorecard for around 27,000 employees, including executives. This consistent approach supports the delivery of our strategy, and a mindset shift in how we win collectively.
Fairness	– We are committed to providing equitable pay for equivalent roles and contribution. We review and monitor pay equity through different lenses: • In-depth pay equity analysis as part of the remuneration review process. Through this, we manage pay equity from multiple perspectives, including gender. • We annually review employee remuneration against living wage benchmarks, and achieved accreditation as a Living Wage Employer from the Fair Wage Network in 2024. • Minimum global standards, which we implement across all countries to ensure the foundations of our reward offerings, meet levels determined by the Group irrespective of local market practices. Examples include global standards for parental leave and life assurance.
Ownership	– We promote material participation in our all-employee share plan (myShare) to create stewardship and provide employees with access to building longer-term financial security. – As at 31 December 2024, approximately 36,000 (2023: 34,000) of our employees across more than 30 countries are shareholders in the company. – Employees invest approximately $26 million (2023: $24 million) in Rio Tinto shares every quarter through the myShare plan. – Employees eligible for LTIP awards receive these as either MSA, vesting over 3 years and not subject to performance conditions, or PSA which are performance-tested over 3 years.
Recognition	– Launched in February 2024, RockStars is our global recognition and service milestones program, reaching over 58,000 colleagues. – The program is supported by an easy-to-use platform, accessible across countries, offering a simple and standardised framework for recognition at all levels. – Recognition moments are aligned with our company values, promoting the behaviours we want to see at Rio Tinto. – The program is complemented by our annual RockStars of the Year Awards, where noteworthy employee efforts are celebrated.
Wellbeing	– We provide industry- and market-leading benefits programs that focus on holistic and integrated support for physical, mental and financial wellbeing. – The benefits we offer can be tailored to suit different needs and life stages, including: employee assistance; minimum standards for life, accident and disability insurances; medical plans and virtual care, health screening and prevention; and subsidised health and wellbeing services.

Numbers at a glance

36,000
Employee shareholders
(2023: 34,000)

<1.5%
Equal pay gap in favour of men
(2023: <1%)

27,000
STIP participants
(2023: 26,000)

195,000
Recognition and service milestone moments
(2023: n/a)

2,200
LTIP participants
(2023: 2,000)

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Implementation report

This Implementation report is presented to shareholders for approval at our AGMs. It outlines how our Policy was implemented in 2024, and the intended operation in 2025.

About our reporting

As our shares are listed on both the Australian Securities Exchange and London Stock Exchange, the information provided within our Remuneration report must comply with the reporting requirements of both countries.

Our regulatory responsibilities impact the volume of information we provide, as well as the complexity. In Australia, we need to report on a wider group of executives, as described in the following paragraph. In addition, as set out in the summary table below, the 2 reporting regimes follow different methodologies for calculating remuneration.

In the UK, disclosure is required for the Board, including the Executive Directors. The Australian legislation requires disclosures in respect of KMP, being those persons having authority and responsibility for planning, directing and controlling the activities of the Group. In 2024, our KMP comprise the Board, all product group Chief Executives and the Chief Commercial Officer.

Executive KMP are listed on pages 136 and 137, with details of the positions held during the year and dates of appointment to those roles.

The single total figure of remuneration table on page 129 shows remuneration for our Executive Directors, gross of tax and in the relevant currency of award or payment.

In table 1a on page 141, we report information regarding executives in accordance with Australian statutory disclosure requirements. The information is shown gross of tax and in US dollars. The remuneration details in table 1a include accounting values relating to various parts of the remuneration package, most notably LTIP awards, and require a different methodology for calculating the pension value. The figures in the single total figure of remuneration table are therefore not directly comparable with those in table 1a. Where applicable, amounts have been converted using the relevant average exchange rates included in the notes to table 1a.

In table 1b on page 142, we report the remuneration of the Chair and the Non-Executive Directors.

Certain information contained within the Remuneration report is audited, as outlined on page 145.

Shareholder voting

As required under UK legislation, the new Policy was subject to a binding vote and approved at our 2024 AGMs. The Implementation report, together with the annual statement by the People & Remuneration Committee Chair, is subject to an advisory vote each year as required by UK legislation. Under Australian legislation, the Remuneration report as a whole is subject to an advisory vote. All remuneration-related resolutions will be voted on at the AGMs as Joint Decision Matters by Rio Tinto plc and Rio Tinto Limited shareholders.

The differing approaches explained

As well as the difference in methodology for measuring remuneration, there are key differences in how remuneration is reported in the UK and Australia.

UK

- For reporting purposes, remuneration is divided into fixed and variable elements.
- We report remuneration in the currency it is paid. For example, where a UK executive is paid in pounds sterling, remuneration is reported in pounds sterling.

Australia

- For reporting purposes, remuneration is divided into short- and long-term elements.
- All remuneration is reported in US dollars, so using the previous example, the UK executives' remuneration would be converted to US dollars using the average exchange rate for the financial year (except STIP, which is converted at the year-end exchange rate).

The table below summarises the elements of each component of remuneration, as well as the significant differences in the approaches to measurement.

UK	Australia
Fixed Base salary	**Short-term** Base salary
Benefits	STIP – cash element
Pension The value of the pension contribution and payment in lieu of pension paid during the year	Cash benefits
	Non-monetary benefits
Variable STIP – cash element	**Long-term** STIP – deferred share element Based on the amortised IFRS fair value of deferred shares at the time of grant
STIP – deferred share element	LTIP Based on the amortised IFRS fair value of the award at time of grant
LTIP Valued at point of vesting	Pension and superannuation Accounting basis
= Total remuneration	

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People & Remuneration Committee

Responsibilities

The Committee's responsibilities are set out in our Terms of Reference, which is reviewed annually, and published at riotinto.com/corporategovernance.

Our responsibilities include:

People

- reviewing strategic workforce planning, including talent, succession and development planning within the Group
- developing leaders' skills
- overseeing and implementing the Board's workforce engagement plan and implementation.

Culture

- progressing implementation of the 2022 *Everyday Respect Report* recommendations and the monitoring of broader cultural change
- developing strategies, initiatives and performance measures around organisational culture and desired behaviours
- assessing the effectiveness of diversity and inclusion policies.

Remuneration

- determining the Group's remuneration strategy, policy and framework
- determining the remuneration of the Chair, Executive Directors and other members of the Executive Committee
- determining the mix and operation of the Group's STIP and LTIP, ensuring alignment with the company's strategic objectives
- overseeing the operation of the Group's STIP and LTIP for executives, including approving awards, setting performance criteria, and determining any vesting, and, where necessary, applying the consequence management framework to current and prior awards
- determining contractual notice periods and termination commitments, and setting retention and termination arrangements for executives
- overseeing awards under the Group's all-employee share plans
- the annual Remuneration report, shareholder engagement on the Remuneration Policy including its implementation, and other related matters including gender pay
- reviewing workforce remuneration and related policies, and the alignment of incentives and rewards with culture. Taking these into account when setting the Policy for Executive Director remuneration
- engaging independent external remuneration advisers.

We consider the level of pay and conditions for all employees across the Group when determining executive remuneration.

Committee membership

The members of the Committee during the year and to the date of this report were:

Sam Laidlaw (Committee Chair)	Dominic Barton
Dean Dalla Valle	Simon McKeon (to 2 May 2024)
Susan Lloyd-Hurwitz	Jennifer Nason
Ngaire Woods (to 31 May 2024)	Ben Wyatt (from 1 June 2024)

How we work

The Group Company Secretary (or their delegate) attends meetings as secretary to the Committee. The Chief Executive, Chief People Officer, Head of Reward and Head of Talent attend appropriate parts of the meetings at the invitation of the Committee Chair. No individual is in attendance during discussions about their own remuneration.

Independent advisers

The Committee has a protocol for engaging and working with remuneration consultants to ensure that "remuneration recommendations" (being advice relating to the elements of remuneration for KMP, as defined under the Australian *Corporations Act 2001*) are made free from undue influence by KMP to whom they may relate. We monitored compliance with these requirements throughout 2024. Deloitte, the appointed advisers to the Committee, gave declarations to the effect that any remuneration recommendations were made free from undue influence by KMP to whom they related. The Board has received assurance from the Committee and is satisfied that this was the case.

Deloitte are members of the Remuneration Consultants' Group, and voluntarily operate under its Code of Conduct (the Code) in relation to executive remuneration consulting in the UK. The Code is based upon principles of transparency, integrity, objectivity, competence, due care and confidentiality. Deloitte has confirmed that they adhered to the Code throughout 2024 for all remuneration services provided to Rio Tinto. The Code is available online at remunerationconsultantsgroup.com.

The Committee is satisfied that the Deloitte team is independent. During 2024, Deloitte's services also included attending Committee meetings, providing support on the 2024 Remuneration Policy and giving advice in relation to management proposals and shareholder consultations.

Deloitte was paid $490,922 (2023: $504,507) for these services. Fees were charged on the basis of time and expenses incurred.

We received other services and publications relating to remuneration data from a range of sources. During the year, Deloitte also provided internal audit, tax compliance and other non-audit advisory services. These services were provided under separate engagement terms and the Committee is satisfied that there were no conflicts of interest.

How the Committee spent its time in 2024

During 2024, the Committee met 5 times. We fulfilled our responsibilities as set out in our terms of reference, including the expanded scope on the broader People agenda.

Our work in 2024 included:

- reviewing culture maturity metrics
- reviewing people development and talent management
- determining any base salary adjustments and LTIP grants for executives
- reviewing performance against the 2023 STIP and 2019 PSA targets, including assessing applicable adjustments
- determining the targets for the 2024 STIP
- reviewing performance of the accountable executives for Global Industry Standard on Tailings Management (GISTM) implementation
- consulting with shareholders and proxy advisers on our new Policy proposals and a base salary review for the Executive Committee
- finalising terms for the retirement of Alf Barrios, Chief Commercial Officer and James Martin, Chief People Officer
- setting terms of appointment of Katie Jackson, Chief Executive, Copper, Bold Baatar, Chief Commercial Officer and Georgie Bezette, Chief People Officer
- reviewing executives' progress towards the Group's share ownership requirements
- reviewing the strategy and annual reports on the Group's global benefit plans.

Performance review process for executives

We conduct annual performance reviews for all executives. Our key objectives for the performance review process are to:

- improve organisational effectiveness by creating alignment between the executive's objectives, Rio Tinto's strategy, the individual's leadership behaviours and the company's values
- provide a consistent, transparent and balanced approach to measure, recognise and reward executive performance.

The Chief Executive conducts the review for members of the Executive Committee and recommends the performance outcomes to the Committee. The Chief Executive's performance is assessed by the Chair of the Board and is discussed and considered with the Committee and the Board. Performance reviews for all executives took place in 2024 and early 2025.

Executive Directors

Single total figure of remuneration (£'000)

						Incentive - STIP payment		Value of LTIP awards vesting[1]			
Executive Director	Year	Base salary	Benefits	Pension	Total fixed	Cash	Deferred shares	Face value	Share price appreciation	Total variable	Single total figure
Jakob Stausholm (Chief Executive)	2024	1,277	168	179	**1,624**	636	636	452	216	**1,940**	**3,564**
Jakob Stausholm (Chief Executive)	2023	1,227	110	172	**1,509**	692	692	4,425	993	**6,802**	**8,311**
Peter Cunningham (Chief Financial Officer)	2024	756	44	106	**906**	376	377	45	21	**819**	**1,725**
Peter Cunningham (Chief Financial Officer)	2023	726	43	102	**871**	409	410	361	81	**1,261**	**2,132**

1. Dividend equivalent shares are applied on the vesting of the LTIP awards and, for the purposes of this table, are valued at the grant price for the LTIP awards and included in the face-value figure. The impact of share price change for LTIP awards vesting is included under the heading "share price appreciation". The value of the LTIP awards reported in 2023 has been restated to reflect the actual vested value.

The LTIP face value for 2024 is based on the number of PSA shares due to vest for the performance period ending 31 December 2024 (including dividend equivalents accrued throughout the vesting period), valued at the share price on the grant date. Any impact of share price movement over the vesting period is shown under the share price appreciation column. The decrease in values for LTIP award vesting for the Executive Directors reflects the lower vesting outcomes for the 2020 PSA relative to the 2019 PSA.

The 2024 face value and the share price appreciation figures shown above are estimates of both the number of shares that will ultimately vest and the share price on vesting. Once actual values are known these estimates will be restated in the following year. Refer to page 134 for further detail.

Fixed remuneration

Base salary

In 2024, a comprehensive review of base salaries was undertaken for the Executive Committee to ensure they remain competitive in the market. The Chief Executive's March 2025 salary increase is at a premium of 6.8% to the 3% general increase awarded to UK employees. Further detail is set out in the Annual statement by the People & Remuneration Committee Chair. The Chief Financial Officer's base salary increase is in line with that awarded to the wider UK employee population in 2025 of 3%. Base salaries are reviewed with a 1 March effective date.

Executive Director	Annual base salary 1 March 2024 £'000	Annual base salary 1 March 2025 £'000	% change
Jakob Stausholm	1,285	1,411	9.8%
Peter Cunningham	761	784	3.0%

Benefits (2024)

Include healthcare, allowance for professional tax compliance services, occasional spouse travel in support of the business which is deemed to be taxable to the individual, and non-performance based awards under the all-employee share plans.

Pension (2024)

Pension benefits can either be paid as contributions to Rio Tinto's company pension fund, as a cash allowance, or both.

Executive Director	Pension contributions paid to the Rio Tinto pension fund £'000	Cash in lieu of pension contributions paid £'000	Total £'000	Pension provision (% of base salary)
Jakob Stausholm	10	169	179	14%
Peter Cunningham	10	96	106	14%

Short-term incentive plan (2024)

2024 outcome

For an executive's STIP outcome, the weighted STIP financial and strategic scorecard results are added to determine the total result. The resulting STIP is delivered equally in cash and deferred shares.

	Weighted result (out of 100%)							Delivered in:		Percentage of:		
Executive Director	Financial (50%)[1]	Strategic (50%)[2]	Group scorecard result (%)	Fatality deduction (%)	STIP (% of base salary)	Base salary £'000	STIP outcome £'000	Cash £'000	Deferred shares £'000	Max awarded	Max forfeited	Target awarded
Jakob Stausholm	23.1%	31.9%	55%	(10)%	99%	1,285	1,272	636	636	49.5%	50.5%	99%
Peter Cunningham	23.1%	31.9%	55%	(10)%	99%	761	753	376	377	49.5%	50.5%	99%

1. The financial scorecard includes flexed financials (underlying EBITDA and free cash flow), focusing on the achievement of financial plan commitments and unflexed financials (underlying EBITDA and free cash flow) aligned to market conditions for our commodities.
2. The strategic scorecard includes Excel in Development (exploration progression, studies progression and project execution metrics), Impeccable ESG (safety and decarbonisation metrics), People & Culture (gender diversity and culture change progress metrics) and Social Licence (reputation metric).

Maximum STIP award is capped at 200% of base salary. Target performance represents 50% of maximum and outstanding performance represents 100% of maximum.

Half of the STIP award will be paid in cash in March 2025, and the remainder will be delivered in deferred shares as a BDA, vesting in December 2027. On cessation of employment, any unvested deferred shares will lapse unless the Committee decides the executive is an eligible leaver.

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2024 short-term incentive plan measures

STIP Component	Commentary
Financial (Weighting: 50%)	For 2024, the financial measures were underlying EBITDA and STIP free cash flow. The first, underlying EBITDA, gives insight to cost management, production and performance efficiency. This is further described on page 168. A reconciliation of Profit after Tax for the year to underlying EBITDA is provided on page 168. STIP free cash flow demonstrates how we convert underlying earnings to cash and provides further insight into how we are managing costs, efficiency and productivity. STIP free cash flow comprises free cash flow (as reported on page 272), adjusted to exclude dividends paid to holders of non-controlling interests in subsidiaries (of $0.5 billion) and development capital expenditure (of $5.3 billion, including development capital expenditure associated with decarbonisation). This adjusted metric excludes the impact of those components of free cash flow that are not directly related to performance in the year and therefore better represents underlying business performance.
Strategic (Weighting: 50%)	**Impeccable ESG (20%)** aims to promote safety in all its aspects and progress decarbonisation efforts as we work towards achieving our ambition to reduce Scope 1 and 2 emissions by 2030. Safety measures a combination of our safety maturity model (SMM) and all-injury frequency rate (AIFR). The safety outcome is underpinned by an assessment of conformance with the GISTM for "high" and "very high" classification tailings facilities. Decarbonisation measures progress of carbon abatement projects against incremental stages of development. **Excel in Development (10%)** aims to incentivise a growth mindset by focusing on exploring new opportunities, prospecting new sites, technology, and innovation. It measures performance in exploration, studies and project execution. Exploration progress focuses on the opportunities coming out of the exploration pipeline and moving into formal studies. Studies progression assesses the number of studies approved to progress to project execution phase. Project execution measures our execution progress in creating growth opportunities and closure projects across the Rio Tinto portfolio. **People & Culture (10%)** aims to improve diversity, create an inclusive work environment in which people can thrive, accelerate our culture change and reinforce our values. It encompasses gender diversity and culture progress metrics. Gender diversity measures the year-on-year increase in representation of women in our organisation. Culture progress reflects the change in organisational culture as indicated by our employee engagement survey. **Social Licence (10%)** is included as an indicator of our ability to build trust and acceptance with our external community of stakeholders. The general public perception in key countries is reflected by a reputation score measured via a third-party survey provider, RepTrak.

Calculation of 2024 short-term incentive plan award

The following table summarises the calculation of the 2024 STIP award against the Group scorecard for the Executive Directors.

Group scorecard outcome

		Weighting (out of 100%)	2024 performance[1]			Outcome	Result (% of maximum)	Weighted result (out of 100%)
			Threshold	Target	Maximum			
Underlying EBITDA	Unflexed	12.5%	$16.3 billion	$23.3 billion	$30.2 billion	23.3 billion	50%	6.3%
	Flexed	12.5%	$17.1 billion	$24.4 billion	$31.7 billion		43%	5.3%
STIP free cash flow	Unflexed	12.5%	$8.0 billion	$11.4 billion	$14.8 billion	11.6 billion	53%	6.6%
	Flexed	12.5%	$8.7 billion	$12.4 billion	$16.1 billion		39%	4.9%
Total Financial		**50%**					**46.3%**	**23.1%**
Impeccable ESG	AIFR[2]	3.3%	0.44	0.38	0.3	0.37	56%	1.9%
	SMM[3]	6.7%	5	5.5	6.5	5.4	45%	3.0%
	Decarbonisation[4]	10%	5Mt CO_2e	7Mt CO_2e	9Mt CO_2e	8.3Mt CO_2e	75%	7.5%
Excel in Development	Exploration progression[5]	2.5%	1	2	3	3.75	100%	2.5%
	Studies progression	2.5%	2 studies	3 studies	4 studies	4 studies	100%	2.5%
	Project execution	5%	25%	50%	75%	75%	100%	5.0%
People & Culture	Gender diversity	5%	25.3%	25.8%	26.3%	25.2%	0%	0%
	Culture progress	5%	70	71	72	70	25%	1.3%
Social Licence	Reputation	10%	55.8 or below	57.8 to 59.8	61.8 or above	60.9 + strong improvement in key areas[6]	82.5%	8.3%
			plus qualitative Social Licence review[6]					
Total Strategic		**50%**					**63.8%**	**31.9%**
Total Group		**100%**						**55%**
Fatality deduction						10% reduction to STIP outcome		
Adjusted Group scorecard outcome								**49.5%**

1. No payout below threshold. Threshold payout is nil for financial measures and Social Licence and 25% of maximum for the other strategic measures. Payout for achieving target corresponds to 50% of maximum, going up in a straight line to outstanding, which represents 100% of maximum.
2. AIFR assesses the number of injuries per 200,000 hours worked by employees and contractors at managed operations. It includes medical treatment cases, restricted workday and lost-day injuries.
3. The Group STIP SMM result is the average of the SMM scores achieved by the individual assets included in the safety maturity program.
4. For Decarbonisation, the progress of carbon abatement projects against incremental stages of development is calculated as the expected 2030 carbon reduction, measured in tonnes of CO_2e, contributed by each abatement project that passes a stage-gate during the calendar year. The scope is restricted to direct abatement initiatives under the global "6+1" decarbonisation program, including approved renewable energy, abatement and energy efficiency projects. Nature-based solution (NbS) offset projects are not in scope. The outcome for 2024 partially includes abatement projects relating to deprioritised assets and projects where the abatement timeframe may extend into 2031, therefore the Committee has capped the resulting outcome at 75% of maximum.
5. Three Conceptual Study (CS) projects were completed in 2024 and each is assigned a value of 1 point. One project advanced to CS and is assigned a value of 0.5 points. Also, one project progressed from Target Testing to Project of Merit and is assigned a value of 0.25 points, resulting in a weighted outcome of 3.75.
6. Qualitative review comprising of community insights from Local Voices and Social Licence self-assessments both showing strong results in 2024 (see commentary on page 131).

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STIP Group scorecard commentary

Commentary on financial measures

Unflexed performance for our financial performance measure of 51.6% was slightly above target. Whilst this included an uplift from higher copper and aluminium prices, the benefit of higher prices compared to plan was modest compared to previous years, and the financial outcome was underpinned by improved operational stability across most of our operations. **Flexed performance** to remove the impact of commodity prices and foreign exchange rates gives us an indication of underlying business performance. Our flexed performance reflects the shortfall in planned production volumes and resulting shipments at a number of our sites. This included lower mined copper volumes from Kennecott due to geotechnical instabilities in the pit wall, higher than average rainfall in the Pilbara, and operational challenges encountered at IOC.	However, underlying performance across the majority of the Group was solid and increasingly predictable as the benefits of the Safe Production System continued to unlock value in our assets. Production was notably strong in Aluminium, with annual record production at Amrun and Gove, resulting in bauxite production 8% higher than plan. Based on these factors, the flexed component is modestly below target for EBITDA (at 42.6%) and STIP free cash flow (at 39.2%). In line with our standard STIP principles, STIP free cash flow was adjusted by $259 million to effectively remove the unplanned cash flow impact of a one-off investment that reduces our exposure to closure obligations over the longer term.	**Outcome: Below target (at 46.3% of maximum)**

Commentary on strategic measures

Impeccable ESG

Safety is our number one priority, and we are saddened to have tragically lost 5 colleagues in 2024. In 2024, we maintained our AIFR performance of 0.37, exceeding the annual target of 0.38. As part of our continual improvement, we have also seen an uplift of 0.4 in our SMM assessments score, against a target improvement of 0.5, resulting in a SMM global score of 5.4. We have also exceeded the target for our GISTM implementation plans for all classifications of tailings facilities in 2024. We have had no incidents with off-lease tailings releases at any of our facilities.	**Decarbonisation** measures the progress of carbon abatement projects against incremental stages of development. Climate change and the low-carbon transition is at the heart of our strategy. We have set ambitious commitments to reduce carbon emissions (CO_2e) from our business by 50% relative to 2018 levels by 2030, and achieve net zero Scope 1 and 2 emissions by 2050. 2024 was Rio Tinto's best year for decarbonisation with absolute Scope 1 and 2 emissions reducing by 3.2 Mt CO_2e during the year. We remain on track to achieve our 2030 and 2050 ambitions. A total of 28 projects progressed through a development stage during the year.	**Outcome: Above target (at 62% of maximum)**

Excel in Development

Excel in Development encompasses goals focusing on exploration progression, studies progression and project execution. **Exploration progression** develops a dynamic portfolio of projects that are rigorously prioritised and rapidly tested. Exploration progression focuses on the opportunities coming out of the exploration pipeline and moving into formal studies, including Conceptual Studies completed with a decision to hold, divest or advance to Order of Magnitude (OoM), studies advancing from Projects of Merit (PoM) to Conceptual Study (CS) phase, and studies advancing from Target Testing (TT) to PoM. Three CS projects were completed this year, one project advanced to CS and another project progressed from TT to PoM, resulting in an outstanding weighted score of 3.75.	**Studies progression** of 5 studies in 2024, with 4 studies obtaining Notice to Proceed in the year. This included Cape Lambert High Density Ore and Brockman Syncline 1 programs. Full project sanction was achieved for the Simandou and Hope Downs 1 Sustaining Studies in 2024. This outstanding result provides diversified growth opportunities across commodities of Copper, Aluminium and Iron Ore. **Projects execution** refers to the percentage of in-flight and completed projects on track against the Investment Committee plan. Throughout 2024, we made strong progress on a range of projects. Nine out of 12 projects remained on track with the approved Investment Committee plans. A significant milestone was also achieved with the Autonomous Haulage System in Western Range going live in 2024. Project Shafts 3 and 4 for Oyu Tolgoi underground mine were also commissioned in 2024, and are now fully operational.	**Outcome: Outstanding (at 100% of maximum)**

People & Culture

Our People & Culture scorecard focuses on driving culture change and improving gender diversity. **Gender diversity** in 2024 was focused on both increasing the number of women and changing the culture to become more inclusive. The representation of women across our business remains a challenge. While we were able to increase the representation of women in 2024 from 24.3% to 25.2%, this result was below the threshold of 25.3%.	**Culture change progress** measures the change in our organisation's culture, as indicated by the results of the employee engagement survey. The result from the employee engagement survey at the end of 2024 was 70.19, rounded down to 70. This result was below the target of 71 and represents threshold performance.	**Outcome: Below target (at 12.5% of maximum)**

Social Licence

Reputation as the Social Licence metric focuses on building trust in and support of Rio Tinto within the communities where we work. The general public perception in selected countries is reflected by a reputation score measured by RepTrak. The 2024 result was 60.9, above the target range of 57.8 to 59.8 and a significant improvement on the score of 58.8 in the prior year. This score is a weighted, global aggregate made up of results from Australia, Canada, Mongolia, New Zealand, South Africa, the UK and the US. For 2024, the Committee also took into account the roll-out of Local Voices (our community perception monitoring program) to 50% of our assets and the emerging insights from the deployment, as well as the outcomes of our Social Licence self-assessments in 14 assets across all product groups that demonstrated clear year-on-year improvement. Considering both the reputation score and qualitative assessment the Committee determined an outcome of 82.5% of maximum.		**Outcome: Above target (at 82.5% of maximum)**

Fatality deduction

A deduction was applied to reflect the tragic work-related fatalities of 2024. Further detail is set out in the Annual statement by the People & Remuneration Committee Chair.

Commentary on individual performance

Jakob Stausholm

Individual multiplier outcome: Not applied

Strategic objectives	Performance Assessment
Best Operator Strong financial performance and prioritisation of Best Operator to enhance competitiveness (Outcome: At target)	– Delivered significant progress towards stable, sustainable operating performance with strong financial results, benefiting from diversified portfolio and progress on growth projects. Continued uplift in technical skills across the organisation. – Achieved a 1% increase in production alongside a 3% rise in sales volumes. – Accelerated the roll-out of SPS which is now in place at 31 sites (80% of our sites- up from 60% in 2023), underlining our commitment to be the best operator. This included success in delivering our SPS target at our Pilbara Iron Ore operations of a 5Mt uplift. – Continued focus on performance required at IOC, Kennecott copper operations, and RTIT Quebec Operations to extract further shareholder value. – Drove significant cultural transformation and leadership development that propelled our progress in 2024 toward becoming Best Operator.
Impeccable ESG Maintain relentless focus on safety; and advance our decarbonisation strategy (Outcome: At target)	– We were devastated by the loss of 5 colleagues in 2024, the first work-related fatalities since 2018. Safety remains our highest priority. – On decarbonisation, delivered our most productive and promising year against our ambitions - reduced approximately 3Mt CO_2e - keeping us on track to achieve our 2030 and 2050 targets. This performance was delivered through a robust portfolio of reduction initiatives across the Group, including 13 major projects that will contribute substantial additional carbon reductions by 2030, including significant progress on repowering our Gladstone assets. Scope 3 emissions reduction initiatives were also progressed through the development of BioIron and electric smelting trials in Western Australia. – Led the public release of the *Everyday Respect Progress Review* showing improvement and momentum. – Intensified focus on tailings storage management with implementation exceeding targets. In addition, achieved full control for ERA closure.
Excel in Development Grow and diversify our portfolio (Outcome: Above target)	– Executed a comprehensive review of corporate strategy and portfolio mix, with an extensive focus on our growth portfolio. – Led a significant shift in our portfolio by expanding our lithium business. Executed the agreement to acquire Arcadium Lithium plc, the Group's largest acquisition for many years which will position Rio Tinto as a global leader in energy transition commodities. Lithium growth was further supported by the commitment to invest $2.5 billion to expand the Rincon project in Argentina following the achievement of first lithium production at the Rincon project in November 2024. – Delivered significant ramp-up of production at the Oyu Tolgoi mine in Mongolia and on course for further increase with the commissioning of ventilation shafts 3 and 4. – Achieved major progress at the Simandou iron ore project in Guinea with all approvals obtained and conditions satisfied in 2024. The project is now on track to deliver first production at the mine gate in 2025. – Five replacement iron ore projects were advanced in the Pilbara, including Western Range, where first iron ore production is scheduled for the first half of 2025. – Refocused our partnerships including adding Sumitomo Metal Mining (buying 30% of Winu) and continued work at Nuevo Cobre, Chile with Codelco. In addition to buying out partners in other areas including purchasing Mitsubishi's stake in BSL and Sumitomo's stake in New Zealand Aluminium Smelters. – Strong achievements in project execution, with major projects such as Western Range, Oyu Tolgoi Underground and Simandou being delivered on schedule and within budget.
Social Licence Improve our social licence to operate by strengthening engagement with key stakeholders (Outcome: Above target)	– Personally led significant efforts in strengthening key relationships with governments (particularly in Canada, China, Chile, Argentina, Guinea, South Africa and Madagascar) and civil society. Much progress made on enhancing transparency, building trust and demonstrating an understanding of society's needs. – Executed significant agreements in New Zealand and Western Australia securing our longer-term future in these markets. – Significant progress in regaining trust with a wide range of traditional owners,.

Peter Cunningham

Individual multiplier outcome: Not applied

Strategic objectives	Performance Assessment
Best Operator Strong financial performance and prioritisation of Best Operator to enhance competitiveness (Outcome: At target)	– Upgraded performance management and supported a disciplined performance around costs and headcount. – Led work to drive improvement around support costs and planning. – Drove work around the renewal of core systems (Finance, HR, HSE) and studies around the renewal of the SAP Real Time Business Suite of tools, plus initial investments in digital/AI. – Delivered an effective 2025 planning process centred around the need to drive enhanced competitiveness.
Impeccable ESG Maintain relentless focus on safety; and advance our decarbonisation strategy (Outcome: At target)	– Accelerated implementation of enhanced risk management through the Three Lines of Defence program. – Continued to support improvements to decarbonisation investment through the capital allocation framework and ongoing performance management.
Excel in Development Grow and diversify our portfolio (Outcome: Above target)	– Led the successful redevelopment of the 2024 strategy process with delivery through agile teams brought together to solve clear business problems. – Implemented substantial changes to the Group's evaluation framework to enable a deeper focus on the most important strategic decisions at the Investment Committee. – Continued to enhance the EiD forum to ensure momentum around the investment pipeline. – Supported industry analysis and investment decision-making around major investments (Rincon) and mergers and acquisitions (Arcadium). – Maintained consistent and disciplined capital allocation framework.
Social Licence Improve our social licence to operate by strengthening engagement with key stakeholders (Outcome: Above target)	– Further developed a comprehensive capital allocation process to promote investment decisions and further build partnerships and capabilities. – Supported investment for creating growth options and social licence through targeted exploration and evaluation, communities and social performance (CSP) and social investment, decarbonisation, and research and development.

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2025 short-term incentive plan

This section outlines the operation of the 2025 short-term incentive plan (STIP).

2025 short-term incentive plan measures and weightings

Financial scorecard dimension	Weighting	What does it measure?	Commentary
Underlying EBITDA – unflexed	12.5%	Underlying EBITDA is a segmental performance measure and represents profit before tax, net finance items, depreciation and amortisation.	Underlying EBITDA is the prominent financial measure of underlying business performance on an income statement basis. The core objectives of robust operational performance and disciplined cost management are well reflected in underlying EBITDA. The underlying EBITDA target for STIP purposes is based on the Group's annual plan, calibrated to reflect production guidance communicated at the start of the year.
Underlying EBITDA – flexed	12.5%	Underlying EBITDA, adjusted for the impact of commodity prices and foreign exchange rates.	Removing the impact of commodity prices and foreign exchange rates gives us a stronger indication of the underlying EBITDA outcome of our underlying business performance, aligned to the core objective of Best Operator.
STIP free cash flow – unflexed	12.5%	STIP free cash flow comprises free cash flow adjusted to exclude dividends paid to holders of non-controlling interests in subsidiaries and development capital expenditure (including development capital expenditure on decarbonisation projects).	STIP free cash flow demonstrates how we convert underlying EBITDA to cash and provides further insight into how we are managing efficiency and productivity, including working capital and sustaining capital. The STIP free cash flow target is based on the Group's annual plan, calibrated to reflect production guidance communicated at the start of the year.
STIP free cash flow – flexed	12.5%	STIP free cash flow, adjusted for the impact of commodity prices and foreign exchange rates.	Removing the impact of commodity prices and foreign exchange rates gives us a stronger indication of the free cash flow outcome of our underlying business performance, aligned to the core objective of Best Operator.
Total weighting	**50%**		

Strategic scorecard dimension	Weighting	What does it measure?	Commentary
Impeccable ESG			
Decarbonisation	10%	Progress of moving carbon abatement projects through the various stages of development all the way to execution to meet our decarbonisation ambition.	Provides focus on progressing at pace and optimising the resource deployment of decarbonisation projects.
Safety index	10%	AIFR as a lag indicator and SMM at our assets as a lead indicator, which includes maturity of safety leadership, including psychological safety. Conformance to GISTM is set as an underpin.	Safety is at the heart of everything we do. The safety index provides focus on the importance of continuing to embed and strengthen our safety culture.
People & Culture			
Diversity	5%	Improving representation of women at Rio Tinto.	The ongoing focus on improving gender representation is an important contributor to advancing our culture-change agenda. Using trends in responses and scores to our engagement surveys, we also demonstrate to what extent our culture is changing. Both of these are important factors as we continue to transform our culture in response to the findings of the 2022 *Everyday Respect Report*.
Culture	5%	Measuring progress in our culture-change journey.	
Excel in Development			
Exploration, studies and project execution	10%	Performance in exploration, studies and project delivery.	Exploration, studies and project execution identifies opportunities for growth and enhancing orebody reserves across our portfolio, while keeping focus on the importance of executing to time and budget.
Social Licence			
Reputation	10%	Indicators of progress made in building acceptance and trust across a broad set of stakeholders, including, but not only, communities, governments, customers, suppliers and civil society.	General public perception measured through a reputation score and community perception measured through localised surveys. The Social Licence measures continue to form a key part of our strategy to build trust and meaningful relationships with our community of stakeholders.
Total weighting	**50%**		

A fatality deduction of a least 10% will be applied in the event of work-related fatalities. This deduction, combined with the 10% weighting of the safety index maintains the prominence of safety in the STIP structure. The specific targets for the 2025 STIP are considered by the Board to be commercially sensitive. These will be disclosed alongside the outturn retrospectively in the 2025 Implementation report.

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Long-term incentive plan

PSA granted in 2020 were based on 2 performance conditions, both measured over a 5-year performance period:

- TSR relative to the EMIX Global Mining Index – 50%
- TSR relative to the MSCI World Index – 50%

The performance outcome against the EMIX Global Mining Index and MSCI World Index was 25.5% and 0% respectively, resulting in an overall vesting of 12.75%. The value of the shares vesting included in the single total figure of remuneration table for 2024 is an estimate, as the actual value can only be determined once the share price and final application of dividend equivalents on vesting are known.

The disclosed value is based on:

- The approved TSR outcome relative to the EMIX Global Mining Index (transitioned to the S&P Global Mining Index from 1 August 2023 following the decommissioning of the EMIX on 31 July 2023) and MSCI World Index, with associated dividend equivalent shares.
- The average share prices for Rio Tinto plc and Rio Tinto Limited over the last quarter of the 5-year performance period (Q4 2024).

The actual value associated with the 2020 PSA vesting will be disclosed in the 2025 Remuneration report.

Calculation of 2020 PSA vesting

The dual TSR measures recognise that the company competes in the global market for investors as well as within the mining sector, and rewards executives for returns over the long term that outperform both the broader market and the mining sector.

Index	Threshold (22.5% of maximum)	Maximum (100% of maximum)	Actual TSR outperformance	Weighting	Vesting outcome
S&P Global Mining Index[1]	Equal to Index	Index + 6% p.a.	Index + 0.2% p.a.	50%	25.5%
MSCI World Index	Equal to Index	Index + 6% p.a.	Index - 0.2% p.a.	50%	0%

1. The EMIX Global Mining Index was decommissioned on 31 July 2023 and therefore it was necessary to identify a replacement index for the remainder of the performance period. The Committee considered a range of alternative indices and determined that S&P's replacement index (the S&P Global Mining Index) was the most suitable, given the overlap in constituents and close correlation in performance. TSR performance was calculated by our independent remuneration consultants tracking the EMIX Global Mining Index to 31 July 2023 and the S&P Global Mining Index thereafter. This methodology will apply to all relevant outstanding PSA.

Executive Director	Year included in single figure	Award	Overall vesting %	Dividend equivalents	Dividend equivalents (% of shares vesting)	Shares (including dividend equivalents)	Share price	PSA outcome (£'000)[1]
Jakob Stausholm	2024	2020 PSA	12.75%	3,926	41%	13,451	£49.67	£668
Peter Cunningham	2024	2020 PSA	12.75%	389	41%	1,335	£49.67	£66

1. The PSA outcome is an estimate based on the average share price over the last quarter of 2024.

For reference, the 2019 PSA vested at 94.1% on 22 February 2024 with Rio Tinto plc and Rio Tinto Limited share prices of £51.51 and A$125.80 respectively (closing share price on the day prior to vesting). Dividend equivalents for the Executive Directors were equal to 38% of the vested awards.

Long-term incentive plan awards granted in 2024

These awards are subject to TSR performance relative to the constituents of the S&P Global Mining Index (53.3%) and MSCI World Index (26.7%), and a decarbonisation scorecard as set out in the Performance measures section below.

Executive Director	Type of award	Grant date	Face value of award (% of base salary)	Face value of award (£'000)	% of vesting at threshold performance	Grant price[1]	Conditional shares awarded	End of the period over which the performance conditions have to be fulfilled	End of holding period
Jakob Stausholm	PSA	9 May 2024	500%	6,424	22.5%	£53.43	120,232	31 December 2026	February 2029
Peter Cunningham	PSA	9 May 2024	500%	3,804	22.5%	£53.43	71,195	31 December 2026	February 2029

1. In line with the Policy, the grant price for PSA is determined by reference to the average share price for the calendar year prior to the year of grant. The grant price of £53.43 represents the Rio Tinto plc average share price for 2023.

Long-term incentive plan awards due to be granted in 2025

Executive Director	Type of award	Face value of award (% of base salary)	Face value of award (£'000)	% of vesting at threshold performance	Grant price[1]	Conditional shares to be awarded	End of the period over which the performance conditions have to be fulfilled	End of holding period
Jakob Stausholm	PSA	500%	7,054	22.5%	£51.35	137,361	31 December 2027	February 2030
Peter Cunningham	PSA	500%	3,918	22.5%	£51.35	76,299	31 December 2027	February 2030

1. In line with Policy, the grant price for PSA is determined by reference to the average share price for the calendar year prior to the year of grant. The grant price of £51.35 represents the Rio Tinto plc average share price for 2024.

Performance measures

For PSAs granted in 2024 and 2025, 80% of the award is based on relative TSR measured on a weighted ranked basis against constituents of a sector and a broader market index. Two-thirds of the TSR element will be measured relative to sector peers (constituents of the S&P Global Mining Index) and the remaining one-third measured against a broader market reference point (constituents of the MSCI World Index). The remaining 20% of the award will be based on strategic measures linked to decarbonisation.

Performance measures	Threshold (22.5% of maximum)	Maximum (100% of maximum)	Weighting
Relative TSR vs constituents of the S&P Global Mining Index	Median	Upper quartile	53.3%
Relative TSR vs constituents of the MSCI World Index	Median	Upper quartile	26.7%
Decarbonisation scorecard	see page 135	see page 135	20.0%

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Decarbonisation

Given the scale and complexity of our emissions portfolio and our decarbonisation ambitions, as well as the multi-year timeframe for this transition, performance and progress will be assessed using a balanced scorecard. The decarbonisation scorecard includes a combination of metrics that address opportunities and risks from the energy transition to incentivise long-term competitive advantage. The balanced scorecard includes the following 4 equally weighted elements assessed over the 3-year performance period:

Objective	Details
Residual emissions	– This provides a measure of actual reduction in Scope 1 and 2 emissions with targets set taking into account the Group's stated ambition of a 50% reduction by 2030 (relative to our 2018 baseline). Achieving the maximum outcome would be consistent with the linear trajectory required to achieve the 2030 ambition. – The Committee will take into account the relative contribution of nature-based offsets directly associated with Rio Tinto landholdings or those of its joint ventures when assessing performance. The contribution will be capped at 10% of the reduction and for any outcome above target the contribution from offsets will be ignored.
Project delivery	– The successful delivery of abatement projects will be fundamental to achieving our stretching decarbonisation objectives. – Working with the Decarbonisation Office, the Committee identifies a number of priority decarbonisation projects for which investment approval has been granted, or is expected to be granted in the near future. Four projects for the 2024-2026 performance period were approved by the Committee during 2024. For the 2025-2027 performance period, there are currently 4 projects identified for which investment approval is expected prior to the end of the first half of 2025. – At the end of the 3-year performance period, there will be an assessment of project delivery measuring conformance to plan for both spend and schedule. Using a predetermined framework, each project will be assigned a score out of 10 and vesting will be determined based on the average score of the projects.
Technology development	– Progressing towards net zero will require technology advancement and research and development breakthroughs that convert into implemented projects. – This metric assesses Group spend committed to research and development and the successful implementation of projects that have a meaningful impact on the abatement of emissions (including spend associated with reducing Scope 3 emissions).
Transition strategy	– This measure aligns decarbonisation activity with our value creation strategy, specifically in building new capabilities or commitments towards new growth assets. – For the 2024-2026 performance period, 3 transition strategy outcomes that are are significant to Group value were selected, namely: Pacific Operations (PacOps) decarbonisation; aluminium and copper recycling and ELYSIS™ implementation. For the 2025-2027 scorecard, PacOps decarbonisation and aluminium recycling will be retained, alongside a new initiative, lithium growth replacing ELYSIS™ implementation. For the PacOps and recycling initiatives being retained on the scorecard, they will be assessed only on performance achieved during 2025-2027, noting they are also on the 2024-2026 scorecard. – At the end of the 3-year performance period, each transition strategy will be assigned a score out of 10 using a predetermined framework and vesting will be determined based on the average score of the transition objectives.

The targets under each element of the scorecard for the 2024 and 2025 awards, as well as an update on how performance is tracking over the first year of the performance period for the 2024 award, are summarised below. Based on the performance to date, the best estimate of the potential vesting outcome for the 2024 award is tracking between threshold and target.

Objective	LTIP weighting	Threshold (22.5% of maximum)	Target (50% of maximum)	Maximum (100% of maximum)
Residual emissions Reduction in residual emissions relative to 2018 baseline, adjusted for changes in equity	5%	3.8Mt CO_2e	5.3Mt CO_2e	6.9Mt CO_2e
2024 performance update: Tracking around threshold - reported emissions at the start of the award period were 33.9Mt CO_2e adjusted for increased equity at Boyne Smelters and New Zealand Aluminium Smelter, with a net reduction of 3.5Mt for the purposes of the scorecard delivered in the first year of the award. Projected emissions reductions to 2030 are expected to be weighted to the end of the decade.				
Project delivery Conformance to plan for priority decarbonisation projects	5%	Average score of at least 6 out of 10 being a maximum deviation of 25% from planned cost and schedule	Average score of at least 8 out of 10 being a maximum deviation of 15% from planned cost and schedule	Average score of at least 9 out of 10 being less than 10% deviation from planned cost and schedule
2024 performance update: Tracking to target – 4 projects have been included in the assessment of this metric, each of which is a committed project. The projects are early in their development cycle and remain materially in conformance with cost and schedule.				
Technology development Technology advancements and research and development breakthroughs that convert into implemented projects	5%	0.2% of Group revenue on decarbonisation research and development spend At least one project into implementation totalling 250kt annual abatement	0.4% of Group revenue on decarbonisation research and development spend At least one project into implementation totalling 500kt annual abatement	0.5% of Group revenue on decarbonisation research and development spend At least 2 projects into implementation totalling 750kt annual abatement
2024 performance update: Tracking to target - spend on research and development is tracking within target range, with several projects expected to proceed into implementation later in the performance period.				
Transition strategy Alignment of decarbonisation activity with value creation	5%	Average score of at least 6 out of 10 representing more limited progress	Average score of at least 8 out of 10 representing good progress towards strategic goals, some areas of outperformance, substantially achieved or on track to deliver major objectives, or progress with no major failures or impacts on broader performance of the Group	Average score of at least 9 out of 10 representing significant outperformance of expectations, implementation achieved or a major new advancement with scope for material benefits
2024 performance update: Tracking around threshold – significant progress including signing new repowering contracts for our Pacific Operations, including at Boyne Smelters and New Zealand Aluminium Smelter to strengthen their future. For ELYSIS™ implementation, commitments have been made to install carbon-free aluminium smelting cells at Arvida using the first technology licence issued by the ELYSIS™ joint venture.				

The Committee will retain discretion in determining vesting outcomes and where required will adjust targets or baselines in relation to any material changes to the portfolio, such as following acquisitions, divestments or closure.

Executive Directors' shareholding

In line with our share ownership policy, Executive Directors' shareholdings are set based on owning a fixed number of Rio Tinto shares.

Executive Director	Year requirement needs to be met	Effective holding of Rio Tinto plc ordinary shares		
		Requirement	31 December 2024	31 December 2023
Jakob Stausholm	2025	**120,000**	**193,740**	**107,115**
Peter Cunningham	2027	**60,000**	**81,601**	**68,568**

The shareholdings shown above include 50% of the number of unvested BDA held by each executive.

We operate a post-employment holding requirement for Executive Directors, but no former Executive Directors are currently subject to a holding requirement.

Service contracts

Executive Director	Position held during 2024	Date of appointment to position	Notice period
Jakob Stausholm	Chief Executive	1 January 2021	12 months
Peter Cunningham	Chief Financial Officer	17 June 2021	12 months

Either party can terminate their contract with notice in writing, or immediately in the case of the company by paying the base salary only in lieu of any unexpired notice.

Executives' external and other appointments

Neither of the Executive Directors currently has an external directorship.

Past director payments

There were no payments to past directors in excess of the de minimis threshold of £15,000.

Chief Executive's remuneration over time

Year	Chief Executive	Single total figure of remuneration ('000)	Annual STIP award against maximum opportunity	Long-term incentive vesting against maximum opportunity (PSA)
2015	Sam Walsh	A$9,141	81.9%	43.6%
2016	Sam Walsh[1]	A$5,772	68.2%	50.5%
2016	Jean-Sébastien Jacques	£3,116	82.4%	50.5%
2017	Jean-Sébastien Jacques	£3,821	73.4%	66.7%
2018	Jean-Sébastien Jacques	£4,551	70.1%	43.0%
2019	Jean-Sébastien Jacques	£5,999	74.8%	76.0%
2020	Jean-Sébastien Jacques	£8,670	0.0%	66.7%
2021	Jakob Stausholm[2]	£2,788	61.3%	0.0%
2022	Jakob Stausholm	£5,010	48.7%	100.0%
2023	Jakob Stausholm[3]	£8,311	56%	94.1%
2024	Jakob Stausholm	£3,564	49.5%	12.8%

1. STIP award and PSA vesting percentages restated following release from the deed of deferral as described in prior Remuneration reports.
2. Jakob Stausholm joined Rio Tinto in September 2018 and became Chief Executive on 1 January 2021. Therefore, he did not participate in the 2017 LTIP which vested at 66.7% of maximum.
3. The 2023 single total figure of remuneration for Jakob Stausholm reported in the 2023 Remuneration report was £8.45 million, based on the estimated value of the 2019 PSA which vested at 94.1%. The single total figure of remuneration for 2023 shown above is restated and based on the actual vesting share price of £52.16.

The effect of performance on the value of shareholdings, as measured by TSR delivered over the past 5 years, based on the sum of dividends paid and share price movements during each calendar year, is detailed in the table below.

	Underlying earnings	Underlying EBITDA	Dividends paid per share	Share price – Rio Tinto plc pence		Share price – Rio Tinto Limited A$		TSR
Year	$ millions	$ millions	$ cents	1 Jan	31 Dec	1 Jan	31 Dec	Group %
2020	12,448	23,902	386	4,503	5,470	100.4	113.8	34.0%
2021	21,401	37,720	963	5,470	4,892	113.8	100.1	(3.8)%
2022	13,359	26,272	746	4,892	5,798	100.1	116.4	18.3%
2023	11,755	23,892	402	5,798	5,842	116.4	135.7	15.8%
2024	10,867	23,314	435	5,842	4,723	135.7	117.5	(15.4)%

The data presented in this table reflects the dual corporate structure of Rio Tinto. We weight the 2 Rio Tinto listings to produce a Group TSR figure in line with the methodology used for the 2020 PSA.

TSR has been calculated using spot Return Index data as at the last trading day for the year sourced from DataStream.

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Total shareholder return

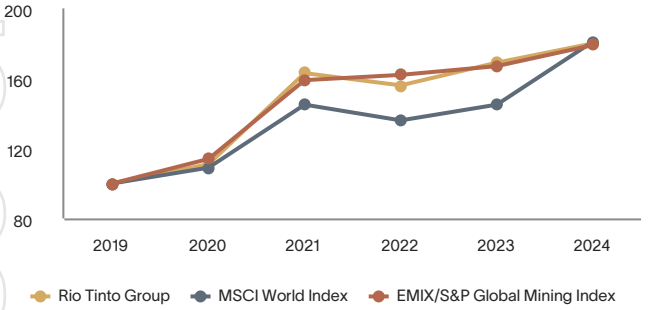
The vesting of the PSA granted in 2020 was subject to relative TSR against the S&P Global Mining Index (transitioned from the EMIX Global Mining Index following its decommissioning in July 2023) and the MSCI World Index.

The graph below shows Rio Tinto's TSR performance for the 2020 PSA. It uses the same methodology as that used to calculate the vesting for the PSA granted in 2020, with a performance period that ended on 31 December 2024.

The following graph illustrates the TSR performance of the Group against the S&P Global Mining Index (and for periods to 31 July 2023 against the EMIX Global Mining Index) and the MSCI World Index over the 10 years to the end of 2024.

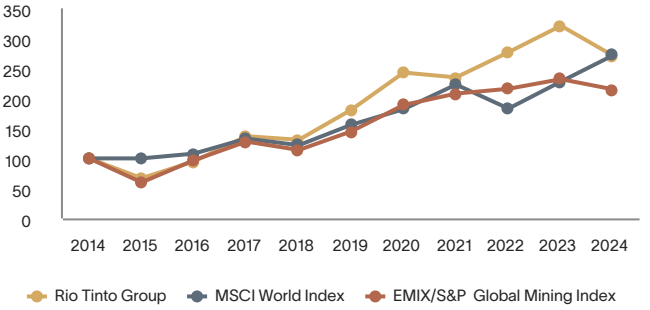
The graph meets the requirements of Schedule 8 of the *UK Large and Medium-sized Companies and Groups (Accounts and Reports) Regulations 2008* (as amended) and is not an indication of the vesting of PSA granted in 2020.

Total shareholder return



1. TSR for the MSCI and EMIX indices has been calculated using 12-month average Return Index data for the year sourced from DataStream.
2. Rio Tinto's Group TSR has been calculated using a weighted average for Rio Tinto plc and Rio Tinto Limited. The weighting is based on the free-float market capitalisation of each entity as at the start of the period.

Total shareholder return



1. TSR has been calculated using spot Return Index data as at the last trading day for the year sourced from DataStream.
2. Rio Tinto's Group TSR has been calculated using a weighted average for Rio Tinto plc and Rio Tinto Limited. The weighting is based on the free-float market capitalisation of each entity as at the start of the period.

Other executive key management personnel

This section sets out remuneration information pertaining to executive key management personnel (KMP) excluding the Chief Executive and the Chief Financial Officer. The Policy applicable to the Executive Directors is also applicable to the other executive KMP with variances specified in this section.

The remuneration mix for other executive KMP under this Policy is set out in the chart below.

2024 Remuneration mix

Maximum



Target



Fixed pay STIP – Cash STIP – BDA LTIP

2024 assumptions

Fixed pay includes base salary, pension and benefits. The value of benefits is estimated at 11% of base salary.

Performance-related (at risk)	
Target STIP and LTIP performance	– STIP award of 50% of the maximum award (equates to 100% of base salary) – PSA expected value of 50% of face value, calculated as 250% of base salary
Maximum STIP and LTIP performance	– Maximum STIP award of 200% of base salary – Maximum PSA face value of 500% of base salary

No assumption has been made for growth in share price and payment of dividend equivalents.

The table below outlines the positions held by the other executive KMP and the respective dates of appointment:

Name	Position(s) held during 2024	Date of appointment to position
Bold Baatar	Chief Executive, Copper	1 February 2021
	Chief Commercial Officer	1 September 2024
Alf Barrios[1]	Chief Commercial Officer	1 March 2021
Sinead Kaufman	Chief Executive, Minerals	1 March 2021
Katie Jackson	Chief Executive, Copper	1 September 2024
Jérôme Pécresse	Chief Executive, Aluminium	23 October 2023
Simon Trott	Chief Executive, Iron Ore	1 March 2021

1. Alf Barrios ceased to be a KMP on 31 August 2024 and he ceased employment on 31 December 2024 following his retirement.

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Base salary

Base salaries for Executive Committee members are reviewed annually by the Committee, with increases generally aligned with the wider employee population in the relevant jurisdiction. Variations may occur in instances in which an individual has changed position, or the position's duties and responsibilities have been enlarged, for example as a result of a reorganisation or acquisition, or where an individual's remuneration has fallen below comparable positions in the market.

Short-term incentive plan

Overview of 2024 short-term incentive plan weightings and measures

The measures and weightings used to determine short-term incentive plan (STIP) awards for executives in 2024 are set out on page 130.

The 2024 STIP awards are detailed in the table below. The amounts set out below reflect the 10% fatality adjustment applied.

			Percentage of:	
	2024 STIP award (% of salary)	2024 STIP award ('000)	Maximum STIP awarded	Maximum STIP forfeited
Bold Baatar	99%	SGD1,247	49.5%	50.5%
Alf Barrios	99%	SGD1,197	49.5%	50.5%
Katie Jackson	99%	GBP208	49.5%	50.5%
Sinead Kaufman	99%	A$1,145	49.5%	50.5%
Jérôme Pécresse	124%	C$1,485	62%	38%
Simon Trott	99%	A$1,347	49.5%	50.5%

Share ownership

The following table shows the share ownership level for other executive KMP as a percentage of their overall requirement which is determined based on 400% of salary.

	Share ownership level at 31 December 2024 as a percentage of requirement
Bold Baatar	211%
Katie Jackson[1]	2%
Sinead Kaufman	103%
Jérôme Pécresse	11%
Simon Trott	85%

1. Katie Jackson joined the Group on 1 September 2024

Share ownership level is set for each individual based on a fixed number of Rio Tinto plc or Limited shares, and we define "share ownership" in our Policy.

Service contracts

KMP service contracts can be terminated by the company or executive with 12 months' notice in writing, or immediately by the company by paying base salary only in lieu of any unexpired notice.

Other KMP appointments

All newly appointed executives have received a remuneration package that is aligned with our Policy and comprises: base salary in line with market benchmarks; target STIP opportunity of 100% of base salary (with maximum opportunity of 200% of base salary); LTIP awards of up to 500% of base salary; company pension contributions of 14% of base salary; and other benefits such as company-provided healthcare coverage, and continued eligibility to participate in the all-employee share plans. A minimum shareholding requirement applies on appointment to be built up over subsequent years.

Executive departures

Alf Barrios ceased to be a KMP on 31 August 2024 and retired from the Group on 31 December 2024. Alf was treated as an eligible leaver for the purposes of STIP and LTIP.

Broader employee disclosures

Chief Executive pay ratio

The ratio of the single total figure of remuneration for the Chief Executive to the lower quartile, median and upper quartile of the Rio Tinto Australian employee population for 2024 is set out in the table below.

	Lower quartile	Median	Upper quartile
2024	46	39	33
2023[1]	114	95	79

1. The 2023 pay ratio data has been restated based on actual pay outcomes for the Chief Executive in 2023.

The median CEO pay ratio of 39:1 is lower than last year, primarily due to materially lower outcomes on long-term incentives for the performance period ending 31 December 2024. The Committee continues to be mindful of the relationship between executive remuneration and that of our broader workforce. The Committee's decision making will continue to be supported by regular and detailed reporting on these matters.

Relative spend on remuneration

The table below shows our relative spend on remuneration across our global employee population and distributions to shareholders in the year. We have also shown other significant disbursements of the company's funds for comparison.

Stated in US$m	2024	2023	Difference in spend
Remuneration paid[1]	**7,055**	**6,636**	419
Distributions to shareholders[2]	**7,025**	**6,470**	555
Purchase of property, plant and equipment, and intangible assets[3]	**9,621**	**7,086**	2,535
Corporate income tax paid[3]	**4,165**	**4,627**	(462)

1. Total employment costs for the financial year as per note 7 to the financial statements.
2. Distributions to shareholders include equity dividends paid to owners of Rio Tinto shares as per the consolidated cash flow statement.
3. Purchase of property, plant and equipment, and intangible assets, and corporate income tax paid during the financial year are as per the consolidated cash flow statement.

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Change in Director and employee pay

In the table below, we compare the annual changes in salary, benefits and annual incentives of the Directors for the past 5 years, to that of the Australian employee population. Column "a" represents the percentage change in salary and fees; values in column "b" represent the percentage change in taxable benefits; and values in column "c" represent the percentage change in annual incentive outcomes for performance periods in respect of each financial year.

	2019 to 2020			2020 to 2021			2021 to 2022			2022 to 2023			2023 to 2024		
	a[1]	b	c	a[1]	b	c	a[1]	b	c	a[1]	b[2]	c	a[1]	b[2]	c[3]
Executive Directors															
Jakob Stausholm	2%	34%	29%	46%	(19)%	25%	2%	94%	(18)%	4%	(15)%	20%	**4%**	**53%**	**(8)%**
Peter Cunningham	–	–	–	–	–	–	–	18%	47%	4%	10%	28%	**4%**	**2%**	**(8)%**
Non-Executive Directors															
Dominic Barton	–	–	–	–	–	–	–	–	–	50%	(84)%	–	**8%**	**213%**	**–**
Simon Henry	3%	(54)%	–	–	64%	–	(6)%	98%	–	(7)%	189%	–	**18%**	**(2)%**	**–**
Sam Laidlaw	8%	(87)%	–	–	51%	–	–	779%	–	–	242%	–	**15%**	**(29)%**	**–**
Simon McKeon	9%	(72)%	–	15%	91%	–	(6)%	1487%	–	6%	78%	–	**13%**	**(55)%**	**–**
Jennifer Nason	–	–	–	–	–	–	(6)%	58%	–	(8)%	59%	–	**14%**	**26%**	**–**
Ngaire Woods	–	–	–	–	–	–	–	273%	–	–	201%	–	**8%**	**(7)%**	**–**
Ben Wyatt	–	–	–	–	–	–	12%	–	–	–	52%	–	**21%**	**26%**	**–**
Dean Dalla Valle[4]	–	–	–	–	–	–	–	–	–	–	–	–	**34%**	**305%**	**–**
Kaisa Hietala[4]	–	–	–	–	–	–	–	–	–	–	–	–	**28%**	**(39)%**	**–**
Susan Lloyd-Hurwitz[4]	–	–	–	–	–	–	–	–	–	–	–	–	**9%**	**108%**	**–**
Joc O'Rourke[4]	–	–	–	–	–	–	–	–	–	–	–	–	**39%**	**–**	**–**
Martina Merz[5]	–	–	–	–	–	–	–	–	–	–	–	–	**–**	**–**	**–**
Sharon Thorne[5]	–	–	–	–	–	–	–	–	–	–	–	–	**–**	**–**	**–**
Australian workforce[6]	**4%**	**5%**	**19%**	**4%**	**–%**	**(18)%**	**7%**	**6%**	**15%**	**8%**	**(1)%**	**16%**	**6%**	**5%**	**(19)%**

1. Change in salary and fees compared on an annualised basis to smooth the impact of part-year appointments.
2. Changes in Director benefits are primarily driven by variances in business travel during the year.
3. The percentage change in annual incentive compares the incentive outcomes for the 2023 performance year to those for the 2024 performance year.
4. Increases are also representative of 2024 being the first full year post appointment in 2023.
5. No prior year data as appointed as a Non-Executive Director in 2024.
6. Since Rio Tinto plc, the statutory entity for which this disclosure is required, does not have any employees, we have included voluntary disclosure of the change in employee pay for our Australian employees who make up more than 40% of our employee population.

"–" in the table signifies no reported change as a result of the absence of comparable data.

Non-Executive Directors

What we paid our Chair and Non-Executive Directors

Positions held

We list the Non-Executive Directors who held office during 2024 below. Each held office for the whole of 2024 unless otherwise indicated. Their years of appointment are reported in "Board of Directors" on pages 102-103.

Name	Title
Dominic Barton	Chair
Dean Dalla Valle	Non-Executive Director
Simon Henry	Non-Executive Director
Kaisa Hietala	Non-Executive Director
Sam Laidlaw	Non-Executive Director
Susan Lloyd-Hurwitz	Non-Executive Director
Simon McKeon	Non-Executive Director (to 2 May 2024)
Martina Merz	Non-Executive Director (from 1 February 2024)
Jennifer Nason	Non-Executive Director
Joc O'Rourke	Non-Executive Director
Sharon Thorne	Non-Executive Director (from 1 July 2024)
Ngaire Woods	Non-Executive Director
Ben Wyatt	Non-Executive Director

Service contracts

The Chair and Non-Executive Directors' letters of appointment from the company stipulate their terms of appointment, including their duties and responsibilities as Directors. Each Non-Executive Director is appointed subject to their election and annual re-election by shareholders. The Chair's appointment may be terminated by either party giving 12 months' notice, and Non-Executive Directors' appointments may be terminated by either party giving 3 months' notice.

Annual fees payable

The table below shows the annual fee structure as at 1 March 2024 and 1 March 2025 for the Chair and Non-Executive Directors.

	2025	2024
Director fees		
Chair's fee	£800,000	£800,000
Non-Executive Director base fee	£115,000	£115,000
Senior Independent Director	£45,000	£45,000
Committee fees		
Audit & Risk Committee Chair	£50,000	£50,000
Audit & Risk Committee member	£30,000	£30,000
People & Remuneration Committee Chair	£45,000	£45,000
People & Remuneration Committee member	£25,000	£25,000
Sustainability Committee Chair	£45,000	£45,000
Sustainability Committee member	£25,000	£25,000
Nominations Committee member	£8,000	£8,000
Meeting allowances		
Long distance (flights over 10 hours per journey)	£10,000	£10,000
Medium distance (flights of 5-10 hours per journey)	£5,000	£5,000

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We set out details of each element of remuneration, and the single total figure of remuneration, paid to the Chair and Non-Executive Directors during 2024 and 2023, in US dollars in table 1b on page 142. No post-employment, termination or share-based payments were made. Statutory minimum superannuation contributions for Non-Executive Directors are deducted from the Director's overall fee entitlements when these are required by Australian superannuation law.

The total fee and allowance payments made to the Chair and Non-Executive Directors in 2024 were within the maximum aggregate annual amount of £4 million set out in the Group's constitutional documents, approved by shareholders at the 2024 AGMs.

Share ownership policy for Non-Executive Directors

Rio Tinto has a policy that encourages Non-Executive Directors to build up a Rio Tinto shareholding. The shareholding target in 2024 is 1,800 Rio Tinto Limited shares, 2,200 Rio Tinto plc shares or 2,100 Rio Tinto ADRs (or a combination thereof) and will be reviewed every 2 years. Details of Non-Executive Directors' share interests in the Group, including total holdings, are set out in table 2 on page 142.

Non-Executive Directors' share ownership

The Non-Executive Directors' shareholdings as a percentage of their overall 2024 requirement are shown in the table below.

Director	Share ownership at 31 December 2024	Share ownership at 31 December 2023
Dominic Barton	94%	94%
Dean Dalla Valle	32%	9%
Simon Henry	100%	91%
Kaisa Hietala	45%	45%
Sam Laidlaw	341%	341%
Susan Lloyd-Hurwitz	79%	65%
Martina Merz[1]	–%	n/a
Jennifer Nason	89%	85%
Joc O'Rourke	–%	–%
Sharon Thorne[2]	118%	n/a
Ngaire Woods	67%	67%
Ben Wyatt	22%	22%

1. Martina Merz joined the Board on 1 February 2024.
2. Sharon Thorne joined the Board on 1 July 2024.

Other statutory disclosures

Other share plans

All-employee share plans

The Committee believes that all employees should be given the opportunity to become shareholders in our business, and that share plans help engage, retain and motivate employees over the long term. Rio Tinto's share plans are therefore part of its standard remuneration practice, to encourage employee share ownership and create alignment with the shareholder experience. Executives may participate in broad-based share plans that are available to Group employees generally and to which performance conditions do not apply.

A global employee share purchase plan is normally offered to all eligible employees unless there are local jurisdictional restrictions. Under the plan, employees may acquire shares up to the value of $5,250 (or equivalent in other currencies) per year or capped at 15% of their base salary if lower. Each share purchased will be matched by the company, providing the participant holds the shares, and is still employed, at the end of the 3-year vesting period.

Approximately 36,000 of our employees (67% of those eligible) are shareholders as a result of participating in these plans. In the UK, these arrangements are partially delivered through the UK Share Plan which is a UK tax-approved arrangement. Under this plan, eligible participants may also receive an annual award of Free Shares up to the limits prescribed under UK tax legislation.

Management Share Awards

The Management Share Awards (MSA) are designed to help the Group attract the best staff in a competitive labour market, and to retain key individuals as we deliver our long-term strategy. MSA are conditional awards that are not subject to a performance condition. They typically vest at the end of 3 years, subject to continued employment. Shares to satisfy the awards are bought in the market or reissued from Treasury. Executive Committee members are not eligible to be granted MSA, except in connection with recruitment purposes.

Shareholder voting

In the table below, we set out the results of the remuneration-related resolutions voted on at the Group's 2024 AGMs.

Resolution	Votes for	Votes against	Votes withheld[1]
Approval of the Directors' Remuneration report: Implementation report	97%	3%	7,949,109
Approval of the Remuneration Policy (2024)	97%	3%	3,469,190
Approval of the Directors' Remuneration report	97%	3%	7,933,078

1. A vote "withheld" is not a vote in law and is not counted in the calculation of the proportion of votes for and against the resolution.

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Table 1a – Executives' remuneration

Stated in US$'000[1]		Short-term benefits: Base salary	Cash bonus[2]	Other cash-based benefits[3]	Non-monetary benefits[4]	Total short-term benefits
Executive Directors						
Jakob Stausholm	**2024**	**1,632**	**796**	**215**	**207**	**2,850**
	2023	1525	860	203	129	2,717
Peter Cunningham	**2024**	**966**	**471**	**122**	**49**	**1,608**
	2023	903	523	116	47	1,589
Other executives						
Bold Baatar	**2024**	**904**	**459**	**801**	**722**	**2,886**
	2023	824	601	105	79	1,609
Alf Barrios[5]	**2024**	**598**	**587**	**30**	**103**	**1,318**
	2023	864	373	43	98	1,378
Katie Jackson	**2024**	**268**	**130**	**222**	**50**	**670**
Sinead Kaufman	**2024**	**753**	**356**	**86**	**113**	**1,308**
	2023	700	408	80	91	1,279
Jérôme Pécresse	**2024**	**876**	**516**	**167**	**63**	**1,622**
	2023	170	98	537	6	811
Simon Trott	**2024**	**833**	**419**	**98**	**89**	**1,439**
	2023	772	566	90	56	1,484

Stated in US$'000[1]		Long-term benefits: Value of shared-based awards[6] BDA[7]	PSA	MSA	Others[8]	Post-employment benefits[9] Pension and superannuation	Other post-employment benefits	Termination benefits	Total remuneration[10]	Currency of actual payment
Executive Directors										
Jakob Stausholm	**2024**	**843**	**3,281**	**–**	**8**	**13**	**–**	**–**	**6,995**	**£**
	2023	783	2556	–	8	10	–	–	6,074	£
Peter Cunningham	**2024**	**445**	**1,315**	**19**	**7**	**13**	**–**	**–**	**3,407**	**£**
	2023	338	691	132	7	10	–	–	2,767	£
Other executives										
Bold Baatar	**2024**	**565**	**1,816**	**–**	**8**	**37**	**–**	**–**	**5,312**	**£ & S$**
	2023	473	1,531	–	8	10	–	–	3,631	£
Alf Barrios[5]	**2024**	**209**	**1,233**	**–**	**3**	**54**	**–**	**–**	**2,817**	**S$**
	2023	428	1,578	–	4	43	–	–	3,431	S$
Katie Jackson	**2024**	**31**	**69**	**333**	**–**	**7**	**–**	**–**	**1,110**	**£**
Sinead Kaufman	**2024**	**364**	**1,378**	**–**	**3**	**19**		**–**	**3,072**	**A$**
	2023	293	856	13	3	18	–	–	2,462	A$
Jérôme Pécresse	**2024**	**151**	**480**	**–**	**–**	**24**	**–**	**–**	**2,277**	**C$**
	2023	22	–	–	–	23	–	–	856	C$
Simon Trott	**2024**	**442**	**1,721**	**–**	**–**	**19**	**–**	**–**	**3,621**	**A$**
	2023	436	1,465	–	–	18	–	–	3,403	A$

Notes to table 1a – Executives' remuneration

1. "Table 1a – Executives' remuneration" is reported in US$ using A$1 = US$0.66002; £1 = US$1.27811; C$1 = US$0.73039; S$1 = US$0.74849 which are year-to-date average rates, except for cash bonuses which use A$1 = US$0.62165; £1 = US$1.25105; C$1 = US$0.69510; S$1 = US$0.73548 31 December 2024 year-end rates.
2. "Cash bonus" relates to the cash portion of the 2024 STIP award to be paid in March 2025.
3. "Other cash-based benefits" typically include cash in lieu of company pension or superannuation contributions. For Bold Baatar this also includes the international transfer allowance paid as per the company standard upon Bold's relocation from the UK to Singapore.
4. "Non-monetary benefits" for executives typically include healthcare coverage, professional tax compliance services/advice, flexible perquisites and, where applicable, leave accruals and mobility-related benefits. For Bold Baatar this also includes benefits related to his relocation from the UK to Singapore.
5. The figures for Alf Barrios reflect his remuneration up until he ceased to be a KMP on 31 August 2024. His total remuneration up until his employment termination date of 31 December 2024 was US$5,314,000.
6. The "Value of share-based awards" has been determined in accordance with the recognition and measurement requirements of IFRS2 "Share-based Payment". The fair value of awards granted as MSA, BDA and PSA have been calculated at their dates of grant using valuation models provided by external consultants, Lane Clark and Peacock LLP, including an independent Monte Carlo valuation model, which take into account the constraints on vesting attached to these awards. Further details of the valuation methods and assumptions used for these awards are included in note 27 (Share-based Payments) in the financial statements. The fair value of other share-based awards is measured at the purchase cost of the shares from the market. The share-based values disclosed in this table do not reflect amounts actually paid in 2024 or the value of shares that will ultimately vest.
7. "BDA" represents the portion of the 2021–2024 STIP awards deferred into Rio Tinto shares.
8. "Others" includes the Global Employee Share Plan (myShare) and the UK Share Plan.
9. Any costs related to defined benefit pension plans and post-retirement medical benefits are the service costs attributable to the individual, calculated in accordance with IAS 19. The cost for defined contribution pension plans is the amount contributed in the year by the company.
10. "Total remuneration" represents the disclosure of total emoluments and compensation required under the Australian *Corporations Act 2001* and applicable accounting standards.

Further details in relation to aggregate remuneration for executives, including Directors, are included in note 29 (Directors' and key management remuneration).

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Table 1b – Non-Executive Directors' remuneration

Stated in US$'000[1]		Fees and allowances[2]	Non-monetary benefits[3]	Post-employment benefits	Single total figure of remuneration[4]	Currency of actual payment
Chair						
Dominic Barton	**2024**	**1,008**	**94**	**–**	**1,102**	**£**
	2023	908	30	–	938	£
Non-Executive Directors						
Dean Dalla Valle	**2024**	**285**	**13**	**19**	**317**	**A$**
	2023	109	6	10	125	A$
Simon Henry	**2024**	**253**	**8**	**–**	**261**	**£**
	2023	221	3	–	224	£
Kaisa Hietala	**2024**	**226**	**8**	**–**	**234**	**£**
	2023	163	18	–	181	£
Sam Laidlaw	**2024**	**335**	**5**	**–**	**340**	**£**
	2023	308	5	–	313	£
Susan Lloyd-Hurwitz	**2024**	**225**	**8**	**5**	**238**	**A$**
	2023	114	3	9	126	A$
Simon McKeon[5]	**2024**	**115**	**6**	**–**	**121**	**A$**
	2023	302	7	–	309	A$
Martina Merz[6]	**2024**	**164**	**8**	**–**	**172**	**£**
Jennifer Nason	**2024**	**235**	**13**	**–**	**248**	**£**
	2023	202	6	–	208	£
Joc O'Rourke	**2024**	**239**	**5**	**–**	**244**	**£**
	2023	23	0	–	23	£
Sharon Thorne[7]	**2024**	**105**	**7**	**–**	**112**	**£**
Ngaire Woods	**2024**	**234**	**7**	**–**	**241**	**£**
	2023	221	5	–	226	£
Ben Wyatt	**2024**	**268**	**12**	**–**	**280**	**A$**
	2023	220	10	–	230	A$

1. Remuneration is reported in US$. The amounts have been converted using the 2024 annual average exchange rates of £1 = US$1.27811 and A$1 = US$0.66002.
2. "Fees and allowances" comprises the total fees for the Chair and all Non-Executive Directors (NED), and travel allowances for the NED. The statutory minimum superannuation contributions required by the Australian superannuation law and paid for the Australia-based NEDs are included in "Fees and allowances".
3. "Non-monetary benefits" include, as in previous years, amounts that are deemed by the UK tax authorities to be benefits in kind relating largely to the costs of Directors' expenses in attending Board meetings held at the company's UK-registered office (including associated accommodation and subsistence expenses) and professional tax compliance services/advice. Given these expenses are incurred by Directors in the fulfilment of their duties, the company pays the tax on them.
4. Represents disclosure of the single total figure of remuneration under Schedule 8 of the Large- and Medium-sized Companies and Groups (Accounts and Reports) Regulations 2008 (as amended) and total remuneration under the Australian *Corporations Act 2001* and applicable accounting standards.
5. The amounts reported for Simon McKeon reflect the period of active Board membership from 1 January 2024 to 2 May 2024.
6. The amounts reported for Martina Merz reflect the period of active Board membership from 1 February 2024 to 31 December 2024.
7. The amounts reported for Sharon Thorne reflect the period of active Board membership from 1 July 2024 to 31 December 2024.

For more information
further details in relation to aggregate remuneration for executives, including Directors, are included in note 29 (Directors' and key management remuneration).

Table 2 – Directors' and executives' beneficial interests in Rio Tinto shares

	Rio Tinto plc[1]			Rio Tinto Limited			Movements	
	1 Jan 2024[2]	31 Dec 2024[3]	4 Feb 2025[4]	1 Jan 2024[2]	31 Dec 2024[3]	4 Feb 2025[4]	Compensation[5]	Other[6]
Directors								
Dominic Barton	–	–	–	11,900	11,900	11,900	–	–
Peter Cunningham	63,053	74,480	74,493	–	–	–	20,651	(9,212)
Dean Dalla Valle	–	–	–	–	579	579	–	579
Simon Henry	2,000	2,200	2,200	–	–	–	–	200
Kaisa Hietala	500	1,000	1,000	–	–	–	–	500
Sam Laidlaw	7,500	7,500	7,500	–	–	–	–	–
Susan Lloyd-Hurwitz	–	–	–	1,380	1,421	1,421	–	41
Simon McKeon[7]	–	–	–	10,000	10,000	–	–	–
Martina Merz	–	–	–	–	–	–	–	–
Jennifer Nason	1,765	1,877	1,877	–	–	–	–	112
Joc O'Rourke	–	–	–	–	–	–	–	–
Jakob Stausholm	95,363	181,391	181,417	–	–	–	119,349	(33,295)
Sharon Thorne[7]	2,593	2,593	2,593	–	–	–	–	–
Ngaire Woods	1,482	1,482	1,482	–	–	–	–	–
Ben Wyatt	–	–	–	400	400	400	–	–
Executives								
Bold Baatar	61,216	102,224	102,229	–	–	–	75,850	(34,837)
Alf Barrios[7]	47,888	45,313	–	–	–	–	74,412	(76,986)
Katie Jackson	1,044	1,044	1,049	–	–	–	–	5
Sinead Kaufman	–	–	–	43,633	36,564	36,592	13,104	(20,145)
Jérôme Pécresse	5,000	5,043	5,058	–	–	–	–	58
Simon Trott	19,338	441	441	26,090	29,499	29,499	72,267	(87,755)

1. Rio Tinto plc ordinary shares or American Depositary Receipts.
2. Or date of appointment, if later.
3. Or date of retirement/date stepped down from the Executive Committee, if earlier.
4. Latest practicable date prior to the publication of the 2024 Annual Report, in accordance with LR 9.8.6A.
5. Shares obtained through awards under the Rio Tinto UK Share Plan, the Global Employee Share Plan and/or vesting of the PSA, MSA and BDA granted under the Group's LTIP arrangements.
6. Share movements due to the sale or purchase of shares, or shares received under dividend reinvestment plans.
7. Simon McKeon retired as a Non-Executive Director at the conclusion of the Rio Tinto Limited annual general meeting on 2 May 2024. Sharon Thorne was appointed Non-Executive Director on 1 July 2024. Alf Barrios ceased to be a KMP on 31 August 2024.

Interests in outstanding BDA, MSA and PSA and UK Share Plan and the Global Employee Share Plan are set out in table 3 and 3a on pages 143–145.

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Table 3 – Plan interests (awards of shares under long-term incentive plans)

Name	Award/grant date	Market price at award [1,2]	1 January 2024	Awarded	Lapsed/ cancelled	Dividend units	Vested	31 December 2024	4 February 2025	Performance period concludes / vesting date	Date of release	Market price on release	Monetary value of award at release US$[3]
Bold Baatar													
Bonus Deferral Award	23 Mar 2022	£58.00	6,956	–	–	1,243	(8,199)	–	–	1 Dec 2024	1 Dec 2024	£49.88	522,704
	22 Mar 2023	£53.19	5,463	–	–	–	–	5,463	5,463	1 Dec 2025	–	–	–
	20 Mar 2024	£49.41	–	9,667	–	–	–	9,667	9,667	1 Dec 2026	–	–	–
Performance Share Award	18 Mar 2019	£42.67	51,752	–	(3,054)	18,820	(67,518)	–	–	31 Dec 2023	22 Feb 2024	£52.16	4,501,170
	16 Mar 2020	£33.58	53,272	–	–	–	–	53,272	53,272	31 Dec 2024	–	–	–
	18 Mar 2021	£55.58	54,005	–	–	–	–	54,005	54,005	31 Dec 2025	–	–	–
	23 Mar 2022	£58.00	44,414	–	–	–	–	44,414	44,414	31 Dec 2026	–	–	–
	22 Mar 2023	£53.19	50,672	–	–	–	–	50,672	50,672	31 Dec 2027	–	–	–
	9 May 2024	£55.84	–	65,431	–	–	–	65,431	65,431	31 Dec 2026	–	–	–
Alf Barrios													
Bonus Deferral Award	23 Mar 2022	£58.00	6,466	–	–	1,155	(7,621)	–	–	1 Dec 2024	1 Dec 2024	£49.88	485,855
	22 Mar 2023	£53.19	5,549	–	–	–	–	5,549	5,549	1 Dec 2025	–	–	–
	20 Mar 2024	£49.41	–	5,904	–	–	–	5,904	5,904	1 Dec 2026	–	–	–
Performance Share Award	18 Mar 2019	£42.67	57,011	–	(3,364)	20,733	(74,380)	–	–	31 Dec 2023	22 Feb 2024	£52.16	4,958,633
	16 Mar 2020	£33.58	53,236	–	–	–	–	53,236	53,236	31 Dec 2024	–	–	–
	18 Mar 2021	£55.58	54,652	–	–	–	–	54,652	54,652	31 Dec 2025	–	–	–
	23 Mar 2022	£58.00	43,707	–	(3,231)	–	–	40,476	40,476	31 Dec 2026	–	–	–
	22 Mar 2023	£53.19	51,626	–	(20,962)	–	–	30,664	30,664	31 Dec 2027	–	–	–
	9 May 2024	£55.84	–	67,756	(52,012)	–	–	15,744	15,744	31 Dec 2026	–	–	–
Peter Cunningham													
Bonus Deferral Award	23 Mar 2022	£58.00	5,203	–	–	929	(6,132)	–	–	1 Dec 2024	1 Dec 2024	£49.88	390,928
	22 Mar 2023	£53.19	5,827	–	–	–	–	5,827	5,827	1 Dec 2025	–	–	–
	20 Mar 2024	£49.41	–	8,415	–	–	–	8,415	8,415	1 Dec 2026	–	–	–
Management Share Award	18 Mar 2021	£55.58	4,781	–	–	1,166	(5,947)	–	–	22 Feb 2024	22 Feb 2024	£52.16	396,464
Performance Share Award	18 Mar 2019	£42.67	6,489	–	(383)	2,359	(8,465)	–	–	31 Dec 2023	22 Feb 2024	£52.16	564,330
	16 Mar 2020	£33.58	7,426	–	–	–	–	7,426	7,426	31 Dec 2024	–	–	–
	18 Mar 2021	£55.58	9,564	–	–	–	–	9,564	9,564	31 Dec 2025	–	–	–
	23 Mar 2022	£58.00	50,405	–	–	–	–	50,405	50,405	31 Dec 2026	–	–	–
	22 Mar 2023	£53.19	55,134	–	–	–	–	55,134	55,134	31 Dec 2027	–	–	–
	9 May 2024	£55.84	–	71,195	–	–	–	71,195	71,195	31 Dec 2026	–	–	–
Katie Jackson													
Management Share Award	5 Sept 2024	£45.91	–	3,547	–	–	–	3,547	3,547	1 Mar 2025	–	–	–
	5 Sept 2024	£45.91	–	10,954	–	–	–	10,954	10,954	1 Sept 2025	–	–	–
Performance Share Award	5 Sept 2024	£45.91	–	18,883	–	–	–	18,883	18,883	31 Dec 2026	–	–	–
Sinead Kaufman													
Bonus Deferral Award	23 Mar 2022	A$113.68	4,711	–	–	653	(5,364)	–	–	1 Dec 2024	1 Dec 2024	A$118.94	421,089
	22 Mar 2023	A$115.45	4,278	–	–	–	–	4,278	4,278	1 Dec 2025	–	–	–
	20 Mar 2024	A$121.30	–	5,060	–	–	–	5,060	5,060	1 Dec 2026	–	–	–
Performance Share Award	18 Mar 2019	A$93.32	6,291	–	(372)	1,747	(7,666)	–	–	31 Dec 2023	22 Feb 2024	A$124.24	628,619
	16 Mar 2020	A$77.65	8,579	–	–	–	–	8,579	8,579	31 Dec 2024	–	–	–
	18 Mar 2021	A$110.80	41,207	–	–	–	–	41,207	41,207	31 Dec 2025	–	–	–
	23 Mar 2022	A$113.68	36,042	–	–	–	–	36,042	36,042	31 Dec 2026	–	–	–
	22 Mar 2023	A$115.45	40,045	–	–	–	–	40,045	40,045	31 Dec 2027	–	–	–
	9 May 2024	A$130.23	–	49,145	–	–	–	49,145	49,145	31 Dec 2026	–	–	–

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Name	Award/grant date	Market price at award [1,2]	1 January 2024	Awarded	Lapsed/ cancelled	Dividend units	Vested	31 December 2024	4 February 2025	Performance period concludes / vesting date	Date of release	Market price on release	Monetary value of award at release US$[3]
Jérôme Pécresse													
Bonus Deferral Award	20 Mar 2024	£49.41	–	1,533	–	–	–	1,533	1,533	1 Dec 2026	–	–	–
Performance Share Award	9 May 2024	£55.84	–	66,928	–	–	–	66,928	66,928	31 Dec 2026	–	–	–
Jakob Stausholm													
Bonus Deferral Award	23 Mar 2022	£58.00	13,017	–	–	2,326	(15,343)	–	–	1 Dec 2024	1 Dec 2024	£49.88	978,149
	22 Mar 2023	£53.19	10,488	–	–	–	–	10,488	10,488	1 Dec 2025	–	–	–
	20 Mar 2024	£49.41	–	14,211	–	–	–	14,211	14,211	1 Dec 2026	–	–	–
Performance Share Award	18 Mar 2019	£42.67	79,609	–	(4,697)	28,951	(103,863)	–	–	31 Dec 2023	22 Feb 2024	£52.16	6,924,153
	16 Mar 2020	£33.58	74,711	–	–	–	–	74,711	74,711	31 Dec 2024	–	–	–
	18 Mar 2021	£55.58	103,510	–	–	–	–	103,510	103,510	31 Dec 2025	–	–	–
	23 Mar 2022	£58.00	85,126	–	–	–	–	85,126	85,126	31 Dec 2026	–	–	
	22 Mar 2023	£53.19	93,114	–	–	–	–	93,114	93,114	31 Dec 2027	–	–	–
	9 May 2024	£55.84	–	120,232	–	–	–	120,232	120,232	31 Dec 2026	–	–	–
Simon Trott													
Bonus Deferral Award	23 Mar 2022	A$113.68	5,494	–	–	761	(6,255)	–	–	1 Dec 2024	1 Dec 2024	A$118.94	491,035
	22 Mar 2023	A$115.45	4,683	–	–	–	–	4,683	4,683	1 Dec 2025	–	–	–
	20 Mar 2024	A$121.30	–	7,027	–	–	–	7,027	7,027	1 Dec 2026	–	–	–
Performance Share Award	18 Mar 2019	£42.67	50,598	–	(2,986)	18,400	(66,012)	–	–	31 Dec 2023	22 Feb 2024	£52.16	4,400,770
	16 Mar 2020	£33.58	52,838	–	–	–	–	52,838	52,838	31 Dec 2024	–	–	–
	18 Mar 2021	£55.58	49,571	–	–	–	–	49,571	49,571	31 Dec 2025	–	–	–
	23 Mar 2022	A$113.68	38,204	–	–	–	–	38,204	38,204	31 Dec 2026	–	–	–
	22 Mar 2023	A$115.45	44,488	–	–	–	–	44,488	44,488	31 Dec 2027	–	–	–
	9 May 2024	A$130.23	–	52,091	–	–	–	52,091	52,091	31 Dec 2026	–	–	–

1. Awards denominated in pounds sterling were for Rio Tinto plc ordinary shares of 10 pence each and awards denominated in Australian dollars were for Rio Tinto Limited shares. All awards are granted over ordinary shares.
2. The weighted fair value per share of Bonus Deferral Awards granted in March 2024 was £49.37 for Rio Tinto plc and A$120.39 for Rio Tinto Limited, and for Performance Share Awards granted in May 2024 was £33.39 for Rio Tinto plc and A$78.48 for Rio Tinto Limited. The weighted fair value per share of Management Share Awards granted in September 2024 was £45.81 for Rio Tinto plc and for Performance Share Awards granted in September 2024 was £30.18 for Rio Tinto plc . Conditional awards are awarded at no cost to the recipient and no amount remains unpaid on any shares awarded.
3. The amount in US dollars has been converted at the rate of US$1.278 = £1 and US$0.660 = A$1, being the average exchange rates for 2024.
4. For the Performance Share Awards granted on 16 March 2020 with a performance period that concluded on 31 December 2024, 12.75 per cent of the award vested.
5. The closing price at 31 December 2024 was £47.23 for Rio Tinto plc ordinary shares and was A$117.46 for Rio Tinto Limited ordinary shares. The high and low prices during 2024 of Rio Tinto plc and Rio Tinto Limited shares were £58.99 and £45.09 and A$136.82 and A$105.11 respectively.
6. As of 4 February 2025, the above members of the Executive Committee held 1,733,610 shares awarded and not vested under long-term incentive plans. No Executive Committee member held any options.

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Table 3a – Plan interests (award of shares under all-employee share arrangements)

		myShare		UK Share Plan				Total activity in 2024		
	Plan interests at 1 January 2024[1]	Value of Matching shares awarded in year[2] ('000)	Value of Matching shares vested in year[3] ('000)	Value of Matching shares awarded in year[2] ('000)	Value of Matching shares vested in year[3] ('000)	Value of Free shares awarded in year[4] ('000)	Value of Free shares vested in year[4] ('000)	Grants in year ('000)	Vesting in year ('000)	Plan interests at 31 December 2024[1]
Bold Baatar	358	2	2	2	2	5	4	9	8	365
Alf Barrios	205	5	4	0	0	0	0	5	4	227
Peter Cunningham	275	2	2	0	0	5	4	7	6	284
Sinead Kaufman	149	4	4	0	0	0	0	4	4	147
Jérôme Pécresse	0	3	0	0	0	0	0	3	0	42
Jakob Stausholm	358	2	2	2	2	5	4	9	8	370

1. All shares shown are Rio Tinto plc shares except in the case of Sinead Kaufman which are Rio Tinto Limited shares.
2. myShare and UK Share Plan Matching share awards are granted on a quarterly basis (January, April, July and October) throughout the year.
3. The vesting of a Matching share is dependent on continued employment with Rio Tinto and the retention of the associated Investment share purchased by the participant for 3 years.
4. UK Share Plan Free shares vest after 3 years.
5. UK Share Plan awards shown above and the vested Matching shares under myShare are included, where relevant, in the executive's share interests in Table 2.
6. All currency figures are shown in USD and rounded.
7. Both Katie Jackson and Simon Trott hold no unvested awards across myShare and/or UK Share Plan and also have not received or had awards vest during 2024.

Audited information

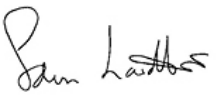
Under Schedule 8 of the *Large- and Medium-sized Companies and Groups (Accounts and Reports) Regulations 2008* (as amended), the following information is auditable:

- The 2024 performance for the purposes of the STIP on pages 129-133.
- The single total figure of remuneration for each Director, as set out on page 129 and table 1b on page 142.
- Details of the Directors' total pension entitlements, as set out on page 129.
- Details of taxable benefits on page 129.
- Details of scheme interests awarded to the Directors during the financial year, as set out on page 134 and tables 3 and 3a on pages 143-145.
- Details of payments to past Directors as set out on page 136.
- Details of shareholding ownership policy and Directors' share ownership on pages 136 and 140.
- Statement of the Directors' shareholdings and share interests, as set out in tables 2, 3 and 3a on pages 142-145 of the Implementation report.
- STIP objectives and outcomes for 2024 as set out on pages 129-132 and the LTIP outcome and award granted for 2024 as set out on page 134.

The Australian Securities and Investments Commission issued an order dated 11 July 2024, under which the Remuneration report must be prepared and audited in accordance with the requirements of the Australian *Corporations Act 2001* applied on the basis of certain modifications set out in the order (as detailed on page 244). The information provided in the Remuneration report has been audited as required by section 308 (3C) of the Australian *Corporations Act 2001*.

Directors' approval statement

This Directors' Remuneration report is delivered in accordance with a resolution of the Board, and has been signed on behalf of the Board by:



Sam Laidlaw
People & Remuneration Committee Chair

19 February 2025

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Additional statutory disclosure

The Directors present their report and audited consolidated financial statements for the year ended 31 December 2024.

Scope of this report

For the purposes of UK company law and the Australian *Corporations Act 2001*:

- The additional disclosures under the heading "Shareholder information" on pages 325-331 are hereby incorporated by reference to, and form part of, this Directors' report.
- The Strategic report on pages 1-99 provides a comprehensive review of Rio Tinto's operations, its financial position and its business strategies and prospects, and is incorporated by reference into, and forms part of, this Directors' report.
- Certain items that would ordinarily need to be included in this Directors' report (including an indication of likely future developments in the business of the company and the Group) have, as permitted, instead been discussed in the Strategic report, while details of the Group's policy on addressing financial risks and details about financial instruments are shown in note 24 to the consolidated financial statements.
- Taken together, the Strategic report and this Directors' report are intended to provide a fair, balanced and understandable assessment of the development and performance of the Group's business during the year and its position at the end of the year; its strategy; likely developments; and any principal or emerging risks and uncertainties associated with the Group's business.
- The Directors' declaration on page 245 is also incorporated into this Directors' report.

For the purposes of compliance with DTR 4.1.5R(2) and DTR 4.1.8R, the required content of the "Management report" can be found in the Strategic report or this Directors' report, including the material incorporated by reference.

A full report on Director and executive remuneration and shareholdings can be found in the Remuneration report on pages 119-145, which, for the purposes of the Australian *Corporations Act 2001*, forms part of this Directors' report.

Dual-listed structure and constitutional documents

The dual-listed companies (DLC) structure of Rio Tinto plc and Rio Tinto Limited, and their constitutional provisions and voting arrangements – including restrictions that may apply to the shares of either company under specified circumstances – are described on pages 325-326.

Operating and financial review

Rio Tinto's principal activities during 2024 were mining minerals and metals throughout the lifecycle from exploration, development, mining and processing, marketing, and repurposing and renewing our assets to create a positive legacy.

Subsidiary and associated undertakings, principally affecting the profits or net assets of the Group in the year, are listed in notes 30-32 to the financial statements.

The following significant changes and events affected the Group during 2024 and up to the date of this report:

- In January 2024, we announced that, under a new power purchase agreement (PPA) with European Energy Australia, we had agreed to buy all electricity from the 1.1GW Upper Calliope Solar Farm to provide renewable energy to Rio Tinto's Gladstone operations.
- In January 2024, we were informed by authorities that a plane on its way to our Diavik mine, carrying a number of our people, crashed near Fort Smith, Northwest Territories, Canada, resulting in fatalities. The fatalities included 4 colleagues and 2 airline crew.
- In February 2024, we announced we had signed Australia's largest renewable PPA to date to supply the Gladstone operations in Queensland, agreeing to buy the majority of electricity from Windlab's planned 1.4GW Bungaban wind energy project.
- In February 2024, we announced that Simon McKeon would step down as a Non-Executive Director at the conclusion of the Rio Tinto Limited annual general meeting on 2 May 2024.
- In April 2024, we announced that Bold Baatar was appointed to the role of Chief Commercial Officer, with effect from 1 September 2024, to lead the Group's commercial and business development activities globally.
- In June 2024, we announced that we will install carbon free aluminium smelting technology at our Arvida smelter in Québec, Canada, using the first technology licence issued by the ELYSIS joint venture. This investment will support the ongoing development of the breakthrough ELYSIS™ technology and allow Rio Tinto to build expertise in its installation and operation.
- In July 2024, we announced that all conditions have now been satisfied for Rio Tinto's investment to develop the Simandou high-grade iron ore deposit in Guinea, including the completion of necessary Guinean and Chinese regulatory approvals. The transaction was expected to be completed during the week of 15 July 2024.
- In July 2024, we announced that Katie Jackson was appointed as Chief Executive, Copper. She joined Rio Tinto on 1 September 2024 and is based in London.
- In September 2024, we hosted a site visit for the financial community to our Aluminium and Iron & Titanium operations in Quebec, Canada. The visit showcased the world-class, hydro-powered aluminium smelters in the Saguenay, including the Shipshaw Power Station and construction progress at the low-carbon AP Technology™ AP60 smelter, and the Iron & Titanium facility at Sorel-Tracy, the world's largest critical minerals and metallurgical complex.
- In October 2024, we confirmed that we made an approach to Arcadium Lithium regarding a potential acquisition.
- In October 2024, we announced a definitive agreement to acquire Arcadium Lithium plc (Arcadium) in an all-cash transaction for US$5.85 per share. This transaction will bring Arcadium's world-class, complementary lithium business into our portfolio, establishing a global leader in energy transition commodities.
- In November 2024, we announced that we will be taking up our pro rata entitlements in the entitlement offer and the level of participation by Energy Resources of Australia shareholders. We will hold over 98% of ERA's shares.
- In December 2024, we announced we signed a Term Sheet for a Joint Venture with Sumitomo Metal Mining to deliver the Winu copper-gold project, located in the Great Sandy Desert region of Western Australia.
- In December, we announced that initial Mineral Resources and Ore Reserves for the Salar del Rincon lithium brine deposits in Argentina will be developed by Rio Tinto. Mineral Resources inclusive of Ore Reserves comprise 1.54 Mt Lithium Carbonate Equivalent (LCE) of Measured Resources, 7.85 Mt LCE of Indicated Resources and 2.29 Mt LCE of Inferred Resources. The Ore Reserves comprise 2.07 Mt LCE of Probable Ore Reserves.
- In December 2024, we held our 2024 Investor Seminar in London, providing updates on our strategy of investing for a stronger, more diversified and growing portfolio to ensure the long-term delivery of attractive shareholder returns.

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- In December 2024 we announced that we had approved $2.5 billion to expand the Rincon project in Argentina, the company's first commercial scale lithium operation, demonstrating commitment to building a world-class battery materials portfolio.
- In December 2024, we announced the appointment of Georgie Bezette as Chief People Officer, succeeding James Martin, who retired at the end of 2024.

For more information visit riotinto.com/invest

In 2024 and 2023, the Group did not receive any public takeover offers from third parties in respect of Rio Tinto plc shares or Rio Tinto Limited shares.

Details of events that took place after the balance sheet date are further described in note 39 to the financial statements.

Risk identification, assessment and management

The Group's principal risks and uncertainties are listed on pages 91-98. The Group's approach to risk management is discussed on pages 88-90.

Financial instruments

Details of the Group's financial risk management objectives and policies, and exposure to risk, are described in note 24 to the financial statements.

Share capital

Details of the Group's share capital as at 31 December 2024 are described in note 34 to the financial statements. Details of the rights and obligations attached to each class of shares are covered on page 325, under the heading "Voting arrangements".

Details of certain restrictions on holding shares in Rio Tinto and certain consequences triggered by a change of control are described on page 326 under the heading "Limitations on ownership of shares and merger obligations". There are no other restrictions on the transfer of ordinary Rio Tinto shares, save for:

- Restrictions that may from time to time be imposed by laws, regulations or Rio Tinto policy (for example, relating to market abuse, insider dealing, share trading or an Australian foreign investment).
- Restrictions on the transfer of shares that may be imposed following a failure to supply information required to be disclosed, or where registration of the transfer may breach a court order or a law, or in relation to unmarketable parcels of shares.
- Restrictions on the transfer of certain shares awarded under an employee share plan in accordance with the terms of those awards.

At the AGMs held in 2024, shareholders authorised:

- The on-market purchase by Rio Tinto plc or Rio Tinto Limited or its subsidiaries of up to 125,141,768 Rio Tinto plc shares (representing approximately 10% of Rio Tinto plc's issued share capital, excluding Rio Tinto plc shares held in Treasury at that time).
- The off-market purchase by Rio Tinto plc of up to 125,141,768 Rio Tinto plc shares acquired by Rio Tinto Limited or its subsidiaries under the above authority.
- The on-market buy-back by Rio Tinto Limited of up to 55.6 million Rio Tinto Limited shares (representing approximately 15% of Rio Tinto Limited's issued share capital at that time).

Substantial shareholders

Details of substantial shareholders are included on page 326.

Dividends

Details of dividends paid and declared for payment, together with the company's shareholder returns policy, can be found on page 21 .

Waived dividends

The number of shares on which Rio Tinto plc dividends are based excludes those held as treasury shares and those held by employee share trusts that waived the right to dividends. Employee share trusts waived dividends on 151,144 Rio Tinto plc ordinary shares and 30,888 American depositary receipts (ADRs) for the 2023 final dividend, and on 81,491 Rio Tinto plc ordinary shares and 34,574 ADRs for the 2024 interim dividend. (2023: on 110,774 Rio Tinto plc ordinary shares and 31,831 ADRs for the 2022 final dividend, and on 99,016 Rio Tinto plc ordinary shares and 35,066 ADRs for the 2023 interim dividend; 2022: on 194,321 Rio Tinto plc ordinary shares and 30,162 ADRs for the 2021 final dividend and on 111,443 Rio Tinto plc ordinary shares and 35,132 ADRs for the 2022 interim dividend). In 2024, 2023 and 2022, no Rio Tinto Limited shares were held by Rio Tinto plc.

The number of shares on which Rio Tinto Limited dividends are based, excludes those held by shareholders who have waived the rights to dividends. Employee share trusts waived dividends on 32,540 Rio Tinto Limited ordinary shares for the 2023 final dividend and on 35,713 shares for the 2024 interim dividend (2023: on 35,010 shares for the 2022 final dividend and on 34,607 shares for the 2023 interim dividend; 2022: on 36,517 shares for the 2021 final dividend and on 31,368 shares for the 2022 interim dividend).

Purchases: Rio Tinto plc shares

Shares of 10p each and Rio Tinto plc American Depositary Receipts (ADRs)

	Total number of shares purchased[1]	Average price per share US$[2]	Total number of shares purchased to satisfy company dividend reinvestment plans	Total number of shares purchased to satisfy employee share plans	Total number of shares purchased as part of publicly announced plans or programs[3]	Maximum number of shares that may be purchased under plans or programs
2024						
1 to 31 Jan	–	–	–	–	–	125,083,217[5]
1 to 28 Feb	–	–	–	–	–	125,083,217[5]
1 to 31 Mar	–	–	–	–	–	125,083,217[5]
1 to 30 Apr	512,774	67.21	459,592	53,182	–	125,141,768[6]
1 to 31 May	–	–	–	–	–	125,141,768[6]
1 to 30 Jun	–	–	–	–	–	125,141,768[6]
1 to 31 Jul	–	–	–	–	–	125,141,768[6]
1 to 31 Aug	–	–	–	–	–	125,141,768[6]
1 to 30 Sep	2,006	70.36	2,006	–	–	125,141,768[6]
1 to 31 Oct	934,735	69.66	901,717	33,018	–	125,141,768[6]
1 to 30 Nov	–	–	–	–	–	125,141,768[6]
1 to 31 Dec	137,748	58.76	–	137,748	–	125,141,768[6]
Total	1,587,263[4]	67.92	1,363,315	223,948	–	–
2025						
1 to 31 Jan	–	–	–	–	–	125,141,768[6]
1 to 04 Feb	–	–	–	–	–	125,141,768[6]

Purchases: Rio Tinto Limited shares

	Total number of shares purchased[1]	Average price per share $[2]	Total number of shares purchased to satisfy company dividend reinvestment plans	Total number of shares purchased to satisfy employee share plans[7]	Total number of shares purchased as part of publicly announced plans or programs[3]	Maximum number of shares that may be purchased under plans or programs
2024						
1 to 31 Jan	–	–	–	–	–	55,600,000[8]
1 to 28 Feb	–	–	–	–	–	55,600,000[8]
1 to 31 Mar	–	–	–	–	–	55,600,000[8]
1 to 30 Apr	762,626	83.41	626,520	136,106	–	55,600,000[8]
1 to 31 May	–	–	–	–	–	55,600,000[9]
1 to 30 Jun	–	–	–	–	–	55,600,000[9]
1 to 31 Jul	–	–	–	–	–	55,600,000[9]
1 to 31 Aug	–	–	–	–	–	55,600,000[9]
1 to 30 Sep	438,316	87.00	438,316	–	–	55,600,000[9]
1 to 31 Oct	178,828	80.25	–	178,828	–	55,600,000[9]
1 to 30 Nov	–	–	–	–	–	55,600,000[9]
1 to 31 Dec	–	–	–	–	–	55,600,000[9]
Total	1,379,770	84.25	1,064,836	314,934	–	–
2025						
1 to 31 Jan	582,366	73.38	–	582,366	–	55,600,000[9]
1 to 07 Feb	–	–	–	–	–	55,600,000[9]

1. Monthly totals of purchases are based on the settlement date.
2. The shares were purchased in the currency of the stock exchange on which the purchases took place and the sale price has been converted into US dollars at the exchange rate on the date of settlement.
3. Shares purchased in connection with the dividend reinvestment plans and employee share plans are not deemed to form any part of any publicly announced plan or program.
4. This figure represents 0.126% of Rio Tinto plc issued share capital at 31 December 2024.
5. At the Rio Tinto plc AGM held in 2023, shareholders authorised the on-market purchase by Rio Tinto plc, and Rio Tinto Limited and its subsidiaries of up to 125,083,217 Rio Tinto plc shares. This authorisation expired at the 2024 AGM on 4 April 2024.
6. At the Rio Tinto plc AGM held in 2024, shareholders authorised the on-market purchase by Rio Tinto plc, and Rio Tinto Limited and its subsidiaries of up to 125,141,768 Rio Tinto plc shares. This authorisation will expire on the later of 5 July 2024 or the date of the 2024 AGM.
7. The average price of shares purchased on-market by the trustee of Rio Tinto Limited's employee share trust during 2024 was $80.31.
8. At the Rio Tinto Limited AGM held in 2023, shareholders authorised the off-market and/or on-market buy-back of up to 55.6 million Rio Tinto Limited shares.
9. At the Rio Tinto Limited AGM held in 2024, shareholders authorised the on-market buy-back of up to 55.6 million Rio Tinto Limited shares.

Our disclosure on Board and executive management diversity in line with UK Listing Rules (UKLR 22.2.30R(2)) is set out below.

Gender reporting categories as at 31 December 2024

Gender	Number of Board members	% of Board	Number of senior positions on the board (e.g. CEO/ CFO, SID & Chair)	Number in executive management	% of executive management
Men	8	57 %	4	8	67 %
Women	6	43 %	–	4	33%[1]
Not specified/prefer not to say	–	–	–	–	–

1. On 1 January 2025, Georgie Bezette replaced James Martin as Chief People Officer. Alf Barrios stepped down as Chief Commercial Officer on 1 September 2024, when Bold Baatar succeeded him in this role. Alf Barrios continued as Chair for China, Japan and Korea and Executive Committee member until his retirement at the end of 2024. Effective 1 January 2025 the composition of the Executive Committee is 6 men (55%) and 5 women (45%).

Ethnicity reporting categories as at 31 December 2024

ONS ethnicity category	Number of Board members	% of Board	Number of senior positions on the board (e.g. CEO/ CFO, SID & Chair)	Number in executive management	% of executive management
White British or other White (including minority-white groups)	13	93 %	4	7	58 %
Mixed/Multiple Ethnic Groups	–	–	–	1	8 %
Asian/Asian British	–	–	–	–	–
Black/African/Caribbean/Black British	–	–	–	–	–
Other Ethnic Group	1	7 %	–	–	–
Not specified/prefer not to say	–	–	–	4	33 %

For the Executive Committee, gender data was collected via self disclosure in the HR system; data on ethnicity reporting categories was collected via a voluntary self identification survey. For the Board, gender and ethnicity reporting categories were collected via a voluntary self identification survey.

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AGM Disclosures

At Rio Tinto plc's AGM on 4 April 2024, Resolution 25 ("Authority to purchase Rio Tinto plc shares") was passed with less than 80% of votes in favour, and Shining Prospect (a subsidiary of the Aluminium Corporation of China (Chinalco)) voted against. Chinalco has not sold any Rio Tinto plc shares and now has a holding of over 14%, given its non-participation in Rio Tinto's significant share buyback programs. This places Chinalco close to the 14.99% holding threshold agreed with the Australian Government at the time of Chinalco's original investment in 2008.

Directors and executives

The names of Directors and their periods of appointment are listed on pages 102-103, together with details of each Director's qualifications, experience and responsibilities, and current directorships.

There are no family relationships between any of our Directors or executives. None of our Directors or Executive Committee members are elected or appointed under any arrangement or understanding with any major shareholder, customer, supplier or otherwise.

A table of Directors' attendance at Board and committee meetings during 2024 is on page 110.

Directors' experience and independence

The Chair was considered independent upon his appointment and, in the Board's view, he continues to satisfy the tests for independence under the ASX Principles and NYSE Standards.

The Board is satisfied that all of its Non-Executive Directors are independent in character and judgement, and are free from any relationships (material or otherwise) or circumstances that could create a conflict of interest.

On joining Rio Tinto, all Directors receive a full, formal induction program. It is delivered over a number of months, and tailored to their specific requirements, taking into account their respective committee responsibilities.

All Directors are expected to commit to continuing their development during their tenure. This is supported through a combination of site visits, teach-ins, deep dives, and internal business and operational briefings provided in or around scheduled Board and committee meetings.

The notice of AGM provides all material information in Rio Tinto's possession relevant to decisions on election and re-election of Directors, including a statement from the Board that it considers all Directors continue to perform effectively and demonstrate appropriate levels of commitment. It also provides reasons why each Director is recommended for re-election, highlighting their relevant skills and experience. Further information on the skills and experience of each Director is set out on pages 102-103.

Previous listed directorships

Details of each Director's previous directorships of other listed companies (where relevant) held in the past 3 years are set out below:

Martina Merz: thyssenkrupp AG (February 2019-June 2023); Siemens AG (February 2023 - February 2024)

Ben Wyatt: APM Human Services International Limited (September 2022 - October 2024)

Directors' and executives' beneficial interests

A table of Directors' and executives' beneficial interests in Rio Tinto shares is on page 142.

Directors' service contracts

The company has written agreements setting out the terms of appointment for each Director and senior executive. Non-Executive Directors are appointed by letters of appointment. Executive Directors and other senior executives are employed through employment service contracts. Further information is set out on pages 136, 138 and 139 in the Remuneration report.

Secretaries

The Group Company Secretary is accountable to the Board and advises the Chair, and through the Chair the Board, on all governance matters. The appointment and removal of the Group Company Secretary is a matter reserved for the Board. Andy Hodges is Group Company Secretary and Company Secretary of Rio Tinto plc. Tim Paine is the Company Secretary of Rio Tinto Limited. Andy's and Tim's qualifications and experience are described on page 103.

Indemnities and insurance

The Articles of Association of Rio Tinto plc and the Constitution of Rio Tinto Limited provide for them to indemnify, to the extent permitted by law, Directors and officers of the companies, including officers of certain subsidiaries, against liabilities arising from the conduct of the Group's business. The Directors, Group Company Secretary and Company Secretary of Rio Tinto Limited, together with employees serving as Directors of eligible subsidiaries at the Group's request, have also received similar direct indemnities. Former Directors also received indemnities for the period in which they were Directors. These are qualifying third-party indemnity provisions for the purposes of the UK *Companies Act 2006*, in force during the financial year ended 31 December 2024 and up to the date of this report. During 2024, Rio Tinto paid legal costs under the terms of those indemnities for certain former Directors and officers totalling $610,486..

Qualifying pension scheme indemnity provisions as defined by section 236 of the UK *Companies Act 2006* and other applicable legal jurisdictions were in force during the course of the financial year ended 31 December 2024 and up to the date of this Directors' report, for the benefit of trustees of the Rio Tinto Group pension and superannuation funds across various jurisdictions. No amount has been paid under any of these indemnities during the year.

The Group has agreed to pay a premium for Directors' and officers' insurance. Disclosure of the nature of the liability covered by the insurance and premium paid is subject to confidentiality requirements under the contract of insurance.

Oversight of whistleblowing procedures

Our whistleblowing process is overseen by the Board. Every member of the workforce has access to the whistleblowing program (myVoice); details of the program are on page 86.

Labour and engagement policies

Labour relations

We also work together with our employees and their unions, and we seek constructive dialogue and fair solutions while maintaining the competitiveness of our managed operations. In 2024, we did not have operations disruptions affecting production due to industrial actions.

Employment of people with a disability

We acknowledge the systemic barriers facing people with disabilities in attaining meaningful employment. We further acknowledge the efforts necessary to fully support people with disabilities and we seek to implement the accommodations they need to fulfil their role, or an alternative role if required.

Our Respect, Inclusion and Diversity Policy sets out our expectations around the behaviours needed for an inclusive and diverse workplace, where we embrace different perspectives, valuing diversity as a strength.

Our Employment Policy outlines how we are committed to preventing discrimination and that we employ on the basis of job requirements and do not discriminate on grounds of disability or any other protected characteristic. It also explains how we ensure our people are trained to perform their roles. More information can be found at riotinto.com/policies.

We remain a member of the IncludeAbility Employer Network, which was set up by the Australian Human Rights Commission and aims to increase access to meaningful employment opportunities for people with a disability. We will continue to seek ways to improve how we provide meaningful opportunities for people with a disability and are also working to reduce these barriers as part of our response to the recommendations in the *Everyday Respect Report*.

Engagement with UK employees

Our statement on engagement with UK employees is on page 106.

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Engagement with suppliers, customers and others in a business relationship with the company

Our statement on engagement with suppliers, customers and others in a business relationship with the company is on page 108.

Political donations

Rio Tinto prohibits the use of its funds to support political candidates or parties. No donations were made by the Group to parties or political candidates during the year. At Rio Tinto, we respect every country's political process and do not get involved in political matters, nor do we make any type of payments to political parties or political candidates. In the US, in accordance with the *Federal Election Campaign Act*, we provide administrative support for the Rio Tinto America Political Action Committee (PAC), which was created in 1990 and encourages voluntary employee participation in the political process. All Rio Tinto America PAC employee contributions are reviewed for compliance with federal and state laws and are publicly reported in accordance with US election laws. The PAC is controlled by neither Rio Tinto nor any of its subsidiaries, but instead by a governing board of 5 employee members on a voluntary basis. In 2024, contributions to Rio Tinto America PAC by 14 employees amounted to $14,815 and Rio Tinto America PAC donated $10,500 in political contributions in 2024.

Government regulations

Our operations around the world are subject to extensive laws and regulations imposed by local, state, provincial and federal governments. In addition to these laws, several of our operations are governed by specific agreements made with governments, some of which are enshrined in legislation.

The geographic and product diversity of our operations reduces the likelihood of any single law or government regulation having a material effect on the Group's business as a whole.

Environmental regulations

Rio Tinto is subject to various environmental laws and regulations in the countries where it has operations. We measure our performance against environmental regulation by tracking and rating incidents according to their actual environmental and compliance impacts using 5 severity categories (very low, low, moderate, high or very high). Incidents with a consequence rating of high or very high are of a severity that requires notification to the relevant product group head and the Rio Tinto Chief Executive immediately after the incident occurring. In 2024, there were no environmental incidents at managed operations with a high impact.

During 2024, 7 managed operations incurred fines amounting to $604,845 (2023: $986,968). Details of these fines are reported in the Our approach to ESG section on page 39.

Australian corporations that exceed specific greenhouse gas (GHG) emissions or energy use thresholds have obligations under the Australian *The National Greenhouse and Energy Reporting Act 2007* (NGER). All Rio Tinto entities covered under this Act have submitted their annual NGER reports by the required 31 October 2024 deadline.

Further information on the Group's environmental performance is included in the Our approach to ESG section on pages 32–87, and at riotinto.com/sustainabilityreporting.

Energy efficiency action

Details of the measures taken to increase the company's energy efficiency are reported on pages 32–75.

Energy consumption (equity basis)[1, 2, 3]

Energy consumption in PJ	2024	2023[5]
From activities including the combustion of fuel and the operation of facilities	**372**	374
From the net purchase of electricity, heat, steam or cooling[4]	**118**	114
Total energy consumed	**490**	488

1. Rio Tinto does not report on the proportion of energy consumption associated with the UK and offshore area since it has no producing assets in the UK, only offices, and consequently falls below Rio Tinto's threshold level of reporting.
2. Our approach and methodology used for the determination of measuring energy consumption is available at riotinto.com/sustainabilityreporting.
3. Data reported is equity basis, and includes total energy less export to others.
4. Rio Tinto exports electricity and steam to others and exports are netted from our purchases.
5. Numbers restated from those originally published to ensure comparability over time.

Greenhouse gas (GHG) emissions (in million tonnes CO_2e)[6, 7, 8]

	2024	2023[5]
Scope 1[9]	**23.0**	23.3
Scope 2[10]	**6.9**	9.3
Total Scope 1 and 2 emissions	**29.8**	32.6
Carbon credits[11]	**1.1**	0.0
Total net Scope 1 and 2 emissions (with credits)[12]	**28.7**	32.6
Operational emissions intensity (t CO_2e/t Cu-eq)(equity)[13]	**6.1**	6.8
Scope 2 (location based)	**7.8**	7.8

6. Rio Tinto's GHG emissions for our operations (RT share: actual equity basis) are reported in accordance with the requirements under Part 7 of the UK *Companies Act 2006* (Strategic report and Directors' report) Regulations 2013. This GHG data represents Scope 1 and market-based Scope 2 data on equity basis. Our approach and methodology used for the determination of these emissions are available at riotinto.com/sustainability reporting.
7. Rio Tinto's GHG emissions inventory is based on definitions provided by The World Resource Institute/ World Business Council for Sustainable Development Greenhouse Gas Protocol: A Carbon Reporting and Accounting Standard (Revised Edition) (2015).
8. Rio Tinto does not report on the proportion of CO_2 emissions associated with the UK and offshore area since it has no producing assets in the UK, only offices, and consequently falls below Rio Tinto's threshold level of reporting.
9. Scope 1 GHG emissions are direct GHG emissions from facilities fully or partially owned or controlled by Rio Tinto (equity share basis). They include fuel use, on-site electricity generation, anode and reductant use, process emissions, land management and livestock.
10. Scope 2 emissions are presented on equity share basis, for market based reporting Scope 2 includes the use of Energy Attribution Certificates. Our approach and methodology used for the determination of these emissions are available at riotinto.com/sustainabilityreporting.
11. Carbon credits used towards our 2024 net emissions calculations include Australian Carbon Credit Units (ACCUs) that were retired for compliance for the period 1 January to 30 June 2024 plus a projection of the number of ACCUs we expect to retire for the period 1 July to 31 December 2024. This projection is based on our Scope 1 emissions for the period 1 July – 31 December 2024. For details, refer to the table "Carbon credits retired towards net emissions (equity basis)" in the Rio Tinto Sustainability Factbook.
12. Total emissions are the sum of Scope 1 and scope 2 emissions. Total emissions include scope 1 emissions resulting from production of electricity exported to third parties. These emissions exclude indirect emissions associated with transportation and use of our products reported under Scope 3 emissions at riotinto.com/sustainabilityreporting.
13. Historical information for copper equivalent intensity has been restated inline with the 2023 review of commodity pricing to allow comparability over time.

Exploration, research and development

The Group carries out exploration, research and development as described in the product group on pages 24–31. Exploration and evaluation costs, net of any gains and losses on disposal, generated a net loss before tax of $936 million (2023: $1,230 million). Research and development costs were $398 million (2023: $245 million).

Dealing in Rio Tinto securities

Rio Tinto securities dealing policy restricts dealing in Rio Tinto securities by Directors and employees who may be in possession of inside information. These individuals must seek clearance before any proposed dealing takes place.

Our policy also prohibits such persons from engaging in hedging or other arrangements that limit the economic risk in connection to Rio Tinto securities issued, or otherwise allocated, as remuneration that are either unvested, or that have vested but remain subject to a holding period. We also impose restrictions on a broader group of employees, requiring them to seek clearance before engaging in similar arrangements over any Rio Tinto securities.

Financial reporting

Financial statements

The Directors are required to prepare financial statements for each financial period that give a true and fair view of the state of the Group at the end of the financial period, together with profit or loss and cash flows for that period. This includes preparing financial statements in accordance with UK-adopted international accounting standards, applicable UK law (*Companies Act 2006*), Australian law (*Corporations Act 2001*) as amended by the ASIC class order and preparing a Remuneration report that includes the information required by Regulation 11, Schedule 8 of the *Large and Medium-sized Companies and Groups (Accounts and Reports) Regulations 2008* (as amended) and the Australian *Corporations Act 2001*.

In addition, the UK *Corporate Governance Code* recommends that the Board provide a fair, balanced and understandable assessment of the company's position and prospects in its external reporting.

Rio Tinto's management conducts extensive review and challenge in support of the Board's obligations, aiming to strike a

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balance between positive and negative statements and provide good linkages throughout the *Annual Report*.

The Directors were responsible for the preparation and approval of the Annual Report for the year ended 31 December 2024. They consider the *Annual Report*, taken as a whole, to be fair, balanced and understandable, and that it provides the information necessary for shareholders to assess the Group's position, performance, business model and strategy.

The Directors are responsible for maintaining proper accounting records, in accordance with UK and Australian legislation. They have a general responsibility to safeguard the assets of the Group, and to prevent and detect fraud and other irregularities. The Directors are also responsible for ensuring that appropriate systems are in place to maintain and preserve the integrity of the Group's website.

Legislation in the UK governing the preparation and dissemination of financial statements may differ from current and future legislation in other jurisdictions. The work carried out by the Group's external auditors does not take into account such legislation and, accordingly, the external auditors accept no responsibility for any changes to the financial statements after they are made available on the Group's website.

The Directors, senior executives, senior financial managers and other members of staff who are required to exercise judgement while preparing the Group's financial statements, are required to conduct themselves with integrity and honesty, and in accordance with the highest ethical standards, as are all Group employees.

The Directors consider that the *2024 Annual Report* presents a true and fair view and has been prepared in accordance with applicable accounting standards, using the most appropriate accounting policies for Rio Tinto's business, and supported by reasonable judgements and estimates. The accounting policies have been consistently applied as described on pages 154-161, and Directors have received a written statement from the Chief Executive and the Chief Financial Officer to this effect. In accordance with the internal control requirements of the Code and the ASX Principles, this written statement confirms that the declarations in the statement are founded on a sound system of risk management and internal controls, and that the system is operating effectively in all material respects in relation to financial reporting risks.

Further information on Directors' responsibilities is included on page 245.

Disclosure controls and procedures

The Group maintains disclosure controls and procedures, as defined in US *Securities Exchange Act of 1934* (Exchange Act) Rule 13a-15(e). Management, with the participation of the Chief Executive and Chief Financial Officer, has evaluated the effectiveness of the Group's disclosure controls and procedures in relation to US Exchange Act Rule 13a-15(b), as of the end of the period covered by this report, and has concluded that the Group's disclosure controls and procedures were effective at a reasonable assurance level.

We have a thorough and rigorous review process in place to ensure integrity of the periodic reports we release to the market. We communicate with the market through accurate, clear, concise and effective reporting, and contents of periodic reports are verified by the subject matter experts and reviewed by the relevant Group functions. Such reports are then reviewed and considered by the Group Disclosure Committee for release to the market.

To ensure that trading in our securities takes place in an informed and orderly market, we have established a Disclosure Committee to oversee compliance with our continuous disclosure obligations. The Group Disclosure and Communications Policy, and the terms of reference of our Disclosure Committee, together with our adopted procedures in relation to disclosure and management of relevant information, support compliance with our disclosure obligations. A copy of the Group Disclosure and Communications Policy is available on the website.

The members of the Committee are the Chief Executive; the Chief Financial Officer; the Group Company Secretary; the Chief Legal Officer, Governance & Corporate Affairs; the Head of Investor Relations; and the Chief Executive, Australia.

Consistent with the Group's disclosure protocols, the Board is provided with copies of all material market announcements promptly after they are released to the market.

Management's report on internal control over financial reporting

Management is responsible for establishing and maintaining adequate internal controls over financial reporting. These controls, designed under the supervision of the Chief Executive and Chief Financial Officer, provide reasonable assurance regarding the reliability of the Group's financial reporting and the preparation and presentation of financial statements for external reporting purposes, in accordance with International Financial Reporting Standards (IFRS) as defined on page 154.

The Group's internal controls over financial reporting include policies and procedures designed to ensure the maintenance of records that:

- accurately and fairly reflect transactions and dispositions of assets,
- provide reasonable assurances that transactions are recorded as necessary, enabling the preparation of financial statements in accordance with IFRS, and that receipts and expenditures are made with the authorisation of management and Directors of each of the companies, and
- provide reasonable assurance regarding the prevention or timely detection of unauthorised acquisition, use or disposition of the Group's assets that could have a material effect on its financial statements.

Due to inherent limitations, internal controls over financial reporting cannot provide absolute assurance. Similarly, these controls may not prevent or detect all misstatements, whether caused by error or fraud, within each of Rio Tinto plc and Rio Tinto Limited.

There were no changes to internal controls over financial reporting during the relevant period that have materially affected, or were reasonably likely to materially affect, the internal control over financial reporting of Rio Tinto plc and Rio Tinto Limited.

Management's evaluation of the effectiveness of the company's internal controls over financial reporting was based on criteria established in the Internal Control-Integrated Framework (2013), issued by the Committee of Sponsoring Organizations of the Treadway Commission. Following this evaluation, management concluded that our internal controls over financial reporting were effective as at 31 December 2024.

Application of and compliance with governance codes and standards

Our shares are listed on both the Australian Securities Exchange (ASX) and the London Stock Exchange (LSE), We comply with the:

London Stock Exchange – *UK Corporate Governance Code* (2018 version) (the UK Code) and the Australian Securities Exchange – *ASX Corporate Governance Council's Corporate Governance Principles and Recommendations (4th edition)* (the ASX Principles).

In addition, as a foreign private issuer (FPI) with American depositary receipts (ADRs) listed on the New York Stock Exchange (NYSE), we report any significant corporate governance differences from the NYSE listing standards (NYSE Standards) followed by US companies.

Statement of compliance with the UK Code and ASX Principles

Throughout 2024, and as at the date of this report, the Group has complied with all the Principles of the UK Code and the ASX Principles, and all the relevant provisions. For the purposes of ASX Listing Rule 4.10.3 and the ASX Principles, pages 100-118 and 146-152 of this report form our "Corporate Governance Statement". This statement is current as at 19 February 2025, unless otherwise indicated, and has been approved by the Board. Further information on our corporate governance framework and practices is available at riotinto.com/corporategovernance.

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Difference from NYSE Standards

We consider that our practices are broadly consistent with the NYSE Standards, There are the following exceptions where the literal requirements of the NYSE Standards are not met due to differences in corporate governance between the US, UK and Australia:

- The NYSE Standards state that US companies must have a nominating/ corporate governance committee which, in addition to identifying individuals qualified to become board members, develops and recommends to the Board a set of corporate governance principles applicable to the company. Our Nominations Committee does not develop corporate governance principles for the Board's approval. The Board itself develops such principles.
- Under US securities law and the NYSE Standards, the company is required to have an audit committee that is directly responsible for the appointment, compensation, retention and oversight of the work of external auditors. While our Audit & Risk Committee makes recommendations to the Board on these matters, and is subject to legal and regulatory requirements on oversight of audit tenders, the ultimate responsibility for the appointment and retention of the external auditors of Rio Tinto rests with the shareholders.
- Under US securities law and the NYSE Standards, an audit committee is required to establish procedures for the receipt, retention and treatment of complaints regarding accounting, internal accounting controls and audit matters. The whistleblowing program (myVoice) enables employees to raise any concerns confidentially or anonymously. The Board has responsibility to ensure that the program is in place and to review the reports arising from its operations.

Directors' declaration

The Directors' statement of responsibilities in relation to the Group's financial statements is set out on page 245.

Non-audit services and auditor independence

Details of the non-audit services and a statement of independence regarding the provision of non-audit services undertaken by our external auditor, including the amounts paid for non-audit services, are set out on page 115 of the Directors' report.

A copy of the Auditor's Independence Declaration as required under section 307C of the *Corporations Act 2001* is set out on page .265.

Going concern

The Directors, having made appropriate enquiries, have satisfied themselves that it is appropriate to adopt the going concern basis of accounting in preparing the financial statements. Additionally, the Directors have considered longer-term viability, as described in their statement on page 90.

2025 annual general meetings

The 2025 AGMs will be held on 3 April 2025 in London, UK and 1 May 2025 in Perth, Australia. Separate notices of the 2025 AGMs will be produced for the shareholders of each company.

Directors' approval statement

The Directors' report is delivered in accordance with a resolution of the Board.



Dominic Barton
Chair

19 February 2025

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Image: West Angelas iron ore mine, Australia.



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About Rio Tinto

In 1995, Rio Tinto plc, incorporated in the UK and listed on the London and New York Stock Exchanges, and Rio Tinto Limited, incorporated in Australia and listed on the Australian Securities Exchange, formed a dual-listed companies structure (DLC). Under the DLC, Rio Tinto plc and Rio Tinto Limited are viewed as a single economic enterprise, with common boards of directors, and the shareholders of both companies have a common economic interest in the DLC. For further information on the DLC structure, see page 325. International Financial Reporting Standards-compliant consolidated financial statements of the Rio Tinto Group are prepared on this basis, with the interests of shareholders of both companies presented as the equity interests of shareholders in the Rio Tinto Group. This is in accordance with the principles and requirements of International Financial Reporting Standards and in accordance with an order, under section 340 of the Australian *Corporations Act 2001*, issued by the Australian Securities and Investments Commission (ASIC) on 11 July 2024 (ASIC class order).

For further details of the ASIC class order relief, see page 244.

Rio Tinto's business is finding, mining, and processing mineral resources. Major products are iron ore, aluminium, copper, industrial minerals (borates, titanium dioxide and salt) and diamonds. Activities span the world and are strongly represented in Australia and North America, with significant businesses in Asia, Europe, Africa and South America.

Rio Tinto plc's registered office is at 6 St James's Square, London SW1Y 4AD, UK. Rio Tinto Limited's registered office is at Level 43, 120 Collins Street, Melbourne VIC 3000, Australia.

About the presentation of our consolidated financial statements

All financial statement values are presented in US dollars (USD) and rounded to the nearest million (US$m), unless otherwise stated. Where applicable, comparatives have been adjusted to measure or present them on the same basis as current-year figures.

Our financial statements for the year ended 31 December 2024 were authorised for issue in accordance with a Directors' resolution on 19 February 2025.

a. The basis of preparation

The financial information included in the financial statements for the year ended 31 December 2024, and for the related comparative periods, has been prepared:

- under the historical cost convention, as modified by the revaluation of certain financial instruments, the impact of fair value hedge accounting on the hedged items and the accounting for post-employment assets and obligations
- on a going concern basis, management has prepared detailed cash flow forecasts for at least 12 months and has updated life-of-mine plan models with longer-term cash flow projections, which demonstrate that we will have sufficient cash, other liquid resources and undrawn credit facilities to enable us to meet our obligations as they fall due
- to meet UK-adopted international accounting standards, applicable UK law (*Companies Act 2006*) and Australian law (Australian *Corporations Act 2001*) as amended by the ASIC class order
- to meet international accounting standards as issued by the International Accounting Standards Board (IASB) and interpretations issued from time to time by the IFRS Interpretations Committee (IFRS IC), which are mandatory at 31 December 2024.

The above accounting standards and interpretations are collectively referred to as "IFRS" in this report and contain the principles we use to create our accounting policies. Where necessary, adjustments are made to the locally reported assets, liabilities, and results of subsidiaries, joint arrangements and associates to align their accounting policies with ours for consistent reporting.

b. The basis of consolidation

The financial statements consolidate the accounts of Rio Tinto plc and Rio Tinto Limited (together "the Companies") and their respective subsidiaries (together "the Rio Tinto Group", "the Group", "we", "our") and include the Group's share of joint arrangements and associates.

We consolidate subsidiaries where either of the companies controls the entity. Control exists where either of the companies has: power over the entities, that is, existing rights that give it the current ability to direct the relevant activities of the entities (those that significantly affect the companies' returns); exposure, or rights, to variable returns from its involvement with the entities; and the ability to use its power to affect those returns. A list of principal subsidiaries is shown in note 30.

A joint arrangement is an arrangement in which 2 or more parties have joint control. Joint control is the contractually agreed sharing of control such that decisions about the relevant activities of the arrangement (those that significantly affect the companies' returns) require the unanimous consent of the parties sharing control. We have 2 types of joint arrangements: joint operations (JOs) and joint ventures (JVs). A JO is a joint arrangement in which the parties that share joint control have rights to the assets and obligations for the liabilities relating to the arrangement. This includes situations where the parties benefit from the joint activity through a share of the output, rather than by receiving a share of the results of trading. For our JOs, we recognise: our share of assets and liabilities; revenue from the sale of our share of the output and our share of any revenue generated from the sale of the output by the JO; and its share of expenses. All such amounts are measured in accordance with the terms of the arrangement, which is usually in proportion to our interest in the JO. These amounts are recorded in our financial statements on the appropriate lines. Our principal JOs are shown in note 31. A JV is a joint arrangement in which the parties that share joint control have rights to the net assets of the arrangement. JVs are accounted for using the equity accounting method.

An associate is an entity over which we have significant influence. Significant influence is presumed to exist where there is neither control nor joint control and the Group has over 20% of the voting rights, unless it can be clearly demonstrated that this is not the case. Significant influence can arise where we hold less than 20% of the voting rights if we have the power to participate in the financial and operating policy decisions affecting the entity. It also includes situations of collective control.

We use the term "equity accounted units" (EAUs) to refer to associates and JVs collectively. Under the equity accounting method, the investment is recorded initially at cost to the Group, including any goodwill on acquisition. In subsequent periods, the carrying amount of the investment is adjusted to reflect the Group's share of the EAUs' retained post-acquisition profit or loss and other comprehensive income. Our principal JVs and associates are shown in note 32.

In some cases, we participate in unincorporated arrangements and have rights to our share of the assets and obligations for our share of the liabilities of the arrangement rather than a right to a net return, but we do not share joint control. In such cases, we account for these arrangements in the same way as our joint operations, with all such amounts measured in accordance with the terms of the arrangement, which is usually in proportion to our interest in the arrangement.

All intragroup transactions and balances are eliminated on consolidation.

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c. Materiality

Our Directors consider information to be material if correcting a misstatement, omission or obscuring could, in the light of surrounding circumstances, reasonably be expected to change the judgement of a reasonable person relying on the financial statements. The Group considers both quantitative and qualitative factors in determining whether information is material; the concept of materiality is therefore not driven purely by numerical values.

When considering the potential materiality of information, management makes an initial quantitative assessment using thresholds based on estimates of profit before taxation; for the year ended 31 December 2024 the quantitative threshold was US$700 million. However, other considerations can result in a determination that lower values are material or, occasionally, that higher values are immaterial. These considerations include whether a misstatement, omission or obscuring: masks a change or trend in key performance indicators; causes reported key metrics to change from a positive to a negative value or vice versa; affects compliance with regulatory requirements or other contractual requirements; could result in an increase to management's compensation; or might conceal an unlawful transaction.

In assessing materiality, management also applies judgement based on its understanding of the business and its internal and external financial statement users. The assessment will consider user expectations of numerical and narrative reporting. Sources used in making this assessment would include, for example: published analyst consensus measures, experience gained in formal and informal dialogue with users (including regulatory correspondence), and peer group benchmarking.

d. Summary of key judgements or other relevant judgements made in applying the accounting policies

The preparation of the financial statements requires management to use judgement in applying accounting policies and in making critical accounting estimates.

These judgements and estimates are based on management's best knowledge of the relevant facts and circumstances, having regard to previous experience, but actual results may differ materially from the amounts included in the financial statements. Areas of judgement in the application of accounting policies that have the most significant effect on the amounts recognised in the financial statements and key sources of estimation uncertainty that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year are noted below. Further information is contained in the notes to the financial statements.

Summarised below are the key judgements that we have taken in the application of the Group's accounting policies for 2024 and how they compare to the prior year. Taking a different judgement over these matters could lead to a material impact on the 2024 financial statements. More detail on the judgement can be found in the respective notes.

Key judgements	2024	2023	Context
Indicators of impairment and impairment reversals (note 4)	✔	✔	Various cash-generating units of the Group that have been impaired or tested for impairment in previous years, are at higher risk of impairment charge or reversal in the future due to carrying value and recoverable amounts being similar. Whilst we monitor all assets for impairment, these assets are monitored more closely for indicators of further impairment or impairment reversal as such adjustments would likely be material to our results.
Deferral of stripping costs (note 13)	✔	✔	The deferral of stripping costs is a key judgement in open-pit mining operations as it impacts the amortisation base for these costs, calculated on a units of production basis; this involves determining whether multiple pits are considered separate or integrated operations, which in turn influences the classification of stripping activities as pre-production or production phase. This judgement relies on various factors that are based on the unique characteristics and circumstances of each mine.
Estimation of asset lives (note 13)	✔	✔	The useful lives of major assets are often linked to the life of the orebody they relate to, which is in turn based on the life-of-mine plan. Where the major assets are not dependent on the life of a related orebody, management applies judgement in estimating the remaining service potential of long-lived assets. The accuracy of estimating these useful lives is essential for determining the appropriate allocation of costs over time, reflecting the consumption of the asset's economic benefits.
Close-down, restoration and environmental obligations (note 14)	✔	✔	Significant judgement is required to assess the possible extent of closure rehabilitation work needed to fulfil the Group's legal, statutory, and constructive obligations, along with other commitments to stakeholders. This involves leveraging our experience in evaluating available options and techniques to meet these obligations, associated costs and their likely timing and, crucially, determining when that estimate is sufficiently reliable to make or adjust a closure provision.

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e. Key sources of estimation uncertainty

We define key sources of estimation uncertainty as accounting estimates that have a significant risk of causing a material adjustment to the carrying amounts of assets and liabilities within the next financial year. We summarise below the most significant items and the rationale for their identification. Relevant sensitivities are included within the indicated financial statement notes.

Key accounting estimates	2024	2023	Context
Estimation of the close-down, restoration and environmental cost obligations (note 14)	✔	✔	Close-down, restoration and environmental obligations are based on cash flow projections derived from studies that incorporate planned rehabilitation activities, cost estimates and discounting for the time value. Closure studies are performed to a rolling schedule with increased frequency and engineering accuracy for sites approaching end of life. Information from these studies can result in a material change to the associated provisions. During the year, the most significant closure provision updates related to a number of sites across the Pilbara. The provisions are based on reforecast cash flows, these are subject to further study which could result in material adjustment in the near term.
Estimation of obligations for post-employment costs (note 28)	✔	✔	The value of the Group's obligations for post-employment benefits is dependent on the amount of benefits that are expected to be paid out, discounted to the balance sheet date. There is significant estimation uncertainty pertaining to the most significant assumptions used in accounting for pension plans, namely the discount rate, the long-term inflation rate and mortality rates.
Renewable power purchase agreements accounted for as derivatives (note 24)	✔	–	A discounted cash flow methodology is used to determine the fair value of the derivative. Key inputs into the valuation model include forward electricity price curves, which are used to forecast future floating cash flows, estimated electricity generation and credit-adjusted discount rates. Long-term forward electricity prices are a source of a significant estimation uncertainty as they are not readily available and may be impacted by renewable market developments, which are presently unknown.

f. Currency

Other relevant judgements – identification of functional currency

We present our financial statements in USD, as that presentation currency most reliably reflects the global business performance of the Group as a whole.

The functional currency for each subsidiary, unincorporated arrangement, joint operation and equity accounted unit is the currency of the primary economic environment in which it operates. For businesses that reside in developed economies, the functional currency is generally the currency of the country in which it operates because of the dominance of locally incurred costs. If the business resides in an emerging economy, the USD is generally identified to be the functional currency as a higher proportion of costs, particularly imported goods and services, are agreed and paid in USD, in common with other international investors. Determination of functional currency involves judgement, and other companies may make different judgements based on similar facts.

The determination of functional currency affects the measurement of non-current assets included in the balance sheet and, as a consequence, the depreciation and amortisation of those assets included in the income statement. It also impacts exchange gains and losses included in the income statement and in equity. We also apply judgement in determining whether settlement of certain intragroup loans is neither planned nor likely in the foreseeable future and, therefore, whether the associated exchange gains and losses can be taken to equity. During 2024, A$15,717 million (2023: A$15,102 million) of intragroup loans continued to meet these criteria; associated exchange gains and losses are taken to equity.

On consolidation, income statement items for each entity are translated from the functional currency into USD at the full-year average rate of exchange, except for material one-off transactions, which are translated at the rate prevailing on the transaction date. Balance sheet items are translated into USD at period-end exchange rates.

Exchange differences arising on the translation of the net assets of entities with functional currencies other than USD are recognised directly in the currency translation reserve. These translation differences are shown in the statement of comprehensive income, with the exception of the translation adjustment relating to Rio Tinto Limited's share capital, which is shown in the statement of changes in equity.

Where an intragroup balance is, in substance, part of the Group's net investment in an entity, exchange gains and losses on that balance are taken to the currency translation reserve.

Except as noted above, or where exchange differences are deferred as part of a cash flow hedge, all other differences are charged or credited to the income statement in the year in which they arise.

The principal exchange rates used in the preparation of the financial statements were:

	Full-year average			Year-end		
One unit of local currency buys the following number of USD	**2024**	2023	2022	**2024**	2023	2022
Pound sterling	**1.28**	1.24	1.24	**1.25**	1.28	1.21
Australian dollar	**0.66**	0.66	0.69	**0.62**	0.69	0.68
Canadian dollar	**0.73**	0.74	0.77	**0.70**	0.76	0.74
Euro	**1.08**	1.08	1.05	**1.04**	1.11	1.07
South African rand	**0.055**	0.054	0.061	**0.053**	0.054	0.059

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g. Ore Reserves and Mineral Resources

A Mineral Resource is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade (or quality), and quantity that there are reasonable prospects for eventual economic extraction. An Ore Reserve is the economically mineable part of a measured or indicated Mineral Resource.

The estimation of Ore Reserves and Mineral Resources requires judgement to interpret available geological data and subsequently to select an appropriate mining method and then to establish an extraction schedule. At least annually, the Competent Persons of the Group (according to the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (the "JORC Code")), estimate Ore Reserves and Mineral Resources using assumptions such as:

- available geological data
- expected future commodity prices and demand
- exchange rates
- production costs
- transport costs
- close-down and restoration costs
- recovery rates
- discount rates
- renewal of mining licences.

With regard to our future commodity price assumptions, to calculate our Ore Reserves and Mineral Resources for our filing on the Australian Securities Exchange and London Stock Exchange, we use prices generated by our Strategy and Economics team (refer to the our 2025 Climate Action Plan section for further details about our pricing methodology). For our *Annual Report on Form 20-F*, filed with the Securities Exchange Commission (SEC), we use consensus price or historical pricing and comply with subpart 1300 of Regulation S-K (SK-1300), instead of with the JORC Code.

We use judgement as to when to include Mineral Resources in accounting estimates, for example, the use of Mineral Resources in our depreciation policy as described in note 13 and in the determination of the date of closure as described in note 14.

There are many uncertainties in the estimation process and assumptions that are valid at the time of estimation may change significantly when new information becomes available. New geological or economic data or unforeseen operational issues may change estimates of Ore Reserves and Mineral Resources. This could cause material adjustments in our financial statements to:

- depreciation and amortisation rates
- carrying values of intangible assets and property, plant and equipment
- deferred stripping costs
- provisions for close-down and restoration costs
- recovery of deferred tax assets.

The unaudited statement of Ore Reserves is included on pages 278 to 289 and of Mineral Resources on pages 290 to 300.

h. Impact of climate change on the Group

The impacts of climate change and the execution of our climate change strategy on our financial statements are discussed below.

Strategy and approach to climate change

In 2021, we put the low-carbon transition at the heart of our business strategy, setting a clear pathway to deliver long-term value as well as ambitious targets to decarbonise our business.

Our target to reduce our net Scope 1 and 2 emissions by 15% by 2025, 50% by 2030 and to reach net zero emissions by 2050, all relative to our 2018 equity baseline, remains unchanged. We have now reduced gross operational emissions by 14% below our 2018 levels; and have a pipeline of projects and committed investments that support our 2030 target. Our gross emissions reductions are expected to be at least 40% by 2030, and the use of carbon credits towards our target will be limited to 10% of our 2018 baseline. While there is no universal standard for determining the alignment of targets with the Paris Agreement goals, we concluded that our Scope 1 and 2 target for 2030 was aligned with efforts to limit warming to 1.5°C when we set it in 2021. To reduce our decarbonisation footprint we focus on renewable electricity, transitioning from diesel and our processing emissions. Nature-based solutions (NbS) and carbon credits complement our decarbonisation activities. To accelerate these activities, in 2023 we established the Rio Tinto Energy and Climate Team led by our Chief Decarbonisation Officer. To deliver our decarbonisation target, we estimate that we will require around US$5 billion to US$6 billion in capital investment between 2022 to 2030, unchanged from the prior year. This includes voluntary carbon credits and investment in NbS projects but excludes the cost of carbon credits bought for compliance purposes.

Our approach to addressing Scope 3 emissions is to engage with our customers on climate change and work with them to develop and scale up the technologies to decarbonise steel and aluminium production.

Our forecast growth capital expenditure captures new growth opportunities with a focus on materials that are expected to see strong demand growth from the low-carbon transition. This includes our investments in Simandou, Matalco, Rincon, Oyu Tolgoi and the recent agreement to acquire Arcadium Lithium plc. Our budget for central greenfield exploration mainly focuses on copper with a growing battery materials program.

Decarbonisation investment is derived from the Group's capital allocation framework and aligned to our 2025 and 2030 Scope 1 and 2 emissions targets. Decarbonisation investment decisions are made under a dedicated evaluation framework, which includes consideration of the value of the investment and its impact on the cost base, the level of abatement, the maturity of the technology, the competitiveness of the asset and its policy context, and alternative options on the pathway to net zero. Projects are also assessed against our approach to a just transition, with consideration of the impact on employees, local communities, and industry.

Further details on our approach and progress are provided in the front half of this Annual Report: our Climate Action Plan on pages 41 to 75.

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Scenarios

We use scenarios to identify and assess climate-related risks and opportunities that may affect our business in the medium to long term. We do not undertake climate modelling ourselves, rather we determine the approximate temperature outcomes in 2100 by comparing the emissions pathways to 2050 in each of our scenarios with the Shared Socio-Economic Pathways set out in the Intergovernmental Panel on Climate Change Sixth Assessment Report. We also consider the carbon budgets associated with different temperature outcomes. Our scenario approach is reviewed every year as part of our Group strategy engagement with the Board. This year, we updated the scenario framework used to assess the resilience of our business under different transition-related scenarios.

Our Conviction scenario is now our central case. In the prior year, our central case comprised the Competitive Leadership and Fragmented Leadership scenarios. The Conviction scenario underlies strategic planning and portfolio investment decisions across the Group, is used in commodity price forecasts, valuation models, reserves and resources determination, and in determining estimates for assets and liabilities in our financial statements. In the prior year, our central case comprised the Competitive Leadership and Fragmented Leadership scenarios. In this scenario, countries will decarbonise at a moderate pace, real gross domestic product (GDP) grows at 2.5% between 2023-2050, but energy intensity of GDP reduces approximately 2.7% per year due to sectoral shifts and greater efficiency. In Conviction, climate policies become more ambitious and effective over time resulting in a temperature rise of 2.1°C in 2100.

Resilience scenario, which limits temperature rises to around 2.5°C by 2100, is a sensitivity analysis that is designed to test our annual plan and investment proposals. Weaker governance, declining global trade, and lower economic growth lead to less effective climate action. Real GDP growth only averages 1.6% between 2023 and 2050.

Neither of the Conviction or Resilience scenarios above are consistent with the expectation of climate policies required to accelerate the global transition to meet the stretch goal of the Paris Agreement. Despite global agreements on climate change reached in Glasgow and Dubai, emissions today continue to rise, making the 1.5°C goal of the Paris Agreement unlikely to be achieved. As our operational emissions targets are in line with 1.5°C, so too are our decarbonisation investment decisions. In 2022, we developed a Paris-aligned scenario, referred to as the Aspirational Leadership scenario. The Aspirational Leadership scenario reflects a world of high growth, significant social change and accelerated climate action. The Aspirational Leadership scenario is a commodity sales price and carbon cost sensitivity, with all other inputs remaining equal to our central case. It is built by design to reach net zero emissions globally by 2050 and helps us better understand the pathways to meet the Paris Agreement goal, and what this could mean for our business. We do not use the Aspirational Leadership scenario in our broader strategic or investment decision-making.

Importantly, none of the above scenarios are considered a definitive representation for our assessment of the future impact of climate change on the Group. To assess transition risk, we use market analysis for our short-term outlook, and our Conviction and Resilience scenarios for our medium- to long-term assessment. For physical risks, we use an intermediate and high emissions scenario. Scenario modelling has inherent limitations and, by its nature, allows a range of possible outcomes to be considered where it is impossible to predict which outcome is likely.

In addition, as our macroeconomic modelling involves a range of variables, isolating and measuring the impact of specific climate risks and opportunities is challenging. We do not publish the commodity price forecasts associated with these scenarios, as to do so would weaken our position in commercial negotiations and might give rise to concerns from other market participants.

Low-carbon transition risks and opportunities, financial resilience of our portfolio

The low-carbon transition is at the heart of our strategy. This mitigates risks associated with stricter carbon regulations and changing consumer preferences and positions us to capitalise on the growing demand for transition materials. With higher GDP growth and a faster low-carbon transition, our economic performance is stronger in Conviction than in Resilience. Higher carbon penalties and the potential impact on demand for mid and lower grade iron ore result in weaker economic performance in Aspirational Leadership than in Conviction. Overall, the economic performance of our portfolio would be stronger in scenarios with higher GDP growth and proactive climate action, and is resilient under scenarios aligned with 1.5°C, 2.1°C and 2.5°C outcomes. .

We carefully monitor and manage transition risks linked to our operational Scope 1 and 2 emissions and value-chain Scope 3 emissions. In particular, we expect the decarbonisation of our assets to benefit from the implementation of new technologies. The pace of technological development is uncertain, which could delay or increase the cost of our decarbonisation efforts.

Physical risk impacts

In 2022, we launched the Physical Resilience Program across the Group, starting with the asset-level resilience assessment in the Pilbara and Saguenay-Lac-St-Jean. We continue to make progress in a Group-wide, top-down assessment to further understand the risks and opportunities associated with physical climate change and to quantify any financial impacts, in addition to the site-specific, bottom-up assessments, which will continue in the foreseeable future. Asset-level resilience assessments conducted to date as part of a broader multi-year program, as well as our ongoing review processes, including impairment assessments, have not identified any material accounting impacts to date. For example, no write-offs were necessary in the Pilbara, where certain infrastructure assets, such as transmission lines, that have reached the end of their natural lives are being replaced with climate-resilient infrastructure. In 2024, we continued to make progress on the climate-resilience assessment process for our tailings storage facilities, enhanced our water risk management, and operationalised analytics that provide real-time natural-hazard monitoring for 50% of our supply chain.

In addition, we do not foresee the renewal of our contractual water rights in Canada that have been classified as indefinite-lived intangible assets to be at risk from climate change (note 12). Further, closure planning considers future climate change projections at each step of the process to support safe and appropriate final landform design.

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NbS and carbon credits

While prioritising emissions reductions at our operations, we are also investing in high-integrity NbS in the regions where we operate that can bring benefits to people, nature and climate. We will voluntarily retire associated carbon credits to complement the decarbonisation investment, but will limit the use of voluntary and compliance offsets towards our 2030 climate target to up to 10% of our 2018 baseline emissions. We source carbon credits in three ways: we develop new projects, invest in and scale up existing projects, and source high-quality carbon credits through spot carbon credit purchases and long-term offtake agreements. This will complement our abatement project portfolio and support our compliance with carbon pricing regulation such as the Safeguard Mechanism in Australia. In 2024, we finalised offtake agreements for high-quality human-induced regeneration (HIR), as well as with savanna fire management project developers, and progressed feasibility studies on other projects.

In 2024, we purchased US$50 million (2023: US$61 million) of carbon credits. They have been acquired for our own use and are accounted for as intangible assets (note 12).

Accounting impacts from executing our strategy

Global decarbonisation and the world's energy transition continue to evolve, with the potential to materially impact our future financial results as our significant accounting judgements and key estimates are updated to reflect prevailing circumstances. In response, carrying values of assets and liabilities could be materially affected in future periods. Our current strategy and approach to decarbonise our operations and achieve our Scope 1 and 2 emissions targets are considered in our significant judgements and key estimates reflected in these financial results.

Progressing our strategy to grow in materials needed for the low-carbon transition

As part of our strategy to grow in materials essential for the energy transition, we approved "notice to proceed" for the Simandou high-grade iron ore project in Guinea and the Rincon lithium project in Argentina (note 12). We have also continued to invest in our copper portfolio. These projects follow our existing accounting policies on undeveloped properties and cost capitalisation. In 2024 we also announced a definitive agreement to acquire Arcadium Lithium plc (note 5).

In 2023, we entered into an agreement with Giampaolo Group to form the Matalco joint venture, equity accounted, to meet a growing demand for recycled aluminium solutions, and invested in a copper project known as Nuevo Cobre, accounted for as an investment in a partially owned subsidiary (note 5).

Decarbonising our portfolio

As part of our decarbonisation programs, we invested US$283 million (2023: US$191 million) comprising capital projects, investments and carbon credits referred to above, capitalised on balance sheet. Our operating expenditure on Scope 1, 2 and 3 energy efficient initiatives and research and development (R&D) costs, inclusive of our equity share of R&D related to ELYSIS™, was US$306 million (2023: US$234 million), recognised in the income statement (note 7). Our capital commitments at the end of 2024 relating to decarbonisation totalled US$114 million (2023: US$123 million) and included the Amrun renewable PPA classifed as a lease not yet commenced (note 37).

We invested US$89 million (2023: US$36 million) in entities specialising in decarbonisation and related technology, accounted for as financial assets, such as the Silva Carbon Origination Fund, a developer of high integrity Australian Carbon Credit Units (ACCUs) and I-Pulse, a developer of decarbonisation applications. In 2023, this included an investment in Australian Integrated Carbon (AIC), a leading developer of high-quality carbon credits, which is an equity accounted unit.

Given the significant investments we are making to abate our carbon emissions, we have considered the potential for asset obsolescence, with a particular focus on our Pilbara operations where we are building our own renewable assets and are prioritising investment in renewables to switch away from natural gas power generation. No material changes to useful economic lives have been identified in the current year as the assets are expected to be required for the transition (note 13). As the renewable projects progress, it is possible that such adjustments may be identified in the future.

Large-scale renewable power purchase agreements (PPAs) require judgement to determine the appropriate accounting treatment and may result in a lease, a derivative or an executory contract depending on contractual terms (refer to note 21 for further information on significant judgements in lease assessment). The renewable solar and wind PPAs at Richards Bay Minerals (RBM) are accounted for on an accrual basis as energy is produced, while the renewable offtake arrangements at QIT Madagascar Minerals (QMM) and Amrun are leases.

As part of the program to develop renewable energy solutions for our Queensland aluminium assets, we entered into 2 long-term renewable 2.2GW PPAs: the Upper Calliope solar farm and the Bungaban wind farm, at the end of 2023 and in 2024 respectively, to buy renewable electricity and associated green products to be generated in the future. In 2024, our New Zealand Aluminium Smelters signed long-term PPAs with electricity generators for a total of 572MW of hydro electricity. We also signed the Monte Cristo Wind PPA in the US, which will account for about 20% of Kennecott Scope 2 emissions abatement. These contracts are recorded as level 3 financial derivatives, with net unrealised losses of US$111 million recognised in the current year (2023: US$nil) (note 24 (iv)). These derivatives require complex measurement over the contract's term, with inputs such as unobservable long-term energy prices being key sources of estimation of uncertainty (note e).

No adjustments to useful lives of the existing fleet have been identified to date as a result of planned mining fleet electrification in the Pilbara. The solutions are still in development or pilot stages and the gradual fleet replacement is intended to be part of the normal lifecycle renewal of trucks. Depending on technological development, which is highly uncertain, this could lead to accelerated depreciation in the future. Similarly, our target to have net zero vessels in our portfolio by 2030 has not given rise to accounting adjustments to date, as the replacement is planned as part of the lifecycle renewal. The expenditure on our own carbon abatement projects and technology advancements follows existing accounting policies on cost capitalisation, research and development costs.

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Impairment – sensitivities to climate change

In our impairment review process we consider the risks associated with climate change.

The Gladstone alumina refineries are responsible for more than half of our Scope 1 carbon dioxide emissions in Australia and therefore have been a key focus as we evaluate options to decarbonise our assets. In 2023, we recorded an impairment of Queensland Alumina Limited (QAL) refinery with the recoverable amount largely dependent upon the double digestion project, which was at the pre-feasibility study stage of project evaluation. This major capital project improves the energy efficiency of the alumina production process and significantly reduces carbon emissions. In 2024, continued studies for this project have indicated an increased capital cost compared with our previous assumption and therefore we recognised further impairment and provided a sensitivity to the cost of carbon credits (note 4). Following the impairment in 2022, we continue to evaluate lower emission power solutions for the Boyne smelter that could extend its life to at least 2040. In such circumstances, the net present value of the forecast future cash flows could support the reversal of past impairments. .

As noted above, we anticipate increased demand for copper in the low-carbon transition. Whilst we have tested Rio Tinto Kennecott cash-generating unit for impairment utilising our Conviction price assumptions, that are not aligned with the goals of the Paris Agreement, we have also provided a sensitivity using our Paris-aligned Aspirational Leadership scenario (note 4).

Under the Aspirational Leadership scenario, which is not used in the preparation of these financial statements, nor for budgeting purposes, the economic performance of copper and aluminium is expected to be stronger under supply and demand forward-pricing curves, which we believe will be consistent with the Paris Agreement. It is possible therefore, under certain conditions, that historical impairments associated with these assets could reverse.

In the Aspirational Leadership scenario, the prices for lower-grade iron ore are supported in the medium term by an assumed underlying increase in GDP-driven demand. However, in the longer term, we assume the pricing for lower-grade iron ore to be weaker than in our Conviction scenario and will depend on the development of low-carbon steel technology, the pace of which is uncertain, but is expected to be offset by higher prices for higher-grade iron ore. As was the case in the prior year, this is very unlikely to give rise to impairment triggers in the short- to medium-term, due to the high returns on capital employed in the Pilbara and the slow deployment of low-carbon steel technology.

Use of Paris-aligned accounting

Forecast commodity prices, including carbon prices, incorporated into our Conviction scenario are used to inform critical accounting estimates included as inputs to impairment testing, estimation of remaining economic life for units of production depreciation and discounting closure and rehabilitation provisions. These prices represent our best estimate of actual market outcomes based on the range of future economic conditions regarding matters largely outside our control, as required by IFRS. As the Conviction scenario does not represent the Group's view of the goals of the Paris Agreement, our commodity price assumptions used in accounting estimates are not consistent with the expectation of climate policies required to accelerate the global transition to meet the goals of the Paris Agreement. As described above, we use our Aspirational Leadership scenario to help us better understand the pathways to meet the Paris Agreement goal, and what this could mean for our business.

Closure dates and cost of closure are also sensitive to climate assumptions, including precipitation rates, but no material changes have been identified in the year specific to climate change that would require a material revision to the provisions in 2024. For those commodities with higher forward price curves under the Aspirational Leadership scenario, it may be economical to mine lower mineral grades, which could result in the conversion of additional Mineral Resources to Ore Reserves and therefore longer dated closure.

We completed the divestments of our coal businesses in 2018 and no longer mine coal, but retained a contingent royalty income from these divestments. Recent favourable coal prices exceeded contractual benchmark levels and resulted in the cash royalty receipt of US$45 million during 2024 (2023: US$38 million). We also carry royalty receivables of US$252 million on our balance sheet at 31 December 2024 (2023: US$214 million), measured at fair value (note 24). The fair value of this balance may be adversely impacted in the future by a faster pace of transition to a low-carbon economy, but this impact is not expected to be material.

Overall, based on the Aspirational Leadership scenario pricing outcomes, and with all other assumptions remaining consistent with those applied to our 2024 financial statements, we do not currently envisage a material adverse impact of the 1.5°C Paris-aligned sensitivity on asset carrying values, remaining useful life, or closure and rehabilitation provisions for the Group. It is possible that other factors may arise in the future, which are not known today, that may impact this assessment.

Additional commentary on the impact of climate change on our business is included in the following notes:

Financial reporting considerations and sensitivities related to climate change	Page
Recoverable value of our assets, asset obsolescence, impairment and use of sensitivities (note 4)	172 – 173
Operating expenditure spend on decarbonisation (note 7 – footnote (h))	178
Water rights – climate impact on indefinite life (note 12)	184
Carbon abatement spend on procurement of carbon units and renewable energy certificates (note 12 – footnote (a))	184
Estimation of asset lives (note 13)	186
Additions to property, plant and equipment with a primary purpose of reducing carbon emissions (note 13 – footnote (d))	188
Useful economic lives of power generating assets (note 13)	189
Close-down, restoration and environmental cost (note 14)	192
Renewable PPAs accounted for as derivatives (note 24 (iv))	204
Coal royalty receivables (note 24)	207
Decarbonisation capital commitments (note 37)	227

i. New standards issued and effective in the current year

Our financial statements have been prepared on the basis of accounting policies consistent with those applied in the financial statements for the year ended 31 December 2023, except for the accounting requirements set out below, effective as at 1 January 2024.

Classification of liabilities as current or non-current liabilities with covenants (Amendments to IAS 1 "Presentation of Financial Statements")

We adopted the Amendments to IAS 1 which specify the requirements for classifying liabilities as either current or non-current. The amendments clarify that a right to defer the settlement must exist at the end of the reporting period and that classification is unaffected by the likelihood that an entity will exercise its deferral right. In addition, a requirement has been introduced whereby an entity must disclose when a liability arising from a loan agreement is classified as non-current and the entity's right to defer settlement is contingent on compliance with future covenants within 12 months. The amendments do not have a material impact on the Group.

Refer to note 20 for additional disclosures made in relation to Amendments to IAS 1.

Lease liability in a sale and leaseback (Amendments to IFRS 16 "Leases")

We adopted the Amendments to IFRS 16 which specify the requirements that a seller-lessee uses in measuring the lease liability arising in a sale and leaseback transaction. The amendments do not have an impact on the Group.

Supplier finance arrangements (Amendments to IAS 7 "Statement of Cash Flows" and IFRS 7 "Financial Instruments: Disclosures")

We adopted the Amendments to IAS 7 and IFRS 7 which clarify the characteristics of supplier finance arrangements and require additional disclosure of such arrangements. The amendments respond to the investors' need for more information about supplier finance arrangements to be able to assess how these arrangements affect an entity's liabilities, cash flows and liquidity risk. As a result of the adoption of the amendments, we provided new disclosures for liabilities under supplier finance arrangements as well as the associated cash flows in note 18 and note 24 (i). These amendments did not have a material impact on the amounts recognised in prior and the current period.

The Organisation for Economic Co-operation and Development's (OECD) Pillar Two Rules

For the year ended 31 December 2023, we adopted the amendments to IAS 12, issued in May 2023, which provide a temporary mandatory exception from the requirement to recognise and disclose information on deferred tax assets and liabilities related to enacted or substantively enacted law that implements Pillar Two income taxes. Pillar Two was substantively enacted in the United Kingdom on 20 June 2023, with application from 1 January 2024. Exposure to additional taxation under Pillar Two is immaterial to the Group (note 10).

j. Reconciliation with Australian Accounting Standards

Our financial statements have been prepared in accordance with IFRS, as defined in the "Basis of preparation" section on page 154, which differs in certain respects from the version of IFRS that is applicable in Australia, referred to as Australian Accounting Standards (AAS). We are required to disclose the effect of the adjustments to our consolidated income statement, consolidated total comprehensive income/(loss) and consolidated shareholders' funds if our accounts were prepared under the version of IFRS that is applicable in Australia. This is in order to satisfy the obligations of Rio Tinto Limited to prepare consolidated accounts under Australian company law, as amended by an order issued by the Australian Securities and Investments Commission on 11 July 2024.

Prior to 1 January 2004, our financial statements were prepared in accordance with UK Generally Accepted Accounting Practice (UK GAAP). Under IFRS, goodwill on acquisitions prior to 1998, which was eliminated directly against equity in the Group's UK GAAP financial statements, has not been reinstated. This was permitted under the rules governing the transition to IFRS set out in IFRS 1. The equivalent Australian Standard, AASB 1, does not provide for the netting of goodwill against equity. As a consequence, shareholders' funds under AAS include the residue of such goodwill, which amounted to US$385 million at 31 December 2024 (2023: US$380 million).

Save for the exception described above, the Group's financial statements prepared in accordance with IFRS are consistent with the requirements of AAS.

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Consolidated income statement

Years ended 31 December

	Note	2024 US$m	2023 US$m	2022 US$m
Consolidated operations				
Consolidated sales revenue	1, 6	**53,658**	54,041	55,554
Net operating costs (excluding items disclosed separately)	7	**(37,745)**	(37,052)	(34,770)
Net impairment (charges)/reversals	4	**(538)**	(936)	150
Gains/(losses) on consolidation and disposal of interests in businesses	5	**1,214**	–	(105)
Exploration and evaluation expenditure (net of profit from disposal of interests in undeveloped projects)	8	**(936)**	(1,230)	(896)
Operating profit		**15,653**	14,823	19,933
Share of profit after tax of equity accounted units		**838**	675	777
Impairment of investments in equity accounted units	4	**–**	–	(202)
Profit before finance items and taxation		**16,491**	15,498	20,508
Finance items				
Net exchange gains/(losses) on external net debt and intragroup balances		**322**	(251)	253
Losses on derivatives not qualifying for hedge accounting		**(92)**	(54)	(424)
Finance income	9	**514**	536	179
Finance costs	9	**(763)**	(967)	(335)
Amortisation of discount on provisions	14, 36	**(857)**	(977)	(1,519)
		(876)	(1,713)	(1,846)
Profit before taxation		**15,615**	13,785	18,662
Taxation	10	**(4,041)**	(3,832)	(5,614)
Profit after tax for the period		**11,574**	9,953	13,048
– attributable to owners of Rio Tinto (net earnings)		**11,552**	10,058	12,392
– attributable to non-controlling interests		**22**	(105)	656
Basic earnings per share	2	**711.7c**	620.3c	765.0c
Diluted earnings per share	2	**707.2c**	616.5c	760.4c

The notes on pages 154 to 161 and pages 167 to 230 are an integral part of these consolidated financial statements.

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Consolidated statement of comprehensive income

Years ended 31 December

	Note	2024 US$m	2023 US$m	2022 US$m
Profit after tax for the year		**11,574**	9,953	13,048
Other comprehensive (loss)/income				
Items that will not be reclassified to the income statement:				
Remeasurement gains/(losses) on pension and post-retirement healthcare plans	28	**83**	(461)	578
Changes in the fair value of equity investments held at fair value through other comprehensive income (FVOCI)		**–**	(24)	–
Tax relating to these components of other comprehensive income	10	**(22)**	152	(123)
Share of other comprehensive income/(loss) of equity accounted units, net of tax		**4**	(3)	5
		65	(336)	460
Items that have been/may be subsequently reclassified to the income statement:				
Currency translation adjustment[(a)]		**(3,391)**	644	(2,399)
Currency translation on operations disposed of, transferred to the income statement		**(27)**	–	105
Fair value movements:				
– Cash flow hedge gains/(losses)		**13**	30	(167)
– Cash flow hedge losses/(gains) transferred to the income statement		**17**	(39)	106
Net change in costs of hedging reserve	35	**4**	5	4
Tax relating to these components of other comprehensive loss	10	**(10)**	1	21
Share of other comprehensive (loss)/income of equity accounted units, net of tax		**(45)**	14	(27)
		(3,439)	655	(2,357)
Total other comprehensive (loss)/income for the year, net of tax		**(3,374)**	319	(1,897)
Total comprehensive income for the year		**8,200**	10,272	11,151
– attributable to owners of Rio Tinto		**8,375**	10,335	10,649
– attributable to non-controlling interests		**(175)**	(63)	502

(a) Excludes a currency translation charge of US$317 million (2023: gain of US$47 million; 2022: charge of US$240 million) arising on Rio Tinto Limited's share capital for the year ended 31 December 2024, which is recognised in the consolidated statement of changes in equity. Refer to the consolidated statement of changes in equity on page 166.

The notes on pages 154 to 161 and pages 167 to 230 are an integral part of these consolidated financial statements.

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Consolidated cash flow statement

Years ended 31 December

	Note	2024 US$m	2023 US$m	2022 US$m
Cash flows from consolidated operations[a]		**19,859**	20,251	23,158
Dividends from equity accounted units		**1,067**	610	879
Cash flows from operations		**20,926**	20,861	24,037
Net interest paid		**(685)**	(612)	(573)
Dividends paid to holders of non-controlling interests in subsidiaries		**(477)**	(462)	(421)
Tax paid		**(4,165)**	(4,627)	(6,909)
Net cash generated from operating activities		**15,599**	15,160	16,134
Cash flows from investing activities				
Purchases of property, plant and equipment and intangible assets[b]	1	**(9,621)**	(7,086)	(6,750)
Sales of property, plant and equipment and intangible assets		**30**	9	–
Acquisitions of subsidiaries, joint ventures and associates[b]	5	**(346)**	(834)	(850)
Disposals of subsidiaries, joint ventures, joint operations and associates	5	**427**	–	80
Purchases of financial assets		**(113)**	(39)	(55)
Sales of financial assets[c]		**677**	1,220	892
Net funding of equity accounted units[b]		**(784)**	(144)	(75)
Other investing cash flows		**136**	(88)	51
Net cash used in investing activities		**(9,594)**	(6,962)	(6,707)
Cash flows before financing activities		**6,005**	8,198	9,427
Cash flows from financing activities				
Equity dividends paid to owners of Rio Tinto	3	**(7,025)**	(6,470)	(11,727)
Proceeds from additional borrowings, net of issue costs	19, 20	**261**	1,833	321
Repayment of borrowings and associated derivatives	19, 20	**(860)**	(310)	(790)
Lease principal payments	19	**(455)**	(426)	(374)
Proceeds from issue of equity to non-controlling interests[b]		**1,574**	127	86
Purchase of non-controlling interest	5, 36	**(591)**	(33)	(2,961)
Other financing cash flows		**2**	2	(28)
Net cash used in financing activities		**(7,094)**	(5,277)	(15,473)
Effects of exchange rates on cash and cash equivalents		**(99)**	(23)	15
Net (decrease)/increase in cash and cash equivalents		**(1,188)**	2,898	(6,031)
Opening cash and cash equivalents less overdrafts		**9,672**	6,774	12,805
Closing cash and cash equivalents less overdrafts	22	**8,484**	9,672	6,774

Notes to the consolidated cash flow statement

(a) Cash flows from consolidated operations	Note	2024 US$m	2023 US$m	2022 US$m
Profit after tax for the year		**11,574**	9,953	13,048
Adjustments for:				
– Taxation		**4,041**	3,832	5,614
– Finance items		**876**	1,713	1,846
– Share of profit after tax of equity accounted units		**(838)**	(675)	(777)
– (Gains)/losses on consolidation and disposal of interests in businesses	5	**(1,214)**	–	105
– Impairment charges of investments in equity accounted units after tax	4	**–**	–	202
– Net impairment charges/(reversals)	4	**538**	936	(150)
– Depreciation and amortisation		**5,918**	5,334	5,010
– Provisions (including exchange differences on provisions)		**398**	1,470	1,006
Utilisation of other provisions	36	**(94)**	(104)	(176)
Utilisation of provisions for close-down and restoration	14	**(1,142)**	(777)	(609)
Utilisation of provisions for post-retirement benefits and other employment costs	26	**(133)**	(277)	(254)
Change in inventories		**205**	(422)	(1,185)
Change in receivables and other assets		**(202)**	(418)	20
Change in trade and other payables		**54**	(86)	700
Other items[d]		**(122)**	(228)	(1,242)
		19,859	20,251	23,158

(b) In 2024, our net cash outflow in relation to the Simandou iron ore project was US$1.3 billion. This includes cash outflows of US$1,831 million for purchase of property, plant and equipment, US$313 million as acquisition of associates for WCS Rail and Port, and US$652 million as net funding of equity accounted units for the subsequent funding of that shared infrastructure. We received related cash inflows of US$1,505 million from Chalco Iron Ore Holdings Ltd (CIOH) for cash calls by SimFerJersey Limited, of which US$411 million relates to CIOH's share of expenditure incurred up until the end of December 2023 to progress critical works.

(c) In 2024, we received net proceeds of US$675 million (2023: US$1,157 million and 2022: US$352 million) from our sales and purchases of investments within a separately managed portfolio of fixed income instruments. Refer to note 19 for details. Purchases and sales of these securities are reported on a net cash flow basis within "Sales of financial assets" or "Purchases of financial assets" depending on the overall net position at each reporting date.

(d) In 2024, Other items includes the recognition of realised losses of US$88 million on currency forwards not designated as hedges (2023: realised losses US$57 million, 2022: realised losses US$459 million). In 2022, other items also included the deduction of the US$432 million relating to the gain recognised on sale of the Cortez royalty shown in "Sale of financial assets".

The notes on pages 154 to 161 and pages 167 to 230 are an integral part of these consolidated financial statements.

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Consolidated balance sheet

At 31 December

	Note	2024 US$m	2023 US$m
Non-current assets			
Goodwill	11	**727**	797
Intangible assets	12	**2,804**	4,389
Property, plant and equipment	13	**68,573**	66,468
Investments in equity accounted units		**4,837**	4,407
Inventories	16	**222**	214
Deferred tax assets	15	**4,016**	3,624
Receivables and other assets	17	**1,397**	1,659
Other financial assets	23	**1,090**	481
		83,666	82,039
Current assets			
Inventories	16	**5,860**	6,659
Receivables and other assets	17	**4,241**	3,945
Tax recoverable		**105**	115
Other financial assets	23	**419**	1,118
Cash and cash equivalents	22	**8,495**	9,673
		19,120	21,510
Total assets		**102,786**	103,549
Current liabilities			
Borrowings	20	**(180)**	(824)
Leases	21	**(354)**	(345)
Other financial liabilities	23	**(112)**	(273)
Trade and other payables	18	**(8,178)**	(8,238)
Tax payable		**(585)**	(542)
Close-down, restoration and environmental provisions	14	**(1,183)**	(1,523)
Provisions for post-retirement benefits and other employment costs	26	**(359)**	(361)
Other provisions	36	**(792)**	(637)
		(11,743)	(12,743)
Non-current liabilities			
Borrowings	20	**(12,262)**	(12,177)
Leases	21	**(1,059)**	(1,006)
Other financial liabilities	23	**(591)**	(513)
Trade and other payables	18	**(543)**	(596)
Tax payable		**(28)**	(31)
Deferred tax liabilities	15	**(2,635)**	(2,584)
Close-down, restoration and environmental provisions	14	**(14,548)**	(15,627)
Provisions for post-retirement benefits and other employment costs	26	**(1,097)**	(1,197)
Other provisions	36	**(315)**	(734)
		(33,078)	(34,465)
Total liabilities		**(44,821)**	(47,208)
Net assets		**57,965**	56,341
Capital and reserves			
Share capital			
– Rio Tinto plc	34	**207**	207
– Rio Tinto Limited	34	**3,060**	3,377
Share premium account		**4,326**	4,324
Other reserves	35	**5,114**	8,328
Retained earnings	35	**42,539**	38,350
Equity attributable to owners of Rio Tinto		**55,246**	54,586
Attributable to non-controlling interests		**2,719**	1,755
Total equity		**57,965**	56,341

The notes on pages 154 to 161 and pages 167 to 230 are an integral part of these consolidated financial statements.

The financial statements on pages 154 to 230 were approved by the Directors on 19 February 2025 and signed on their behalf by

Dominic Barton
Chair

Jakob Stausholm
Chief Executive

Peter Cunningham
Chief Financial Officer

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Consolidated statement of changes in equity

Years ended 31 December

Year ended 31 December 2024	Attributable to owners of Rio Tinto						
	Share capital (note 34) US$m	Share premium account US$m	Other reserves (note 35) US$m	Retained earnings (note 35) US$m	Total US$m	Non-controlling interests US$m	Total equity US$m
Opening balance	**3,584**	**4,324**	**8,328**	**38,350**	**54,586**	**1,755**	**56,341**
Total comprehensive income for the year[a]	**–**	**–**	**(3,242)**	**11,617**	**8,375**	**(175)**	**8,200**
Currency translation arising on Rio Tinto Limited's share capital	**(317)**	**–**	**–**	**–**	**(317)**	**–**	**(317)**
Dividends (note 3)	**–**	**–**	**–**	**(7,025)**	**(7,025)**	**(528)**	**(7,553)**
Newly consolidated operation (note 5)	**–**	**–**	**–**	**–**	**–**	**5**	**5**
Own shares purchased from Rio Tinto shareholders to satisfy share awards to employees[b]	**–**	**–**	**(44)**	**(13)**	**(57)**	**–**	**(57)**
Change in equity interest held by Rio Tinto	**–**	**–**	**–**	**(468)**	**(468)**	**88**	**(380)**
Treasury shares reissued and other movements	**–**	**2**	**–**	**–**	**2**	**–**	**2**
Equity issued to holders of non-controlling interests	**–**	**–**	**–**	**–**	**–**	**1,574**	**1,574**
Employee share awards charged to the income statement	**–**	**–**	**72**	**78**	**150**	**–**	**150**
Closing balance	**3,267**	**4,326**	**5,114**	**42,539**	**55,246**	**2,719**	**57,965**

Year ended 31 December 2023	Attributable to owners of Rio Tinto						
	Share capital (note 34) US$m	Share premium account US$m	Other reserves (note 35) US$m	Retained earnings (note 35) US$m	Total US$m	Non-controlling interests US$m	Total equity US$m
Opening balance	3,537	4,322	7,755	35,020	50,634	2,107	52,741
Total comprehensive income for the year[a]	—	–	585	9,750	10,335	(63)	10,272
Currency translation arising on Rio Tinto Limited's share capital	47	–	–	–	47	–	47
Dividends (note 3)	–	–	–	(6,466)	(6,466)	(462)	(6,928)
Newly consolidated operation (note 5)	–	–	—	—	—	33	33
Own shares purchased from Rio Tinto shareholders to satisfy share awards to employees[b]	–	–	(78)	(17)	(95)	–	(95)
Change in equity interest held by Rio Tinto	–	–	–	(13)	(13)	13	–
Treasury shares reissued and other movements	–	2	–	–	2	–	2
Equity issued to holders of non-controlling interests	–	–	–	—	—	127	127
Employee share awards charged to the income statement	–	–	66	76	142	–	142
Closing balance	**3,584**	**4,324**	**8,328**	**38,350**	**54,586**	**1,755**	**56,341**

Year ended 31 December 2022	Attributable to owners of Rio Tinto						
	Share capital (note 34) US$m	Share premium account US$m	Other reserves (note 35) US$m	Retained earnings (note 35) US$m	Total US$m	Non-controlling interests US$m	Total equity US$m
Opening balance	3,777	4,320	9,976	33,857	51,930	5,166	57,096
Total comprehensive income for the year[a]	–	–	(2,193)	12,842	10,649	502	11,151
Currency translation arising on Rio Tinto Limited's share capital	(240)	–	–	–	(240)	–	(240)
Dividends (note 3)	–	–	–	(11,716)	(11,716)	(421)	(12,137)
Own shares purchased from Rio Tinto shareholders to satisfy share awards to employees[b]	–	–	(84)	(16)	(100)	–	(100)
Change in equity interest held by Rio Tinto	–	–	–	701	701	(3,907)	(3,206)
Treasury shares reissued and other movements	–	2	–	–	2	–	2
Equity issued to holders of non-controlling interests	–	–	–	(711)	(711)	797	86
Employee share awards charged to the income statement	–	–	56	63	119	—	119
Transfers and other movements	–	–	—	—	—	(30)	(30)
Closing balance	**3,537**	**4,322**	**7,755**	**35,020**	**50,634**	**2,107**	**52,741**

(a) Refer to the consolidated statement of comprehensive income for further details. Adjustments to other reserves include currency translation attributable to owners of Rio Tinto, other than that arising on Rio Tinto Limited's share capital.

(b) Net of contributions received from employees for share awards.

The notes on pages 154 to 161 and pages 167 to 230 are an integral part of these consolidated financial statements.

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Notes to the consolidated financial statements

Our financial performance

We use a number of measures, including segmental revenue, underlying EBITDA, and capital expenditure to provide us with a greater understanding of our operations' underlying business performance, including revenue generation, productivity and cost management, on a comparable basis between reporting years.

1 Financial performance by segment

Our management structure is based on product groups (PG) together with global support functions whose leaders make up the Executive Committee. The Executive Committee members each report directly to our Chief Executive who is the chief operating decision maker (CODM) and is responsible for allocating resources and assessing performance of the operating segments. The CODM's primary measure of profit is underlying EBITDA (as defined on page 168).

Our reportable segments are as follows.

Reportable segment	Principal activities
Iron Ore	Iron ore mining and salt and gypsum production in Western Australia.
Aluminium	Bauxite mining; alumina refining; aluminium smelting and recycling.
Copper	Mining and refining of copper, gold, silver, molybdenum, other by-products and exploration activities.
Minerals	Includes mining and processing of borates, titanium dioxide feedstock and iron concentrate and pellets from the Iron Ore Company of Canada. Also includes diamond mining, sorting and marketing and development projects for battery materials, such as lithium.

Management responsibility during the build phase of the Simandou iron ore project falls under the Chief Technical Officer, Mark Davies. Whilst this is classified as "Other operations",and sits below reportable segments, we have shown this separately due to the significance of funding and spend during the year following notice to proceed. Accountability for Rio Tinto Guinea, our in-country external affairs office remains with Bold Baatar, and has therefore moved from the Copper product group to "Other operations" following his change in role to Chief Commercial Officer. Accordingly, prior period amounts have been adjusted for comparability even though there is no material impact as a result of the change.

	Segmental revenue US$m			Underlying EBITDA US$m			Capital expenditure[a] US$m		
	2024	2023	2022	2024	2023 Adjusted	2022 Adjusted	2024	2023	2022
Iron Ore	**29,339**	32,249	30,906	**16,249**	19,974	18,612	**3,012**	2,588	2,940
Aluminium	**13,650**	12,285	14,109	**3,673**	2,282	3,672	**1,694**	1,331	1,377
Copper	**9,275**	6,678	6,699	**3,437**	1,960	2,566	**2,055**	1,976	1,622
Minerals	**5,531**	5,934	6,754	**1,080**	1,414	2,419	**798**	746	679
Reportable segments total	**57,795**	57,146	58,468	**24,439**	25,630	27,269	**7,559**	6,641	6,618
Simandou iron ore project	**—**	—	—	**(22)**	(539)	(189)	**1,832**	266	—
Other operations	**120**	142	192	**43**	(95)	(17)	**66**	57	53
Inter-segment transactions	**(209)**	(231)	(256)	**9**	8	24			
Share of equity accounted units[b]	**(4,048)**	(3,016)	(2,850)						
Central pension costs, share-based payments, insurance and derivatives				**153**	168	377			
Restructuring, project and one-off costs				**(254)**	(190)	(173)			
Central costs				**(816)**	(990)	(766)			
Central exploration and evaluation expenditures				**(238)**	(100)	(253)			
Proceeds from disposal of property, plant and equipment							**30**	9	–
Other items							**134**	113	79
Consolidated sales revenue	**53,658**	54,041	55,554						
Purchases of property, plant and equipment and intangible assets							**9,621**	7,086	6,750
Underlying EBITDA[c]				**23,314**	23,892	26,272			

(a) Capital expenditure for reportable segments includes the net cash outflow on purchases less disposals of property, plant and equipment, capitalised evaluation costs and purchases less disposals of other intangible assets. The details provided include 100% of subsidiaries' capital expenditure and Rio Tinto's share of the capital expenditure of joint operations.

(b) Consolidated sales revenue includes subsidiary sales of US$213 million (2023: US$20 million; 2022: US$50 million) to equity accounted units which are not included in segmental revenue. Segmental revenue includes the Group's proportionate share of product sales by equity accounted units (after adjusting for sales to subsidiaries) of US$4,261 million (2023: US$3,036 million; 2022: US$2,900 million) which are not included in consolidated sales revenue.

(c) Pre-tax and pre-divestment expenditure on exploration and evaluation charged to the profit and loss account in 2024 was US$935 million (note 8), compared with US$855 million in 2023 (excluding Simandou). Approximately 25% of the spend was by central exploration, 23% by Minerals (with the majority focusing on lithium), 36% by Copper, 14% by Iron Ore and 2% by Aluminium. In 2024, all qualifying expenditure relating to Simandou is being capitalised. Qualifying expenditure on the Rincon lithium project has been capitalised since 1 July 2024.

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1 Financial performance by segment *continued*

Segmental revenue

Segmental revenue includes consolidated sales revenue plus the equivalent sales revenue of equity accounted units (EAUs) in proportion to our equity interest (after adjusting for sales to/from subsidiaries).

Segmental revenue measures revenue on a basis that is comparable to our underlying EBITDA metric.

Other segmental reporting

For further information relating to Revenue by destination and product and Non-operating assets by geography, refer to note 6 on page 178 and Our operating assets section on page 182, respectively.

Underlying EBITDA

Underlying EBITDA represents profit before taxation, net finance items, depreciation and amortisation adjusted to exclude the EBITDA impact of items which do not reflect the underlying performance of our reportable segments.

Other relevant judgements – Exclusions from underlying EBITDA

Items excluded from profit after tax are those gains and losses that, individually or in aggregate with similar items, are of a nature and size to require exclusion in order to provide additional insight into the underlying business performance. The following items are excluded from profit after tax in arriving at underlying EBITDA in each year irrespective of materiality:

- all depreciation and amortisation in subsidiaries and the corresponding share of profit in EAUs
- all taxation and finance items in subsidiaries and the corresponding share of profit in EAUs
- unrealised (gains)/losses on embedded derivatives not qualifying for hedge accounting (including foreign exchange)
- net (gains)/losses on consolidation or disposal of interests in businesses
- impairment charges net of reversals including corresponding amounts in share of profit in EAUs
- the underlying EBITDA of discontinued operations
- adjustments to closure provisions where the adjustment is associated with an impairment charge and for legacy sites where the disturbance or environmental contamination relates to the pre-acquisition period.

In addition, there is a final judgemental category which includes, where applicable, other credits and charges that, individually or in aggregate if of a similar type, are of a nature or size to require exclusion in order to provide additional insight into underlying business performance. In 2023, this included all re-estimates of the closure provisions for fully impaired sites identified in the second half of the year due to the materiality of the adjustment in aggregate. In 2022, this category included the gain recognised by Kitimat relating to LNG Canada's project and the gain recognised upon sale of the Cortez royalty. There were no similar items in 2024.

	2024 US$m	2023 US$m	2022 US$m
Profit after tax for the year	**11,574**	9,953	13,048
Taxation	**4,041**	3,832	5,614
Profit before taxation	**15,615**	13,785	18,662
Depreciation and amortisation in subsidiaries, excluding capitalised depreciation[a]	**5,744**	4,976	4,871
Depreciation and amortisation in equity accounted units	**559**	484	470
Finance items in subsidiaries	**876**	1,713	1,846
Taxation and finance items in equity accounted units	**1,002**	741	640
Unrealised losses/(gains) on embedded commodity and currency derivatives not qualifying for hedge accounting (including foreign exchange)	**73**	(15)	(6)
(Gains)/losses on consolidation and disposal of interests in businesses[b]	**(1,214)**	–	105
Impairment charges net of reversals (note 4)	**573**	936	52
Gain recognised by Kitimat relating to LNG Canada's project[c]	**–**	–	(116)
Change in closure estimates (non-operating and fully impaired sites)[d]	**86**	1,272	180
Gain on sale of the Cortez royalty[e]	**–**	–	(432)
Underlying EBITDA	**23,314**	23,892	26,272

(a) Depreciation and amortisation in subsidiaries for the year ended 31 December 2024 is net of capitalised depreciation of US$174 million (2023: US$358 million; 2022: US$139 million).

(b) Gains on consolidation of businesses include the revaluation of our previously held interest in the NZAS joint operation as we acquired the remaining shares during the year and this became a subsidiary. Disposals include the sale of Wyoming Uranium and Lake MacLeod, as described in note 5.

(c) During 2022, LNG Canada elected to terminate their option to purchase additional land and facilities for expansion of their operations at Kitimat, Canada. The resulting gain was excluded from underlying EBITDA consistent with prior years as it was part of a series of transactions that together were material.

(d) In 2024, the charge to the income statement relates to the change in estimates of underlying closure cash flows, net of impact of a change in discount rate, expressed in real-terms, from 2.0% to 2.5% as applied to provisions for close-down, restoration and environmental liabilities at legacy sites where the environmental damage preceded ownership by Rio Tinto. In 2023, the charge includes US$873 million related to the closure provision update announced by ERA on 12 December 2023, together with the update included in their half year results for the period ended 30 June 2023, published in August 2023. This update was considered material and therefore it was aggregated with other closure study updates (see note 14) which were similar in nature and have been excluded from underlying EBITDA. The other closure study updates were at legacy sites managed by our central closure team as well as an update at Yarwun alumina refinery which was expensed due to the impairment earlier in the year. In 2022, the charge related to re-estimates of underlying closure cash flows for legacy sites where the environmental damage preceded ownership by Rio Tinto.

(e) On 2 August 2022, we completed the sale of a gross production royalty which was retained following the disposal of the Cortez Complex in 2008. The gain recognised on sale of the royalty was excluded from underlying EBITDA on the grounds of individual magnitude.

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2 Earnings per ordinary share

Basic earnings per share

	2024	2023	2022
Net earnings attributable to owners of Rio Tinto (US$ million)	**11,552**	10,058	12,392
Weighted average number of shares (millions)[(a)]	**1,623.1**	1,621.4	1,619.8
Basic earnings per ordinary share (cents)	**711.7**	620.3	765.0

Diluted earnings per share

For the purposes of calculating diluted earnings per share, the effect of dilutive securities of 10.3 million shares in 2024 (2023: 10.1 million; 2022: 9.8 million) is added to the weighted average number of shares described in footnote (a) below. This effect is calculated under the treasury stock method, in accordance with IAS 33 "Earnings per Share". Our only potential dilutive ordinary shares are share awards for which terms and conditions are described in note 27.

	2024	2023	2022
Net earnings attributable to owners of Rio Tinto (US$ million)	**11,552**	10,058	12,392
Weighted average number of shares (millions)[(a)]	**1,633.4**	1,631.5	1,629.6
Diluted earnings per share attributable to ordinary shareholders of Rio Tinto (cents)	**707.2**	616.5	760.4

(a) The weighted average number of shares is calculated as the average number of Rio Tinto plc shares outstanding not held as treasury shares of 1,252.1 million (2023: 1,250.5 million; 2022: 1,248.9 million) plus the average number of Rio Tinto Limited shares outstanding of 371.0 million (2023: 370.9 million; 2022: 370.9 million) over the relevant period. There were no cross holdings of shares between Rio Tinto Limited and Rio Tinto plc at 31 December 2024 (2023: nil; 2022: nil).

3 Dividends

Our Directors have announced a final dividend of 225.0 cents per share on 19 February 2025. This is expected to result in payments of US$3,652 million. The dividend will be paid on 17 April 2025 to Rio Tinto plc and Rio Tinto Limited shareholders on the register at the close of business on 7 March 2025. Dividends per share announced for the year ended 31 December are as follows.

	2024 US cents	2023 US cents	2022 US cents
Ordinary dividends per share: announced with the results for the year[(a)]	**225.0**	258.0	225.0

(a) As announced on 26 July 2024, following changes to Rio Tinto Limited's constitution approved by shareholders in 2024, we now declare and announce Rio Tinto plc and Rio Tinto Limited dividends in USD, our reporting currency. Historically, we have declared and announced these dividends in GBP and AUD, respectively. Dividends declared and announced in GBP and AUD for prior years can be found in note 3 to the Financial Statements in our *2023 Annual Report*.

Total dividends per share paid in the year

	2024 US cents	2023 US cents	2022 US cents
Previous year final - paid during the year	**258.0**	225.0	417.0
Previous year special - paid during the year	**–**	–	62.0
Interim - paid during the year	**177.0**	177.0	267.0
Total paid during the year	**435.0**	402.0	746.0

The franking credits available to the Group as at 31 December 2024, after allowing for Australian tax payable in respect of the current and prior reporting period's profit, are estimated to be US$9,177 million (2023: US$8,734 million; 2022: US$7,246 million).

The proposed Rio Tinto Limited dividend will be fully franked based on a tax rate of 30%, and reduce the franking account balance by US$358 million.

Reconciliation of dividend declared to dividend paid

	2024 US$m	2023 US$m	2022 US$m
Rio Tinto plc previous year final dividend payable	**3,185**	2,875	5,024
Rio Tinto plc previous year special dividend payable	**–**	–	747
Rio Tinto plc interim dividend payable	**2,238**	2,147	3,162
Rio Tinto Limited previous year final dividend payable	**936**	815	1,597
Rio Tinto Limited previous year special dividend payable	**–**	–	237
Rio Tinto Limited interim dividend payable	**666**	629	949
Dividends payable during the year	**7,025**	6,466	11,716
Net movement of unclaimed dividends in the year	**–**	4	11
Dividends paid during the year[(a)]	**7,025**	6,470	11,727

(a) Until April 2024. we economically hedged the dividend cash flows from the announcement date to the payment date in order to reduce our foreign exchange exposure on these cash flows. Following our policy change to declare dividends in US dollars, the period of currency exposure has shortened to the period from the date of final reinvestment and alternative currency elections and the payment. The realised impact of these hedges was shown within "Other items" in the Cash flows from consolidated operations and is not included in the above.

4 Impairment charges net of reversals

Recognition and measurement

Impairment charges and reversals are assessed at the level of cash-generating units (CGUs) which, in accordance with IAS 36 "Impairment of Assets", are identified as the smallest identifiable asset or group of assets that generate cash inflows, which are largely independent of the cash inflows from other assets. Separate CGUs are identified where an active market exists for intermediate products, even if the majority of those products are further processed internally. In some cases, individual business units consist of several operations with independent cash-generating streams which constitute separate CGUs.

Goodwill acquired through business combinations is allocated to the CGU or groups of CGUs that are expected to benefit from the related business combination, and tested for impairment at the lowest level within the Group at which goodwill is monitored for internal management purposes. All CGUs containing goodwill (note 11), indefinite-lived intangible assets and intangible assets that are not ready for use (note 12) are tested annually for impairment as at 30 September, regardless of whether there has been an impairment trigger, or more frequently if events or changes in circumstances indicate a potential impairment charge.

Other relevant judgements – determination of CGUs

Judgement is applied to identify the Group's CGUs, particularly when assets belong to integrated operations, and changes in CGUs could impact impairment charges and reversals. The most relevant judgement for grouping continues to relate to the grouping of Rio Tinto Iron and Titanium Quebec Operations and QIT Madagascar Minerals (QMM) as a single CGU on the basis that they are vertically integrated operations and there is no active market for QMM's ilmenite.

The most relevant judgement for disaggregation continues to relate to our bauxite and alumina refining operations in Australia whereby we treat the Weipa bauxite mine as a separate CGU from the downstream assets at Gladstone. Currently, Weipa sells the majority of its bauxite to third-party customers, whereas the alumina refineries are supplied with all of their bauxite internally.

Property, plant and equipment, including right-of-use assets and intangible assets with finite lives, are reviewed for impairment annually or more frequently if there is an indication that the carrying amount may not be recoverable. This review starts with an appraisal of the perimeter of cash-generating units to consider changes in the business or strategic direction. Following this, an assessment of internal and external indicators is performed. Internal sources of information considered include assessment of the financial performance of the CGU and changes in mine plans. External sources of information include changes in forecast commodity prices, costs and other market factors.

Non-current assets (excluding goodwill) that have suffered impairment are reviewed using the same basis for valuation as explained below whenever events or changes in circumstances indicate that the impairment loss may no longer exist, or may have decreased. If appropriate, an impairment reversal will be recognised. The carrying amount of the CGU after reversal must be the lower of (a) the recoverable amount, as calculated above, and (b) the carrying amount that would have been determined (net of amortisation or depreciation) had no impairment loss been recognised for the CGU in prior periods.

Key judgement – indicators of impairment and impairment reversals

Our mining operations require large upfront investment with long periods of construction and management of geotechnical stability risks from large-scale excavation of open pits or underground tunnelling. During operation and towards the end of mine life, the economic performance of assets is subject to greater influence by short term market dynamics, which can impact the economic feasibility of operations and life extension options. Together these represent our most significant sources of uncertainty relating to the identification of indicators of impairment and impairment reversal.

The underground expansion of our Oyu Tolgoi copper and gold mine in Mongolia is closely monitored for indicators of impairment and impairment reversal, as it was previously impaired, meaning that carrying value and fair value were equal at that date. The ramp up of the underground operations is progressing inline with our expectations, which means we have not identified an impairment trigger, however there remain several years of construction, the complexity of which means we have not identified a trigger for impairment reversal. The Rio Tinto Kennecott copper mine faced worsening geotechnical conditions in 2024, requiring a revised mine plan for 2025/26. This increased uncertainty was identified as an impairment indicator for Rio Tinto Kennecott and an impairment test was performed.

The Gladstone alumina refineries are responsible for more than half of our Scope 1 carbon dioxide emissions in Australia and have therefore been a key focus as we evaluate options to decarbonise our assets. In 2023, an impairment indicator at these assets resulted in the full write-down of the carrying value of Yarwun and a partial write-down of our assets at Queensland Alumina Limited (QAL). Continued studies during 2024 in relation to the double digestion project to improve the energy efficiency and reduce the carbon emissions at QAL has indicated a greater overall cost compared with our prior year assumption and therefore we have identified this as an impairment indicator and performed an impairment test.

Where indication of impairment or impairment reversal exists, an impairment review is undertaken. The recoverable amount is assessed by reference to the higher of value in use (being the net present value of expected future cash flows of the relevant CGU in its current condition) and fair value less costs of disposal (FVLCD). When the recoverable amount of the CGU is measured by reference to FVLCD, this amount is further classified in accordance with the fair value hierarchy for observable market data that is consistent with the unit of account for the CGU being tested. The Group considers that the best evidence of FVLCD is the value obtained from an active market or binding sale agreement and, in this case, the recoverable amount is classified in the fair value hierarchy as level 1. When FVLCD is based on quoted prices for equity instruments but adjusted to reflect factors such as a lack of liquidity in the market, the recoverable amount is classified as level 2 in the fair value hierarchy. No CGUs are currently assessed for impairment by reference to a recoverable amount based on FVLCD classified as level 1 or level 2.

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4 Impairment charges net of reversals *continued*

Where unobservable inputs are material to the measurement of the recoverable amount, FVLCD is based on the best information available to reflect the amount the Group could receive for the CGU in an orderly transaction between market participants at the measurement date. This is often estimated using discounted cash flow techniques and is classified as level 3 in the fair value hierarchy.

Where the recoverable amount is assessed using FVLCD based on discounted cash flow techniques, the resulting estimates are based on detailed life-of-mine and long-term production plans. These may include anticipated expansions which are at the evaluation stage of study.

The cash flow forecasts for FVLCD purposes are based on management's best estimates of expected future revenues and costs, including the future cash costs of production, capital expenditure, and closure, restoration and environmental costs. For the purposes of determining FVLCD from a market participant's perspective, the cash flows incorporate management's price and cost assumptions in the short and medium term. In the longer term, operating margins are assumed to remain constant where appropriate, as it is considered unlikely that a market participant would prepare detailed forecasts over a longer term. The cash flow forecasts may include net cash flows expected to be realised from the extraction, processing and sale of material that does not currently qualify for inclusion in Ore Reserves. Such non-reserve material is only included when there is a high degree of confidence in its economic extraction. This expectation is usually based on preliminary drilling and sampling of areas of mineralisation that are contiguous with existing Ore Reserves. Typically, the additional evaluation required to achieve reserves status for such material has not yet been done because this would involve incurring evaluation costs earlier than is required for the efficient planning and operation of the mine.

As noted above, cost levels incorporated in the cash flow forecasts for FVLCD purposes are based on the current life-of-mine plan or long-term production plan for the CGU. This differs from value in use which requires future cash flows to be estimated for the asset in its current condition and therefore does not include future cash flows associated with improving or enhancing an asset's performance. Anticipated enhancements to assets may be included in FVLCD calculations and, therefore, generally result in a higher value.

Where the recoverable amount of a CGU is dependent on the life of its associated orebody, expected future cash flows reflect the current life-of-mine and long-term production plans; these are based on detailed research, analysis and iterative modelling to optimise the level of return from investment, output and sequence of extraction. The mine plan takes account of all relevant characteristics of the orebody, including waste-to-ore ratios, ore grades, haul distances, chemical and metallurgical properties of the ore impacting process recoveries, and capacities of processing equipment that can be used. The life-of-mine plan and long-term production plans are, therefore, the basis for forecasting production output and production costs in each future year.

Forecast cash flows for Ore Reserve estimation for JORC purposes are generally based on Rio Tinto's commodity price forecasts, which assume short-term market prices will revert to the Group's assessment of the long-term price, generally over a period of 3 to 5 years. For most commodities, these forecast commodity prices are derived from a combination of analyses of the marginal costs of the producers and the incentive price of these commodities. These assessments often differ from current price levels and are updated periodically. The Group does not believe that published medium- and long-term forward prices necessarily provide a good indication of future levels because they tend to be strongly influenced by spot prices. The price forecasts used for Ore Reserve estimation are generally consistent with those used for impairment testing unless management deems that in certain economic environments a market participant would not assume Rio Tinto's view on prices, in which case in preparing FVLCD impairment calculations management estimates the assumptions that a market participant would be expected to use.

Forecast future cash flows of a CGU take into account the sales prices under existing sales contracts.

The discount rates applied to the future cash flow forecasts represent an estimate of the rate the market participant would apply having regard to the time value of money and the risks specific to the asset for which the future cash flow estimates have not been adjusted. The Group's weighted average cost of capital is generally used as a starting point for determining the discount rates, with appropriate adjustments for the risk profile of the countries in which the individual CGUs operate. For final feasibility studies and Ore Reserve estimation, internal hurdle rates, which are generally higher than the Group's weighted average cost of capital, are used. For developments funded with project finance, the debt component of the weighted average cost of capital may be calculated by reference to the specific interest rate of the project finance and anticipated leverage of the project.

For operations with a functional currency other than the US dollar, the impairment review is undertaken in the relevant functional currency. In estimating FVLCD, internal forecasts of exchange rates take into account spot exchange rates, historical data and external forecasts, and are kept constant in real terms after 5 years. The great majority of the Group's sales are based on prices denominated in US dollars. To the extent that the currencies of countries in which the Group produces commodities strengthen against the US dollar without an increase in commodity prices, cash flows and, therefore, net present values, are reduced. Management considers that, over the long term, there is a tendency for movements in commodity prices to compensate to some extent for movements in the value of the US dollar, particularly against the Australian dollar and Canadian dollar, and vice versa. However, such compensating changes are not synchronised and do not fully offset each other. In estimating value in use, the present value of future cash flows in foreign currencies is translated at the spot exchange rate on the testing date.

Generally, discounted cash flow models are used to determine the recoverable amount of CGUs. In this case, significant judgement is required to determine the appropriate estimates and assumptions used, and there is significant estimation uncertainty. In particular, for fair value less costs of disposal valuations, judgement is required to determine the estimates a market participant would use. The discounted cash flow models are most sensitive to the following estimates: the timing of project expansions; the cost to complete assets under construction; long-term commodity prices; production timing and recovery rates; exchange rates; operating costs; reserve and resource estimates; closure costs; discount rates; allocation of long-term contract revenues between CGUs; and, in some instances, the renewal of mining licences. Some of these variables are unique to an individual CGU. Future changes in these variables may differ from management's expectations and may materially alter the recoverable amounts of the CGUs.

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4 Impairment charges net of reversals *continued*

	Note	2024 Pre-tax amount US$m	2024 Taxation US$m	2024 Non-controlling interest US$m	2024 Net amount US$m	2023 Pre-tax amount US$m	2022 Pre-tax amount US$m
Aluminium - Alumina refineries		**(461)**	**(42)**	**—**	**(503)**	(1,175)	–
Aluminium - Tiwai Point		**41**	**37**	**—**	**78**	–	–
Aluminium - MRN		**(23)**	**–**	**—**	**(23)**	–	–
Aluminium – Pacific Aluminium		**–**	**–**	**–**	**–**	–	(202)
Minerals - Diavik		**(118)**	**32**	**–**	**(86)**	–	–
Other operations - Simandou		**–**	**–**	**–**	**–**	239	–
Other operations - Roughrider		**–**	**–**	**–**	**–**	–	150
Total impairment charges net of reversals		**(561)**	**27**	**–**	**(534)**	(936)	(52)
Allocated as:							
Intangible assets	12	**–**				231	150
Property, plant and equipment	13	**(538)**				(1,167)	–
Investment in equity accounted units (EAUs)		**–**				–	(202)
Share of profit after tax in EAUs		**(23)**				–	–
Total impairment charges net of reversals		**(561)**				(936)	(52)
Comprising:							
Net impairment (charges)/reversals of consolidated balances					**(538)**	(936)	150
Impairment (charges) related to EAUs (pre-tax)					**(35)**	–	(202)
Total impairment charges net of reversals in the financial information by business unit (page 266)					**(573)**	(936)	(52)
Taxation (including related to EAUs)					**39**	499	–
Non-controlling interests					**–**	(215)	–
Total impairment charges net of reversals in the income statement					**(534)**	(652)	(52)

2024

Copper - Rio Tinto Kennecott, United States

For the past 3 years we have been managing a zone of pit wall geotechnical instability, principally through removal of material from the top of the pit to de-weight the mine surface area known as “Revere”. Through the spring of 2024 as snow melted, accelerating movement in the high wall was observed along 2 major fault lines. This movement has limited our ability to access the higher-grade primary ore on the south wall. During the 3rd quarter of 2024, further studies on the geotechnical risks have been completed, indicating the need to change our mine plan to stabilise pit wall movement and mitigate the risk of a significant geotechnical failure, this is expected to restrict ore deliveries from the primary ore face in 2025 and 2026. This new information represents a material deviation from the current mine plan and has therefore been identified as an impairment indicator.

The recoverable amount for the CGU uses the fair value less cost of disposal methodology with real-terms post-tax cash flows discounted over the expected life of mine at 6.3%. This includes preliminary estimates from a revised mine plan as future options for the open pit and underground are reviewed, including growth options that remain subject to study and approval. The period of cash flows for end-of-mine closure is significant relative to the period assumed for operations and therefore a post-tax real-terms discount rate of 2.5% has been used in the recoverable amount determination for the cash outflows for the rehabilitation of the mine. No impairment charge has been recorded as the overall net present value of cash flows based on our Conviction price series indicated that the recoverable amount exceeded the US$2.2 billion carrying value of CGU by US$0.5 billion. This outcome is finely balanced as it represents less than 10% of the gross asset carrying value. To illustrate the sensitivity of the recoverable amount to copper prices, with all other inputs unchanged, a reduction to the copper price of 3% across all years would result in the recoverable amount of the CGU and the carrying value being equal.

Impact of climate change on our business - demand for copper

As described in note 1, we anticipate increased demand for copper in the low carbon transition will result in higher copper prices. While we have tested the Rio Tinto Kennecott CGU for impairment using our Conviction price assumptions, this is not aligned with the goals of the Paris Agreement. Therefore we also provide a sensitivity using our Paris-aligned Aspirational Leadership scenario. We do not believe this is representative of fair value less cost of disposal and it is provided for illustrative purposes only.

The weighted average selling price for copper under our Aspirational leadership scenario over the life of mine for the Rio Tinto Kennecott CGU is 10 per cent greater than our Conviction prices. Utilising the copper and carbon tax prices from our Aspirational Leadership scenario with all other assumptions remaining unchanged indicates an additional US$1.0 billion of net present value from post-tax cash flows. This assumes no changes to mined ore, or changes to risk weightings for future mine expansions, which in a stronger pricing environment could improve the economic business case.

4 Impairment charges net of reversals *continued*

Aluminium – Alumina refineries, Australia

The Gladstone alumina refineries are responsible for more than half of our Scope 1 carbon dioxide emissions in Australia and therefore have been a key focus as we evaluate options to decarbonise our assets. In 2023 we recorded an impairment of Queensland Alumina Limited (QAL) refinery with the recoverable amount largely dependent upon the double digestion project, which was at the pre-feasibility study stage of project evaluation. This major capital project improves the energy efficiency of the alumina production process and significantly reduces carbon emissions. Continued studies for this project have indicated an increased capital cost compared with our previous assumption and therefore we have performed a further test for impairment.

Using a fair value less cost of disposal methodology and discounting real-terms post-tax cash flows at 6.6%, we recognised a pre-tax impairment charge of US$461 million (post-tax US$503 million). This charge was all allocated against property, plant and equipment leaving them with a residual carrying value of US$151 million. The post-tax impairment charge also includes a consequential adjustment to deferred tax asset recognition within the same tax group.

Impact of climate change on our business – Queensland alumina refinery

We are committed to the decarbonisation of our assets to reduce Scope 1 and 2 emissions by 50% by 2030 and to net zero emissions by 2050 relative to our 2018 equity baseline. We anticipate that further carbon action may be necessary to align with the goals of the Paris Agreement to limit temperature increases to 1.5°C. To illustrate the sensitivity of the impairment outcome to the cost of carbon credits, we have modelled a 10% increase in carbon costs with no change to any other cash flows or assumptions. This sensitivity indicated that a full impairment of QAL would occur under this scenario.

Aluminium – Tiwai Point, New Zealand

On 30 May 2024, we signed 20-year power arrangements with electricity generators Meridian Energy, Contact Energy and Mercury NZ to set pricing for an aggregate of 572MW of electricity to meet the smelter's electricity needs. These new arrangements were identified as an impairment reversal trigger as they give us confidence that the smelter would continue operations competitively beyond the existing supply arrangement, which ran to December 2024.

An impairment reversal is limited by the amount of depreciation that would have been charged had the previous impairments not occurred. In this case, as the previous depreciation period was until December 2024, the impairment reversal was limited to US$41 million.

Aluminium – Porto Trombetas (MRN), Brazil

In preparing the local accounts for the year to 31 December 2023, after the publication of the Rio Tinto 2023 *Annual Report*, the directors of Mineração Rio do Norte S.A. (MRN) recorded a local impairment charge triggered by cost increases, unfavourable exchange rates and declining sales prices. The Rio Tinto share of that impairment is US$35 million pre-tax and US$23 million post-tax, and is included within the current period share of profit after tax of equity accounted units.

Rio Tinto's share of bauxite produced by MRN is vertically integrated into our Quebec Smelter CGU included in North America Aluminium operations. We reviewed the carrying value of the investment in equity accounted unit as part of this CGU and did not identify indicators of impairment.

Minerals – Diavik, Canada

During the year an impairment trigger was identified at the Diavik diamond mine due to lower than forecasted diamond prices and short remaining life of mine. Using a value in use methodology and discounting real-terms post-tax cash flows at 6.6%, we recognised a pre-tax impairment charge of US$118 million (post-tax US$86 million). This represents a full impairment of property, plant and equipment in the CGU.

2023

Aluminium – Alumina refineries, Australia

In March 2023, the Australian Parliament legislated to introduce a requirement for large heavy industrial carbon emitters to purchase carbon credits based on their Scope 1 emissions with a reducing baseline for these emissions. The challenging market conditions facing these assets, together with our improved understanding of the capital requirements for decarbonisation and the legislated cost escalation for carbon emissions, were identified as impairment triggers during the 6 months ended 30 June 2023.

Using a fair value less cost of disposal methodology and discounting real-terms post-tax cash flows at 6.6%, we recognised a pre-tax impairment charge of US$1,175 million (post-tax US$828 million). This represented a full impairment of the property, plant and equipment at the Yarwun alumina refinery (US$948 million) and an impairment of US$227 million for the property, plant and equipment of QAL. These impairments reflected market participant assumptions and the difficult trading conditions for these assets which were operating below our planned output during the first half of 2023.

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4 Impairment charges net of reversals *continued*

Other operations – Simandou, Guinea

The Simandou project in Guinea was fully impaired in 2015 as uncertainty over infrastructure ownership and funding had resulted in further spend on exploration and evaluation being neither budgeted nor planned. In the second half of 2023, we concluded key agreements with the Republic of Guinea and Winning Consortium Simandou (WCS) on the trans-Guinean infrastructure for the Simandou project and progressed agreements with our joint venture partners that will enable the development of the Simandou iron ore mine. We therefore concluded that although development agreements remain subject to regulatory approvals, the key uncertainties that gave rise to the 2015 impairment had reversed and consequently an impairment reversal trigger was identified at 1 October 2023.

Revisions to the Investment Framework and changes to the proposed infrastructure arrangements since 2015 meant that historical costs associated with these items were superseded and therefore the attributable asset cost and accumulated impairment associated with these items was permanently derecognised. Previously capitalised exploration and evaluation costs associated with the mine and retained items of property, plant and equipment that continue to be relevant to the Simandou project development were assessed for impairment reversal. The recoverable amount of the CGU measured on a fair value less cost of disposal basis, was significantly greater than the historical cost of the remaining impaired assets and therefore supported a full reversal of their previously recorded impairment charge. The pre-tax impairment reversal of US$239 million was allocated as US$231 million to intangible assets (exploration and evaluation) and US$8 million to property, plant and equipment. A deferred tax asset of US$152 million was recorded to account for the difference between the asset values included in the Group accounts and the carrying value of in-country depreciable assets. Under our Aspirational Leadership pricing scenario, increases in carbon pricing are expected to drive demand for the higher-grade iron ore at Simandou which would indicate a higher recoverable value. As the previous impairment was fully reversed, this Paris-aligned sensitivity would not result in a different impairment reversal.

All spend on the Simandou project between the impairment in 2015 and 30 September 2023 was expensed as incurred. With effect from 1 October 2023, qualifying spend has been capitalised.

2022

Other operations – Roughrider, Canada

On 17 October 2022, we completed the sale of the Roughrider uranium undeveloped project located in the Athabasca Basin in Saskatchewan, Canada for US$150 million (US$80 million in cash and US$70 million in shares of Uranium Energy Corp.). The project was fully impaired during the year ended 31 December 2017 due to significant uncertainty over whether commercially viable quantities of Mineral Resources could be identified at a future date. The sale therefore led to an impairment reversal during the year ended 31 December 2022. It also led to a loss on disposal being recognised of US$105 million arising from the recycling of the currency translation reserve to the income statement.

Aluminium – Pacific Aluminium, Australia and New Zealand

The operating and economic performance of the Boyne Smelter in Queensland, Australia was below our expectations in 2022. The plant operated with reduced capacity and the economic performance suffered due to the high cost of energy from the coal-fired Gladstone Power Station. These conditions were identified as an impairment trigger. We calculated a recoverable amount for the CGU based on post-tax cash flows, expressed in real terms and discounted using a post-tax rate of 6.6% over the period to 2029. This date was chosen as it coincided with both the remaining term of the Boyne Smelter joint venture agreements and the Group's Paris-aligned commitment to reduce carbon emissions by 50% by 2030 relative to the 2018 baseline. Despite the implementation of temporary energy price caps by the Australian Government in 2022, this resulted in an impairment charge of US$202 million, representing a full impairment of the carrying value of the Boyne Smelter investment in equity accounted unit.

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5 Acquisitions and disposals

Acquisitions

Recognition and measurement

In determining whether a particular set of activities is a business, an acquired arrangement has to have an input and substantive process, which together significantly contribute to the ability to create outputs. Where an acquisition does not meet the definition of a business as defined by IFRS 3 "Business Combinations", each asset is recognised on the balance sheet at fair value. In the consolidated cash flow statement we assess, based on the substance of the transaction, whether to allocate the cash consideration for these transactions either to "Purchases of property, plant and equipment, and intangible assets" or to "Acquisitions of subsidiaries, joint ventures and associates" depending on the type of assets purchased.

For undeveloped mining projects that have arisen through acquisition, the allocation of the purchase price consideration may result in undeveloped properties being recognised at an earlier stage of project evaluation compared with projects arising from the Group's exploration and evaluation program. Subsequent expenditure on acquired undeveloped projects is only capitalised if it meets the high degree of confidence threshold discussed in note 12.

Where we increase our ownership interest in a subsidiary, the difference between the purchase price and the carrying value of the share of net assets acquired is recorded in equity. The cash cost of such purchases is included within "financing activities" in the cash flow statement.

2024

Proposed acquisition of Arcadium Lithium

On 9 October 2024, Rio Tinto and Arcadium Lithium plc (Arcadium Lithium) announced a definitive agreement under which Rio Tinto will acquire Arcadium Lithium in an all-cash transaction for $5.85 per share. The transaction has been unanimously approved by the Board of Directors of both Rio Tinto and Arcadium Lithium. On 23 December 2024, Arcadium Lithium announced that it had obtained the requisite approvals of their shareholders. The transaction is also subject to the approval of the Royal Court of Jersey and receipt of customary regulatory approvals and other closing conditions, which is expected to close in March 2025.

On 22 January 2025, Rio Tinto committed to providing Arcadium Lithium with a loan of US$200 million, which was fully drawn on 30 January 2025, and a further US$300 million loan facility to support certain capital expenditures, subject to certain conditions precedent. These loans are interest bearing and are due for repayment on 1 September 2027, though earlier settlement without penalty is permitted.

Boyne Smelters Limited (BSL)

Following approval from Australia's Foreign Investment Review Board (FIRB), on 30 September 2024, we completed the acquisition of Mitsubishi Corporation's 11.65% interest in BSL, which owns and operates the Boyne Island aluminium smelter in Gladstone Australia. On 1 November 2024, we also completed the acquisition of Sumitomo Chemical Company Limited's (SCC) 2.46% interest in BSL, increasing our total interest in BSL to 73.5%. BSL remains accounted for as an investment in associate under the equity method.

New Zealand Aluminium Smelters Limited (NZAS)

On 1 November 2024, we acquired SCC's 20.64% interest in NZAS, which owns and operates the Tiwai Point aluminium smelter in New Zealand. This transaction has been accounted for as a business combination achieved in stages, with our previous 79.36% interest in the NZAS joint operation being remeasured to fair value and forming the majority of the consideration for the acquisition of this subsidiary.

The fair value of 100% of NZAS has been calculated as US$386 million based on forecast post-tax cash flows consistent with the methodology used for the impairment reversal. The extent of the 30 June 2024 impairment reversal was restricted to US$41 million, as described in note 4. However, business combination accounting requires us to take into account the full fair value measurement from the revised business outlook incorporating the new 20-year power arrangements.

A gain of US$638 million (post-tax US$467 million) has been recorded within "Gains/(losses) on consolidation and disposal of interests in businesses" in the consolidated income statement, principally due to the net post-tax fair value of our share of the joint operation of US$290 million, exceeding the carrying value of the previously held interest of US$(78) million which includes the closure provision. This resulted in an increase to the carrying value of property, plant and equipment of US$650 million and deferred tax liabilities of US$171 million. All other carrying value adjustments were proportionate to our increase in equity ownership, and no goodwill was recognised.

WCS Rail and Port entities

On 15 July 2024, our subsidiary SimFer Jersey Limited's investment in Winning Consortium Simandou (WCS) for co-development of the rail and port infrastructure became unconditional.

On 17 July 2024, we acquired a 34% equity interest in Winning Consortium Simandou Railway Pte. Ltd and Winning Consortium Simandou Ports Pte. Ltd (together referred to as "WCS Rail and Port entities"), through our partially owned subsidiary SimFer Jersey for US$313 million. The Rio Tinto share of this consideration was US$166 million and US$147 million was funded by Chalco Iron Ore Holdings Ltd (CIOH). Further shareholder loan funding to the WCS Rail and Port entities was made on the same day directly by Rio Tinto and CIOH, in proportion to their respective 53% and 47% ownership interest of SimFer Jersey, to these equity accounted units.

2023

Nuevo Cobre

On 8 November 2023, we acquired Meridian Minera Limitada's (MML) 57.74% share in Agua de la Falda (ADLF) for US$45 million. Subsequently, we entered into an agreement with Corporación Nacional del Cobre de Chile (Codelco), a state-owned enterprise, to explore and potentially acquire assets in Chile's prospective Atacama region - the project is known as Nuevo Cobre.

The majority ownership of 57.74% equity confered voting rights that allow Rio Tinto to control the relevant activities of Nuevo Cobre. Therefore, we accounted for Nuevo Cobre as an investment in a partially owned subsidiary. There was no goodwill recognised on acquisition as the transaction was not accounted for as a business combination. The difference between the net assets acquired and the purchase consideration was recognised within Intangible assets as Exploration and evaluation assets. The transaction gave rise to the recognition of a non-controlling interest of US$33 million, representing Codelco's 42.26% equity stake in Nuevo Cobre.

5 Acquisitions and disposals *continued*

Acquisitions (continued)

Matalco

On 30 November 2023, Rio Tinto and Giampaolo Group completed a transaction to form the Matalco joint venture. We acquired a 50% equity interest in Matalco Canada Inc. which owns one Canadian aluminium recycling facility and a 50% equity interest in Matalco USA LLC which owns 6 aluminium recycling facilities in the US for combined consideration of US$738 million, inclusive of accrued transaction costs and working capital adjustments.

Rio Tinto has joint control over the Matalco businesses and therefore our investment is accounted for under the equity method.

The fair value of the underlying identifiable assets acquired and liabilities assumed had been provisionally determined at 31 December 2023. During 2024, the acquisition accounting for Matalco, which was subject to the finalisation of working capital adjustments, was completed and did not result in any material adjustments.

2022

Rincon

Following approval from Australia's Foreign Investment Review Board (FIRB), on 29 March 2022 we completed the acquisition of Rincon Mining Pty Limited (Rincon), the owner of a lithium project in Argentina. Total cash consideration was US$825 million. In determining whether Rincon's set of activities is a business, we assessed whether it had inputs and substantive processes which together significantly contribute to the ability to create outputs. Based on this assessment, we concluded that Rincon did not meet the definition of a business as defined by IFRS 3 "Business Combinations" and therefore no goodwill was recorded. The transaction was therefore treated as an asset purchase with US$822 million of capitalised exploration and evaluation recorded for the principal economic resource. The balance of total consideration was allocated to property, plant and equipment and other assets/liabilities. For the consolidated cash flow statement we determined that, since Rincon constitutes a group of companies, it was appropriate to present the cash outflow as "Acquisitions of subsidiaries, joint ventures and associates" rather than as separate asset purchases even though it did not meet the definition of a business combination.

Turquoise Hill Resources (TRQ)

On 16 December 2022 we acquired the remaining 49% share of TRQ. The consideration paid amounted to US$2,961 million. The transaction was not classified as a business combination as it related to the purchase of non-controlling interests in a subsidiary. It was recognised in the statement of changes in equity as an adjustment to retained earnings.

Certain shareholders exercised their right to dissent to the transaction. In accordance with the terms of the circular, the dissent proceedings were concluded during 2024, and final consideration has been paid to the dissenting shareholders.

Disposals

Recognition and measurement

If a group of assets and liabilities (disposal group) is sold, the carrying value of the disposal group is de-recognised with the difference between the carrying amount and the consideration received recognised in the income statement. Certain amounts previously recognised in other comprehensive income in respect of the entity disposed of may be recycled to the income statement. The cash proceeds of disposals are included within "Investing activities" in the cash flow statement.

2024

Wyoming Uranium

On 5 December 2024, we completed our sale of the Sweetwater uranium mill facility together with mining projects (collectively known as "Wyoming Uranium") to Uranium Energy Corp. (UEC) for cash consideration of US$175 million.

Lake MacLeod

On 2 December 2024, we completed our sale of Dampier Salt Limited's Lake MacLeod salt and gypsum operation in Carnarvon to Leichhardt Industrials Group (Leichhardt) for cash consideration of US$247 million.

2023

La Granja

On 28 August 2023, we completed the sale of a 55% interest in the undeveloped La Granja project in Peru for US$105 million to First Quantum Minerals (FQM). The consideration received was recorded in the cash flow statement for US$104 million (net of US$1 million of cash balance), of which US$16 million relating to sale of land was included within "net cash used in investing activities" and the remaining US$88 million was included within "net cash generated from operating activities". As a result of the sale, our retained interest in La Granja represents a 45% owned associate (equity accounted) over which Rio Tinto has significant influence during the evaluation phase.

On initial recognition, the gain on fair valuation of interest retained in the project of US$85 million was recognised to the extent of US$47 million (relating to the 55% interest sold) within "profit relating to interests in undeveloped projects" and the remaining gain of US$38 million was eliminated against the fair value of the EAU. In total, we recognised a pre-tax gain of US$154 million in the income statement, primarily representing the consideration transferred by First Quantum, plus the fair value of the retained interest in the project.

2022

Roughrider

As summarised in note 4, we sold our shareholding in the Roughrider uranium undeveloped project on 17 October 2022 for consideration of US$150 million (US$80 million in cash and US$70 million in shares of UEC). This transaction was treated as a disposal of a subsidiary as the carrying value was largely represented by assets recorded as a purchase price allocation from the Hathor Exploration business combination in 2012.

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6 Revenue by destination and product

Recognition and measurement

We recognise sales revenue related to the transfer of promised goods or services when control of the goods or services passes to the customer. The amount of revenue recognised reflects the consideration to which the Group is, or expects to be, entitled in exchange for those goods or services.

Sales revenue is recognised on individual sales when control transfers to the customer. In most instances, control passes and sales revenue is recognised when the product is delivered to the vessel or vehicle on which it will be transported once loaded, the destination port or the customer's premises. There may be circumstances when judgement is required based on the 5 indicators of control below:

- The customer has the significant risks and rewards of ownership and has the ability to direct the use of, and obtain substantially all of the remaining benefits from, the good or service.
- The customer has a present obligation to pay in accordance with the terms of the sales contract. For shipments under the Incoterms cost, insurance and freight (CIF)/carriage paid to (CPT)/cost and freight (CFR), this is generally when the ship is loaded, at which time the obligation for payment is for both product and freight.
- The customer has accepted the asset. Sales revenue may be subject to adjustment if the product specification does not conform to the terms specified in the sales contract but this does not impact the passing of control. Assay and specification adjustments have historically been immaterial.
- The customer has legal title to the asset. The Group usually retains legal title until payment is received for credit risk purposes only.
- The customer has physical possession of the asset. This indicator may be less important as the customer may obtain control of an asset prior to obtaining physical possession, which may be the case for goods in transit.

Revenue is principally derived from sale of commodities. We sell the majority of our products on CFR or CIF Incoterms. This means that the Group is responsible (acts as principal) for providing shipping services and, in some instances, insurance after the date at which control of goods passes to the customer at the loading port. The Group, therefore, has separate performance obligations for freight and insurance services that are provided solely to facilitate the sale of the products it produces. Other Incoterms commonly used by the Group are free on board (FOB), where the Group has no responsibility for freight or insurance once control of the goods has passed at the loading port, and delivered at place (DAP), where control of the goods passes when the product is delivered to the agreed destination. For these Incoterms, there is only one performance obligation, being the provision of product at the point where control passes.

Within each sales contract, each unit of product shipped is a separate performance obligation. Revenue is generally recognised at the contracted price as this reflects the standalone selling price. Sales revenue excludes any applicable sales taxes. Sales of copper concentrate are stated net of the treatment and refining charges, which will be required to convert it to an end product.

The Group's products are sold to customers under contracts that vary in tenure and pricing mechanisms, including some volumes sold on the spot market. Pricing for iron ore is on a range of terms, the majority being either monthly or quarterly average pricing mechanisms, with a smaller proportion of iron ore volumes being sold on the spot market.

Certain of the Group's products may be provisionally priced at the date revenue is recognised and a provisional invoice issued; however, substantially all iron ore and aluminium sales are reflected at final prices in the results for the period. Provisionally priced receivables are subsequently measured at fair value through the income statement under IFRS 9 "Financial Instruments" as described in note 24. The final selling price for all provisionally priced products is based on the price for the quotational period stipulated in the contract. Final prices for copper concentrate are normally determined between 30 and 120 days after delivery to the customer. The change in value of the provisionally priced receivable is based on relevant forward market prices and is included in sales revenue. Refer to "Other revenue" within the sales by product disclosure below.

Revenues from the sale of significant by-products, such as gold, are included in sales revenue. Third-party commodity swap arrangements principally for delivery and receipt of smelter-grade alumina are offset within operating costs. The sale and purchase of third-party production for own use or to mitigate shortfalls in our production are accounted for on a gross basis with sales presented within revenue from contracts with customers. Other operating income includes revenue incidental to the main revenue-generating activities of the operations and is treated as a credit to operating costs.

Typically, the Group has a right to payment before or at the point that control of the goods passes, including a right, where applicable, to payment for provisionally priced products and unperformed freight and insurance services. Cash received before control passes is recognised as a contract liability. The amount of consideration does not contain a significant financing component as payment terms are less than one year. We have a number of long-term contracts to supply products to customers in future periods. Generally, revenue is recognised on an invoice basis, as each unit sold is a separate performance obligation and therefore the right to consideration from a customer corresponds directly with our performance completed to date.

We do not disclose sales revenue from freight and insurance services separately as we do not consider that this is necessary in order to understand the impact of economic factors on the Group. Our Chief Executive, the CODM as defined under IFRS 8 "Operating Segments", does not review information specifically relating to these sources of revenue in order to evaluate the performance of business segments and Group information on these sources of revenue is not provided externally.

We do provide information on freight revenue for the iron ore and bauxite businesses on pages 25 and 27 to help stakeholders understand FOB operating margins for those products.

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6 Revenue by destination and product *continued*

Consolidated sales revenue by destination[a]

	2024 %	2023 %	2022 %	2024 US$m	2023 US$m	2022 US$m
Greater China	**57.4**	59.6	54.3	**30,814**	32,193	30,172
US	**16.8**	13.9	15.9	**9,007**	7,516	8,823
Asia (excluding Greater China and Japan)	**6.9**	7.2	7.1	**3,718**	3,881	3,937
Japan	**6.5**	6.9	7.4	**3,470**	3,727	4,091
Europe (excluding UK)	**4.8**	5.3	6.5	**2,580**	2,859	3,618
Canada	**2.9**	2.9	3.1	**1,562**	1,588	1,743
Australia	**2.0**	1.7	1.9	**1,076**	923	1,047
UK	**0.3**	0.1	0.3	**143**	81	182
Other countries	**2.4**	2.4	3.5	**1,288**	1,273	1,941
Consolidated sales revenue	**100**	100	100	**53,658**	54,041	55,554

(a) Consolidated sales revenue by geographical destination is based on the ultimate country of the product's destination, if known. Where the ultimate destination is not known, we have defaulted to the shipping address of the customer. Rio Tinto is domiciled in both the UK and Australia.

Consolidated sales revenue by product

We have sold the following products to external customers during the year:

	2024			2023			2022		
	Revenue from contracts with customers US$m	Other revenue[a] US$m	Consolidated sales revenue US$m	Revenue from contracts with customers US$m	Other revenue[a] US$m	Consolidated sales revenue US$m	Revenue from contracts with customers US$m	Other revenue[a] US$m	Consolidated sales revenue US$m
Iron ore	**31,334**	**(530)**	**30,804**	33,383	389	33,772	33,068	(267)	32,801
Aluminium, alumina and bauxite	**12,947**	**48**	**12,995**	12,039	(63)	11,976	13,955	(165)	13,790
Copper	**4,791**	**(63)**	**4,728**	3,219	(1)	3,218	3,276	(80)	3,196
Industrial minerals (comprising titanium dioxide slag, borates and salt)	**2,678**	**(3)**	**2,675**	2,806	(8)	2,798	2,685	(16)	2,669
Gold	**788**	**9**	**797**	470	6	476	564	9	573
Diamonds	**279**	**–**	**279**	444	–	444	816	–	816
Other products and freight services[b]	**1,385**	**(5)**	**1,380**	1,360	(3)	1,357	1,710	(1)	1,709
Consolidated sales revenue	**54,202**	**(544)**	**53,658**	53,721	320	54,041	56,074	(520)	55,554

(a) Consolidated sales revenue includes both revenue from contracts with customers, accounted for under IFRS 15 "Revenue from Contracts with Customers", and subsequent movements in provisionally priced receivables, accounted for under IFRS 9, and included in "Other revenue" above.

(b) "Other products and freight services" includes metallic co-products, molybdenum, silver and other commodities.

7 Net operating costs (excluding items disclosed separately)

	Note	2024 US$m	2023 US$m	2022 US$m
Raw materials, consumables, repairs and maintenance		**12,115**	12,019	12,477
Amortisation of intangible assets	12	**138**	124	159
Depreciation of property, plant and equipment	13	**5,780**	5,210	4,851
Employment costs	26	**7,055**	6,636	6,002
Shipping and other freight costs		**2,942**	2,781	3,146
Decrease in finished goods and work in progress[a]		**2,407**	1,152	803
Royalties		**2,938**	3,135	2,994
Amounts charged by equity accounted units[b]		**875**	1,163	1,429
Net foreign exchange gains		**(193)**	(47)	(42)
Gain on sale of the Cortez royalty[c]		**–**	–	(432)
Gains recognised by Kitimat relating to LNG Canada's project[d]		**–**	–	(116)
Provisions (including exchange differences on provisions)		**398**	1,491	1,006
Research and development		**398**	245	76
Other external costs[e]		**5,037**	5,295	4,161
Costs included above capitalised or shown on a separate line item[f]		**(1,203)**	(1,331)	(722)
Other operating income[g]		**(942)**	(821)	(1,022)
Net operating costs (excluding items disclosed separately)[h]		**37,745**	37,052	34,770

(a) Includes purchases of third-party material to satisfy sales contracts.

(b) Amounts charged by equity accounted units relate to toll processing fees and also include purchases from equity accounted units of bauxite, aluminium and copper concentrate which are then processed by the product group or sold to third parties.

(c) On 2 August 2022, we completed the sale for US$525 million of a gold royalty which was retained following the disposal of the Cortez mine in 2008.

(d) During the first half of 2022, LNG Canada elected to terminate their option to purchase additional land and facilities for expansion of their operations at Kitimat, Canada.

(e) In 2024, other external costs include US$217 million (2023: US$269 million, 2022: US$465 million) of short-term lease costs and US$46 million (2023: US$40 million, 2022: US$50 million) of variable lease costs recognised in the income statement in accordance with IFRS 16 "Leases". Refer to note 21.

(f) In 2024, US$923 million (2023: US$1,007 million; 2022: US$485 million) of operating costs were capitalised, US$220 million (2023: US$247 million; 2022: US$190 million) of costs were shown separately within "Exploration and evaluation costs" in the consolidated income statement, and US$60 million (2023: US$77 million; 2022: US$47 million) of costs were shown within operating costs as "Research and development".

(g) Other operating income includes sundry revenue incidental to the main revenue-generating activities of the operations.

(h) Operating decarbonisation spend of US$306 million (2023: US$234 million; 2022: US$138 million) is allocated as US$253 million (2023: US$182 million; 2022: US$88 million) within "Net operating costs (excluding items disclosed separately)", with the remainder included in our share of profit or loss of equity accounted units.

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8 Exploration and evaluation expenditure

Exploration and evaluation expenditure includes costs that are directly attributable to:

- researching and analysing existing exploration data
- conducting geological studies, exploratory drilling and sampling
- examining and testing extraction and treatment methods
- compiling various studies (order of magnitude, pre-feasibility and feasibility) and/or
- early works at mine sites prior to full notice to proceed.

Exploration expenditure relates to the initial search for deposits with economic potential. Expenditure on exploration activity undertaken by the Group is not capitalised.

Evaluation expenditure relates to a detailed assessment of deposits or other projects (including smelter and refinery projects) that have been identified as having economic potential. These costs are also expensed until the business case for the project is sufficiently advanced. For greenfield projects, expensing typically continues to a later phase of study compared with brownfield expansions.

The charge for the year and the net amount of intangible assets capitalised during the year are as follows.

	2024 US$m	2023 US$m	2022 US$m
Expenditure in the year (inclusive of net cash proceeds of nil (2023: US$88 million; 2022: US$1 million) on disposal of undeveloped projects)[a]	**(1,337)**	(1,684)	(1,097)
Non-cash movements and non-cash proceeds on disposal of undeveloped projects	**(15)**	(17)	(6)
Amount capitalised during the year	**416**	471	207
Exploration and evaluation expenditure (net of profit from disposal of interests in undeveloped projects) per income statement	**(936)**	(1,230)	(896)
Comprising:			
– Exploration and evaluation expenditures	**(935)**	(1,384)	(897)
– (Loss)/profit from disposal of interests in undeveloped projects[a]	**(1)**	154	1

(a) In 2023, net cash proceeds of US$88 million were received in relation to the sale of a 55% interest in the undeveloped La Granja project in Peru, for which we recognised a gain on disposal of US$154 million. This profit is recorded within underlying EBITDA as it represents recovery of past exploration and evaluation expenditures that were also included within underlying EBITDA. Refer to note 5 for details of the transaction.

9 Finance income and finance costs

	Note	2024 US$m	2023 US$m	2022 US$m
Finance income from loans to equity accounted units		**24**	4	3
Other finance income (including bank deposits, net investment in leases, and other financial assets)		**490**	532	176
Total finance income		**514**	536	179
Interest on:				
– Financial liabilities at amortised cost (excluding lease liabilities) and associated derivatives		**(1,126)**	(1,209)	(713)
– Lease liabilities		**(70)**	(50)	(49)
Fair value movements:				
– Bonds designated as hedged items in fair value hedges[a]		**(9)**	(190)	526
– Derivatives designated as hedging instruments in fair value hedges[a]		**18**	203	(515)
Amounts capitalised[b]	13	**424**	279	416
Total finance costs		**(763)**	(967)	(335)

(a) The main sources of ineffectiveness of the fair value hedges include changes in the timing of the cash flows of the hedging instrument compared to the underlying hedged item, and changes in the credit risk of parties to the hedging relationships.

(b) We capitalise interest based on the Group or relevant subsidiary's cost of borrowing (refer to note 13) or at the rate of project-specific debt (where applicable).

10 Taxation

Recognition and measurement

The taxation charge contains both current and deferred tax.

Current tax is the tax expected to be payable on the taxable income for the year calculated using rates applicable during the year. It includes adjustments for tax expected to be payable or recoverable in respect of previous periods. Where the amount of tax payable or recoverable is uncertain, we establish provisions based on either: the Group's judgement of the most likely amount of the liability or recovery; or, when there is a wide range of possible outcomes, a probability weighted average approach.

Deferred tax is calculated in accordance with IAS 12, at the rate expected to apply when the asset is realised or liability settled, according to rates that have been enacted or substantively enacted at the balance sheet date. Deferred tax is generally recognised in respect of differences between the carrying values of assets and liabilities in the financial statements and their tax bases. Deferred tax assets are recognised to the extent it is probable that taxable profit will be available against which the deductible temporary difference can be utilised.

Deferred tax is not recognised on the initial recognition of goodwill or of assets and liabilities, other than in a business combination, that at the time of the transaction impact neither accounting nor taxable profit, except where the transaction gives rise to equal and offsetting taxable and deductible temporary differences. Deferred tax is not recognised in respect of investments in subsidiaries and associates and jointly controlled entities where the Group is able to control the timing of the reversal of the temporary difference and it is probable they will not reverse in the foreseeable future.

The mandatory exception to recognising and disclosing information related to deferred tax assets and liabilities related to Pillar Two income taxes has been applied as required by IAS 12. The Pillar Two global minimum tax of 15% formulated by the Organisation for Economic Co-operation and Development (OECD) was substantively enacted by the United Kingdom on 20 June 2023, with application from 1 January 2024. Exposure to additional taxation under Pillar Two is immaterial to the Group.

Current and deferred tax assets and liabilities are offset when the balances are related to taxes levied by the same taxing authority, there is a legally enforceable right to offset, and it is intended that they be settled on a net basis or realised simultaneously.

Other relevant judgements – uncertain tax positions

The Group operates across a large number of jurisdictions and is subject to review and challenge by local tax authorities on a range of tax matters. Where the amount of tax payable or recoverable is uncertain, whether due to local tax authority challenge or due to uncertainty regarding the appropriate treatment, judgement is required to assess the probability that the adopted treatment will be accepted. In accordance with IFRIC 23 "Uncertainty over Income Tax Treatments", if it is not probable that the treatment will be accepted, the Group accounts for uncertain tax provisions for all matters worldwide based on the Group's judgement of the most likely amount of the liability or recovery, or, where there is a wide range of possible outcomes, using a probability weighted average approach. Uncertain tax provisions include any related interest and penalties.

The Mongolian Tax Authority has issued a number of tax assessments covering the fiscal years 2013 to 2020, the most recent of which was received in December 2023, which are inconsistent with the Oyu Tolgoi Investment Agreement and Mongolian legislation. The matters under dispute have been referred to international arbitration. As required by Mongolian law, we have paid US$438 million (US dollar equivalent at the time of payment) in respect of the assessments, including US$82 million paid in the current year, pending resolution of the disputes through the arbitration. The assessments also seek to disallow tax deductions, including future tax deductions, in respect of amounts accrued and payable in the future.

Management regularly re-evaluates the likely outcomes from the dispute based on the progress of the arbitration proceedings, legal advice, and discussions with the Government of Mongolia. In 2024, we have recorded a provision of US$295 million for uncertain tax positions reflecting our best estimate of the likely outcome from the dispute. It is possible that the outcome of these proceedings could result in a change in our estimated exposure in respect of the matters under dispute and therefore a material revision to this provision in future periods.

Differences in interpretation of the Investment Agreement and Mongolian legislation could have a material impact on the recovery of certain deferred tax assets, further details of which are provided in note 15.

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10 Taxation *continued*

Taxation charge

	Note	2024 US$m	2023 US$m	2022 US$m
– Current		**4,434**	5,092	4,851
– Deferred	15	**(393)**	(1,260)	763
Total taxation charge		**4,041**	3,832	5,614

Prima facie tax reconciliation

	2024 US$m	2023 US$m	2022 US$m
Profit before taxation[a]	**15,615**	13,785	18,662
Prima facie tax payable at UK rate of 25.0% (2023: 23.5%; 2022: 19%)[b]	**3,904**	3,239	3,546
Higher rate of taxation of 30% on Australian earnings (2023: 30%; 2022: 30%)	**613**	835	1,550
Other tax rates applicable outside the UK and Australia	**(303)**	(2)	(17)
Tax effect of profit from equity accounted units, related impairments and expenses[a]	**(210)**	(159)	(109)
Impact of changes in tax rates	**(15)**	(173)	(11)
Resource depletion allowances	**(10)**	(11)	(40)
Recognition of previously unrecognised deferred tax assets[c]	**(640)**	(157)	(261)
Write-down of previously recognised deferred tax assets[d]	**203**	–	932
Utilisation of previously unrecognised deferred tax assets	**(42)**	(10)	(37)
Unrecognised current year operating losses[e]	**185**	567	212
Uncertain tax provision[f]	**295**	–	–
Deferred tax arising on internal sale of assets in Canadian operations[g]	**–**	(364)	–
Adjustments in respect of prior periods[h]	**(13)**	31	(222)
Other items[i]	**74**	36	71
Total taxation charge	**4,041**	3,832	5,614

(a) The Group profit before tax includes profit after tax of equity accounted units. Consequently, the tax effect on the profit from equity accounted units is included as a separate reconciling item in this prima facie tax reconciliation.

(b) As a UK headquartered and listed Group, the reconciliation of expected tax on accounting profit to tax charge uses the UK corporate tax rate to calculate the prima facie tax payable. Rio Tinto is also listed in Australia, and the reconciliation includes the impact of the higher tax rate in Australia where a significant proportion of the Group's profits are currently earned. The impact of other tax rates applicable outside the UK and Australia is also included. The weighted average statutory corporate tax rate on profit before tax is approximately 29% (2023: 31%; 2022: 29%).

(c) The recognition of previously unrecognised deferred tax assets in 2024 includes US$443 million in respect of Energy Resources of Australia (ERA) and relates to rehabilitation provisions which are tax deductible when paid in the future. In November 2024, our interest in ERA increased from 86.3% to 98.43% and Rio Tinto stated its intention to proceed with compulsory acquisition of the remaining shares during 2025. Tax deductions for rehabilitation payments made after completion of the compulsory acquisition process will be applied against taxable profits from other Australian operations, including our iron ore business. In 2023 and 2022, recognition of previously unrecognised deferred tax assets relates primarily to Oyu Tolgoi where reaching sustainable underground production has reduced the risk of tax losses expiring if not recovered against taxable profits within 8 years.

(d) In 2024, the write-down of previously recognised deferred tax assets primarily relates to our Australian aluminium business. In 2022, the write-down of previously recognised deferred tax assets relates to deferred tax assets of our US businesses following the introduction of a Corporate Alternative Minimum Tax (CAMT) regime.

(e) Unrecognised current year operating losses include tax losses around the Group, including increases in closure estimates in 2024 and 2023, for which no tax benefit is currently recognised due to uncertainty regarding whether suitable taxable profits will be earned in future to obtain value for the tax losses.

(f) The uncertain tax provision of US$295 million in 2024 represents amounts provided in relation to disputes with the Mongolian Tax Authority for which the timing of resolution and potential economic outflow are uncertain. Further information is included in the '*Other relevant judgements - uncertain tax positions*' section of this note above.

(g) In 2023, the Canadian aluminium business completed an internal sale of assets which resulted in the utilisation of previously unrecognised capital losses and an uplift in the tax depreciable value of assets on which a deferred tax asset of US$364 million was recognised.

(h) In 2022, adjustments in respect of prior periods includes amounts related to the settlement of all tax disputes with the Australian Tax Office for the years 2010 to 2021.

(i) In 2024, "Other items" includes US$1 million current tax expense related to Pillar Two measures.

Tax related to components of other comprehensive income

	2024 US$m	2023 US$m	2022 US$m
Tax (charge)/credit on fair value movements	**(10)**	1	21
Tax (charge)/credit on remeasurement gains/(losses) on pension and post-retirement healthcare plans	**(22)**	152	(123)
Deferred tax relating to components of other comprehensive income for the year (note 15)	**(32)**	153	(102)

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Our operating assets

We are a diversified mining operation with the majority of our assets being located in OECD countries.

Non-current assets other than excluded items

The total of non-current assets other than excluded items is shown by location below[(a)].

	2024 US$m	2023 US$m
Australia	**29,177**	31,419
Canada	**14,444**	15,362
Mongolia	**15,244**	14,172
US	**7,111**	7,171
Africa	**5,597**	3,412
South America	**3,704**	3,624
Europe (excluding UK)	**216**	165
UK	**109**	132
Other countries	**1,739**	1,254
Total non-current assets other than excluded items	**77,341**	76,711
Non-current assets excluded from analysis above:		
Deferred tax assets	**4,016**	3,624
Other financial assets	**1,090**	481
Quasi-equity loans to equity accounted units[(a)]	**5**	14
Receivables and other assets	**1,214**	1,209
Total non-current assets per balance sheet	**83,666**	82,039

(a) Allocation of non-current assets by country is based on the location of the business units holding the assets. It includes investments in equity accounted units totalling US$4,832 million (2023: US$4,393 million) which represents the Group's share of net assets excluding quasi-equity loans shown separately above.

11 Goodwill

Recognition and measurement

Goodwill is not amortised; it is tested annually at 30 September for impairment, or more frequently if events or changes in circumstances indicate a potential impairment. Refer to note 4 for further information.

	2024 US$m	2023 US$m
Net book value		
At 1 January	**797**	826
Adjustment on currency translation	**(45)**	(29)
Company no longer consolidated	**(25)**	–
At 31 December	**727**	797
– cost	**14,959**	16,237
– accumulated impairment	**(14,232)**	(15,440)
At 1 January		
– cost	**16,237**	15,974
– accumulated impairment	**(15,440)**	(15,148)

At 31 December, goodwill has been allocated as follows.

	2024 US$m	2023 US$m
Net book value		
Richards Bay Minerals	**364**	370
Pilbara	**310**	342
Dampier Salt	**53**	85
Total	**727**	797

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11 Goodwill *continued*

Impairment tests for goodwill

Richards Bay Minerals

Richards Bay Minerals' annual impairment review resulted in no impairment charge for 2024 (2023: no impairment charge). The recoverable amount has been assessed by reference to the CGU's FVLCD, in line with the policy set out in note 4 and classified as level 3 under the fair value hierarchy. FVLCD was determined by estimating cash flows until the end of the life-of-mine plan including anticipated expansions. In arriving at FVLCD, a post-tax discount rate of 8.6% (2023: 8.6%) has been applied to the post-tax cash flows expressed in real terms.

The key assumptions to which the calculation of FVLCD for Richards Bay Minerals is most sensitive and the corresponding change in FVLCD are set out below:

	2024 US$m	2023 US$m
5% increase in the titanium slag price	**144**	**217**
1% increase in the discount rate applied to post-tax cash flows	**(135)**	**(175)**
10% strengthening of the South African rand	**232**	**272**

Future selling prices and operating costs have been estimated in line with the policy set out in note 4. The recoverable amount of the CGU exceeds the carrying value when each of these sensitivities is applied while keeping all other assumptions constant.

12 Intangible assets

Recognition and measurement

Purchased intangible assets are initially recorded at cost. Finite-life intangible assets are amortised over their useful economic lives on a straight line or units of production basis, as appropriate. Intangible assets that are deemed to have indefinite lives and intangible assets that are not yet ready for use are not amortised; they are reviewed annually for impairment or more frequently if events or changes in circumstances indicate a potential impairment.

The majority of our intangible assets relate to capitalised exploration and evaluation spend on undeveloped properties and contract-based water rights. The water rights were acquired with Alcan in Canada.

The carrying values for undeveloped properties are reviewed at each reporting date in accordance with IFRS 6 "Exploration for and Evaluation of Mineral Resources". The indicators of impairment differ from the tests in accordance with IAS 36 in recognition of the subjectivity of estimating future cash flows for mineral interests under evaluation. Potential indicators of impairment include: expiry of the right to explore, substantive expenditure is no longer planned, commercially viable quantities of Mineral Resources have not been discovered and exploration activities will be discontinued, or sufficient data exists to indicate a future development would be unlikely to recover the carrying amount in full. When such impairment indicators have been identified, the recoverable amount and impairment charge are measured under IAS 36. Impairment reversals for undeveloped properties are not subject to special conditions within IFRS 6 and are therefore subject to the same monitoring for indicators of impairment reversal as other CGUs.

Exploration and evaluation

Evaluation expenditure relates to a detailed assessment of deposits or other projects (including smelter and refinery projects) that have been identified as having economic potential. Capitalisation of evaluation expenditure commences when there is a high degree of confidence that the Group will determine that a project is commercially viable; that is, the project will provide a satisfactory return relative to its perceived risks and, therefore, it is considered probable that future economic benefits will flow to the Group. The Group's view is that a high degree of confidence is greater than "more likely than not" (that is, greater than 50% certainty) and less than "virtually certain" (that is, less than 90% certainty).

Assessing whether there is a high degree of confidence that the Group will ultimately determine that an evaluation project is commercially viable requires judgement and consideration of all relevant factors such as: the nature and objective of the project, the project's current stage, project timeline, current estimates of the project's net present value (including sensitivity analyses for the key assumptions), and the main risks of the project. Development expenditure incurred prior to the decision to proceed is subject to the same criteria for capitalisation, being a high degree of confidence that the Group will ultimately determine that a project is commercially viable.

In some cases, undeveloped projects are regarded as successors to orebodies, smelters or refineries currently in production. Where this is the case, it is intended that these will be developed and go into production when the current source of ore is exhausted or when existing smelters or refineries are closed. Ore Reserves may be declared for an undeveloped mining project before its commercial viability has been fully determined. Evaluation costs may continue to be capitalised in between declaration of Ore Reserves and approval to mine as further work is undertaken in order to refine the development case to maximise the project's returns.

Carbon credits and Renewable Energy Certificates

Carbon credits and Renewable Energy Certificates (RECs) acquired for our own use are accounted for as intangible assets, initially recorded at cost. They are amortised through the income statement when surrendered.

Contract-based intangible assets

The majority of the carrying value of our contract-based intangible assets relate to water rights in the Quebec region. These contribute to the efficiency and cost effectiveness of our aluminium operations as they enable us to generate electricity from hydropower stations.

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12 Intangible assets *continued*

Other relevant judgements – assessment of indefinite-lived water rights in Quebec, Canada

We continue to judge the water rights in Quebec to have an indefinite life because we expect the contractual rights to contribute to the efficiency and cost effectiveness of our operations for the foreseeable future. Accordingly, the rights are not subject to amortisation but are tested annually for impairment. We have no other indefinite-lived assets.

As at 31 December 2024, the remaining carrying value of the water rights (included in contract-based assets) of US$1,631 million (2023: US$1,776 million) relates wholly to the Quebec smelters CGU. The Quebec smelters CGU was tested for impairment by reference to FVLCD using discounted cash flows. The recoverable amount of the Quebec smelters is classified as level 3 under the fair value hierarchy. In arriving at its FVLCD, post-tax cash flows expressed in real terms have been estimated over the expected useful economic lives of the underlying smelting assets and discounted using a real post-tax discount rate of 6.6% (2023: 6.6%).

The recoverable amounts were determined to be significantly in excess of carrying value, and there are no reasonably possible changes in key assumptions that would cause the remaining water rights to be impaired.

Impact of climate change on our business – water rights

To manage the uncertainties of climate change and our impact on the area, our team of hydrologists in Quebec analyse different weather scenarios on a daily basis. We monitor the water resource available to us along with the impact that our operation is having on the water quality and quantity, and on the environment when we return the water following use. Based on our analysis to date, we do not consider the renewal of our contractual water rights to be at risk from climate change for the foreseeable future.

	2024				
	Exploration and evaluation US$m	Trademarks, patented and non-patented technology US$m	Contract-based intangible assets US$m	Other intangible assets[a] US$m	Total US$m
Net book value					
At 1 January 2024	**1,979**	**9**	**1,953**	**448**	**4,389**
Adjustment on currency translation	**(44)**	**(1)**	**(159)**	**(39)**	**(243)**
Additions[b]	**416**	**–**	**–**	**116**	**532**
Amortisation for the year	**–**	**(4)**	**(7)**	**(127)**	**(138)**
Disposals, transfers and other movements[c]	**(1,789)**	**–**	**–**	**53**	**(1,736)**
At 31 December 2024	**562**	**4**	**1,787**	**451**	**2,804**
– cost	**564**	**207**	**2,758**	**1,922**	**5,451**
– accumulated amortisation and impairment	**(2)**	**(203)**	**(971)**	**(1,471)**	**(2,647)**
Total	**562**	**4**	**1,787**	**451**	**2,804**

	2023				
	Exploration and evaluation US$m	Trademarks, patented and non-patented technology US$m	Contract-based intangible assets US$m	Other intangible assets [a] US$m	Total US$m
Net book value					
At 1 January 2023	1,368	12	1,875	390	3,645
Adjustment on currency translation	–	1	52	8	61
Additions[d]	471	–	–	121	592
Amortisation for the year	–	(4)	(7)	(113)	(124)
Impairment reversal[d]	231	–	–	–	231
Newly consolidated operations[e]	85	–	–	–	85
Disposals, transfers and other movements	(176)	–	33	42	(101)
At 31 December 2023	1,979	9	1,953	448	4,389
– cost	1,989	222	2,996	1,926	7,133
– accumulated amortisation and impairment[d]	(10)	(213)	(1,043)	(1,478)	(2,744)
Total	1,979	9	1,953	448	4,389

(a) Other intangible assets include US$50 million (2023: US$61 million) of carbon abatement spend. This relates to procurement of carbon units and RECs, from which we will get future economic benefit.

(b) In 2024, additions primarily relate to project costs incurred at Simandou prior to Board approval of "notice to proceed" in February 2024 and at Rincon from July 2024 following approval by the Argentine Congress of the new "RIGI" legislation, which underpinned the economic business case, until Board notice to proceed in December 2024.

(c) "Transfers and other movements" includes reclassification between categories. In 2024, following approvals by the Board of notice to proceed, exploration and evaluation assets relating to Simandou (US$732 million) and Rincon (US$1,013 million), were transferred in full to Property, plant and equipment after being assessed for indicators of impairment.

(d) In 2023, we commenced capitalisation of exploration and evaluation costs at the Simandou project based on our confidence in the project progressing, this also resulted in an impairment reversal, refer to note 4 for details.

(e) In 2023, newly consolidated operations relate to our purchase of Meridian Minera Limitada's 57.74% share in Agua de la Falda. Refer to note 5 for details.

12 Intangible assets *continued*

Where amortisation is calculated on a straight line basis, the following useful lives have been determined:

	Trademarks, patented and non-patented technology		Contract-based intangible assets		Other intangible assets	
Type of intangible	Trademarks	Patented and non-patented technology	Power contracts/ water rights	Other purchase and customer contracts	Internally generated intangible assets and computer software	Other intangible assets
Amortisation profile	14 to 20 years	10 to 20 years	2 to 45 years	5 to 15 years	2 to 5 years	2 to 20 years

13 Property, plant and equipment

Recognition and measurement

Property, plant and equipment is stated at cost, as defined in IAS 16 "Property, Plant and Equipment", less accumulated depreciation and accumulated impairment losses. The cost of property, plant and equipment includes, where applicable, the estimated close-down and restoration costs associated with the asset.

Property, plant and equipment includes right-of-use assets arising from leasing arrangements, shown separately from owned and leasehold assets.

Once an undeveloped mining project has been determined as commercially viable and approval to mine has been given, further expenditure is capitalised under "capital works in progress" together with any amount transferred from "Exploration and evaluation". Once the project enters into an operation phase, the amounts capitalised in capital work in progress are reclassified to their respective asset categories.

Costs incurred while commissioning new assets, in the period before they are capable of operating in the manner intended by management, are capitalised unless associated with pre-production revenue. Development costs incurred after the commencement of production are capitalised to the extent they are expected to give rise to a future economic benefit. Interest on borrowings related to construction or development projects is capitalised, at the rate payable on project-specific debt if applicable or at the Group or subsidiary's cost of borrowing if not. This is performed until the point when substantially all the activities that are necessary to make the asset ready for its intended use are complete. It may be appropriate to use a subsidiary's cost of borrowing when the debt was negotiated based on the financing requirements of that subsidiary.

Depreciation of non-current assets

Property, plant and equipment is depreciated over its useful life, or over the remaining life of the mine, smelter or refinery if that is shorter and there is no reasonable alternative use for the asset by the Group. Depreciation commences when an asset is available for use and therefore there is no depreciation for capital work in progress.

Straight line basis

Assets within operations for which production is not expected to fluctuate significantly from one year to another or which have a physical life shorter than the related mine are depreciated on a straight line basis as follows.

	Land and buildings		Plant and equipment	
Type of Property, plant and equipment	Land	Buildings	Power-generating assets	Other plant and equipment
Depreciation profile	Not depreciated	5 to 50 years	See Power note below on page 189	3 to 50 years

The useful lives and residual values for material assets and categories of assets are reviewed annually and changes are reflected prospectively.

Units of production basis

For mining properties and leases and certain mining equipment, consumption of the economic benefits of the asset is linked to production. Except as noted below, these assets are depreciated on the units of production basis.

In applying the units of production method, depreciation is normally calculated based on production in the period as a percentage of total expected production in current and future periods based on Ore Reserves and, for some mines, other Mineral Resources. Other Mineral Resources may be included in the calculations of total expected production in limited circumstances where there are very large areas of contiguous mineralisation, for which the economic viability is not sensitive to likely variations in grade, as may be the case for certain iron ore, bauxite and industrial mineral deposits, and where there is a high degree of confidence that the other Mineral Resources can be extracted economically. This would be the case when the other Mineral Resources do not yet have the status of Ore Reserves merely because the necessary detailed evaluation work has not yet been performed and the responsible technical personnel agree that inclusion of a proportion of Measured and Indicated Resources in the calculation of total expected production is appropriate based on historical reserve conversion rates.

The required level of confidence is unlikely to exist for minerals that are typically found in low-grade ore (as compared with the above), such as copper or gold. In these cases, specific areas of mineralisation have to be evaluated in detail before their economic status can be predicted with confidence.

Sometimes the calculation of depreciation for infrastructure assets, primarily rail and port, considers Measured and Indicated Resources. This is because the asset can benefit current and future mines. The measured and indicated resource may relate to mines which are currently in production or to mines where there is a high degree of confidence that they will be brought into production in the future. The quantum of Mineral Resources is determined taking into account future capital costs as required by the JORC Code. The depreciation calculation, however, applies to current mines only and does not take into account future development costs for mines which are not yet in production. Measured and Indicated Resources are currently incorporated into depreciation calculations in the Group's Australian iron ore business.

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13 Property, plant and equipment *continued*

Key judgement – estimation of asset lives

The useful lives of the major assets of a CGU are often dependent on the life of the orebody to which they relate. Where this is the case, the lives of mining properties, and their associated refineries, concentrators and other long-lived processing equipment are generally limited to the expected life of the orebody. The life of the orebody, in turn, is estimated on the basis of the life-of-mine plan. Where the major assets of a CGU are not dependent on the life of a related orebody, management applies judgement in estimating the remaining service potential of long-lived assets. Factors affecting the remaining service potential of smelters include, for example, smelter technology and electricity purchase contracts when power is not sourced from the Group, or in some cases from local governments permitting electricity generation from hydropower stations.

Impact of climate change on our business – estimation of asset lives

We expect there to be a higher demand for copper, aluminium, lithium and high-grade iron ore in order to meet demand for the minerals required to transition to a low-carbon economic environment, consistent with the climate change commitments of the Paris Agreement. We expect this to exceed new supply to the market and therefore increase prices. Under the Aspirational Leadership scenario, the economic cut-off grade for our Ore Reserves is expected to be lower; in effect we would mine a greater volume of material before the mines are depleted. We cannot quantify the difference this would make without undue cost as it would require revised mine plans, but for property, plant and equipment this increased volume of material would reduce the depreciation charge during any given period for assets that use the "Units of production" depreciation basis.

Deferred stripping

In open pit mining operations, overburden and other waste materials must be removed to access ore from which minerals can be extracted economically. The process of removing overburden and other waste materials is referred to as stripping. During the development of a mine (or, in some instances, pit; see below), before production commences, stripping costs related to a component of an orebody are capitalised as part of the cost of construction of the mine (or pit). These are then amortised over the life of the mine (or pit) on a units of production basis.

Where a mine operates several open pits that are regarded as separate operations for the purpose of mine planning, initial stripping costs are accounted for separately by reference to the ore from each separate pit. If, however, the pits are highly integrated for the purpose of mine planning, the second and subsequent pits are regarded as extensions of the first pit in accounting for stripping costs. In such cases, the initial stripping of the second and subsequent pits is considered to be production phase stripping (see below).

Key judgement – deferral of stripping costs

We apply judgement as to whether multiple pits at a mine are considered separate or integrated operations. This determines whether the stripping activities of a pit are classified as pre-production or production phase stripping and, therefore, the amortisation base for those costs. The analysis depends on each mine's specific circumstances and requires judgement: another mining company could make a different judgement even when the fact pattern appears to be similar.

The following factors would point towards the initial stripping costs for the individual pits being accounted for separately:

- if mining of the second and subsequent pits is conducted consecutively following that of the first pit, rather than concurrently
- if separate investment decisions are made to develop each pit, rather than a single investment decision being made at the outset
- if the pits are operated as separate units in terms of mine planning and the sequencing of overburden removal and ore mining, rather than as an integrated unit
- if expenditures for additional infrastructure to support the second and subsequent pits are relatively large
- if the pits extract ore from separate and distinct orebodies, rather than from a single orebody.

If the designs of the second and subsequent pits are significantly influenced by opportunities to optimise output from several pits combined, including the co-treatment or blending of the output from the pits, then this would point to treatment as an integrated operation for the purposes of accounting for initial stripping costs. The relative importance of each of the above factors is considered in each case.

In order for production phase stripping costs to qualify for capitalisation as a stripping activity asset, 3 criteria must be met:

- it must be probable that there will be an economic benefit in a future accounting period because the stripping activity has improved access to the orebody
- it must be possible to identify the "component" of the orebody for which access has been improved
- it must be possible to reliably measure the costs that relate to the stripping activity.

A "component" is a specific section of the orebody that is made more accessible by the stripping activity. It will typically be a subset of the larger orebody that is distinguished by a separate useful economic life (for example, a pushback).

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13 Property, plant and equipment *continued*

Recognition and measurement of deferred stripping

Phase	Development Phase	Production Phase	
Stripping activity	Overburden and other waste removal during the development of a mine before production commences.	Production phase stripping can give access to 2 benefits: the extraction of ore in the current period and improved access to ore which will be extracted in future periods.	
Period of benefit	After commissioning of the mine.	Future periods after first phase is complete.	Current and future benefit are indistinguishable.
Capitalised to mining properties and leases in property, plant and equipment	During the development of a mine, stripping costs relating to a component of an orebody are capitalised as part of the cost of construction of the mine.	It may be the case that subsequent phases of stripping will access additional ore and that these subsequent phases are only possible after the first phase has taken place. Where applicable, the Group considers this on a mine-by-mine basis. Generally, the only ore attributed to the stripping activity asset for the purposes of calculating the life-of-component ratio is the ore to be extracted from the originally identified component.	Stripping costs for the component are deferred to the extent that the current period ratio exceeds the life-of-component ratio.
Allocation to inventory	Not applicable	Not applicable	The stripping cost is allocated to inventory based on a relevant production measure using a life-of-component strip ratio. The ratio divides the tonnage of waste mined for the component for the period either by the quantity of ore mined for the component or by the quantity of minerals contained in the ore mined for the component. In some operations, the quantity of ore is a more appropriate basis for allocating costs, particularly when there are significant by-products.
Component	A “component” is a specific section of the orebody that is made more accessible by the stripping activity. It will typically be a subset of the larger orebody that is distinguished by a separate useful economic life (for example, a pushback).		
Life-of-component ratio	The life-of-component ratios are based on the Ore Reserves of the mine (and for some mines, other Mineral Resources) and the annual mine plan; they are a function of the mine design and, therefore, changes to that design will generally result in changes to the ratios. Changes in other technical or economic parameters that impact the Ore Reserves (and for some mines, other mineral resources) may also have an impact on the life-of-component ratios even if they do not affect the mine design. Changes to the ratios are accounted for prospectively.		
Depreciation basis	Depreciated on a “units of production” basis based on expected production of either ore or minerals contained in the ore over the life of the component unless another method is more appropriate.		

Property, plant and equipment – owned and leased assets

	2024 US$m	2023 US$m
Property, plant and equipment – owned	**67,345**	65,290
Right-of-use assets – leased	**1,228**	1,178
Net book value	**68,573**	66,468

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13 Property, plant and equipment *continued*

Property, plant and equipment – owned

	Note	2024 Mining properties and leases[a] US$m	Land and buildings US$m	Plant and equipment US$m	Capital works in progress US$m	Total US$m
Net book value						
At 1 January 2024		**13,555**	**8,022**	**36,345**	**7,368**	**65,290**
Adjustment on currency translation[b]		**(500)**	**(548)**	**(2,634)**	**(396)**	**(4,078)**
Adjustments to capitalised closure costs	14	**64**	**–**	**–**	**–**	**64**
Interest capitalised[c]	9	**–**	**–**	**–**	**424**	**424**
Additions[d]		**350**	**246**	**1,226**	**7,551**	**9,373**
Depreciation for the year[a]		**(1,217)**	**(531)**	**(3,554)**	**–**	**(5,302)**
Impairment charges net of reversals[e]		**(38)**	**(39)**	**(457)**	**(9)**	**(543)**
Disposals		**(1)**	**(5)**	**(75)**	**(17)**	**(98)**
Acquisitions, including fair value adjustment for contributed assets[f]		**150**	**64**	**429**	**7**	**650**
Operations divested[g]		**–**	**(2)**	**(34)**	**–**	**(36)**
Transfers and other movements[h]		**1,833**	**1,013**	**3,127**	**(4,372)**	**1,601**
At 31 December 2024		**14,196**	**8,220**	**34,373**	**10,556**	**67,345**
Comprising:						
– cost		**30,762**	**14,822**	**78,295**	**10,925**	**134,804**
– accumulated depreciation and impairment		**(16,566)**	**(6,602)**	**(43,922)**	**(369)**	**(67,459)**
Total		**14,196**	**8,220**	**34,373**	**10,556**	**67,345**
Non-current assets pledged as security[i]		**5,676**	**2,257**	**7,058**	**3,397**	**18,388**

	Note	2023 Mining properties and leases[a] US$m	Land and buildings US$m	Plant and equipment US$m	Capital works in progress US$m	Total US$m
Net book value						
At 1 January 2023		10,529	6,699	34,407	12,096	63,731
Adjustment on currency translation[b]		14	116	495	54	679
Adjustments to capitalised closure costs	14	(292)	–	–	–	(292)
Interest capitalised[c]	9	–	–	–	275	275
Additions[d]		222	207	1,381	5,110	6,920
Depreciation for the year[a]		(802)	(504)	(3,511)	–	(4,817)
Impairment charges net of reversals[e]		(92)	(58)	(922)	(87)	(1,159)
Disposals		–	(28)	(73)	(27)	(128)
Transfers and other movements[h]		3,976	1,590	4,568	(10,053)	81
At 31 December 2023		13,555	8,022	36,345	7,368	65,290
Comprising						
– cost		29,731	14,737	80,993	7,728	133,189
– accumulated depreciation and impairment		(16,176)	(6,715)	(44,648)	(360)	(67,899)
Total		13,555	8,022	36,345	7,368	65,290
Non-current assets pledged as security[i]		5,307	1,477	6,980	3,715	17,479

(a) At 31 December 2024, the net book value of capitalised production phase stripping costs totalled US$2,326 million, with US$1,947 million within "Property, plant and equipment" and a further US$379 million within "Investments in equity accounted units" (2023: total of US$2,505 million, with US$2,069 million in "Property, plant and equipment" and a further US$436 million within "Investments in equity accounted units"). During the year, capitalisation of US$423 million was offset by depreciation of US$580 million, inclusive of amounts recorded within equity accounted units (2023: US$325 million offset by depreciation of US$324 million). Depreciation of deferred stripping costs in respect of subsidiaries of US$411 million (2023: US$216 million; 2022: US$246 million) is included within "Depreciation for the year".

(b) Adjustment on currency translation represents the impact of exchange differences arising on the translation of the assets of entities with functional currencies other than the US dollar, recognised directly in the currency translation reserve. The adjustment in 2024 arose primarily from the weakening of the Australian and Canadian dollars against the US dollar.

(c) Our average borrowing rate, excluding any project finance, used for capitalisation of interest is 7.20% (2023: 7.50%).

(d) Additions to "Property, plant and equipment" includes US$144 million of spend on carbon abatement (2023: US$94 million).

(e) Refer to note 4 for details.

(f) Primarily relates to the acquisition of the remaining 20.64% interest in New Zealand Aluminium Smelters (NZAS). The transaction has been accounted for as a business combination achieved in stages, with our previous 79.36% interest in the NZAS joint operation deemed to have been disposed of. Refer to note 5 for details.

(g) Relates to our sale of the Lake MacLeod salt and gypsum operations. Refer to note 5 for details.

(h) "Transfers and other movements" includes reclassification between categories. In 2024, this included amounts reclassified from Intangible Assets relating to exploration and evaluation at Simandou (US$732 million) and Rincon (US$1,013 million) following Board approval of "notice to proceed" in February 2024 and December 2024, respectively.

(i) Excludes assets held under capitalised lease arrangements. Non-current assets pledged as security represent amounts pledged as collateral against US$4,011 million (2023: US$3,994 million) of loans, which are included in note 20.

13 Property, plant and equipment *continued*

Impact of climate change on our business - useful economic lives of our power generating assets

The Group has committed to reducing Scope 1 and Scope 2 carbon emissions by 50% relative to our 2018 baseline by 2030 and achieving net zero emission across our operations by 2050. We expect to invest US$5 billion to US$6 billion on carbon abatement projects between 2022 and 2030. Transitioning electricity from principally fossil fuel-based power generating assets to principally renewables is critical to achieving that goal. The carrying value of power generating assets is set out in the table below. The weighted average remaining useful economic life of plant and equipment for fossil fuel-based power generating assets is 10 years (2023: 10 years). Given the technical limitations of intermittent renewable energy generation and energy storage systems, and our need for reliable baseload electricity, we expect our current generation assets will be integral to those needs for the foreseeable future. We are investing in research and development and evaluating new market options that may overcome these technical challenges. Should pathways for eliminating fossil fuel power generating assets be identified we may need to accelerate depreciation or impair the assets; however, at this present moment the requirement for fossil fuel powered back-up means that early retirement of the assets is not expected and no change to depreciation rates is required.

	2024		2023	
Net book value of power generating assets powered by	**Land and buildings US$m**	**Plant and equipment US$m**	Land and buildings US$m	Plant and equipment US$m
– Fossil fuels	59	840	87	932
– Renewables	177	2,375	201	2,456

Right-of-use assets – leased

	2024			2023		
	Land and buildings US$m	Plant and equipment US$m	Total US$m	Land and buildings US$m	Plant and equipment US$m	Total US$m
Net book value						
At 1 January	**543**	**635**	**1,178**	515	488	1,003
Adjustment on currency translation	**(37)**	**(24)**	**(61)**	11	4	15
Additions	**150**	**420**	**570**	96	420	516
Depreciation for the year	**(125)**	**(353)**	**(478)**	(88)	(305)	(393)
Net impairment reversal/(charges)[(a)]	**–**	**5**	**5**	(1)	(7)	(8)
Disposals	**–**	**–**	**–**	–	(1)	(1)
Transfers and other movements	**(7)**	**21**	**14**	10	36	46
At 31 December	**524**	**704**	**1,228**	543	635	1,178

(a) Refer to note 4 for details.

The leased assets of the Group include land and buildings (mainly office buildings) and plant and equipment, the majority of which are marine vessels. Lease terms are negotiated on an individual basis and contain a wide range of terms and conditions. Right-of-use assets are depreciated on a straight line basis over the life of the lease, taking into account any extensions that are likely to be exercised.

14 Close-down, restoration and environmental provisions

Recognition and measurement

The Group has provisions for close-down and restoration costs, which include the dismantling and demolition of infrastructure, the removal of residual materials and the remediation of disturbed areas for mines and certain refineries and smelters. The obligation may arise during development or during the production phase of a facility. These provisions are based on all regulatory requirements and any other commitments made to stakeholders. The provision excludes the impact of future disturbance that is planned to occur during the life of mine, so that it represents only existing disturbance as at the balance sheet date.

Closure provisions are not made for those operations that have no known restrictions on their lives as the closure dates cannot be reliably estimated; instead a contingent liability is disclosed. Refer to note 37 for details. This applies primarily to certain Canadian smelters that have indefinite-lived water rights from local governments permitting electricity generation from hydropower stations and are not tied to a specific orebody.

Close-down and restoration costs are a normal consequence of mining or production, and the majority of close-down and restoration expenditure is incurred in the years following closure of the mine, refinery or smelter. Although the ultimate cost to be incurred is uncertain, the Group's businesses estimate their costs using current restoration standards, techniques and expected climate conditions. The costs are estimated on the basis of a closure plan, and are reviewed at each reporting period during the life of the operation to reflect known developments. The estimates are also subject to formal review, with appropriate external support, at regular intervals.

The timing of closure and the rehabilitation plans for the site can be uncertain and dependent upon future capital allocation decisions, which involve estimation of future economic circumstances and business cases. In such circumstances, the closure provision is estimated using probability weighting of the different remediation and closure scenarios.

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14 Close-down, restoration and environmental provisions *continued*

The initial close-down and restoration provision is capitalised within "Property, plant and equipment". Subsequent movements in the close-down and restoration provisions for ongoing operations are treated as an adjustment to cost within "Property, plant and equipment". This includes those resulting from new disturbances related to expansions or other activities qualifying for capitalisation; updated cost estimates; changes to the estimated lives of operations; changes to the timing of closure activities; and revisions to discount rates.

Changes in closure provisions relating to closed and fully impaired operations are charged/credited to "Net operating costs" in the income statement.

Where rehabilitation is conducted systematically over the life of the operation, rather than at the time of closure, provision is made for the estimated outstanding continuous rehabilitation work at each balance sheet date and the cost is charged to the income statement.

The closure provision is represented by forecast future underlying cash flows expressed in real terms at the balance sheet date. These are discounted for the time value of money based on a long-term view of low-risk market yields which includes a review of historic trends plus risks and opportunities for which future cash flows have not been adjusted, namely potential improvements in closure practices between the reporting date and the point at which rehabilitation spend takes place. The real-terms discount rate used is 2.5% (2023: 2.0%) which is applied to all locations since we expect to meet closure cash flows principally from US dollar revenues and financing, with activities coordinated by the Group's central closure team.

To roll forward those real-terms cash flows between periods, we identify local rates of inflation based on Producer Price Inflation (PPI) indices and, together with the real-terms discount rate, unwind the discount through the line "Amortisation of discount on provisions", shown within "Finance items" in the income statement. This nominal rate for cost escalation in the current financial year is estimated at the start of each half-year and applied systematically for 6 months. At the end of each half-year we update the underlying cash flows for the latest estimate of experienced inflation, if it differs materially from our forecast, for the current financial year and record this as "changes to existing provisions". For operating sites this adjustment usually results in a corresponding adjustment to property, plant and equipment, and for closed and fully impaired sites the adjustment is charged or credited to the income statement.

In some cases, our subsidiaries make a contribution to trust funds in order to meet or reimburse future environmental and decommissioning costs. Amounts due for reimbursement from trust funds are not offset against the corresponding closure provision unless payments into the fund have the effect of passing the closure obligation to the trust.

Environmental costs result from environmental damage that was not a necessary consequence of operations, and may include remediation, compensation and penalties. Provision is made for the estimated present value of such costs at the balance sheet date. These costs are charged to "Net operating costs", except for the unwinding of the discount which is shown within "Amortisation of discount on provisions".

Remediation procedures may commence soon after the time the disturbance, remediation process and estimated remediation costs become known, but can continue for many years depending on the nature of the disturbance and the remediation techniques used.

	Note	2024 US$m	2023 US$m
At 1 January		**17,150**	15,759
Adjustment on currency translation		**(1,128)**	241
Adjustments to mining properties/right-of-use assets:	13		
– increases to existing and new provisions		**851**	629
– change in discount rate		**(787)**	(921)
Charged/(credited) to profit:			
– increases to existing and new provisions[(a)]		**435**	1,654
– change in discount rate		**(235)**	(168)
– unused amounts reversed		**(88)**	(195)
– exchange losses/(gains) on provisions		**26**	(16)
– amortisation of discount		**843**	955
Utilised in year		**(1,142)**	(777)
Newly consolidated operation[(b)]		**61**	–
Transfers and other movements[(c)]		**(255)**	(11)
At 31 December[(d)]		**15,731**	17,150
Balance sheet analysis:			
Current		**1,183**	1,523
Non-current		**14,548**	15,627
Total		**15,731**	17,150

(a) In 2023, this included US$1,272 million arising from study updates in the second half of the year which was excluded from underlying EBITDA. Refer to note 1 for details.

(b) This relates to our acquisition of 20.64% interest in NZAS. Refer to note 5 for details.

(c) In 2024, transfer and other movements includes amount relating to disposal of interest in businesses.

(d) Close-down, restoration and environmental provisions at 31 December 2024 have not been adjusted for closure-related receivables amounting to US$350 million (2023: US$366 million) due from the ERA trust fund and other financial assets held for the purposes of meeting closure obligations. These are included within "Receivables and other assets" on the balance sheet.

14 Close-down, restoration and environmental provisions *continued*

Key judgement – close-down, restoration and environmental obligations

We use our judgement and experience to determine the potential scope of closure rehabilitation work required to meet the Group's legal, statutory and constructive obligations, and any other commitments made to stakeholders, and the options and techniques available to meet those obligations in order to estimate the associated costs and the likely timing of those costs. Significant judgement is also required to then determine both the costs associated with that work and the other assumptions used to calculate the provision. External experts support the cost estimation process where appropriate but there remains significant estimation uncertainty.

The key judgement in applying this accounting policy is determining when an estimate is sufficiently reliable to make or adjust a closure provision. Adjustments are made to provisions when the range of possible outcomes becomes sufficiently narrow to permit reliable estimation. Depending on the materiality of the change, adjustments may require review and endorsement by the Group's Closure Steering Committee before the provision is updated.

Cost provisions are updated throughout the life of the operation with conceptual study estimates reviewed every 5 years. Within 10 years from the expected closure date, closure cost estimates must comply with the Group's Capital Project Framework. This means, for example, that where an Order of Magnitude (OoM) study is required for closure, it must be of the same standard as an OoM study for a new mine, smelter or refinery.

In 2023, a reforecast for the Ranger Uranium mine operated by Energy Resources of Australia resulted in an increase to the closure provision of US$850 million. The majority of the provision increase was attributable to rehabilitation activities post 2027 and is subject to further study which could result in material change to the provision. These activities remain subject to a number of studies and are also potentially sensitive to external events such as rainfall.

In some cases, the closure study may indicate that monitoring and, potentially, remediation will be required indefinitely – for example, groundwater treatment. In these cases, the underlying cash flows for the provision may be restricted to a period for which the costs can be reliably estimated, which on average is around 30 years. Where an alternative commercial arrangement to meet our obligations can be predicted with confidence, this period may be shorter.

Analysis of close-down, restoration and environmental provisions

	2024 US$m	2023 US$m
Undiscounted close-down, restoration and environmental obligations	**23,038**	23,372
Impact of discounting	**(7,307)**	(6,222)
Present value of close-down, restoration and environmental provisions	**15,731**	17,150
Attributable to:		
Operating sites	**11,715**	12,021
Non-operating sites	**4,016**	5,129
Total close-down, restoration and environmental provisions	**15,731**	17,150

Closure cost composition as at 31 December	2024 US$m	2023 US$m
Decommissioning, decontamination and demolition	**3,065**	3,591
Closure and rehabilitation earthworks[(a)]	**4,628**	4,609
Long-term water management costs[(b)]	**1,316**	1,236
Post-closure monitoring and maintenance	**1,581**	1,806
Indirect costs, owners' costs and contingency[(c)]	**5,141**	5,908
Total	**15,731**	17,150

(a) A key component of earthworks rehabilitation involves re-landscaping the area disturbed by mining activities utilising largely diesel-powered heavy mobile equipment. In developing low-carbon solutions for our mobile fleet, this may include electrification of the vehicles during the mine life. The forecast cash flows for the heavy mobile equipment in the closure cost estimate are based on existing fuel sources. The cost incurred during closure could reduce if these activities are powered by renewable energy.

(b) Long-term water management relates to the post-closure treatment of water due to acid rock drainage and other environmental commitments and is an area of research and development focus for our Closure team. The cost of this water processing can continue for many years after the bulk earthworks and demolition activities have completed and are therefore exposed to long-term climate change. This could materially affect rates of precipitation and therefore change the volume of water requiring processing. It is not currently possible to forecast accurately the impact this could have on the closure provision as some of our locations could experience drier conditions whereas others could experience greater rainfall. A further consideration relates to the alternative commercial use for the processed water, which could support ultimate transfer of these costs to a third party.

(c) Indirect costs, owners' costs and contingency include adjustments to the underlying cash flows to align the closure provision with a central-case estimate. This excludes allowances for quantitative estimation uncertainties, which are allocated to the underlying cost driver and presented within the respective cost categories above.

Geographic composition as at 31 December	2024 US$m	2023 US$m
Australia	**8,546**	9,187
US	**4,419**	4,682
Canada	**1,517**	1,722
Other countries	**1,249**	1,559
Total	**15,731**	17,150

The geographic composition of the closure provision shows that our closure obligations are largely in countries with established levels of regulation in respect of mine and site closure.

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14 Close-down, restoration and environmental provisions *continued*

Projected cash flows (undiscounted) for close-down, restoration and environmental provisions

	<1 year US$m	1-3 years US$m	3-5 years US$m	>5 years US$m	Total US$m
At 31 December 2024	**1,183**	**2,497**	**1,880**	**17,478**	**23,038**
At 31 December 2023	1,523	2,365	2,005	17,479	23,372

Remaining lives of operations and infrastructure range from 1 to over 50 years with an average for all sites, weighted by present closure obligation, of around 14 years. Although the ultimate cost to be incurred is uncertain, the Group's businesses estimate their respective costs based on current restoration standards, techniques and expected climate conditions.

Key accounting estimate - close-down, restoration and environmental obligations

The most significant assumptions and estimates used in calculating the provision are:

- Closure timeframes. The weighted average remaining lives of operations is shown above. Some expenditure may be incurred before closure while the operation as a whole is in production.
- The length of any post-closure monitoring period. This will depend on the specific site requirements and the availability of alternative commercial arrangements; some expenditure can continue into perpetuity. The Rio Tinto Kennecott closure and environmental remediation provision includes an allowance for ongoing monitoring and remediation costs, including groundwater treatment, of approximately US$0.7 billion.
- The probability weighting of possible closure scenarios. The most significant impact of probability weighting is at the Pilbara operations (Iron Ore) relating to infrastructure, and incorporates the expectation that some infrastructure will be retained by the relevant State authorities post closure. The assignment of probabilities to this scenario reduces the closure provision by US$0.5 billion.
- Appropriate sources on which to base the calculation of the discount rate. The discount rate, by nature, is subjective and therefore sensitivities are shown below for how the provision balance, which at 31 December 2024 was US$15,731 million, would change if discounted at alternative discount rates.

There is significant estimation uncertainty in the calculation of the provision and cost estimates can vary in response to many factors including:

- changes to the relevant legal or local/national government requirements and any other commitments made to stakeholders
- review of remediation and relinquishment options
- additional remediation requirements identified during the rehabilitation
- the emergence of new restoration techniques
- precipitation rates and climate change
- change in foreign exchange rates
- change in the expected closure date
- change in the discount rate.

Experience gained at other mine or production sites may also change expected methods or costs of closure, although elements of the restoration and rehabilitation can be unique to each site. Generally, there is relatively limited restoration and rehabilitation activity and historical precedent elsewhere in the Group, or in the industry as a whole, against which to benchmark cost estimates.

The expected timing of expenditure can also change for other reasons, for example because of changes to expectations relating to Ore Reserves and Mineral Resources, production rates, renewal of operating licences or economic conditions.

Changes in closure cost estimates at the Group's ongoing operations could result in a material adjustment to assets and liabilities in the next 12 months and would also impact the depreciation and the unwinding of discount in future years.

Changes to closure cost estimates for closed operations, and changes to environmental cost estimates at any operation, could cause a material adjustment to the income statement and closure liability. We do not consider that there is significant risk of a change in estimates for these liabilities causing a material adjustment to the income statement in the next 12 months. Any new environmental incidents may require a material provision but cannot be predicted.

Project-specific risks are embedded within the cash flows which are based on a central case estimate of closure activities assuming that the obligation is fulfilled by the Group. These cash flows are then discounted, as mentioned above, using a consistent discount rate applied to all locations.

Impact of climate change on our business - close-down, restoration and environmental costs

The underlying costs for closure have been estimated with varying degrees of precision based on a function of the age of the underlying asset and proximity to closure. For assets within 10 years of closure, closure plans and cost estimates are supported by detailed studies which are refined as the closure date approaches. These closure studies consider climate change and plan for resilience to expected climate conditions with a particular focus on precipitation rates. For new developments, consideration of climate change and ultimate closure conditions are an important part of the approval process. For longer-lived assets, closure provisions are typically based on conceptual level studies that are refreshed at least every 5 years; these are evolving to incorporate greater consideration of forecast climate conditions at closure.

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14 Close-down, restoration and environmental provisions *continued*

Sensitivity analysis

Close-down, restoration and environmental provisions of US$15,731 million (2023: US$17,150 million) are based on risk-adjusted cash flows expressed in real terms. The recent upward trajectory in interest rates has resulted in expectations of higher yields from long-dated bonds, including the 30-year US Treasury Inflation Protected Securities, which is a key input to our closure provision discount rate. On 30 June 2024, we revised the closure discount rate from 2.0% to 2.5% (2023: from 1.5% to 2.0% on 30 June 2023), applied prospectively from that date. This assumption is based on the currency in which we plan to fund the closures and our expectation of long-term interest rate and exchange rate parity in the locations of our operations.

The impact of discounting on the provision - and the corresponding amount capitalised within "Property, plant and equipment" (for operating sites) or charged/(credited) to the income statement (for non-operating and fully impaired sites) - is illustrated below:

	At 31 December 2024			At 31 December 2023		
	Capitalised within "Property, plant and equipment" US$m	**Charged/(credited) to the income statement US$m**	**Total increase/ (decrease) in provision US$m**	Capitalised within "Property, plant and equipment" US$m	Charged/(credited) to the income statement US$m	Total increase/ (decrease) in provision US$m
Discount rate decreased to 1.0%	**3,300**	**400**	**3,700**	2,300	300	2,600
Discount rate increased to 3.0%	**(900)**	**(100)**	**(1,000)**	(1,800)	(300)	(2,100)

15 Deferred taxation

Recognition and measurement

The Group's accounting policy in relation to deferred taxation is outlined within note 10.

The movement in deferred tax (liabilities)/assets during the year is as follows.

	2024 US$m	2023 US$m
At 1 January	**1,040**	(368)
Adjustment on currency translation	**(10)**	19
Credited/(charged) to the income statement	**393**	1,260
(Charged)/credited to statement of comprehensive income[a]	**(32)**	153
Other movements[b]	**(10)**	(24)
At 31 December	**1,381**	1,040
Comprising:		
– deferred tax assets[c][d]	**4,016**	3,624
– deferred tax liabilities[e]	**(2,635)**	(2,584)

(a) The amounts credited/(charged) directly to the statement of comprehensive income include provisions for tax on cash flow hedges and on remeasurement gains/(losses) on pension schemes and on post-retirement healthcare plans.

(b) "Other movements" include deferred tax relating to tax payable recognised by subsidiary holding companies on the profits of the equity accounted units to which it relates.

(c) Recognised deferred tax assets of US$1,293 million (2023: US$1,182 million) are subject to expiry if not recovered within certain time limits as specified in local tax legislation and investment agreements. Of those recognised assets, US$66 million (2023: US$nil) would expire within one year if not used, US$93 million (2023: US$140 million) would expire within one to 5 years, and US$1,134 million (2023: US$1,042 million) would expire in more than 5 years.

(d) Recognised and unrecognised deferred tax assets are shown in the table on page 195 and totalled US$9,994 million at 31 December 2024 (2023: US$10,040 million). Of this total, US$4,016 million has been recognised as deferred tax assets (2023: US$3,624 million), leaving US$5,978 million (2023: US$6,416 million) unrecognised, as recovery is not considered probable.

(e) Deferred tax liabilities are not recognised on the unremitted earnings of subsidiaries and joint ventures totalling US$2,152 million (2023: US$2,249 million) where the Group is able to control the timing of the remittance and it is probable that there will be no remittance in the foreseeable future. If these earnings were remitted, tax of US$99 million (2023: US$110 million) would be payable.

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15 Deferred taxation *continued*

Analysis of deferred tax

Deferred tax balances for which there is a right of offset within the same tax jurisdiction are presented net on the face of the balance sheet as required by IAS 12. The closing deferred tax assets and liabilities, prior to this offsetting of balances, are shown below.

	2024 US$m	2023 US$m
Deferred tax assets arising from:		
Tax losses[a]	**1,461**	1,474
Provisions and other liabilities	**4,710**	3,835
Capital allowances	**1,024**	961
Post-retirement benefits	**187**	210
Unrealised exchange losses	**157**	194
Other temporary differences[b]	**911**	1,433
Total	**8,450**	8,107
Deferred tax liabilities arising from:		
Capital allowances	**(5,378)**	(5,407)
Unremitted earnings[c]	**(391)**	(394)
Capitalised and accrued interest	**(766)**	(304)
Post-retirement benefits	**(50)**	(72)
Unrealised exchange gains	**(13)**	(15)
Other temporary differences	**(471)**	(875)
Total	**(7,069)**	(7,067)
Credited/(charged) to the income statement		
Unrealised exchange losses	**(11)**	(2)
Tax losses	**98**	531
Provisions and other liabilities	**785**	133
Capital allowances	**(323)**	628
Tax on unremitted earnings	**–**	5
Post-retirement benefits	**28**	(48)
Other temporary differences	**(184)**	13
Total	**393**	1,260

(a) Recognised deferred tax assets of US$1,293 million (2023: US$1,182 million) are subject to expiry if not recovered within certain time limits as specified in local tax legislation and investment agreements. Of those recognised assets, US$66 million (2023: US$nil) would expire within one year if not used, US$93 million (2023: US$140 million) would expire within one to 5 years, and US$1,134 million (2023: US$1,042 million) would expire in more than 5 years.

(b) Other temporary differences include research and development, investment and other tax credits and allowances of US$540 million (2023: US$583 million).

(c) Deferred tax liabilities are not recognised on the unremitted earnings of subsidiaries and joint ventures totalling US$2,152 million (2023: US$2,249 million) where the Group is able to control the timing of the remittance and it is probable that there will be no remittance in the foreseeable future. If these earnings were remitted, tax of US$99 million (2023: US$110 million) would be payable.

Other relevant judgements – recoverability of deferred tax assets

In considering the recoverability of deferred tax assets, judgement is required regarding the extent to which certain risk factors are likely to affect the recovery of these assets. These risk factors include the risk of expiry of losses prior to utilisation, the impact of other legislation or tax regimes, such as minimum taxes, and consideration of factors that lead to the generation of losses or other deferred tax assets. IAS 12 requires us to consider whether taxable profits will be available against which deferred tax assets may be utilised.

The Mongolian Tax Authority has issued a number of tax assessments covering the fiscal years 2013 to 2020, the most recent of which was received in December 2023, which are inconsistent with the Oyu Tolgoi Investment Agreement and Mongolian legislation. The matters under dispute have been referred to international arbitration. Differences in interpretation of the Investment Agreement and Mongolian legislation could have a material impact on the amount and/or recovery of recognised deferred tax items, including tax losses. The arbitration process on matters of this complexity can typically take over 12 months to conclude.

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15 Deferred taxation *continued*

Analysis of deferred tax assets

The recognised amounts in the table below do not include deferred tax assets that have been netted off against deferred tax liabilities.

	Recognised		Unrecognised	
At 31 December	**2024 US$m**	2023 US$m	**2024 US$m**	2023 US$m
France	**–**	–	**1,233**	1,320
Canada	**331**	383	**511**	501
US[(a)]	**262**	204	**926**	977
Australia	**1,132**	991	**563**	842
Mongolia[(b)]	**1,780**	1,530	**68**	235
Other countries	**511**	516	**2,677**	2,541
Total[(c)(d)]	**4,016**	3,624	**5,978**	6,416

(a) Although our US Group companies expect to generate sufficient taxable profits to utilise existing Federal deferred tax assets, the application of the new Corporate Alternative Minimum Tax (CAMT) rules has resulted in a position where the future tax benefit derived from utilisation of Federal deferred tax assets is limited and consequently these deferred tax assets are included as "unrecognised" in this table.

(b) Deferred tax assets in Mongolia include US$419 million (2023: US$310 million) from tax losses that expire if not recovered against taxable profits within 8 years. In addition, amounts have been recognised as deferred tax assets relating to anticipated future deductions. Tax losses and other deferred tax assets have been calculated in accordance with the Oyu Tolgoi Investment Agreement and Mongolian legislation. The interpretation of the Investment Agreement by the Mongolian Tax Authority is under dispute and has been referred to international arbitration. Differences in interpretation of the Investment Agreement and Mongolian legislation could have a material impact on the amount and/or period of recovery of deferred tax assets.

(c) US$2,561 million (2023: US$2,455 million) of the unrecognised assets relate to realised or unrealised capital losses, the recovery of which depends on the existence of capital gains in future years. There are time limits, the shortest of which is one year, for the recovery of US$249 million of the unrecognised assets (2023: US$543 million).

(d) In addition to the unrecognised deferred tax assets in this table, the Group has accumulated UK foreign tax credits of US$1.4 billion (2023: US$1.3 billion). The credits are not refundable but would be available, if needed, to shelter any UK tax in respect of profits arising in the Escondida business.

16 Inventories

Recognition and measurement

Inventories are measured at the lower of cost and net realisable value, primarily on a weighted average cost basis. Third-party production purchased for our own use that is ordinarily interchangeable in accordance with IAS 2 "Inventories" is valued on the same basis, jointly with our own production. Average costs are calculated by reference to the cost levels experienced in the relevant month together with those in opening inventory.

The cost of raw materials and purchased components, and consumable stores, is the purchase price. The cost of work in progress and finished goods and goods for resale is generally the cost of production, including directly attributable labour costs, materials and contractor expenses, the depreciation of assets used in production and production overheads.

Work in progress includes ore stockpiles and other partly processed material. Stockpiles represent ore that has been extracted and is available for further processing. If there is significant uncertainty as to if and when the stockpiled ore will be processed, the cost of such ore is expensed as mined. If the ore will not be processed within 12 months after the balance sheet date, it is included within non-current assets and net realisable value is calculated on a discounted cash flow basis. Quantities of stockpiled ore are assessed primarily through surveys and assays. Certain estimates, including expected metal recoveries, are calculated using available industry, engineering and scientific data, and are periodically reassessed, taking into account technical analysis and historical performance.

	2024 US$m	2023 US$m
Raw materials and purchased components	**971**	1,050
Consumable stores	**1,560**	1,520
Work in progress	**1,931**	2,467
Finished goods and goods for resale	**1,620**	1,836
Total inventories	**6,082**	6,873
Comprising:		
Expected to be used within one year	**5,860**	6,659
Expected to be used after more than one year	**222**	214
Total inventories	**6,082**	6,873

During 2024, the Group recognised a net inventory write-off of US$49 million (2023: US$60 million write-off). This included inventory write-offs of US$77 million (2023: US$94 million) partly offset by a write-back of previously written down inventory due to an increase in realisable values amounting to US$28 million (2023: US$34 million).

At 31 December 2024, US$947 million (2023: US$925 million) of inventories were pledged as security for liabilities.

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17 Receivables and other assets

Recognition and measurement

Financial assets (except provisionally priced receivables) which are held under a hold to collect business model and have cash flows that meet the solely payments of principal and interest (SPPI) criteria are recognised at amortised cost. Provisionally priced receivables are measured at fair value through profit or loss with subsequent fair value gains or losses taken to the income statement.

As a part of our working capital management, we offer receivables factoring and letter of credit programs for our customers/receivables. For our receivables under letter of credit programs, the business model of "hold to collect" has not changed and these continue to be recognised at amortised cost as the sale of the letter of credit is made close to maturity of receivables and discounting costs are immaterial. The receivables under our global factoring program do not meet the "hold to collect" model and therefore are recognised at fair value through profit or loss and continue to be classified as trade receivables within operating cash flows. US$588 million of receivables (2023: US$475 million) are subject to our factoring program and US$510 million (2023: US$372 million) of receivables subject to a letter of credit discounting program have been transferred to the participating banks and derecognised at the reporting date.

	2024			2023		
	Non-current US$m	Current US$m	Total US$m	Non-current US$m	Current US$m	Total US$m
Trade receivables[a]	–	2,344	2,344	–	2,461	2,461
Other financial receivables[a]	355	643	998	234	548	782
Other receivables[b]	380	429	809	470	347	817
Prepayment of tolling charges to jointly controlled entities[c]	94	–	94	113	–	113
Pension surpluses (note 28)	405	–	405	466	–	466
Other prepayments	163	825	988	376	589	965
Total[d]	**1,397**	**4,241**	**5,638**	1,659	3,945	5,604

(a) At 31 December 2024, trade receivables and other financial receivables are stated net of allowances for expected credit losses of US$72 million (2023: US$82 million). We apply the "simplified approach" to trade receivables and receivables relating to net investment in finance leases and a "general approach" to all other financial assets.
(b) At 31 December 2024, other receivables include US$333 million (2023: US$349 million) related to Energy Resources of Australia Ltd's (ERA) deposit held in a trust fund which is controlled by the Government of Australia. ERA are entitled to reimbursement from the fund once specific phases of rehabilitation relating to the Ranger Project are completed. The fund is outside the scope of IFRS 9.
(c) These prepayments will be charged to Group operating costs as tolling services are rendered and product processing occurs.
(d) There is no material element of receivables and other assets that is interest-bearing or financing in nature. The fair value of current trade and other receivables and the majority of amounts classified as non-current trade and other receivables approximates to their carrying value.

Credit risk related to receivables

Our Commercial team manages customer credit risk by reference to our established policy, procedures and controls. The team establishes credit limits for all of our customers. Where customers are rated by an independent credit rating agency, these ratings are used as a guide to set credit limits. Where there are no independent credit ratings available, we assess the credit quality of the customer through a credit rating model and assign appropriate credit limits. The Commercial team monitors outstanding customer receivables regularly and highlights any credit concerns to senior management. Receivables to high-risk customers are often secured by letters of credit or other forms of credit enhancement.

The expected credit loss on our trade receivable portfolio is insignificant.

18 Trade and other payables

Recognition and measurement

Trade payables are measured at amortised cost, with the exception of provisionally priced contracts which are held at fair value as per IFRS 9.

	2024			2023		
	Non-current US$m	Current US$m	Total US$m	Non-current US$m	Current US$m	Total US$m
Trade payables	–	3,196	3,196	–	3,265	3,265
Other financial payables	188	1,192	1,380	238	913	1,151
Other payables	42	143	185	56	208	264
Deferred income[a]	118	338	456	103	280	383
Accruals	–	1,751	1,751	–	1,702	1,702
Employee entitlements	–	920	920	–	992	992
Royalties and mining taxes	2	622	624	3	868	871
Amounts owed to equity accounted units	193	16	209	196	10	206
Total	**543**	**8,178**	**8,721**	596	8,238	8,834

(a) Deferred income includes contract liabilities of US$358 million (2023: US$275 million).

The fair value of trade payables and financial instruments within other financial payables approximates their carrying value.

Supplier finance arrangements

The Group participates in supplier finance arrangements with designated banks whereby suppliers may elect to receive early payment of their invoice from a third-party bank by factoring their receivable from Rio Tinto. These arrangements do not modify the terms of the original liability with respect to either counterparty terms, settlement date or amount due. Although they are open to a wide range of suppliers, we typically see a take up for suppliers with payment terms ranging from 60 to 105 days, similar to the prior year. For comparable trade payables that are not part of supplier finance arrangements the range of payment terms are similar. Use of the early settlement facility is voluntary and at the suppliers' discretion on an invoice-by-invoice basis. Financial liabilities subject to supplier finance arrangements, therefore, continue to be classified as trade payables with cash outflows showing within operating cash flows. There were no significant non-cash changes in the carrying amount of the trade payables included in the Group's supplier finance arrangements.

As at 31 December 2024, the carrying value of the financial liabilities that are part of supplier finance arrangements presented within trade payables amounts to US$714 million (2023: US$821 million), of which US$603 million (2023: US$754 million) relates to amounts that suppliers have already received as payment from the banks on the reporting date.

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Our capital and liquidity

Our overriding objective when managing capital and liquidity is to safeguard the business as a going concern. Capital is allocated in a consistent and disciplined manner. Essential capital expenditure remains our priority for capital allocation. It includes sustaining capital to ensure the integrity of our assets, high-returning replacement projects and decarbonisation investment. This is followed by ordinary dividends within our well-established returns policy. We then test investment in compelling growth projects against debt management and additional cash returns to shareholders.

Our Board and senior management regularly review the capital structure and liquidity of the Group. They take into account our strategic priorities, the economic and business conditions, and any identified investment opportunities, along with the expected returns to shareholders. We expect total cash returns to shareholders over the longer term to be in a range of 40–60% of underlying earnings in aggregate through the commodity cycle.

We consider various financial metrics when managing our capital structure and liquidity risk, including total capital, net debt, gearing, the overall level of borrowings and their maturity profile, liquidity levels, future cash flows, underlying EBITDA and interest cover ratios.

Our total capital as at 31 December is shown in the table below.

	Note	2024 US$m	2023 US$m
Equity attributable to owners of Rio Tinto (see consolidated balance sheet)		**55,246**	54,586
Equity attributable to non-controlling interests (see consolidated balance sheet)		**2,719**	1,755
Net debt	19	**5,491**	4,231
Total capital		**63,456**	60,572

We have access to various forms of financing including corporate bonds issued in debt capital markets through our US Shelf and European Medium Term Note Programmes, commercial paper, project finance, bank loans and credit facilities.

In November 2024, we entered into a US$7 billion bridge facility to support the funding required for the proposed acquisition of Arcadium Lithium, which is expected to close in March 2025 (refer to note 5 for details). The Group also has an existing US$7.5 billion multi-currency revolving credit facility which matures in November 2028. Both facilities remained undrawn throughout the year. At 31 December 2024, the Group's subsidiaries had available in aggregate US$738 million (2023: US$558 million) of committed borrowing facilities; these amounts are available for use by the respective holders of each facility only and are not available for use across the Group.

Our credit ratings as at 31 December, as provided by Standard & Poor's and Moody's Investor Services, were:

	2024	2023
Long-term rating	**A/A1**	A/A1
Short-term rating	**A-1/P-1**	A-1/P-1
Outlook	**Stable/Stable**	Stable/Stable

Our unified credit status is maintained through cross guarantees, which mean the contractual obligations of Rio Tinto plc and Rio Tinto Limited are automatically guaranteed by the other.

Financial liability analysis

In the table below, we summarise the maturity profile of our financial liabilities on our balance sheet based on contractual undiscounted payments as at 31 December. When the amount payable is not fixed, the amount disclosed is determined by reference to the conditions existing at the end of the reporting period. This will, therefore, not necessarily agree with the amounts disclosed as the carrying value.

	2024					2023				
(Outflows)/Inflows	Within 1 year or on demand US$m	Between 1 and 2 years US$m	Between 2 and 5 years US$m	After 5 years US$m	Total US$m	Within 1 year or on demand US$m	Between 1 and 2 years US$m	Between 2 and 5 years US$m	After 5 years US$m	Total US$m
Non-derivative financial liabilities										
Trade and other financial payables[a]	**(6,032)**	**(30)**	**(43)**	**(307)**	**(6,412)**	(5,769)	(57)	(68)	(308)	(6,202)
Expected lease liability payments	**(398)**	**(306)**	**(488)**	**(551)**	**(1,743)**	(385)	(285)	(442)	(574)	(1,686)
Borrowings before swaps	**(185)**	**(630)**	**(3,007)**	**(8,854)**	**(12,676)**	(845)	(17)	(2,385)	(10,011)	(13,258)
Expected future interest payments[a]	**(748)**	**(729)**	**(1,873)**	**(4,260)**	**(7,610)**	(803)	(781)	(2,156)	(4,886)	(8,626)
Other financial liabilities	**–**	**–**	**–**	**–**	**–**	(4)	–	–	–	(4)
Derivative financial liabilities[b]										
Derivatives related to net debt – net settled	**(78)**	**(50)**	**(86)**	**(17)**	**(231)**	(161)	(87)	(163)	–	(411)
Derivatives related to net debt – gross settled[a]										
– gross inflows	**13**	**25**	**701**	**–**	**739**	502	26	77	664	1,269
– gross outflows	**(34)**	**(34)**	**(909)**	**–**	**(977)**	(620)	(34)	(102)	(841)	(1,597)
Derivatives not related to net debt – net settled	**(81)**	**(33)**	**(117)**	**(149)**	**(380)**	(76)	(54)	(124)	(54)	(308)
Derivatives not related to net debt – gross settled										
– gross inflows	**240**	**–**	**–**	**–**	**240**	499	–	–	–	499
– gross outflows	**(240)**	**–**	**–**	**–**	**(240)**	(501)	–	–	–	(501)
Total	**(7,543)**	**(1,787)**	**(5,822)**	**(14,138)**	**(29,290)**	(8,163)	(1,289)	(5,363)	(16,010)	(30,825)

(a) The interest payable at the year-end is removed from trade and other financial payables and shown within expected future interest payments and derivatives related to net debt. Interest payments have been projected using interest rates applicable at the end of the applicable financial year. Where debt is subject to variable interest rates, future interest payments are subject to change in line with market rates.

(b) The maturity grouping is based on the earliest payment date.

Our weighted average debt maturity including leases and derivatives related to debt was approximately 11 years (2023: 12 years).

19 Net debt

Analysis of changes in net debt

	2024					
	Financial liabilities			Other assets		
	Borrowings excluding overdrafts (note 20)[a] US$m	Lease liabilities (note 21)[b] US$m	Derivatives related to net debt (note 23)[c] US$m	Cash and cash equivalents including overdrafts (note 22)[a] US$m	Other investments (note 23)[d] US$m	Net debt US$m
At 1 January	**(13,000)**	**(1,351)**	**(429)**	**9,672**	**877**	**(4,231)**
Foreign exchange adjustment	**57**	**69**	**(30)**	**(99)**	**(1)**	**(4)**
Cash movements excluding exchange movements	**494**	**455**	**104**	**(1,089)**	**(675)**	**(711)**
Other non-cash movements	**18**	**(586)**	**12**	**–**	**11**	**(545)**
At 31 December	**(12,431)**	**(1,413)**	**(343)**	**8,484**	**212**	**(5,491)**

	2023					
	Financial liabilities			Other assets		
	Borrowings excluding overdrafts (note 20)[a] US$m	Lease liabilities (note 21)[b] US$m	Derivatives related to net debt (note 23)[c] US$m	Cash and cash equivalents including overdrafts (note 22)[a] US$m	Other investments (note 23)[d] US$m	Net debt US$m
At 1 January	(11,070)	(1,200)	(690)	6,774	1,998	(4,188)
Foreign exchange adjustment	(87)	(21)	62	(23)	–	(69)
Cash movements excluding exchange movements	(1,523)	426	(4)	2,921	(1,157)	663
Other non-cash movements	(320)	(556)	203	–	36	(637)
At 31 December	(13,000)	(1,351)	(429)	9,672	877	(4,231)

(a) Borrowings excluding overdrafts of US$12,431 million (2023:US$13,000 million) differs from Borrowings on the balance sheet as it excludes bank overdrafts of US$11 million (2023: US$1 million) which has been included in cash and cash equivalents for the net debt reconciliation.

(b) Other non-cash movements in lease liabilities include the net impact of additions, modifications and terminations during the period.

(c) Included within "Derivatives related to net debt" are interest rate and cross-currency interest rate swaps that are in hedge relationships with the Group's debt.

(d) Other investments includes US$212 million (2023: US$877 million) of highly liquid financial assets held in a separately managed portfolio of fixed income instruments classified as held for trading.

The table below summarises, by currency, our net debt, after taking into account relevant cross-currency interest rate swaps and foreign exchange contracts:

	2024						2023
Net debt by currency	Borrowings excluding overdrafts US$m	Lease liabilities US$m	Derivatives related to net debt US$m	Cash and cash equivalents US$m	Other investments US$m	Net debt US$m	Net debt US$m
US dollar	**(12,181)**	**(539)**	**(343)**	**7,108**	**212**	**(5,743)**	(4,033)
Australian dollar	**(92)**	**(501)**	**–**	**721**	**–**	**128**	(186)
Canadian dollar	**(158)**	**(158)**	**–**	**81**	**–**	**(235)**	(247)
South African rand	**–**	**(2)**	**–**	**167**	**–**	**165**	130
Other	**–**	**(213)**	**–**	**407**	**–**	**194**	105
Total	**(12,431)**	**(1,413)**	**(343)**	**8,484**	**212**	**(5,491)**	(4,231)

20 Borrowings

Recognition and measurement

Borrowings are recognised initially at fair value, net of transaction costs incurred, and are subsequently measured at amortised cost. Our policy is to predominantly borrow in US dollars (USD) at floating interest rates, either directly or through the use of derivatives, as:

- the majority of our sales are in USD
- historically a lower cost of borrowing has been observed from maintaining a floating rate exposure
- historically there has been a correlation between interest rates and commodity prices.

For bonds with fixed interest rates, we generally enter into interest rate swaps to convert them to floating rates. The tenor of the interest rate swaps is sometimes shorter than the tenor of the bond which means we remain exposed to long-term fixed-rate funding. As interest rate swaps mature, new medium dated swaps are generally transacted to maintain this floating rate exposure; however, we may elect to maintain a proportion of fixed-rate funding after considering market conditions, the cost and form of funding and other related factors.

We have designated the swaps to be in fair value hedge relationships with the corresponding period of future interest payments of the respective debt.

Where we borrow non-US denominated debt, we generally enter into cross-currency interest rate swaps to convert the principal and fixed interest coupon to a USD nominal with a USD interest coupon.

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20 Borrowings *continued*

Borrowings

The characteristics and carrying value of the Group's borrowings at 31 December are summarised below.

	Carrying value 2024 US$m	Carrying value 2023 US$m	Nominal value of hedged item 2024 US$m	Nominal value of hedged item 2023 US$m	Weighted average interest rate after swaps (where applicable)[b]	Swap maturity (where applicable)
Rio Tinto Finance plc Euro Bonds 2.875% due 2024[a][b][c]	–	452	–	463		
Rio Tinto Finance (USA) Limited Bonds 7.125% due 2028[a][b]	**780**	804	**750**	750	3 month SOFR +3.54%	2028
Alcan Inc. Debentures 7.25% due 2028[a][d]	**101**	99	**100**	100	6 month SOFR +3.33%	2028
Rio Tinto Finance plc Sterling Bonds 4.0% due 2029[a][b][e][f]	**624**	611	–	639		
Alcan Inc. Debentures 7.25% due 2031[a][b]	**402**	392	**400**	400	3 month SOFR +5.98%	2025
Rio Tinto Finance (USA) plc Bonds 5.0% due 2033[a][g]	**646**	646	**650**	–	6 month SOFR + 0.96%	2026/ 2033
Alcan Inc. Global Notes 6.125% due 2033[a][b]	**731**	699	**750**	750	3 month SOFR +5.93%	2025
Alcan Inc. Global Notes 5.75% due 2035[a][b]	**287**	274	**300**	300	3 month SOFR +5.44%	2025
Rio Tinto Finance (USA) Limited Bonds 5.2% due 2040[a][b][h]	**1,142**	1,158	**1,150**	200	6 month SOFR +1.18%	2033
Rio Tinto Finance (USA) plc Bonds 4.75% due 2042[a][i]	**492**	492	**500**	–	6 month SOFR + 0.65%	2026
Rio Tinto Finance (USA) plc Bonds 4.125% due 2042	**732**	731	–	–		
Rio Tinto Finance (USA) Limited Bonds 2.75% due 2051[a][b]	**1,103**	1,098	**1,250**	1,250	6 month SOFR +1.57%	2028
Rio Tinto Finance (USA) plc Bonds 5.125% due 2053[a]	**1,097**	1,151	**1,100**	1,100	6 month SOFR +0.76%	2033
Oyu Tolgoi LLC MIGA Insured Loan SOFR plus 2.65% due 2032[j][k]	**603**	602	–	–		
Oyu Tolgoi LLC Commercial Banks "B Loan" SOFR plus 3.4% due 2032[j][k]	**1,392**	1,392	–	–		
Oyu Tolgoi LLC Export Credit Agencies Loan 4.72% due 2033[j][k]	**249**	248	–	–		
Oyu Tolgoi LLC Export Credit Agencies Loan SOFR plus 3.65% due 2034[j][k]	**816**	816	–	–		
Oyu Tolgoi LLC International Financial Institutions "A Loan" SOFR plus 3.78% due 2035[j][k]	**792**	792	–	–		
Other secured loans	**93**	144				
Other unsecured loans	**349**	399				
Bank overdrafts	**11**	1				
Total borrowings[l]	**12,442**	13,001				
Comprising:						
Current borrowings	**180**	824				
Non-current borrowings	**12,262**	12,177				
Total borrowings[l]	**12,442**	13,001				

(a) The fair value movements of our borrowings and interest rate swaps that are in fair value hedge relationships are included in note 9.

(b) The LIBOR reference rates derivatives were transitioned to Secured Overnight Financing Rate (SOFR) with effect from 1 July 2023 in accordance with International Swaps and Derivatives Association (ISDA) Fallback Protocol. Weighted average interest rate after swaps for 2023 can be found in note 20 to the Financial Statements in our *2023 Annual Report*.

(c) On 11 December 2024 we repaid our €417 million (nominal value) Rio Tinto Finance plc Euro Bonds on their maturity. The cash outflow relating to the repayment of the bonds and the realised loss on the derivatives have been recognised within "Repayment of borrowings and associated derivatives" in the Group cash flow statement and totalled US$546 million.

(d) In November 2024, our interest rate swap which converted our fixed coupon interest payments on this bond to 3 month SOFR +5.69%, matured. We entered into a new interest rate swap to convert our fixed coupon interest payments on this bond to 6 month SOFR + 3.33%.

(e) Rio Tinto has a US$10 billion (2023: US$10 billion) European Medium Term Note Program against which the cumulative amount utilised was US$626 million equivalent at 31 December 2024 (2023: US$1,102 million). The carrying value of these bonds after hedge accounting adjustments amounted to US$624 million (2023: US$1,063 million) in aggregate.

(f) We applied cash flow hedge accounting to this bond and the corresponding cross currency interest rate swap. The hedge is fully effective as the notional amount, maturity, payment and reset dates match. In 2019, we swapped the resulting fixed US dollar annual interest coupon payments to floating rates. Fair value hedge accounting has been applied to this relationship in addition to the pre-existing cash flow hedge. In December 2024, our existing interest rate swap on this bond matured, therefore, the bond is no longer in a hedged position.

(g) In April and October 2024 we entered into new interest rate swaps to convert our fixed coupon on this bond to 6 month SOFR +0.96%.

(h) In February, March and April 2024 we entered into a new interest rate swap to convert our fixed coupon on this bond to 6 month SOFR +1.18%.

(i) In December 2024 we entered into a new interest rate swaps to convert our fixed coupon on this bond to 6 month SOFR +0.65%.

(j) These borrowings relate to the Oyu Tolgoi LLC project finance facility and the due dates stated represent the final repayment date. The interest rates stated are pre-completion and will increase by 1.2% post-completion, which is expected to take place in 2029 subject to meeting certain conditions. Refer below on the refinancing of the facility made during 2023.

(k) Our bank borrowings in Oyu Tolgoi (OT) are subject to financial covenants which require that OT maintains a certain level of debt-equity ratio and a debt service coverage ratio. These covenants are tested at the end of each month. Based on our forecasting, we consider this risk of non-compliance with these covenants to be remote.

(l) The Group's borrowings of US$12,442 million (2023: US$13,001 million) include US$3,945 million (2023: US$3,994 million) of subsidiary entity borrowings that are subject to various financial and general covenants with which the respective borrowers were in compliance as at 31 December 2024 and are expected to be in compliance within 12 months after the reporting date. The non-compliance with these covenants, if not remediated, would permit the lender to immediately call the loan and borrowings.

In the prior year, we refinanced the Oyu Tolgoi project finance with a syndicate of international financial institutions, export credit agencies and commercial lenders. The lenders agreed to a deferral of the principal repayments by 3 years to June 2026 and to an extension of the final maturity date by 5 years from 2030 to 2035. As part of refinancing, the debt transitioned to the SOFR benchmark to which we applied the Phase 2 IBOR reform relief under IFRS 9. The refinancing did not result in a derecognition of the drawn down amount, however we recognised an accounting loss on modification of US$123 million related to changes other than the benchmark transition and capitalised transaction costs incurred of US$50 million.

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21 Leases

Recognition and measurement

IFRS 16 applies to the recognition, measurement, presentation and disclosure of leases. Certain leases are exempt from the standard, including leases to explore for or use minerals, oil, natural gas and similar non-regenerative resources. We apply the scope exemptions in paragraphs 3(e) and 4 of IFRS 16 and do not apply the standard to leases of any assets which would otherwise fall within the scope of IAS 38 "Intangible Assets".

A significant proportion of our lease arrangements relate to dry bulk vessels and office properties. Other leases include land and non-mining rights, warehouses, ports, equipment and vehicles.

We recognise all lease liabilities and corresponding right-of-use assets on the balance sheet, with the exception of short-term (12 months or fewer) and low-value leases, where payments are expensed as incurred. Lease liabilities are recorded at the present value of fixed payments; variable lease payments that depend on an index or rate; amounts payable under residual value guarantees; and extension options expected to be exercised. Where a lease contains an extension option that we can exercise without negotiation, lease payments for the extension period are included in the liability if we are reasonably certain that we will exercise the option. Variable lease payments not dependent on an index or rate are excluded from the calculation of lease liabilities at initial recognition. Payments are discounted at the incremental borrowing rate of the lessee, unless the interest rate implicit in the lease can be readily determined. For lease agreements relating to vessels, ports and properties, non-lease components are excluded from the projection of future lease payments and recorded separately within operating costs as services are being provided. The lease liability is measured at amortised cost using the effective interest method. The right-of-use asset arising from a lease arrangement at initial recognition reflects the lease liability, initial direct costs, lease payments made before the commencement date of the lease, and capitalised provision for dismantling and restoration of the underlying asset, less any lease incentives.

We recognise depreciation on right-of-use assets and interest on lease liabilities in the income statement over the lease term. Repayments of lease liabilities are separated into a principal portion (presented within financing activities) and an interest portion (which the Group presents in operating activities) in the cash flow statement. Payments made before the commencement date are included within financing activities unless they in substance represent investing cash flows, for example where pre-commencement cash flows are significant relative to aggregate cash flows of the leasing arrangement.

Other relevant judgements – accounting for renewable power purchase agreements

We have to apply judgement for certain contractual arrangements, such as renewable energy power purchase agreements (PPAs), in evaluating whether we have the right to obtain substantially all of the economic benefits from the use of the renewable energy assets, including the right to obtain physical energy these assets generate. Based on our evaluation, we determine whether an arrangement is a lease, an executory contract or a derivative. An immaterial amount was recognised as a lease at 31 December 2024 for a fixed component of the QMM renewable PPA. The Amrun PPA is a lease, which has not yet commenced and is included in capital commitments (note 37).

Lessee arrangements

We have made the following payments during the year associated with leases:

Description of payment	Included within	2024 US$m	2023 US$m
Principal lease payments	Cash flows from financing activities	**455**	426
Interest payments on leases	Cash flows from operating activities	**67**	50
Payments for short-term leases	Net operating costs	**217**	269
Payments for variable lease components	Net operating costs	**46**	40
Payments for low value leases (>12 months in duration)	Net operating costs	**3**	3
Total lease payments		**788**	788

Lease liabilities

The maturity profile of lease liabilities recognised at 31 December is:

	2024 US$m	2023 US$m
Lease liabilities		
Due within 1 year	**398**	385
Between 1 and 3 years	**513**	457
Between 3 and 5 years	**281**	270
More than 5 years	**551**	574
Total undiscounted cash payments expected to be made	**1,743**	1,686
Effect of discounting	**(330)**	(335)
Present value of minimum lease payments	**1,413**	1,351
Comprising:		
Current lease liabilities per the balance sheet	**354**	345
Non-current lease liabilities per the balance sheet	**1,059**	1,006
Total lease liabilities	**1,413**	1,351

At 31 December 2024, commitments for leases not yet commenced were US$405 million (2023: US$308 million) and commitments relating to short-term leases which had already commenced were US$182 million (2023: US$164 million). These commitments are not included in the maturity profile table above.

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22 Cash and cash equivalents

Recognition and measurement

For the purpose of the balance sheet, cash and cash equivalents covers cash on hand, deposits held with banks, and short-term, highly liquid investments (mainly money market funds and reverse repurchase agreements) that are readily convertible into known amounts of cash and which are subject to insignificant risk of changes in value. Bank overdrafts are shown as current liabilities on the balance sheet. For the purposes of the cash flow statement, cash and cash equivalents are shown net of overdrafts.

	Note	2024 US$m	2023 US$m
Cash at bank and in hand		**2,330**	1,843
Money market funds, reverse repurchase agreements and other cash equivalents		**6,165**	7,830
Total cash and cash equivalents per consolidated balance sheet		**8,495**	9,673
Bank overdrafts repayable on demand (unsecured)	20	**(11)**	(1)
Total cash and cash equivalents per consolidated cash flow statement		**8,484**	9,672

Restricted cash and cash equivalent analysis

Cash and cash equivalents of US$515 million (2023: US$422 million) are held in countries where there are restrictions on remittances. Of this balance, US$194 million (2023: US$156 million) could be used to repay subsidiaries' third-party borrowings.

There are also restrictions on a further US$1,150 million (2023: US$553 million) of cash and cash equivalents, the majority of which is held by partially owned subsidiaries and is not available for use in the wider Group due to legal and contractual restrictions currently in place. Of this balance US$157 million (2023: US$129 million) could be used to repay these subsidiaries' third-party borrowings.

Credit risk related to cash and cash equivalents

Our Treasury team manages credit risk from our investing activities in accordance with a credit risk framework which sets the risk appetite. We make investments of surplus funds only with approved investment grade (BBB+ and above) counterparties who have been assigned specific credit limits. The limits are set to minimise the concentration of credit risk and therefore mitigate the potential for financial loss through counterparty failure.

23 Other financial assets and liabilities

Recognition and measurement

Derivatives are measured at fair value through profit or loss unless they are designated as hedging instruments. For details about our hedging strategy and risks, refer to note 24. The Group has made an irrevocable choice to measure investments in equity shares at fair value through other comprehensive income (FVOCI) except for those held for trading purposes.

Other financial assets

	2024			2023		
	Non-current US$m	Current US$m	Total US$m	Non-current US$m	Current US$m	Total US$m
Derivatives not related to net debt	**39**	**49**	**88**	14	40	54
Derivatives related to net debt	**24**	**–**	**24**	87	–	87
Equity shares and quoted funds	**255**	**24**	**279**	163	18	181
Other investments, including loans[a]	**263**	**346**	**609**	217	1,060	1,277
Loans to equity accounted units[b]	**509**	**–**	**509**	–	–	–
Total other financial assets	**1,090**	**419**	**1,509**	481	1,118	1,599

(a) Current "Other investments, including loans" includes US$212 million (2023: US$877 million) of highly liquid financial assets held in a separately managed portfolio of fixed income instruments classified as held for trading and included within our net debt definition.

(b) This relates to loans of US$534 million due from WCS Rail and Port entities, net of expected credit loss.

Credit risk related to other financial assets

Our Treasury team manages credit risk in relation to applicable other financial assets in accordance with our counterparty credit framework (which is reviewed biannually) to minimise our counterparty risk and mitigate financial loss through counterparty failure. Derivatives and investments with any given counterparty are required to be within the credit limit (based on a quantitative credit risk model) for that counterparty as approved by the Group's Financial Risk Management Committee. Our investments are dictated by the Group's investment policy which sets out a number of criteria for eligible investments, including credit quality, duration, maturity and concentration limits.

Other financial liabilities

	2024			2023		
	Non-current US$m	Current US$m	Total US$m	Non-current US$m	Current US$m	Total US$m
Derivatives not related to net debt	**252**	**84**	**336**	198	68	266
Derivatives related to net debt	**339**	**28**	**367**	315	201	516
Other financial liabilities	**–**	**–**	**–**	–	4	4
Total other financial liabilities	**591**	**112**	**703**	513	273	786

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23 Other financial assets and liabilities *continued*

Offsetting and enforceable master netting agreements

When we have a legally enforceable right to set-off our financial assets and liabilities and an intention to settle on a net basis, or realise the asset and settle the liability simultaneously, we report the net amount in the consolidated balance sheet. Agreements with derivative counterparties are based on the International Swaps and Derivatives Association master netting agreements that do not meet the criteria for offsetting, but allow for the related amounts to be set-off in certain circumstances. During the year, there were no material amounts offset in the balance sheet.

24 Financial instruments and risk management

Recognition and measurement

We classify our financial assets into those held at amortised cost and those to be measured at fair value either through the profit and loss (FVTPL) or through other comprehensive income (FVOCI) based on the business model for managing the financial assets and the contractual terms of the cash flows.

Classification of financial asset	Amortised cost	Fair value through profit and loss	Fair value through other comprehensive income
Recognition and initial measurement	At initial recognition, trade receivables that do not have a significant financing component are recognised at their transaction price. Other financial assets are initially recognised at fair value plus related transaction costs.	The asset is initially recognised at fair value with transaction costs immediately expensed to the income statement.	The asset is initially recognised at fair value.
Subsequent measurement	Amortised cost using the effective interest method.	Fair value movements are recognised in the income statement.	Fair value gains or losses on revaluation of such equity investments, including any foreign exchange component, are recognised in other comprehensive income. Dividends are recognised in the income statement when the right to receive payment is established.
Derecognition	Any gain or loss on derecognition or modification of a financial asset held at amortised cost is recognised in the income statement.	Not applicable.	When the equity investment is derecognised, there is no recycling of fair value gains or losses previously recognised in other comprehensive income to the income statement.

Borrowings and other financial liabilities (including trade payables but excluding derivative liabilities) are recognised initially at fair value, net of transaction costs incurred, and are subsequently measured at amortised cost.

Financial risk management objectives

Our financial risk management objectives are:

- to have in place a robust capital structure to manage the organisation through the commodity cycle
- to allow our financial exposures, mainly commodity price, foreign exchange and interest rates to, in general, float with the market.

Our Treasury and Commercial teams manage the following key economic risks generated from our operations:

- capital and liquidity risk
- credit risk
- interest rate risk
- commodity price risk
- foreign exchange risk.

These teams operate under a strong control environment, within approved limits.

(i) Capital and liquidity risk

Our capital and liquidity risk arises from the possibility that we may not be able to settle or meet our obligations as they fall due. Refer to our capital and liquidity section on page 197.

As disclosed in note 18, under the supplier finance arrangements, the Group makes payments to participating banks on the same date as stated on the vendor's invoice, and as such these arrangements do not give rise to additional liquidity risk.

(ii) Credit risk

Credit risk is the risk that our customers, or institutions that we hold investments with, are unable to meet their contractual obligations. We are exposed to credit risk in our operating activities (primarily from customer trade receivables); and from our investing activities that include government securities (primarily US Government), corporate and asset-backed securities, reverse repurchase agreements, money market funds, and balances with banks and financial institutions. Refer to note 17, note 22 and note 23 for an understanding of the size of, and the credit risk related to, each balance.

(iii) Interest rate risk

Our interest rate management policy is generally to borrow and invest at floating interest rates. However, we may elect to maintain a proportion of fixed-rate funding after considering market conditions, the cost and form of funding and other related factors. After the impact of hedging, 76% (2023: 68%) of our borrowings (including leases) were at floating rates. To understand how we manage interest rate risk, refer to note 20.

24 Financial instruments and risk management *continued*

Sensitivity to interest rate changes

Based on our floating rate financial instruments outstanding at 31 December 2024, the effect on our net earnings of a 100 basis point increase in US dollar Secured Overnight Financing Rate (SOFR) interest rates, with all other variables held constant, would be an expense of US$23 million (2023: US$5 million). This reflects the net debt position in 2024 and 2023.

We are also exposed to interest rate volatility within shareholders' equity. This is because we have designated some cross-currency interest rate swaps to be in a cash flow hedge relationship with our 2029 British pound sterling (GBP) loan. As we receive fixed GBP interest and pay fixed USD interest, any change in the GBP interest rate or the USD interest rate will have an impact on the fair value of the derivative within shareholders' equity. With all factors remaining constant, a 100 basis point increase in interest rates in each of the currencies in isolation would impact equity, before tax, by a charge of US$27 million (2023: US$33 million) for GBP and a credit of US$35 million (2023: US$42 million) for USD. A 100 basis point decrease would have broadly the same impact in the opposite direction.

(iv) Commodity price risk

Our broad commodity base means our exposure to commodity prices is diversified. Our normal policy is to sell our products at prevailing market prices. For certain physical commodity transactions for which the price was fixed at the contract date, we enter into derivatives to achieve the prevailing market prices at the point of revenue recognition. We do not generally consider that using derivatives to fix commodity prices would provide a long-term benefit to our shareholders.

Exceptions to this rule are subject to limits, and to defined market risk tolerances and internal controls.

Substantially all iron ore and aluminium sales are reflected at final prices at each reporting period. Final prices for copper concentrate, however, are normally determined between 30 and 180 days after delivery to our customer.

At 31 December 2024, we had 186 million pounds of copper sales (31 December 2023: 92 million pounds) which were provisionally priced at US 397 cents per pound (2023: US 387 cents per pound). The final price of these sales will be determined during the first half of 2025. A 10% change in the price of copper realised on the provisionally priced sales, with all other factors held constant, would increase or reduce net earnings by US$46 million (2023: US$22 million).

Power costs represent a significant portion of costs in our aluminium business and, therefore, we are exposed to fluctuations in power prices. To mitigate our exposure to changes in the relationship between aluminium prices and power prices, we have a number of electricity purchase contracts that are directly linked to the daily official LME cash ask price for high-grade aluminium (LME price) and to the US Midwest Transaction Premium (Midwest premium).

In accordance with IFRS 9, we apply hedge accounting to 2 embedded derivatives within our power contracts. The embedded derivatives (nominal aluminium forward sales) have been designated as the hedging instrument. The forecast aluminium sales, priced using the LME price and the Midwest premium, represent the hedged item.

The hedging ratio is 1:1, as the quantity of sales designated as being hedged matches the notional amount of the hedging instrument. The hedging instrument's nominal amount, expressed in equivalent metric tonnes of aluminium, is derived from our expected electricity consumption under the power contracts as well as other relevant contract parameters.

When we designate such embedded derivatives as the hedging instrument in a cash flow hedge, we recognise the effective portion of the change in the fair value of the hedging instrument in other comprehensive income, and it is accumulated in the cash flow hedge reserve. The amount that is recognised in other comprehensive income is limited to the lesser of the cumulative change in the fair value of the hedging instrument and the cumulative change in the fair value of the hedged item, in absolute terms. On realisation of the hedges, realised amounts are reclassified from reserves to consolidated sales revenue in the income statement.

We recognise any ineffectiveness relating to the hedging relationship immediately in the income statement.

Sources of ineffectiveness include differences in the timing of the cash flows between the hedged item and the hedging instrument, non-zero initial fair value of the hedging instrument, the existence of a cap on the Midwest premium in the hedging instrument and counterparty credit risk.

We held the following nominal aluminium forward sales contracts embedded in the power contracts as at 31 December:

	2024				2023			
	Within 1 year	**Between 1 and 5 years**	**Between 5 and 10 years**	**Total**	Within 1 year	Between 1 and 5 years	Between 5 and 10 years	Total
Nominal amount (tonnes)	**73,117**	**286,455**	**—**	**359,572**	72,617	289,801	66,268	428,686
Nominal amount (US$ millions)	**174**	**716**	**—**	**890**	169	711	170	1,050
Average hedged rate (US$ per tonne)	**2,382**	**2,498**	**—**	**2,474**	2,331	2,452	2,564	2,449

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24 Financial instruments and risk management *continued*

The impact on our financial statements of these hedging instruments and hedging items are:

	Aluminium embedded derivatives separated from the power contract (hedging instrument)[a]			Highly probable forecast aluminium sales (hedged item)				
	Nominal US$m	Carrying amount US$m	Change in fair value in the period US$m	Cash flow hedge reserve[b] US$m	Change in fair value in the period US$m	Total hedging gains/(losses) recognised in reserves US$m	Hedge ineffective-ness in the period (losses)/ gains[c] US$m	Losses/ (gains) reclassified from reserves to income statement[d] US$m
2024	**890**	**(113)**	**42**	**(39)**	**(26)**	**42**	**–**	**5**
2023	1,050	(174)	3	(91)	(16)	(1)	4	(2)

(a) Aluminium embedded derivatives (forward contracts and options) are contained within certain aluminium smelter electricity purchase contracts. The carrying amount of US$113 million (2023: US$174 million) is shown within "Other financial assets and liabilities".

(b) The difference between this amount and the total cash flow hedge reserve of the Group (shown in note 35) relates to our cash flow hedge on the sterling bond (refer to interest rate risk section).

(c) Hedge ineffectiveness is included in "net operating costs" (within "raw materials, consumables, repairs and maintenance" – refer to note 7) in the income statement.

(d) On realisation of the hedge, realised amounts are reclassified from reserves to consolidated sales revenue in the income statement.

There was no cost of hedging recognised in 2024 (2023: no cost) relating to this hedging relationship.

Sensitivity analysis

Our commodity derivatives are impacted by changes in market prices. The table below summarises the impact that changes in aluminium market prices have on aluminium forward and option contracts embedded in power supply agreements outstanding at 31 December 2024. Any change in price will result in an offsetting change in our future earnings.

	Change in market prices	2024 US$m	2023 US$m
Effect on net earnings	**+10 %**	**(42)**	(52)
	(10)%	**69**	67
Effect on equity	**+10 %**	**(68)**	(81)
	(10)%	**42**	70

We exclude our "own use contracts" from this sensitivity analysis as they are outside the scope of IFRS 9. Our business units continue to hold these types of contracts to satisfy their expected purchase, sale or usage requirements.

Impact of climate change on our business – renewable power purchase agreements in Queensland, New Zealand and the USA

As part of the program to develop renewable energy solutions for our Queensland aluminium assets, in 2023 and 2024, we entered into long-term renewable 2.2GW PPAs to buy renewable electricity and associated carbon credits to be generated in the future from the Upper Calliope solar farm and the Bungaban wind farm. In 2024, our New Zealand Aluminium Smelters signed long term PPAs with electricity generators for a total of 572MW of hydro electricity. We also signed a PPA with the Monte Cristo wind farm in the US. These contracts are recorded as derivatives, with net unrealised losses of US$111 million recognised in the current year (2023: US$nil) and require complex derivative measurement over the contract's term categorised under level 3 with significant unobservable inputs related to future energy prices. A 10% increase in forecast electricity prices over the remaining term of the contracts would result in a US$499 million increase in fair value and a 10% decrease in forecast electricity prices would result in a US$500 million decrease in fair value.

(v) Foreign exchange risk

The broad geographic spread of our sales and operations means that our earnings, cash flows and shareholders' equity are influenced by a wide variety of currencies. The majority of our sales are denominated in USD.

Our operating costs are influenced by the currencies of those countries where our mines and processing plants are located, and by those currencies in which we buy imported equipment and services. The USD, the Australian dollar (AUD) and the Canadian dollar (CAD) are the most important currencies influencing our costs. In any particular year, currency fluctuations may have a significant impact on our financial results. A strengthening of the USD against the currencies in which our costs are partly denominated has a positive effect on our net earnings. However, a strengthening of the USD reduces the value of non-USD denominated net assets, and therefore total equity.

In most cases, our debt and other financial assets and liabilities, including intragroup balances, are held in the functional currency of the relevant subsidiary. There are instances where these balances are held in currencies other than the functional currency of the relevant subsidiary. This means we recognise exchange gains and losses in our income statement (except where they can be taken to equity) as these balances are translated into the functional currency of the relevant subsidiary. Our income statement also includes exchange gains and losses arising on USD net debt and intragroup balances. On consolidation, these balances are retranslated to our USD presentational currency and there is a corresponding and offsetting exchange difference recognised directly in the currency translation reserve. There is no impact on total equity.

Under normal market conditions, we do not consider that active currency hedging of transactions would provide long-term benefits to shareholders. We review our exposure on a regular basis and will undertake hedging if deemed appropriate. We may deem currency protection measures appropriate in specific commercial circumstances. Capital expenditures and other significant financial items such as acquisitions, disposals, tax and dividend cash flows may be economically hedged.

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24 Financial instruments and risk management *continued*

Sensitivity analysis

The table below shows the estimated retranslation effect on financial assets and financial liabilities at 31 December, including intragroup balances, of a 10% strengthening in the closing exchange rate of the USD against significant currencies. We deem 10% to be the annual exchange rate movement that is reasonably probable (on an annual basis over the long run) for any of our significant currencies and therefore an appropriate representation for the sensitivity analysis.

	2024			2023		
Currency exposure	Closing exchange rate US cents	Effect on net earnings US$m	Impact directly on equity US$m	Closing exchange rate US cents	Effect on net earnings US$m	Impact directly on equity US$m
Australian dollar	**62**	**391**	**(977)**	69	228	(1,036)
Canadian dollar	**70**	**(362)**	**–**	76	(361)	–

We calculate sensitivities in relation to the functional currencies of our individual entities. We translate the impact of these on net earnings into USD at the exchange rates on which the sensitivities are based. The impact to net earnings associated with a 10% weakening of a particular currency, shown above, is broadly offset within equity through movements in the currency translation reserve and therefore generally has no impact on our net assets. The offsetting currency translation movement is not shown in the table above. The impact is expressed in terms of the effect on net earnings and equity, assuming that each exchange rate moves in isolation. The sensitivities are based on financial assets and financial liabilities held at 31 December, where balances are not denominated in the functional currency of the subsidiary or joint operation, and exclude financial assets and liabilities held by equity accounted units. These balances will not remain constant throughout 2025 and, therefore, this illustrative information should be used with caution.

Valuation hierarchy of financial instruments carried at fair value on a recurring basis

The table below shows the classifications of our financial instruments by valuation method in accordance with IFRS 13 "Fair Value Measurement" at 31 December.

All instruments shown as being held at fair value have been classified as fair value through the profit and loss unless specifically footnoted.

		2024					2023				
		Held at fair value			Held at amortised cost		Held at fair value			Held at amortised cost	
	Note	Level 1[a] US$m	Level 2[b] US$m	Level 3[c] US$m	US$m	Total US$m	Level 1[a] US$m	Level 2[b] US$m	Level 3[c] US$m	US$m	Total US$m
Assets											
Cash and cash equivalents[d]	22	**4,893**	**–**	**–**	**3,602**	**8,495**	2,722	–	–	6,951	9,673
Investments in equity shares and funds[e]	23	**96**	**–**	**183**	**–**	**279**	85	–	96	–	181
Other investments, including loans[f]	23	**230**	**–**	**275**	**104**	**609**	896	–	228	153	1,277
Trade and other financial receivables[g]	17	**15**	**1,379**	**–**	**1,948**	**3,342**	9	1,383	–	1,851	3,243
Loans to equity accounted units	23	**–**	**–**	**–**	**509**	**509**	–	–	–	–	–
Forward contracts and option contracts: designated as hedges[h]	23	**–**	**–**	**27**	**–**	**27**	–	–	–	–	–
Forward, option and embedded derivatives contracts, not designated as hedges[h]	23	**–**	**42**	**19**	**–**	**61**	–	28	26	–	54
Derivatives related to net debt[i]	23	**–**	**24**	**–**	**–**	**24**	–	87	–	–	87
Liabilities											
Trade and other financial payables[i]	18	**–**	**(144)**	**–**	**(6,392)**	**(6,536)**	–	(47)	–	(6,277)	(6,324)
Forward, option and embedded derivatives contracts, designated as hedges[h]	23	**–**	**–**	**(180)**	**–**	**(180)**	–	–	(174)	–	(174)
Forward, option and embedded derivatives contracts, not designated as hedges[h]	23	**–**	**(48)**	**(108)**	**–**	**(156)**	–	(63)	(29)	–	(92)
Derivatives related to net debt[i]	23	**–**	**(367)**	**–**	**–**	**(367)**	–	(516)	–	–	(516)

(a) Valuation is based on unadjusted quoted prices in active markets for identical financial instruments.

(b) Valuation is based on inputs that are observable for the financial instruments, which include quoted prices for similar instruments or identical instruments in markets which are not considered to be active, or inputs, either directly or indirectly based on observable market data.

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24 Financial instruments and risk management *continued*

(c) Valuation is based on inputs that cannot be observed using market data (unobservable inputs). The change in valuation of our level 3 instruments for the year to 31 December is as follows.

Level 3 financial assets and liabilities	2024 US$m	2023 US$m
Opening balance	**147**	131
Currency translation adjustments	**(12)**	(2)
Total realised gains/(losses) included in:		
– consolidated sales revenue	**–**	12
– net operating costs	**(32)**	(18)
Total unrealised gains included in:		
– net operating costs	**22**	43
Total unrealised gains/(losses) transferred into other comprehensive income through cash flow hedges	**34**	(1)
Additions to financial assets	**88**	29
Disposals/maturity of financial instruments	**(31)**	(47)
Closing balance	**216**	147
Net gains included in the income statement for assets and liabilities held at year end	**3**	31

(d) Our Cash and cash equivalents of US$8,495 million (2023: US$9,673 million), includes US$4,893 million (2023: US$2,722 million) relating to money market funds which are treated as FVTPL under IFRS 9 with the fair value movements reported as finance income.

(e) Investments in equity shares and funds include US$221 million (2023: US$157 million) of equity shares, not held for trading, where we have irrevocably elected to present fair value gains and losses on revaluation in other comprehensive income. The election is made at an individual investment level.

(f) Other investments, including loans, covers cash deposits in rehabilitation funds, government bonds, managed investment funds and royalty receivables.

(g) Trade receivables include provisionally priced invoices. The related revenue is initially based on forward market selling prices for the quotation periods stipulated in the contracts with changes between the provisional price and the final price recorded separately within "Other revenue". The selling price can be measured reliably for the Group's products, as it operates in active and freely traded commodity markets. At 31 December 2024, US$1,374 million (2023: US$1,362 million) of provisionally priced receivables were recognised.

(h) Level 3 derivatives mainly consist of derivatives embedded in electricity purchase contracts linked to the LME, midwest premium and billet premium with terms expiring between 2025 and 2036 (2023: 2025 and 2036). Derivatives related to renewable power purchase agreements are linked to forward electricity prices with terms expiring between 2026 and 2054.

(i) Net debt derivatives include interest rate swaps and cross-currency swaps. As part of the International Swaps and Derivatives Association (ISDA) Fallbacks Protocol, on 1 July 2023 we completed the transition of our US LIBOR derivatives to SOFR on cessation of US LIBOR at 30 June 2023. There was no impact on our hedging arrangements after taking into account the IFRS 9 IBOR reform reliefs.

(j) Trade and other financial payables comprise trade payables, other financial payables, accruals and amounts due to equity accounted units within note 18.

There were no material transfers between level 1 and level 2, or between level 2 and level 3 in the current or prior year.

Valuation techniques and inputs

The techniques used to value our more significant fair value assets/(liabilities) categorised under level 2 and level 3 are summarised below:

Description	2024 Fair value US$m	2023 Fair value US$m	Valuation technique	Significant inputs
Level 2				
Interest rate swaps	**(156)**	(163)	Discounted cash flows	– Applicable market quoted swap yield curves – Credit default spread
Cross-currency interest rate swaps	**(187)**	(266)	Discounted cash flows	– Applicable market quoted swap yield curves – Credit default spread – Market quoted FX rate
Provisionally priced receivables	**1,374**	1,362	Closely related listed product	– Applicable forward quoted metal price
Level 3				
Renewable power purchase agreements	**(111)**	–	Discounted cash flows	– Forward electricity price – Energy volume
Derivatives embedded in electricity contracts	**(132)**	(186)	Option pricing model	– LME forward aluminium price – Midwest premium and billet premium
Royalty receivables	**252**	214	Discounted cash flows	– Forward commodity price – Mine production

Sensitivity analysis in respect of level 3 financial instruments

For assets/(liabilities) classified under level 3, the effect of changing the significant unobservable inputs on carrying value has been calculated using a movement that we deem to be reasonably probable.

Net derivative liabilities related to our renewable power purchase agreements have a fair value of US$111 million at 31 December 2024 (2023: nil). The fair value is calculated as the present value of the future contracted cash flows using risk-adjusted forecast prices including credit adjustments. A 10% increase in forecast electricity prices over the remaining term of the contracts would result in a US$499 million increase in fair value and a 10% decrease in forecast electricity prices would result in a US$500 million decrease in fair value.

To value long-term aluminium embedded power derivatives, we use unobservable inputs when the term of the derivative extends beyond observable market prices. Changing the level 3 inputs to reasonably possible alternative assumptions does not change the fair value significantly, taking into account the expected remaining term of contracts for either reported period. The fair value of these derivatives is a net liability of US$132 million at 31 December 2024 (2023: US$186 million).

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24 Financial instruments and risk management *continued*

Impact of climate change on our business – coal royalty receivables

At 31 December 2024, royalty receivables include amounts arising from our divested coal businesses with a carrying value of US$252 million (2023: US$214 million). These are classified as "Other investments, including loans" within note 23. The fair values are determined using level 3 unobservable inputs. These royalty receivables include US$96 million from forecast production beyond 2030. These have not been adjusted for potential changes in production rates that could occur due to climate change targets impacting the operator.

The main unobservable input is the long-term coal price used over the life of these royalty receivables. A 15% increase in the coal spot price would result in a US$24 million increase (2023: US$64 million) in the carrying value. A 15% decrease in the coal spot price would result in a US$61 million decrease (2023: US$39 million) in the carrying value. We have used a 15% assumption to calculate our exposure as it represents the annual coal price movement that we deem to be reasonably probable (on an annual basis over the long run).

Fair values disclosure of financial instruments

The following table shows the carrying amounts and fair values of our borrowings including those which are not carried at an amount which approximates their fair value at 31 December. The fair values of some of our financial instruments approximate their carrying values because of their short maturity, or because they carry floating rates of interest.

	2024		2023	
	Carrying value US$m	**Fair value US$m**	Carrying value US$m	Fair value US$m
Listed bonds	**8,137**	**7,702**	8,607	8,672
Oyu Tolgoi project finance	**3,852**	**4,103**	3,850	4,090
Other	**453**	**416**	544	494
Total borrowings (including overdrafts)	**12,442**	**12,221**	13,001	13,256

Borrowings relating to listed bonds are categorised as level 1 in the fair value hierarchy while those relating to project finance drawn down by Oyu Tolgoi use a number of level 3 valuation inputs. Our remaining borrowings have a fair value measured by discounting estimated cash flows with an applicable market quoted yield, and are categorised as level 2 in the fair value hierarchy.

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Our people

Summarised below are the key financial metrics relating to our people.

25 Average number of employees

	Subsidiaries and joint operations			Equity accounted units (Rio Tinto share)			Total		
	2024	2023	2022	**2024**	2023	2022	**2024**	2023	2022
Principal locations of employment:									
Australia and New Zealand	**25,098**	25,045	23,829	**858**	725	704	**25,956**	25,770	24,533
Canada	**14,157**	13,864	13,344	**50**	5	—	**14,207**	13,869	13,344
UK	**366**	323	202	**–**	—	—	**366**	323	202
Europe	**875**	912	994	**24**	25	—	**899**	937	994
Africa	**3,567**	3,180	2,797	**1,293**	1,176	1,218	**4,860**	4,356	4,015
US	**4,113**	3,973	3,655	**311**	58	—	**4,424**	4,031	3,655
Mongolia	**4,962**	4,700	4,175	**–**	—	—	**4,962**	4,700	4,175
South America	**449**	389	286	**1,497**	1,414	1,383	**1,946**	1,803	1,669
India	**1,183**	611	396	**–**	—	—	**1,183**	611	396
Singapore	**486**	469	454	**–**	–	–	**486**	469	454
Other countries[(a)]	**305**	305	289	**–**	–	–	**305**	305	289
Total	**55,561**	53,771	50,421	**4,033**	3,403	3,305	**59,594**	57,174	53,726

(a) "Other countries" primarily includes employees in the Middle East (excluding Oman which is included in Africa), and other countries in Asia which are not shown separately in the table above.

Employee numbers, which represent the average for the year, include 100% of employees of subsidiary companies. Employee numbers for joint operations and equity accounted units are proportional to the Group's interest under contractual agreements. Average employee numbers include a part-year effect for companies acquired or disposed of during the year.

Part-time employees are included on a full-time-equivalent basis. Temporary employees are included in employee numbers.

People employed by contractors are not included.

26 Employment costs and provisions

	Note	**2024 US$m**	2023 US$m	2022 US$m
Total employment costs				
– Wages and salaries		**6,004**	5,625	5,115
– Social security costs		**461**	470	425
– Net post-retirement charge	28	**605**	449	559
– Share-based payment charge	27	**172**	144	122
		7,242	6,688	6,221
Less: charged within movement in provisions (see below)		**(187)**	(52)	(219)
Total employment costs	7	**7,055**	6,636	6,002

	2024			2023
Employment provisions	**Pensions and post-retirement healthcare[(a)] US$m**	**Other employee entitlements[(b)] US$m**	**Total US$m**	Total US$m
At 1 January	**1,189**	**369**	**1,558**	1,658
Adjustment on currency translation	**(48)**	**(35)**	**(83)**	32
Charged/(credited) to profit:				
– increases to existing and new provisions	**91**	**108**	**199**	78
– unused amounts reversed	**–**	**(12)**	**(12)**	(26)
Utilised in year	**(75)**	**(58)**	**(133)**	(277)
Remeasurement (gains)/losses recognised in other comprehensive income	**(94)**	**–**	**(94)**	102
Transfers and other movements	**–**	**21**	**21**	(9)
At 31 December	**1,063**	**393**	**1,456**	1,558
Balance sheet analysis:				
Current	**68**	**291**	**359**	361
Non-current	**995**	**102**	**1,097**	1,197
Total employment provisions	**1,063**	**393**	**1,456**	1,558

(a) The main assumptions used to determine the provision for pensions and post-retirement healthcare, and other information, including the expected level of future funding payments in respect of those arrangements, are given in note 28.

(b) The provision for other employee entitlements includes a provision for long service leave of US$313 million (2023: US$296 million), based on the relevant entitlements in certain Group operations, and includes US$24 million (2023: US$17 million) of provision for redundancy and severance payments.

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27 Share-based payments

The Rio Tinto plc and Rio Tinto Limited share-based incentive plans are as follows.

UK Share Plan

The fair values of Matching and Free share awards are the market value of the shares on the date of award. The awards are settled in equity.

Equity Incentive Plan

Since 2018, all long-term incentive awards have been granted under the 2018 Equity Incentive Plans which allow for awards in the form of Performance Share Awards (PSA), Management Share Awards (MSA) and Bonus Deferral Awards (BDA) to be granted. In general, these awards will be settled in equity, including the dividends accumulated from date of award to vesting and therefore the awards are accounted for in accordance with the requirements applying to equity-settled share-based payment transactions.

Performance Share Awards

The vesting of these awards is dependent on service conditions being met; performance conditions apply.

Awards granted in previous years (since 2018) are subject to a Total Shareholder Return (TSR) performance condition. Awards granted in 2024 are subject to both a TSR performance condition (80% weighting), and a decarbonisation measure (20% weighting). Details are set out in the Remuneration Report. The fair value of the awards subject to a TSR performance condition is calculated using a Monte Carlo simulation model. For the part of the awards subject to a decarbonisation target, as this is a non-market related performance condition, the fair value is reviewed at each accounting date, based on the prevailing projected outcome. Forfeitures prior to vesting are assumed at 5% per annum of outstanding awards (2023: 5% per annum).

Management Share Awards

The vesting of these awards is dependent on service conditions being met; no performance conditions apply.

The fair value of each award on the day of grant is based on the share price on the day of grant. Forfeitures prior to vesting are assumed at 7% per annum of outstanding awards (2023: 7% per annum).

Bonus Deferral Awards

Bonus Deferral Awards provide for the mandatory deferral of 50% of the bonuses for Executive Directors and Executive Committee members.

The vesting of these awards is dependent only on service conditions being met. The fair value of each award is based on the share price on the day of grant. Forfeitures prior to vesting are assumed at 3% per annum of outstanding awards (2023: 3% per annum).

Global Employee Share Plans

The Global Employee Share Plans were re-approved by shareholders in 2021. Under these plans, the companies provide a Matching share award for each Investment share purchased by a participant. The vesting of Matching awards is dependent on service conditions being met and the continued holding of Investment shares by the participant until vesting. These awards are settled in equity including the dividends accumulated from date of award to vesting. The fair value of each Matching share on the day of grant is equal to the share price on the date of purchase less a deduction of 15% (5% per annum) for estimated cancellations (caused by employees withdrawing their Investment shares prior to vesting) in addition to a deduction for forfeitures prior to vesting which are assumed at 5% per annum of outstanding awards (2023: 5% per annum).

The PSA, MSA, BDA and awards under the Global Employee Share Plans and UK Share Plan together represent 100% (2023: 100%) of the total IFRS 2 "Share-based Payment" charge for Rio Tinto plc and Rio Tinto Limited plans in 2024.

Recognition and measurement

These plans are accounted for in accordance with the fair value recognition provisions of IFRS 2.

The fair value of the Group's share plans is recognised as an expense over the expected vesting period with an offset to retained earnings for Rio Tinto plc plans and to other reserves for Rio Tinto Limited plans.

The Group uses fair values provided by independent actuaries calculated using a Monte Carlo simulation model where required.

The terms of each plan are considered at the balance sheet date to determine whether the plan should be accounted for as equity-settled or cash-settled. The Group does not operate any material plans as cash-settled although certain awards can be settled in cash at the discretion of the Directors or where settling awards in equity is challenging or prohibited by local laws and regulations. The value of these awards is immaterial.

The Group's equity-settled share plans are settled either by the issuance of shares by the relevant parent company; the purchase of shares on market; or the use of shares held in treasury. If the cost of shares acquired to satisfy the plans differs from the expense charged, the difference is taken to retained earnings or other reserves, as appropriate.

The charge that has been recognised in the income statement for Rio Tinto's share-based incentive plans, and the related liability (for cash-settled awards), is set out in the table below.

	Charge recognised for the year			Liability at the end of the year	
	2024 US$m	2023 US$m	2022 US$m	**2024 US$m**	2023 US$m
Equity-settled awards	**170**	140	117	**–**	–
Cash-settled awards	**2**	4	5	**5**	6
Total	**172**	144	122	**5**	6

27 Share-based payments *continued*

Performance Share Awards (granted under either the Performance Share Plans or the Equity Incentive Plans)

	Rio Tinto plc awards				Rio Tinto Limited awards			
	2024 number	Weighted average fair value at grant date 2024 £	2023 number	Weighted average fair value at grant date 2023 £	2024 number	Weighted average fair value at grant date 2024 A$	2023 number	Weighted average fair value at grant date 2023 A$
Unvested awards at 1 January	**2,596,811**	**24.34**	2,903,449	24.36	**1,011,192**	**54.74**	1,040,240	52.51
Awarded	**1,077,110**	**28.22**	562,747	28.40	**579,982**	**67.34**	287,714	61.66
Forfeited	**(77,417)**	**27.33**	(166,376)	27.94	**(35,737)**	**60.05**	(28,789)	51.91
Failed performance conditions	**(38,101)**	**24.68**	–	–	**(11,058)**	**54.55**	–	–
Vested	**(801,809)**	**24.52**	(703,009)	26.84	**(175,600)**	**54.55**	(287,973)	53.88
Unvested awards at 31 December	**2,756,594**	**25.71**	2,596,811	24.34	**1,368,779**	**59.97**	1,011,192	54.74

	Rio Tinto plc awards				Rio Tinto Limited awards			
	2024 number	Weighted average share price at vesting 2024 £	2023 number	Weighted average share price at vesting 2023 £	2024 number	Weighted average share price at vesting 2024 A$	2023 number	Weighted average share price at vesting 2023 A$
Vested awards settled in shares during the year (including dividend shares applied on vesting)	**924,836**	**51.12**	767,439	59.21	**143,996**	**124.24**	238,405	122.58
Vested awards settled in cash during the year (including dividend shares applied on vesting)	**111,446**	**51.70**	181,492	58.36	**83,388**	**124.36**	140,690	123.40

In addition to the equity-settled awards shown above, there were 41,164 Rio Tinto plc and 25,792 Rio Tinto Limited cash-settled awards outstanding at 31 December 2024 (2023: 24,365 Rio Tinto plc and 19,881 Rio Tinto Limited cash-settled awards outstanding). The total liability for these awards at 31 December 2024 was US$1 million (2023: US$1 million).

Management Share Awards, Bonus Deferral Awards (granted under the Equity Incentive Plans), Global Employee Share Plans and UK Share Plan (combined)

	Rio Tinto plc awards[a]				Rio Tinto Limited awards			
	2024 number	Weighted average fair value at grant date 2024 £	2023 number	Weighted average fair value at grant date 2023 £	2024 number	Weighted average fair value at grant date 2024 A$	2023 number	Weighted average fair value at grant date 2023 A$
Unvested awards at 1 January[b]	**2,810,128**	**50.36**	2,585,679	47.22	**2,580,993**	**103.11**	2,340,705	95.27
Awarded	**1,360,676**	**46.54**	1,298,578	49.59	**1,189,754**	**110.96**	1,159,498	107.86
Forfeited	**(115,973)**	**47.67**	(113,473)	57.02	**(152,069)**	**106.75**	(144,531)	102.40
Cancelled	**(94,111)**	**44.97**	(71,160)	46.21	**(70,514)**	**98.85**	(61,993)	93.15
Vested	**(909,986)**	**52.00**	(889,496)	39.59	**(767,686)**	**105.79**	(712,686)	86.09
Unvested awards at 31 December[b]	**3,050,734**	**48.43**	2,810,128	50.36	**2,780,478**	**105.64**	2,580,993	103.11
Comprising:								
– Management Share Awards	**1,337,860**	**52.10**	1,321,207	54.05	**1,228,291**	**115.71**	1,211,757	113.03
– Bonus Deferral Awards	**74,844**	**50.75**	102,388	55.64	**39,652**	**117.82**	56,597	113.90
– Global Employee Share Plan	**1,593,851**	**45.11**	1,350,559	46.22	**1,512,535**	**97.14**	1,312,639	93.50
– UK Share Plan	**44,179**	**53.25**	35,974	54.68	**–**	**–**	–	–
Unvested awards at 31 December[b]	**3,050,734**	**48.43**	2,810,128	50.36	**2,780,478**	**105.64**	2,580,993	103.11

(a) Awards of Rio Tinto American Depositary Receipts (ADRs) under the Global Employee Share Plan are included within the totals for Rio Tinto plc awards for the purpose of these tables.
(b) These numbers are presented and calculated in accordance with IFRS 2 and represent awards for which an IFRS 2 charge continues to be accrued for.

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27 Share-based payments *continued*

	Rio Tinto plc awards[a]				Rio Tinto Limited awards			
	2024 number	Weighted average share price at vesting 2024 £	2023 number	Weighted average share price at vesting 2023 £	2024 number	Weighted average share price at vesting 2024 A$	2023 number	Weighted average share price at vesting 2023 A$
Vested awards settled in shares during the year (including dividend shares applied on vesting):								
– Management Share Awards	**569,907**	**51.97**	537,748	57.86	**458,429**	**123.92**	476,813	121.87
– Bonus Deferral Awards	**90,422**	**50.18**	87,475	55.43	**44,477**	**119.53**	23,569	123.91
– Global Employee Share Plan	**431,973**	**51.59**	493,187	55.05	**401,915**	**120.73**	374,232	118.12
– UK Share Plan	**7,403**	**51.56**	6,791	53.28	**–**	**–**	–	–
Vested awards settled in cash during the year (including dividend shares applied on vesting):								
– Bonus Deferral Awards	**–**	**–**	–	–	**–**	**–**	–	–

(a) Awards of Rio Tinto American Depositary Receipts (ADRs) under the Global Employee Share Plan are included within the totals for Rio Tinto plc awards for the purpose of these tables.

In addition to the equity-settled awards shown above, there were 88,637 Rio Tinto plc and 5,232 Rio Tinto Limited cash-settled awards outstanding at 31 December 2024 (2023: 90,331 Rio Tinto plc and 7,913 Rio Tinto Limited cash-settled awards outstanding). The total liability for these awards at 31 December 2024 was US$4 million (2023: US$5 million).

28 Post-retirement benefits

Description of plans

The Group operates a number of pension and post-retirement healthcare plans which provide lump sums, pensions, medical benefits and life insurance to retirees. Some of these plans are defined contribution and some are defined benefit, with assets held in separate trusts, foundations and similar entities.

Defined benefit pension and post-retirement healthcare plans expose the Group to a number of risks.

Uncertainty in benefit payments	The value of the Group's liabilities for post-retirement benefits will ultimately depend on the amount of benefits paid out. This in turn will depend on the level of future pay increases, the level of inflation (for those benefits that are subject to some form of inflation protection) and how long individuals live.
Volatility in asset values	The Group is exposed to future movements in the values of assets held in pension plans to meet future benefit payments.
Uncertainty in cash funding	Movements in the values of the obligations or assets may result in the Group being required to provide higher levels of cash funding, although changes in the level of cash required can often be spread over a number of years. In some countries control over the rate of cash funding or over the investment policy for pension assets might rest to some extent with a trustee body or other body that is not under the Group's direct control. In addition the Group is also exposed to adverse changes in pension regulation.

For these reasons, the Group has a policy of moving away from defined benefit pension provisions and towards defined contribution arrangements. The defined benefit pension plans for non-unionised employees are closed to new entrants in all countries. For unionised employees, some plans remain open.

The Group does not usually participate in multi-employer plans in which the risks are shared with other companies using those plans. The Group's participation in such plans is immaterial and therefore no detailed disclosures are provided in this note.

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28 Post-retirement benefits *continued*

Pension plans

The majority of the Group's defined benefit pension obligations are in Canada, the UK, the US and Switzerland. In Australia the main arrangements are principally defined contribution in nature, but there are sections providing defined benefits linked to final pay. The features of the Group's defined benefit pension obligations are summarised as follows.

	Calculation of benefit	Regulatory requirements	Governing body
Canada	Linked to final average pay for non-unionised employees. For unionised employees linked to final average pay or to a flat monetary amount per year of service.	Regulatory requirements in the relevant provinces and territories (predominantly Quebec).	Pension committee, a number of members are appointed by the sponsor and a number appointed by plan participants. In some cases, independent committee members are also appointed.
UK	Linked to final pay, subject to an earnings cap.	Regulatory requirements that apply to UK pension plans.	Trustee board, a number of directors appointed by the sponsor and a number appointed by plan participants and an independent trustee director.
US	Linked to final average pay for non-unionised employees and to a flat monetary amount per year of service for unionised employees.	US regulations.	Benefit Governance Committee. Members are appointed by the sponsor.
Switzerland	Linked to final average pay.	Swiss regulations.	Trustee board. Members are appointed by the plan sponsor, by employees and by retirees.
Australia	Linked to final pay and typically paid in lump sum form.	Local regulations in Australia.	An independent financial institution. One-third of the board positions are nominated by employers. Remaining positions are filled by independent directors and directors nominated by participants.

The Group also operates a number of unfunded defined benefit plans, which are included in the reported defined benefit obligations.

Post-retirement healthcare plans

Certain subsidiaries of the Group, mainly in the US and Canada, provide healthcare and life insurance benefits to retired employees and in some cases to their beneficiaries and covered dependants. Eligibility for coverage is dependent upon certain age and service criteria. These arrangements are unfunded, and are included in the reported defined benefit obligations.

Recognition and measurement

For post-employment defined benefit schemes, in accordance with IAS 19 "Employee Benefits", local actuaries calculate the fair value of the plan assets and the present value of the plan obligations using a variety of valuation techniques dependent on the type of asset or liability. The difference is recognised as an asset or liability in the balance sheet.

Where appropriate, the recognition of assets may be restricted to the present value of any amounts the Group expects to recover by way of refunds from the plan or reductions in future contributions. In determining the extent to which a refund will be available the Group considers whether any third party, such as a trustee or pension committee, has the power to enhance benefits or to wind up a pension plan without the Group's consent.

The current service cost, any past service cost and the effect of any curtailment or settlements and the interest cost less interest income on assets held in the plans are recognised in the income statement. Actuarial gains/(losses) and returns from assets are recognised in other comprehensive income.

The Group's contributions to defined contribution plans are charged to the income statement in the period to which the contributions relate.

All amounts charged to the income statement in respect of these plans are included within "Net operating costs" or in "Share of profit after tax of equity accounted units", as appropriate.

Plan assets

The assets of the pension plans are invested predominantly in a diversified range of bonds, equities, property and qualifying insurance policies. Consequently, the funding level of the pension plans is affected by movements in interest rates and also in the level of equity markets. The Group monitors its exposure to changes in interest rates and equity markets and also measures its balance sheet pension risk using a value at risk approach. These measures are considered when deciding whether significant changes in investment strategy are required.

Investment strategy reviews are conducted on a periodic basis to determine the optimal investment mix. This is performed while bearing in mind the risk tolerance of the Group and local sponsor companies, and the views of the Pension Committees and trustee boards who are legally responsible for the plans' investments. The assets of the pension plans may also be invested in qualifying insurance policies which provide a stream of payments to match the benefits being paid out by the plans. This would therefore remove the investment, inflation and longevity risks.

28 Post-retirement benefits *continued*

In Canada, the UK and Switzerland, the Group works with the governing bodies to ensure that the investment policy adopted is consistent with the Group's tolerance for risk. In the US, the Group has direct control over the investment policy, subject to local investment regulations. The proportions of the total fair value of assets in the pension plans for each asset class at 31 December were as follows.

	2024		2023	
Equities	**17.6%**		16.6%	
– Quoted[(a)]		**11.1%**		11.1%
– Private[(b)]		**6.5%**		5.5%
Bonds[(c)]	**47.7%**		47.4%	
– Government fixed income		**21.0%**		21.6%
– Government inflation-linked		**1.6%**		1.6%
– Corporate and other publicly quoted		**17.5%**		16.5%
– Private		**7.6%**		7.7%
Property[(d)]	**6.9%**		8.7%	
– Quoted property funds		**2.2%**		2.5%
– Unquoted property funds		**4.7%**		6.2%
Qualifying insurance policies[(e)]	**24.3%**		24.9%	
Cash and other[(f)(g)]	**3.5%**		2.4%	
Total	**100.0%**		100.0%	

(a) The holdings of quoted equities are invested in either pooled funds or segregated accounts held in the name of the relevant pension funds. These equity portfolios are well diversified in terms of the geographic distribution and market sectors.

(b) Investments in private equity, private debt and property are less liquid than the other investment classes listed above and therefore the Group's investment in those asset classes is restricted to a level that does not endanger the liquidity of the pension plans.

(c) The holdings of government bonds are generally invested in the debt of the country in which a pension plan is situated. Corporate and other quoted bonds are usually of investment grade. Private debt is mainly held in the North American and UK pension funds and is invested in North American and European companies.

(d) The property funds held by pension plans are invested in a diversified range of properties.

(e) Qualifying insurance policies are held with insurance companies that are regulated by the relevant local authorities. The value of those policies is calculated by the local actuaries using assumptions consistent with those adopted for valuing the insured obligations.

(f) The holdings of cash and other are predominantly cash and short-term money market instruments.

(g) The Group makes limited use of futures, repurchase agreements and other instruments to manage the interest rate risk in some of its plans. Fund managers may also use derivatives to hedge currency movements within their portfolios and, in the case of bond managers, to take positions that could be taken using direct holdings of bonds but more efficiently. Exposure to these instruments is closely monitored and maintained at a level that does not endanger the liquidity of any pension plan.

The assets of the plans are managed on a day-to-day basis by external specialist fund managers. These managers may invest in the Group's securities subject to limits imposed by the relevant fiduciary committees and local legislation. The approximate total holding of Group securities within the plans is US$1 million (2023: US$2 million).

Maturity of defined benefit obligations

An approximate analysis of the maturity of the obligations is given in the table below.

	Pension benefits	Other benefits	2024 Total	2023 Total	2022 Total
Proportion relating to current employees	**19%**	**15%**	**18%**	17%	18%
Proportion relating to former employees not yet retired	**9%**	**—%**	**9%**	9%	9%
Proportion relating to retirees	**72%**	**85%**	**73%**	74%	73%
Total	**100%**	**100%**	**100%**	100%	100%
Average duration of obligations (years)	**11.5**	**11.5**	**11.5**	10.8	11.4

Most of the Group's defined benefit pension plans are closed to new entrants, therefore the carrying value of the Group's post-employment obligations is less sensitive to assumptions about future salary increases than to other assumptions such as future inflation.

Geographical distribution of defined benefit obligations

An approximate analysis of the geographic distribution of the obligations is given in the table below:

	Pension benefits	Other benefits	2024 Total	2023 Total	2022 Total
Canada	**58%**	**50%**	**58%**	57%	58%
UK	**26%**	**2%**	**24%**	25%	24%
US	**8%**	**45%**	**10%**	10%	10%
Switzerland	**6%**	**—%**	**6%**	6%	6%
Other	**2%**	**3%**	**2%**	2%	2%
Total	**100%**	**100%**	**100%**	100%	100%

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28 Post-retirement benefits *continued*

Total expense recognised in the income statement

	Pension benefits US$m	Other benefits US$m	2024 Total US$m	2023 Total US$m	2022 Total US$m
Current employer service cost for defined benefit plans	**(80)**	**(3)**	**(83)**	(79)	(143)
Past service (cost)/credit	**(9)**	**(3)**	**(12)**	87	–
Net interest on net defined benefit liability	**(2)**	**(30)**	**(32)**	(21)	(36)
Non-investment expenses paid from the plans	**(20)**	**–**	**(20)**	(20)	(13)
Total defined benefit expense	**(111)**	**(36)**	**(147)**	(33)	(192)
Current employer service cost for defined contribution and industry-wide plans	**(455)**	**(3)**	**(458)**	(416)	(367)
Total expense recognised in the income statement	**(566)**	**(39)**	**(605)**	(449)	(559)

These expense amounts are included as an employee cost within net operating costs.

Total amount recognised in other comprehensive income before tax

	2024 US$m	2023 US$m	2022 US$m
Actuarial gains/(losses)	**201**	(407)	3,410
Impact of buy-in[(a)]	**–**	(216)	–
Return on assets, net of interest on assets	**(130)**	222	(2,831)
Gains/(losses) on application of asset ceiling	**12**	(60)	(1)
Remeasurement gains/(loss) on pension and post-retirement healthcare plans	**83**	(461)	578

(a) In 2023, the trustee of the Rio Tinto 2009 Pension Fund (RT09), a UK based scheme, purchased a bulk annuity contract - buy-in contract - which covers all scheme members. The bulk annuity contract is a Fund asset which provides an income to the RT09 that matches the pension paid out by the Fund. No formal decision to progress to buy-out and winding up of the RT09 can be made until such time as the Company and trustee agree on a number of key areas, including use of any residual surplus. As such, the trustee retains the legal responsibility to make benefit payments and the loss arising on this transaction was charged to other comprehensive income.

Amounts recognised in the balance sheet

The following amounts were measured in accordance with IAS 19 at 31 December.

	2024			2023
	Pension benefits US$m	Other benefits US$m	Total US$m	Total US$m
Total fair value of plan assets	**10,155**	**–**	**10,155**	11,138
Present value of obligations – funded	**(9,840)**	**–**	**(9,840)**	(10,799)
Present value of obligations – unfunded	**(347)**	**(576)**	**(923)**	(996)
Present value of obligations – total	**(10,187)**	**(576)**	**(10,763)**	(11,795)
Effect of asset ceiling	**(50)**	**–**	**(50)**	(66)
Net deficit to be shown in the balance sheet	**(82)**	**(576)**	**(658)**	(723)
Comprising:				
– Deficits	**(487)**	**(576)**	**(1,063)**	(1,189)
– Surpluses	**405**	**–**	**405**	466
Net deficits on pension plans	**(82)**	**–**	**(82)**	(95)
Unfunded post-retirement healthcare obligation	**–**	**(576)**	**(576)**	(628)

The surplus amounts shown above are included in the balance sheet as “Receivables and other assets”. See note 17.

Deficits are shown in the balance sheet within “Provisions (including post-retirement benefits)”. See note 26.

Funding policy and contributions to plans

The Group reviews the funding position of its pension plans on a regular basis and considers whether to provide funding above the minimum level required in each country. In Canada and the US, the minimum level is prescribed by legislation. In the UK and Switzerland, the minimum level is negotiated with the local trustee in accordance with the funding guidance issued by the local regulators. In deciding whether to provide funding above the minimum level, we consider other possible uses of cash elsewhere, the local sponsoring entity’s tax situation and any strategic advantage we might obtain. The Group does not generally pre-fund post-retirement healthcare arrangements.

	2024			2023	2022
	Pension benefits US$m	Other benefits US$m	Total US$m	Total US$m	Total US$m
Contributions to defined benefit plans	**71**	**36**	**107**	237	211
Contributions to defined contribution plans	**448**	**3**	**451**	410	363
Total	**519**	**39**	**558**	647	574

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28 Post-retirement benefits *continued*

The level of surplus in the Rio Tinto Pension Fund in the UK is such that it may be used to pay for the employer contributions to the defined contribution section of that Fund, in accordance with the funding arrangements agreed with the trustee of that Fund. Consequently, the cash paid to defined contribution plans is lower than the defined contribution service cost by US$7 million. Contributions to defined benefit pension plans are kept under regular review and actual contributions will be determined in line with the Group's wider financing strategy, taking into account relevant minimum funding requirements.

As contributions to many plans are reviewed on at least an annual basis, the contributions for 2025 and subsequent years cannot be determined precisely in advance. Most of the Group's largest pension funds are fully funded on their local funding basis and at present do not require long-term funding commitments. Contributions to defined benefit pension plans for 2025 are estimated to be around US$120 million but may be higher or lower than this depending on the evolution of financial markets and voluntary funding decisions taken by the Group. Contributions for subsequent years are expected to be at similar levels. Healthcare plans are generally unfunded and contributions for future years will be equal to benefit payments net of participant contributions. The Group's contributions for healthcare plans in 2025 are expected to be similar to the amounts paid in 2024.

Movements in the net defined benefit liability

A summary of the movement in the net defined benefit liability is shown in the first table below. The subsequent tables provide a more detailed analysis of the movements in the present value of the obligations and the fair value of assets.

	2024			2023
	Pension benefits US$m	Other benefits US$m	Total US$m	Total US$m
Change in the net defined benefit liability				
Net defined benefit liability at the start of the year	**(95)**	**(628)**	**(723)**	(470)
Amounts recognised in income statement	**(111)**	**(36)**	**(147)**	(33)
Amounts recognised in other comprehensive income	**58**	**25**	**83**	(461)
Employer contributions	**71**	**36**	**107**	237
Assets transferred to defined contribution section	**(7)**	**–**	**(7)**	(6)
Currency exchange rate gains	**2**	**27**	**29**	10
Net defined benefit liability at the end of the year	**(82)**	**(576)**	**(658)**	(723)

	2024			2023
	Pension benefits US$m	Other benefits US$m	Total US$m	Total US$m
Change in present value of obligation				
Present value of obligation at the start of the year	**(11,167)**	**(628)**	**(11,795)**	(11,177)
Current employer service costs	**(80)**	**(3)**	**(83)**	(79)
Past service (cost)/credit	**(9)**	**(3)**	**(12)**	87
Settlements	**–**	**–**	**–**	4
Interest on obligation	**(467)**	**(30)**	**(497)**	(533)
Contributions by plan participants	**(18)**	**–**	**(18)**	(19)
Benefits paid	**716**	**36**	**752**	748
Experience (losses)/gains	**(9)**	**11**	**2**	(40)
Changes in financial assumptions gains/(losses)	**242**	**14**	**256**	(418)
Changes in demographic assumptions (losses)/gains	**(57)**	**–**	**(57)**	51
Currency exchange rate gains/(losses)	**662**	**27**	**689**	(419)
Present value of obligation at the end of the year	**(10,187)**	**(576)**	**(10,763)**	(11,795)

	2024			2023
	Pension benefits US$m	Other benefits US$m	Total US$m	Total US$m
Change in plan assets				
Fair value of plan assets at the start of the year	**11,138**	**–**	**11,138**	10,708
Settlements	**–**	**–**	**–**	(4)
Interest on assets	**465**	**–**	**465**	512
Contributions by plan participants	**18**	**–**	**18**	19
Contributions by employer	**71**	**36**	**107**	237
Benefits paid	**(716)**	**(36)**	**(752)**	(748)
Non-investment expenses	**(20)**	**–**	**(20)**	(20)
Return on plan assets, net of interest on assets	**(130)**	**–**	**(130)**	222
Impact of buy-in	**–**	**–**	**–**	(216)
Assets transferred to defined contribution section	**(7)**	**–**	**(7)**	(6)
Currency exchange rate (losses)/gains	**(664)**	**–**	**(664)**	434
Fair value of plan assets at the end of the year	**10,155**	**–**	**10,155**	11,138

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28 Post-retirement benefits *continued*

The impact of higher interest rates on bonds and qualifying insurance policies explains most of the return on plan assets, net of interest on assets in 2024.

The resulting effect of applying an asset ceiling is a gain of US$12 million and a gain of US$4 million for the change in currency exchange rate during the year. In determining the extent to which the asset ceiling has an effect, the Group considers the funding legislation in each country and the rules specific to each pension plan. The calculation takes into account any minimum funding requirements that may be applicable to the plan, whether any reduction in future Group contributions is available, and whether a refund of surplus may be available. In considering whether any refund of surplus is available, the Group considers the powers of trustee boards and similar bodies to augment benefits or wind up a plan. Where such powers are unilateral, the Group does not consider a refund to be available at the end of the life of a plan. Where the plan rules and legislation both permit the employer to take a refund of surplus, the asset ceiling may have no effect, although it may be the case that a refund will only be available many years in the future.

Main assumptions (rates per annum)

Key estimate – Estimation of obligations for post-employment costs

The value of the Group's obligations for post-employment benefits is dependent on the amount of benefits that are expected to be paid out, discounted to the balance sheet date. The most significant assumptions used in accounting for pension plans are:

- The discount rate – used to determine the net present value of the obligations, the interest cost on the obligations and the interest income on plan assets. We use the yield from high-quality corporate bonds with maturities and terms that match those of the post-employment obligations as closely as possible. Where there is no developed corporate bond market in a currency, the rate on government bonds is used.
- The long-term inflation rate – used to project increases in future benefit payments for those plans that have benefits linked to inflation. The assumption regarding future inflation is based on market yields on inflation linked instruments, where possible, combined with consensus views.
- The mortality rates – used to project the period over which benefits will be paid, which is then discounted to arrive at the net present value of the obligations. The Group reviews the actual mortality rates of retirees in its major pension plans on a regular basis and uses these rates to set its current mortality assumptions. It also uses its judgement with respect to allowances for future improvements in longevity having regard to standard improvement scales in each relevant country and after taking external actuarial advice.

The weighted-average assumptions used for the valuation at year-end are summarised below:

	At 31 December 2024			At 31 December 2023		
	Discount rate	**Long-term inflation[a]**	**Rate of increase in pensions**	Discount rate	Long-term inflation[a]	Rate of increase in pensions
Canada	**4.6%**	**2.0%**	**0.2%**	4.6%	1.9%	0.2%
UK	**5.4%**	**3.1%**	**2.7%**	4.5%	3.1%	2.6%
US	**5.5%**	**2.3%**	**—%**	4.8%	2.2%	–%
Switzerland	**0.9%**	**1.0%**	**2.2%**	1.5%	1.2%	2.3%

(a) The long-term inflation assumption shown for the UK is for the Retail Price Index. The assumption for the Consumer Price Index at 31 December 2024 was 2.7% (2023: 2.5%).

The main financial assumptions used for the healthcare plans, which are predominantly in the US and Canada, were: discount rate: 5.3% (2023: 5.0%); medical trend rate: 9.7% reducing to 4.7% by the year 2034, broadly on a straight line basis (2023: 8.3%, reducing to 4.7% by the year 2032); claims costs based on individual company experience.

For both the pension and healthcare arrangements, the post-retirement mortality assumptions allow for future improvements in longevity. The mortality tables used imply that a man aged 60 at the balance sheet date has a weighted average expected future lifetime of 27 years (2023: 27 years) and that a man aged 60 in 2044 would have a weighted average expected future lifetime of 28 years (2023: 28 years). The mortality tables are generally based upon the latest standard tables published in each country, adjusted appropriately to reflect the actual mortality experience of the plan participants where credible data is available. Adjustments have been made to some of our plans within the demographic assumptions for the impact of the COVID-19 pandemic.

Sensitivity analysis

The values reported for the defined benefit obligations are sensitive to the actuarial assumptions used for projecting future benefit payments and discounting those payments. In order to estimate the sensitivity of the obligations to changes in assumptions, we calculate what the obligations would be if we were to make changes to each of the key assumptions in isolation. The difference between this figure and the figure calculated using our stated assumptions is an indication of the sensitivity to reasonably possible changes in each assumption. The results of this sensitivity analysis are summarised in the table below. Note that this approach is valid for small changes in the assumptions but will be less accurate for larger changes in the assumptions. The sensitivity to inflation includes the impact on pension increases, which are generally linked to inflation where they are granted.

28 Post-retirement benefits *continued*

		2024		2023	
		Approximate (increase)/ decrease in obligations		Approximate (increase)/ decrease in obligations	
Assumption	Change in assumption	**Pensions US$m**	**Other US$m**	Pensions US$m	Other US$m
Discount rate	Increase of 0.5 percentage points	**419**	**31**	460	31
	Decrease of 0.5 percentage points	**(487)**	**(33)**	(514)	(33)
Long-term inflation	Increase of 0.5 percentage points	**(167)**	**(9)**	(183)	(9)
	Decrease of 0.5 percentage points	**160**	**8**	176	8
Demographic – allowance for future improvements in longevity	Participants assumed to have the mortality rates of individuals who are one year older	**221**	**8**	244	7
	Participants assumed to have the mortality rates of individuals who are one year younger	**(232)**	**(8)**	(244)	(7)

29 Directors' and key management personnel remuneration

Directors

Aggregate remuneration, calculated in accordance with the UK *Companies Act 2006*, of the Directors of the parent companies was as follows.

	2024 US$'000	2023 US$'000	2022 US$'000
Emoluments	**8,369**	7,461	6,726
Long-term incentive plans	**8,746**	8,746	4,691
	17,115	16,207	11,417
Pension contributions to defined contribution plans by Rio Tinto plc	**26**	20	10
Pension contributions to defined contribution plans by Rio Tinto Limited	**—**	–	–
Aggregate remuneration, including pension contributions	**17,141**	16,227	11,427
Incurred by:			
Rio Tinto plc	**16,185**	15,184	10,692
Rio Tinto Limited	**956**	1,043	735
	17,141	16,227	11,427

(a) Emoluments have been translated from local currency at the average exchange rate for the year with the exception of bonus payments, which have been translated at the year-end rate.

Key management personnel

The Group defines key management personnel as the Directors and certain members of the Executive Committee, as described on page 104. The Executive Committee includes the Executive Directors, product group Chief Executive Officers and Group executives. Details of the Directors and members of the Executive Committee identified as key management are shown in the Directors' Report on pages 102 to 105.

During 2024, no Directors (2023: nil; 2022: nil) accrued retirement benefits under defined benefit arrangements, and 2 Directors (2023: 2; 2022: 2) accrued retirement benefits under defined contribution arrangements.

Aggregate compensation, representing the expense recognised under IFRS as defined in the "Basis of preparation" section, of the Group's key management, including Directors, was as follows.

	2024 US$'000	2023 US$'000	2022 US$'000
Short-term employee benefits and costs	**19,928**	16,159	14,258
Post-employment benefits	**186**	155	174
Employment termination benefits	**—**	155	–
Share-based payments	**14,724**	10,305	10,846
Total[(a)]	**34,838**	26,774	25,278

(a) The figures shown above include employment costs which cover social security and accident premiums in Canada, the UK and payroll taxes in Australia paid by the employer as a direct additional cost of hire. In total, they amount to US$2,316,000 (2023: US$1,321,000; 2022: US$1,173,000) and, although disclosed here, are not included in table 1 of the Remuneration report.

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Our Group structure

The Group's principal subsidiaries (note 30), joint operations (note 31), joint ventures and associates (note 32) are in most cases held by intermediate holding companies and not directly by Rio Tinto plc or Rio Tinto Limited. This section of the notes only includes those companies that have a more significant impact on the profit or operating assets of the Group. As required by section 409 of the *Companies Act 2006*, refer to pages 231 to 238 for a complete list of related undertakings which, for the purposes of UK reporting requirements, form a part of the financial statements.

30 Principal subsidiaries

The Group's principal subsidiaries at 31 December 2024 are summarised in the table below.

Company and country of incorporation/operation	Principal activities	Group interest (voting %)
Australia		
Dampier Salt Limited	Salt and gypsum production	68.36
Energy Resources of Australia Ltd[a]	Uranium processing (until January 2021)	98.43
Hamersley Iron Pty Limited	Iron ore mining	100
North Mining Limited[b]	Iron ore mining	100
Rio Tinto Aluminium (Holdings) Limited	Bauxite mining, alumina production, primary aluminium smelting	100
Robe River Mining Co Pty Ltd[b]	Iron ore mining	73.61
Argentina		
Rincon Mining Pty Limited[c]	Exploration and development of lithium asset	100
Brazil		
Rio Tinto do Brasil Ltda.[d]	Alumina production and bauxite mining	100
Canada		
Diavik Diamond Mines (2012) Inc.	Diamond mining and processing	100
Iron Ore Company of Canada[e]	Iron ore mining; iron ore pellets production	58.72
Rio Tinto Alcan Inc.	Bauxite mining; alumina refining; aluminium smelting	100
Rio Tinto Fer et Titane Inc.	Titanium dioxide feedstock; high purity iron and steel production	100
Jersey/Guinea		
SimFer Jersey Limited[f]	Iron ore project	53
Madagascar		
QIT Madagascar Minerals SA[g]	Ilmenite mining	80
Mongolia		
Oyu Tolgoi LLC	Copper and gold mining	66
New Zealand		
New Zealand Aluminium Smelters Limited[h]	Aluminium smelting	100
Singapore		
Rio Tinto Singapore Holdings Pte Ltd	Commercial activities	100
South Africa		
Richards Bay Titanium (Proprietary) Limited	Titanium dioxide, high purity iron production	74
Richards Bay Mining (Proprietary) Limited	Ilmenite, rutile and zircon mining	74
United States		
Kennecott Holdings Corporation (including Kennecott Utah Copper and Kennecott Exploration)	Copper mining, smelting and refining and exploration activities	100
Nuton LLC	Investments and collaborations related to proprietary nature-based copper leach technologies	100
U.S. Borax Inc.	Mining, refining and marketing of borates	100
Resolution Copper Mining LLC	Exploration and development of copper	55

(a) In November 2024, our interest in Energy Resources of Australia (ERA) increased from 86.3% to 98.43% as a result of new shares issued to Rio Tinto under ERA's entitlement offer to raise funds for the rehabilitation of the Ranger Project Area.

(b) Robe River Mining Co Pty Ltd (which is 60% owned by the Group) holds a 30% economic interest in Robe River Iron Associates (Robe River). North Mining Ltd (which is wholly owned by the Group) holds a 35% economic interest in Robe River. Through these companies the Group recognises a 65% share of the assets, liabilities, revenues and expenses of Robe River, with a 12% non-controlling interest. The Group therefore has a 53% economic interest in Robe River.

(c) Rincon Mining Pty Limited is incorporated in Australia but operates in Argentina.

(d) Rio Tinto do Brasil Ltda holds the Group's 10% interest in Consórcio de Alumínio do Maranhão, a joint operation in which the Group participates but is not a joint operator. The Group recognises its share of assets, liabilities, revenues and expenses relating to this arrangement.

(e) Iron Ore Company of Canada is incorporated in the US, but operates in Canada.

(f) Rio Tinto SimFer UK Limited (which is wholly owned by the Group) holds a 53% interest in SimFer Jersey Limited (SimFer Jersey), a company incorporated in Jersey. SimFer Jersey, in turn, has an 85% interest in SimFer S.A., the company that will carry out the Simandou mining operations in Guinea and an 85% interest in the company which will deliver Simfer Jersey's scope of the co-developed rail and port infrastructure. SimFer Jersey at present has a 100% interest in the companies that will own and operate the transhipment vessels, however this is anticipated to reduce to 85% with the Government of Guinea taking a 15% interest before operations commence. These entities, together with the equity accounted WCS Rail and Port entities described in note 32, are referred to as the Simandou iron ore project.

(g) The Group's shareholding in QIT Madagascar Minerals SA (QMM) carries an 80% economic interest and 80% of the total voting rights; a further 5% economic interest is held through non-voting investment certificates to give an economic interest of 85%. In the prior year, a Memorandum of Understanding (MoU) was signed with the Malagasy Government in relation to their fiscal regime for QMM which expired at the end of May 2023. The MoU gave effect to the application of a new fiscal regime for the next 25 years, with terms effective as of 1 July 2023. Terms of the MoU included the granting of a 15% free-carry equity stake to the Malagasy Government that can no longer be diluted, while maintaining their current 20% of the voting rights. As a result, the Malagasy Government's non-controlling interest was recognised for the first time in 2023, and QMM's net earnings has been presented net of amounts attributable to non-controlling interests from 1 July 2023. The initial recognition of non-controlling interests, and any subsequent recognition arising from future contributions, gave rise to a charge within equity as the transaction was between Rio Tinto and the Malagasy Government acting in their capacity as shareholders and there were no changes to the net assets of QMM. As at 31 December 2024, the value of QMM's non-controlling interest is US$4 million (2023: US$16 million).

(h) On 1 November 2024, our interest in NZAS ceased to be a joint operation and became a wholly owned subsidiary following the acquisition of Sumitomo Chemical Company's 20.64% interest in the entity.

30 Principal subsidiaries *continued*

Summary financial information for subsidiaries that have non-controlling interests that are material to the Group

This summarised financial information is shown on a 100% basis. It represents the amounts shown in the subsidiaries' financial statements prepared in accordance with IFRS in line with the Group's accounting policies, including fair value adjustments, and before intercompany eliminations.

Income statement summary for the year ended 31 December	**Iron Ore Company of Canada 2024** **US$m**	Iron Ore Company of Canada 2023 US$m	**Simfer Jersey 2024** **US$m**	Simfer Jersey 2023 US$m	**Oyu Tolgoi LLC[a] 2024** **US$m**	Oyu Tolgoi LLC[a] 2023 US$m	**Robe River Mining Co Pty 2024** **US$m**	Robe River Mining Co Pty 2023 US$m
Revenue	**2,255**	2,314	**–**	–	**2,184**	1,625	**1,746**	1,753
Profit/(loss) after tax	**321**	445	**(25)**	(199)	**(1,077)**	(1,024)	**782**	848
– attributable to non-controlling interests	**133**	184	**(18)**	(114)	**(436)**	(352)	**313**	339
– attributable to Rio Tinto	**188**	261	**(7)**	(85)	**(641)**	(672)	**469**	509
Other comprehensive (loss)/income	**(205)**	60	**–**	–	**–**	–	**(279)**	40
Total comprehensive income/(loss)	**116**	505	**(25)**	(199)	**(1,077)**	(1,024)	**503**	888

Balance sheet summary as at 31 December	**2024** **US$m**	2023 US$m	**2024** **US$m**	2023 US$m	**2024** **US$m**	2023 US$m	**2024** **US$m**	2023 US$m
Non-current assets	**2,987**	3,170	**2,908**	789	**16,535**	15,335	**2,695**	2,899
Current assets	**711**	866	**545**	83	**581**	511	**743**	808
Current liabilities	**(541)**	(519)	**(402)**	(67)	**(672)**	(4,920)	**(124)**	(157)
Non-current liabilities	**(937)**	(1,005)	**(45)**	(1,016)	**(18,860)**	(12,544)	**(422)**	(443)
Net assets/(liabilities)	**2,220**	2,512	**3,006**	(211)	**(2,416)**	(1,618)	**2,892**	3,107
– attributable to non-controlling interests	**934**	1,052	**1,335**	(130)	**(994)**	(558)	**1,153**	1,241
– attributable to Rio Tinto	**1,286**	1,460	**1,671**	(81)	**(1,422)**	(1,060)	**1,739**	1,866

Cash flow statement summary for the year ended 31 December	**2024** **US$m**	2023 US$m	**2024** **US$m**	2023 US$m	**2024** **US$m**	2023 US$m	**2024** **US$m**	2023 US$m
Cash flow from operations	**735**	801	**(850)**	262	**1,039**	345	**1,274**	1,480
Dividends paid to non-controlling interests	**(165)**	(103)	**–**	–	**–**	–	**(282)**	(345)

(a) Under the terms of the project finance facility held by Oyu Tolgoi LLC, there are certain restrictions on the ability of Oyu Tolgoi LLC to make shareholder distributions.

31 Principal joint operations

The Group's principal joint operations at 31 December 2024 are summarised in the table below.

Company and country of incorporation/operation	Principal activities	Group interest (%)
Australia		
Tomago Aluminium Joint Venture	Aluminium smelting	51.55
Gladstone Power Station Joint Venture	Power generation	42.13
Hope Downs Joint Venture	Iron ore mining	50
Western Range Joint Venture[a]	Iron ore mining	54
Queensland Alumina Limited[b][c]	Alumina production	80
Pilbara Iron Arrangements	Infrastructure, corporate and mining services	See other relevant judgements call out box below
Canada		
Aluminerie Alouette Inc.	Aluminium production	40
Pechiney Reynolds Quebec Inc[c][d]	Aluminium smelting	50.2

(a) The Group owns a 54% interest in the Western Range Joint Venture (WRJV), an unincorporated arrangement in the Pilbara. The Group recognises its equity share of assets, revenue and expenses relating to this arrangement. Liabilities are recognised at 54% with the exception of the close-down and restoration provision, which is recognised at 100% according to WRJV's contractual obligations, with a corresponding 46% receivable from China Baowu Group, for the co-owner's share.

(b) Although the Group has an 80% interest in Queensland Alumina Limited, decisions about activities that significantly affect the returns that are generated require agreement of both parties to the joint arrangement, giving rise to joint control.

(c) Queensland Alumina Limited and Pechiney Reynolds Quebec Inc. are joint arrangements that are primarily designed for the provision of output to the parties sharing joint control. This indicates that the parties have rights to substantially all the economic benefits of the assets. The liabilities of the arrangements are in substance satisfied by cash flows received from the parties. This dependence indicates that the parties in effect have obligations for the liabilities. It is these facts and circumstances that give rise to the classification of these entities as joint operations.

(d) Pechiney Reynolds Quebec Inc., an entity incorporated in the United States, has a 50.1% interest in the Aluminerie de Bécancour, Inc. aluminium smelter, which is located in Canada. As Rio Tinto owns 50.2% of Pechiney Reynolds Quebec Inc our effective ownership of the Bécancour smelter is 25.2%.

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31 Principal joint operations *continued*

Other relevant judgements – accounting for the Pilbara Iron Arrangements

A number of arrangements are in place amongst the Australian Iron Ore operations, managed by Rio Tinto, which allow their respective assets to be operated as a single integrated network across the Pilbara region. In assessing the Pilbara Iron Arrangements, it has been concluded that they collectively constitute a joint operation on the basis that decisions about relevant activities require unanimous consent. The resulting efficiencies are shared between Rio Tinto and Robe River Iron Associates (Robe River), and the parties fund all of the cash flow requirements of Pilbara Iron (Company) Services Pty Ltd and Pilbara Iron Pty Ltd.

Each of the partners in the joint operation is able to request the other to construct assets on their tenure to increase the capacity of the rail and port infrastructure network. The requesting partner's (Asset User's) share of the capacity of the network will increase by the capacity of the newly constructed asset, but generally that capacity may be provided from any of the network assets. The Asset User will pay an annual charge, Committed Use Charge (CUC) over a contractually specified period irrespective of network usage. The constructing partner (Asset Owner) has an ongoing obligation to make available capacity from those assets and to maintain the assets in good working order as required under relevant State Agreements and associated tenure. The arrangements are managed through two wholly-owned subsidiaries: Pilbara Iron (Company) Services Pty Ltd and Pilbara Iron Pty Ltd.

We have also considered whether the CUC arrangements give rise to a lease between the Asset Owner and the Asset User. We have concluded that they do not, as there is no specified asset; rather the Asset User has a first priority right to the capacity in the CUC asset. This treatment was grandfathered on adoption of IFRS 16 on 1 January 2019, following an assessment under the preceding standards IAS 17 "Leases" and IFRIC 4 "Determining whether an arrangement contains a lease", with no change to the conclusion under IFRS 16 for subsequent expenditure subject to the existing CUC arrangements. Management considers that these arrangements are unique and has used judgement to apply the principles of IFRS to the accounting for the arrangements as described above. The obligation of the Asset Owner to make capacity available is fulfilled over time and not at a point in time. The CUC arrangement is therefore an executory contract as defined under IAS 37, whereby neither party has performed any of its obligations, or both parties have partially performed their obligations to an equal extent, and so the CUC payments are expensed as incurred. An alternative interpretation of the fact pattern could have resulted in a gross presentation in the Group's balance sheet with an asset and a corresponding liability to reflect the present value of the CUC payments. The Asset User is a wholly-owned subsidiary of Rio Tinto, whereas the Asset Owner is a joint operation. This impact would be some US$929 million (calculated on the basis of grossing up the tax written down value of the CUC assets). Other methods of calculating the gross-up might give rise to different numbers.

32 Entities accounted under the equity method

Principal joint ventures

The Group's principal joint ventures at 31 December 2024 are summarised in the table below.

Company and country of incorporation/operation	Principal activities	Group interest (%)
Canada		
Matalco Canada Inc.	Aluminium recycling	50
Chile		
Minera Escondida Ltda[a]	Copper mining and refining	30
Oman		
Sohar Aluminium Co. L.L.C.[b]	Aluminium smelting, power generation	20
United States		
Matalco USA, LLC	Aluminium recycling	50

(a) The year-end of Minera Escondida Ltda is 30 June. The amounts included in the consolidated financial statements of Rio Tinto are however, based on financial statements of Minera Escondida Ltda that are coterminous with those of the Group.

(b) Although the Group holds a 20% interest in Sohar Aluminium Co. L.L.C, decisions about relevant activities that significantly affect the returns that are generated require agreement of all parties to the arrangement. It is therefore determined that Rio Tinto has joint control.

Other relevant judgements – accounting for Minera Escondida Ltda

Judgement has been applied on the determination that Escondida is a joint venture. We have based this on the nature of significant commercial decisions, including those in relation to capital expenditure, which require approval of both Rio Tinto and its partner BHP (holders of a 57.5% interest). In contrast, our partner has assessed Rio Tinto's rights as protective and concluded that it controls Escondida through its rights to direct relevant activities. Adoption of the equivalent judgement by the Group would result in reclassification of Escondida from a joint venture to an associate, with no other financial reporting consequence since accounting under the equity method would remain in place.

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32 Entities accounted under the equity method *continued*

Summary information for joint ventures that are material to the Group

This summarised financial information is shown on a 100% basis. It represents the amounts shown in the joint ventures' financial statements prepared in accordance with IFRS under Group accounting policies, including fair value adjustments and amounts due to and from Rio Tinto.

	Minera Escondida Ltda[a] 2024 US$m	Minera Escondida Ltda[a] 2023 US$m
Revenue	**11,413**	9,187
Depreciation and amortisation	**(1,417)**	(1,183)
Other operating costs	**(4,123)**	(3,784)
Operating profit	**5,873**	4,220
Finance expense	**(233)**	(283)
Income tax[b]	**(2,707)**	(1,773)
Profit after tax	**2,933**	2,164
Other comprehensive income/(loss)	**14**	(13)
Total comprehensive income	**2,947**	2,151
Non-current assets	**12,991**	12,480
Current assets	**3,230**	2,751
Current liabilities	**(2,351)**	(1,607)
Non-current liabilities	**(5,585)**	(5,192)
Net assets	**8,285**	8,432
Assets and liabilities above include:		
– cash and cash equivalents	**677**	360
– current financial liabilities	**(170)**	(677)
– non-current financial liabilities	**(3,333)**	(2,770)
Dividends received from joint venture (Rio Tinto share)	**1,035**	578

Reconciliation of the above amounts to the investment recognised in the consolidated balance sheet

	Minera Escondida Ltda[a]	Minera Escondida Ltda[a]
Group interest	**30%**	30%
Net assets (100%)	**8,285**	8,432
Group's ownership interest	**2,486**	2,530
Carrying value of Group's interest	**2,486**	2,530

(a) In addition to its "Investment in equity accounted units", the Group recognises deferred tax liabilities of US$349 million (2023: US$354 million) relating to tax on unremitted earnings of equity accounted units.

(b) In 2023, income tax includes a charge of US$252 million for the revaluation of deferred tax balances following the substantive enactment of the Chilean Royalty Bill which, effective from 1 January 2024, implemented a 1% royalty on revenues, a margin based tax with rates ranging between 8% and 26%, and a 46.5% cap to the overall Chilean tax burden of mining companies.

Principal associates

The Group's principal associates at 31 December 2024 are summarised in the table below.

Company and country of incorporation/operation	Principal activities	Group interest (%)
Australia		
Boyne Smelters Limited[a]	Aluminium smelting	73.5
Brazil		
Mineração Rio do Norte S.A.	Bauxite mining	22
Singapore/Guinea		
Winning Consortium Simandou Railway Pte. Ltd[b]	Rail and port infrastructure including trans-Guinean heavy haul rail system	18.02
Winning Consortium Simandou Ports Pte. Ltd[b]		18.02
United States		
Halco (Mining) Inc.[c]	Bauxite mining	45

(a) The parties that collectively control Boyne Smelters Limited (BSL) do so through decisions that are determined on an aggregate voting interest that can be achieved by several combinations of the parties. Although each combination requires Rio Tinto's approval, this is not joint control as defined under IFRS 11 "Joint Arrangements". Rio Tinto is therefore determined to have significant influence over this company. During the period, we acquired an additional 14.11% interest (comprising 11.65% from Mitsubishi Corporation and 2.46% from Sumitomo Chemical Company) in BSL, increasing our total interest to 73.5%. BSL remains accounted for as an investment in associate under the equity method.

(b) Rio Tinto SimFer UK Limited (which is wholly owned by the Group) holds a 53% interest in SimFer Jersey Limited (SimFer Jersey), a company incorporated in Jersey. During the year, SimFer Jersey, through its wholly owned subsidiary, SimFer InfraCo Ltd., a company incorporated in the United Kingdom, acquired 34% interests in Winning Consortium Simandou Railway Pte. Ltd and Winning Consortium Simandou Ports Pte. Ltd (together referred to as "WCS Rail and Port entities"). Refer to note 5 for further details. The WCS Rail and Port entities are incorporated in Singapore, however their operations are in Guinea. As at 31 December 2024, the Group has an effective 18.02% indirect interest in the WCS Rail and Port entities. The Government of Guinea holds a 15% interest in the WCS Rail and Port operations and therefore we have a 15.32% indirect interest in those operations.

(c) The Group holds a 45% interest in Halco (Mining) Inc., a non-managed associate. Halco (Mining) Inc., in turn, has a 51% indirect interest in Compagnie des Bauxites de Guinée, a bauxite mine, the core assets of which are located in Guinea.

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32 Entities accounted under the equity method *continued*

Summary information for joint ventures and associates that are not individually material to the Group

	2024 US$m	2023 US$m
Carrying value of Group's interest	**2,351**	1,878
(Loss)/profit after tax	**(42)**	26
Other comprehensive (loss)/income	**(44)**	15
Total comprehensive (loss)/income	**(86)**	41

33 Related-party transactions

Information about material related-party transactions of the Rio Tinto Group is set out below.

Subsidiary companies and joint operations

Details of investments in principal subsidiary companies are disclosed in note 30. Information relating to principal joint operations can be found in note 31.

Equity accounted units

Transactions and balances with equity accounted units are summarised below. Purchases, trade and other receivables, and trade and other payables, relate largely to amounts charged by equity accounted units for toll processing of alumina and purchasing of bauxite and aluminium. Sales relate largely to sales of alumina to equity accounted units for smelting into aluminium.

	2024 US$m	2023 US$m	2022 US$m
Income statement items			
Purchases from equity accounted units	**(874)**	(1,163)	(1,429)
Sales to equity accounted units	**684**	349	563
Cash flow statement items			
Dividends from equity accounted units	**1,067**	610	879
Net funding of equity accounted units	**(784)**	(144)	(75)
Balance sheet items			
Investments in equity accounted units[(a)]	**4,837**	4,407	3,298
Loans to equity accounted units[(b)]	**534**	–	–
Loans related to equity accounted units[(c)]	**–**	100	—
Trade and other receivables: amounts due from equity accounted units[(d)]	**221**	189	297
Trade and other payables: amounts due to equity accounted units	**(209)**	(206)	(294)

(a) Investments in equity accounted units include quasi-equity loans. Further information about investments in equity accounted units is set out in note 32.
(b) Relates to amounts advanced as part of acquisition of WCS Rail and Port entities (refer to note 5 for details), as well as subsequent funding of the EAUs.
(c) Relates to initial funding for Simandou infrastructure, classified as "Other investments, including loans" pending finalisation of the project shareholder agreements. This loan was repaid during 2024.
(d) This includes prepayments of tolling charges.

Pension funds

Information relating to pension fund arrangements is set out in note 28.

Directors and key management

Details of Directors' and key management's remuneration are set out in note 29 and in the Remuneration report on pages 119 to 145.

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Our equity

34 Share capital

Recognition and measurement

Ordinary shares are classified as equity. Incremental costs directly attributable to the issuance of new shares are shown in equity as a deduction, net of tax, from the proceeds.

Where any Group company purchases the Group's equity share capital (treasury shares), the consideration paid, including any directly attributable incremental costs (net of income taxes) is deducted from equity attributable to owners of Rio Tinto. Where such shares are subsequently reissued, any consideration received, net of any directly attributable incremental costs and the related income tax effects, is included in equity attributable to owners of Rio Tinto. If purchased Rio Tinto plc shares are cancelled, an amount equal to the nominal value of the cancelled share is credited to the capital redemption reserve.

Rio Tinto plc

	2024 Number (million)	2023 Number (million)	2022 Number (million)	2024 US$m	2023 US$m	2022 US$m
Issued and fully paid up share capital of 10p each						
At 1 January	**1,255.892**	1,255.845	1,255.795	**207**	207	207
Ordinary shares issued under the Global Employee Share plan (GESP)	**0.053**	0.047	0.050	**–**	–	–
Shares purchased and cancelled[a]	**–**	–	–	**–**	–	–
At 31 December	**1,255.945**	1,255.892	1,255.845	**207**	207	207
Shares held by public						
At 1 January	**1,251.321**	1,249.655	1,248.141			
Shares reissued from treasury under the GESP[b]	**1.548**	1.619	1.464			
Ordinary shares issued under the GESP[b]	**0.053**	0.047	0.050			
Shares purchased and cancelled[a]	**–**	–	–			
At 31 December	**1,252.922**	1,251.321	1,249.655			
Shares held in treasury	**3.023**	4.571	6.190			
Shares held by public	**1,252.922**	1,251.321	1,249.655			
Total share capital	**1,255.945**	1,255.892	1,255.845			
Other share classes						
Special Voting Share of 10p each[c]	**1 only**	1 only	1 only			
DLC Dividend Share of 10p each[c]	**1 only**	1 only	1 only			

(a) The authority for the company to buy back its ordinary shares was renewed at the 2021 annual general meeting. No shares were bought back and cancelled in 2024, 2023 or 2022 under the on-market buy-back programme.

(b) New shares issued and reissued from Treasury during the year resulting from the vesting of awards and the exercise of options under Rio Tinto plc employee share-based payment plans had exercise prices and market values between £45.09 and £58.99 per share.

(c) The Special Voting Share was issued to facilitate the joint voting by shareholders of Rio Tinto plc and Rio Tinto Limited on Joint Decisions, following the DLC Merger. The DLC Dividend Share was issued to a subsidiary of Rio Tinto Limited to facilitate the efficient management of funds within the DLC structure. In addition, an Equalisation Share is authorised but not issued and is governed by the terms of the DLC Merger Sharing Agreement.

During 2024, US$13 million of shares and ADRs (2023: US$17 million; 2022: US$16 million) were purchased by employee share ownership trusts on behalf of Rio Tinto plc to satisfy employee share awards on vesting. At 31 December 2024, 229,749 shares (2023: 253,371; 2022: 232,621) and 48,990 ADRs (2023: 45,694; 2022: 49,777) shares were held in the employee share ownership trusts on behalf of Rio Tinto plc.

Rio Tinto Limited

	2024 Number (million)	2023 Number (million)	2022 Number (million)	2024 US$m	2023 US$m	2022 US$m
Issued and fully paid up share capital						
At 1 January	**371.21**	371.21	371.21	**3,377**	3,330	3,570
Adjustment on currency translation				**(317)**	47	(240)
At 31 December	**371.21**	371.21	371.21	**3,060**	3,377	3,330
– Special Voting Share[a]	**1 only**	1 only	1 only			
– DLC Dividend Share[a]	**1 only**	1 only	1 only			
Total share capital	**371.21**	371.21	371.21			

(a) The Special Voting Share was issued to facilitate the joint voting by shareholders of Rio Tinto Limited and Rio Tinto plc on Joint Decisions following the DLC Merger. The DLC Dividend Share was issued to a subsidiary of Rio Tinto Plc to facilitate the efficient management of funds within the DLC structure. Directors have the ability to issue an Equalisation Share if that is required under the terms of the DLC Merger Sharing Agreement.

During 2024, US$44 million of shares (2023: US$78 million; 2022: US$84 million) were purchased by employee share ownership trusts on behalf of Rio Tinto Limited to satisfy employee share awards on vesting. At 31 December 2024, 303,327 shares (2023: 794,282; 2022: 979,495) were held in the employee share ownership trusts on behalf of Rio Tinto Limited.

Information relating to share-based incentive schemes is in note 27.

35 Other reserves and retained earnings

	2024 US$m	2023 US$m	2022 US$m
Capital redemption reserve[a]			
At 1 January and 31 December	**51**	51	51
Cash flow hedge reserve			
At 1 January	**(59)**	(51)	(11)
Cash flow hedge gains/(losses)	**13**	30	(167)
Cash flow hedge losses/(gains) transferred to the income statement	**17**	(39)	106
Tax on the above	**(10)**	1	21
At 31 December	**(39)**	(59)	(51)
Fair value through other comprehensive income reserve			
At 1 January	**(22)**	2	2
(Losses) on equity investments	**–**	(24)	–
At 31 December	**(22)**	(22)	2
Cost of hedging reserve			
At 1 January	**(12)**	(17)	(21)
Cost of hedging deferred to reserves during the year	**3**	4	4
Transfer of cost of hedging to the income statement	**1**	1	–
At 31 December	**(8)**	(12)	(17)
Other reserves[b]			
At 1 January	**11,542**	11,554	11,582
Own shares purchased from Rio Tinto Limited shareholders to satisfy share awards	**(44)**	(78)	(84)
Employee share options: value of services	**76**	62	56
Deferred tax on share options	**(4)**	4	–
At 31 December	**11,570**	11,542	11,554
Foreign currency translation reserve[c]			
At 1 January	**(3,172)**	(3,784)	(1,627)
Parent and subsidiaries' currency translation and exchange adjustments	**(3,194)**	598	(2,235)
Equity accounted units currency translation adjustments	**(45)**	14	(27)
Currency translation reclassified on disposal[d]	**(27)**	–	105
At 31 December	**(6,438)**	(3,172)	(3,784)
Total other reserves per balance sheet	**5,114**	8,328	7,755
Retained earnings[e]			
At 1 January	**38,350**	35,020	33,857
Parent and subsidiaries' profit for the year	**10,697**	9,385	11,817
Equity accounted units' profit after tax for the year	**855**	673	575
Remeasurement gains/(losses) on pension and post-retirement healthcare plans[f]	**88**	(459)	568
Tax relating to components of other comprehensive income	**(23)**	151	(118)
Total comprehensive income for the year	**11,617**	9,750	12,842
Dividends paid	**(7,025)**	(6,466)	(11,716)
Change in equity interest held by Rio Tinto[g]	**(468)**	(13)	701
Own shares purchased/treasury shares reissued for share awards and other movements	**(13)**	(17)	(16)
Equity issued to holders of non-controlling interests[g]	**–**	–	(711)
Employee share options and other IFRS 2 charges taken to the income statement	**78**	76	63
At 31 December	**42,539**	38,350	35,020

(a) The capital redemption reserve was set up to comply with section 733 of the UK *Companies Act 2006* (previously section 170 of the UK *Companies Act 1985*) when shares of a company are redeemed or purchased wholly out of the company's profits. Balances reflect the amount by which the company's issued share capital is diminished in accordance with this section.

(b) Other reserves includes US$11,936 million which represents the difference between the nominal value and issue price of the shares issued arising from Rio Tinto plc's rights issue completed in July 2009. No share premium was recorded in the Rio Tinto plc financial statements through the operation of the merger relief provisions of the UK *Companies Act 1985*. Other reserves also include the cumulative amount recognised under IFRS 2 in respect of awards granted but not exercised to acquire shares in Rio Tinto Limited, less, where applicable, the cost of shares purchased to satisfy share awards exercised. The cumulative amount recognised under IFRS 2 in respect of awards granted but not exercised to acquire shares in Rio Tinto plc is recorded in retained earnings.

(c) Exchange differences arising on the translation of the Group's net investment in foreign controlled companies are taken to the foreign currency translation reserve. The cumulative differences relating to an investment are transferred to the income statement when the investment is disposed of.

(d) In 2024, currency translation reclassified on disposal primarily relates to the acquisition of the remaining 20.64% interest in NZAS. The transaction has been accounted for as a business combination achieved in stages, with our previous 79.36% interest in the NZAS joint operation deemed to have been disposed of and, accordingly, the currency translation has been reclassified to the income statement. In 2022, the sale of our Roughrider undeveloped project led to the recycling of currency translation reserve losses of US$105 million relating to the entity that owns the project. Refer to note 5 for details.

(e) Retained earnings and movements in reserves of subsidiaries include those arising from the Group's share of joint operations.

(f) In 2024, there were US$6 million of remeasurement losses relating to equity accounted units (2023: gains of US$3 million, 2022: gains of US$5 million).

(g) In 2024, this relates to the additional interest acquired in ERA (refer to note 30 for further details) as well as the settlement of deferred consideration payable to Turquoise Hill Resources Ltd dissenting shareholders (refer to note 5 for further details). In 2022, the amount relates to forgiveness by Turquoise Hill Resources Ltd of the accrued interest and funding balances from Erdenes Oyu Tolgoi and the purchase of the non-controlling interest of Turquoise Hill Resources Ltd.

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Other notes

36 Other provisions

Recognition and measurement

Other provisions are recognised when it is more likely than not that we will become obliged, legally or constructively, to future expenditure because of a past event. The provision reflects the best estimate of the expenditure needed to settle the obligation which existed at the balance sheet date. Where there is sufficient objective evidence of reasonably expected future events (such as changes in technology and new legislation) we reflect this in the amounts recognised. Other provisions includes provision for legal claims, onerous contracts and claims for past royalties. In the prior year, this also included the residual consideration payable to Turquoise Hill Resources Ltd shareholders that dissented to the 2022 transaction, which has now been paid in 2024 (refer further detail below).

	2024 US$m	2023 US$m
Opening balance at 1 January	**1,371**	1,298
Adjustment on currency translation	**(69)**	14
Adjustments to mining properties/right-of-use assets:		
– increases to existing and new provisions	**17**	–
– change in discount rate	**(2)**	–
Charged/(credited) to profit:		
– increases to existing and new provisions	**184**	214
– change in discount rate	**(7)**	(18)
– unused amounts reversed	**(104)**	(31)
– exchange gain on provisions	**–**	(1)
– amortisation of discount	**14**	22
Utilised in year	**(94)**	(104)
Transfers and other movements[(a)]	**(203)**	(23)
Closing balance at 31 December	**1,107**	1,371
Balance sheet analysis:		
Current	**792**	637
Non-current	**315**	734
Total	**1,107**	1,371

(a) In 2024, transfers and other movements includes settlement of deferred consideration payable to Turquoise Hill Resources Ltd dissenting shareholders.

Panguna mine, Bougainville

During the year we utilised a provision of US$10 million to fund a legacy impact assessment study in relation to a Panguna mine of Bougainville Copper Limited (BCL), our former subsidiary. The Panguna Mine Legacy Impact Assessment, an independent report published in December 2024, assessed the environmental impacts and directly connected social and human rights impacts caused by the Panguna mine since BCL ceased operations in 1989.

In November 2024, Rio Tinto, BCL and the Autonomous Bougainville Government signed a Memorandum of Understanding (MoU) to discuss ways forward. The MoU parties plan to address the findings of the independent report and develop a remedy mechanism consistent with the UN Guiding Principles on Business and Human Rights. We have acknowledged a class action lawsuit filed in July 2024 in Papua New Guinea's National Court of Justice, naming both Rio Tinto and our former subsidiary, BCL, as defendants. We submitted our defence against the legal claim and will strongly defend our position in this case.

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37 Contingencies and commitments

Recognition and measurement

Contingent liabilities, indemnities and other performance guarantees represent the potential outflow of funds from the Group for the satisfaction of obligations, including those under contractual arrangements (eg undertakings related to supplier agreements) not provided for on the balance sheet, where the likelihood of the contingent liabilities, guarantees or indemnities being called is assessed as possible rather than probable or remote.

Other relevant judgements – contingencies

Disclosure is made for material contingent liabilities unless the possibility of any loss arising is considered remote based on our judgement and legal advice. These are quantified unless, in our judgement, the amount cannot be reliably estimated. The unit of account for claims is the matter taken as a whole and therefore when a provision has been recorded for the best estimate of the cost to settle the obligation there is no further contingent liability component. This means that when a provision is recognised for the best estimate of the expenditure required to settle the present obligation from a single past event, a further contingent liability is not reported for the maximum potential exposure in excess of that already provided.

We have not established provisions for certain additional legal claims in cases where we have assessed that a payment is either not probable or cannot be reliably estimated. A number of our companies are, and will likely continue to be, subject to various legal proceedings and investigations that arise from time to time. As a result, the Group may become subject to substantial liabilities that could affect our business, financial position and reputation. Litigation is inherently unpredictable and large judgements may at times occur. The Group may in the future incur judgements or enter into settlements of claims that could lead to material cash outflows. We do not believe that any of these proceedings will have a materially adverse effect on our financial position.

Contingent liabilities – subsidiaries, joint operations, joint ventures and associates

	2024 US$m	2023 US$m
Contingent liabilities, indemnities and other performance guarantees[a]	**192**	435

(a) There were no material contingent liabilities arising in relation to the Group's joint ventures and associates.

Contingent liabilities – not quantifiable

The current status of contingent liabilities where it is not practicable to provide a reliable estimate of possible financial exposure is:

Litigation disputes

Litigation matter	Latest update
2011 Contractual payments in Guinea	In 2023, we resolved a previously self-disclosed investigation by the SEC into certain contractual payments totalling US$10.5 million made to a consultant who had provided advisory services in 2011, relating to the Simandou project in the Republic of Guinea. In August 2023, the UK Serious Fraud Office closed its case and announced that the Australian Federal Police maintains a live investigation into the matter. Rio Tinto continues to co-operate fully with relevant authorities. At 31 December 2024, the outcome of this investigation remains uncertain, but it could ultimately expose the Group to material financial cost. No provision has been recognised for the investigation. We believe this case is unwarranted and will defend the allegation vigorously.

Other contingent liabilities

We continue to modernise agreements with Traditional Owner groups in response to the Juukan Gorge incident. We have created provisions, within "Other provisions", based on our best estimate of historical claims. However, the process is incomplete and it is possible that further claims could arise relating to past events.

Close-down, restoration and environmental provisions are not recognised for those operations that have no known restrictions on their lives as the date of closure cannot be reliably estimated. This applies primarily to our Canadian aluminium smelters, which are not dependent upon a specific orebody and have access to indefinite-lived power from owned hydropower stations with water rights permitted by local governments. In these instances, a closure obligation may exist at the reporting date. However, due to the indefinite nature of asset lives it is not possible to arrive at a sufficiently reliable estimate for the purposes of recognising a provision. Close-down, restoration and environmental provisions are recognised at these operations for separately identifiable closure activities which can be reasonably estimated, such as the demolition and removal of fixed structures after a predetermined period. Any contingent liability for these assets will crystallise into a closure provision if and when a decision is taken to cease operations.

Contingent assets

The Group has, from time to time, various insurance claims outstanding with reinsurers. Recognition of any assets arising takes place once the insurance company has agreed to refund the claims and the amount is quantifiable. This is usually in the same period as payment is received.

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37 Contingencies and commitments *continued*

Capital commitments

Our capital commitments include:

- open purchase orders for managed operations and non-managed tolling entities
- expenditure on major projects already authorised by our Investment Committee for non-managed operations.

On a legally enforceable basis, capital commitments excluding the Group's share of joint ventures would be approximately US$1,872 million (2023: US$1,400 million) as many of the contracts relating to the Group's projects have various cancellation clauses.

The capital commitments for Simandou are shown on a 100% basis for the SimFer mine and the SimFer scope of infrastructure as managed operations. The SimFer investment in WCS Rail and Port is classified as a joint venture capital commitment and is shown inclusive of the funding due from non-controlling interests.

	2024 US$m	2023 US$m
Capital commitments excluding the Group's share of joint venture capital commitments		
Within 1 year	**4,559**	3,662
Between 1 and 3 years	**602**	597
Between 3 and 5 years	**313**	27
After 5 years	**82**	99
Total	**5,556**	4,385
Group's share of joint venture capital commitments		
Within 1 year	**1,280**	128
Between 1 and 3 years	**271**	99
Total	**1,551**	227

Impact of climate change on our business - decarbonisation capital commitments

Capital commitments do not include the estimated incremental capital expenditure relating to decarbonisation projects of US$5 billion to US$6 billion between 2022 and 2030 unless otherwise contractually committed. Included in capital commitments at 31 December 2024 are contractually committed decarbonisation capital commitments of US$114 million (2023: US$123 million), inclusive of the Amrun power purchase agreement, which is a treated as a lease, which has not yet commenced (disclosed in note 21).

Other commitments

The Group has also made other commitments to incur a minimum amount of expenditure on community development initiatives as part of its agreements with various stakeholders. As of 31 December 2024, a total of US$154 million (2023: US$173 million) of such expenditure is estimated to be incurred over the next 25 years, out of which US$27 million (2023: US$10 million) is expected to be incurred within the next year.

Unrecognised commitments to contribute funding or resources to joint ventures

Along with the other joint venture partners, we have commitments to provide emergency funding (such as funding required to preserve the life of assets of the company or to comply with applicable laws) if required by Sohar Aluminium Company L.L.C., subject to approved thresholds.

At 31 December 2024, Minera Escondida Ltda held an undrawn shareholder line of credit, of which Rio Tinto's share was US$225 million (2023: US$225 million). The current facility was extended during the year and will now mature in September 2026.

Purchase obligations

Purchase obligations are enforceable and legally binding agreements to buy goods or services. They specify all significant terms, including fixed or minimum quantities to be purchased or consumed; fixed, minimum or variable price provisions; and the approximate timing of the transactions.

Purchase obligations for goods mainly relate to purchases of raw materials and consumables, and purchase obligations for services mainly relate to charges for the use of infrastructure, commitments to purchase power and freight contracts. These goods and services are expected to be used in the business. To the extent that this changes, a provision for onerous obligations may be made.

Purchases from joint arrangements or associates are included if the quantity to be purchased is in excess of our ownership interest in the entity. However, purchase obligations exclude contracted purchases of bauxite, alumina and aluminium from joint arrangements and associates and contracted purchases of alumina from third parties. This is because these purchases are made for commercial reasons and the Group is, overall, a net seller of these commodities.

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37 Contingencies and commitments *continued*

The aggregate amount of future payment commitments under purchase obligations outstanding at 31 December is shown in the table below.

	2024 US$m	2023 US$m
Within 1 year	**3,160**	2,927
Between 1 and 2 years	**1,461**	1,663
Between 2 and 3 years	**1,364**	1,496
Between 3 and 4 years	**851**	1,147
Between 4 and 5 years	**614**	948
After 5 years	**4,905**	6,365
Total	**12,355**	14,546

Guarantees by parent companies

Rio Tinto plc and Rio Tinto Limited have, jointly and severally, fully and unconditionally guaranteed the following securities issued by the following 100% owned finance subsidiaries: US$6.2 billion (2023: US$6.2 billion) Rio Tinto Finance (USA) Limited and Rio Tinto Finance (USA) plc bonds with maturity dates up to 2053; and US$0.6 billion (2023: US$1.1 billion) on the European Debt Issuance Programme. In addition, Rio Tinto Finance plc and Rio Tinto Finance Limited have entered into undrawn facility arrangements for an aggregate amount of US$7.5 billion (2023: US$7.5 billion). The facilities are guaranteed by Rio Tinto plc and Rio Tinto Limited.

Rio Tinto plc has provided a guarantee, known as the completion support undertaking (CSU), in favour of the Oyu Tolgoi LLC project finance lenders. In 2023, a wholly owned subsidiary of Rio Tinto plc became a lender under the project finance facility ranking pari passu with the external lenders.

At 31 December 2024, a total of US$5.5 billion (2023: US$4.7 billion) of project finance debt was outstanding under this facility of which US$3.9 billion (2023: US$3.9 billion) is owed to external third party lenders. Rio Tinto plc, through its subsidiaries, owns 66% of Oyu Tolgoi LLC, with the remaining share owned by Erdenes Oyu Tolgoi LLC (34%), which is controlled by the Government of Mongolia. The project finance was raised for development of the underground mine and the CSU will terminate on the completion of the underground mine according to a set of completion tests set out in the project finance facility. The CSU contains a carve-out for certain political risk events.

In November 2024, the Group entered into a US$7 billion bridge facility agreement to support the proposed acquisition of Arcadium Lithium (refer to note 5). Rio Tinto Plc and Rio Tinto Limited have jointly guaranteed the facility, which remains undrawn as at 31 December 2024.

38 Auditors' remuneration

Group auditors' remuneration[a]

	2024 US$m	2023 US$m	2022 US$m
Audit of the Group	**20.7**	19.1	17.3
Audit of subsidiaries	**7.4**	7.5	8.4
Total audit	**28.1**	26.6	25.7
Audit-related assurance service	**1.7**	1.1	1.0
Other assurance services[b]	**3.5**	3.0	2.3
Total assurance services	**5.2**	4.1	3.3
Tax compliance	**–**	–	–
Other non-audit services not covered above	**0.2**	0.1	0.3
Total non-audit services	**5.4**	4.2	3.6
Total Group auditors' remuneration	**33.5**	30.8	29.3
Group auditors' remuneration as required to be categorised under SEC regulations			
Audit fees	**30.0**	27.7	27.0
Audit-related fees	**3.3**	3.0	2.0
Tax fees	**–**	–	–
All other fees	**0.2**	0.1	0.3
Total Group auditors' remuneration	**33.5**	30.8	29.3
Audit fees payable to other accounting firms			
Audit of the financial statements of the Group's subsidiaries	**0.3**	0.3	0.2
Fees in respect of pension scheme audits	**0.1**	0.1	0.1
Total audit fees payable to other accounting firms	**0.4**	0.4	0.3

(a) The remuneration payable to KPMG, the Group auditors, is approved by the Audit & Risk Committee. The Committee sets the policy for the award of non-audit work to the auditors and approves the nature and extent of such work, and the amount of the related fees, to ensure that independence is maintained. The fees disclosed above consolidate all payments, including overruns, made to member firms of KPMG by the companies and their subsidiaries, along with fees in respect of joint operations paid for by the Group. Non-audit services arise largely from assurance and regulation related work.

(b) Other assurance services relates to the review of non-statutory financial information including sustainability reporting.

39 Events after the balance sheet date

There were no significant events after the balance sheet date requiring disclosure.

40 New standards issued but not yet effective

We have not early adopted any new accounting standards or amendments that have been issued but are not yet effective. Except for the Amendments to IAS 21 "The Effects Of Changes In Foreign Exchange Rates" (IAS 21), referred to below, they are not available for early adoption because they have not yet been endorsed by the UK Endorsement Board.

IFRS 18 Presentation and Disclosure in Financial Statements (mandatory in 2027) will replace IAS 1. The new standard requires that companies classify all income and expenses into 5 categories in the statement of profit or loss, namely the operating, investing, financing, discontinued operations and income tax categories. Management defined performance measures are disclosed in a single note and enhanced guidance is provided on how to group information in the financial statements. In addition, all entities are required to use the operating profit subtotal as the starting point for the statement of cash flows. We are in process of assessing the impact of IFRS 18 and expect that changes will be required to the presentation and disclosures in our financial statements.

Amendments to IFRS 9 Financial Instruments and IFRS 7 Financial Instruments: Disclosures (mandatory in 2026) will help companies better report the financial effects of nature-dependent electricity contracts, which are often structured as power purchase agreements (PPAs). The amendments include: clarifying the application of the 'own-use' requirements, permitting hedge accounting if these contracts are used as hedging instruments; and adding new disclosure requirements to enable investors to understand the effect of these contracts on a company's financial performance and cash flows. We are in process of assessing the impacts from these amendments.

The assessment is ongoing in relation to the amendments listed below, but no material impact has been identified to date:

- Lack of exchangeability (Amendments to IAS 21 , mandatory in 2025)
- Annual Improvements to IFRS Accounting Standards (Amendments to IAS 7 "Statement of Cash Flows" and IFRS 10 "Consolidated Financial Statements" mandatory in 2026)
- Amendments to the Classification and Measurement of Financial Instruments (Amendments to IFRS 9 "Financial Instruments" and IFRS 7 "Financial Instruments: Disclosures", mandatory in 2026)
- IFRS 19 "Subsidiaries without Public Accountability: Disclosures" (mandatory in 2027)

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41 Rio Tinto Limited parent company disclosures

The following disclosures are prepared under Australian Accounting Standards (AAS) and in accordance with Australian Corporations Act 2001 (see page 244). In relation to Rio Tinto Limited there are no significant measurement differences between AAS and IFRS as defined on page 154. Rio Tinto Limited has an Australian dollar functional currency and this balance sheet and related disclosures are also presented in Australian dollars.

As at 31 December	2024 A$m	2023 A$m
Assets		
Current assets	**17,817**	13,451
Non-current assets	**2,723**	2,659
Total assets	**20,540**	16,110
Liabilities		
Current liabilities	**(2,095)**	(1,831)
Non-current liabilities	**—**	(1)
Total liabilities	**(2,095)**	(1,832)
Net assets	**18,445**	14,278
Shareholders' equity		
Share capital	**3,504**	3,504
Other reserves	**403**	307
Retained earnings	**14,538**	10,467
Total equity	**18,445**	14,278
Profit of the parent company	**11,704**	11,344
Total comprehensive income of the parent company	**11,704**	11,344

Rio Tinto Limited guarantees

Rio Tinto Limited provides a number of guarantees in respect of Group companies.

Rio Tinto plc and Rio Tinto Limited have jointly guaranteed the Group's external listed debt under the US Shelf Programme, European Debt Issuance Programme and Commercial Paper Programme, which totalled A$10.9 billion at 31 December 2024 (2023: A$10.6 billion). These entities also jointly guarantee the Group's undrawn credit facility, which was A$12.1 billion at 31 December 2024 (2023: A$10.9 billion).

In November 2024, the Group entered into a A$11.3 billion bridge facility agreement to support the proposed acquisition of Arcadium Lithium (refer to note 5). Rio Tinto Plc and Rio Tinto Limited have jointly guaranteed the facility, which remains undrawn as at 31 December 2024.

Other external debt guaranteed by Rio Tinto Limited totalling A$0.1 billion in 2023 was repaid during the year ended 31 December 2024.

In addition, Rio Tinto Limited has provided a guarantee of all third-party obligations, including contingent obligations, of Rio Tinto Finance Limited, a wholly-owned subsidiary.

Pursuant to the DLC Merger, both Rio Tinto plc and Rio Tinto Limited issued deed poll guarantees by which each company guaranteed contractual obligations incurred by the other or guaranteed by the other.

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Consolidated entity disclosure statement

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Basis of preparation

This consolidated entity disclosure statement (CEDS) has been prepared as at 31 December 2024 in accordance with:

- subsection 295(3A) of the Australian *Corporations Act 2001* (Corporations Act), and includes information for each entity that was part of the Rio Tinto Group (being subsidiaries and other consolidated entities).
- section 409 of the UK *Companies Act 2006* (Companies Act), and includes information for the full list of related undertakings of the Rio Tinto Group. Apart from "subsidiary undertakings" (subsidiaries), related undertakings also includes "associated undertakings", and "significant holdings in undertakings other than subsidiary companies", which do not fall within the scope of subsection 295(3A) of the Corporations Act. Therefore, disclosures required under the Corporations Act are only made for entities which are considered a subsidiary of – or are otherwise consolidated in – the Rio Tinto Group.
- The definition of a subsidiary undertaking in accordance with the Companies Act is different from the definition under IFRS. As a result, the related undertakings included within this CEDS may not be the same as the related undertakings consolidated in the consolidated financial statements. Unless otherwise disclosed, all undertakings with an effective equity holding of greater than 50% are considered subsidiary undertakings for the purpose of this note.

For all entities within this CEDS, place (country) of incorporation, classes of shares, the registered office address, the percentage of the share class held by Group entities, and the effective percentage of equity owned by the Group calculated by reference to voting rights, are disclosed. The share class held by the Group are ordinary (voting) shares (also referred to as common stock in certain countries), unless identified with one of the following annotations against the entity name:

(1) ordinary/common; (2) preference; (3) redeemable preference; (4) unit; (5) redeemable preference B; (6) registered; (7) special voting; (8) DLC dividend; (9) founder's; (10) non-cumulative redeemable preference; (11) non-redeemable preference; (12) deferred; (13) Class A; (14) Class B; (15) Class/Series C; (16) Class/Series D; (17) Class/Series E; (18) Series F; (19) Series G; (20) Class H; (21) Class J; (22) Class S; (23) Class Z; (24) E1 Class; (25) E2 Class; (26) F1 Class; (27) F2 Class; (28) G1 Class; (29) Stock Unit A; (30) Stock Unit B; (31) Stock Unit C; (32) C1 Class; (33) C2 Class.

Additionally, for subsidiaries and other consolidated entities, the entity's tax residency; whether the entity was a body corporate, partnership or trust; and whether the entity was a partner in a partnership, a trustee of a trust or a participant in a joint venture within the consolidated Group, are also disclosed. Unless otherwise disclosed, each entity in this CEDS is a body corporate.

Unless otherwise disclosed, the tax residency of subsidiaries and other consolidated entities is the same as the country of incorporation. The determination of tax residency involves judgement as the determination of tax residency is highly fact dependent and requires interpretation of relevant legislation, guidance and judicial precedent. Different interpretations could be adopted which could give rise to a different conclusion on residency. In determining tax residency, the Group has applied current legislation, judicial precedent and other available guidance, including where relevant, the Australian Commissioner of Taxation's public guidance in Tax Ruling TR 2018/5.

Refer to the "Basis of consolidation" on page 154 for further information on accounting policies, basis of consolidation, principal subsidiaries, joint operations, joint ventures and associates.

An explanation of the dual listed companies structure of Rio Tinto plc and Rio Tinto Limited can be found on pages 325 to 326.
For completeness, the effective ownership by the Group relates to effective holdings by both entities either together or individually.

Entities are listed by place (country) of incorporation and under their registered office address.

Parent entities

Australia

Level 43, 120 Collins Street, Melbourne VIC 3000

Rio Tinto Limited

United Kingdom

6 St James's Square, London, SW1Y 4AD

Rio Tinto plc

Wholly-owned subsidiaries

Angola

Edificio Kilamba, 20th Floor, Avenida 4 de Fevereiro, Marginal de Luanda, Luanda

Rio Tinto Angola (SU), LDA.
Rio Tinto Exploration Angola (SU), Limitada

Aruba

Caya Dr. J.E.M. (Loy) Arends, 18-A, Oranjestad

THR Aruba Holdings LLC A.V.V.[(d)]

Australia

155 Charlotte Street, Brisbane QLD 4000

Alcan Gove Development Pty Limited
Alcan Holdings Australia Pty Limited
Alcan Northern Territory Alumina Pty Limited
Alcan Primary Metal Australia Pty Ltd[(bb)]
Alcan South Pacific Pty Ltd
Australian Coal Holdings Pty. Limited[(a)]
Cathjoh Holdings Pty Limited[(bb)]
Gladstone Infrastructure Pty Ltd
Gove Aluminium Ltd
GPS Energy Pty Limited[(w)]
GPS Nominee Pty Limited
GPS Power Pty. Limited[(w)]
Hunter Valley Resources Pty Ltd
Johcath Holdings Pty Limited
Kembla Coal & Coke Pty. Limited
Mitchell Plateau Bauxite Co. Pty. Limited[(y)]
Pacific Aluminium Pty. Limited[(a)]
Pechiney Consolidated Australia Pty Limited
Queensland Coal Pty. Limited
Rio Tinto Alcan Technology Pty Ltd
Rio Tinto Aluminium (Bell Bay) Limited
Rio Tinto Aluminium (Holdings) Limited
Rio Tinto Aluminium Bell Bay Sales Pty Limited
Rio Tinto Aluminium Limited
Rio Tinto Aluminium Services Pty Limited
Rio Tinto Coal (Clermont) Pty Ltd

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Australia (continued)

Rio Tinto Coal Australia Pty Limited
Rio Tinto Coal NSW Holdings Limited[a]
RTA AAL Australia Limited
RTA Boyne Limited
RTA Gove Pty Limited
RTA Holdco Australia 1 Pty Ltd
RTA Holdco Australia 3 Pty Ltd
RTA Holdco Australia 5 Pty Ltd
RTA Holdco Australia 6 Pty Ltd
RTA Pacific Pty Limited
RTA Sales Pty Ltd
RTA Smelter Development Pty Limited
RTA Weipa Pty Ltd
RTA Yarwun Pty Ltd
Swiss Aluminium Australia Limited
Trans Territory Pipeline Pty Limited
Winchester South Development Company Proprietary Limited

19 Westal Street, Nhulunbuy NT 0880

Nhulunbuy Corporation Limited[c]

37 Belmont Avenue, Belmont WA 6104

Peko Exploration Pty Ltd.
Rio Tinto Exploration Pty Limited[a]

Level 18, Central Park, 152–158 St Georges Terrace, Perth WA 6000

AML Properties Pty Ltd
Argyle Diamond Mines Pty Limited
Argyle Diamonds Pty Limited[a]
Ashton Mining Pty Ltd
Ashton Nominees Pty Limited
Capricorn Diamonds Investments Pty Limited
Channar Management Services Pty Limited
Channar Mining Pty Ltd
Hamersley Exploration Pty Limited
Hamersley HMS Pty Ltd
Hamersley Holdings Limited[a]
Hamersley Iron – Yandi Pty Limited[a]
Hamersley Iron Pty. Limited
Hamersley Resources Limited[z]
Hamersley WA Pty Ltd[x]
Hlsmelt Corporation Pty Limited[a]
Juna Station Pty Ltd
Lithium Extraction Technologies (Australia) Pty Ltd
Mount Bruce Mining Pty Limited
NBH Pty Ltd
Norgold Pty Limited
North Gold (W.A.) Pty Ltd
North IOC Holdings Pty Ltd
North Limited
North Mining Limited[aa]
Peko-Wallsend Pty Ltd
Pilbara Iron Company (Services) Pty Ltd
Pilbara Iron Pty Ltd
Ranges Management Company Pty Ltd
Ranges Mining Pty Ltd[u]
Rhodes Ridge Account Manager Pty Ltd
Rhodes Ridge Management Services Pty Ltd
Rincon Mining Pty Limited
Rio Tinto EN21 Australia Pty Ltd[a]
Rio Tinto EN21 Op Co Pty Ltd
Rio Tinto Investments One Pty Limited
Rio Tinto Investments Two Pty Limited
Rio Tinto Iron Ore (Pilbara) Sales Pty Ltd
Rio Tinto PACE Australia Pty Limited[a]
Rio Tinto Winu Pty Limited[a]
Robe River Limited
Rocklea Station Pty Ltd

Level 43, 120 Collins Street, Melbourne VIC 3000

Australian Mining & Smelting Pty Ltd[a]
Canning Resources Pty Limited[a]
CRA Investments Pty. Limited[a]
CRA Pty Ltd[a]
Fundsprops Pty. Limited[a]
Kalimantan Gold Pty Limited
Kelian Pty. Limited[a]
Kutaibar Holdings Pty Ltd[a]
MineSmith Australasia Pty Ltd
North Insurances Pty. Ltd.
Project Generation Group Pty Ltd[a]
Rio Tinto (Commercial Paper) Limited[a]
Rio Tinto Advisory Services Pty Limited
Rio Tinto Asia Pty. Limited[a]
Rio Tinto Biofuels Pty Ltd
Rio Tinto Closure Pty Limited[a]
Rio Tinto Energy and Climate Investments Australia Pty Ltd[a]
Rio Tinto Energy Services Pty Ltd
Rio Tinto Finance (Rhodes Ridge) Pty Ltd
Rio Tinto Finance (USA) Limited[a]
Rio Tinto Finance Limited[a]
Rio Tinto Services Limited[a]
Rio Tinto Shared Services Pty Limited
Rio Tinto Shipping Pty. Limited.[a]
Rio Tinto Staff Fund (Retired) Pty Limited[a]
RTLDS Aus Pty Ltd[a]
RTPDS Aus Pty Ltd
Southern Copper Pty. Limited
Technological Resources Pty. Limited[a]
The Zinc Corporation Pty Ltd
Tinto Holdings Australia Pty. Limited
Wimmera Industrial Minerals Pty. Limited[a]

Belgium

Hoveniersstraat 53, 2018, Antwerp

Rio Tinto Diamonds NV

Bermuda

Clarendon House, 2 Church Street, Hamilton, HM 11

North IOC (Bermuda) Holdings Limited
North IOC (Bermuda) Limited
QIT Madagascar Minerals Ltd[f]
Rio Tinto Escondida Limited[f]

Brazil

Avenida das Nações Unidas, 12.551 – 19th floor – Suite 1.911, São Paulo, SP, 04578-00

Alcan Composites Brasil Ltda

Avenida Engenheiro Emiliano Macieira, 1 – km 18, Pedrinhas, Sao Luis, MA, 65095-603

Rio Tinto do Brasil Ltda.

Avenida Benedito Lessa 240, Bairro Conceição, Município de Ipaiú, Estado de Bahia, CEP, 45.570-000

Rio de Contas Desenvolvimentos Minerais Ltda

SIG Quadra 04, Lote 175, Torre A, Salas 106 a 109, Edificio Capital Financial Center, Brasilia, CEP 70610-440

Rio Tinto Desenvolvimentos Minerais Ltda.

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Brazil (continued)

SIG Quadra 04, Lote 75, Torre A Sala, 109 Parte B, Edificio Capital Financial Center, Brasilia, CEP, 70610-440

Rio Tinto Mineracao do Brasil Ltda

SIG, QUADRA 04, Lote 75, Sala 109 Parte C, Edificio Capital Financial Center, Brasilia DF, CEP, 71.610-440

Empresa de Mineracao Finesa Ltda.

SIG, QUADRA 04, Lote 75, Sala 109 Parte D, Edificio Capital Financial Center, Brasilia DF, CEP, 71.610-440

Mineracao Tabuleiro Ltda

SIG, QUADRA 04, Lote 75, Sala 109 Parte E, Edificio Capital Financial Center, Brasilia DF, CEP, 71.610-440

Rio Santa Rita Empreenimentos e-Particiacoes Ltda

Canada

1212-1175 Douglas Street, Victoria BC V8W 2E1

Rio Tinto Exploration Canada Inc.

1625 Route Marie-Victorin, Sorel-Tracy QC J3R 1M6

Rio Tinto Fer et Titane inc.

Rio Tinto Iron and Titanium Canada Inc. / Rio Tinto Fer et Titane Canada Inc.

1800-510 West Georgia Street, Vancouver BC V6B 0M3

1109723 B.C. Ltd.[d]

200-204 Lambert Street, Whitehorse YT Y1A 1Z4

THR Mines Services Co. Ltd.

Turquoise Hill Resources Ltd.

300-5201 50th Avenue, Yellowknife NT X1A 2P8

Diavik Diamond Mines (2012) Inc.[cc]

300-815 West Hastings Street, Vancouver BC V6C 1B4

Rio Tinto Potash Management Inc. / Rio Tinto Potasse Management Inc.[t]

400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3

10676276 Canada Inc.

16140467 Canada Inc.

9519-2845 Quebec inc.[s]

Alcan Management Services Canada Limited / Societe de Services de Gestion Alcan Canada Limitee

Alcan Realty Limited / Societe Immobiliere Alcan Limitee

Element North 21 GP Inc. / Element Nord 21 GP Inc.[r]

Element North 21 Limited Partnership / Elément Nord 21 Société en Commandite[q]

Rio Tinto Alcan Fund Inc.

Rio Tinto Alcan Inc.[s]

Rio Tinto Alcan International Ltd. / Rio Tinto Alcan International Ltee

Rio Tinto Canada Inc[r]

Rio Tinto Canada Management Inc./ Rio Tinto Gestion Canada Inc.

Rio Tinto Energy and Climate Investments Canada Inc./Rio Tinto Investissements Énergie et Climat Canada Inc.

Rio Tinto PACE Canada Inc. / Gestion Rio Tinto PACE Canada Inc.

The Roberval and Saguenay Railway Company/ La Compagnie du Chemin de Fer Roberval Saguenay

Usine de démonstration de la Technologie ELYSIS S.E.C / ELYSIS Technology Demonstration Plant L.P.[q]

5300-66 Wellington Street West, Toronto ON M5K 1E6

1043802 Ontario Ltd

Rio Tinto Saskatchewan Potash Holdings General Partner Inc.[t]

Rio Tinto Saskatchewan Potash Holdings Limited Partnership[q]

745 Thurlow Street, Suite 2400, Vancouver BC V6E 0C5

1508137 B.C. Ltd.

Chile

Av. Presidente Riesco 5435, Of. 1302, Las Condes, Santiago

Rio Tinto Chile SpA

China

41/F Wheelock Square, No. 1717 West Nanjing Road, Jing' an District, Shanghai, 200040

Rio Tinto Trading (Shanghai) Co., Ltd.

418 Nanshi Street, Suzhou Industrial Park, Suzhou, 215021

Rio Tinto Iron & Titanium (Suzhou) Co., Ltd

Room 328, 3rd Floor, Unit 2, 231 Shibocun Road, Shanghai, Pilot Free Trade Zone, 200125

Rio Tinto Mining Commercial (Shanghai) Co., Ltd.

Units 15-16, 18/F, China World Office Building 2, No. 1 Jianguomenwai Dajie, Chaoyang District, Beijing

Rio Tinto Minerals Exploration (Beijing) Co., Ltd

Finland

PL 18, Helsinki, 00271

Rio Tinto Exploration Finland OY[l]

France

60 Avenue Charles de Gaulle, 92200, Neuilly-Sur-Seine

Pechiney Bâtiment

Rio Tinto France S.A.S.

RTA HOLDCO FRANCE 1 S.A.S.

RTA HOLDCO FRANCE 2 S.A.S.

725 rue Aristide Bergès, 38340, Voreppe

AP Service

Rio Tinto Aluminium Pechiney

89 Route de Bourbourg, 59210, Coudekerque-Branche

Borax Francais

Germany

Alfred-Herrhausen-Allee 3-5, 65760, Eschborn

Rio Tinto Commercial GmbH

Rio Tinto Iron & Titanium GmbH[c]

Rio Tinto Iron & Titanium Holdings GmbH[c]

Alusingenplatz 1, D-78221, Singen

Alcan Betriebs- und Verwaltungsgesellschaft GmbH

Alcan Lebensmittelverpackungen GmbH

Alcan Packaging Mühltal Gmbh & Co. KG

Scheuch Unterstuetzungskasse GmbH

Guinea

Immeuble Camayenne Corniche Nord, Commune de Dixinn, BP 848, Conakry

Rio Tinto Guinée S.A.

Manquépas - Commune de Kaloum

Fondation Rio Tinto[c]

Hong Kong

6/F, Luk Kwok Centre, 72 Gloucester Road, Wan Chai

Alcan Asia Limited

Rio Tinto Asia Ltd[h]

Iceland

P.O. Box 244, IS-222, Hafnarfjördur

Rio Tinto Iceland Ltd.

India

21st Floor, DLF Building No. 5, Tower A, DLF Cyber City Phase III, Gurgaon, Haryana, 122002

Rio Tinto Exploration India Private Limited[d]

Ground, 1st & 2nd Floor, DLF Building No. 7, Tower B, DLF Cyber City, Phase III, Gurgaon, Haryana, 122002

Rio Tinto India Private Limited

Japan

Kojimachi Diamond Building, 8th Floor, 1 Kojimachi 4-chome, Chiyoda-ku, Tokyo, 102-0083

Rio Tinto Japan Limited

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Jersey

3rd Floor, IFC 5, Castle Street, St Helier, JE2 3BY

Rio Tinto Jersey Holdings 2010 Limited[f]

Kazakhstan

Dostyk 310/G, Almaty, 050020

Rio Tinto Exploration Kazakhstan LLP[p]

Korea, Republic of

2nd Floor, JS Tower, 6 Teheran-ro 79-gil, Gangnam-Gu, Seoul, 06158

Rio Tinto Korea Ltd

Lao People's Democratic Republic

5th Floor, AGL Building, 33 Lane Xang Avenue, Hatsady Village, Chanthaboury District, Vientiane Capital

Rio Tinto Minerals Development (Lao) Sole Co., Ltd.[i]

Malaysia

Suite 13.03, 13th Floor, Menara Tan & Tan, 207 Jalan Tun Razak, 50400, Kuala Lumpur

Borax Malaysia Sdn Bhd

Mexico

Florencia 57, Piso 3, Col. Juarez, Delegacion Cuauhtemoc, Mexico, D.F., 06600

Minera Kennecott, S.A. de C.V.[d][g]

Mongolia

Level 17, Shangri-La Center, Olympic Street 19A, Sukhbaatar District, Ulaanbaatar, 14214

Asia Gold Mongolia LLC[d]
Heruga Exploration LLC
Rio Tinto Holdings LLC
Rio Tinto Mongolia LLC

Mozambique

Av. da Marginal Nº 4985, 1º andar – Prédio ZEN, Maputo

Mutamba Mineral Sands S.A.

Netherlands

6 St James's Square, London, SW1Y 4AD, United Kingdom

Rio Tinto Eastern Investments B.V.[f]

Unit 02.01, Kingsforweg 151, 1043 GR, Amsterdam

Oyu Tolgoi Netherlands BV

Welplaatweg 104, 3197 KS, Botlek, Rotterdam

Alcan Holdings Europe B.V.
Alcan Holdings Nederland B.V.
Borax Rotterdam BV
Rio Tinto Diamonds Netherlands B.V.

New Zealand

1530 Tiwai Road, Tiwai Point, Invercargill, 9877

Electric Power Generation Limited[a]
New Zealand Aluminium Smelters Ltd
Pacific Aluminium (New Zealand) Limited

Level 2, 20 Customhouse Quay, Wellington, 6011

NZAS Retirement Fund Trustee Limited

Papua New Guinea

C/- Bdo, Section 15, Lot 15, Bernal Street, Port Moresby, National Capital District

Rio Tinto Holding PNG Limited

Section 15, Lot 15, Bernal Street, National Capital District, Port Moresby

Rio Tinto Exploration (PNG) Limited[a]

Peru

Av. La Paz 1049, Oficina 503, Miraflores, Lima, 18

Rio Tinto Mining and Exploration S.A.C.

Rwanda

9 (Plot 526), KG 668 St, Kimihurura, Gasabo, Kigali

Rio Tinto Exploration Rwanda Limited[m]

Serbia

Bulevar Milutina Milankovica 1i, 5th Floor, Novi Beograd, 11070

Jadar Free Zone Management Company DOO Beograd - Novi Beograd
Rio Sava Exploration DOO
Rio Tinto Exploration Dunav d.o.o. Beograd - Novi Beograd[n]

Singapore

10 Collyer Quay, #10-01 Ocean Financial Centre, 049315

The Kelian Community and Forest Protection Trust[o]
West Kutai Foundation Limited[c]

12 Marina Boulevard, #20-01 MBFC Tower 3, 018982

Rio Tinto Commercial Pte. Ltd.
Rio Tinto Global Employment Company Pte. Ltd.
Rio Tinto Marketing Pte. Ltd.
Rio Tinto Minerals Asia Pte Ltd
Rio Tinto Procurement (Singapore) Pte Ltd
Rio Tinto Pte Ltd[d]
Rio Tinto Shipping (Asia) Pte. Ltd.
Rio Tinto Singapore Holdings Pte Ltd

2 Shenton Way #26-01, SGX Centre I, 068804

Metals & Minerals Insurance Pte. Limited

2 Venture Drive, #24-01, Vision Exchange, 608526

Turquoise Hill Resources Singapore Pte Ltd.[d][k]

77 Robinson Road #13-00, 068896

AGM Holding Company Pte. Ltd.[d][k]
Cuprum Metals Pte. Ltd.
Sharp Investment Holding Company Pte. Ltd.
Singapore Metals Pte. Ltd.[d][j]

South Africa

1 Harries Road, Illovo, Sandton, 2196

Rio Tinto Management Services South Africa (Proprietary) Ltd

Ground Floor-Cypress Place North, Woodmead Business Park, 140/142 Western Service Road, Woodmead, 2191

Riversdale Connections (Proprietary) Ltd

The Farm RBM, Number 16317, KwaZulu-Natal, 3900

Richards Bay Mining Holdings (Proprietary) Limited
Richards Bay Titanium Holdings (Proprietary) Limited

Spain

CN 340, Km 954, 12520 NULES, Castellon

Borax España, S.A.

Switzerland

Badenerstrasse 549, CH-8048, Zürich

Metallwerke Refonda AG
Rio Tinto Switzerland AG (SA/Ltd.)

United Kingdom

6 St James's Square, London, SW1Y 4AD

Alcan Chemicals Limited
Alcan Farms Limited
Anglesey Aluminium Metal Limited
Borax Europe Limited
British Alcan Aluminium Limited
IOC Sales Limited
Lawson Mardon Flexible Limited
Lawson Mardon Smith Brothers Ltd.
Nuton Holdings Limited
Pechiney Aviatube Limited
Rio Tinto Australian Holdings Limited
Rio Tinto Bahia Holdings Limited
Rio Tinto BM Limited
Rio Tinto BM Subsidiary Limited

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United Kingdom (continued)

Rio Tinto Canada Finance Limited
Rio Tinto Copper Holdings Limited
Rio Tinto Copper Limited
Rio Tinto Energy Limited
Rio Tinto European Holdings Limited[b]
Rio Tinto Finance (USA) plc
Rio Tinto Finance plc
Rio Tinto Indonesian Holdings Limited
Rio Tinto International Holdings Limited[b]
Rio Tinto Iron & Titanium Limited
Rio Tinto Iron Ore Atlantic Limited
Rio Tinto Iron Ore Trading China Limited
Rio Tinto London Limited
Rio Tinto Medical Plan Trustees Limited
Rio Tinto Metals Limited
Rio Tinto Minerals Development Limited
Rio Tinto Minerals Investments Africa Limited
Rio Tinto Minerals Limited
Rio Tinto Mining and Exploration Limited
Rio Tinto Nominees Limited
Rio Tinto OT Management Limited
Rio Tinto Overseas Holdings Limited
Rio Tinto Secretariat Limited
Rio Tinto SimFer UK Limited
Rio Tinto South East Asia Limited
Rio Tinto Sulawesi Holdings Limited
Rio Tinto Technological Resources UK Limited
Rio Tinto Western Holdings Limited
RTA Holdco 1 Limited
RTA Holdco 4 Limited
RTA Holdco 8 Limited[e]
RTLDS UK Limited
TBAC Limited
Thos. W. Ward Limited
THR Copper Limited

International Centre for Sustainable Carbon, 27 Old Gloucester Street, London, England, WC1N 3AX

IEA Coal Research Limited

Pure Offices Cheltenham Office Park, Hatherley Lane, Cheltenham, GL51 6SH

IEA Environmental Projects Limited

United States

1108 E. South Union Avenue, Midvale UT 84047

Three Crowns Insurance Company

15 West South Temple, Suite 600, Salt Lake City UT 84101

Daybreak Property Holdings LLC[c]
DB Medical I LLC
DBVC1 LLC[c]
Kennecott Utah Copper LLC
Rio Tinto Minerals Inc.

211 East 7th Street, Suite 620, Austin TX 78701-3218

Alcan Corporation
Alcan Primary Products Corporation

251 Little Falls Drive, Wilmington DE 19808

Alcan Primary Products Company LLC
BetterIron - Texas Inc.
Daybreak Development LLC
Daybreak Secondary Water Distribution Company
Daybreak Water Holding LLC
Eastland Management Inc.
Flambeau Mining Company
High Purity Iron Inc.
Iron Company of Texas LLC
Kennecott Barneys Canyon Mining Company
Kennecott Exploration Company
Kennecott Holdings Corporation
Kennecott Land Company
Kennecott Land Investment Company LLC[c]
Kennecott Nevada Copper Company
Kennecott Ridgeway Mining Company
Kennecott Royalty Company
Kennecott Services Company
Kennecott Water Distribution LLC
Nuton LLC[v]
Pacific Coast Mines, Inc.
Pechiney Bécancour, Inc.
Pechiney Cast Plate, Inc.
Pechiney Holdings, Inc.
Pechiney Metals LLC[c]
Pechiney Plastic Packaging, Inc.
Pechiney Sales Corporation
Resolution Copper Company
Rio Tinto America Holdings Inc.
Rio Tinto America Inc.
Rio Tinto AuM Company
Rio Tinto Commercial Americas Inc.
Rio Tinto Energy America Inc.
Rio Tinto Energy Development LLC
Rio Tinto Energy Services Inc.
Rio Tinto Finance (USA) Inc.
Rio Tinto Hydrogen Energy LLC[c]
Rio Tinto Leaching Technologies LLC
Rio Tinto Mining and Exploration Inc.
Rio Tinto Services Inc.
Rio Tinto Technological Resources Inc.
Rio Tinto Technology Holdings Corporation
Skymont Corporation
Sohio Western Mining Company
The Pyrites Company, Inc.
U.S. Borax Inc.
Victoria Technology Inc.[a]
Waste Solutions and Recycling LLC

80 State Street, Albany NY 12207-2543

Alcan International Network U.S.A. Inc.
Henlopen Manufacturing Co., Inc.

8825 N. 23rd Avenue, Suite 100, Phoenix AZ 85021

Integrity Land and Cattle LLC
Swift Current Land & Cattle LLC[c]

British Virgin Islands

Road Town, Tortolla, VG1110

THR OYU TOLGOI LTD.[f]

Zambia

Block A, Suites GF05-GF08, 4 Bishops Office Park, Bishops Road, Kabulonga, Lusaka

Solwezi Metals Exploration Limited
Rio Tinto Exploration Zambia Limited

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Subsidiaries where the effective ownership is less than 100%

Name of entity and place (country) of incorporation	Registered address	Share class note	% of share class held by Group companies	Effective Group % ownership
Australia				
Dampier Salt Limited	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000	(1)	68.36	68.36
Energy Resources of Australia Ltd	TIO Building, Level 8, 24 Mitchell Street, Darwin, NT 0800	(1)	98.43	98.43
Hope Downs Marketing Company Pty Ltd	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000	(13)	100	50
Robe River Mining Co. Pty. Ltd.[(aa)]	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000	(13)	40	73.61
		(14)	76.36	
Tomago Aluminium Company Pty Limited	638 Tomago Road, Tomago NSW 2322	(1)	51.6	51.6
Canada				
Évolys Québec Inc.	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3	(1)	75	75
Gulf Power Company / La Compagnie Gulf Power	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3	(1)	100	58.72
Quebec North Shore and Labrador Railway Company Inc. / Compagnie de Chemin de Fer du Littoral Nord de Quebec et du Labrador Inc.	400-1190 Avenue des Canadiens-de-Montréal, Montréal QC H3B 0E3	(1)	100	58.72
Chile				
Nuevo Cobre S.A.	Av. Ricardo Lyon #222, Office 1403, Providencia, Santiago, Metropolitan Region	(1)	100	57.74
Guinea				
SimFer InfraCo Guinée S.A.	Tours Cocotiers, Coléah Route du Niger, Matam, Conakry, BP848	(2)	100	45.05
SIMFER S.A.	Tours Cocotiers, Coléah Route du Niger, Matam, Conakry, BP848	(1)	85	45.05
SimFer Marine Guinée S.A.	Tours Cocotiers, Coléah Route du Niger, Matam, Conakry, BP848	(1)	100	53
Société Minière Et De Participations Guinée-Alusuisse	Tougue, Guinea	(c)	–	50
India				
Rio Tinto Orissa Mining Private Ltd	220, 2nd Floor, DLF Cyber City, Chandaka Industrial Area, Patia, Bhubneshwar, Odisha, 751024	(1)	51	51
Indonesia				
PT Hutan Lindung Kelian Lestari	Kelian Mine Site, West Kutai, East Kalimantan	(1)	99	99
PT Kelian Equatorial Mining	Sampoerna Strategic Square, South Tower, Level 30, Jl. Jenderal Sudirman Kav. 45-46, Jakarta, 12930	(1)	90	90
Jersey				
SimFer Jersey Limited[(f)]	PO Box 536, 13-14 Esplanade, St Helier, JE4 5UR,	(1)	53	53
Kazakhstan				
Korgantas LLP[(p)]	Dostyk 310/G, Almaty, 050020	(c)	–	75
Madagascar				
Port d'Ehoala S.A.	Immeuble ASSIST, Ivandry, Lot N°35, 5ème étage, Antananarivo, 101	(1)	100	80
QIT Madagascar Minerals SA	Immeuble ASSIST, Ivandry, Lot N°35, 5ème étage, Antananarivo, 101	(1)	85	80
Mongolia				
Gobi Oyu Development Support Fund	8th Bagh of Tsagaan Bulag, Umnugobi Provice, 46801	(c)	–	66
Oyu Tolgoi Catalyst Fund for Khanbogd Development	3rd Bagh, Dalanzadgad Soum, Umnugobi Aimag	(c)	–	66
Oyu Tolgoi LLC	Level 12 Monnis Tower, Chinggis Avenue-15, 1st khoroo, Sukhbaatar District, Ulaanbaatar, 14240	(1)	66	66
Netherlands				
Saryarka B.V.	Welplaatweg 104, 3197 KS , Botlek, Rotterdam	(1)	75	75
Rwanda				
Nyabarongo Mining and Exploration Limited	Kimihurura, Gasabo, Umujyi wa, Kigali	(1)	75	75
Singapore				
Chlor Alkali Unit Pte Ltd	12 Marina Boulevard, #20-01 MBFC Tower 3, 018982	(1)	100	68.36
		(1)	68.36	
SimFer TSV Holdco Pte. Ltd	9 Raffles Place, #26-01, Republic Plaza, 048619	(1)	100	53
South Africa				
Richards Bay Mining (Proprietary) Limited	The Farm RBM, Number 16317, KwaZulu-Natal, 3900	(1)	100	74
		(2)	100	
Richards Bay Titanium (Proprietary) Limited	The Farm RBM, Number 16317, KwaZulu-Natal, 3900	(1)	100	74
		(2)	100	
United Kingdom				
SimFer InfraCo Ltd	6 St James's Square, London, SW1Y 4AD	(1)	100	53
SimFer Jersey Nominee Limited	6 St James's Square, London, SW1Y 4AD	(1)	100	53

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Name of entity and place (country) of incorporation	Registered address	Share class note	% of share class held by Group companies	Effective Group % ownership
United States				
Iron Ore Company of Canada	1209 Orange Street, Wilmington DE 19801	(13)	91.41	58.72
		(17)	100	
		(18)	100	
Magma Arizona Railroad Company	8825 N. 23rd Avenue, Suite 100, Phoenix AZ 85021	(1)	99.98	54.97
Resolution Copper Mining LLC	251 Little Falls Drive, Wilmington DE 19808	(c)	–	55

Associated undertakings and significant holdings in related undertakings other than subsidiaries

Name of entity and place (country) of incorporation	Registered address	Share class note	% of share class held by Group companies	Effective Group % ownership
Australia				
Australian Integrated Carbon Pty Ltd	Room 4, Level 1, Hannaford Building, Waite Campus Urrbrae SA 5064	(1)	14.15	14.15
Boyne Smelters Limited	155 Charlotte Street, Brisbane QLD 4000	(13)	100	73.5
		(14)	100	
		(24)	100	
		(25)	100	
		(28)	100	
Electralith Pty Ltd	IP Group Australia, Level 35, 360 Elizabeth Street, Melbourne VIC 3000	(1)	30.77	40.72
		(2)	94.97	
FF RT JV Pty Ltd	Level 20, 1 William Street, Perth WA 6000	(2)	20	70
Panguna Legacy Assessment Company Limited	Level 10 , 12 Creek Street, Brisbane QLD 4000	(c)	–	33.33
Queensland Alumina Limited	Plant Operations Building, Parsons Point, Gladstone QLD 4680	(14)	100	80
		(15)	100	
		(16)	100	
Robe River Ore Sales Pty. Ltd.	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000	(1)	65	57.08
Sovereign Metals Limited	Level 9, 28 The Esplanade, Perth WA 6000	(1)	19.9	19.9
Yalleen Pastoral Co. Pty. Ltd.	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000	(1)	65.69	55.97
Belgium				
Boké Services Company SA	187 Chaussée de la Hulpe, B-01170, Brussels	(1)	100	45
Brazil				
Mineração Rio do Norte S.A.	Rua Jari, S/N Porto Tombetas, Municipio de Oriximina, Para, CEP 68275-000	(1)	25	22
		(2)	20.5	
Canada				
Aluminerie Alouette Inc.	400, Chemin de la Pointe-Noire, C.P. 1650, Sept-Îles Québec G4R 5M9	(1)	40	40
Aluminerie De Bécancour, Inc.	5555 Pierre Thibault Street, PO 30, Becancour, Quebec G0X 1B	(1)	50.1	25.2
CanPacific Potash Inc.	500-211 19th Street East, Saskatoon SK S7K 5R6,	(c)	–	32
Elysis Limited Partnership / Elysis Societe en Commandite	2323-1, Place Ville Marie, Montréal QC H3B 5M5	(14)	100	48.24
Matalco Canada Inc.	301-1 Kenview Boulevard, Brampton ON L6T 5E6	(1)	100	50
McEwen Copper Inc.	2800-150 King Street West Toronto ON M5H 1J9	(1)	17.23	17.23
Regulus Resources Inc.	Suite 2300, 1177 West Hastings Street, Vancouver BC V6E 2K3	(1)	16.09	16.09
Chile				
Minera Escondida Ltda	Cerro el Plomo 6000, Piso 15, Santiago, 7560623	(c)	–	30
China				
Minmetals Rio Tinto Exploration Company Limited	422-2, 4th Floor, Building #1 of Yongyou Industrial Park, Yazhou Bay Science & Technology City, Yazhou District, Sanya City, Hainan Province	(1)	50	50
France				
Procivis Savoie	116 Quai Charles Roissard, 73000, Chambéry	(1)	22.06	22.06
Guinea				
La Compagnie du Transguinéen S.A.	5D Bloc A, Résidence Hamade, Cité Ministérielle Fondis, Commune de Dixinn, Conakry	(1)	42.5	22.53
Netherlands				
Aluminium & Chemie Rotterdam B.V.	Oude Maasweg 80, NL-3197 KJ, Botlek, Rotterdam	(1)	65.8	65.8
Global Hubco BV	Luna Arena, Herikerbergweg 238, 1101, CM, Amsterdam Zuidoost	(1)	33.33	33.33
Oman				
Sohar Aluminium Co. L.L.C.	Sohar Industrial Estate, P.O. Box 80, PC 327, Sohar	(1)	20	20

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Name of entity and place (country) of incorporation	Registered address	Share class note	% of share class held by Group companies	Effective Group % ownership
Singapore				
Rightship Group Pte. Ltd.	10 Anson Road #29-07, International Plaza, 079903	(1)	33.33	33.33
Winning Consortium Simandou Ports Pte. Ltd.	5 Shenton Way, #19-01, UIC Building, 068808	(1)	34	18.02
		(2)	34	
Winning Consortium Simandou Railway Pte. Ltd.	5 Shenton Way, #19-01, UIC Building, 068808	(1)	34	18.02
		(2)	34	
Sweden				
Alufluor AB	Industrigatan 70, Box 902, S-25109, Helsingborg	(1)	50	50
United Kingdom				
La Granja UK Holdings Limited	4th Floor , The Charlotte Building, 17 Gresse Street, London, W1T 1QL	(1)	45	45
United States				
201 Logistics Center, LLC	1209 Orange Street, Wilmington DE 19801	(c)	–	50
7600 West Center, LLC	9090 S. Sandy Parkway, Sandy UT 84070	(c)	–	50
Boké Investment Company	251 Little Falls Drive, Wilmington DE 19808	(1)	100	45
Boké Services Management, Inc.	323 North Shore Drive, Suite 510, Pittsburgh PA 15212	(1)	100	45
Boké Trading Inc.	323 North Shore Drive, Suite 510, Pittsburgh PA 15212	(1)	100	45
Compagnie des Bauxites de Guinée	251 Little Falls Drive, Wilmington DE 19808	(1)	51	22.95
Halco (Mining) Inc.	30 Isabella Street, 3rd Floor, Pittsburgh PA 15212	(1)	45	45
Matalco USA, LLC	1209 Orange Street, Wilmington DE 19801	(4)	50	50
Pechiney Reynolds Quebec, Inc.	233 South 13th Street, Suite 1900, Lincoln NE 68508	(1)	50	50.2
		(2)	100	
Regeneration Enterprises, Inc.	2657 Windmill Parkway #302, Henderson NV 89074	(13)	25	25
Venezuela, Bolivarian Republic of				
Fabrica De Plasticos Mycsa, S.A.[(d)]	Urbanización Industrial San Ignacio, parcela 2-A, vía San Pedro, Los Teques, Estado Miranda	(1)	49	49

In addition, the Group participates in the following unincorporated arrangements:

Place (country) of operation	Name of entity	Address or principal place of business	Interest % owned by the Group
Australia	Bao-HI Ranges Joint Venture	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000	54
Australia	Gladstone Power Station Joint Venture	NRG Gladstone Operating Service, Power Station, Gladstone QLD 4680	42.13
Australia	Hope Downs Joint Venture	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000	50
Australia	Mitchell Plateau Joint Venture	155 Charlotte Street, Brisbane QLD 4000	65.62
Australia	Rhodes Ridge Joint Venture	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000	50
Australia	Robe River Iron Associates Joint Venture	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000	57.08
Australia	Tomago Aluminium Joint Venture	638 Tomago Road, Tomago NSW 2322	51.55
Australia	Western Range Joint Venture	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000	54
Australia	Yarraloola Pastoral Co	Level 18, Central Park, 152-158 St Georges Terrace, Perth WA 6000	57.08
Canada	Winter Road Joint Venture	300-5201 50th Avenue, Yellowknife NT X1A 2P9	33.33
United States	Excelsior-Nuton	4700 Daybreak Parkway, South Jordan UT 84009	49

(a) Directly held by Rio Tinto Limited.
(b) Directly held by Rio Tinto plc.
(c) Group ownership is held through an interest in capital. The entity has no classes of shares.
(d) Entity in liquidation or application for dissolution filed.
(e) Entity liquidated or dissolved subsequent to 31 December 2024
(f) Entity is a tax resident of the United Kingdom
(g) Entity is a tax resident of the United States
(h) Entity is a tax resident of Hong Kong and Australia
(i) Entity is a tax resident of Laos and Australia
(j) Entity is a tax resident of Singapore and Australia
(k) Entity is a tax resident of Singapore and Canada
(l) Entity is a tax resident of Finland and the United Kingdom
(m) Entity is a tax resident of Rwanda and the United Kingdom
(n) Entity is a tax resident of Serbia and the United Kingdom
(o) This entity is a trust.
(p) This entity is a partnership.
(q) This entity is a partnership but not a taxable entity. The partnership's income and losses flow through to the partners for tax purposes. As such, this partnership does not have a tax residency. The partners of this partnership are incorporated in Canada.
(r) Entity is a partner in the Element North 21 Limited Partnership
(s) Entity is a partner in the ELYSIS Technology Demonstration Plant Limited Partnership
(t) Entity is a partner in the Rio Tinto Saskatchewan Potash Holdings Limited Partnership
(u) Entity is a participant in the Bao-HI Ranges Joint Venture and the Western Range Joint Venture
(v) Entity is a participant in the Excelsior-Nuton Joint Venture
(w) Entity is a participant in the Gladstone Power Station Joint Venture
(x) Entity is a participant in the Hope Downs Joint Venture
(y) Entity is a participant in the Mitchell Plateau Joint Venture
(z) Entity is a participant in the Rhodes Ridge Joint Venture
(aa) Entity is a participant in the Robe River Iron Associates Joint Venture and Yarraloola Pastoral Co
(bb) Entity is a participant in the Tomago Aluminium Joint Venture
(cc) Entity is a participant in the Winter Road Joint Venture

Rio Tinto plc

Company Balance Sheet

As at 31 December	Note	2024 US$m	2023 US$m
Non-current assets			
Investments	B	**36,212**	36,218
Trade and other receivables		**0**	24
		36,212	36,242
Current assets			
Trade and other receivables	C	**8,057**	5,025
Cash at bank and in hand		**18**	18
		8,075	5,043
Total assets		**44,287**	41,285
Current liabilities			
Trade and other payables	D	**(6,183)**	(6,245)
Dividends payable		**(25)**	(25)
Other financial liabilities	G	**(12)**	(25)
		(6,220)	(6,295)
Non-current liabilities			
Other financial liabilities	G	**—**	(12)
Total liabilities		**(6,220)**	(6,307)
Net assets		**38,067**	34,978
Capital and reserves			
Share capital	E	**207**	207
Share premium account		**4,326**	4,324
Other reserves	F	**12,005**	12,005
Retained earnings		**21,529**	18,442
Total equity		**38,067**	34,978

The Rio Tinto plc financial statements have been prepared in accordance with Financial Reporting Standard 101 "Reduced Disclosure Framework" (FRS 101). Note A explains the principal accounting policies.

Profit after tax and total comprehensive income for the year amounted to US$8,418 million (2023: US$2,217 million). As permitted by section 408 of the UK Companies Act 2006, no statement of comprehensive income for the Rio Tinto plc parent company is shown.

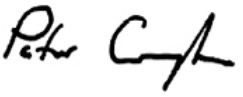
The Rio Tinto plc company balance sheet, statement of comprehensive income and the related notes were approved by the Directors on 19 February 2025 and the balance sheet is signed on their behalf by



Dominic Barton
Chair



Jakob Stausholm
Chief Executive



Peter Cunningham
Chief Financial Officer

Rio Tinto plc

Registered number: 719885

Rio Tinto plc (the "Company") is incorporated in the United Kingdom, registered in England and Wales, and domiciled in the United Kingdom.

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Rio Tinto plc

Company Statement of Changes in Equity

Year ended 31 December 2024	Share capital US$m	Share premium account US$m	Other reserves US$m	Retained earnings US$m	Total equity US$m
Opening balance	**207**	**4,324**	**12,005**	**18,442**	**34,978**
Profit for the financial year (comprehensive income)	**–**	**–**	**–**	**8,418**	**8,418**
Dividends	**–**	**–**	**–**	**(5,423)**	**(5,423)**
Proceeds from issue of shares	**–**	**2**	**–**	**–**	**2**
Share-based payments	**–**	**–**	**–**	**92**	**92**
Total	**207**	**4,326**	**12,005**	**21,529**	**38,067**

Year ended 31 December 2023	Share capital US$m	Share premium account US$m	Other reserves US$m	Retained earnings US$m	Total equity US$m
Opening balance	207	4,322	12,005	21,170	37,704
Profit for the financial year (comprehensive income)	–	–	–	2,217	2,217
Dividends	–	–	–	(5,022)	(5,022)
Proceeds from issue of shares	–	2	–	–	2
Share-based payments	–	–	–	77	77
Total	207	4,324	12,005	18,442	34,978

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Notes to the Rio Tinto plc financial statements

A Principal accounting policies

a. Basis of preparation

The Rio Tinto plc ("the Company") company financial statements have been prepared using the historical cost convention, as modified by the revaluation of certain financial liabilities and in accordance with the UK *Companies Act 2006* and Financial Reporting Standard 101 Reduced Disclosure Framework (FRS 101). The financial statements have been prepared on a going concern basis.

In preparing these financial statements, the Company applies the recognition, measurement and disclosure requirements of UK-adopted international accounting standards, but makes amendments where necessary in order to comply with the UK Companies Act 2006.

The accounting policies set out below have been applied consistently to all periods presented in these financial statements. The following exemptions available under FRS 101 have been applied:

- paragraphs 45(b) and 46 to 52 of IFRS 2 "Share-based Payment" (details of the number and weighted average exercise prices of share options and how the fair value of goods and services received was determined)
- paragraphs 91 to 99 of IFRS 13 "Fair Value Measurement" (disclosure of valuation techniques and inputs used for fair value measurement of assets and liabilities)
- IFRS 7 "Financial Instruments: Disclosures"
- paragraph 38 of IAS 1 "Presentation of financial statements", comparative information requirements in respect of Paragraph 79(a)(iv) of IAS 1
- the following paragraphs of IAS 1 "Presentation of financial statements":
  - 10 (d) (statement of cash flows)
  - 16 (statement of compliance with all IFRS)
  - 38A (requirement for minimum of 2 primary statements, including cash flow statements)
  - 38B-D (additional comparative information)
  - 111 (cash flow statement information)
  - 134-136 (capital management disclosures).
- IAS 7 "Statement of Cash Flows"
- paragraph 30 and 31 of IAS 8 "Accounting policies, changes in accounting estimates and errors" (requirement for the disclosure of information when an entity has not applied a new IFRS that has been issued and is not yet effective)
- paragraph 17 of IAS 24 "Related party disclosures" (key management compensation)
- the requirements of IAS 24, "Related party disclosures" to disclose related party transactions entered into between 2 or more members of a group.

b. Judgements in applying accounting policies and key sources of estimation uncertainty

The preparation of the financial statements requires management to make assumptions, judgements and estimates and to use judgement in applying accounting policies and making critical accounting estimates. These judgements, estimates and assumptions are based on management's best knowledge of the relevant facts and circumstances, having regard to previous experience, but actual results may differ materially from the amounts included in the financial statements.

The key area of judgement that has the most significant effect on the amounts recognised in the financial statements is the review for impairment of investment carrying values.

Investments in subsidiaries are reviewed for impairment where events or changes in circumstances indicate that the carrying amount of the investment may not be recoverable. The unit of account being the equity of the subsidiary taken as a whole, which may include interests in multiple cash-generating units.

If any such indication exists, Rio Tinto plc makes an assessment of the recoverable amount. If the asset is determined to be impaired, an impairment loss will be recorded and the asset will be written down based on the amount by which the asset carrying amount exceeds the higher of fair value less cost of disposal and value in use. An impairment loss is recognised immediately in the income statement.

c. Currency translation

Items included in the financial statements are measured using the currency of the primary economic environment in which the Company operates (the functional currency). The financial statements are presented in US dollars, which is the Company's functional and presentation currency. Transactions denominated in other currencies, including the issue of shares, are translated into the functional currency using the exchange rates prevailing at the date of the transaction.

Foreign exchange gains and losses resulting from the settlement of such transactions, and from the translation at year-end exchange rates of monetary assets and liabilities denominated in foreign currencies, are recognised in the profit and loss account.

Exchange rates used are consistent with the rates used by the Group as disclosed in the consolidated financial statements on page 156.

d. Investments

Investments in Group companies are valued at cost less accumulated impairment losses. Investments are reviewed for impairment if events or changes in circumstances indicate that the carrying amount may not be recoverable.

e. Financial guarantees

Financial guarantees are recognised initially at fair value. Subsequently, the liability is measured at the higher of the best estimate of the expenditure required to settle the present obligation and the amount initially recognised less cumulative amortisation.

f. Share-based payments

The Company operates a number of share-based payment plans for Group employees, the details of which are included in the consolidated financial statements (note 27). The fair value of the Company's share plans is recognised as an addition to the cost of the investment in the subsidiary in which the relevant employees work over the expected vesting period, with a corresponding entry to retained earnings. Payments received from the Company's subsidiaries in respect of these share-based payments are recognised as a reduction in the cost of the investment. The Company uses fair values provided by independent actuaries calculated using either a lattice-based option valuation model or a Monte Carlo simulation model. The fair value of the share plans is determined at the date of grant, taking into account any market-based vesting conditions attached to the award.

Non-market vesting conditions (eg Total Shareholder Return (TSR) performance condition) are taken into account in estimating the number of awards likely to vest. The estimate of the number of awards likely to vest is reviewed at each balance sheet date up to the vesting date, at which point the estimate is adjusted to reflect the actual awards issued. No adjustment is made after the vesting date even if the awards are forfeited or not exercised.

g. Dividend income

Dividend income is recognised when the right to receive payment is established.

h. Treasury shares

The consideration paid for shares repurchased by the Company and held as treasury shares is recognised as a reduction in shareholders' funds through retained earnings.

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B Investments

	2024 US$m	2023 US$m
Investments in Group companies:		
At 1 January	**36,218**	36,250
Additions	**92**	77
Other adjustments	**(98)**	(109)
At 31 December	**36,212**	36,218

At 31 December 2024, the Company had the following principal subsidiaries:

Company	Principal activity	Country of incorporation	Percentage shareholding
Rio Tinto International Holdings Limited	Holding company	UK	100%
Rio Tinto European Holdings Limited	Holding company	UK	100%

In accordance with section 409 of the UK Companies Act 2006, a full list of related undertakings is disclosed in the Consolidated Entity Disclosure Statement on page 231.

C Trade and other receivables

Trade and other receivables includes US$8,015 million (2023: US$5,025 million), which is subject to interest rates based on Secured Overnight Financing Rate (SOFR) and is unsecured and repayable on demand.

D Trade and other payables

Trade and other payables includes US$6,151 million (2023: US$6,151 million) which is subject to interest rates based on SOFR and is unsecured and repayable on demand.

E Share capital

Details of share capital are included in note 34 to the consolidated financial statements.

F Other reserves

Other reserves includes US$11,936 million (2023: US$11,936 million) which represents the difference between the nominal value and issue price of the shares issued arising from Rio Tinto plc's rights issue completed in July 2009.

G Rio Tinto plc guarantees

Rio Tinto plc provides a number of guarantees in respect of Group companies.

Rio Tinto plc and Rio Tinto Limited have jointly guaranteed the Group's external listed debt under the US Shelf Programme, European Debt Issuance Programme and Commercial Paper Programme which totalled US$6.8 billion at 31 December 2024 (2023: US$7.3 billion). These entities also jointly guarantee the Group's undrawn credit facility, which was US$7.5 billion at 31 December 2024 (2023: US$7.5 billion). At 31 December 2024, Rio Tinto plc has provided guarantees in respect of certain derivative contracts that are in a liability position of US$221 million (2023: US$381 million).

Rio Tinto plc has provided a guarantee, known as the completion support undertaking (CSU), in favour of the Oyu Tolgoi LLC project finance lenders. In 2023, a wholly owned subsidiary of Rio Tinto plc became a lender under the project finance facility ranking pari passu with the external lenders.

At 31 December 2024, a total of US$5.5 billion (2023: US$4.7 billion) of project finance debt was outstanding under this facility of which US$3.9 billion (2023: US$3.9 billion) is owed to external third party lenders. Rio Tinto plc, through its subsidiaries, owns 66% of Oyu Tolgoi LLC, with the remaining share owned by Erdenes Oyu Tolgoi LLC (34%), which is controlled by the Government of Mongolia. The project finance was raised for development of the underground mine and the CSU will terminate on the completion of the underground mine according to a set of completion tests set out in the project finance facility. The CSU contains a carve-out for certain political risk events. During 2024, fees of US$77 million (2023: US$77 million) were received from Oyu Tolgoi LLC as consideration for the provision of the CSU.

In November 2024, the Group entered into a US$7.0 billion bridge facility agreement to support the proposed acquisition of Arcadium Lithium (refer to note 5). Rio Tinto Plc and Rio Tinto Limited have jointly guaranteed the facility, which remains undrawn as at 31 December 2024.

Rio Tinto plc has provided a number of guarantees in relation to various pension funds. Subject to certain conditions, Rio Tinto plc would pay any contributions due from Group companies participating in these funds should the companies fail to meet their contribution requirements. The guarantees were not called upon in 2024. The aggregate of company contributions to these plans in 2024 was US$8 million (2023: US$8 million).

At 31 December 2024, other guarantees issued by Rio Tinto plc in relation to Rio Tinto Group entities amount to US$594 million (2023: US$525 million). Included within this balance is US$19 million (2023: US$17 million) in relation to non-wholly-owned subsidiaries.

Pursuant to the DLC Merger, both Rio Tinto plc and Rio Tinto Limited issued deed poll guarantees by which each company guaranteed contractual obligations incurred by the other or guaranteed by the other.

The liability recognised for financial guarantees is US$12 million (2023: US$37 million) presented in "Other financial liabilities" in the balance sheet.

G Rio Tinto plc guarantees *continued*

Subsidiary audit exemptions

The following UK subsidiary undertakings are exempt from the requirements of the *Companies Act 2006* (the Act) relating to the audit of individual accounts by virtue of section 479A of the Act. All of these companies are included in the consolidated subsidiaries listed in the Consolidated Entity Disclosure Statement.

Name	Company number	Name	Company number
Anglesey Aluminium Metal Limited	909645	Rio Tinto Iron & Titanium Limited	2796146
Borax Europe Limited	36374	Rio Tinto Iron Ore Atlantic Limited	5516177
British Alcan Aluminium Limited	385816	Rio Tinto Iron Ore Trading China Limited	8651526
IOC Sales Limited	11576814	Rio Tinto Metals Limited	147115
Nuton Holdings Limited	16013671	Rio Tinto Minerals Development Limited	281218
Pechiney Aviatube Limited	4124570	Rio Tinto Minerals Investments Africa Limited	15909409
Rio Tinto Australian Holdings Limited	464176	Rio Tinto Minerals Limited	13807147
Rio Tinto Bahia Holdings Limited	1338672	Rio Tinto OT Management Limited	9247092
Rio Tinto BM Limited	16001765	Rio Tinto Overseas Holdings Limited	280423
Rio Tinto BM Subsidiary Limited	16003844	Rio Tinto Simfer UK Limited	6375648
Rio Tinto Canada Finance Limited	13575404	Rio Tinto South East Asia Limited	3699290
Rio Tinto Copper Holdings Limited	14549568	Rio Tinto Technological Resources UK Limited	8270236
Rio Tinto Copper Limited	15070996	Rio Tinto Western Holdings Limited	7132
Rio Tinto European Holdings Limited	993068	RTA Holdco 4 Limited	6404791
Rio Tinto Indonesian Holdings Limited	3074852	Thos. W Ward Limited	81020
Rio Tinto International Holdings Limited	425864	THR Copper Limited	15130606

Rio Tinto Plc will guarantee all outstanding liabilities that these subsidiaries are subject to as at 31 December 2024 in accordance with section 479C of the Act, as amended by the Companies and Limited Liability Partnerships (Accounts and Audit Exemptions and Change of Accounting Framework) Regulations 2012. In addition, Rio Tinto plc will guarantee any contingent and prospective liabilities that these subsidiaries are subject to.

H Contingent liabilities

Details of contingent liabilities are included in note 37 to the consolidated financial statements.

I Auditor's remuneration

Amounts receivable by the Company's auditor and its associates in respect of services to the Company and its associates have not been disclosed as the information is required instead to be disclosed on a consolidated basis in note 38 to the consolidated financial statements.

J Events after the balance sheet date

There were no significant events after the balance sheet date requiring disclosure.

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Australian Corporations Act – Summary of ASIC Relief

Pursuant to section 340 of the Australian Corporations Act 2001 (Corporations Act), the Australian Securities and Investments Commission (ASIC) issued an order dated 11 July 2024 that granted relief to Rio Tinto Limited from certain requirements of the Corporations Act in relation to its financial statements and associated reports. The order essentially continues the relief that has applied to Rio Tinto Limited since the formation of the Group's dual listed companies (DLC) structure in 1995. The order applies to Rio Tinto Limited's financial reporting obligations for the financial years up to and including 31 December 2027.

In essence, instead of being required under the Corporations Act to prepare consolidated financial statements covering Rio Tinto Limited and its controlled entities, it allows the Company to prepare consolidated financial statements in which it, Rio Tinto plc and their respective controlled entities are treated as a single economic entity. In addition, those consolidated financial statements are to be prepared:

- in accordance with the principles and requirements of International Financial Reporting Standards as adopted by the United Kingdom (UK IFRS) rather than the Australian Accounting Standards (AAS) (except for one limited instance in the case of any concise report), and in accordance with UK financial reporting obligations generally
- on the basis that the transitional provisions of International Financial Reporting Standard 1, First-time Adoption of International Financial Reporting Standards, should be applied using the combined financial statements previously prepared for Rio Tinto Limited, Rio Tinto plc and their respective controlled entities under Generally Accepted Accounting Principles in the UK, under which the DLC Merger between Rio Tinto Limited and Rio Tinto plc was accounted for using "merger", rather than "acquisition", accounting (reflecting that neither Rio Tinto Limited nor Rio Tinto plc was acquired by, or is controlled by, the other; and meaning that the existing carrying amounts, rather than fair values, of assets and liabilities at the time of the DLC Merger were used to measure those assets and liabilities at formation)
- on the basis that Rio Tinto Limited and Rio Tinto plc are a single company (with their respective shareholders being the shareholders in that single company)
- with a reconciliation, from UK IFRS to AAS, of the following amounts: consolidated loss/profit for the financial year, total consolidated comprehensive loss/income for the financial year and total consolidated equity at the end of the financial year (see page 161).

Those consolidated financial statements must also be audited in relation to their compliance with relevant Australian and UK requirements. Rio Tinto Limited must also prepare a Directors' report which satisfies the content requirements of the Corporations Act (applied on the basis that for these purposes, the consolidated entity is the Group, and the consolidated financial statements cover the Group). This includes a Remuneration report (see pages 119 to 145) prepared in accordance with the requirements of the Corporations Act.

Rio Tinto Limited is also required to comply generally with the lodgement and distribution requirements of the Corporations Act (including timing requirements) in relation to those consolidated financial statements (including any concise financial statements), the Auditors' report and the Directors' report. The Corporations Act also requires that a non-binding resolution to adopt the Remuneration report be voted on by shareholders at Rio Tinto Limited's annual general meeting.

Rio Tinto Limited is not required to prepare separate consolidated financial statements solely for it and its controlled entities. Rio Tinto Limited is also not required to prepare and lodge parent entity financial statements for itself in respect of each relevant financial year.

Rio Tinto Limited must, however, in accordance with the Corporations Act include in the consolidated financial statements for the Group, as a note, various parent entity information regarding Rio Tinto Limited (including in relation to assets, liabilities, shareholders' equity, profit and loss, income, guarantees, contingent liabilities, and contractual commitments) prepared in accordance with AAS (see page 230).

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Directors' declaration

Directors' statement of responsibilities in relation to the consolidated financial statements, Rio Tinto plc financial statements and Rio Tinto Limited financial statements.

The Directors are responsible for preparing the Annual Report, the Remuneration report and the financial statements in accordance with applicable law and regulations. In accordance with Disclosure Guidance and Transparency Rule ("DTR") 4.1.16R and under DTR 4.1.17R and DTR 4.1.18R, the auditor's report on these financial statements provides no assurance over whether the annual financial report has been prepared in accordance with those requirements.

UK and Australian company law requires the Directors to prepare financial statements for each financial year. As required under UK law, our Directors have prepared the consolidated financial statements in accordance with UK-adopted international accounting standards and applicable law. The Directors have elected to prepare the Rio Tinto plc parent company financial statements in accordance with United Kingdom Generally Accepted Accounting Practice (United Kingdom Accounting Standards, comprising FRS 101 "Reduced Disclosure Framework", and applicable law). Under Australian law, the Directors are also required to prepare certain Rio Tinto Limited parent company disclosures in accordance with Australian Accounting Standards (AAS). In preparing the consolidated financial statements of the Rio Tinto Group, the Directors have also elected to comply with IFRS, issued by the International Accounting Standards Board (IASB).

Under UK and Australian company law, the Directors must not approve the financial statements unless they are satisfied that they give a true and fair view of the state of affairs of the Group and the companies as at the end of the financial year, and of the profit or loss of the companies and Group for the period (as applicable).

In preparing these financial statements, the Directors are required to:

- select suitable accounting policies and apply them consistently
- make judgements and estimates that are reasonable, relevant, reliable and prudent
- state whether applicable UK adopted international accounting standards and AAS have been followed, subject to any material departures disclosed and explained in the Group and parent company financial statements respectively
- assess the Group and companies' ability to continue as a going concern, disclosing as applicable matters related to going concern
- use the going concern basis of accounting unless they either intend to liquidate the Group or the companies or to cease operations, or have no realistic alternative but to do so.

The Directors are responsible for keeping adequate accounting records that are sufficient to show and explain the transactions of the companies and the Group and disclose with reasonable accuracy at any time the financial position of the companies and the Group and enable them to ensure that:

- the consolidated financial statements comply with the UK Companies Act 2006 and the Australian Corporations Act 2001 as amended by the Australian Securities and Investments Commission Order dated 11 July 2024
- the Rio Tinto plc financial statements comply with the UK Companies Act 2006
- the Rio Tinto Limited parent company disclosures comply with the Corporations Act as amended by the Australian Securities and Investments Commission Order dated 11 July 2024
- the Remuneration report complies with the UK Companies Act 2006 and the Australian Corporations Act 2001 as amended by the Australian Securities and Investments Commission Order dated 11 July 2024.

The Directors are also responsible for safeguarding the assets of the companies and the Group and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

The Directors are responsible for the maintenance and integrity of the Group's website. Legislation governing the preparation and dissemination of financial statements may differ between jurisdictions in which the Group reports.

Each of the current Directors, whose names and function are listed on pages 102 and 103 in the Governance section, confirm that, to the best of their knowledge:

- the consolidated financial statements and notes, which have been prepared in accordance with international accounting standards in conformity with the requirements of UK-adopted international accounting standards, the Australian Corporations Act 2001 as amended by the Australian Securities and Investments Commission Order dated 11 July 2024 and the UK *Companies Act 2006*, give a true and fair view of the assets, liabilities, financial position and profit of the Group
- the Rio Tinto plc financial statements and notes, which have been prepared in accordance with United Kingdom Generally Accepted Accounting Practice, give a true and fair view of the assets, liabilities, financial position and profit of the company
- the Rio Tinto Limited parent company disclosures, which have been prepared in accordance with the AAS and Australian Corporations Act 2001 as amended by the Australian Securities and Investments Commission Order dated 11 July 2024, give a true and fair view of the assets, liabilities, financial position and profit of the company
- the Strategic report section of the Annual Report includes a fair review of the development and performance of the business and the position of the Group, together with a description of the principal risks and uncertainties that it faces
- there are reasonable grounds to believe that each of the Rio Tinto Group, Rio Tinto plc and Rio Tinto Limited will be able to pay its debts as and when they become due and payable
- the consolidated entity disclosure statement required by Subsection 295(3A) of the Australian Corporations Act 2001, as at 31 December 2024, disclosed on pages 231 to 238, is true and correct.

The Directors have been given the declarations by the Chief Executive and Chief Financial Officer required by section 295A of the Australian Corporations Act 2001 as amended by the Australian Securities and Investments Commission Order dated 11 July 2024.

Disclosure of information to auditors

The Directors in office at the date of this report have each confirmed that:

- so far as they are aware, there is no relevant audit information of which the Group's auditors are unaware
- they have taken all the steps that they ought to have taken as a Director to make themselves aware of any relevant audit information and to establish that the Group's auditors are aware of that information.

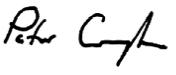
This declaration is made in accordance with a resolution of the Board.



Dominic Barton
Chair



Jakob Stausholm
Chief Executive



Peter Cunningham
Chief Financial Officer

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Independent Auditors' Report

of KPMG LLP ("KPMG UK") to the members of Rio Tinto plc and of KPMG ("KPMG Australia") to the members of Rio Tinto Limited

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REPORT ON THE AUDITS OF THE FINANCIAL STATEMENTS

1. OPINIONS: OUR OPINIONS ARE UNMODIFIED

In KPMG UK's opinion:

- the financial statements give a true and fair view of the state of the Group's and of the UK Parent Company, Rio Tinto plc's, affairs as at 31 December 2024, and of the Group's profit for the year then ended;
- the Group financial statements have been properly prepared in accordance with UK-adopted international accounting standards and IFRS Accounting Standards as issued by the International Accounting Standards Board (IASB). As explained on page 154 to the financial statements, the Group, in addition to complying with its legal obligation to apply UK-adopted international accounting standards has applied IFRS Accounting Standards as issued by the IASB;
- the Rio Tinto plc company financial statements have been properly prepared in accordance with UK accounting standards, including FRS 101 Reduced Disclosure Framework; and
- the financial statements have been prepared in accordance with the requirements of the Companies Act 2006.

In KPMG Australia's opinion, the accompanying Group financial statements give a true and fair view, including of the Group's financial position as at 31 December 2024 and of its financial performance for the year then ended, in accordance with the Australian Corporations Act 2001, as amended by the Australian Securities and Investments Commission Order dated 11 July 2024 (the "ASIC Class Order"), in compliance with UK-adopted international accounting standards and the Australian Corporations Regulations 2001.

For the purpose of these reports, the terms "we" and "our" denote KPMG UK in relation to UK responsibilities and reporting obligations to the members of Rio Tinto plc, and KPMG Australia in relation to Australian responsibilities and reporting obligations to the members of Rio Tinto Limited. Rio Tinto ("the Group" or "Rio Tinto Group") consists of Rio Tinto plc, Rio Tinto Limited (individually "the Company" or together "the Companies") and their respective subsidiaries including the Group's share of joint arrangements and associates, as at and during the financial year ended 31 December 2024. The "Group financial statements" denotes the financial statements prepared for the Rio Tinto Group. References to "Rio Tinto plc company financial statements" denote the company only financial statements for the UK parent company, Rio Tinto plc. The Group financial statements and Rio Tinto plc company financial statements taken together are referred to as "financial statements".

WHAT OUR OPINIONS COVER

We have audited the Group financial statements as at and for the year ended 31 December 2024 (FY24) included in the Annual Report, which comprise:

Rio Tinto Group
Consolidated income statement
Consolidated statement of comprehensive income
Consolidated cash flow statement
Consolidated balance sheet
Consolidated statement of changes in equity
Notes[1] 1 to 41 to the Group financial statements, including material Group accounting policy information and other explanatory information covered on pages 167 to 238 and in the "about presentation of our financial statements" section on pages 154 to 161.

KPMG UK has also audited the UK parent company, Rio Tinto plc's financial statements for FY24, which comprise the Rio Tinto plc company balance sheet on page 239, the Rio Tinto plc parent company statement of changes in equity on page 240 and related notes on pages 241 to 243 which include a description of material accounting policy information and other explanatory information.

KPMG Australia has also considered the Consolidated entity disclosure statement and accompanying basis of preparation on page 231, the Directors' declaration on page 245, the Reconciliation with Australian Accounting Standards note on page 161, and the Australian Corporation Act – Summary of ASIC relief note on page 244 to be part of the contents of the Group financial statements when forming its opinion under the requirements of the Australian Corporation Act 2001, as amended by the ASIC Class Order, the ASAs and Australian Corporations Regulations 2001. KPMG Australia has also audited the Remuneration Report information of Rio Tinto Limited, required by the Australian Corporations Act, included in the Directors' report pages 119 to 145 for FY24.

1. KPMG UK has considered the "about the presentation of our financial statements" section on pages 154 to 161 and notes 1 – 40 and KPMG Australia has considered the 'about the presentation of our financial statements' section on pages 154 to 161 and notes 1 – 41 in forming their respective opinions

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BASIS FOR OPINIONS

We conducted our audits in accordance with International Standards on Auditing (UK) ("ISAs (UK)") (KPMG UK) and Australian Auditing Standards ("ASAs") (KPMG Australia) and applicable laws. Our responsibilities under those standards are further described in the *Auditors' responsibilities for the audits of the financial statements* section of our report. KPMG Australia has also considered the Consolidated entity disclosure statement and accompanying basis of preparation on page 231, the Directors' declaration on page 245, the Reconciliation with Australian Accounting Standards note on page 161, and the Australian Corporation Act – Summary of ASIC relief note on page 244 to be part of the contents of the Group financial statements when forming its opinion under the requirements of the Australian Corporation Act 2001, as amended by the ASIC Class Order, the ASAs and Australian Corporations Regulations 2001. KPMG Australia has also audited the Remuneration Report information of Rio Tinto Limited, required by the Australian Corporations Act, included in the Directors' report pages 119 to 145 for FY24.

We believe that the audit evidence we have obtained is a sufficient and appropriate basis for our opinions. Our audit opinions and matters included in this report are consistent with those discussed and included in our reporting to the Audit and Risk Committee ("ARC").

We have fulfilled our ethical responsibilities under, and we remain independent of the Group in accordance with, UK ethical requirements including the FRC Ethical Standard as applied to listed public interest entities; the Australian Corporations Act 2001 as amended by the ASIC Class Order; and the relevant ethical requirements of the *Australian Accounting Professional and Ethical Standards Board's APES 101 Code of Ethics for Professional Accountants (including Independence Standards).*

2. OVERVIEW OF OUR AUDITS

FACTORS DRIVING OUR VIEW OF RISKS

Following our FY23 audits and considering developments affecting the Group since then, our assessment of risks and our view of how these impact the audits of the financial statements has been reassessed for the current year.

In the current year, we identified a new Key Audit Matter ('KAM') in relation to our evaluation of the impairment assessment for the Kennecott Utah Copper cash generating unit. This arose as a result of the impairment trigger identified requiring an impairment assessment to be performed. Our assessment of risk on specific closure provisions remained consistent with prior year. The closure provisions for Rio Tinto Iron Ore remains as a Key Audit Matter ('KAM') in FY24.

Our view of the risk associated with the Group's assessment of impairment or impairment reversal of property, plant and equipment remains unchanged and continues to be a KAM. We continued to focus on the Oyu Tolgoi CGU due to the significance of the operation and associated complexity, which has heightened risk of impairment or impairment reversal.

Our assessment of the recoverability of the UK Parent company's investment in subsidiaries has remained consistent and remains a KAM for the UK parent company.

Key Audit Matters	Vs FY23	Item
Evaluation of the impairment assessment for the Kennecott Utah Copper cash generating unit ('KUC CGU')	+	4.1
Evaluation of specific provisions for the close-down, restoration and environmental obligations ('closure provisions')	–	4.2
Evaluation of indicators of impairment or impairment reversal of property, plant and equipment for the Oyu Tolgoi copper-gold mine cash generating unit ('Oyu Tolgoi CGU')	–	4.3
Evaluation of recoverability of Rio Tinto plc's investments in subsidiaries (KPMG UK only)	–	4.4

AUDIT AND RISK COMMITTEE INTERACTION

In relation to FY24, the Audit and Risk committee ("ARC") met 6 times. KPMG are invited to attend all ARC meetings and are provided with an opportunity to meet with the ARC in private sessions without the Executive Directors or management being present. For each Key Audit Matter, we have set out communications with the ARC in section 4, including matters that required particular judgement for each.

The matters included in the Audit and Risk committee Chair's report on page 113 are materially consistent with our observations of those meetings.

Independent Auditors' Report

Of KPMG LLP ("KPMG UK") to the members of Rio Tinto plc and of KPMG ("KPMG Australia") to the members of Rio Tinto Limited

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OUR INDEPENDENCE

We have fulfilled our ethical responsibilities under, and we remain independent of the Group in accordance with, UK ethical requirements including the FRC Ethical Standard as applied to listed public interest entities; the Australian Corporation Act 2001 as amended by ASIC Class Order; and the relevant ethical requirements of the Australian Accounting Professional and Ethical Standards Board's APES 110 Code of Ethics for Professional Standards (including Independence Standards).

We have not performed any non-audit services during the year ended 31 December 2024 or subsequently which are prohibited by the FRC Ethical Standard or Australian Corporations Act 2001 or Australian Accounting Professional and Ethical Standards Board's APES 110 Code of Ethics for Professional Accountants.

We were first appointed as auditors by the members for the financial year ended 31 December 2020. The period of total uninterrupted engagement is for the five financial years ended 31 December 2024.

The Group engagement partners are required to rotate every 5 years. The Group engagement partners are Trevor Hart and Jonathan Downer who are required to rotate off after the FY24 and FY25 audits respectively.

The average tenure of component engagement partners as set out in section 7 is 4 years, with the shortest being 1 year and the longest 5 years.

Total fee	US$33.5m
Audit related fees including interim review	US$29.8m
Other services	US$3.7m
Non-audit fee as a % of total audit and audit related fee %	12.4%
Date first appointed	KPMG UK – 8 April 2020 KPMG Australia – 5 May 2020
Uninterrupted audit tenure	5 years
Next financial period which requires a tender	2030
Tenure of Group engagement partner	Trevor Hart – 5 years Jonathan Downer – 4 years
Average tenure of component partners	4 years

MATERIALITY (SECTION 6 BELOW)

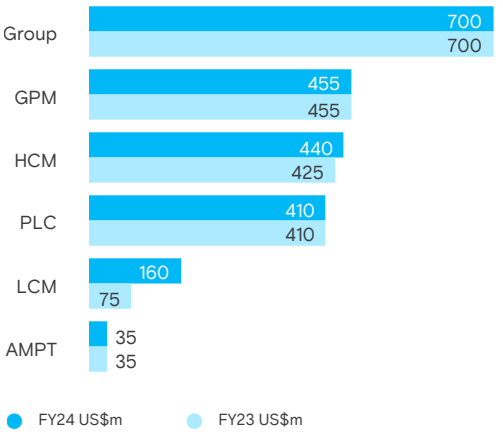
The scope of our work is influenced by our view of materiality and our assessed risk of material misstatement.

We have determined overall materiality for the Group financial statements as a whole at US$700m (FY23: US$700m). For both FY24 and FY23, we determined profit before taxation to be an appropriate benchmark ('the benchmark') and considered qualitative factors that impact our assessment of materiality. The rationale for this benchmark is the Group is profit-orientated and, in an industry like mining, the cost of operations show the Group's ability to control costs to generate value over volume. We consider this to be key to users of the financial statements.

In FY24 we adjusted profit before taxation to exclude certain items that were significant and did not represent normal, continuing operations of the Group in determining our materiality ('normalised Group profit before taxation'). The exclusions were US$538m related to the pre-tax impairment charge as disclosed in Note 4 and US$1,214m of pre-tax gains on consolidation and disposal of interests in businesses as disclosed in Note 5 of the Group financial statements. In FY23 there was an exclusion of US$936m related to the net pre-tax impairment charge as disclosed in Note 4 of the Group's financial statements. The Group materiality for FY24 represents 4.7% of the normalised Group profit before taxation (FY23: 4.8%).

KPMG UK have determined materiality for the Rio Tinto plc Company financial statements as a whole at US$410m (FY23: US$410m). Consistent with FY23 we determined total assets remain an appropriate benchmark because the entity's role as a parent company means it holds significant assets. The materiality benchmark represents 1% (FY23: 1%) of Rio Tinto plc's total assets.

Materiality levels used in our audit



Group: Group Materiality

GPM: Group Performance Materiality

HCM: Highest Component Materiality

PLC: Parent Company Materiality

LCM: Lowest Component Materiality

AMPT: Audit Misstatement Posting Threshold

Independent Auditors' Report

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GROUP SCOPE (SECTION 7 BELOW)

We have performed risk assessment procedures to determine which of the Group's components are likely to include risks of material misstatement to the Group financial statements, what audit procedures to perform at these components and the extent of involvement required from our component auditors around the world.

We identified components and determined those which are considered to be quantitatively significant, require special audit considerations or would otherwise require procedures to be performed.

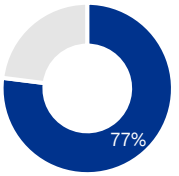
This has resulted in 15 components in scope, please refer to section 7 below for further details of these components.

In addition, for the remaining components for which we performed no audit procedures, we performed analysis at an aggregated Group level to re-examine our assessment that there is not a reasonable possibility of a material misstatement in these components.

We consider the scope of our audit, as communicated to the Audit and Risk Committee, to be an appropriate basis for our audit opinion.

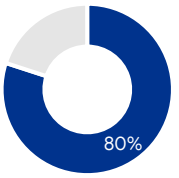
Our audit procedures covered 77% of Group revenue:

Group revenue

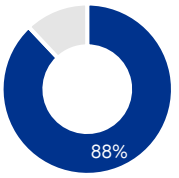


We performed audit procedures in relation to components that accounted for the following percentages:

Total profits and losses that made up group profit before tax



Group Total assets



THE IMPACT OF CLIMATE CHANGE ON OUR AUDITS

As part of our risk assessment throughout the audits, we considered the potential impacts of climate change on the Group's business and the financial statements, based on our knowledge of the Group's operations and their stated climate change strategy. Recognising the increased shareholder focus on the impact of climate change on financial reporting and financial statement audits, we are providing enhanced disclosure on the impact of climate change on our audit in this report. We do not identify the impact of climate change as a separate Key Audit Matter in our audit given the nature of the Group's operations, the impact of climate change on the Group's key judgements and estimates, and the resulting impact on our audit effort.

The context of climate change for the Group

The Group does not mine or extract hydrocarbons such as coal, natural gas or oil. It does, however, emit greenhouse gases directly from energy used in its mining operations, the processing of metals and minerals and the transportation of its products. Certain of the Group's products are used in energy and carbon intensive industries including steel and aluminium production. Other of the Group's products, such as copper, are expected to continue to be important in the transition to a low-carbon economy.

Targets and expected capital expenditure

Within page 157 of the Group's financial statements, the Group has discussed its target to reduce scope 1 and scope 2 emissions relative to its 2018 baseline by 15% in 2025, by 50% in 2030 and aim to achieve net zero by 2050. Whilst the Group expects to have made financial commitments to abatement projects designed to achieve the 15% emissions reduction by the end of 2025, the actual emissions abatement will lag these.

Climate change scenarios

The Group has detailed within page 158 its climate change scenarios, with Group's Conviction scenario being the central reference case for commodity forecasts and valuations, to support strategic decision making, capital allocation and financial reporting. The Group's Resilience and Aspirational scenario are two ends of the spectrum, with the Group's Resilience scenario being a lower GDP growth world and the Group's Aspirational scenario the stretch goal of the Paris Agreement.

Independent Auditors' Report

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THE IMPACT OF CLIMATE CHANGE ON OUR AUDITS *(continued)*

Group's assessment of financial reporting consequences

IFRS requires the Group financial reporting to be based, amongst other things, on the Group's best estimate of assumptions that are reasonable and supportable as at the date of reporting. Those assumptions may not align with the ways in which the global economy, society and government policies will need to change to meet the targets to limit global warming to 1.5^{0}C, which is aligned with the stretch goal of the 2015 COP 21 Paris Agreement.

The Group has detailed how it considered the financial reporting consequences of climate change on pages 157 to 160, of the financial statements including cross references where further disclosure is included in notes to the Group financial statements

Our audit response

General risk assessment procedures

As part of our risk assessment procedures, we made inquiries, with the assistance of our sustainability specialists, of key members of management. Our inquiries focused on understanding the reason for and make-up of the Group's new Conviction scenario, progress of the Group's climate strategy and identifying those areas where climate change could have a potentially material impact on the financial statements. Our inquiries also focused on understanding the progress made by the Group in meeting its Scope 1 and Scope 2 targets, progress of its decarbonisation programmes and understanding the Group's actual capital expenditure in relation to its decarbonisation strategy and financial commitments to abatement projects. We involved our sustainability specialists in our inherent risk assessment and planning discussions, where we discussed the Group's climate strategy, and considered potential material impacts to the financial statements.

Specific risk assessment procedures with regards to the carrying value of the Group's assets, consideration of asset obsolescence and assessment of useful economic lives

As the Group continues to progress its climate change strategy, we have considered the impact of climate change when evaluating potential impairment of property, plant and equipment or cash-generating units ('CGUs') including when responding to the Key Audit Matters ('KAM) with respect to the Oyu Tolgoi and Kennecott Utah Copper CGUs.

Our climate risk assessment procedures, including making specific inquiries with Group personnel to assess risk of material misstatement on the Group's financial statements, included :

- Understanding the status of the Group's plans relating to renewable energy solutions to the Australian Aluminium assets and related considerations for asset obsolescence or re-estimation of useful lives.
- Understanding the status of the Group's plan to decarbonise elements of its operations, including attaining net zero shipping vessels by 2030, decarbonising elements of its existing mobile fleet, in the Pilbara, and related considerations for asset obsolescence or re-estimation of useful lives.
- Understanding the Group's process to continue assessing the impact of climate change on physical risks to its operations and the accounting impacts, if any. This included, for example, whether physical risk had impacted the Group's judgment on the useful economic life of its water rights in Quebec (currently indefinite-life intangible assets).
- As a result of our risk-assessment procedures, considering factors such as the stage of development and expected timing of asset replacement projects compared to existing useful economic lives, we have not identified a separate risk of material misstatement arising from the impact of climate change to these financial statements.

As the Group continues implementing its climate strategy, there may be material accounting considerations and consequences in the future, including impacts on recoverable amounts of key assets and re-estimation of useful economic lives.

Other audit procedures

During the course of our audits our specialists, including sustainability specialists, assisted us in carrying out additional audit procedures including:

- Evaluating the potential impact of new and emerging climate-related legislation on the Group. This included the Australian Safeguard mechanisms.
- Evaluating the material closure provisions of the Group where cost estimates consider the impact of climate change in inputs, such as expected precipitation rates. This consideration was not significant to warrant separate discussion in our KAM on evaluation of specific provision for close-down, restoration and environment
- Evaluating the Group's disclosures related to climate change in the financial statements
- Reading the disclosures related to climate change in the Directors' Report and Strategic report, including the TCFD recommended disclosures, and considering their consistency with the financial statements and our audit knowledge
- Assessing the consistency between the Group's expectation of capital expenditure planned for decarbonisation with cash flows used in the going concern and viability assessments.

Independent Auditors' Report

Of KPMG LLP ("KPMG UK") to the members of Rio Tinto plc and of KPMG ("KPMG Australia") to the members of Rio Tinto Limited

2. GOING CONCERN, VIABILITY AND PRINCIPAL RISKS AND UNCERTAINTIES (KPMG UK ONLY)

The Directors have prepared the financial statements on the going concern basis as they do not intend to liquidate the Group or the UK parent or to cease their operations, and as they have concluded that the Group's and UK parent company's financial position means that this is realistic. They have also concluded that there are no material uncertainties that could have cast significant doubt over their ability to continue as a going concern for at least a year from the date of approval of the financial statements ("the going concern period").

GOING CONCERN

We used our knowledge of the Group, its industry, and the general economic environment to identify the inherent risks to its business model and analysed how those risks might affect the Group's financial resources or ability to continue operations over the going concern period. The risks we considered most likely to adversely affect the Group's and UK Parent Company's available financial resources over this period relate to levels of demand and commodity pricing of key products.

We critically assessed the assumptions in the Directors' downside scenarios relevant to liquidity and covenant metrics, in particular in relation to revenue growth by assessing:

- The directors' forecasting by comparing previous forecasts with actual results
- The assumptions in the Group's forecast of reasonably possibly downsides
- The impact of applying more severe downside scenarios.

The extent of our work was influenced by the level of liquidity. We also assessed the completeness of the going concern disclosure.

Accordingly, based on those procedures, we found the directors' use of the going concern basis of accounting without any material uncertainty for the Group and Parent Company to be acceptable. However, as we cannot predict all future events or conditions and as subsequent events may result in outcomes that are inconsistent with judgements that were reasonable at the time they were made, the above conclusions are not a guarantee that the Group or the Parent Company will continue in operation.

Our conclusions

- We consider that the directors' use of the going concern basis of accounting in the preparation of the Group's and UK parent company's financial statements is appropriate;
- We have not identified, and concur with the directors' assessment that there is not, a material uncertainty related to events or conditions that, individually or collectively, may cast significant doubt on the Group's or UK parent company's ability to continue as a going concern for the going concern period;
- We have nothing material to add or draw attention to in relation to the directors' statement on the 'about the presentation of our financial statements' section in the financial statements on the use of the going concern basis of accounting with no material uncertainties that may cast significant doubt over the Group and UK parent company's use of that basis for the going concern period, and we found the going concern disclosure to be acceptable; and
- The related statement under the UK Listing Rules set out on page 151 is materially consistent with the financial statements and our audit knowledge.

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DISCLOSURES OF EMERGING AND PRINCIPAL RISKS AND LONGER-TERM VIABILITY

Our responsibility

We are required to perform procedures to identify whether there is a material inconsistency between the directors' disclosures in respect of emerging and principal risks and the viability statement, and the financial statements and our audit knowledge.

Based on those procedures, we have nothing material to add or draw attention to in relation to:

- the directors' confirmation within the longer-term viability statement on page 90 that they have carried out a robust assessment of the emerging and principal risks facing the Group, including those that would threaten its business model, future performance, solvency and liquidity;
- the Principal Risks disclosures describing these risks and how emerging risks are identified and explaining how they are being managed and mitigated; and
- the directors' explanation in the longer-term viability statement of how they have assessed the prospects of the Group, over what period they have done so and why they considered that period to be appropriate, and their statement as to whether they have a reasonable expectation that the Group will be able to continue in operation and meet its liabilities as they fall due over the period of their assessment, including any related disclosures drawing attention to any necessary qualifications or assumptions.

We are also required to review the longer-term viability statement set out on page 90 under the Listing Rules.

Our work is limited to assessing these matters in the context of only the knowledge acquired during our financial statements audit. As we cannot predict all future events or conditions and as subsequent events may result in outcomes that are inconsistent with judgements that were reasonable at the time they were made, the absence of anything to report on these statements is not a guarantee as to the Group's and UK Parent Company's longer-term viability.

Our reporting

We have nothing material to add or draw attention to in relation to these disclosures.

We have concluded that these disclosures are materially consistent with the financial statements and our audit knowledge.

3. KEY AUDIT MATTERS

WHAT WE MEAN

Key audit matters are those matters that, in our professional judgement, were of most significance in our audits of the current year financial statements and include the most significant assessed risks of material misstatement (whether or not due to fraud) identified by us, including those which had the greatest effect on:

- the overall audit strategies;
- the allocation of resources in the audits; and
- directing the efforts of the engagement teams.

We include below the Key Audit Matters ('KAMs') for the Group and Rio Tinto plc in decreasing order of audit significance, together with our key audit procedures to address those matters and, as required for public interest entities, our results from those procedures. These matters were addressed in the context of, and our results are based on procedures undertaken specific to each of our discrete audits of the financial statements as a whole and in forming our opinions thereon, and consequently are incidental to those opinions, and we do not provide separate opinions on these matters.

4.1 EVALUATION OF THE IMPAIRMENT ASSESSMENT FOR THE KENNECOTT UTAH COPPER CGU ('KUC CGU')

Financial Statement Elements		Our results
	FY24	
Carrying value of the Kennecott Utah Copper CGU	**US$2,200m**	**FY24: Acceptable**

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Description of the Key Audit Matter	Our response to the risk
As described in note 4, the Group has determined that there is an indicator of impairment of property, plant and equipment in the Kennecott Utah Copper CGU, as a result of worsening geotechnical conditions, which led to the Group estimating the recoverable amount of the CGU (based on fair value less costs of disposal methodology) and comparing to the respective carrying amount. The Group concluded that the Kennecott Utah Copper CGU's recoverable amount exceeded its carrying value. The Group's determination of recoverable amount of the CGU requires judgement and estimation in arriving at key assumptions, including: – forecast copper commodity prices; and – timing and volume of forecast production in the life of mine plans. We have identified the Group's impairment assessment of property, plant and equipment in the Kennecott Utah Copper CGU as a key audit matter. This was due to the complex auditor judgement and the level of specialised skills required to evaluate the key assumptions noted above.	Our procedures to address the risk included: **Control operation** Evaluating the design and testing the operating effectiveness of certain internal controls of the Group related to the impairment process for determination of the recoverable amount of property, plant and equipment for the Kennecott Utah Copper CGU. **Test of details** We performed the following procedures to challenge the Group when evaluating the key assumptions used to determine the recoverable amount: – involved our valuation professionals with specialist skills and knowledge who assisted us in assessing the forecast long-term copper commodity prices used in the Group's assessment by comparing them to, and considering changes in, market observable price forecasts; – assessed the scope, competency and objectivity of the Group's internal experts who prepared the life of mine plans (which details the timing and production volumes) utilised in the Group's impairment assessment by examining the work they were involved to perform, their professional qualification and experience; and – used our audit knowledge, judgement and industry experience to evaluate and challenge the Group's assumptions on timing and volume of production, including with reference to historical performance and through inquiries of senior finance and operational personnel within the Group **Assessing disclosures** We have assessed the disclosures in note 4 of the Group financial statements using our understanding obtained from our testing, against the requirements of the accounting standards.

Communications with the Rio Tinto's Audit and Risk Committee

Our discussions with and reporting to the Audit and Risk Committee included:

- Key factors impacting our risk assessment and procedures performed as listed above
- Key procedures performed to respond to the risk as listed above; and
- Involvement of our valuations professionals, who assisted us in assessing the forecast copper commodity prices

Areas of particular auditor judgement

There is inherent judgement and complexity in assessing the Group's forecast copper commodity prices and the timing and volume of the forecast production and life of mine plan.

Our results

We found the impairment assessment of the Kennecott Utah Copper CGU to be acceptable.

4.2 EVALUATION OF SPECIFIC PROVISIONS FOR CLOSE-DOWN, RESTORATION AND ENVIRONMENTAL OBLIGATIONS ('CLOSURE PROVISIONS')

Financial Statement Elements	FY24	FY23	Our assessment of risk vs FY23		Our results
Carrying value of the closure provisions within Rio Tinto Iron ore ('Pilbara')	**Included in US$15,731m of close-down and restoration provisions**	Included in US$17,150m of close-down and restoration provisions	↔	*Our assessment of risk on specific closure provisions remained consistent with the prior year.*	**FY24: Acceptable** FY23: Acceptable

Independent Auditors' Report

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Description of the Key Audit Matter

The Group incurs legal and constructive obligations for close-down and restoration activities which include the dismantling and demolition of infrastructure, the removal of residual materials and the remediation of disturbed areas for mines and certain refineries and smelters. Generally, there is relatively limited activity within the Group or broader industry of completing large scale restoration and rehabilitation projects, and elements of restoration and rehabilitation of each site are relatively unique to the site. As such, there are limited comparable historical precedents against which to assess estimates of future costs, which increases estimation uncertainty for the Group, and increases audit focus for us.

A significant proportion of the Group's assets have long remaining lives, which also increases the estimation uncertainty relating to the restoration and rehabilitation activities required and the timing of the associated future cash flows. Because of this, the effect of the time value of money is significant.

Close-down, restoration and environmental remediation activities are governed by a combination of legislative requirements and the Group's policies. These vary across location, product and operation.

The Group has disclosed that the determination of when an estimate associated with close-down, restoration and environmental obligations is sufficiently reliable to update is an area of judgement that may have a significant effect on the amounts recognised in the financial statements.

The evaluation of closure provisions for Rio Tinto Iron Ore ('Pilbara') is a KAM due to the significant amount of the provision and the judgement and specialised skills involved in our audit testing of key assumptions used by the Group to determine the provision, including:

- the future close-down and restoration costs including costs associated with post-closure monitoring; and
- the life of operation and probability, nature and timing of closure rehabilitation activities.

Refer to note 14, and the Audit and Risk Committee's views set on page 114.

Our response to the risk

Our procedures to address the risk included:

Control operation

Evaluating the design and testing the operating effectiveness of certain internal controls over the Group's process to estimate provisions for close-down, restoration and environmental obligations including the Group's selection of key assumptions to be used.

Test of details

- We evaluated the scope, objectivity and competence of the Group's experts, both internal and external to the Group, who produce the cost estimates, by examining the work they were involved to perform, their professional qualification and experience;
- We compared a sample of previous forecast cost assumptions to actual costs to assess the Group's ability to accurately forecast closure costs;
- We inspected the most recent closure studies and other technical material prepared by the Group relating to changes in the closure provision to assess the nature and scope of restoration work planned to be undertaken. This included assumptions related to the life of the operation and the probability, nature and timing of closure rehabilitation activities and strategy;
- On a sample basis, we compared the nature, timing and quantum of costs contained in the Group's provisions to the Group's third-party expert reports and internal and external underlying documentation; and
- We evaluated the completeness of the provisions against the Group's analysis for where disturbances require rehabilitation and comparing to our understanding of the Pilbara sites, including the probability, nature and timing of possible closure rehabilitation activities.

Our closure expertise

For a sample of sites, we involved our own mine closure professionals with specialist skills and knowledge who assisted in evaluating the methodology applied by the Group's third-party experts and assisted us in assessing certain assumptions regarding the nature and costs of future rehabilitation based on their experience and familiarity with applicable legislative requirements and industry practice and Group's closure commitments.

Assessing disclosures

We have assessed the disclosures in note 14 of the Group financial statements, including the accounting policy, using our understanding obtained from our testing, against the requirements of the accounting standards. This included evaluating the current and non-current closure provision disclosure for consistency to the planned timing of the expenditure, and whether the disclosure reflected the risks inherent in the estimation of the provision.

Communications with the Rio Tinto's Audit and Risk Committee

Our discussions with and reporting to the Audit and Risk Committee included:

- Key factors impacting our risk assessment and procedures performed as listed above
- Involvement of our mine closure professionals, in assessing certain assumptions regarding the forecast closure costs of closure activities within the Pilbara; and
- Conclusions from our audit procedures.

Areas of particular auditor judgement

There is inherent judgement and complexity in:

- assessing the accuracy of close-down and restoration costs (including contingencies) given the limited comparable historical precedents of similar activities being undertaken
- the length of time until the closure activities are due to be completed which impacts the estimation of cost; and
- the assessment of the probability of whether certain closure activities will be required to be undertaken based on the interpretation of legislative requirements

Our results

We found the level of provision for close-down, restoration and environmental obligations for Rio Tinto Iron Ore to be acceptable.

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4.3 EVALUATION OF INDICATORS OF IMPAIRMENT OR IMPAIRMENT REVERSAL OF PROPERTY, PLANT AND EQUIPMENT FOR THE OYU TOLGOI COPPER-GOLD MINE CASH GENERATING UNIT ('OYU TOLGOI CGU')

Financial Statement Elements			Our assessment of risk vs FY23		Our results
	FY24	FY23			
Carrying value of the Oyu Tolgoi CGU	**Included in US$67,345m of property, plant and equipment**	Included in US$65,290m of property plant and equipment	↔	*Our assessment of risk on specific impairment or impairment reversal triggers remained consistent with the prior year.*	**FY24: Acceptable** FY23: Acceptable

Description of the Key Audit

The Group has determined that there were no indicators of an impairment or impairment reversal of property, plant and equipment on the Oyu Tolgoi CGU. Please see Note 4 for the group's assessment

The assessment of whether indicators of impairment or impairment reversal exist over the Oyu Tolgoi CGU is a KAM due to:

- The history of impairment in the CGU meaning it is more susceptible to further indicators of impairment or impairment reversal
- The level of auditor judgement required in challenging the Group's determination that there were no indicators of impairment or impairment reversal requiring involvement of valuations professionals alongside our senior audit team members

We focussed on the key internal and external factors impacting the Oyu Tolgoi CGU, including:

- The continued ramp up of the underground production
- Volatility in forecast commodity prices which are subject to greater uncertainty in the current economic environment

Our response to the risk

Our procedures to address the risk included:

Control operation

Evaluating the design, implementation and testing the operating effectiveness of certain internal controls over the Group's process for identifying indicators of impairment or impairment reversal of property, plant and equipment for the Oyu Tolgoi CGU.

Test of details

We performed the following procedures, amongst others, to challenge the Group's determination that no indicators of impairment or impairment reversal were present:

- evaluated the Group's assessment with reference to our knowledge of the Group, our industry experience, current economic conditions and requirements of IAS 36 – Impairment of Assets;
- involved our valuation professionals with specialised skills and knowledge who assisted us in assessing the forecast commodity prices used in the Group's assessment, by comparing them to, and considering changes in, market observable price forecasts;
- compared the actual ramp up of underground mine production to the Group's plans, to assess whether any deviation from these plans could represent an indicator of impairment or impairment reversal; and
- inquired of operational management to corroborate certain changes in assumptions.

Assessing disclosures

We have assessed the disclosures in note 4 of the Group financial statements, including the accounting policy, using our understanding obtained from our testing, against the requirements of the accounting standards.

Communications with Rio Tinto's Audit and Risk Committee

Our discussions with and reporting to the Audit and Risk Committee included:

- Key factors impacting our risk assessment and procedures performed as listed above;
- Key procedures performed to respond to the risk as listed above; and
- Involvement of our own valuations professionals, who assisted us in assessing the forecast commodity prices.

Areas of particular auditor judgement

Particular auditor judgement was required to assess whether certain internal and external factors impacting the Oyu Tolgoi CGU, in particular the volatility of forecast commodity prices and the continued ramp up of underground production, result in indicators of impairment or impairment reversal.

Our results

We found the Group's determination that there were no indicators or impairment or impairment reversal in respect of the Oyu Tolgoi CGU to be acceptable.

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4.4 EVALUATION OF RECOVERABILITY OF RIO TINTO PLC'S INVESTMENTS IN SUBSIDARIES (KPMG UK ONLY)

Financial Statement Elements	FY24	FY23	Our assessment of risk vs FY23	Our results
Carrying value of Rio Tinto plc's investments in Group companies	**US$36,212m**	US$36,218m	◄► *Our assessment of risks of recoverability of Rio Tinto plc's investments in its subsidiaries of the Group has remained consistent with the previous year.*	**FY24: Acceptable** FY23: Acceptable

Description of the Key Audit

In respect of KPMG UK's audit of the UK parent company, Rio Tinto plc, the sole KAM relates to the recoverability of its investment in its subsidiaries of the Group. The carrying amount of the UK parent Company's investments in subsidiaries is disclosed in Note B of the Rio Tinto plc company financial statements represents 81.8% (FY23: 87.7%) of the UK parent company's total assets.

Their recoverability is not at a high risk of material misstatement or subject to significant auditor judgement. However, due to the value of these investments in the context of the UK parent company's financial statements, this is the area that had the greatest effect overall on our UK parent company audit.

Our response to the risk

We performed the tests below rather than seeking to rely on any of the company's controls because the nature of the balance is such that we would expect to obtain audit evidence primarily through the detailed procedures described.

Our procedures to address the risk included:

Test of details

- We compared the carrying value of its investments with the relevant subsidiaries' draft balance sheets to identify whether their net assets, being an approximation of their minimum recoverable amounts, were in excess of the carrying amount
- We evaluated the UK parent company's considerations of indicators of impairment or impairment reversal of the Group's CGUs within the subsidiaries owned by the UK parent company using our knowledge obtained from the Group's impairment or impairment reversal assessment.

Communications with Rio Tinto plc's Audit and Risk Committee

We reported to the Audit and Risk Committee that based on the risks identified and our procedures performed, we found the company's conclusion that there is no impairment of its investments in subsidiaries to be acceptable.

Areas of particular auditor judgement

There were no areas of particular auditor judgement.

Our results

We found the company's conclusion that there is no impairment of its investment in subsidiaries to be acceptable.

4. KPMG UK'S REPORTING ON OUR ABILITY TO DETECT IRREGULARITIES, AND OUR RESPONSE

FRAUD – IDENTIFYING AND RESPONDING TO RISKS OF MATERIAL MISSTATEMENT DUE TO FRAUD

FRAUD RISK ASSESSMENT

To identify risks of material misstatement due to fraud ('fraud risks') we assessed events or conditions that could indicate an incentive or pressure by the Directors and other management to commit, or provide an opportunity to commit, fraud. Our risk assessment procedures included:

- Inquiries of the Directors, other management, internal audit and the Audit and Risk Committee, including obtaining and reviewing underlying documentation, covering the Group's policies and procedures related to:
  - Detecting and responding to the risks of fraud
  - Internal controls established to mitigate risks related to fraud
- Inquiries of the Directors, other management, internal audit and the Audit and Risk Committee as to whether they had knowledge of any actual, suspected or alleged fraud
- Reading Board and Audit and Risk Committee minutes
- Considering remuneration incentive schemes and performance targets for Directors and other management, including the flexed and unflexed underlying earning and STIP free cash flow target ranges for executive remuneration

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FRAUD RISK ASSESSMENT (continued)	– Using analytical procedures to identify any unusual or unexpected relationship between financial statement line items – Discussion among the engagement team regarding how and where fraud might occur in the financial statements and any potential indicators of fraud. The engagement team includes audit partners and staff who have extensive experience of working with companies in the mining sector, and this experience was relevant to the decision about where fraud risks may arise. The discussions also involved our own forensic specialists to assist us in identifying fraud risks based on discussions of the circumstances of the Group who advised the engagement team of fraud schemes that had arisen in similar sectors and industries and participated in the fraud risk assessment discussions.
RISK COMMUNICATIONS	We communicated fraud risks throughout the team and remained alert to any indicators of fraud throughout the audits. This included communication from the group audit team to component auditors of relevant fraud risks identified at the group level and requests to component audit teams to report to the group audit team any instances of fraud that could give rise to a material misstatement of the Group financial statements.
FRAUD RISKS	As required by UK auditing standards we addressed the risk of management override of controls and the risk of fraudulent revenue recognition. In particular we considered the risk that revenue is recorded in the wrong period, specifically overstated and the risk that Group and component management may be in a position to make inappropriate accounting entries, and the risk of bias in accounting estimates and judgments, with an additional risk focused on manual journals to revenue. We did not identify any additional fraud risks.
PROCEDURES TO ADDRESS FRAUD RISKS	Our audit procedures included evaluating the design, implementation and operating effectiveness of internal controls relevant to mitigate these risks. We also performed audit procedures including: – Comparing journal entries to supporting documentation for a selection based on risk including, for example, those posted by senior finance management, those posted to unusual accounts or those containing unusual journal descriptions. Additionally, we identified high-risk manual journal entries related to revenue. – Assessing significant accounting estimates for bias – Obtaining third party confirmations for all material cash balances – Assessing when revenue was recognised, particularly focusing on revenue recognised in the days before year-end, and whether it was recognised in the appropriate year in line with the requirements of the accounting standards.

LAWS AND REGULATIONS – IDENTIFYING AND RESPONDING TO RISKS OF MATERIAL MISSTATEMENT RELATING TO COMPLIANCE WITH LAWS AND REGULATIONS	
LAWS AND REGULATIONS RISK ASSESSMENT	We identified areas of laws and regulations that could reasonably be expected to have a material effect on the financial statements: – From our general commercial and mining sector experience – From inspection of the Group's regulatory and legal correspondence – Discussed with the Directors and other management about the policies and procedures regarding compliance with laws and regulations As the Group operates in a regulated environment, our assessment of risks of material misstatement also involved gaining an understanding of the control environments including the Group's higher-level procedures for complying with regulatory requirements.
RISK COMMUNICATIONS	We communicated identified laws and regulations risks throughout our team and remained alert to any non-compliance throughout the audits. This included communication from the group audit team to components audit teams of relevant laws and regulations identified at the group level and requests to component auditors to report to the group audit team any instances of non-compliance with laws and regulations that could give rise to a material misstatement of the Group financial statements.
DIRECT LAWS CONTEXT AND LINK TO AUDIT	The potential effect of these laws and regulations on the financial statements varies considerably. Firstly, the Group is subject to laws and regulations that directly affect the financial statements, including: – Financial reporting legislation (including related companies' legislation) – Distributable profits legislation – Taxation legislation (direct and indirect) – Pensions legislation We assessed the extent of compliance with these laws and regulations as part of our procedures on the related financial statement items.

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MOST SIGNIFICANT INDIRECT LAW/ REGULATION AREAS	Secondly, the Group is subject to many other laws and regulations where the consequences of non-compliance could have a material effect on amounts or disclosures in the financial statements, for instance through the imposition of fines or litigation or harm to the Group's license to operate We identified the following areas as those most likely to have such an effect: – Anti-bribery, fraud and corruption – Health and safety legislation – Employment and social security legislation – Environmental protection legislation – Competition legislation Auditing standards limit the required audit procedures to identify non-compliance with these laws and regulations to enquiry of the Directors and other management and inspection of regulatory and legal correspondence, if any. Therefore, if a breach of operational regulations is not disclosed to us or evident from relevant correspondence, an audit will not detect that breach.
KNOWN ACTUAL MATTERS	For the contingent liabilities disclosed in note 37 we assessed the disclosures against our understanding from legal confirmations received from external legal counsel and the requirements of the accounting standards.

CONTEXT	
CONTEXT OF THE ABILITY OF THE AUDIT TO DETECT FRAUD OR BREACHES OF LAW OR REGULATION	Owing to the inherent limitations of an audit, there is an unavoidable risk that we may not have detected some material misstatements in the financial statements, even though we have properly planned and performed our audit in accordance with auditing standards. For example, the further removed non-compliance with laws and regulations is from the events and transactions reflected in the financial statements, the less likely the inherently limited procedures required by UK auditing standards would identify it. In addition, as with any audit, there remained a higher risk of non-detection of fraud, as fraud may involve collusion, forgery, intentional omissions, misrepresentations, or the override of internal controls. Our audit procedures are designed to detect material misstatement. We are not responsible for preventing non-compliance or fraud and cannot be expected to detect non-compliance with all laws and regulations.

5. OUR DETERMINATION OF MATERIALITY

The scope of our audits was influenced by our application of materiality. We set quantitative thresholds and overlay qualitative considerations to help us determine the scope of our audits and the nature, timing and extent of our procedures, and in evaluating the effect of misstatements, both individually and in the aggregate, on the distinct financial statements as a whole.

USUS$700M (FY23: US$700M) **MATERIALITY FOR THE GROUP FINANCIAL STATEMENTS AS A WHOLE**	**What we mean** A quantitative reference for the purpose of planning and performing our audits. **Basis for determining materiality and judgements applied** Materiality for the Group financial statements as a whole was set by us at US$700m (FY23: US$700m). This was determined with reference to a benchmark of profit before taxation of the Group. For both FY24 and FY23, we determined profit before taxation to be an appropriate benchmark ('the benchmark') and considered qualitative factors that impact our assessment of materiality. The rationale for this benchmark is the Group is profit-orientated and, in an industry like mining, the cost of operations show the Group's ability to control costs to generate value over volume. We consider this to be key to users of the financial statements. In FY24 we adjusted profit before taxation to exclude certain items that were significant and did not represent normal, continuing operations of the Group in determining our materiality ('normalised Group profit before taxation'). The exclusions were US$538m related to the pre-tax impairment charge as disclosed in Note 4 and US$1,214m of pre-tax gains on consolidation and disposal of interests in businesses as disclosed in Note 5 of the Group financial statements. In FY23 there was an exclusion of US$936m related to the net pre-tax impairment charge as disclosed in Note 4 of the Group's financial statements. The Group materiality for FY24 represents 4.7% of the normalised Group profit before taxation (FY23: 4.8%). KPMG UK have determined materiality for the Rio Tinto plc Company financial statements as a whole at US$410m (FY23: US$410m). Consistent with FY23 we determined total assets remain an appropriate benchmark because the entity's role as a parent company means it holds significant assets. The materiality benchmark represents 1% (FY23: 1%) of Rio Tinto plc's total assets.

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US$455M

(FY23: US$455M)

PERFORMANCE MATERIALITY

What we mean

Our procedures on individual account balances and disclosures were performed to a lower threshold, performance materiality, so as to reduce to an acceptable level the risk that individually immaterial misstatements in individual account balances add up to a material amount across the financial statements as a whole.

Basis for determining performance materiality and judgements applied

We have considered performance materiality at a level of 65% (FY23: 65%) of materiality for the Group financial statements as a whole to be appropriate. We applied this percentage in our determination of performance materiality based on our expectation of control risk at the start of the audit and based on the findings of previous audits.

We have determined the Parent Company performance materiality to be set at US$307m (FY23: US$307m), which equates to 75% (FY23: 75%) of materiality for the Parent Company financial statements as a whole. KPMG UK applied this percentage in our determination of performance materiality because we did not identify any factors indicating an elevated level of risk.

US$35M

(FY23: US$35M)

AUDIT MISSTATEMENT POSTING THRESHOLD

What we mean

This is the amount below which identified misstatements are considered to be clearly trivial from a quantitative point of view. We may become aware of misstatements below this threshold which could alter the nature, timing and scope of our audit procedures, for example if we identify smaller misstatements which are indicators of fraud.

This is also the amount above which all misstatements identified are communicated to Rio Tinto's Audit and Risk Committee.

Basis for determining performance materiality and judgements applied

Basis for determining the audit misstatement posting threshold and judgements applied

We set our audit misstatement posting threshold at 5% (FY23: 5%) of our materiality for the Group financial statements and UK parent company financial statements.

We also report to the Audit and Risk Committee any other identified misstatements that warrant reporting on qualitative grounds.

The overall materiality for the Group financial statements of US$700m (FY23: US$700m) compares as follows to the main financial statement caption amounts:

	Total Group Revenue		Group profit before tax		Total Group Assets	
	FY24	FY23	**FY24**	FY23	**FY24**	FY23
Financial statement Caption	**US$53,658m**	US$54,041m	**US$15,615m**	US$13,785m	**US$102,786m**	US$103,549m
Group Materiality as % of caption	**1.3%**	1.3%	**4.5%**	5.0%	**0.7%**	0.7%

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6. THE SCOPE OF OUR AUDITS

GROUP SCOPE

What we mean

How the Group audit team determined the procedures to be performed across the Group.

This year, we applied the revised group auditing standard in our audit of the Group financial statements. The revised standard changes how an auditor approaches the identification of components, and how the audit procedures are planned and executed across components.

In particular, the definition of a component has changed, shifting the focus from how the entity prepares financial information to how we, as the group auditor, plan to perform audit procedures to address group risks of material misstatement. Similarly, the group auditor has an increased role in designing the audit procedures as well as making decisions on where these procedures are performed (centrally and/or at component level) and how these procedures are executed and supervised. As a result, we assess scoping and coverage in a different way and comparisons to prior period coverage figures are not meaningful. In this report we provide an indication of scope coverage on the new basis.

We performed risk assessment procedures to determine which of the Group's components are likely to include risks of material misstatement to the Group financial statements and which procedures to perform at these components to address those risks.

In total, we identified 15 components, having considered our evaluation of the Group's operational structure, the Group's legal structure, the existence of common information systems, the existence of common risk profiles across entities and our ability to perform audit procedures centrally.

Of those, we identified quantitatively significant components which contained the largest percentages of either total revenue or total assets of the Group, for which we performed audit procedures.

We also identified components that required special audit consideration, owing to Group risk relating to revenue recognition and impairment considerations residing in these components.

Additionally, having considered qualitative and quantitative factors, we selected additional components with accounts and/or disclosures contributing to the specific risks of material misstatement of the Group financial statements.

The below summarises where we performed audit procedures:

Component type	Number of components where we performed audit procedures	Range of materiality applied
Quantitatively significant components	4	US$440m - US$240m
Components requiring special audit consideration	3	US$200m - US$160m
Other components where we performed procedures	8	US$334m - US$160m
Total	**15**	

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GROUP SCOPE *(continued)*

We involved component auditors in performing the audit work on 15 components. We set the component materialities having regard to the mix of size and risk profile of the Group across the components. The parent companies are not components for the group audit.

Our audit procedures covered 77% of Group revenue.

We performed audit procedures in relation to components that accounted for 80% of total profits and losses that made up Group profit before tax and 88% of Group total assets.

For the remaining components for which we performed no further audit procedures, no component represented more than 6% of Group total revenue, Group profit before tax or Group total assets. We performed analysis at an aggregated Group level to re-examine our assessment that there is not a reasonable possibility of a material misstatement in these components.

Certain Group sales and purchases transactions that originate in various countries are processed in Singapore and Delhi respectively. These transactions are tested centrally by our audit teams in Singapore and Delhi on behalf of our component teams. The Group team has also performed audit procedures on the following areas on behalf of the components as they are controlled at the group level:

- Testing of IT Systems and configuration
- Consolidation of financial information
- Climate considerations and impact on the financial statements
- Identifying journal entries with a defined high-risk criteria
- Group level macro-economic assumptions for closure and impairment testing; and
- Pensions and post-retirement benefits

The Group team instructed component auditors as to the significant areas to be covered, including the relevant risks detailed above and the information to be reported back.

Impact of controls on our group audit

We identified the main finance IT system used by the majority of the Group, the consolidation system and two separate finance systems used by two of the group's components to be the main IT systems relevant to our audit.

With the involvement of our IT auditors, we assessed the design and operating effectiveness of key general IT and automated controls relevant to our audit for these aforementioned systems.

For all of our in-scope components we tested the operating effectiveness of relevant IT general controls and did not identify a need to change the planned audit approach that gained evidence including from testing the operating effectiveness of controls and substantive testing.

We also tested the design and operating effectiveness of the Group's internal controls over financial reporting in several areas of our audit, including key revenue streams. As a result of our testing, were able to rely on controls in these areas, which enabled us to reduce the scope of our substantive audit. In the other areas the scope of the audit work performed was fully substantive.

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GROUP AUDIT TEAM OVERSIGHT

What we mean

The extent of the Group audit team's involvement in component audits.

In working with component auditors, we:

- Held planning calls with component audit teams to discuss the significant areas of the audit relevant to the components, including the key audit matters in respect of:
  - Evaluation of the impairment assessment for the Kennecott Utah Copper CGU ('KUC CGU')
  - Evaluation of specific provisions for close-down, restoration and environmental obligations ('closure provisions'); and
  - Evaluation of indicators of impairment or impairment reversal of property, plant and equipment for the Oyu Tolgoi copper-gold mine cash generating unit ('Oyu Tolgoi CGU')
- Issued group audit instructions to component auditors on the scope and nature of their work, including significant areas to be covered, relevant risks and the information to be reported back.
- Held a global in-person conference with all component audit teams
- Held risk assessment alignment meetings and workshops with all component audit teams before the commencement of each phase of the audit.
- Visited 11 (2023: 6) components in-person as the audit progressed to understand and challenge the audit approach and organised fortnightly video conferences with the partners and directors of the Group and component audit teams. At these visits and video conferences, the findings reported to the Group team were discussed in more detail, and any further work required by the Group team was then performed by the component audit teams.
- Inspection of component audit teams' key work papers (in person and/or using remote technology capabilities) to evaluate the appropriateness of conclusions drawn from the audit evidence obtained and consistencies between communicated findings and work performed, with a particular focus on the key audit matters.

Sites visited along with our component auditors, where we also held meetings with relevant Rio Tinto personnel

Scope	FY24	FY23
Sites visited	– Pilbara operations – Oyu Tolgoi operations – Kennecott Utah Copper operations – Commercial Hub in Singapore – Simandou operations – Group Services Hub in Brisbane, Perth and Montreal	– Pilbara operations – Oyu Tolgoi operations – Kitimat operations – Iron Ore of Canada operations – Group Services Hub in Delhi, Brisbane, Perth and Montreal – Commercial Hub in Singapore

7. KPMG AUSTRALIA'S REPORT ON THE REMUNERATION REPORT

OPINION	In our opinion, the Remuneration Report of Rio Tinto Limited for the year ended 31 December 2024 complies with Section 300A of the Australian Corporations Act 2001, as amended by the ASIC Class Order.
OUR RESPONSIBILITIES	KPMG Australia has audited the Remuneration Report, required by the Australian Corporations Act 2001, included in pages 119 to 145 of the Directors' report for the year ended 31 December 2024. Our responsibility is to express an opinion as to whether the Remuneration Report complies in all material respects with Section 300A of the Australian Corporations Act 2001, based on our audit conducted in accordance with Australian Auditing Standards.
DIRECTORS' RESPONSIBILITIES	The Directors of Rio Tinto Limited are responsible for the preparation and presentation of the Remuneration Report information in accordance with Section 300A of the Australian Corporations Act 2001.

8. OTHER INFORMATION IN THE ANNUAL REPORT

The Directors are responsible for the other information presented in the Annual Report together with the financial statements. Other Information is financial and non-financial information in Rio Tinto's annual report which is provided in addition to the financial statements and the Auditors' Report. Our opinions on the financial statements do not cover the other information and, accordingly, we do not express an audit opinion or, except as explicitly stated below, in section 8, and on pages 321 to 324 provide any form of assurance conclusion thereon.

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ALL OTHER INFORMATION

Our responsibility (KPMG UK)

Our responsibility is to read the other information and, in doing so, consider whether, based on our financial statements audit work, the information therein is materially misstated or materially inconsistent with the financial statements or our audit knowledge.

Our reporting

Based solely on that work KPMG UK have not identified material misstatements or inconsistencies in the other information.

Our responsibility (KPMG Australia)

Our responsibility is to read the Other Information. In doing so, we consider whether the Other Information is materially inconsistent with the financial statements or our knowledge obtained in the audit, or otherwise appears to be materially misstated. We are required to report if we conclude that there is a material misstatement of this Other Information.

Based on the work KPMG Australia have performed on the Other Information that we obtained prior to the date of this Auditor's Report we have nothing to report.

STRATEGIC REPORT AND DIRECTORS' REPORT (KPMG UK ONLY)

Our responsibility and reporting

Based solely on our work on the other information described above we report to you as follows:

- we have not identified material misstatements in the strategic report and the Directors' report;
- in our opinion the information given in those reports for the financial year is consistent with the financial statements; and
- in our opinion those reports have been prepared in accordance with the Companies Act 2006.

DIRECTORS' REMUNERATION REPORT (KPMG UK ONLY)

Our responsibility

KPMG UK are required to form an opinion as to whether the part of the Directors' Remuneration Report to be audited has been properly prepared in accordance with the Companies Act 2006.

Our reporting

In our opinion the part of the Directors' Remuneration Report to be audited has been properly prepared in accordance with the Companies Act 2006.

CORPORATE GOVERNANCE DISCLOSURES (KPMG UK ONLY)

Our responsibility

We are required to perform procedures to identify whether there is a material inconsistency between the financial statements and our audit knowledge, and:

- the directors' statement that they consider that the annual report and financial statements taken as a whole is fair, balanced and understandable, and provides the information necessary for shareholders to assess the Group's position and performance, business model and strategy;
- the section of the annual report describing the work of the Audit and Risk Committee, including the significant issues that the Audit and Risk Committee considered in relation to the financial statements, and how these issues were addressed; and
- the section of the annual report that describes the review of the effectiveness of the Group's risk management and internal control systems.

Our reporting

Based on those procedures, we have concluded that each of these disclosures is materially consistent with the financial statements and our audit knowledge.

We are also required to review the part of the Corporate Governance Statement relating to the Group's compliance with the provisions of the UK Corporate Governance Code specified by the Listing Rules for our review.

We have nothing to report in this respect.

OTHER MATTERS ON WHICH WE ARE REQUIRED TO REPORT BY EXCEPTION (KPMG UK ONLY)

Our responsibility

Under the Companies Act 2006, we are required to report to you if, in our opinion:

- adequate accounting records have not been kept by the UK parent company, or returns adequate for our audit have not been received from branches not visited by us; or
- the UK parent company financial statements and the part of the Directors' Remuneration Report to be audited are not in agreement with the accounting records and returns; or
- certain disclosures of directors' remuneration specified by law are not made; or
- we have not received all the information and explanations we require for our audit.

Our reporting

We have nothing to report in these respects.

Independent Auditors' Report

Of KPMG LLP ("KPMG UK") to the members of Rio Tinto plc and of KPMG ("KPMG Australia") to the members of Rio Tinto Limited

9. RESPECTIVE RESPONSIBILITIES

Directors' responsibilities for the financial statements

As explained more fully in their statement set out on page 245, the directors are responsible for: the preparation of the financial statements in accordance with relevant laws and regulations including being satisfied that they give a true and fair view of the financial position and performance of the Group and Rio Tinto Plc in accordance with the relevant financial reporting frameworks and in compliance with relevant laws and regulations; implementing such internal control as they determine is necessary to enable the preparation of financial statements in accordance with relevant laws and regulations, including giving a true and fair view of the financial position and performance of the Group and Rio Tinto Plc , and that are free from material misstatement, whether due to fraud or error; assessing the Group, Rio Tinto plc's and Rio Tinto Limited's ability to continue as a going concern and whether the use of the going concern basis of accounting is appropriate, disclosing, as applicable, matters related to going concern; and using the going concern basis of accounting unless they either intend to liquidate the Group, Rio Tinto plc and Rio Tinto Limited, or to cease operations, or have no realistic alternative but to do so.

Auditors' responsibilities for the audit of the financial statements

Our objectives are to obtain reasonable assurance about whether each of the distinct financial statements as a whole are free from material misstatement, whether due to fraud or error, and to issue our opinions in an auditor's report. Reasonable assurance is a high level of assurance, but does not guarantee that an audit conducted in accordance with ISAs (UK) or ASAs will always detect a material misstatement when it exists. Misstatements can arise from fraud or error and are considered material if, individually or in aggregate, they could reasonably be expected to influence the economic decisions of users taken on the basis of the financial statements.

A fuller description of our responsibilities is provided on the FRC's website at www.frc.org.uk/auditorsresponsibilities. A further description of KPMG Australia's responsibilities for the audit of the Group financial statements is located at the Auditing and Assurance Standards Board website at: https://auasb.gov.au/media/bwvjcgre/ar1_2024.pdf . This description forms part of our Australian auditor's report.

The UK Parent company is required to include these financial statements in an annual financial report prepared under Disclosure Guidance and Transparency Rule 4.1.17R and 4.1.18R. Our auditor's report provides no assurance over whether the annual financial report has been prepared in accordance with those requirements.

10. THE PURPOSE OF OUR AUDIT WORK AND TO WHOM WE OWE OUR RESPONSIBILITIES

KPMG UK's report is made solely to Rio Tinto plc's members, as a body, in accordance with Chapter 3 of Part 16 of the Companies Act 2006, and the terms of our engagement by that company. Our audit work has been undertaken so that we might state to the members of Rio Tinto plc those matters we are required to state to them in an auditor's report, and the further matters we are required to state to them in accordance with the terms agreed with Rio Tinto plc, and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than Rio Tinto plc's members, as a body, for our audit work, for this report, or for the opinions we have formed.

KPMG Australia's report is made solely to Rio Tinto Limited's members, as a body, in accordance with the Australian Corporations Act 2001 as amended by the ASIC Class Order dated 11 July 2024. Our audit work has been undertaken so that we might state to the members of Rio Tinto Limited those matters we are required to state to them in an auditor's report, and further matters we are required to state to them in accordance with the terms agreed with Rio Tinto Limited, and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than Rio Tinto Limited's members, as a body, for our audit work, for this report, or for the opinions we have formed.



Jonathan Downer (Senior Statutory Auditor)
for and on behalf of KPMG LLP, Statutory Auditor
Chartered Accountants
15 Canada Square
London
E14 5GL
United Kingdom

19 February 2025



Trevor Hart
KPMG
Partner
235 St Georges Terrace
Perth WA 6000
Australia

19 February 2025

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Lead Auditor's Independence Declaration

Under Section 307C of the Corporations Act 2001

To the Directors of Rio Tinto Limited

I declare that, to the best of my knowledge and belief, in relation to the Rio Tinto Limited for the financial year ended 31 December 2024 there have been:

i. no contraventions of the auditors independence requirements as set out in the Australian Corporations Act 2001 in relation to the audit; and
ii. no contravention of any applicable code of professional conduct in relation to the audit.

This declaration is in respect of Rio Tinto Limited and the entities it controlled during the period.

KPMG

KPMG

Trevor Hart
Partner
Perth

19 February 2025

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Financial information by business unit

	Rio Tinto interest %	Segmental revenue[a] for the year ended 31 December 2024 US$m	2023 US$m	2022 US$m	Underlying EBITDA[a] for the year ended 31 December 2024 US$m	2023 US$m Adjusted[m]	2022 US$m Adjusted[m]	Depreciation and amortisation for the year ended 31 December 2024 US$m	2023 US$m	2022 US$m	Underlying earnings[a] for the year ended 31 December 2024 US$m	2023 US$m Adjusted[m]	2022 US$m Adjusted[m]
Iron Ore													
Pilbara	(b)	**27,849**	30,867	29,313	**16,543**	19,828	18,474	**2,390**	2,128	2,011	**9,550**	11,945	11,106
Dampier Salt	68.4%	**412**	422	352	**117**	120	56	**23**	21	19	**46**	49	19
Evaluation projects/other	(c)	**3,197**	2,701	2,711	**(478)**	57	33	**–**	–	–	**(550)**	(89)	53
Intra-segment	(c)	**(2,119)**	(1,741)	(1,470)	**67**	(31)	49	**–**	–	–	**51**	(23)	35
Total Iron Ore segment		**29,339**	32,249	30,906	**16,249**	19,974	18,612	**2,413**	2,149	2,030	**9,097**	11,882	11,213
Aluminium													
Bauxite	(d)	**3,061**	2,390	2,396	**1,250**	662	618	**365**	373	361	**579**	141	101
Alumina	(e)	**3,612**	2,882	3,215	**799**	136	289	**142**	170	200	**417**	(56)	18
North American Aluminium	(f)	**7,030**	6,581	7,561	**1,639**	1,480	2,426	**785**	710	704	**632**	566	1,266
Pacific Aluminium	(g)	**2,844**	2,613	3,102	**363**	169	497	**154**	165	135	**131**	18	261
Intra-segment and other		**(3,651)**	(2,953)	(3,138)	**(194)**	(11)	12	**–**	–	—	**(136)**	(15)	(8)
Integrated operations		**12,896**	11,513	13,136	**3,857**	2,436	3,842	**1,446**	1,418	1,400	**1,623**	654	1,638
Other product group items		**754**	772	973	**35**	9	25	**–**	–	–	**23**	5	15
Product group operations		**13,650**	12,285	14,109	**3,892**	2,445	3,867	**1,446**	1,418	1,400	**1,646**	659	1,653
Evaluation projects/other		**–**	–	–	**(219)**	(163)	(195)	**–**	–	–	**(163)**	(121)	(149)
Total Aluminium segment		**13,650**	12,285	14,109	**3,673**	2,282	3,672	**1,446**	1,418	1,400	**1,483**	538	1,504
Copper													
Kennecott	100%	**2,599**	1,430	1,923	**720**	178	857	**718**	500	624	**(54)**	(328)	12
Escondida	30%	**3,424**	2,756	2,628	**2,221**	1,619	1,641	**426**	355	330	**921**	684	798
Oyu Tolgoi	(h)	**2,184**	1,625	1,424	**1,105**	639	449	**473**	476	194	**388**	161	130
Product group operations		**8,207**	5,811	5,975	**4,046**	2,436	2,947	**1,617**	1,331	1,148	**1,255**	517	940
Evaluation projects/other	(m)	**1,068**	867	724	**(609)**	(476)	(381)	**3**	5	5	**(444)**	(327)	(252)
Total Copper segment		**9,275**	6,678	6,699	**3,437**	1,960	2,566	**1,620**	1,336	1,153	**811**	190	688
Minerals													
Iron Ore Company of Canada	58.7%	**2,450**	2,500	2,818	**746**	942	1,381	**229**	214	207	**212**	293	475
Rio Tinto Iron & Titanium	(i)	**1,993**	2,172	2,366	**609**	582	799	**226**	222	224	**241**	221	374
Rio Tinto Borates	100%	**763**	802	742	**183**	212	155	**65**	58	54	**82**	125	80
Diamonds	(j)	**279**	444	816	**(115)**	44	330	**29**	35	45	**(127)**	26	151
Product group operations		**5,485**	5,918	6,742	**1,423**	1,780	2,665	**549**	529	530	**408**	665	1,080
Evaluation projects/other		**46**	16	12	**(343)**	(366)	(246)	**1**	1	1	**(265)**	(353)	(226)
Total Minerals segment		**5,531**	5,934	6,754	**1,080**	1,414	2,419	**550**	530	531	**143**	312	854
Reportable segments total		**57,795**	57,146	58,468	**24,439**	25,630	27,269	**6,029**	5,433	5,114	**11,534**	12,922	14,259
Simandou iron ore project	(k)	**–**	–	–	**(22)**	(539)	(189)	**7**	–	–	**(39)**	(160)	(145)
Other operations	(l)(m)	**120**	142	192	**43**	(95)	(17)	**320**	290	272	**(225)**	(307)	(348)
Inter-segment transactions	(c)	**(209)**	(231)	(256)	**9**	8	24				**4**	4	26
Central pension costs, share-based payments, insurance and derivatives					**153**	168	377				**228**	48	374
Restructuring, project and one-off costs					**(254)**	(190)	(173)				**(178)**	(112)	(85)
Central costs					**(816)**	(990)	(766)	**121**	95	94	**(636)**	(898)	(651)
Central exploration and evaluation					**(238)**	(100)	(253)				**(216)**	(60)	(209)
Net interest											**395**	318	138
Underlying EBITDA/earnings					**23,314**	23,892	26,272				**10,867**	11,755	13,359
Items excluded from underlying EBITDA/ earnings					**1,055**	(1,257)	269				**685**	(1,697)	(967)
Reconciliation to consolidated income statement													
Share of EAUs sales and inter-subsidiary/EAUs sales		**(4,048)**	(3,016)	(2,850)									
Impairment charges net of reversals	(n)				**(573)**	(936)	(52)						
Depreciation and amortisation in subsidiaries excluding capitalised depreciation					**(5,744)**	(4,976)	(4,871)						
Depreciation and amortisation in EAUs					**(559)**	(484)	(470)	**(559)**	(484)	(470)			
Taxation and finance items in EAUs					**(1,002)**	(741)	(640)						
Finance items					**(876)**	(1,713)	(1,846)						
Consolidated sales revenue/profit before taxation/depreciation and amortisation/net earnings		**53,658**	54,041	55,554	**15,615**	13,785	18,662	**5,918**	5,334	5,010	**11,552**	10,058	12,392

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	Rio Tinto interest %	Capital expenditure[a][o] for the year ended 31 December 2024 US$m	2023 US$m	2022 US$m	Operating assets[p] as at 31 December 2024 US$m	2023 US$m Adjusted[m]	2022 US$m	Employees for the year ended 31 December 2024	2023 Adjusted[m]	2022 Adjusted[m]
Iron Ore										
Pilbara	(b)	**2,985**	2,563	2,906	**17,016**	17,959	17,785	**15,152**	15,181	14,319
Dampier Salt	68.4%	**27**	25	34	**5**	146	153	**422**	430	436
Evaluation projects/other	(c)	**–**	–	–	**718**	780	835	**22**	22	20
Intra-segment	(c)	**–**	–	–	**(193)**	(243)	(220)	**–**	–	–
Total Iron Ore segment		**3,012**	2,588	2,940	**17,546**	18,642	18,553	**15,596**	15,633	14,775
Aluminium										
Bauxite	(d)	**159**	159	161	**2,289**	2,649	2,458	**3,188**	3,008	2,966
Alumina	(e)	**279**	325	356	**804**	1,315	2,400	**2,502**	2,600	2,626
North American Aluminium	(f)	**1,153**	748	752	**10,516**	10,582	9,343	**7,497**	6,886	6,693
Pacific Aluminium	(g)	**102**	99	108	**706**	340	159	**2,728**	2,563	2,480
Intra-segment and other		**1**	–	–	**795**	997	629	**243**	256	234
Total Aluminium segment		**1,694**	1,331	1,377	**15,110**	15,883	14,989	**16,158**	15,313	14,999
Copper										
Kennecott	100%	**774**	735	563	**2,391**	2,606	2,027	**2,502**	2,411	2,176
Escondida	30%	**–**	–	–	**2,779**	2,844	2,792	**1,135**	1,203	1,205
Oyu Tolgoi	(h)	**1,277**	1,230	1,056	**16,692**	15,334	13,479	**4,734**	4,515	4,060
Product group operations		**2,051**	1,965	1,619	**21,862**	20,784	18,298	**8,371**	8,129	7,441
Evaluation projects/other	(m)	**4**	11	3	**262**	266	165	**317**	295	236
Total Copper segment		**2,055**	1,976	1,622	**22,124**	21,050	18,463	**8,688**	8,424	7,677
Minerals										
Iron Ore Company of Canada	58.7%	**291**	364	366	**1,240**	1,347	1,147	**3,214**	3,206	3,075
Rio Tinto Iron & Titanium	(i)	**244**	240	217	**3,215**	3,386	3,351	**4,397**	4,415	4,273
Rio Tinto Borates	100%	**57**	49	34	**475**	502	496	**989**	1,013	1,009
Diamonds	(j)	**48**	66	48	**(38)**	29	(84)	**864**	871	853
Product group operations		**640**	719	665	**4,892**	5,264	4,910	**9,464**	9,505	9,210
Evaluation projects/other		**158**	27	14	**1,138**	873	874	**358**	328	224
Total Minerals segment		**798**	746	679	**6,030**	6,137	5,784	**9,822**	9,833	9,434
Reportable segments total		**7,559**	6,641	6,618	**60,810**	61,712	57,789	**50,264**	49,203	46,885
Simandou iron ore project	(k)	**1,832**	266	–	**2,106**	738	(22)	**989**	571	343
Other operations	(l)(m)	**66**	57	53	**(1,446)**	(2,638)	(1,850)	**703**	703	639
Inter-segment transactions	(c)				**22**	20	12			
Other items		**134**	113	79	**(755)**	(1,015)	(1,107)	**7,638**	6,697	5,859
Total		**9,591**	7,077	6,750	**60,737**	58,817	54,822	**59,594**	57,174	53,726
Add back: Proceeds from disposal of property, plant and equipment		**30**	9	–						
Total purchases of property, plant & equipment and intangibles as per cash flow statement		**9,621**	7,086	6,750						
Add: Net debt					**(5,491)**	(4,231)	(4,188)			
Equity attributable to owners of Rio Tinto					**55,246**	54,586	50,634			
Total employees								**59,594**	57,174	53,726

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Business units are classified according to the Group's management structure. Our management structure is based on product groups together with global support functions whose leaders make up the Executive Committee. The Executive Committee members each report directly to our Chief Executive who is the chief operating decision maker and is responsible for allocating resources and assessing performance of the operating segments. Finance costs and net debt are managed on a Group-wide basis and are therefore excluded from the segmental results.

The disclosures in this note include certain alternative performance measures (non-IFRS measures). For more information on the non-IFRS measures used by the Group, including definitions and calculations, refer to section entitled alternative performance measures (pages 269 to 273).

(a) Segmental revenue, Underlying EBITDA and Capital expenditure are defined and calculated in note 1 from pages 167 to 168. Underlying earnings is defined and calculated within the Alternative performance measures section on pages 270 and 270.

(b) Pilbara represents the Group's 100% holding in Hamersley, 50% holding in Hope Downs Joint Venture, 54% holding in Western Range Joint Venture and 65% holding in Robe River Iron Associates. The Group's net beneficial interest in Robe River Iron Associates is 53%, as 30% is held through a 60% owned subsidiary and 35% is held through a 100% owned subsidiary.

(c) Segmental revenue, Underlying EBITDA, Underlying earnings and Operating assets within Evaluation projects/other include activities relating to the shipment and blending of Pilbara and Iron Ore Company of Canada (IOC) iron ore inventories held portside in China and sold to domestic customers. Transactions between Pilbara and our portside trading business are eliminated through the Iron Ore "intra-segment" line and transactions between IOC and the portside trading business are eliminated through "inter-segment transactions".

(d) Bauxite represents the Group's 100% interest in Gove and Weipa, 22% interest in Porto Trombetas and 22.9% interest in Sangarédi.

(e) Alumina represents the Group's 100% interest in Jonquière (Vaudreuil), Yarwun, 80% interest in Queensland Alumina and 10% interest in São Luis (Alumar).

(f) North American Aluminium represents the Group's 100% interest in Alma, Arvida, Arvida AP60, Grande-Baie, ISAL, Kitimat, Laterrière, 40% interest in Alouette, 25.1% interest in Bécancour, 20% interest in Sohar and 50% interest in Matalco.

(g) Pacific Aluminium represents the Group's 100% interest in Bell Bay, 73.5% interest in Boyne Island, 100% interest in Tiwai Point and 51.6% interest in Tomago. On 30 September 2024, our interest in Boyne Island was increased from 59.4% to 71.05% following our acquisition of Mitsubishi Corporation's 11.65% interest in Boyne Smelters Limited (BSL). On 1 November 2024, our interest was further increased to 73.5% following our acquisition of Sumitomo Chemical Company's (SCC) 2.46% interest in BSL. On 1 November 2024, we also acquired SCC's 20.64% interest in New Zealand Aluminium Smelters, increasing our interest from 79.36% to 100%.

(h) Until 16 December 2022, our interest in Oyu Tolgoi (OT) was held indirectly through our 50.8% investment in Turquoise Hill Resources Ltd (TRQ), where TRQ's principal asset was its 66% investment in Oyu Tolgoi LLC, which owned the OT copper-gold mine. Following the purchase of TRQ we now directly hold a 66% investment in Oyu Tolgoi LLC.

(i) Includes our interests in Rio Tinto Iron and Titanium Quebec Operations (100%), QIT Madagascar Minerals (QMM, economic interest of 85%) and Richards Bay Minerals (attributable interest of 74%).

(j) Relates to our 100% interest in the Diavik diamond mine and diamond marketing operations.

(k) Rio Tinto SimFer UK Limited (which is wholly owned by the Group) holds a 53% interest in SimFer Jersey Limited (SimFer Jersey) which in turn, has an 85% interest in SimFer S.A., the company that will carry out the Simandou mining operations in Guinea, and an 85% interest in the company which will deliver SimFer Jersey's scope of the co-developed rail and port infrastructure. SimFer Jersey at present has a 100% interest in the companies that will own and operate the transhipment vessels, however this is anticipated to reduce to 85% with the Government of Guinea taking a 15% interest before operations commence. These entities, together with the equity accounted WCS Rail and Port entities described in note 32, are referred to as the Simandou iron ore project.

(l) Other operations includes our 98.43% interest in Energy Resources of Australia (increased from 86.3% in November 2024 - refer to note 30), sites being rehabilitated under the management of Rio Tinto Closure, Rio Tinto Marine, and the remaining legacy liabilities of Rio Tinto Coal Australia. These include provisions for onerous contracts, in relation to rail infrastructure capacity, partly offset by financial assets and receivables relating to contingent royalties and disposal proceeds.

(m) Accountability for Rio Tinto Guinea, our in-country external affairs office remains with Bold Baatar, and has therefore moved from the Copper product group to "Other operations" following his change in role to Chief Commercial Officer. Accordingly, prior period amounts have been adjusted for comparability even though there is no material impact as a result of the change.

(n) Refer to note 4 for allocation of impairment charges net of reversals between consolidated amounts and share of profit in EAUs.

(o) Capital expenditure is the net cash outflow on purchases less sales of property, plant and equipment, capitalised evaluation costs and purchases less sales of other intangible assets as derived from the consolidated cash flow statement. The details provided include 100% of subsidiaries' capital expenditure and Rio Tinto's share of the capital expenditure of joint operations but exclude equity accounted units.

(p) Operating assets of the Group represents equity attributable to Rio Tinto adjusted for net debt. Operating assets of subsidiaries, joint operations and the Group's share relating to equity accounted units are made up of net assets adjusted for net debt and post-retirement assets and liabilities, net of tax. Operating assets are stated after the deduction of non-controlling interests; these are calculated by reference to the net assets of the relevant companies (ie inclusive of such companies' debt and amounts due to or from Rio Tinto Group companies).

Alternative performance measures

The Group presents certain alternative performance measures (non-IFRS measures) which are reconciled to directly comparable IFRS financial measures below. These non-IFRS measures, hereinafter referred to as alternative performance measures (APMs), are used by management to assess the performance of the business and provide additional information, which investors may find useful. APMs are presented in order to give further insight into the underlying business performance of the Group's operations.

APMs are not consistently defined and calculated by all companies, including those in the Group's industry. Accordingly, these measures used by the Group may not be comparable with similarly titled measures and disclosures made by other companies. Consequently, these APMs should not be regarded as a substitute for the IFRS measures and should be considered supplementary to those measures.

The following tables present the Group's key financial measures not defined according to IFRS and a reconciliation between those APMs and their nearest respective IFRS measures.

Reconciliation of APMs to the nearest comparable IFRS financial measures for the year 2021 and 2020 can be found in the section APM of our 2021 *Annual Report*. Reconciliation of underlying return on capital employed and Net (debt)/cash for the year 2022 can be found in our 2022 *Annual Report*.

APMs derived from the income statement

The following income statement measures are used by the Group to provide greater understanding of the underlying business performance of its operations and to enhance comparability of reporting periods. They indicate the underlying commercial and operating performance of our assets including revenue generation, productivity and cost management.

Segmental revenue

Segmental revenue includes consolidated sales revenue plus the equivalent sales revenue of equity accounted units (EAUs) in proportion to our equity interest (after adjusting for sales to/from subsidiaries). The reconciliation can be found in "Our financial performance" on page 167.

Underlying EBITDA

Underlying EBITDA represents profit before taxation, net finance items, depreciation and amortisation adjusted to exclude the EBITDA impact of items that do not reflect the underlying performance of our reportable segments. The reconciliation of profit after tax to underlying EBITDA can be found in "Our financial performance" on page 168.

Underlying EBITDA margin

Underlying EBITDA margin is defined as Group underlying EBITDA divided by the aggregate of consolidated sales revenue and our share of equity account unit sales after eliminations.

	2024 US$m	2023 US$m	2022 US$m
Underlying EBITDA	**23,314**	23,892	26,272
Consolidated sales revenue	**53,658**	54,041	55,554
Share of equity accounted unit sales and inter-subsidiary/equity accounted unit sales eliminations	**4,048**	3,016	2,850
	57,706	57,057	58,404
Underlying EBITDA margin	**40%**	42%	45%

Pilbara underlying FOB EBITDA margin

The Pilbara underlying free on board (FOB) EBITDA margin is defined as Pilbara underlying EBITDA divided by Pilbara segmental revenue, excluding freight revenue.

	2024 US$m	2023 US$m	2022 US$m
Pilbara			
Underlying EBITDA	**16,543**	19,828	18,474
Pilbara segmental revenue	**27,849**	30,867	29,313
Less: Freight revenue	**(2,344)**	(2,098)	(2,206)
Pilbara segmental revenue, excluding freight revenue	**25,505**	28,769	27,107
Pilbara underlying FOB EBITDA margin	**65%**	69%	68%

Underlying EBITDA margin from integrated operations and product group operations

	Aluminium – integrated operations			Copper – product group operations			Minerals – product group operations		
	2024 US$m	2023 US$m	2022 US$m	2024 US$m	2023 US$m	2022 US$m	2024 US$m	2023 US$m	2022 US$m
Underlying EBITDA	**3,857**	2,436	3,842	**4,046**	2,436	2,947	**1,423**	1,780	2,665
Segmental revenue	**12,896**	11,513	13,136	**8,207**	5,811	5,975	**5,485**	5,918	6,742
Underlying EBITDA margin	**30%**	21%	29%	**49%**	42%	49%	**26%**	30%	40%

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Underlying earnings

Underlying earnings represents net earnings attributable to the owners of Rio Tinto, adjusted to exclude items that do not reflect the underlying performance of the Group's operations.

Exclusions from underlying earnings are those gains and losses that, individually or in aggregate with similar items, are of a nature and size to require exclusion in order to provide additional insight into underlying business performance.

The following items are excluded from net earnings in arriving at underlying earnings in each period irrespective of materiality:

- net (gains)/losses on consolidation or disposal of interests in businesses
- impairment charges and reversals
- (profit)/loss after tax from discontinued operations
- exchange and derivative gains and losses. This adjustment includes exchange (gains)/losses on external net debt and intragroup balances, unrealised (gains)/losses on currency and interest rate derivatives not qualifying for hedge accounting, unrealised (gains)/losses on certain commodity derivatives not qualifying for hedge accounting, and unrealised (gains)/losses on embedded derivatives not qualifying for hedge accounting
- adjustments to closure provisions where the adjustment is associated with an impairment charge, or for legacy sites where the disturbance or environmental contamination relates to the pre-acquisition period.

In addition, there is a final judgemental category which includes, where applicable, other credits and charges that, individually or in aggregate if of a similar type, are of a nature or size to require exclusion in order to provide additional insight into underlying business performance. In 2024 this includes provision for uncertain tax positions in relation to disputes with the Mongolian Tax Authority and the recognition of deferred tax assets at Energy Resources of Australia.

Exclusions from underlying earnings relating to equity accounted units are stated after tax and included in the column "Pre-tax".

	Pre-tax 2024 US$m	Taxation 2024 US$m	Non-controlling interests 2024 US$m	Net amount 2024 US$m	Net amount 2023 US$m	Net amount 2022 US$m
Net earnings	**15,615**	**(4,041)**	**(22)**	**11,552**	10,058	12,392
Items excluded from underlying earnings						
(Gains)/losses on consolidation and disposal of interests in businesses[a]	**(1,214)**	**274**	**43**	**(897)**	–	105
Impairment charges net of reversals (note 4)	**561**	**(27)**	**–**	**534**	652	52
Foreign exchange and derivative losses/(gains):						
– Exchange (gains)/losses on external net debt, intragroup balances and derivatives[b]	**(308)**	**13**	**2**	**(293)**	243	(216)
– Losses on currency and interest rate derivatives not qualifying for hedge accounting[c]	**68**	**2**	**4**	**74**	87	373
– Losses/(gains) on embedded commodity derivatives not qualifying for hedge accounting[d]	**92**	**(27)**	**–**	**65**	(23)	(20)
Change in closure estimates (non-operating and fully impaired sites)[e]	**86**	**(13)**	**–**	**73**	1,102	178
Uncertain tax provisions[f]	**–**	**295**	**(100)**	**195**	–	–
Recognition of deferred tax assets at Energy Resources of Australia[g]	**–**	**(443)**	**7**	**(436)**	–	–
Deferred tax arising on internal sale of assets in Canadian operations[h]	**–**	**–**	**–**	**–**	(364)	–
Gains recognised by Kitimat relating to LNG Canada's project[i]	**–**	**–**	**–**	**–**	–	(106)
Gain on sale of the Cortez royalty[j]	**–**	**–**	**–**	**–**	–	(331)
Write-off of Federal deferred tax assets in the United States[k]	**–**	**–**	**–**	**–**	–	932
Total excluded from underlying earnings	**(715)**	**74**	**(44)**	**(685)**	1,697	967
Underlying earnings	**14,900**	**(3,967)**	**(66)**	**10,867**	11,755	13,359

(a) Gains on consolidation of businesses include the revaluation of our previously held interest in the NZAS joint operation as we acquired the remaining shares during the year and this became a subsidiary. Disposals include the sale of Wyoming Uranium and Lake MacLeod, as described in note 5.

(b) Exchange (gains)/losses on external net debt, intragroup balances and derivatives includes post-tax gains on intragroup balances of US$647 million (2023: US$316 million loss; 2022: US$478 million gain) offset by post-tax losses on external net debt of US$354 million (2023: US$73 million gain; 2022: US$262 million loss), primarily as a result of the Australian dollar weakening against the US dollar.

(c) Valuation changes on currency and interest rate derivatives, which are ineligible for hedge accounting, other than those embedded in commercial contracts, and the currency revaluation of embedded US dollar derivatives contained in contracts held by entities whose functional currency is not the US dollar.

(d) Valuation changes on derivatives, embedded in commercial contracts that are ineligible for hedge accounting but for which there will be an offsetting change in future Group earnings. Mark-to-market movements on commodity derivatives entered into with the commercial objective of achieving spot pricing for the underlying transaction at the date of settlement are included in underlying earnings. In 2024, the charge includes unrealised losses recognised in relation to our renewable PPAs.

(e) In 2024, the charge to the income statement relates to the change in estimates of underlying closure cash flows, net of impact of a change in discount rate, expressed in real-terms, from 2.0% to 2.5% as applied to provisions for close-down, restoration and environmental liabilities at legacy sites where the environmental damage preceded ownership by Rio Tinto. In 2023, the charge included US$0.9 billion related to the closure provision update announced by Energy Resources of Australia on 12 December 2023 together with the update included in their half year results for the period ended 30 June 2023, published in August 2023. This update was considered material and therefore it was aggregated with other closure study updates which were similar in nature and have been excluded from underlying earnings. The other closure study updates were at legacy sites managed by our central closure team as well as an update at Yarwun alumina refinery which was expensed due to the impairment earlier in the year. In 2022, the charge related to re-estimates of underlying closure cash flows for legacy sites where the environmental damage preceded ownership by Rio Tinto.

(f) The uncertain tax provision in 2024 represents amounts provided in relation to disputes with the Mongolian Tax Authority for which the timing of resolution and potential economic outflow are uncertain. Further information is included in the "other relevant judgements – uncertain tax positions" section of note 10 Taxation.

(g) Recognition of deferred tax assets at Energy Resources of Australia (ERA) relates to rehabilitation provisions which are tax deductible when paid in the future. In November 2024, our interest in ERA increased from 86.3% to 98.43% and Rio Tinto stated its intention to proceed with compulsory acquisition of the remaining shares during 2025. Tax deductions for rehabilitation payments made after completion of the compulsory acquisition process will be applied against taxable profits from other Australian operations, including our iron ore business.

(h) In 2023, the Canadian aluminium business completed an internal sale of assets which resulted in the utilisation of previously unrecognised capital losses and an uplift in the tax depreciable value of assets on which a deferred tax asset of US$364 million was recognised.

(i) In 2022, LNG Canada elected to terminate their option to purchase additional land and facilities for expansion of their operations at Kitimat, Canada. The resulting gain was excluded from underlying earnings consistent with prior years as it was part of a series of transactions that together were material.

(j) In 2022, we completed the sale of a gross production royalty which was retained following the disposal of the Cortez Complex in 2008. The gain recognised on sale of the royalty was excluded from underlying earnings on the grounds of individual magnitude.

(k) In 2022, we wrote down our deferred tax assets in the US following the introduction of the Corporate Alternative Minimum Tax regime. Refer to note 10 for details.

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Basic underlying earnings per share

Basic underlying earnings per share is calculated as underlying earnings divided by the weighted average number of shares outstanding during the year.

	2024 (cents)	2023 (cents)	2022 (cents)
Basic earnings per ordinary share	**711.7**	620.3	765.0
Items excluded from underlying earnings per share[(a)]	**(42.2)**	104.7	59.7
Basic underlying earnings per ordinary share	**669.5**	725.0	824.7

(a) Calculation of items excluded from underlying earnings per share.

	2024	2023	2022
Items excluded from underlying earnings (US$m) (refer to page 270)	**(685.0)**	1,697.0	967.0
Weighted average number of shares (millions)	**1,623.1**	1,621.4	1,619.8
Items excluded from underlying earnings per share (cents)	**(42.2)**	104.7	59.7

We have provided basic underlying earnings per share as this allows the comparability of financial performance adjusted to exclude items which do not reflect the underlying performance of the Group's operations.

Interest cover

Interest cover is a financial metric used to monitor our ability to service debt. It represents the number of times finance income and finance costs (including amounts capitalised) are covered by profit before taxation, before finance income, finance costs, share of profit after tax of equity accounted units and items excluded from underlying earnings, plus dividends from equity accounted units.

	2024 US$m	2023 US$m
Profit before taxation	**15,615**	13,785
Add back		
Finance income	**(514)**	(536)
Finance costs	**763**	967
Share of profit after tax of equity accounted units	**(838)**	(675)
Items excluded from underlying earnings	**(715)**	2,498
Add: Dividends from equity accounted units	**1,067**	610
Calculated earnings	**15,378**	16,649
Finance income	**514**	536
Finance costs	**(763)**	(967)
Add: Amounts capitalised	**(424)**	(279)
Total net finance costs before capitalisation	**(673)**	(710)
Interest cover	**23**	23

Payout ratio

The payout ratio is used by us to guide the dividend policy we implemented in 2016, under which we have sought to return 40-60% of underlying earnings, on average through the cycle, to shareholders as dividends. It is calculated as total equity dividends per share to owners of Rio Tinto declared in respect of the financial year divided by underlying earnings per share (as defined above). Dividends declared usually include an interim dividend paid in the year, and a final dividend paid after the end of the year. Any special dividends declared in respect of the financial year are also included.

	2024 (cents)	2023 (cents)
Interim dividend declared per share	**177.0**	177.0
Final dividend declared per share	**225.0**	258.0
Total dividend declared per share for the year	**402.0**	435.0
Underlying earnings per share	**669.5**	725.0
Payout ratio	**60%**	60%

APMs derived from cash flow statement

Capital expenditure

Capital expenditure includes the net sustaining and development expenditure on property, plant and equipment, and on intangible assets. This is equivalent to "Purchases of property, plant and equipment and intangible assets" in the cash flow statement less "Sales of property, plant and equipment and intangible assets".

This measure is used to support management's objective of effective and efficient capital allocation as we need to invest in existing assets in order to maintain and improve productive capacity, and in new assets to grow the business.

	2024 US$m	2023 US$m	2022 US$m
Purchase of property, plant and equipment and intangible assets	**9,621**	7,086	6,750
Less: Sales of property, plant and equipment and intangible assets	**(30)**	(9)	–
Capital expenditure	**9,591**	**7,077**	**6,750**

Rio Tinto share of capital investment

Rio Tinto's share of capital investment represents our economic investment in capital projects. This measure was introduced in 2022 to better represent the Group's share of funding for capital projects which are jointly funded with other shareholders and which may differ from the consolidated basis included in the Capital expenditure APM. This better reflects our approach to capital allocation.

The measure is based upon purchase of property, plant and equipment and intangible assets and adjusted to deduct equity or shareholder loan financing provided to partially owned subsidiaries by non-controlling interests in respect of major capital projects in the period. In circumstances where the funding to be provided by non-controlling interests is not received in the same period as the underlying capital investment, this adjustment is applied in the period in which the underlying capital investment is made, not when the funding is received. Where funding which would otherwise be provided directly by shareholders is replaced with project financing, an adjustment is also made to deduct the share of project financing attributable to the non-controlling interest. This adjustment is not made in cases where Rio Tinto has unilaterally guaranteed this project financing. Lastly, funding contributed by the Group to Equity Accounted Units for its share of investment in their major capital projects is added to the measure. No adjustment is made to the Capital expenditure APM where capital expenditure is funded from the operating cash flows of the subsidiary or EAU.

	2024 US$m	2023 US$m	2022 US$m
Purchase of property, plant and equipment and intangible assets	**9,621**	7,086	6,750
Funding provided by the group to EAUs[(a)]	**965**	–	–
Less: Equity or shareholder loan financing received/due from non-controlling interests[(b)]	**(1,063)**	(125)	–
Rio Tinto share of capital investment	**9,523**	**6,961**	**6,750**

(a) In 2024, funding provided by the group to EAUs relates to funding of WCS rail and port entities (WCS) in relation to the Simandou project, consisting of a direct equity investment in WCS of US$431 million and loans provided totalling US$534 million.

(b) In 2024, we received US$1,505 million from Chalco Iron Ore Holdings Ltd (CIOH), of which US$1,063 million relates to CIOH's 47% share of capital expenditure incurred on the Simandou project and associated funding provided by the Group to EAUs during the year, accounted for on an accrual basis.

Free cash flow

Free cash flow is defined as net cash generated from operating activities minus purchases of property, plant and equipment and intangibles and payments of lease principal, plus proceeds from the sale of property, plant and equipment and intangible assets.

This measures the net cash returned by the business after the expenditure of sustaining and development capital. This cash can be used for shareholder returns, reducing debt and other investing/financing activities.

	2024 US$m	2023 US$m	2022 US$m
Net cash generated from operating activities	**15,599**	15,160	16,134
Less: Purchase of property, plant and equipment and intangible assets	**(9,621)**	(7,086)	(6,750)
Less: Lease principal payments	**(455)**	(426)	(374)
Add: Sales of property, plant and equipment and intangible assets	**30**	9	–
Free cash flow	**5,553**	7,657	9,010

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APMs derived from the balance sheet

Net debt

Net debt is total borrowings plus lease liabilities less cash and cash equivalents and other liquid investments, adjusted for derivatives related to net debt.

Net debt measures how we are managing our balance sheet and capital structure. Refer to note 19 on page 198 for the reconciliation.

Net gearing ratio

Net gearing ratio is defined as net debt divided by the sum of net debt and total equity at the end of each year. It demonstrates the degree to which the Group's operations are funded by debt versus equity.

	2024 US$m	2023 US$m
Net debt	**5,491**	4,231
Net debt	**5,491**	4,231
Total equity	**57,965**	56,341
Net debt plus total equity	**63,456**	60,572
Net gearing ratio	**9%**	7%

Underlying return on capital employed

Underlying return on capital employed (ROCE) is defined as underlying earnings excluding net interest divided by average capital employed (operating assets).

Underlying ROCE measures how efficiently we generate profits from investment in our portfolio of assets.

	2024 US$m	2023 US$m
Profit after tax attributable to owners of Rio Tinto (net earnings)	**11,552**	10,058
Items added back to derive underlying earnings (refer to page 270)	**(685)**	1,697
Underlying earnings	**10,867**	11,755
Add/(deduct):		
Finance income per the income statement	**(514)**	(536)
Finance costs per the income statement	**763**	967
Tax on finance cost	**(208)**	(373)
Non-controlling interest share of net finance costs	**(496)**	(429)
Net interest cost in equity accounted units (Rio Tinto share)	**60**	53
Net interest	**(395)**	(318)
Adjusted underlying earnings	**10,472**	11,437
Equity attributable to owners of Rio Tinto - beginning of the year	**54,586**	50,634
Net debt - beginning of the year	**4,231**	4,188
Operating assets - beginning of the year	**58,817**	54,822
Equity attributable to owners of Rio Tinto - end of the year	**55,246**	54,586
Net debt - end of the year	**5,491**	4,231
Operating assets - end of the year	**60,737**	58,817
Average operating assets	**59,777**	56,820
Underlying return on capital employed	**18%**	20%

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Production, Ore Reserves, Mineral Resources and operations

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Image: Weipa bauxite mine, Australia



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Metals and minerals production

	Rio Tinto % share[1]	2024 Production Total	2024 Production Rio Tinto share	2023 Production Total	2023 Production Rio Tinto share	2022 Production Total	2022 Production Rio Tinto share
ALUMINA ('000 tonnes)							
Jonquière (Vaudreuil) (Canada)[2]	100.0%	**1,353**	**1,353**	1,392	1,392	1,364	1,364
Jonquière (Vaudreuil) specialty plant (Canada)	100.0%	**111**	**111**	109	109	114	114
Queensland Alumina (Australia)	80.0%	**3,384**	**2,707**	3,366	2,693	3,425	2,740
São Luis (Alumar) (Brazil)	10.0%	**3,687**	**369**	3,375	338	3,771	377
Yarwun (Australia)	100.0%	**2,762**	**2,762**	3,006	3,006	2,949	2,949
Rio Tinto total			**7,303**		7,537		7,544
ALUMINIUM (primary) ('000 tonnes)							
Alma (Canada)	100.0%	**483**	**483**	484	484	482	482
Alouette (Sept-Îles) (Canada)	40.0%	**632**	**253**	634	253	628	251
Arvida (Canada)	100.0%	**153**	**153**	172	172	171	171
Arvida AP60 (Canada)	100.0%	**61**	**61**	59	59	58	58
Bécancour (Canada)	25.1%	**473**	**119**	465	117	459	115
Bell Bay (Australia)	100.0%	**187**	**187**	186	186	185	185
Boyne Island (Australia)[3]	73.5%	**507**	**318**	496	295	450	267
Grande-Baie (Canada)	100.0%	**229**	**229**	229	229	232	232
ISAL (Reykjavik) (Iceland)	100.0%	**202**	**202**	209	209	202	202
Kitimat (Canada)	100.0%	**419**	**419**	377	377	145	145
Laterrière (Canada)	100.0%	**252**	**252**	244	244	253	253
Sohar (Oman)	20.0%	**399**	**80**	398	80	395	79
Tiwai Point (New Zealand)[4]	100.0%	**290**	**239**	334	265	336	267
Tomago (Australia)	51.6%	**587**	**302**	589	304	586	302
Rio Tinto total			**3,296**		3,272		3,009
ALUMINIUM (recycled) ('000 tonnes)							
Matalco	50.0%	**528**	**264**	–	–	–	–
BAUXITE ('000 tonnes)							
Gove (Australia)	100.0%	**12,721**	**12,721**	11,566	11,566	11,510	11,510
Porto Trombetas (MRN) (Brazil)[5]	22.0%	**11,523**	**2,535**	11,472	1,502	11,100	1,332
Sangaredi (Guinea)[6]	23.0%	**14,043**	**6,319**	14,278	6,425	16,115	7,252
Weipa (Australia)	100.0%	**37,078**	**37,078**	35,126	35,126	34,525	34,525
Rio Tinto total			**58,653**		54,619		54,618
BORATES ('000 tonnes)[7]							
Rio Tinto Borates – Boron (US)	100.0%	**504**	**504**	495	495	532	532
COPPER (mined) ('000 tonnes)							
Bingham Canyon (US)	100.0%	**123**	**123**	152	152	179	179
Escondida (Chile)	30.0%	**1,196**	**359**	1,000	300	995	299
Oyu Tolgoi (Mongolia)[8]	66.0%	**215**	**142**	168	111	129	43
Rio Tinto total			**624**		562		521
COPPER (refined) ('000 tonnes)							
Escondida (Chile)	30.0%	**184**	**55**	222	67	203	61
Kennecott (US)	100.0%	**193**	**193**	109	109	148	148
Rio Tinto total			**248**		175		209
DIAMONDS ('000 carats)							
Diavik (Canada)	100.0%	**2,759**	**2,759**	3,340	3,340	4,651	4,651
GOLD (mined) ('000 ounces)							
Bingham Canyon (US)	100.0%	**95**	**95**	105	105	123	123
Escondida (Chile)	30.0%	**169**	**51**	199	60	169	51
Oyu Tolgoi (Mongolia)[8]	66.0%	**206**	**136**	177	117	184	62
Rio Tinto total			**282**		282		235

See notes on page 276.

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		2024 Production		2023 Production		2022 Production	
	Rio Tinto % share[1]	Total	Rio Tinto share	Total	Rio Tinto share	Total	Rio Tinto share
GOLD (refined) ('000 ounces)							
Kennecott (US)	100.0%	**144**	**144**	74	74	114	114
IRON ORE ('000 tonnes)							
Hamersley mines (Australia)	See footnote 9	**224,816**	**224,816**	225,898	225,898	218,304	218,304
Hope Downs (Australia)	50.0%	**41,956**	**20,978**	46,482	23,241	48,850	24,425
Iron Ore Company of Canada (Canada)	58.7%	**16,086**	**9,446**	16,478	9,676	17,562	10,312
Robe River – Robe Valley (Australia)	53.0%	**31,742**	**16,823**	29,162	15,456	25,558	13,546
Robe River – West Angelas (Australia)	53.0%	**29,457**	**15,612**	29,999	15,899	31,435	16,660
Rio Tinto total			**287,676**		290,171		283,247
MOLYBDENUM ('000 tonnes)							
Bingham Canyon (US)	100.0%	**2.6**	**2.6**	1.8	1.8	3.3	3.3
SALT ('000 tonnes)							
Dampier Salt (Australia)	68.4%	**8,518**	**5,823**	8,737	5,973	8,422	5,757
SILVER (mined) ('000 ounces)							
Bingham Canyon (US)	100.0%	**1,484**	**1,484**	1,618	1,618	2,057	2,057
Escondida (Chile)	30.0%	**6,042**	**1,813**	4,921	1,476	5,301	1,590
Oyu Tolgoi (Mongolia)[8]	66.0%	**1,424**	**940**	1,086	717	871	292
Rio Tinto total			**4,236**		3,811		3,940
SILVER (refined) ('000 ounces)							
Kennecott (US)	100.0%	**2,314**	**2,314**	1,407	1,407	1,950	1,950
TITANIUM DIOXIDE SLAG ('000 tonnes)							
Rio Tinto Iron & Titanium (Canada/South Africa)[10]	100.0%	**990**	**990**	1,111	1,111	1,200	1,200
Rio Tinto total							

Production data notes

Mine production figures for metals refer to the total quantity of metal produced in concentrates, leach liquor or doré bullion irrespective of whether these products are then refined onsite, except for the data for bauxite and iron ore which can represent production of marketable quantities of ore plus concentrates and pellets. Production figures are sometimes more precise than the rounded numbers shown, hence small differences may result from calculation of Rio Tinto share of production.

1. Rio Tinto percentage share, shown above, is as at 31 December 2024. The footnotes below include all ownership changes over the 3 years.
2. Jonquière's (Vaudreuil) production shows smelter grade alumina only and excludes hydrate produced and used for specialty alumina.
3. Rio Tinto's ownership interest in Boyne Smelters Limited (BSL) increased from 59% to 73.5%. Production is reported including this change from 1 October for Mitsubishi Corporation's 11.65% interest and 1 November 2024 for Sumitomo Chemical Company's 2.46% interest.
4. On 1 November 2024, Rio Tinto's ownership interest in Tiwai Point Smelter (NZAS) increased from 79.36% to 100%. Production is reported including this change from 1 November 2024.
5. On 30 November 2023, Rio Tinto's ownership interest in Porto Trombetas increased from 12% to 22%. Production is reported including this change from 1 December 2023.
6. Rio Tinto has a 22.95% shareholding in the Sangaredi mine, but benefits from 45% of production.
7. Borate quantities are expressed as B_2O_3.
8. On 16 December 2022, Rio Tinto completed the acquisition of 100% of Turquoise Hill Resources Ltd, increasing our ownership interest in Oyu Tolgoi from 33.52% to 66%. Production is reported including this change from 1 January 2023.
9. Includes 100% of production from Paraburdoo, Mount Tom Price, Western Turner Syncline, Marandoo, Yandicoogina, Brockman, Nammuldi, Silvergrass, Channar, Gudai-Darri and the Eastern Range mines. While we own 54% of the Eastern Range mine, under the terms of the joint venture agreement, Hamersley Iron manages the operation and is obliged to purchase all mine production from the joint venture and, therefore, all of the production is included in Rio Tinto's share of production.
10. Quantities comprise 100% of Rio Tinto Iron and Titanium Quebec Operations and our 74% share of Richards Bay Minerals' production. Ilmenite mined in Madagascar is processed in Canada.

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Mineral Resources and Ore Reserves

Mineral Resources and Ore Reserves for Rio Tinto managed operations are reported in accordance with the *Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, 2012 edition* (the JORC Code), as required by the Australian Securities Exchange (ASX). Rio Tinto also files an annual report on Form 20-F (Form 20-F) with the US Securities and Exchange Commission (SEC) and prepares the Form 20-F Mineral Resources and Mineral Reserves in accordance with subpart 1300 of Regulation S-K (SK-1300). Mineral Reserves under SK-1300 are the equivalent of Ore Reserves under ASX. Some variations may occur between the reporting in accordance with the JORC Code and SK-1300.

A Mineral Resource is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade (or quality) and quantity that there are reasonable prospects for eventual economic extraction. Estimates of such material are based largely on geological information with only preliminary consideration of mining, economic and other factors. While in the judgement of the Competent Person there are realistic expectations that all or part of the Mineral Resources will eventually become Proved or Probable Ore Reserves, there is no guarantee that this will occur, as the result depends on further technical and economic studies and prevailing economic conditions in the future.

An Ore Reserve is the economically mineable part of a Measured and/or Indicated Mineral Resource. It includes diluting materials and allowances for losses, which may occur when the material is mined or extracted. It is defined by studies at pre-feasibility or feasibility level as appropriate, with the application of modifying factors. Such studies demonstrate that, at the time of reporting, extraction can reasonably be justified.

Rio Tinto's Mineral Resources are reported as additional (exclusive) to the reported Ore Reserves, with the exception of the Rincon lithium brines Mineral Resources which are reported inclusive of Ore Reserves. Reporting of Mineral Resources inclusive of Ore Reserves is industry-standard for in situ lithium brines.

For Mineral Resources and Ore Reserves reporting, the JORC Code envisages the use of reasonable investment assumptions to test the economic viability of the Ore Reserves and the reasonable prospects of eventual economic extraction for the Mineral Resources. To achieve this, Rio Tinto uses internally generated, projected long-term commodity prices.

SK-1300 requires the use of a justifiable commodity price to test the economic viability of the Mineral Reserves and the reasonable prospects of economic extraction for the Mineral Resources, and prices used in calculating the estimates must be disclosed. As a result of the commercial sensitivity of Rio Tinto's long-term commodity prices, we use commercially available consensus pricing or historical pricing for SEC reporting. For this reason and others, some Mineral Resources and Mineral Reserves reported to the SEC in the Form 20-F may differ from those Mineral Resources and Ore Reserves reported herein.

Mineral Resources and Ore Reserves information in the following tables is based on information compiled by Competent Persons (as defined by the JORC Code), most of whom are full-time employees of Rio Tinto or related companies. Each has had a minimum of 5 years' relevant experience and is a member of a recognised professional body whose members are bound by a professional code of ethics. These bodies include the Australasian Institute of Mining and Metallurgy (AusIMM), Australian Institute of Geoscientists (AIG) or recognised professional organisations (RPO). Each Competent Person consents to the inclusion in this Annual Report of information they have provided in the form and context in which it appears. Competent Persons responsible for the estimates are listed on page 301, by operation, along with their professional affiliation, employer, and accountability for Mineral Resources and/or Ore Reserves.

Mineral Resources and Ore Reserves from our managed operations are the responsibility of the managing directors of the business units and estimates are carried out by the Competent Persons.

Mineral Resources and Ore Reserves from externally managed operations, in which Rio Tinto holds a minority share, are reported as received from the managing entity and in accordance with the JORC Code.

The Mineral Resources and Ore Reserves figures in the following tables are reported as of 31 December 2024. Summary data for year end 2023 are shown for comparison. Metric units are used throughout. The figures used to calculate Rio Tinto's Mineral Resources and Ore Reserves are more precise than the rounded numbers shown in the tables, hence small differences might result if the calculations are repeated using the tabulated figures.

JORC Table 1 reports for new or materially changed significant deposits are released to the market. They are also available at riotinto.com/resourcesandreserves. JORC Table 1, SEC Technical Report Summaries and NI 43-101 Technical Reports generated by non-managed units or joint venture partners are referenced within the reporting footnotes, with the location and initial reporting date identified.

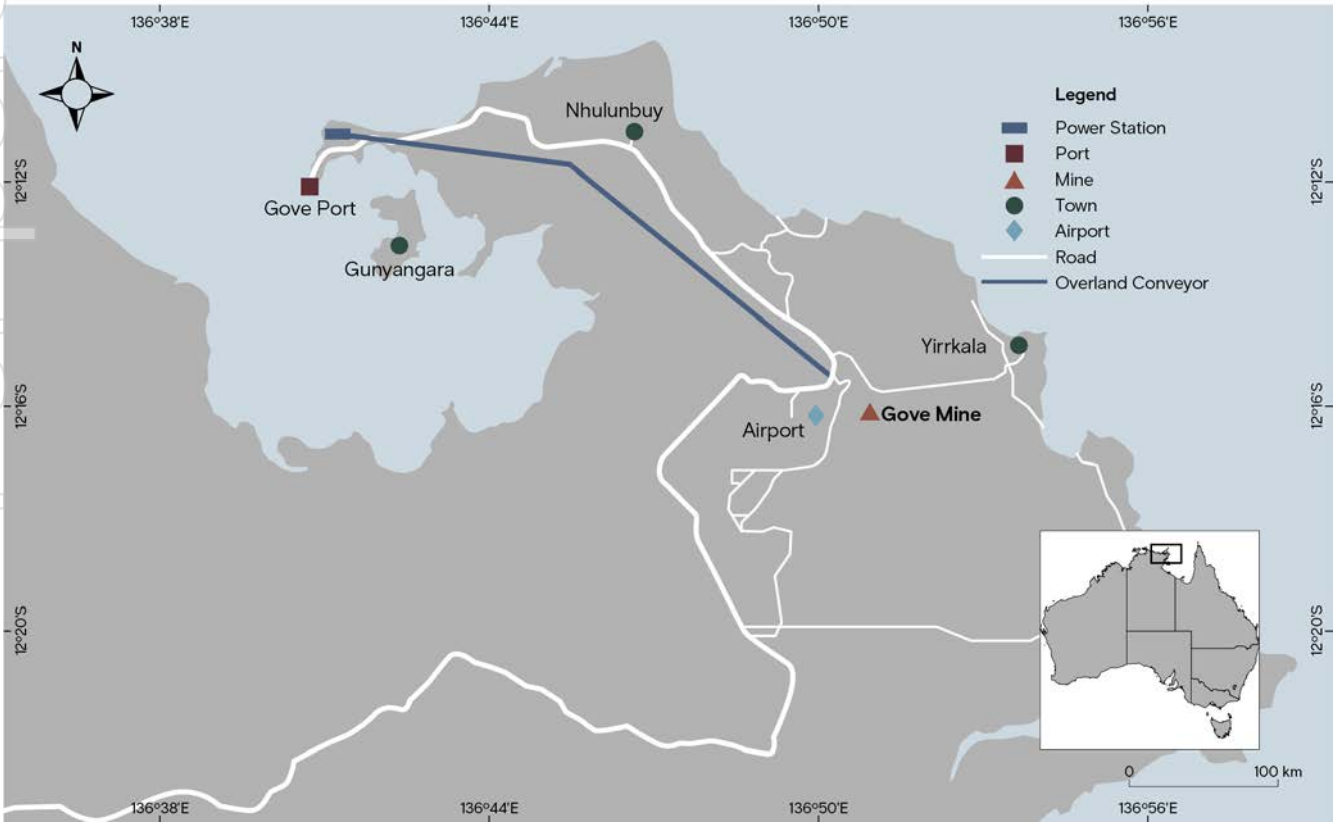
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Ore Reserves

	Type of mine[1]	Proved Ore Reserves as at 31 December 2024			Probable Ore Reserves as at 31 December 2024		
		Tonnage	Grade		Tonnage	Grade	
Bauxite[2]		Mt	% Al_2O_3	% SiO_2	Mt	% Al_2O_3	% SiO_2
Rio Tinto Aluminium (Australia)[3]							
– Amrun	O/P	466	54.6	8.8	512	54.3	9.1
– East Weipa and Andoom	O/P	55	50.6	8.1	2	48.9	8.5
– Gove	O/P	44	50.0	6.4	4	50.3	6.7
Total (Australia)		**565**	**53.8**	**8.6**	**518**	**54.2**	**9.1**
Porto Trombetas (MRN) (Brazil)[4]	O/P	39	48.0	5.2	170	49.1	4.6
Sangaredi (Guinea)[5]	O/P	324	47.0	1.9	16	48.7	2.5
Total bauxite		**927**	**51.2**	**6.1**	**705**	**52.8**	**7.8**

1. Type of mine: O/P = open pit/surface.
2. Bauxite Ore Reserves are stated as recoverable Ore Reserves of marketable product after accounting for all mining and processing losses. Mill recoveries are therefore not shown.
3. Australian bauxite Ore Reserves are stated as dry tonnes and total alumina and silica grade.
4. Porto Trombetas (MRN) Ore Reserves are stated as dry tonnes, available alumina grade and reactive silica grade.
5. Sangaredi Ore Reserves tonnes are reported on a 3% moisture basis and total alumina and silica grade.

Gove operations – Australia



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	Total Ore Reserves as at 31 December 2024			Rio Tinto interest	Rio Tinto share recoverable mineral	Total Ore Reserves as at 31 December 2023		
	Tonnage	Grade				Tonnage	Grade	
	Mt	% Al_2O_3	% SiO_2	%	Mt	Mt	% Al_2O_3	% SiO_2
	978	**54.4**	**9.0**	100.0	**978**	**950**	**54.3**	**9.1**
	56	**50.5**	**8.1**	100.0	**56**	**72**	**50.5**	**8.0**
	48	**50.0**	**6.4**	100.0	**48**	**58**	**50.2**	**6.4**
	1,083	**54.0**	**8.8**		**1,083**	**1,080**	**53.8**	**8.8**
	209	**48.9**	**4.7**	22.0	**46**	**46**	**48.9**	**4.9**
	340	**47.1**	**1.9**	23.0	**78**	**350**	**47.1**	**1.9**
	1,632	**51.9**	**6.9**		**1,207**	**1,476**	**52.1**	**7.1**

Rio Tinto Aluminium

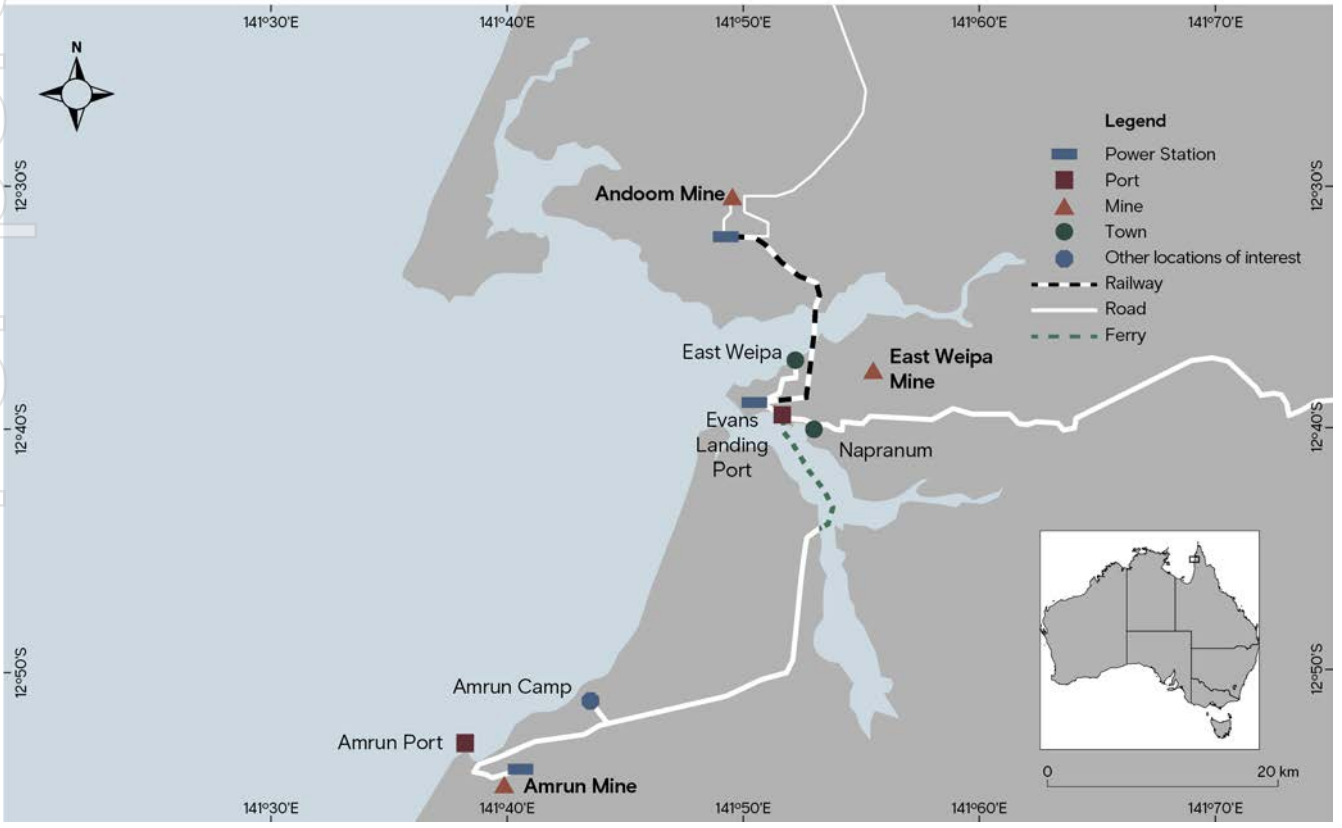
The change in Ore Reserves classification at Amrun reflects a higher level of confidence in the modifying factors resulting from completion of an access study and increased confidence in the underlying Mineral Resources as a result of updated orebody knowledge. A JORC Table 1 in support of this change will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/resourcesandreserves.

The decrease in Ore Reserves tonnes at both Andoom and Gove, is due to mining depletion. Mining operations ceased at East Weipa in 2024.

Porto Trombetas (MRN)

Ore Reserves tonnes increased due to the conversion of Mineral Resources to Ore Reserves at the West Zone Project, following the approval of the Preliminary Environmental Licence. A JORC Table 1 in support of this change will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/resourcesandreserves.

Weipa operations – Australia

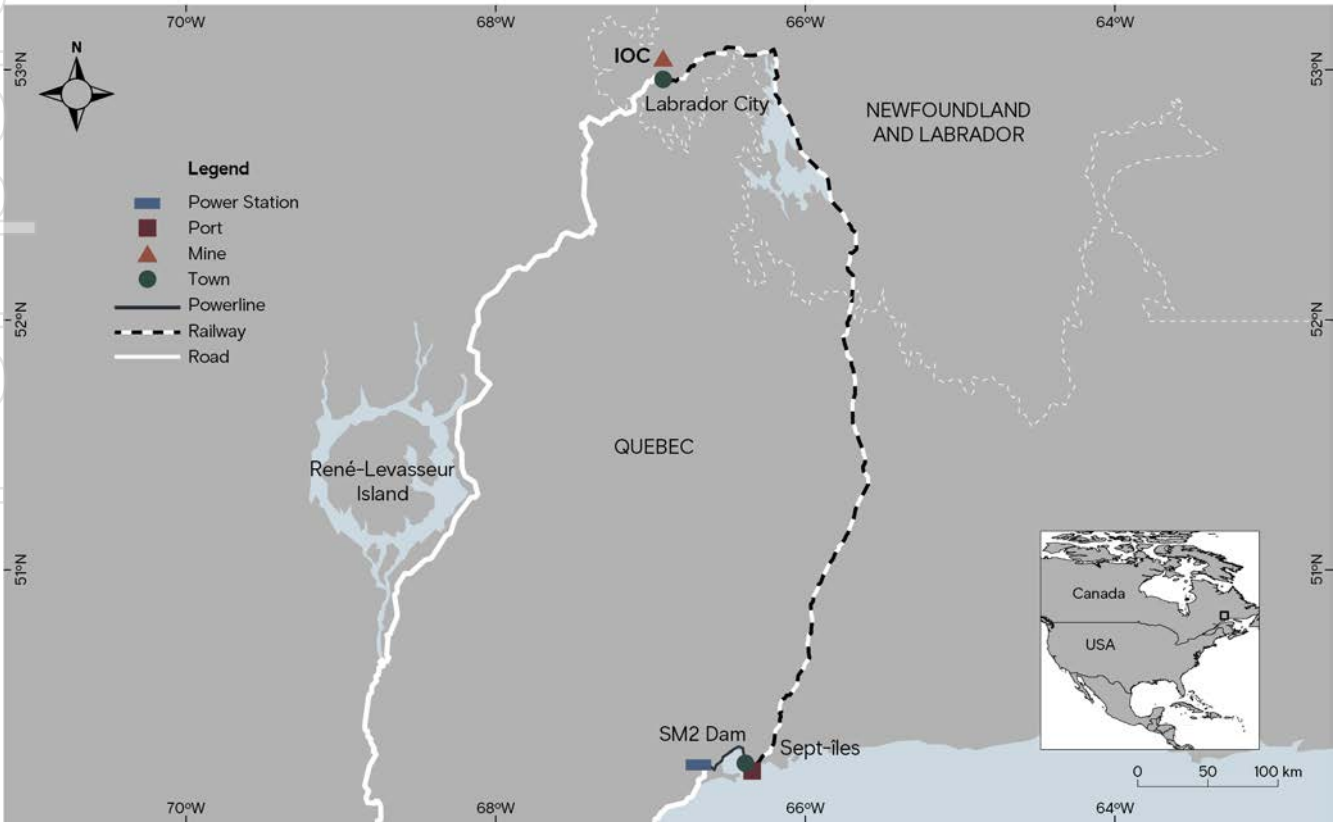


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	Type of mine[1]	Proved Ore Reserves as at 31 December 2024						Probable Ore Reserves as at 31 December 2024					
		Tonnage	Grade					Tonnage	Grade				
Iron ore[2]		Mt	% Fe	% SiO_2	% Al_2O_3	% P	% LOI	Mt	% Fe	% SiO_2	% Al_2O_3	% P	% LOI
Australia[3,4]													
– Brockman Ore[5]	O/P	289	62.2	3.5	2.0	0.14	4.9	1,243	61.4	3.8	2.1	0.12	5.7
– Marra Mamba Ore[6]	O/P	170	62.5	2.8	1.6	0.06	5.5	451	62.0	3.1	1.9	0.06	5.6
– Pisolite (Channel Iron) Ore[7]	O/P	380	57.7	4.7	1.9	0.06	10.4	132	56.0	5.6	2.6	0.05	11.0
Total (Australia)		**839**	**60.2**	**3.9**	**1.9**	**0.08**	**7.5**	**1,826**	**61.1**	**3.7**	**2.1**	**0.10**	**6.1**
Iron Ore Company of Canada (Canada)[8]	O/P	145	65.0	2.7	–	–	–	255	65.0	2.7	–	–	–
Simandou (Guinea)[9]	O/P	152	66.4	0.8	1.2	0.07	2.7	1,347	65.2	0.9	1.8	0.10	3.8
Total iron ore		**1,136**	**61.7**	**3.3**	**1.6**	**0.07**	**5.9**	**3,427**	**63.0**	**2.6**	**1.8**	**0.09**	**4.7**

1. Type of mine: O/P = open pit/surface.
2. Ore Reserves of iron ore are shown as recoverable Ore Reserves of marketable product after accounting for all mining and processing losses. Mill recoveries are therefore not shown.
3. Australian iron ore Ore Reserves tonnes are reported on a dry weight basis.
4. Australian iron ore Ore Reserves are all located on State Agreement mining leases. Prior to mining, state government approvals (including environmental and heritage) are required. Reported Ore Reserves include select areas where one or more approvals remain outstanding. In these areas, it is expected that these approvals will be obtained within the timeframes required in the current production schedule.
5. Ore Reserves of Brockman Ore are 86.2% Rio Tinto-owned, with the remainder split between the non-Rio Tinto partners in the Bao-HI joint venture and the Hope Downs joint venture.
6. Ore Reserves of Marra Mamba Ore are 80.5% Rio Tinto-owned, with the remainder split between the non-Rio Tinto partners in the Hope Downs joint venture and the Robe River joint venture.
7. Ore Reserves of Pisolite Ore are 80.2% Rio Tinto-owned, with the remainder split between the non-Rio Tinto partners in the Robe River joint venture.
8. Iron Ore Company of Canada (IOC) Ore Reserves are reported as marketable product (61% pellets and 39% concentrate for sale) at a natural moisture content of 2%. The marketable product is derived from mined material comprising 355 million dry tonnes at 39% iron, 34% silica, 0.20% alumina, 0.022% phosphorus (Proved) and 610 million dry tonnes at 39% iron, 34% silica, 0.19% alumina, 0.022% phosphorus (Probable) using process recovery factors derived from current IOC concentrating and pellet operations. No meaningful relationship has been established between the product and feed grades of alumina and phosphorus, so these grades cannot be reported for Ore Reserves. Saleable product is produced to meet silica grade specifications, so the Ore Reserves silica grade is the targeted silica grade for the currently anticipated long-term product mix. Loss on Ignition (LOI) is not determined for resource drilling samples, so no estimate of % LOI is available for Ore Reserves.
9. Simandou Ore Reserves tonnes are reported on a dry weight basis.

Iron Ore Company of Canada operations – Canada



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	Total Ore Reserves as at 31 December 2024								Total Ore Reserves as at 31 December 2023					
	Tonnage	Grade					Rio Tinto interest	Rio Tinto share marketable product	Tonnage	Grade				
	Mt	% Fe	% SiO_2	% Al_2O_3	% P	% LOI	%	Mt	Mt	% Fe	% SiO_2	% Al_2O_3	% P	% LOI
	1,531	**61.5**	**3.7**	**2.1**	**0.13**	**5.6**	86.2	**1,320**	1,427	61.8	3.5	2.0	0.13	5.5
	621	**62.2**	**3.1**	**1.8**	**0.06**	**5.6**	80.5	**500**	687	62.0	3.1	1.9	0.06	5.7
	512	**57.3**	**4.9**	**2.1**	**0.05**	**10.5**	80.2	**410**	566	57.3	4.8	2.1	0.05	10.5
	2,664	**60.9**	**3.8**	**2.0**	**0.10**	**6.5**		**2,230**	2,680	60.9	3.7	2.0	0.09	6.6
	400	**65.0**	**2.7**	**–**	**–**	**–**	58.7	**235**	423	65.0	2.8	–	–	–
	1,499	**65.3**	**0.9**	**1.7**	**0.09**	**3.7**	45.1	**675**	1,499	65.3	0.9	1.7	0.09	3.6
	4,563	**62.7**	**2.8**	**1.7**	**0.09**	**5.0**		**3,140**	4,602	62.7	2.7	1.7	0.09	5.0

Australian Iron Ore

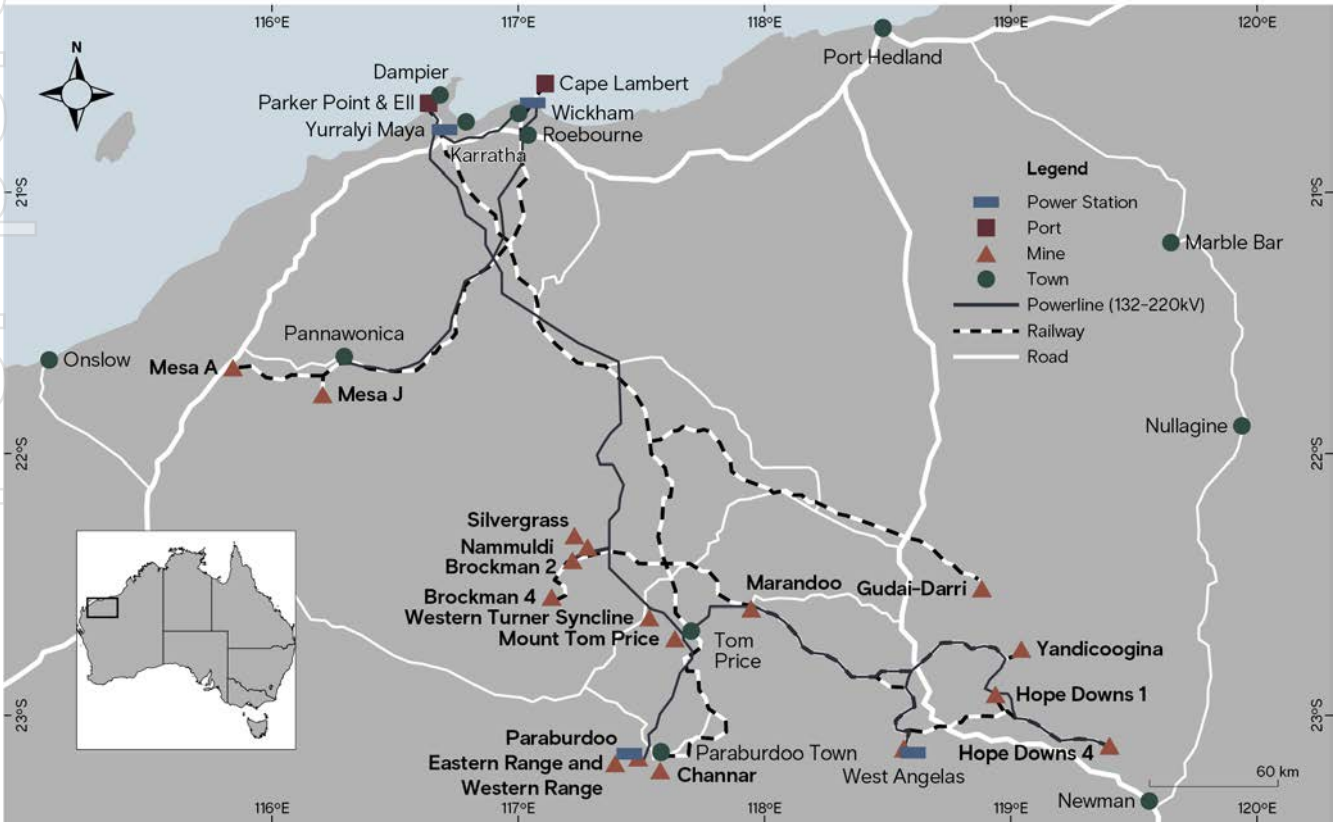
Ore Reserves updates for Brockman, Marra Mamba and Pisolite Ore include mining depletion, the addition of new deposits and design updates (primarily at Western Range and Gudai-Darri) and changes to cut-off grades.

Ore Reserves classification is determined based on confidence in all the modifying factors. Generally, Proved Ore Reserves are derived from Measured Mineral Resources, and Probable Ore Reserves are derived from Indicated Mineral Resources. In 2024, portions of the Ore Reserves derived from Measured Mineral Resources have been classified as Probable Ore Reserves. This classification primarily represents areas where one or more state government approvals remain outstanding or specific Traditional Owner engagement is required prior to mining.

Simandou

Ore Reserves updates reflect a classification change from Proved Ore Reserves to Probable Ore Reserves due to geotechnical parameters supporting design being largely at pre-feasibility study level.

Iron Ore operations – Australia



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	Type of mine[1]	Proved Ore Reserves as at 31 December 2024					Probable Ore Reserves as at 31 December 2024				
		Tonnage	Grade				Tonnage	Grade			
Copper[2]		Mt	% Cu	g/t Au	g/t Ag	% Mo	Mt	% Cu	g/t Au	g/t Ag	% Mo
Bingham Canyon (US)											
– Bingham Open Pit[3]	O/P	454	0.37	0.18	1.97	0.038	323	0.36	0.18	1.98	0.028
– Underground Skarns	U/G	–	–	–	–	–	5	2.21	1.39	14.30	0.022
Total (US)		**454**	**0.37**	**0.18**	**1.97**	**0.038**	**328**	**0.38**	**0.20**	**2.16**	**0.028**
Escondida (Chile)											
– Full SaL[4]	O/P	171	0.81	–	–	–	36	0.61	–	–	–
– oxide	O/P	–	–	–	–	–	–	–	–	–	–
– sulphide	O/P	3,312	0.62	–	–	–	1,399	0.54	–	–	–
– sulphide leach	O/P	1,259	0.38	–	–	–	238	0.37	–	–	–
Total (Chile)		**4,742**	**0.57**	**–**	**–**	**–**	**1,673**	**0.52**	**–**	**–**	**–**
Oyu Tolgoi (Mongolia)											
– Hugo Dummett North[5]	U/G	–	–	–	–	–	386	1.58	0.31	3.25	–
– Hugo Dummett North Extension	U/G	–	–	–	–	–	36	1.68	0.60	3.97	–
– Oyut open pit	O/P	224	0.54	0.42	1.30	–	348	0.42	0.26	1.16	–
– Oyut stockpiles	S/P	–	–	–	–	–	63	0.31	0.13	0.98	–
Total (Mongolia)		**224**	**0.54**	**0.42**	**1.30**	**–**	**832**	**1.00**	**0.28**	**2.23**	**–**
Total copper		**5,420**	**0.55**	**0.03**	**0.22**	**0.003**	**2,833**	**0.64**	**0.11**	**0.91**	**0.003**

1. Type of mine: O/P = open pit/surface, S/P = stockpile, U/G = underground.
2. Copper Ore Reserves are reported as dry mill feed tonnes.
3. Bingham Canyon Open Pit Ore Reserves molybdenum grades interpolated from exploration drilling assays have been factored based on long reconciliation history to blast hole and mill samples.
4. Escondida Ore Reserves Full SaL ore type has replaced oxide ore type due to a change in processing methodology.
5. The Hugo Dummett North Ore Reserves include approximately 2.0 million tonnes of stockpiled material at a grade of 0.45% copper, 0.14g/t gold and 1.09g/t silver.

Bingham Canyon operations – US



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Total Ore Reserves as at 31 December 2024					Average mill recovery %				Rio Tinto interest	Rio Tinto share recoverable metal				Total Ore Reserves as at 31 December 2023				
Tonnage	Grade													Tonnage	Grade			
Mt	% Cu	g/t Au	g/t Ag	% Mo	Cu	Au	Ag	Mo	%	Mt Cu	Moz Au	Moz Ag	Mt Mo	Mt	% Cu	g/t Au	g/t Ag	% Mo
777	**0.36**	**0.18**	**1.97**	**0.034**	88	69	71	65	100.0	**2.497**	**3.060**	**35.021**	**0.173**	829	0.37	0.18	1.98	0.033
5	**2.21**	**1.39**	**14.30**	**0.022**	92	70	68	54	100.0	**0.095**	**0.145**	**1.458**	**0.001**	5	2.22	1.39	15.52	0.022
782	**0.37**	**0.19**	**2.05**	**0.034**						**2.591**	**3.205**	**36.479**	**0.174**	834	0.38	0.19	2.06	0.033
207	**0.78**	**–**	**–**	**–**	78	–	–	–	30.0	**0.375**	**–**	**–**	**–**	–	–	–	–	–
–	**–**	**–**	**–**	**–**	–	–	–	–	30.0	**–**	**–**	**–**	**–**	151	0.56	–	–	–
4,711	**0.60**	**–**	**–**	**–**	85	–	–	–	30.0	**7.173**	**–**	**–**	**–**	4,717	0.65	–	–	–
1,497	**0.38**	**–**	**–**	**–**	41	–	–	–	30.0	**0.703**	**–**	**–**	**–**	1,644	0.42	–	–	–
6,416	**0.55**	**–**	**–**	**–**						**8.251**	**–**	**–**	**–**	6,512	0.59	–	–	–
386	**1.58**	**0.31**	**3.25**	**–**	92	79	81	–	66.0	**3.723**	**1.994**	**21.500**	**–**	402	1.55	0.31	3.21	–
36	**1.68**	**0.60**	**3.97**	**–**	92	81	84	–	56.0	**0.309**	**0.311**	**2.123**	**–**	38	1.60	0.56	3.80	–
571	**0.46**	**0.32**	**1.22**	**–**	76	67	55	–	66.0	**1.335**	**2.606**	**8.112**	**–**	614	0.46	0.30	1.20	–
63	**0.31**	**0.13**	**0.98**	**–**	70	53	50	–	66.0	**0.090**	**0.089**	**0.649**	**–**	58	0.31	0.12	1.04	–
1,056	**0.90**	**0.31**	**2.04**	**–**						**5.458**	**4.999**	**32.383**	**–**	1,111	0.88	0.30	2.01	–
8,253	**0.58**	**0.06**	**0.45**	**0.003**						**16.300**	**8.204**	**68.863**	**0.174**	8,457	0.60	0.06	0.47	0.003

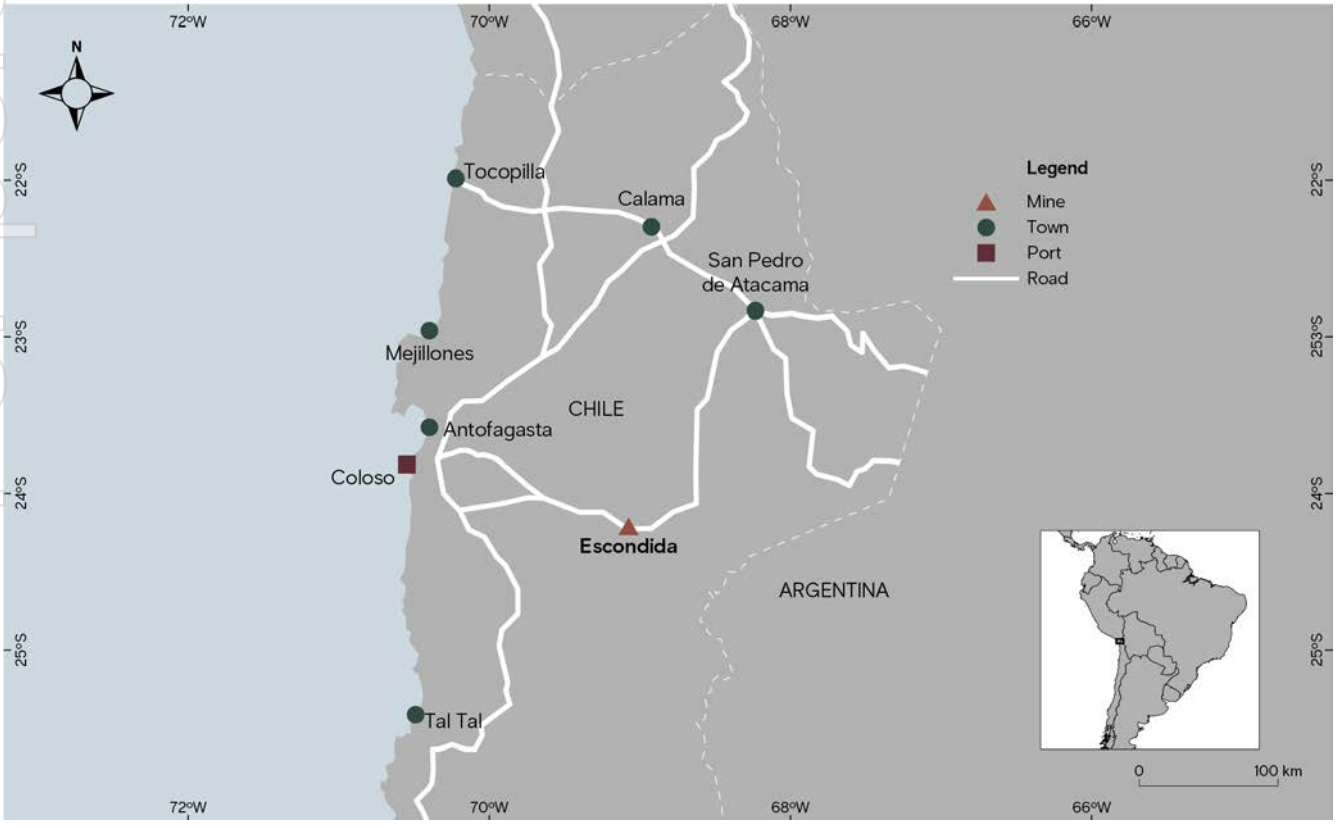
Bingham Canyon

Underground Skarns Ore Reserves comprise the Lower Commercial Skarns (LCS) Ore Reserves and the North Rim Skarn (NRS) Ore Reserves. It is noted that the Underground Skarns Ore Reserves are only economically viable while the current open pit is in operation.

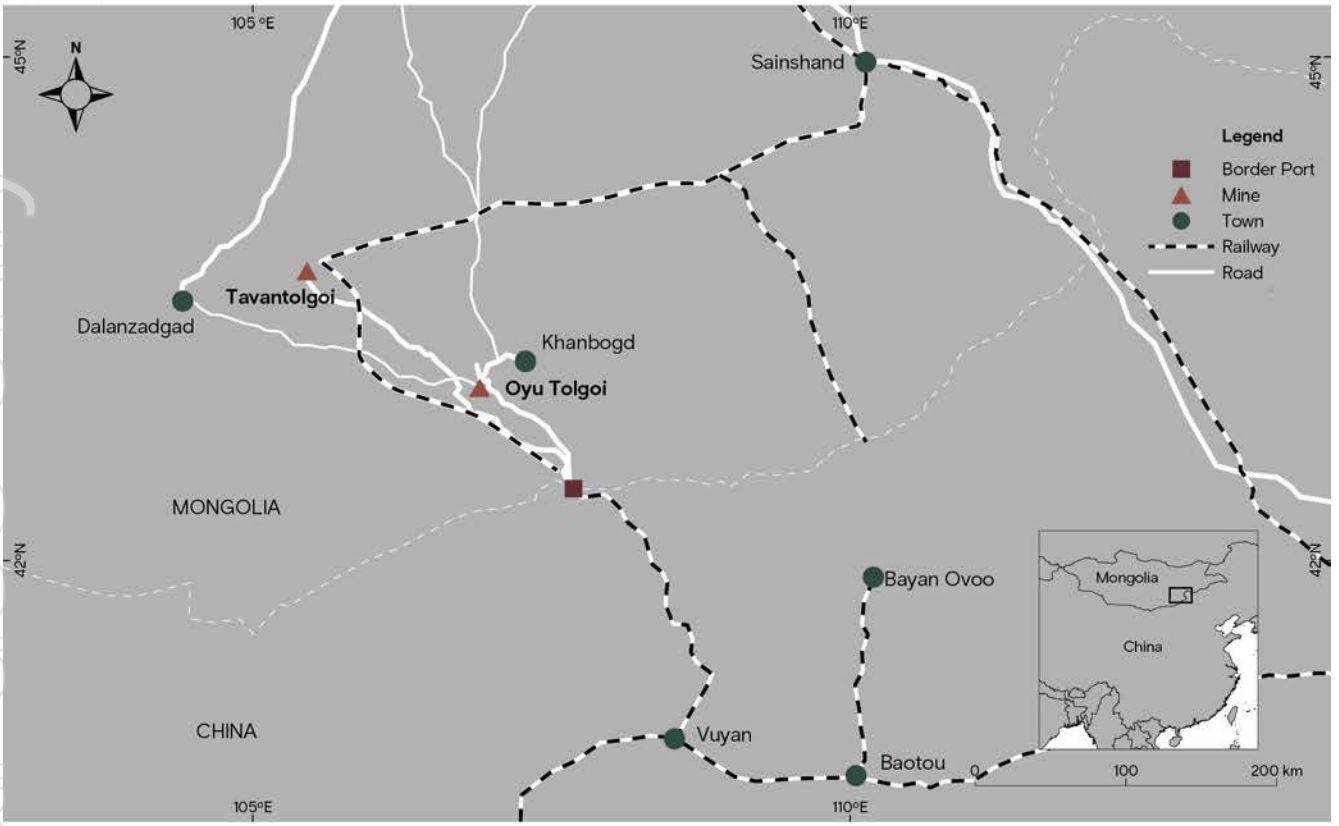
Escondida

Full SaL ore type has replaced oxide ore type. Full SaL is a processing technology that allows the extraction of copper using chlorine-assisted leaching predominantly for sulphidic material, resulting in an increase in Ore Reserves.

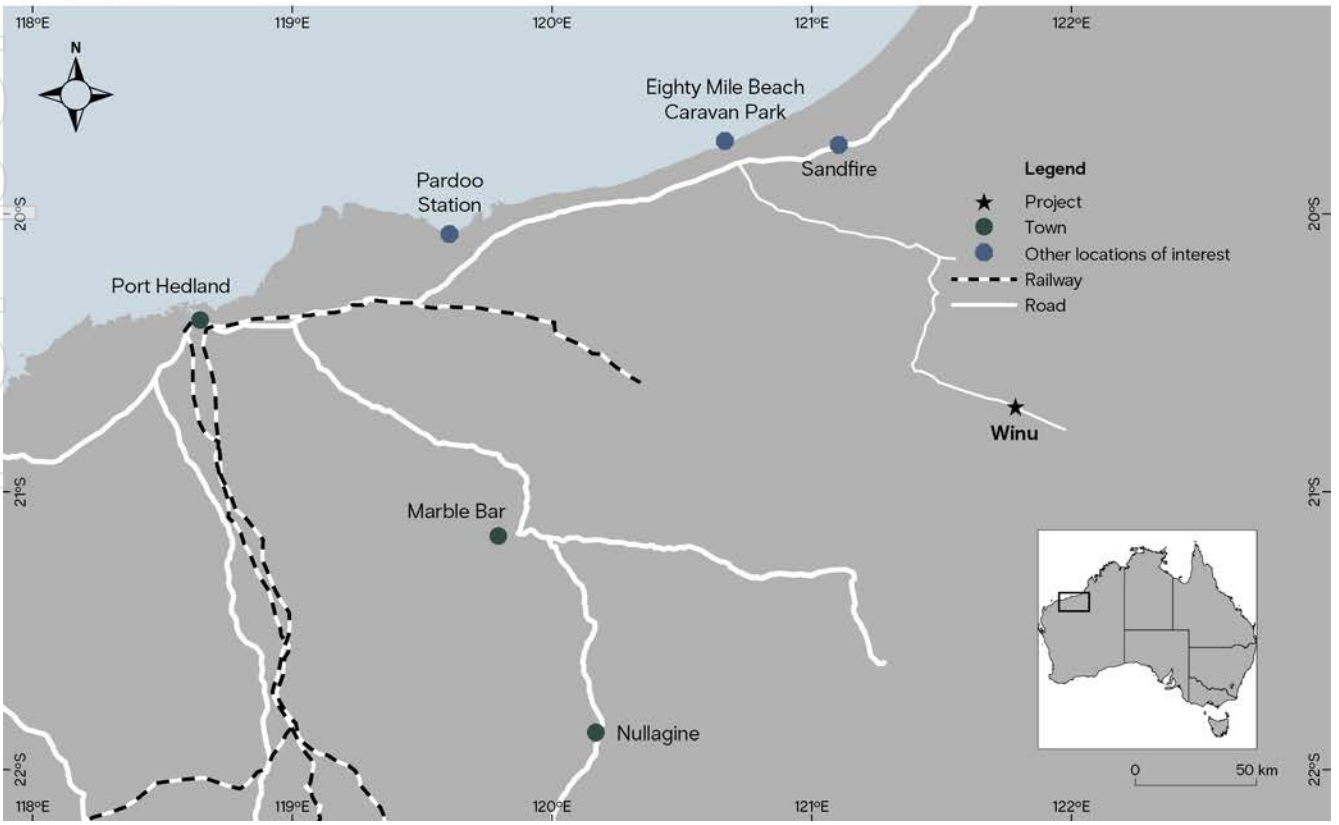
Escondida operations – Chile



Oyu Tolgoi operations – Mongolia



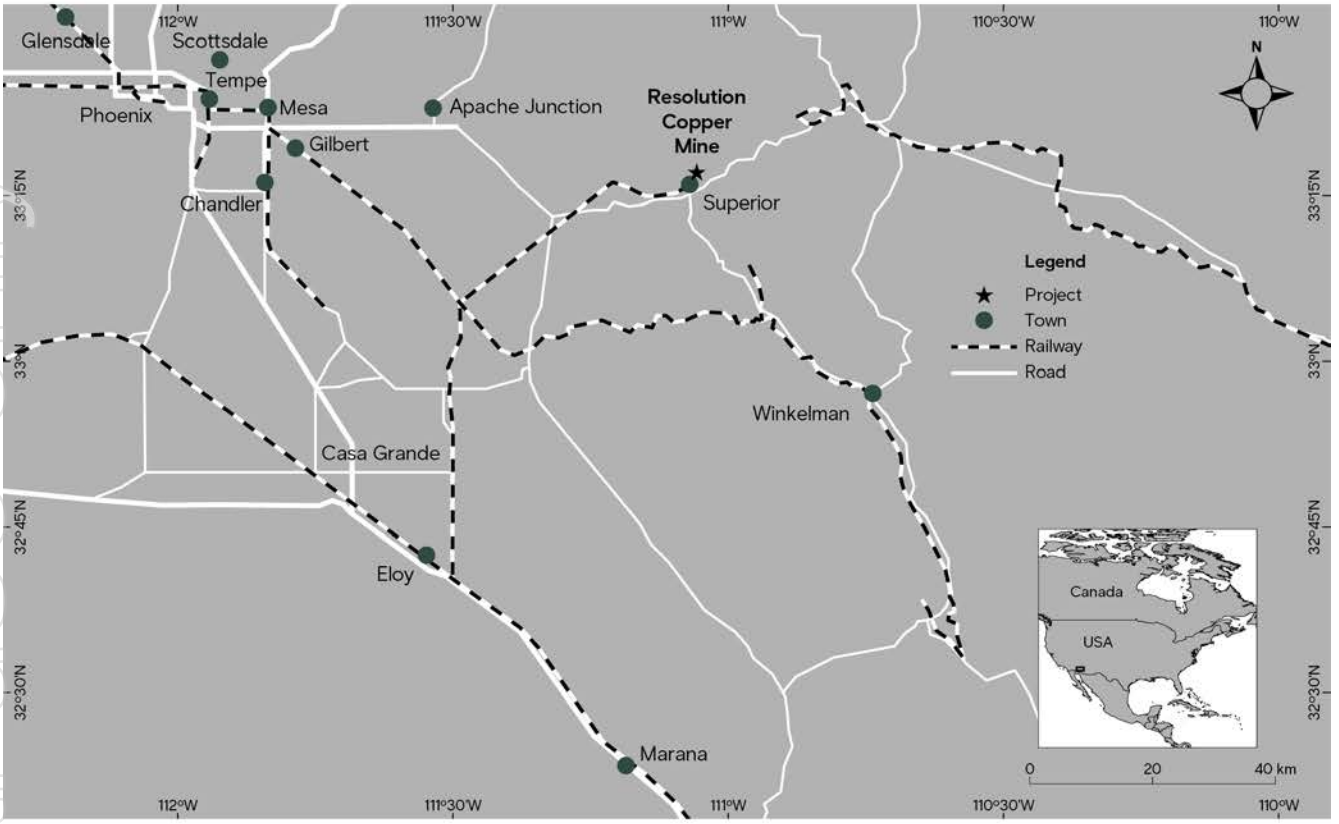
Winu project – Australia



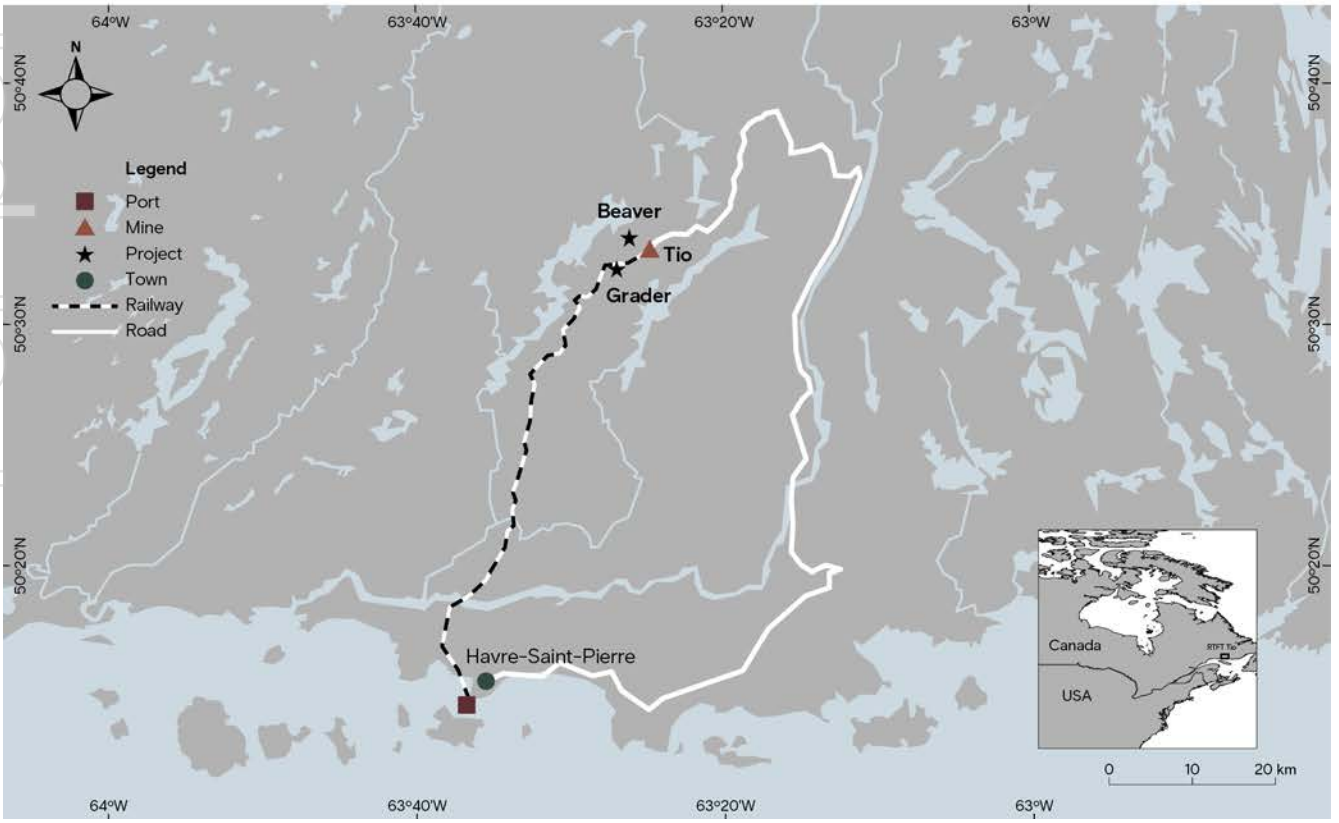
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Resolution project – US



Rio Tinto Iron and Titanium Quebec Operations – Canada

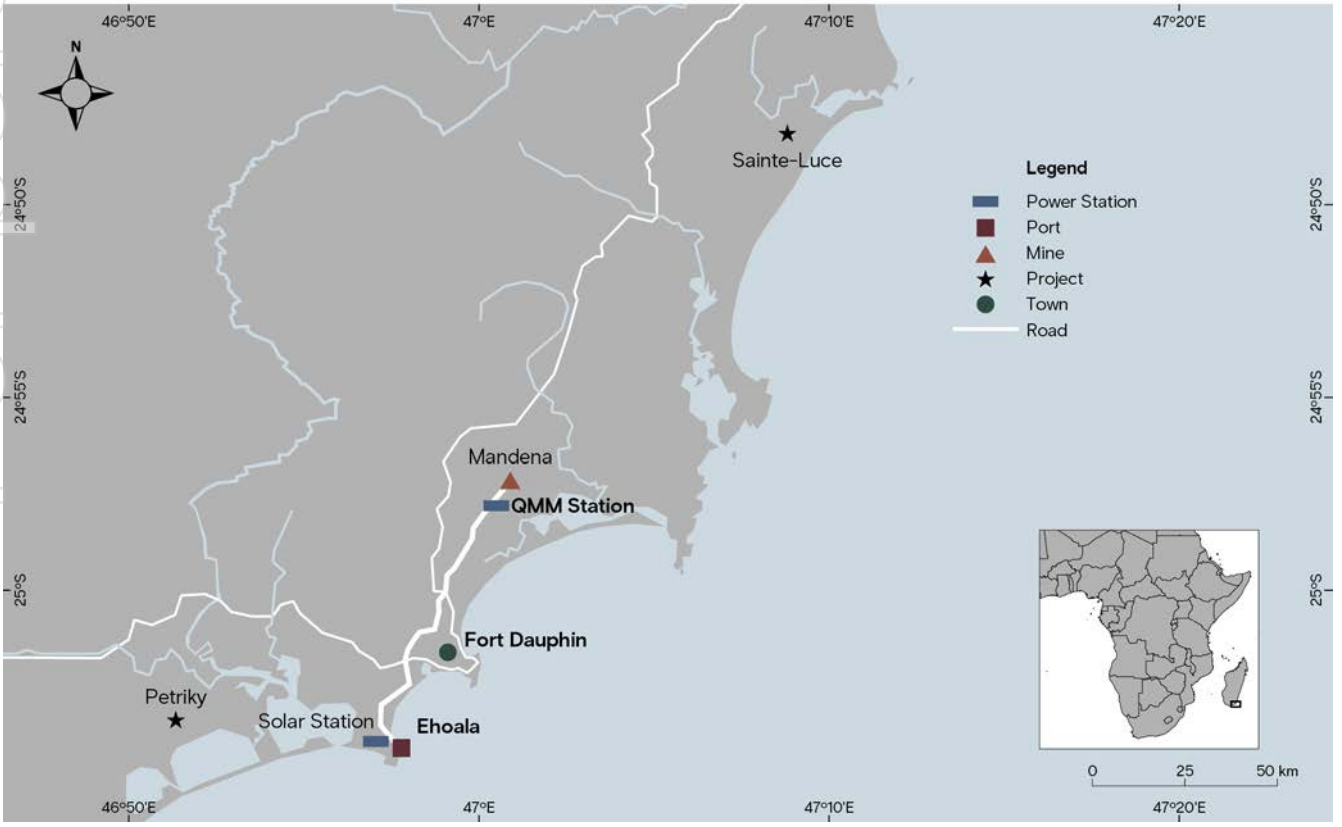


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	Type of mine[1]	Proved Ore reserves as at 31 December 2024			Probable Ore Reserves as at 31 December 2024		
		Tonnage	Grade		Tonnage	Grade	
Titanium dioxide feedstock[2]		Mt	% Ti minerals	% Zircon	Mt	% Ti minerals	% Zircon
QIT Madagascar Minerals (QMM) (Madagascar)	O/P	192	3.3	0.2	83	2.9	0.1
Richards Bay Minerals (RBM) (South Africa)	O/P	425	1.5	0.2	732	3.0	0.4
Rio Tinto Iron and Titanium (RTIT) Quebec Operations (Canada)	O/P	–	–	–	143	82.8	–
Total titanium dioxide feedstock		**617**	**2.1**	**0.2**	**958**	**14.9**	**0.3**

1. Type of mine: O/P = open pit/surface.
2. The marketable product (zircon at RBM and zirsil at QMM) is shown after all mining and processing losses. Titanium dioxide feedstock Ore Reserves are reported as dry in situ tonnes.

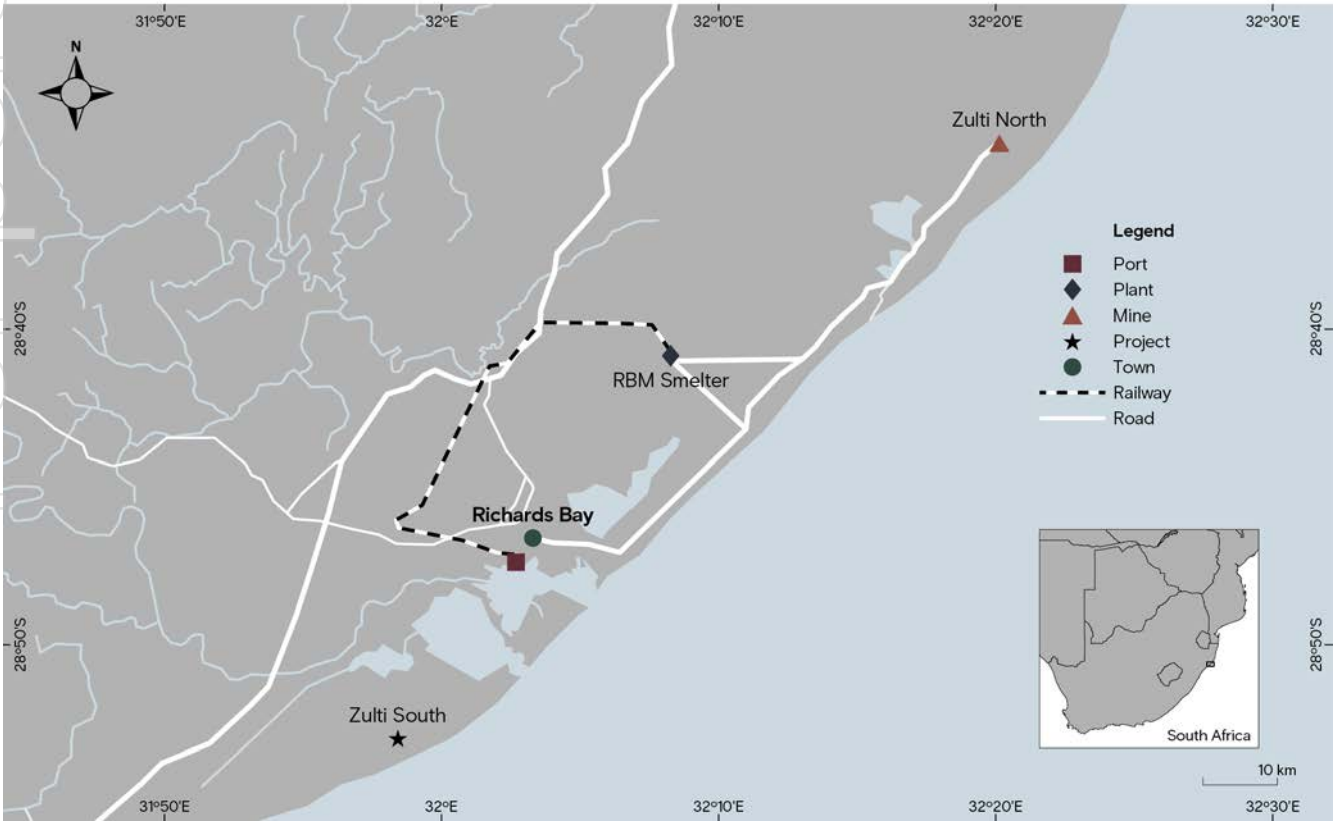
QIT Madagascar Minerals operations – Madagascar



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	Total Ore Reserves as at 31 December 2024			Rio Tinto interest	Rio Tinto share marketable product		Total Ore Reserves as at 31 December 2023		
	Tonnage	Grade					Tonnage	Grade	
	Mt	% Ti minerals	% Zircon	%	Mt Titanium dioxide feedstock	Mt Zircon	Mt	% Ti minerals	% Zircon
	275	**3.2**	**0.1**	80.0	**3.3**	**0.2**	299	3.3	0.1
	1,157	**2.5**	**0.3**	74.0	**9.4**	**2.2**	1,187	2.5	0.3
	143	**82.8**	**–**	100.0	**47.0**	**–**	151	80.0	–
	1,575	**9.9**	**0.3**		**59.7**	**2.4**	1,637	9.8	0.3

Richards Bay Minerals operations – South Africa



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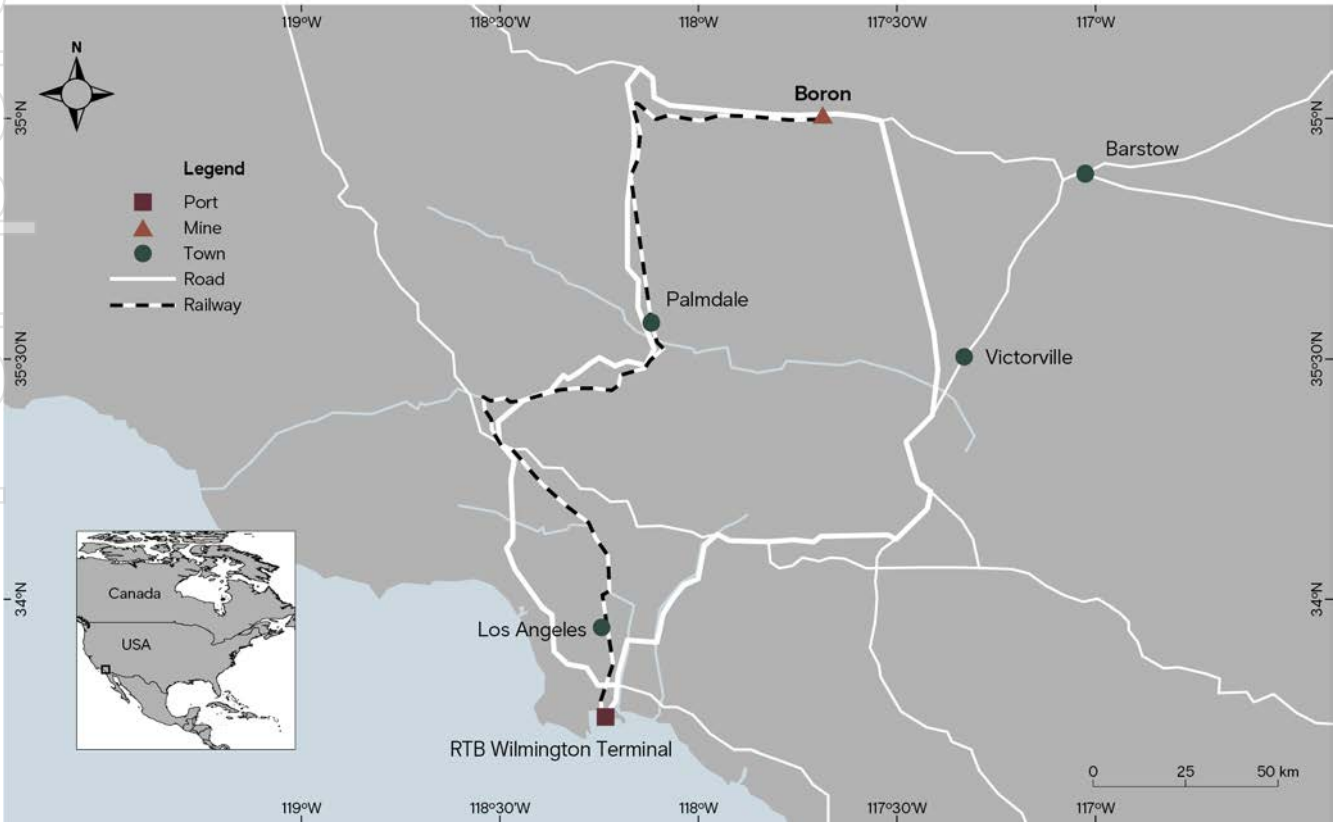
	Type of mine[1]	Proved Ore Reserves as at 31 December 2024	Probable Ore Reserves as at 31 December 2024	Total Ore Reserves as at 31 December 2024
		Tonnage	Tonnage	Tonnage
Borates[2]		Mt	Mt	Mt
Boron (US)	O/P	7	5	**13**

	Type of mine[1]	Proved Ore Reserves as at 31 December 2024		Probable Ore Reserves as at 31 December 2024		Total Ore Reserves as at 31 December 2024	
		Tonnage	Grade	Tonnage	Grade	Tonnage	Grade
Diamonds[3]		Mt	Carats per tonne	Mt	Carats per tonne	Mt	Carats per tonne
Diavik (Canada)[4]	U/G	1.0	2.3	1.2	2.4	**2.2**	**2.3**

	Type of mine[1]	Proved Ore Reserves as at 31 December 2024		Probable Ore Reserves as at 31 December 2024		Total Ore Reserves as at 31 December 2024	
		Total brine pumped	Grade	Total brine pumped	Grade	Total brine pumped	Grade
Lithium brine		Mm^3	mg/L Li	Mm^3	mg/L Li	Mm^3	mg/L Li
Rincon (Argentina)[5 6]	Sol	–	–	1,340	350	**1,340**	**350**

1. Type of mine: O/P = open pit/surface, U/G = underground, Sol = solution mining.
2. Ore Reserves of borates are expressed in terms of marketable product (B_2O_3) tonnes after all mining and processing losses.
3. Ore Reserves of diamonds are shown as recoverable Ore Reserves of marketable product after accounting for all mining and processing losses. Mill recoveries are therefore not shown.
4. Diavik Ore Reserves are based on a nominal 1 millimetre lower cut-off size and a final re-crushing size of 6 millimetres.
5. Ore Reserves for Rincon lithium brine are based on the cumulative brine volume pumped for the entire wellfield over a 40 year duration and the average lithium grade is lithium brine grade from all wells in the wellfield averaged for pumping period.
6. To obtain the equivalent tonnage for lithium carbonate equivalent (LCE), the estimated mass of lithium was multiplied by a factor that is based on the atomic weights of each element in lithium carbonate to obtain the final compound weight. The factor used was 5.322785 to obtain LCE mass from lithium mass.

Boron operations – US



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	Rio Tinto interest	Rio Tinto share marketable product	Total Ore Reserves as at 31 December 2023
			Tonnage
	%	Mt	Mt
	100.0	**13**	13

	Rio Tinto interest	Rio Tinto share recoverable diamonds	Total Ore Reserves as at 31 December 2023	
			Tonnage	Grade
	%	M carats	Mt	Carats per tonne
	100.0	**5.0**	3.1	2.2

	Average process recovery	Rio Tinto interest	Rio Tinto share recoverable Li metal	Rio Tinto share recoverable LCE	Total Ore Reserves as at 31 December 2023	
					Total brine pumped	Extracted grade
	%	%	Mt	Mt	Mm^3	mg/L Li
	90.0	100.0	**0.42**	**2.25**	–	–

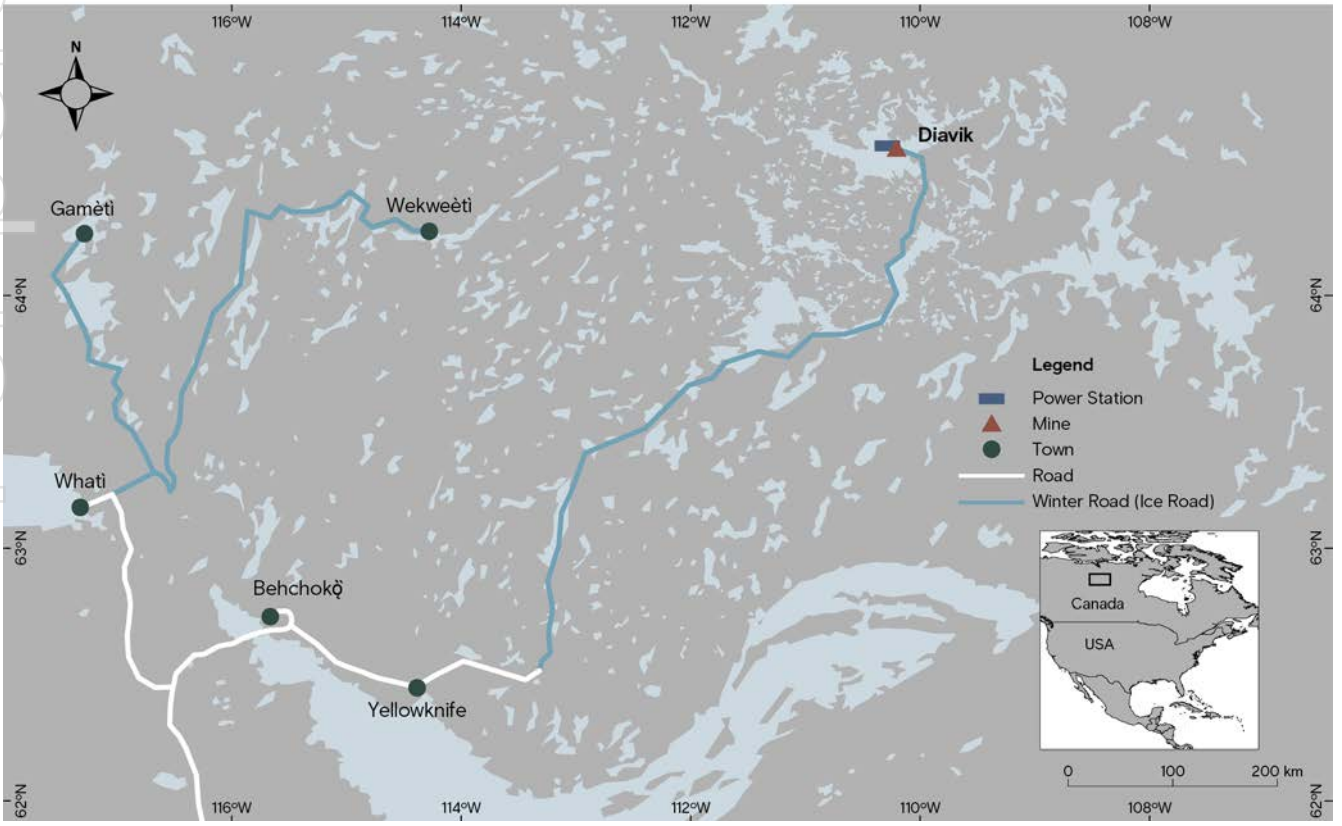
Diavik

Ore Reserves tonnes decreased due to mining depletion offsetting the addition of tonnes from A21 underground.

Rincon

Ore Reserves were reported for the first time in 2024. A JORC Table 1 in support of this was released to the market on 4 December 2024 and can be viewed at riotinto.com/resourcesandreserves.

Diavik operations – Canada

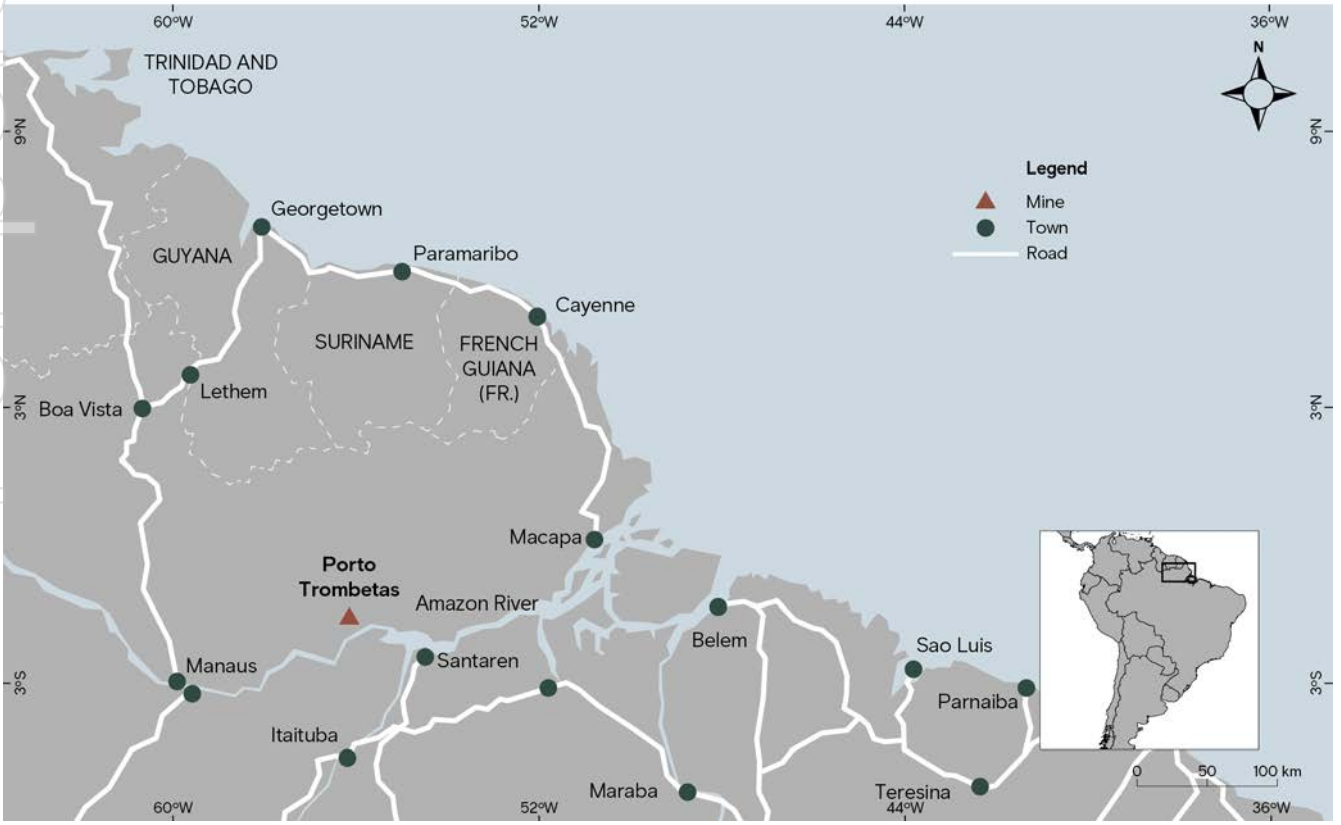


Mineral Resources

	Likely mining method[1]	Measured Mineral Resources as at 31 December 2024			Indicated Mineral Resources as at 31 December 2024			Total Measured and Indicated Mineral Resources as at 31 December 2024		
		Tonnage	Grade		Tonnage	Grade		Tonnage	Grade	
Bauxite		Mt	% Al_2O_3	% SiO_2	Mt	% Al_2O_3	% SiO_2	Mt	% Al_2O_3	% SiO_2
Rio Tinto Aluminium (Australia)[2]										
– Amrun	O/P	129	49.1	11.7	380	49.7	11.8	**509**	**49.5**	**11.8**
– East Weipa and Andoom	O/P	36	48.0	8.9	–	–	–	**36**	**48.0**	**8.9**
– Gove	O/P	10	47.7	9.0	0.1	49.5	8.4	**10**	**47.7**	**9.0**
– North of Weipa	O/P	–	–	–	202	52.0	11.1	**202**	**52.0**	**11.1**
Total (Australia)		**175**	**48.8**	**11.0**	**583**	**50.5**	**11.6**	**758**	**50.1**	**11.4**
Porto Trombetas (MRN) (Brazil)[3]	O/P	244	46.8	5.9	3	49.1	2.5	**247**	**46.8**	**5.9**
Sangaredi (Guinea)[4]	O/P	319	43.7	2.1	5,988	46.6	2.3	**6,307**	**46.4**	**2.3**
Total bauxite		**737**	**45.9**	**5.5**	**6,575**	**46.9**	**3.1**	**7,312**	**46.8**	**3.4**

1. Likely mining method: O/P = open pit/surface.
2. Rio Tinto Aluminium bauxite Mineral Resources are stated as dry product tonnes and total alumina and silica grades.
3. Porto Trombetas (MRN) Mineral Resources are stated as dry in situ tonnes, available alumina grade and total silica grade.
4. Sangaredi Mineral Resources tonnes are reported on a 3% moisture basis and total alumina and silica grades.

Porto Trombetas operations – Brazil



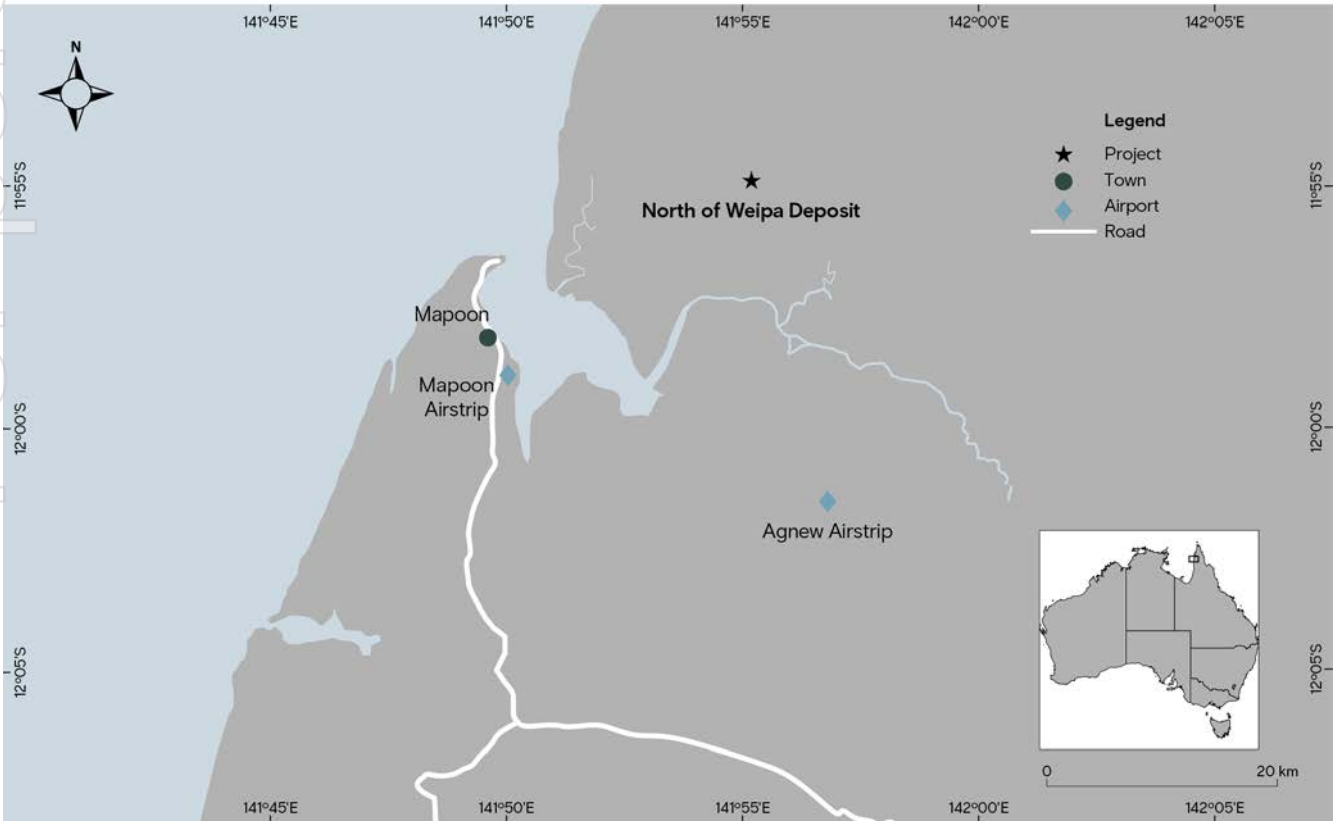
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Inferred Mineral Resources as at 31 December 2024			Total Mineral Resources as at 31 December 2024			Rio Tinto interest	Total Mineral Resources as at 31 December 2023		
Tonnage	Grade		Tonnage	Grade			Tonnage	Grade	
Mt	% Al_2O_3	% SiO_2	Mt	% Al_2O_3	% SiO_2	%	Mt	% Al_2O_3	% SiO_2
238	51.4	12.4	**747**	**50.1**	**12.0**	100.0	788	50.4	11.9
–	–	–	**36**	**48.0**	**8.9**	100.0	43	49.9	8.8
–	–	–	**10**	**47.7**	**9.0**	100.0	9	48.1	8.9
1,248	51.8	11.4	**1,451**	**51.9**	**11.4**	100.0	1,451	51.9	11.4
1,486	**51.8**	**11.6**	**2,244**	**51.2**	**11.5**		2,291	51.3	11.5
34	47.3	5.2	**282**	**46.9**	**5.8**	22.0	571	47.9	5.0
760	45.7	2.4	**7,068**	**46.4**	**2.3**	23.0	7,021	46.4	2.3
2,281	**49.7**	**8.4**	**9,593**	**47.5**	**4.6**		9,884	47.6	4.6

Porto Trombetas (MRN)

Mineral Resources tonnes decreased due to the conversion of Mineral Resources to Ore Reserves at the West Zone Project and the downgrading of material to non-resources. A JORC Table 1 in support of this change will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/resourcesandreserves.

North of Weipa project – Australia



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	Likely mining method[1]	Measured Mineral Resources as at 31 December 2024						Indicated Mineral Resources as at 31 December 2024						Total Measured and Indicated Mineral Resources as at 31 December 2024					
		Tonnage	Grade					Tonnage	Grade					Tonnage	Grade				
Iron ore[2]		**Mt**	**% Fe**	**% SiO_2**	**% Al_2O_3**	**% P**	**% LOI**	**Mt**	**% Fe**	**% SiO_2**	**% Al_2O_3**	**% P**	**% LOI**	**Mt**	**% Fe**	**% SiO_2**	**% Al_2O_3**	**% P**	**% LOI**
Australia																			
– Boolgeeda[3]	O/P	–	–	–	–	–	–	–	–	–	–	–	–	**–**	**–**	**–**	**–**	**–**	**–**
– Brockman[4]	O/P	481	62.4	3.3	1.8	0.13	5.0	985	62.5	3.2	1.8	0.13	4.9	**1,466**	**62.5**	**3.3**	**1.8**	**0.13**	**5.0**
– Brockman Process Ore[5]	O/P	206	57.2	6.2	4.1	0.15	6.9	522	56.7	6.3	4.2	0.16	7.5	**728**	**56.8**	**6.3**	**4.2**	**0.15**	**7.3**
– Channel Iron Deposit[6]	O/P	859	55.8	6.3	2.8	0.05	10.4	2,329	57.3	5.2	2.9	0.07	9.3	**3,188**	**56.9**	**5.5**	**2.9**	**0.07**	**9.6**
– Detrital[7]	O/P	0.4	61.2	4.7	2.7	0.06	4.6	40	60.5	5.0	3.3	0.07	4.3	**40**	**60.5**	**5.0**	**3.3**	**0.07**	**4.3**
– Marra Mamba[8]	O/P	225	62.4	2.8	1.5	0.07	6.0	811	62.7	2.5	1.4	0.06	5.9	**1,036**	**62.7**	**2.5**	**1.4**	**0.06**	**5.9**
Total (Australia)		1,771	58.6	5.0	2.5	0.09	7.9	4,686	59.3	4.4	2.6	0.09	7.6	**6,458**	**59.1**	**4.6**	**2.5**	**0.09**	**7.7**
Iron Ore Company of Canada (Canada)[9 10]	O/P	181	40.1	33.7	0.2	0.02	–	639	38.5	36.4	0.2	0.03	–	**820**	**38.8**	**35.8**	**0.2**	**0.03**	**–**
Simandou (Guinea)	O/P	153	67.1	1.8	1.1	0.04	1.1	485	66.2	1.8	1.5	0.05	1.8	**638**	**66.4**	**1.8**	**1.4**	**0.05**	**1.6**
Total iron ore		**2,105**	**57.6**	**7.3**	**2.2**	**0.08**	**6.8**	**5,810**	**57.6**	**7.7**	**2.2**	**0.08**	**6.2**	**7,915**	**57.6**	**7.6**	**2.2**	**0.08**	**6.4**

1. Likely mining method: O/P = open pit/surface.
2. Iron ore Mineral Resources are stated on a dry in situ weight basis.
3. Boolgeeda Mineral Resources are 100% Rio Tinto-owned.
4. Brockman Mineral Resources are 75.1% Rio Tinto-owned, with the remainder split between the non-Rio Tinto partners in the Bao-HI joint venture, the Hope Downs joint venture, the Robe River joint venture and the Rhodes Ridge joint venture.
5. Brockman Process Ore Mineral Resources are 66.3% Rio Tinto-owned, with the remainder split between the non-Rio Tinto partners in the Bao-HI joint venture, the Hope Downs joint venture, the Robe River joint venture and the Rhodes Ridge joint venture.
6. Channel Iron Deposit Mineral Resources are 68.0% Rio Tinto-owned, with the remainder split between the non-Rio Tinto partners in the Robe River joint venture.
7. Detrital Mineral Resources are 72.6% Rio Tinto-owned, with the remainder split between the non-Rio Tinto partners in the Hope Downs joint venture, the Robe River joint venture and the Rhodes Ridge joint venture.
8. Marra Mamba Mineral Resources are 62.9% Rio Tinto-owned, with the remainder split between the non-Rio Tinto partners in the Hope Downs joint venture, the Robe River joint venture and the Rhodes Ridge joint venture.
9. Iron Ore Company of Canada (IOC) Mineral Resources are stated as in situ material on a dry basis.
10. IOC Mineral Resources have the potential to produce marketable product (61% pellets and 39% concentrate for sale at a natural moisture content of 2%) comprising 77 million tonnes at 65% iron 2.7% silica (Measured), 262 million tonnes at 65% iron 2.7% silica (Indicated) and 269 million tonnes at 65% iron 2.7% silica (Inferred) using process recovery factors derived from current IOC concentrating and pellet operations. LOI is not determined for resource drilling samples, so no estimate of %LOI is available for Mineral Resources.

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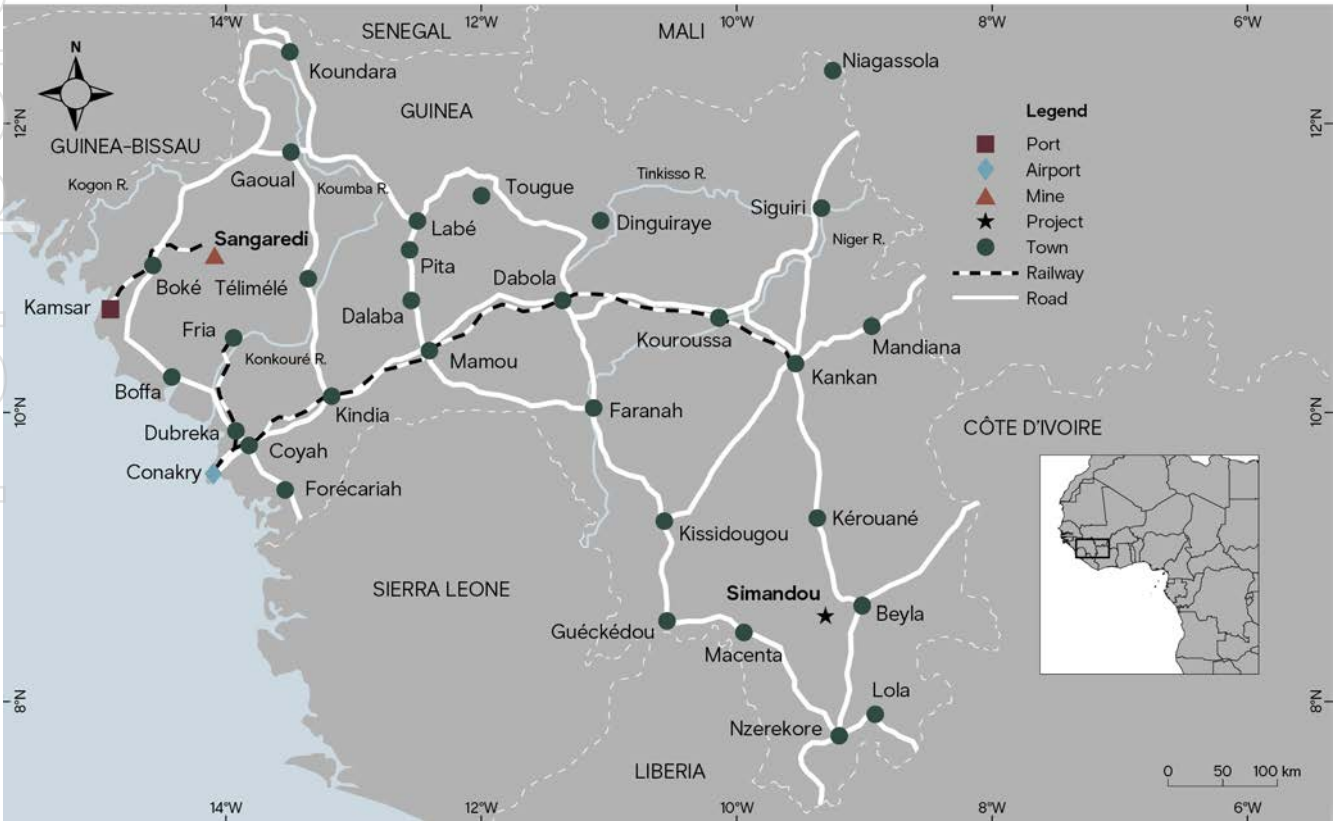
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Inferred Mineral Resources as at 31 December 2024						Total Mineral Resources as at 31 December 2024						Rio Tinto interest	Total Mineral Resources as at 31 December 2023					
Tonnage	Grade					Tonnage	Grade						Tonnage	Grade				
Mt	% Fe	% SiO_2	% Al_2O_3	% P	% LOI	Mt	% Fe	% SiO_2	% Al_2O_3	% P	% LOI	%	Mt	% Fe	% SiO_2	% Al_2O_3	% P	% LOI
532	57.9	4.8	3.9	0.17	7.6	**532**	**57.9**	**4.8**	**3.9**	**0.17**	**7.6**	100.0	532	57.9	4.8	3.9	0.17	7.6
5,766	62.4	3.2	1.9	0.13	5.3	**7,231**	**62.4**	**3.2**	**1.8**	**0.13**	**5.2**	75.1	7,346	62.5	3.2	1.8	0.13	5.2
2,606	56.7	6.0	4.2	0.16	7.9	**3,334**	**56.7**	**6.0**	**4.2**	**0.16**	**7.8**	66.3	3,345	56.8	5.9	4.1	0.16	7.7
4,970	56.0	6.1	3.2	0.08	9.8	**8,158**	**56.4**	**5.9**	**3.1**	**0.07**	**9.7**	68.0	7,749	56.5	5.7	3.0	0.07	9.7
1,725	60.5	4.4	3.9	0.06	4.3	**1,766**	**60.5**	**4.4**	**3.9**	**0.06**	**4.3**	72.6	1,655	60.6	4.3	3.8	0.06	4.3
4,350	61.5	3.1	1.8	0.07	6.5	**5,386**	**61.7**	**3.0**	**1.7**	**0.07**	**6.4**	62.9	5,206	61.8	2.9	1.7	0.06	6.3
19,948	**59.6**	**4.4**	**2.7**	**0.10**	**7.0**	26,406	59.5	4.4	2.7	0.10	7.2		25,833	59.6	4.3	2.6	0.10	7.1
665	38.4	36.7	0.2	0.03	–	**1,484**	**38.6**	**36.2**	**0.2**	**0.03**	**–**	58.7	1,641	38.6	37.3	0.2	0.03	–
722	65.8	1.3	1.4	0.07	2.9	**1,360**	**66.0**	**1.6**	**1.4**	**0.06**	**2.3**	45.1	1,343	66.1	1.6	1.4	0.06	2.3
21,335	**59.1**	**5.3**	**2.6**	**0.10**	**6.6**	29,250	58.7	5.9	2.5	0.09	6.6		28,817	58.7	6.1	2.4	0.10	6.5

Iron Ore Australia

Mineral Resources tonnes have increased as a result of additional drilling and updated resource models offsetting conversion to Ore Reserves and model updates.

Simandou project and Sangaredi operations – Guinea



	Likely mining method[1]	Measured Mineral Resources as at 31 December 2024					Indicated Mineral Resources as at 31 December 2024					Total Measured and Indicated Mineral Resources as at 31 December 2024				
		Tonnage	Grade				Tonnage	Grade				Tonnage	Grade			
Copper[2]		Mt	% Cu	g/t Au	g/t Ag	% Mo	Mt	% Cu	g/t Au	g/t Ag	% Mo	Mt	% Cu	g/t Au	g/t Ag	% Mo
Winu (Australia)	O/P	–	–	–	–	–	464	0.39	0.32	2.24	–	464	0.39	0.32	2.24	–
Bingham Canyon (US)																
– Bingham Open Pit[3]	O/P	40	0.45	0.14	2.44	0.022	23	0.34	0.20	2.75	0.015	63	0.41	0.17	2.55	0.019
– Underground Skarns	U/G	0.1	2.52	1.29	10.41	0.056	12	2.75	1.17	15.17	0.010	12	2.75	1.17	15.11	0.011
Resolution (US)	U/G	–	–	–	–	–	724	1.89	–	3.70	0.042	724	1.89	–	3.70	0.042
Total (US)		**40**	**0.46**	**0.15**	**2.47**	**0.022**	**759**	**1.86**	**0.02**	**3.86**	**0.041**	**799**	**1.79**	**0.03**	**3.79**	**0.040**
Escondida (Chile)																
– Chimborazo - sulphide	O/P	–	–	–	–	–	135	0.50	–	–	–	135	0.50	–	–	–
– Escondida - mixed	O/P	–	–	–	–	–	8	0.46	–	–	–	8	0.46	–	–	–
– Escondida - oxide	O/P	9	0.62	–	–	–	–	–	–	–	–	9	0.62	–	–	–
– Escondida - sulphide	O/P	393	0.54	–	–	–	1,984	0.53	–	–	–	2,377	0.53	–	–	–
– Pampa Escondida - sulphide	O/P	294	0.53	0.07	–	–	1,150	0.55	0.10	–	–	1,444	0.55	0.09	–	–
– Pinta Verde - oxide	O/P	109	0.59	–	–	–	64	0.52	–	–	–	173	0.56	–	–	–
– Pinta Verde - sulphide	O/P	–	–	–	–	–	23	0.50	–	–	–	23	0.50	–	–	–
Total (Chile)		**805**	**0.54**	**0.03**	**–**	**–**	**3,364**	**0.54**	**0.03**	**–**	**–**	**4,169**	**0.54**	**0.03**	**–**	**–**
La Granja (Peru)	O/P	–	–	–	–	–	130	0.85	–	–	–	130	0.85	–	–	–
Oyu Tolgoi (Mongolia)																
– Heruga ETG	U/G	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
– Heruga OT	U/G	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
– Hugo Dummett North[4]	U/G	53	1.89	0.50	4.26	–	376	1.39	0.35	3.23	–	429	1.45	0.37	3.36	–
– Hugo Dummett North Extension	U/G	–	–	–	–	–	84	1.62	0.55	4.20	–	84	1.62	0.55	4.20	–
– Hugo Dummett South	U/G	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
– Oyut Open Pit	O/P	18	0.42	0.31	1.07	–	90	0.34	0.28	1.11	–	108	0.35	0.29	1.11	–
– Oyut Underground	U/G	9	0.48	0.94	1.33	–	50	0.38	0.62	1.18	–	59	0.40	0.67	1.20	–
Total (Mongolia)		**80**	**1.41**	**0.51**	**3.22**	**–**	**600**	**1.18**	**0.39**	**2.88**	**–**	**679**	**1.21**	**0.41**	**2.92**	**–**
Total copper		**925**	**0.61**	**0.07**	**0.39**	**0.001**	**5,316**	**0.79**	**0.10**	**1.07**	**0.006**	**6,241**	**0.77**	**0.09**	**0.97**	**0.005**

1. Likely mining method: O/P = open pit/surface, U/G = underground.
2. Copper Mineral Resources are stated on a dry in situ weight basis.
3. Bingham Canyon Open Pit Mineral Resources molybdenum grades interpolated from exploration drilling assays have been factored based on a long reconciliation history to blast hole and mill samples.
4. The Hugo Dummett North Mineral Resources include approximately 1.3 million tonnes of stockpiled material at a grade of 0.35% copper, 0.11g/t gold and 0.85g/t silver.

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Inferred Mineral Resources as at 31 December 2024					Total Mineral Resources as at 31 December 2024					Rio Tinto interest	Total Mineral Resources as at 31 December 2023				
Tonnage	Grade				Tonnage	Grade					Tonnage	Grade			
Mt	% Cu	g/t Au	g/t Ag	% Mo	Mt	% Cu	g/t Au	g/t Ag	% Mo	%	Mt	% Cu	g/t Au	g/t Ag	% Mo
277	0.41	0.36	2.12	–	**741**	**0.40**	**0.33**	**2.20**	**–**	100.0	721	0.40	0.34	2.21	–
13	0.19	0.28	3.15	0.006	**76**	**0.37**	**0.18**	**2.65**	**0.017**	100.0	72	0.41	0.16	2.55	0.016
14	2.51	0.91	13.92	0.008	**26**	**2.62**	**1.04**	**14.47**	**0.009**	100.0	26	2.62	1.03	36.18	0.009
1,134	1.28	–	2.74	0.031	**1,859**	**1.52**	**–**	**3.12**	**0.035**	55.0	1,859	1.52	–	3.12	0.035
1,161	**1.28**	**0.01**	**2.88**	**0.030**	**1,960**	**1.49**	**0.02**	**3.25**	**0.034**		1,956	1.49	0.02	3.53	0.034
80	0.60	–	–	–	**215**	**0.54**	**–**	**–**	**–**	30.0	218	0.54	–	–	–
20	0.45	–	–	–	**28**	**0.45**	**–**	**–**	**–**	30.0	49	0.46	–	–	–
2	0.51	–	–	–	**11**	**0.60**	**–**	**–**	**–**	30.0	22	0.58	–	–	–
9,058	0.53	–	–	–	**11,435**	**0.53**	**–**	**–**	**–**	30.0	12,264	0.53	–	–	–
5,400	0.44	0.04	–	–	**6,844**	**0.46**	**0.05**	**–**	**–**	30.0	6,864	0.46	0.06	–	–
15	0.54	–	–	–	**188**	**0.56**	**–**	**–**	**–**	30.0	188	0.57	–	–	–
37	0.45	–	–	–	**60**	**0.47**	**–**	**–**	**–**	30.0	60	0.47	–	–	–
14,612	**0.50**	**0.01**	**–**	**–**	**18,781**	**0.51**	**0.02**	**–**	**–**		19,665	0.50	0.02	–	–
4,190	0.50	–	–	–	**4,320**	**0.51**	**–**	**–**	**–**	45.0	4,320	0.51	–	–	–
1,502	0.41	0.40	1.44	0.012	**1,502**	**0.41**	**0.40**	**1.44**	**0.012**	56.0	1,502	0.41	0.40	1.44	0.012
107	0.42	0.30	1.58	0.011	**107**	**0.42**	**0.30**	**1.58**	**0.011**	66.0	107	0.42	0.30	1.58	0.011
716	0.83	0.29	2.47	–	**1,145**	**1.06**	**0.32**	**2.80**	**–**	66.0	1,156	1.07	0.32	2.82	–
160	1.05	0.37	2.85	–	**244**	**1.24**	**0.43**	**3.31**	**–**	56.0	245	1.25	0.43	3.32	–
731	0.83	0.07	1.87	–	**731**	**0.83**	**0.07**	**1.87**	**–**	66.0	731	0.83	0.07	1.87	–
322	0.29	0.19	1.01	–	**430**	**0.30**	**0.21**	**1.04**	**–**	66.0	428	0.30	0.22	1.04	–
144	0.41	0.42	1.25	–	**203**	**0.40**	**0.49**	**1.23**	**–**	66.0	204	0.40	0.49	1.23	–
3,683	**0.59**	**0.29**	**1.75**	**0.005**	**4,362**	**0.69**	**0.31**	**1.93**	**0.004**		4,372	0.69	0.31	1.93	0.004
23,923	**0.55**	**0.06**	**0.43**	**0.002**	**30,165**	**0.59**	**0.07**	**0.54**	**0.003**		31,035	0.59	0.07	0.55	0.003

Winu

Mineral Resources updates reflect a change in classification methodology. A JORC Table 1 in support of this change will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/resourcesandreserves.

Bingham Canyon

Underground Skarns Mineral Resources represent the combined Mineral Resources from the various underground deposits at Bingham Canyon. Underground Skarns Mineral Resources silver grades reflect corrections made after identifying errors in North Rim Skarns legacy assay data.

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	Likely mining method[1]	Measured Mineral Resources as at 31 December 2024			Indicated Mineral Resources as at 31 December 2024			Total Measured and Indicated Mineral Resources as at 31 December 2024		
		Tonnage	Grade		Tonnage	Grade		Tonnage	Grade	
Titanium dioxide feedstock[2]		Mt	% Ti minerals	% Zircon	Mt	% Ti minerals	% Zircon	Mt	% Ti minerals	% Zircon
QIT Madagascar Minerals (QMM) (Madagascar)	O/P	445	4.3	0.2	398	4.0	0.2	843	4.2	0.2
Richards Bay Minerals (RBM) (South Africa)	O/P	–	–	–	9	12.0	8.0	9	12.0	8.0
Rio Tinto Iron and Titanium (RTIT) Quebec Operations (Canada)	O/P	19	82.0	–	9	81.8	–	28	82.0	–
Total titanium dioxide feedstock		**464**	**7.5**	**0.2**	**416**	**5.8**	**8.2**	**880**	**6.7**	**4.0**

1. Likely mining method: O/P = open pit/surface.
2. Titanium dioxide feedstock Mineral Resources are reported as dry in situ tonnes.

La Granja project – Peru



Inferred Mineral Resources as at 31 December 2024			Total Mineral Resources as at 31 December 2024			Rio Tinto interest	Total Mineral Resources as at 31 December 2023		
Tonnage	Grade		Tonnage	Grade			Tonnage	Grade	
Mt	% Ti minerals	% Zircon	Mt	% Ti minerals	% Zircon	%	Mt	% Ti minerals	% Zircon
596	3.9	0.2	**1,439**	**4.1**	**0.2**	80.0	1,439	4.1	0.2
–	–	–	**9**	**12.0**	**8.0**	74.0	10	12.0	8.1
25	79.7	–	**53**	**80.9**	**–**	100.0	27	81.6	–
621	**7.0**	**0.2**	**1,502**	**6.8**	**2.4**		1,476	5.5	2.5

Rio Tinto Iron and Titanium (RTIT) Quebec Operations

Mineral Resources tonnes increased due to the inclusion of additional drilling at the Grader deposit. A JORC Table 1 in support of this change will be released to the market contemporaneously with the release of this Annual Report and can be viewed at riotinto.com/resourcesandreserves.

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	Likely mining method[1]	Measured Mineral Resources as at 31 December 2024	Indicated Mineral Resources as at 31 December 2024	Total Measured and Indicated Mineral Resources as at 31 December 2024
		Tonnage	Tonnage	Tonnage
Borates[2]		Mt	Mt	Mt
Jadar (Serbia)[3]	U/G	–	14	**14**

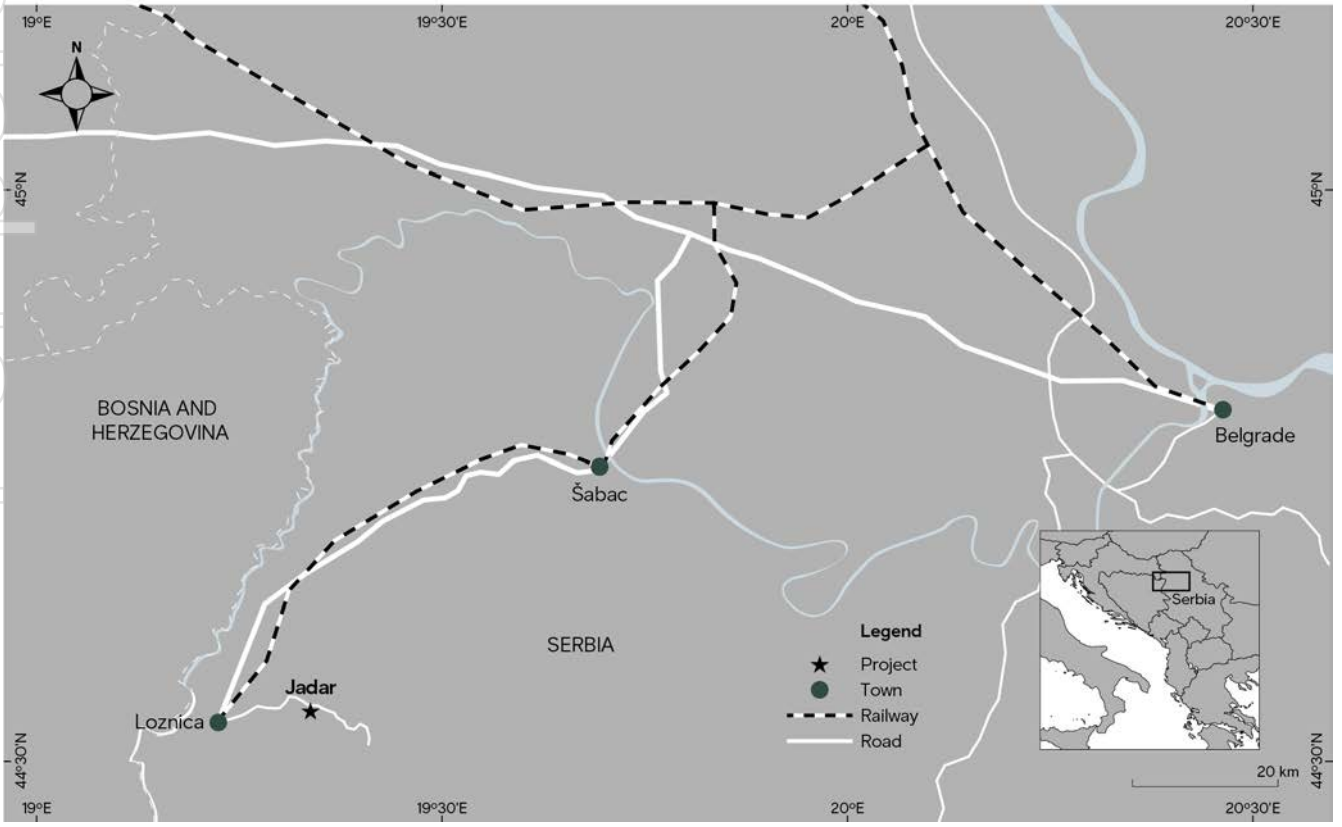
	Likely mining method[1]	Measured Mineral Resources as at 31 December 2024		Indicated Mineral Resources as at 31 December 2024		Total Measured and Indicated Mineral Resources as at 31 December 2024	
		Tonnage	Grade	Tonnage	Grade	Tonnage	Grade
Diamonds[4]		Mt	Carats per tonne	Mt	Carats per tonne	Mt	Carats per tonne
Diavik (Canada)	U/G	–	–	–	–	**–**	**–**

	Likely mining method[1]	Measured Mineral Resources as at 31 December 2024		Indicated Mineral Resources as at 31 December 2024		Total Measured and Indicated Mineral Resources as at 31 December 2024	
		Tonnage	Grade	Tonnage	Grade	Tonnage	Grade
Lithium[4]		Mt	% Li_2O	Mt	% Li_2O	Mt	% Li_2O
Jadar (Serbia)	U/G	–	–	85	1.76	**85**	**1.76**

	Likely mining method[1]	Measured Mineral Resources as at 31 December 2024				Indicated Mineral Resources as at 31 December 2024				Total Measured and Indicated Mineral Resources as at 31 December 2024			
		Total brine volume	Grade	Lithium metal	LCE	Total brine volume	Grade	Lithium metal	LCE	Total brine volume	Grade	Lithium metal	LCE
Lithium brine[5]		Mm^3	mg/L Li	Mt	Mt	Mm^3	mg/L Li	Mt	Mt	Mm^3	mg/L Li	Mt	Mt
Rincon (Argentina)[6]	Sol	748	394	0.29	1.54	3,419	432	1.48	7.85	**4,167**	**425**	**1.77**	**9.39**

1. Likely mining method: U/G = underground, Sol = solution mining.
2. Borates Mineral Resources are reported as dry in situ B_2O_3 tonnes, rather than marketable product as in Ore Reserves.
3. Jadar equivalent dry in situ Mineral Resource is 85 million tonnes at 16.1% B_2O_3 (Indicated) and 58 million tonnes at 12.0% B_2O_3 (Inferred).
4. Diamond and lithium Mineral Resources are stated as dry in situ tonnes.
5. Lithium brine Mineral Resources are reported in situ and inclusive of Ore Reserves. It should be noted that Rio Tinto generally reports Mineral Resources exclusive of Ore Reserves, but such methodology is not considered applicable for lithium brines. Reporting of Mineral Resources inclusive of Ore Reserves is industry-standard for in situ lithium brines and is compliant with JORC code reporting criteria.
6. Rincon Mineral Resources lithium metal and LCE tonnages are in situ values assuming 100% recovery as per standard brine reporting practices. To obtain the equivalent tonnage for LCE, the estimated mass of lithium was multiplied by a factor that is based on the atomic weights of each element in lithium carbonate to obtain the final compound weight. The factor used was 5.322785 to obtain LCE mass from lithium mass.

Jadar project – Serbia



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Inferred Mineral Resources as at 31 December 2024	Total Mineral Resources as at 31 December 2024	Rio Tinto interest	Total Mineral Resources as at 31 December 2023
Tonnage	**Tonnage**		Tonnage
Mt	**Mt**	%	Mt
7	**21**	100.0	21

Inferred Mineral Resources as at 31 December 2024		Total Mineral Resources as at 31 December 2024		Rio Tinto interest	Total Mineral Resources as at 31 December 2023	
Tonnage	Grade	**Tonnage**	**Grade**		Tonnage	Grade
Mt	Carats per tonne	**Mt**	**Carats per tonne**	%	Mt	Carats per tonne
0.1	1.6	**0.1**	**1.6**	100.0	3.0	2.5

Inferred Mineral Resources as at 31 December 2024		Total Mineral Resources as at 31 December 2024		Rio Tinto interest	Total Mineral Resources as at 31 December 2023	
Tonnage	Grade	**Tonnage**	**Grade**		Tonnage	Grade
Mt	% Li_2O	**Mt**	**% Li_2O**	%	Mt	% Li_2O
58	1.87	**144**	**1.80**	100.0	144	1.80

Inferred Mineral Resources as at 31 December 2024				Total Mineral Resources as at 31 December 2024				Rio Tinto interest	Total Mineral Resources as at 31 December 2023			
Total brine volume	Grade	Lithium metal	LCE	**Total brine volume**	**Grade**	**Lithium metal**	**LCE**		Total brine volume	Grade	Lithium metal	LCE
Mm^3	mg/L Li	Mt	Mt	**Mm^3**	**mg/L Li**	**Mt**	**Mt**	%	Mm^3	mg/L Li	Mt	Mt
1,148	374	0.43	2.29	**5,315**	**414**	**2.20**	**11.68**	100.0	–	–	–	–

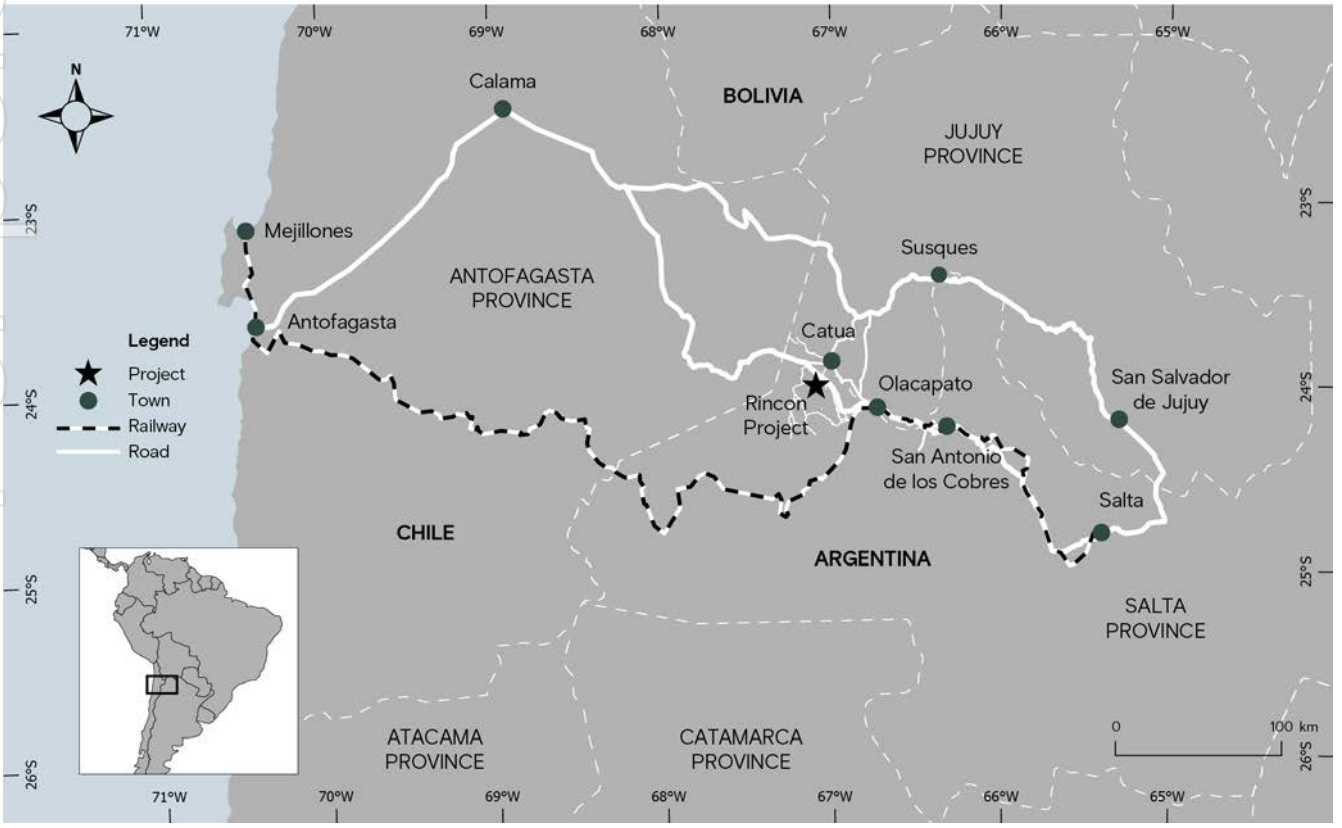
Diavik

With the pending closure of Diavik, the majority of Mineral Resources have been downgraded to non-Resources.

Rincon

Mineral Resources were reported for the first time in 2024. A JORC Table 1 in support of this was released to the market on 4 December 2024 and can be viewed at riotinto.com/resourcesandreserves.

Rincon project – Argentina



Mineral Resources and Ore Reserves governance and internal controls

Rio Tinto has well-established governance processes and internal controls to support the generation and publication of Mineral Resources and Ore Reserves, including a series of business unit and product group structures and processes independent of operational reporting.

Audit & Risk Committee

The Audit & Risk Committee's remit includes the governance of Mineral Resources and Ore Reserves. This includes an annual review of Mineral Resources and Ore Reserves at a Group level, as well as a review of findings and progress from the Group Internal Audit program.

Ore Reserves Steering Committee

The Ore Reserves Steering Committee (ORSC), chaired by the Chief Technical Officer, Development & Technology, meets at least quarterly. The ORSC comprises senior representatives across our technical, financial, governance and business groups, and oversees the appointment of Competent Persons nominated by the business units; reviews Exploration Results, Mineral Resources or Ore Reserves releases prior to public reporting; and oversees the development of the Group Mineral Resources and Ore Reserves standards and guidance.

Orebody Knowledge Centre of Excellence

The Orebody Knowledge Centre of Excellence contains a dedicated Orebody Knowledge Technical Assurance team. Orebody Knowledge Technical Assurance, in conjunction with the ORSC, is the guardian and author of Group Mineral Resources and Ore Reserves standards and guidance, and is responsible for the governance and compilation of Group Mineral Resources, Ore Reserves and reconciliation reporting. The Technical Assurance team also advises on disclosure obligations, monitors the external reporting environment and facilitates internal audits.

Internal Auditing

Mineral Resources and Ore Reserves internal audits are conducted by independent external consulting personnel in a program managed by Orebody Knowledge Technical Assurance. Material findings are reported outside of the product group reporting line to the ORSC, and all reports and action plans are reviewed by the ORSC for alignment to internal and external reporting standards.

During 2024, 3 internal Mineral Resources and Ore Reserves audits were completed.

Geoscientific information management and assurance

We employ industry-standard drilling, sampling, assaying and quality assurance/quality control (QA/QC) practices supported by formally documented procedures.

Diamond core and reverse circulation are our primary drilling methods. We use other methods such as sonic and air core if appropriate for the style of deposit. Drill hole locations are typically confirmed by high-precision differential Global Positioning System (GPS) and down-hole trace positioning is primarily achieved by gyroscopic survey.

Drill sample recovery is typically recorded, and all geological data is collected by qualified geoscientific professionals. Geological logging consistency is secured via formal logging procedures and training, reference materials, application of geological code libraries and digital logging directly to the geological database.

On-site or commercial laboratories provide appropriate analytical (assaying) techniques, according to the commodity and style of deposit. Reliability of assay data is maintained via QA/QC procedures, which monitor assay accuracy and precision through the analysis of blanks, sample duplicates and matrix-matched certified reference materials.

Our geoscientific information management standard is the industry-leading acQuire system and we employ strict QA/QC criteria to ensure only high-quality assay data is uploaded to a project's database.

Mineral Resources and Ore Reserves risk management

Risks to our Mineral Resources and Ore Reserves estimates are managed through comprehensive risk assessments undertaken in support of the annual reporting cycle. Risks are identified and managed by verifying controls, determining and undertaking suitable actions to remove or reduce the risk, conducting reviews, and maintaining compliance with standards and procedures. Risks are managed through a commercial risk management solution.

At the end of each reporting cycle, we analyse the Mineral Resources and Ore Reserves risks across all business units to ensure both consistency of reporting and determine any Group-wide risks to the various processes.

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Competent Persons

	Association[a]	Employer	Accountability	Deposits
Bauxite				
A McIntyre	AusIMM	Rio Tinto	Resources	Gove, East Weipa and Andoom, North of Weipa, Amrun
W Saba	AusIMM		Reserves	Gove, East Weipa and Andoom, Amrun
M Alpha Diallo	EFG	Compagnie des Bauxites de Guinée	Resources	Sangaredi
M Keersemaker	AusIMM	External consultant to Compagnie des Bauxites de Guinée	Reserves	
R Aglinskas	AusIMM	Mineração Rio do Norte	Resources	Porto Trombetas (MRN)
L H Costa	AusIMM	External consultant to Mineração Rio do Norte	Reserves	
Borates				
B Griffiths	SME	Rio Tinto	Resources & Reserves	Boron
Copper				
D Hlorgbe	AusIMM	Rio Tinto	Resources	Resolution[b][c]
H Martin	AusIMM		Resources	
A Schwarz	AusIMM		Resources	
O Togtokhbayar	AusIMM	Rio Tinto	Resources	Oyu Tolgoi[b] [c] [d]
B Ndlovu	AusIMM		Reserves	
N Robinson	AusIMM		Reserves	
R Hayes	AusIMM	Rio Tinto	Resources	Bingham Canyon[b] [c] [d]
G Austin	AusIMM		Resources	
P Rodriguez	AusIMM		Resources	
C McArthur	AusIMM		Reserves	
E Hoffmann	AusIMM		Reserves	
R Maureira	AusIMM	Minera Escondida Ltda.	Resources	Escondida
E Mulet Cortes	AusIMM		Resources	Chimborazo, Pampa Escondida[d], Pinta Verde
P Castillo	AusIMM		Reserves	Escondida
J Marshall	AusIMM	Rio Tinto	Resources	La Granja
J Pocoe	AusIMM	Rio Tinto	Resources	Winu[b] [d]
Diamonds				
K Pollock	NAPEG	Rio Tinto	Resources	Diavik
Z Li	NAPEG		Reserves	
Iron ore				
M Styles	AusIMM	Rio Tinto	Resources	Simandou
M Apfel	AusIMM		Reserves	
M McDonald	PEGNL	Rio Tinto	Resources	Iron Ore Company of Canada
B Power	PEGNL		Resources	
R Way	PEGNL		Resources	
R Williams	PEGNL		Reserves	
S Roche	AusIMM		Reserves	
N Brajkovich	AusIMM	Rio Tinto	Resources	Rio Tinto Iron Ore – Boolgeeda, Brockman, Brockman Process Ore, Channel Iron Deposit, Detrital, Marra Mamba
M Judge	AusIMM		Resources	
E Barron	AusIMM		Resources	
P Savory	AusIMM		Resources	
O Abdrashitova	AusIMM		Reserves	Rio Tinto Iron Ore – Brockman Ore, Marra Mamba Ore, Pisolite (Channel Iron) Ore
P Barnes	AusIMM		Reserves	
L Fouche	AusIMM		Reserves	
A Ghosh	AusIMM		Reserves	
A Leong	AusIMM		Reserves	
L Vilela Couto	AusIMM		Reserves	
B Satria Yudha	AusIMM		Reserves	
Lithium				
I Misailovic	EFG	Rio Tinto	Resources	Jadar[e]
D Tanaskovic	EFG		Resources	
M Rosko	SME	External consultants to Rio Tinto	Resources & Reserves	Rincon
M Zivic	SME			
B Foster	AusIMM	Rio Tinto	Reserves	
Titanium dioxide feedstock				
J Dumouchel	OGQ	Rio Tinto	Resources	Rio Tinto Iron and Titanium (RTIT) Quebec Operations
F Kerr-Gillespie	OGQ		Resources	
J Solorzano	OIQ		Reserves	
A Cawthorn-Blazeby	SACNASP	Rio Tinto	Resources	Richards Bay Minerals (RBM)[f]
S Mnunu	SACNASP		Reserves	
A Louw	AusIMM	Rio Tinto	Resources	QIT Madagascar Minerals (QMM)[f]
P Kluge	SAIMM		Reserves	

(a) AusIMM: Australasian Institute of Mining and Metallurgy
EFG: European Federation of Geologists
NAPEG: Association of Professional Engineers; Geologists and Geophysicists of the Northwest Territories
OGQ: L'Ordre des Géologues du Québec
OIQ: L'Ordre des Ingénieurs du Québec
PEGNL: Professional Engineers and Geoscientists Newfoundland and Labrador
SACNASP: South African Council for Natural Scientific Professions
SAIMM: South African Institute of Mining and Metallurgy
SME: Society of Mining, Metallurgy and Exploration

(b) Includes silver
(c) Includes molybdenum
(d) Includes gold
(e) Includes borates
(f) Includes zircon

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Mines and production facilities

Group mines as at 31 December 2024

Iron Ore

Production properties

Property
Australian Pilbara Operations

Mine
Hamersley Iron:

- Brockman 2
- Brockman 4
- Channar
- Gudai-Darri
- Marandoo
- Mount Tom Price
- Nammuldi
- Paraburdoo
- Silvergrass
- Western Turner Syncline
- Yandicoogina

Ownership
100% Rio Tinto

Operator
Rio Tinto

Location
Pilbara region, Western Australia

Access and infrastructure
Access and infrastructure within the property includes:

- a network of sealed and unsealed roads connecting to public roads and highways
- public and Rio Tinto-operated airports
- a Hamersley and Robe owned integrated heavy haulage rail network, operated by Pilbara Iron comprising nearly 2,000km of rail, rail cars and locomotives
- four shipping terminals, located at Dampier and Cape Lambert and managed as a single port system
- water piping networks for both abstracted water and supply of fresh water to sites
- managed accommodation villages for fly-in fly-out (FIFO) sites
- a housing portfolio managing properties in the towns of Dampier, Wickham, Karratha, Pannawonica, Paraburdoo and Tom Price
- tailings storage facilities at several mine sites.

All assets are subject to routine inspections and ongoing investment and maintenance programs to ensure these remain fit for purpose.

Title/lease/acreage
Agreements for life of mine with the Government of Western Australia, save for the Yandicoogina mining lease, which expires in 2039 with an option to extend for 21 years.

Mount Tom Price, Marandoo, Brockman 2, Brockman 4, Nammuldi and Western Turner Syncline Mineral and Mining Leases held under *Iron Ore (Hamersley Range) Agreement Act 1963*.

Area of ML4SA approximately 79,469 hectares (ha).

Area of M272SA approximately 14,136ha.

Gudai-Darri Mineral Lease held under *Iron Ore (Mount Bruce) Agreement Act 1972*.

Area of ML252SA approximately 67,616ha.

Paraburdoo Mineral Lease held under *Iron Ore (Hamersley Range) Agreement Act 1968*.

Area of ML246SA approximately 12,950ha.

Channar Mining Lease held under *Iron Ore (Channar Joint Venture) Agreement Act 1987*. Mining lease expires in 2028 with an option to extend by up to 5 years.

Area of M265SA approximately 5,965ha.

Yandicoogina Mining Lease held under *Iron Ore (Yandicoogina) Agreement Act 1996*.

Area of M274SA approximately 30,550ha.

Key permit conditions
State Agreement conditions are set by the Government of Western Australia and broadly comprise environmental compliance and reporting obligations; closure and rehabilitation considerations; local procurement and community initiatives/investment requirements; and payment of taxes and government royalties.

The current business also operates under an Indigenous Land Use Agreement (ILUA) which includes commitments for payments made to trust accounts; Indigenous employment and business opportunities; and heritage and cultural protections.

History
Mount Tom Price began operations in 1966, followed by Paraburdoo in 1974. During the 1990s, Channar (1990), Brockman 2 (1992), Marandoo (1994) and Yandicoogina (1998) achieved first ore. Nammuldi achieved first ore in 2006 followed by Brockman 4 (2010), Western Turner Syncline (2011) and Silvergrass (2017). The latest addition to the network of Hamersley Iron mines, Gudai-Darri, had first ore railed in December 2021, and commissioned its primary crusher in the second quarter of 2022.

Property description/type of mine
All mines operated by Rio Tinto within the property are open pit mines. The mining method employed uses conventional surface mining, whereby shovels and loaders are used to load drilled and blasted material into trucks for removal to waste dumps and stockpiles or feed to process plants. In addition to mining activities, Rio Tinto conducts both exploration and development drilling across the property.

Type of mineralisation
Brockman 2, Brockman 4, Channar, Gudai-Darri, Tom Price, Paraburdoo and Western Turner Syncline: mineralisation occurs as haematite/goethite within the banded iron formation of the Brockman Formation. Detrital deposits also occur at these sites. At Brockman 2, Brockman 4, Tom Price and Western Turner Syncline, some goethite/haematite within the banded iron formation of the Marra Mamba Formation also occurs.

Marandoo, Nammuldi and Silvergrass: mineralisation occurs as goethite/haematite within the banded iron formation of the Marra Mamba Formation. Some detrital mineralisation also occurs.

Yandicoogina: goethite mineralisation occurs as pisolite ores within the paleo-channel of a channel iron formation.

Processing plants and other available facilities
At Brockman 2, Brockman 4, the Nammuldi dry plant and Gudai-Darri, dry crushing and screening is used to produce lump and fines iron ore products. Ore from the Silvergrass and Nammuldi mines is blended and processed through a wet scrubbing and screening plant, ahead of desliming of the fines product using hydrocyclones. At Marandoo, wet scrubbing and screening is used to produce lump and fines iron ore products, prior to desliming of fines products using hydrocyclones. Ore from the Channar and Paraburdoo mines is crushed and then processed through a central tertiary crushing and dry screening plant to produce a dry lump product, with further wet processing of the fines using hydrocyclones to remove slimes. Ore from the Tom Price and Western Turner Syncline mines is directed to either the high-grade plant for dry crushing and screening to dry lump and fines products, or to the low-grade plant for beneficiation. Heavy media separation is used to beneficiate low-grade lump, and a combination of heavy media hydrocyclones and spirals is used to beneficiate the low-grade fines. At Yandicoogina, ore is crushed to fines product only through a combination of dry crushing and screening, or crushing and wet processing of ore using classification to remove finer particles.

The processing plants within the Hamersley Iron network vary considerably in age, and many plants have been subject to brownfields development since original construction. All plants are subject to an ongoing regime of sustaining capital investment and maintenance, underpinned by asset integrity audits, engineering inspections, engineering life cycles for key equipment and safety inspections and audits.

Power source
Supplied through the integrated Hamersley and Robe power network operated by Pilbara Iron.

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Property
Australian Pilbara Operations

Mine
Bao-HI Joint Venture:

- Eastern Range and Western Range mines

Ownership
54% Rio Tinto

Rio Tinto owns 54% of the Bao-Hi joint venture with the remaining 46% held by China Baowu Group

Operator
Rio Tinto

Location
Pilbara region, Western Australia

Access and infrastructure
Access and infrastructure within the property includes:

- a network of sealed and unsealed roads connecting to public roads and highways
- public and Rio Tinto-operated airports
- a Hamersley and Robe owned integrated heavy haulage rail network, operated by Pilbara Iron comprising nearly 2,000km of rail, rail cars and locomotives
- four shipping terminals, located at Dampier and Cape Lambert and managed as a single port system
- water piping networks for both abstracted water and supply of fresh water to sites
- managed accommodation villages for FIFO sites
- a housing portfolio managing properties in the towns of Dampier, Wickham, Karratha, Pannawonica, Paraburdoo and Tom Price
- tailings storage facilities at several mine sites.

All assets are subject to routine inspections and ongoing investment and maintenance programs to ensure these remain fit for purpose.

Title/lease/acreage
Eastern Range and Western Range Mineral Lease held under *Iron Ore (Hamersley Range) Agreement Act 1968*. Area of ML4SA approximately 79,469ha. Area of ML246SA approximately 12,950ha.

Key permit conditions
State Agreement conditions are set by the Government of Western Australia and broadly comprise environmental compliance and reporting obligations; closure and rehabilitation considerations; local procurement and community initiatives/ investment requirements; and payment of taxes and government royalties.

The current business also operates under an ILUA which includes commitments for payments made to trust accounts; Indigenous employment and business opportunities; and heritage and cultural protections.

History
The Bao-HI joint venture was established in 2002 and has delivered sales of more than 200 million tonnes of iron ore to China. First ore from Eastern Range was delivered in 2004.

In 2022, the Bao-HI joint venture was extended with a commitment to deliver 275 million tonnes of sales of iron ore to China. First ore from Western Range was delivered in 2024 utilising existing infrastructure, with a new crusher at Western Range mine planned to be operational in 2025.

Property description/type of mine
All mines operated by Rio Tinto within the property are open pit mines. The mining method employed uses conventional surface mining, whereby shovels and loaders are used to load drilled and blasted material into trucks for removal to waste dumps or feed to process plants. In addition to mining activities, Rio Tinto conducts both exploration and development drilling across the property.

Type of mineralisation
Mineralisation at Eastern Range and Western Range occurs as haematite/goethite mineralisation hosted within the banded iron formations of the Brockman Formation.

Processing plants and other available facilities
Ore from the Eastern Range and Western Range mines is crushed and then processed through the central Paraburdoo tertiary crushing and dry screening plant to produce a dry lump product, with further wet processing of the fines product using hydrocyclones to remove slimes.

The processing plants within the Hamersley Iron network vary considerably in age, and many plants have been subject to brownfields development since original construction. All plants are subject to an ongoing regime of sustaining capital investment and maintenance, underpinned by asset integrity audits, engineering inspections, engineering life cycles for key equipment and safety inspections and audits.

Power source
Supplied through the integrated Hamersley and Robe power network operated by Pilbara Iron.

Property
Australian Pilbara Operations

Mine
Hope Downs 1

Ownership
50% Rio Tinto

50% Hancock Prospecting Pty Ltd

Operator
Rio Tinto

Location
Pilbara region, Western Australia

Access and infrastructure
Access and infrastructure within the property includes:

- a network of sealed and unsealed roads connecting to public roads and highways
- public and Rio Tinto-operated airports
- a Hamersley and Robe-owned integrated heavy haulage rail network, operated by Pilbara Iron comprising nearly 2,000km of rail, rail cars and locomotives
- four shipping terminals, located at Dampier and Cape Lambert and managed as a single port system
- water piping networks for both abstracted water and supply of fresh water to sites
- managed accommodation villages for FIFO sites
- tailings storage facilities at several mine sites.

All assets are subject to routine inspections and ongoing investment and maintenance programs to ensure these remain fit for purpose.

Title/lease/acreage
Mining lease expires in 2027 with 2 options to extend of 21 years each. Mining lease held under *Iron Ore (Hope Downs) Agreement Act 1992*. Area of M282SA approximately 57,222ha.

Key permit conditions
State Agreement conditions are set by the Western Australian Government and broadly comprise environmental compliance and reporting obligations; closure and rehabilitation considerations; local procurement and community initiatives/ investment requirements; and payment of taxes and government royalties.

The current business also operates under an ILUA which includes commitments for payments made to trust accounts, Indigenous employment and business opportunities, and heritage and cultural protections.

History
Joint venture between Rio Tinto and Hancock Prospecting. Construction of Stage 1 to 22Mtpa commenced 2006 and first production occurred 2007. Stage 2 to 30Mtpa completed 2009.

Group mines as at 31 December 2024

Iron Ore continued

Property
Australian Pilbara Operations

Mine
Hope Downs 1

Ownership
50% Rio Tinto

50% Hancock Prospecting Pty Ltd

Operator
Rio Tinto

Location
Pilbara region, Western Australia

Property description/type of mine
All mines operated by Rio Tinto within the property are open pit mines. The mining method employed uses conventional surface mining, where shovels and loaders are used to load drilled and blasted material into trucks for removal to waste dumps or feed to process plants.

In addition to mining activities, Rio Tinto conducts both exploration and development drilling across the property.

Type of mineralisation
Mineralisation at Hope Downs 1 occurs as goethite/haematite within the banded iron formations of the Marra Mamba and haematite/goethite within the banded iron formation of the Brockman Formation. Some detrital mineralisation also occurs.

Processing plants and other available facilities
Ore from Hope Downs 1 is processed through the Hope Downs 1 processing plant, which utilises dry crushing and screening to produce lump and fines iron ore products.

The processing plants within the Hamersley Iron network vary considerably in age, and many plants have been subject to brownfields development since original construction. All plants are subject to an ongoing regime of sustaining capital investment and maintenance, underpinned by asset integrity audits, engineering inspections, engineering life cycles for key equipment and safety inspections and audits.

Power source
Supplied through the integrated Hamersley and Robe power network operated by Pilbara Iron.

Property
Australian Pilbara Operations

Mine
Hope Downs 4

Ownership
50% Rio Tinto

50% Hancock Prospecting Pty Ltd

Operator
Rio Tinto

Location
Pilbara region, Western Australia

Access and infrastructure
Access and infrastructure within the property includes:

- a network of sealed and unsealed roads connecting to public roads and highways
- public and Rio Tinto-operated airports
- a Hamersley and Robe owned integrated heavy haulage rail network, operated by Pilbara Iron comprising nearly 2,000km of rail, rail cars and locomotives
- four shipping terminals, located at Dampier and Cape Lambert and managed as a single port system
- water piping networks for both abstracted water and supply of fresh water to sites
- managed accommodation villages for FIFO sites
- tailings storage facilities at several mine sites.

All assets are subject to routine inspections and ongoing investment and maintenance programs to ensure these remain fit for purpose.

Title/lease/acreage
Mining lease expires in 2027 with two options to extend of 21 years each. Mining lease held under *Iron Ore (Hope Downs) Agreement Act 1992*. Area of M282SA approximately 57,222ha.

Key permit conditions
State Agreement conditions are set by the Government of Western Australia and broadly comprise environmental compliance and reporting obligations; closure and rehabilitation considerations; local procurement and community initiatives/investment requirements; and payment of taxes and government royalties.

The current business also operates under an ILUA which includes commitments for payments made to trust accounts; Indigenous employment and business opportunities; and heritage and cultural protections.

History
Joint venture between Rio Tinto and Hancock Prospecting. Construction of wet plant processing to 15Mtpa commenced 2011 and first production occurred 2013.

Property description/type of mine
All mines operated by Rio Tinto within the property are open pit mines. The mining method employed uses conventional surface mining, where shovels and loaders are used to load drilled and blasted material into trucks for removal to waste dumps or feed to process plants.

In addition to mining activities, Rio Tinto conducts both exploration and development activities across the property.

Type of mineralisation
Mineralisation at Hope Downs 4 occurs as haematite/goethite mineralisation hosted within the banded iron formations of the Brockman Formation.

Processing plants and other available facilities
Ore from Hope Downs 4 is processed through the Hope Downs 4 processing plant. Wet scrubbing and screening are used to separate lump and fines products, prior to desliming of fines product using hydrocyclones.

The processing plants within the Hamersley Iron network vary considerably in age, and many plants have been subject to brownfields development since original construction. All plants are subject to an ongoing regime of sustaining capital investment and maintenance, underpinned by asset integrity audits, engineering inspections, engineering life cycles for key equipment and safety inspections and audits.

Power source
Supplied through the integrated Hamersley and Robe power network operated by Pilbara Iron.

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Property
Australian Pilbara Operations

Mine
Robe River Iron Associates:

Robe Valley mines:

- Mesa A
- Mesa J

West Angelas

Ownership
53% Rio Tinto

Robe River is a joint venture between Rio Tinto (53%), Mitsui Iron Ore Development (33%), and Nippon Steel Corporation (14%)

Operator
Rio Tinto

Location
Pilbara region, Western Australia

Access and infrastructure
Access and infrastructure within the property includes:

- a network of sealed and unsealed roads connecting to public roads and highways
- public and Rio Tinto-operated airports
- a Hamersley and Robe owned integrated heavy haulage rail network, operated by Pilbara Iron comprising nearly 2,000 km of rail, rail cars and locomotives
- four shipping terminals, located at Dampier and Cape Lambert and managed as a single port system
- water piping networks for both abstracted water and supply of fresh water to sites
- managed accommodation villages for FIFO sites
- a housing portfolio managing properties in the towns of Dampier, Wickham, Karratha, Pannawonica, Paraburdoo and Tom Price
- tailings storage facilities at several mine sites.

All assets are subject to routine inspections and ongoing investment and maintenance programs to ensure these remain fit for purpose.

Title/lease/acreage
Agreements for life of mine with the Government of Western Australia.

Mineral lease held under *Iron Ore (Robe River) Agreement Act 1964*. Area of ML248SA approximately 78,600ha.

Key permit conditions
State Agreement conditions are set by the Government of Western Australia and broadly comprise environmental compliance and reporting obligations; closure and rehabilitation considerations; local procurement and community initiatives/investment requirements; and payment of taxes and government royalties.

The current business also operates under an ILUA which includes commitments for payments made to trust accounts; Indigenous employment and business opportunities; and heritage and cultural protections.

History
The first shipment from Robe Valley was in 1972. Interest acquired in 2000 through North Limited acquisition. First ore was shipped from West Angelas in 2002.

Property description/type of mine
All mines operated by Rio Tinto within the property are open pit mines. The mining method employed uses conventional surface mining, whereby shovels and loaders are used to load drilled and blasted material into trucks for removal to waste dumps or feed to process plants.

In addition to mining activities, Rio Tinto conducts both exploration and development drilling across the property.

Type of mineralisation
Robe Valley deposits: goethite mineralisation occurs as pisolite ores within the paleo-channel of a channel iron formation. Some detrital mineralisation also occurs.

West Angelas deposits: mineralisation occurs as goethite/haematite within the banded iron formations of the Marra Mamba Formation and haematite/goethite within the banded iron formation of the Brockman Formation. Some detrital mineralisation also occurs.

Processing plants and other available facilities
Ore from the Robe Valley mines of Mesa A and Mesa J is processed through either dry crushing and screening plants or through wet processing plants using scrubbing and screening to remove finer particles. Crushed and deslimed ore from the Robe Valley mines is railed to Cape Lambert, where further dry crushing and screening through a dedicated processing plant produces lump and fines iron ore products.

At West Angelas mine, dry crushing and screening is used to produce lump and fines iron ore products.

The processing plants within the Hamersley Iron network vary considerably in age, and many plants have been subject to brownfields development since original construction. All plants are subject to an ongoing regime of sustaining capital investment and maintenance, underpinned by asset integrity audits, engineering inspections, engineering life cycles for key equipment and safety inspections and audits.

Power source
Supplied through the integrated Hamersley and Robe power network operated by Pilbara Iron.

Property
Dampier Salt Port Hedland, Dampier

Mine
–

Ownership
68.4% Rio Tinto

Dampier Salt is a joint venture between Rio Tinto (68%), Marubeni Corporation (22%) and Sojitz (10%)

Operator
Rio Tinto (Dampier Salt Limited)

Location
Gascoyne and Pilbara regions, Western Australia

Access and infrastructure
Road and port.

Title/lease/acreage
Dampier Salt Dampier operation State Agreement Mineral and Mining leases are held under the *Dampier Solar Salt Industry Agreement Act 1967 (ML253SA, 14,710ha)*, and expire in 2034.

Dampier Salt Port Hedland operation State Agreement Mineral and Mining leases are held under the *Leslie Solar Salt Industry Agreement Act 1966* (M269SA, 2,459ha; ML242SA, 19,503.291ha and ML250SA, 1,381ha) and expire in 2029.

Key permit conditions
State Agreement conditions are set by the Government of Western Australia and broadly comprise environmental compliance and reporting obligations; closure and rehabilitation considerations; local procurement and community initiatives/investment requirements; and payment of taxes and government royalties.

History
Construction of the Dampier field started in 1969; first shipment in 1972. Lake MacLeod was acquired in 1978 as an operating field. Port Hedland was acquired in 2001 as an operating field.

In January 2024, Dampier Salt entered into a sales agreement for Lake MacLeod with privately owned salt company Leichhardt Industrials Group. Commercial and regulatory conditions for divestment were satisfied in November 2024 and the site transferred to Leichhardt ownership on 2 December 2024.

Property description/type of mine
Solar evaporation of seawater at Dampier and Port Hedland.

Type of mineralisation
Salt is grown every year through solar evaporation in permanent crystallising pans.

Processing plants and other available facilities
Salt is processed through a washing plant, consisting of screw bowl classifiers and static screens at Port Hedland and sizing screens, counter-current classifiers with dewatering screens and centrifuges at Dampier.

Dampier produces shipping-ready product for immediate shiploading.

Washed salt at Port Hedland is dewatered on stockpiles.

Power source
Long-term contracts with Hamersley Iron and Horizon Power and on-site generation.

Group mines as at 31 December 2024

Copper

Production properties

Property
Escondida

Ownership
30% Rio Tinto, 57.5% BHP, 10% JECO Corporation consortium comprising Mitsubishi, JX Nippon Mining and Metals (10%), 2.5% JECO 2 Ltd

Operator
BHP

Location
Atacama Desert, Chile

Access and infrastructure
Road and rail, including a pipeline and road to the deep sea port at Coloso:

- Two concentrate transport lines from mine site to port facility at Coloso (9" line from LS1 and LS2 and 6" line from Los Colorados)
- Two desalinisation plants at Coloso port along with water treatment plant for concentrate filtrate
- Two water pipelines and 4 pump stations for freshwater supply to site
- Roadway to site, rail line for supplies and cathode transport, power transport facilities to tie site to power grid
- Site offices, housing, and cafeteria facilities to support employees and contractors on site
- Warehouse buildings and laydown facilities to support operations and projects on site.

Title/lease/acreage
Rights conferred by Government under Chilean Mining Code. 764 concessions throughout the site with a total of 406,018ha, including 18 main mineral rights leases with a total of 58,934ha.

Key permit conditions
Annual tenement payments (due March each year). The current business operates under the rights conferred by the Government under the Chilean Mining Code and includes key underlying documents such as the Environmental Impact Assessment Permit as well as the Closure Plan Permit.

History
Production started in 1990 and since then capacity has been expanded numerous times. In 1998, first cathode was produced from the oxide leach plant, and during 2006 the sulphide leach plant was inaugurated, a year after the start of Escondida Norte pit production. In 2016, the 3rd concentrator plant was commissioned.

Property description/type of mine
Two active surface open pit mines in production, Escondida and Escondida Norte with ore being processed via 3 processing options, oxide leach, sulfide RoM leach, or conventional flotation concentrators.

Type of mineralisation
Consists of a series of porphyry deposits containing copper, minor gold, silver, and molybdenum.

Processing plants and other available facilities
Los Colorados, Laguna Seca Line 1, and Laguna Seca Line 2 Concentrators. Oxide leach facility (OLAP), SL RoM leach facility and SX/EW facility.

Power source
Supplied from grid under various contracts with local generating companies.

Property
Rio Tinto Kennecott

Ownership
100% Rio Tinto

Operator
Rio Tinto (Kennecott Utah Copper LLC)

Location
Near Salt Lake City, Utah, US

Access and infrastructure
Pipeline, road and rail.

Title/lease/acreage
Wholly owned – approximately 95,000 acres in total.

Key permit conditions
Permit conditions are established by Utah and US Government agencies and comprise:

- environmental compliance and reporting
- closure and reclamation requirements

History
Interest acquired in 1989. In 2012, the pushback of the south wall commenced, extending the mine life from 2018 to 2032.

Approval for underground mining at Lower Commercial Skarn was obtained in 2022.

Property description/type of mine
Open pit and underground.

Type of mineralisation
Porphyry and associated skarn deposits containing copper, gold, silver, molybdenum and tellurium.

Processing plants and other available facilities
Copperton concentrator, Garfield smelter, refinery, and precious metals plant, assay lab and tailings storage facilities.

Power source
Supply contract with Rocky Mountain Power.

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Property
Oyu Tolgoi

Ownership
Rio Tinto owns a 66% interest in Oyu Tolgoi LLC; the remaining 34% interest is held by the Government of Mongolia through Erdenes Oyu Tolgoi LLC

Rio Tinto is responsible for the day-to-day operational management and development of the project

Operator
Rio Tinto

Location
Khanbogd soum, Umnugovi province, Mongolia

Access and infrastructure
Air and road.

Title/lease/acreage
Three mining licences are 100% held by Oyu Tolgoi LLC: MV-006708 (the Manakht licence: 4,533ha), MV-006709 (the Oyu Tolgoi licence: 8,490ha), and MV-006710 (the Khukh Khad licence: 1,763ha).

Two further licences are held in joint venture with Entrée Resources Ltd, MV-015226 (the Shivee Tolgoi Licence: 42,593ha) and MV-015225 (the Javkhlant Licence: 20,327ha).

The licence term under the Minerals Law of Mongolia is 30 years with two 20-year extensions. First renewals are due in 2033 and 2039 for the Oyu Tolgoi and Entrée joint venture licences respectively.

Key permit conditions
Investment Agreement dated 6 October 2009, between the Government of Mongolia, Oyu Tolgoi LLC (formerly Ivanhoe Mines Mongolia Inc LLC), Turquoise Hill Resources (TRQ) (formerly Ivanhoe Mines Ltd), and Rio Tinto International Holdings Limited in respect of Oyu Tolgoi (Investment Agreement).

Amended and Restated Shareholders Agreement dated 8 June 2011 among Oyu Tolgoi LLC, THR Oyu Tolgoi Ltd. (formerly Ivanhoe Oyu Tolgoi (BVI) Ltd.), Oyu Tolgoi Netherlands B.V. and Erdenes MGL LLC, as amended and restated on 2 October 2023 (ARSHA). Erdenes MGL LLC since transferred its shares in Oyu Tolgoi LLC and its rights and obligations under the ARSHA to its subsidiary, Erdenes Oyu Tolgoi LLC.

Power Source Framework Agreement dated 31 December 2018, between the Government of Mongolia and Oyu Tolgoi LLC, as amended on 18 June 2020.

Electricity Supply Agreement dated 26 January 2022, between Southern Region Electricity Distribution Network SOSC, National Power Transmission Grid SOSC, National Dispatching Center LLC and Oyu Tolgoi LLC.

In terms of key government permits, Oyu Tolgoi LLC secured a land use permit until 2036 and water use permit until 2039 as well as the mineral rights.

History
Oyu Tolgoi was first discovered in 1996. Construction began in late 2009 after the signing of an Investment Agreement with the Government of Mongolia, and the first concentrate was produced in 2012. First sales of copper concentrate were made to Chinese customers in 2013.

The first drawbell of the Hugo North underground mine was fired in 2022. In December 2022, Rio Tinto acquired 100% ownership of TRQ. Sustainable production from underground commenced in March 2023.

Property description/type of mine
Ore Reserves have been reported at the Oyut and Hugo North Deposits. The Oyut deposit is currently mined as an open pit using a conventional drill, blast, load, and haul method. The Hugo North deposit is currently being developed as an underground mine.

Type of mineralisation
Consists of a series of porphyry deposits containing copper, gold, silver, and molybdenum.

Processing plants and other available facilities
One copper concentrator with a nominal feed capacity of 100ktpd currently comprising 2 SAG mills, 4 ball mills, rougher and cleaner flotation circuits and up to 1Mtpa copper concentrate capacity. Other major facilities that support the isolated operations include maintenance workshops, heating plant, sealed airstrip and terminal, and camp facilities with up to 6,000 person capacity to accommodate current operations and the underground construction project. Underground infrastructure in place includes several shafts for ore haulage, personnel haulage and ventilation plus a conveyor decline to surface and associated surface infrastructure.

Power source
Oyu Tolgoi obtains its electricity from the Western Grid of the Inner Mongolia Autonomous Region (IMAR) in the People's Republic of China. This power is delivered through a cross-border 220kV double-circuit transmission line. The electricity is provided by Inner Mongolia Power International Cooperation Co., Ltd (IMPIC), a subsidiary of Inner Mongolia Power (Group) Co., Ltd. This company is responsible for the ownership and operation of IMAR's Western Grid. The current power supply agreement is a collaborative arrangement involving IMPIC and the National Power Transmission Grid SOSC (NPTG) of Mongolia, which holds the necessary import license. Additionally, Oyu Tolgoi maintains an on-site diesel generator that functions as a 24/7 standby emergency power source.

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Group mines as at 31 December 2024

Copper continued

Projects

Property
Resolution

Ownership
55% Rio Tinto,
45% BHP

Operator
Rio Tinto

Location
Superior, Arizona, Pinal County, US

Access and infrastructure
Road, rail and water pipeline.

Title/lease/acreage
Land ownership: 192 parcels, including 185 fee simple parcels and 7 split estate parcels wherein mineral rights are secured by mining claims. Land ownership totals 16,544 acres.

Federal Mining Claims: 2,286 (2,285 lode claims and 1 placer) covering 42,053 acres.

State of Arizona Mineral Exploration Permits: 62 permits, 8 permits with a total of 4,163 acres in exploration areas and 54 permits with a total of 26,801 acres in tailings, tailings corridors and tailings buffer areas.

State of Arizona Special Land Use Permits: 11 permits covering 8,360 acres in stream monitoring, groundwater monitoring, and tailings surface investigation areas.

Federal and State Grazing Permits and Leases: 7 leases covering 80,270 acres.

Rights of Way, for rail line and stations, roads, and pipelines, and utilities granted by both the United States and the State of Arizona through a combination of grants, leases, and permits totalling 696 acres.

All claims, permits, and leases are subject to annual renewal filings and associated rental fees. A property tax is paid for owned lands. Grants are held not subject to fees or taxes.

Key permit conditions
Resolution is in the permitting and study stage of the project. It is currently at the end of a multi-year process to complete its Environmental Impact Statement under the National Environmental Protection Act. Future permits will be required for operations such as air quality permits and aquifer protection permits.

History
The Magma Vein (formerly Silver Queen) was discovered in the 1870s and underground mining continued at the Magma Mine until 1998. In 1996, the Resolution deposit was discovered via an underground drillhole directed south from the Magma Mine workings. Kennecott Exploration (Rio Tinto) entered the project in 2001 and through an exploration "earn-in" agreement became operator in 2004.

Property description/type of mine
Block cave underground mining method.

Type of mineralisation
Porphyry copper and molybdenum deposit.

Processing plants and other available facilities
Water treatment and reverse osmosis plant, historic tailings impoundments from the Magma Mine No. 9 and No. 10 ventilation shafts.

Power source
115kV power lines to East and West Plant sites with supply contract with Salt River Project (SRP).

Property
Winu

Ownership
100% Rio Tinto

Operator
Rio Tinto

Location
Great Sandy Desert, Western Australia, Australia

Access and infrastructure
Air and road.

Title/lease/acreage
Exploration License E45/4833 hosts the deposit. Several Miscellaneous Licenses cover the road access route, associated facilities, camp accommodation, airstrip and the regional borefields. A Mining Lease Application (M45/1288; 7,500ha) has been made and is awaiting formal approval.

Key permit conditions
Annual rental payments for licences are required under the *Western Australian Mining Act 1978*, along with other standard reporting obligations relating to expenditure and works undertaken on the exploration licence.

History
The exploration licence was granted to Rio Tinto in October 2017 and Winu was discovered in December 2017. The first Inferred Mineral Resource was announced in July 2020 and updated to an Indicated and Inferred Mineral Resource in February 2022.

In December 2024, we announced a new partnership with Sumitomo Metal Mining (SMM) to deliver the Winu copper-gold project in Western Australia. Under the Term Sheet signed between the partners, Rio Tinto will continue to develop and operate Winu as the managing partner, with SMM to acquire a 30% equity share.

Property description/type of mine
Winu is currently undergoing technical studies and finalising all required stakeholder negotiations and applications to secure the necessary approvals for a potential open pit mining operation.

Type of mineralisation
Copper-gold-silver mineralisation hosted within sulphide breccias and quartz veins. A supergene enrichment profile caps most of the primary mineralisation.

Processing plants and other available facilities
Winu comprises camp facilities for up to 110 people, unimproved access roads and trails, and a gravel airstrip.

Power source
Power is provided by diesel generators.

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Property
La Granja

Ownership
45% Rio Tinto,
55% First Quantum Minerals

Operator
First Quantum Minerals

Location
Cajamarca, Northern Peru

Access and infrastructure
Mountain road access only, 6 hours from Chiclayo.

Title/lease/acreage
The present La Granja Mining Concession grants its titleholders the right to explore and exploit all existing mineral resources within the 3,900ha it covers.

Key permit conditions
The Transfer Agreement (in respect of the acquisition of the La Granja mineral concession dated 31 January 2006, between La Granja Limitada S.A.C. (formerly known as Rio Tinto Minera Peru Limitada S.A.C.) and Activos Mineros S.A.C. requires an annual fee ($5 million per semester split by the Peruvian Government 50:50 between the special federal government fees and the establishment of a social fund). Title is subject to completion and delivery of a feasibility study (FS), and implementation of a mine subject to approval of the FS by the Peruvian Government within the timelines established in the Transfer Agreement.

The Transfer Agreement was extended in April 2023 and is scheduled to expire in January 2028.

History
Rio Tinto received the Mining Concession in 2006, after BHP and Cambior had returned the leases to the Peruvian Government. Numerous studies have been completed by Rio Tinto, up to pre-feasibility study. In August 2023, Rio Tinto and First Quantum Minerals announced the completion of a transaction that will work to unlock the development of the La Granja project. Under the terms of the transaction, First Quantum Minerals acquired a 55% interest in the project and became the project operator, assuming all key permit obligations.

Property description/type of mine
La Granja is currently undergoing technical studies and engagement with host communities, local and national governments focused on development of a potential open pit mining operation.

Type of mineralisation
Porphyry copper and associated skarn deposits, with high grade breccias with minor silver, and molybdenum.

Processing plants and other available facilities
La Granja comprises an exploration camp and water treatment infrastructure.

Power source
Currently powered by diesel generators. An upgraded power supply is required for development of the asset.

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Group mines as at 31 December 2024

Minerals

Production properties

Property
Rio Tinto Borates – Boron

Ownership
100% Rio Tinto

Operator
Rio Tinto

Location
Boron, California, US

Access and infrastructure
Road and rail.

Title/lease/acreage
Land holdings include 13,493 acres (owned, including mineral rights) for the mining operation, plant infrastructure and tailings storage facility.

Key permit conditions
Boron operations currently have all State and Federal environmental and operational permits in place to continue the mining and processing operation. Regular updates to permits are ongoing.

History
Deposit discovered in 1906, underground mining operations began in 1925, 3 underground mining operations were consolidated and the mining method switched to open pit mining in 1956. Assets were acquired by Rio Tinto in 1967.

Property description/type of mine
Open pit.

Type of mineralisation
Sedimentary sequence of tincal and kernite containing interbedded claystone enveloped by facies consisting of ulexite and colemanite bearing claystone, and barren claystone.

Processing plants and other available facilities
Boron operations consists of the open pit mine, an ore crushing and conveying system, 2 process plants (Primary Process and Boric Acid Plant), shipping facility and tailings storage facilities.

Power source
On-site co-generation units and local power grid.

Property
Rio Tinto Iron and Titanium (RTIT) Quebec Operations – Lac Tio

Ownership
100% Rio Tinto

Operator
Rio Tinto

Location
Havre-Saint-Pierre, Quebec, Canada

Access and infrastructure
Rail, road and port (St Lawrence River).

Title/lease/acreage
A total of 6,496ha of licences including 2 mining concessions of total 605ha, granted by Province of Quebec in 1949 and 1951 which, subject to certain Mining Act restrictions, confer rights and obligations of an owner.

Key permit conditions
The property is held under Quebec provincial government mining concession permits (Concession minière No 368 and 381). Each is of one year duration renewable as long as the mine is in operation. RTIT Quebec Operations – Lac Tio have also a number of claims (exclusive exploration permits) covering ilmenite occurrences in the region of the mine. These claims are renewable every 2 years.

History
Production started 1950; interest acquired in 1989.

Property description/type of mine
Open pit.

Type of mineralisation
Magmatic intrusion.

Processing plants and other available facilities
Lac Tio has a crushing facility, dedicated railway, stockpile at the train terminal, ship loader, office buildings at the mine and at the terminal and waste dumps.

Power source
Supplied by Hydro-Québec at regulated tariff.

Property
QIT Madagascar Minerals (QMM)

Ownership
QIT Madagascar Minerals is 80% owned by Rio Tinto and 20% owned by the Government of Madagascar

Operator
Rio Tinto

Location
Fort-Dauphin, Madagascar

Access and infrastructure
Road and port.

Title/lease/acreage
Mining lease covering 56,200ha, granted by central government.

Key permit conditions
The permit has a validity of 30 years as of 12 December 1996. Additional renewal for 10 years each period are granted at QMM's request. An annual fee is payable to government authorities following notification at the beginning of January.

History
Exploration project started in 1986; construction approved 2005. Ilmenite and zirsil production started 2008. QMM intends to extract ilmenite and zirsil from heavy mineral sands over an area of about 6,000ha along the coast over the next 40 years.

Property description/type of mine
Mineral sand dredging.

Type of mineralisation
Coastal mineralised sands.

Processing plants and other available facilities
QMM has an operating dredge, dry mine unit, heavy mineral concentrator, mineral separation plant, port and bulk loading facilities.

Power source
On-site heavy fuel oil generators; wind and solar project agreements with an independent power producer are expected to take the asset to 50% renewable energy by 2025.

The 8MW photovoltaic (PV) solar plant and 8.25 MWh lithium-ion battery energy storage system were successfully commissioned in 2023, and the mine received its first renewable electricity supply. Construction of the 16MW wind project began in the third quarter of 2023 and is scheduled for completion by 2025.

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Property
Richards Bay Minerals (RBM)

(Richards Bay Mining (Pty) Limited and Richards Bay Titanium (Pty) Limited)

Ownership
RBM is a joint venture between Rio Tinto (74%) and Blue Horizon – a consortium of investors and our host communities Mbonambi, Sokhulu, Mkhwanazi and Dube (24%). The remaining shares are held in an employee trust (2%).

Operator
Rio Tinto

Location
Richards Bay, KwaZulu-Natal, South Africa

Access and infrastructure
Rail, road and port.

Title/lease/acreage
Mineral rights for Reserve 4 and Reserve 10 issued by South African State and converted to new order mining rights from 9 May 2012. Mining rights run until 8 May 2041 and covers 11,645ha, including the mined Tisand area.

Key permit conditions
RBM operates in 3 lease areas, Tisand, Zulti North and Zulti South, by means of a notarial deed. Tisand (which contains the stockpiled tails) and Zulti North leases are held by Richards Bay Mining (Pty) Ltd.

RBM is owned by a consortium of local communities and businesses in line with South Africa's Broad-Based Black Economic Empowerment legislation.

History
Production started 1977; initial interest acquired 1989. Fifth mining plant commissioned in 2000. One mining plant decommissioned in 2008. In September 2012, Rio Tinto doubled its holding in RBM to 74% following the acquisition of BHP Billiton's entire interests.

Property description/type of mine
Mineral sand dredging.

Type of mineralisation
Coastal mineralised sands.

Processing plants and other available facilities
RBM manages and operates several dredges, dry mining units, heavy mineral concentrators and a mineral separation plant. RBM also has a smelter with furnaces to produce titania slag, pig iron in addition to rutile and zircon.

Power source
Contract with ESKOM is currently the sole power source. RBM has signed 3 PPAs for renewable energy with 2 projects currently in construction. The Bolobedu photovoltaic farm and the Khangela Emoyeni wind farm are expected to be producing power by the end of 2025 and 2026 respectively.

Property
Iron Ore Company of Canada (IOC)

Ownership
IOC is a joint venture between Rio Tinto (58.7%), Mitsubishi Corporation (26.2%) and the Labrador Iron Ore Royalty Corporation (15.1%).

Operator
Rio Tinto

Location
Labrador City, Newfoundland and Labrador, Canada

Access and infrastructure
- Railway and port facilities in Sept-Îles, Quebec (owned and operated by IOC)
- Public highway
- Public airport

Title/lease/acreage
Mining leases, surface rights and a tailings disposal licence are held by the Labrador Iron Ore Royalty Corporation (LIORC), under the Labrador Mining and Exploration Act. LIORC subleases these rights to IOC. The mining leases cover 10,356ha, the surface rights cover 8,805ha and the tailings licence covers 2,784ha. These sub-leased rights are valid until 2050. IOC also directly holds 3 small mining leases, but none produce saleable products. In addition to the above rights, IOC also holds a number of mineral licences, either directly or under sub-lease from LIORC.

Key permit conditions
IOC holds numerous permits with the Federal, provincial and local governments covering all aspects of the operation. Key permit conditions include:

- maintaining effluent quality within Metal and Diamond Mining Effluent Regulations (MDMER) criteria
- maintaining air quality criteria specified in the certificate of approval (for dust, NOx, SO_2, CO)
- prudent resource management
- progressive rehabilitation
- monitoring groundwater quality around permitted landfill
- restricting tailings discharge to the permitted area.

History
Interest acquired in 2000 through acquisition of North Ltd. Current operation began in 1962 and has processed over one billion tonnes of crude ore. Annual capacity 23Mt of concentrate of which 12-13Mt can be pelletised.

Property description/type of mine
Open pit.

Type of mineralisation
Oxide iron (specular haematite and magnetite).

Processing plants and other available facilities
Concentrator (gravity and magnetic separation circuits), pellet plant, warehouses, workshops, heating plant and ore delivery system (crusher/conveyor and automated train system).

Explosives plant, train loadout facilities, rail line (Labrador City to Sept-Îles), stockyards and shiploaders.

Power source
Supplied by Newfoundland and Labrador Hydro for the Labrador City operations and by Hydro-Québec and the IOC owned SM2 power station for the Sept-Îles operations.

Group mines as at 31 December 2024

Minerals continued

Property
Diavik

Ownership
100% owned by Diavik Diamond Mines (2012) Inc.

Operator
Diavik Diamond Mines (2012) Inc. is a Yellowknife-based Canadian subsidiary of Rio Tinto plc in London, UK

Location
Northwest Territories (NWT), Canada

Access and infrastructure
Airstrip and winter road access.

Title/lease/acreage
Three mineral rights leases with a total acreage of 8,016 (3,244ha). Mining leases are issued by the NWT Government. One lease was renewed in 2017 and 2 leases were renewed in February 2018. The new leases will expire after 21 years.

Key permit conditions
Our key permit conditions are local employment, procurement and benefit sharing commitments, environmental compliance and reporting, environmental security and closure and rehabilitation planning, and payment of taxes and government royalties.

History
Deposits discovered in 1994-95. Construction approved in 2000. Diamond production started in 2003. Fourth pipe commenced production in 2018. Mine life through early 2026. In November 2021, Rio Tinto became the sole owner of Diavik Diamond Mine. This followed the completion of a transaction for Rio Tinto's acquisition of the 40% share held by Dominion Diamond Mines in Diavik, with the Court of Queen's Bench of Alberta's approval.

Property description/type of mine
Open pit and underground operations (blast-hole stoping and sub-level cave methods).

Type of mineralisation
Diamondiferous kimberlite deposit.

Processing plants and other available facilities
Includes processing plant and accommodation facilities on-site.

Power source
On-site diesel generators, installed capacity 44MW, 9.2MW of wind capacity and 3.5MW solar farm.

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Minerals

Projects

Property
Rincon

Ownership
100% Rio Tinto

Operator
Rio Tinto

Location
Rincon Salar, Salta, Argentina

Access and infrastructure
Road and air.

Title/lease/acreage
Two separate mineral leases for a total of 82,905ha, the largest one being the Grupo Minero Proyecto Rincon with 80,032ha. Mining concessions are issued by the Provincial Mining Court and have lifelong exploitation rights.

Key permit conditions
Key permit conditions are environmental compliance and reporting, including independent authorisations for industrial water and brine extraction, spent brine disposal facilities, processing plant and ancillary infrastructure.

History
Rincon Salar was initially explored by Admiralty Resources NL, who acquired mining leases covering approximately 85% of the Salar in 2001. Admiralty demerged the project into a separate Australian Securities Exchange (ASX) listed entity called Rincon Lithium Ltd in October 2007, and sold the company to the private equity group Sentient Equity Partners in December 2008. The project was under evaluation by Sentient until the acquisition of the property by Rio Tinto in March 2022.

The Rincon 3000 starter plant achieved first lithium in November 2024 and is scheduled for completion in the first half of 2025.

Property description/type of mine
Mining will comprise brine extracted from a production wellfield and fed to a central processing facility for lithium recovery and battery grade lithium carbonate production.

Type of mineralisation
Lithium mineralisation occurs as a brine within a sedimentary sequence in a mature salar, composed of halite, volcaniclastic sand and variable amounts of clay/sand. The brine is hosted in 2 separate aquifers: an upper unconfined fractured halitic aquifer and a lower semi-confined aquifer composed mainly of volcaniclastic sand.

Processing plants and other available facilities
The project includes a wellfield for brine extraction and a plant for the production of lithium carbonate, a spent brine disposal facility, wellfield for the extraction of process water and water pre-treatment equipment, camp and office buildings, warehouses and loading/unloading facilities.

Power source
Connected to the national electric grid with options for on-site or off-site renewable power purchase agreements.

Property
Jadar

Ownership
100% Rio Tinto

Operator
Rio Tinto

Location
Loznica town, Serbia

Access and infrastructure
Road and rail.

Title/lease/acreage
The last extension of the Jadar exploration licence expired on 14 February 2020, with no legal basis for further extension of its term.

During the feasibility study the project has completed the Elaborate on Resources and Reserves (declaration based on Serbian law), obtained the Certificate on Resources and Reserves on 6 January 2021 and has submitted the request for exploitation field licence (with Serbian Feasibility Study being one of the supporting documents to this request).

In January 2022, the Government of Serbia cancelled the Spatial Plan for the Jadar project (SPSPA) and required all related permits to be revoked.

On 16 July 2024, the Government of Serbia enacted the Decree on reinstatement of the SPSPA based on the Decision of the Constitutional Court of Serbia, dated 12 July 2024, which determined that the Decree on cancellation of the SPSPA was not compliant with the Constitution and laws of the Republic of Serbia. As a result of this, Rio Tinto initiated the scoping and content procedure for Environmental Impact Assessment (EIA) for the mine. The Ministry for Environmental Protection issued the EIA Scoping Decision for the Mine which was published on 21 November 2024. This is one of the key documents required to apply for the exploitation field license.

Key permit conditions
The project is governed by 2 main pieces of Serbian legislation: Mining Law is administered by the Ministry of Mining and Energy (MME), and Planning and Construction Law is administered by the Ministry of Construction, Transportation and Infrastructure (MCTI).

The permitting process base case foresees the following:

- Mine, beneficiation plant and mine surface facilities are subject to the permitting procedure of MME
- Processing plant, industrial waste landfill and infrastructure (rail, roads, power and water pipelines) are subject to the unified permitting procedure under MCTI.

History
The Jadar deposit was discovered in 2004 by Rio Tinto Exploration geologists during a regional exploration program for borates in the Balkans. The deposit is in its majority composed of a mineral new to science named Jadarite with high concentrations of lithium and boron. Resource definition and processing workflow development and testing were conducted for over a decade. The pre-feasibility study (PFS) completed in July 2020 has shown that the Jadar project has the potential to produce both battery grade lithium carbonate and boric acid.

Property description/type of mine
Underground mine.

Type of mineralisation
Jadarite mineralisation is present in 3 broad zones containing stratiform lenses of variable thickness. These units are hosted in a much thicker gently dipping sequence mainly composed of fine-grained sediments affected by syn and post depositional faulting.

Processing plants and other available facilities
The planned site layout includes a concentrator to beneficiate the primary ore, a chemical plant to produce boric acid and lithium carbonate, paste plant, water and waste treatment plants, surface waste storage (dry stack), railroad spur and warehouses for product storage and loading/unloading, and office buildings.

Power source
Connected to the national electric grid. Electricity planned to be sourced from nearby hydroelectrical power plant.

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Group mines as at 31 December 2024

Aluminium

Production properties

Property
CBG Sangaredi

Ownership
Rio Tinto Group 22.95%, Guinean Government 49%, Alcoa 22.95%, Dadco Investments Limited 5.1%

Operator
La Compagnie des Bauxites de Guinée (CBG)

Location
Sangaredi, Guinea

Access and infrastructure
Road, air and port.

Sangaredi-Kamsar railway (leasing rail infrastructure from ANAIM, wholly-owned by Government of Guinea).

Title/lease/acreage
Mining concession expires in 2040.

Leases comprise 2,939km^2.

Key permit conditions
The obligations of CBG relative to health and safety of workers and to the environment and to the rehabilitation of mined out areas are subject to the Mining Code (2011) and Environmental Code of the Republic of Guinea.

History
CBG is a joint venture created in 1963 and is registered in US (Delaware). Bauxite mining commenced in 1973. Shareholders are 51% Halco and 49% Government of Guinea. Rio Tinto holds a 45% interest in Halco. Expansion of the CBG bauxite mine, processing plant, port facility and associated infrastructure is currently near completion with ramp up to 18.5Mtpa underway. In 2015, CBG entered into an agreement to share the rail infrastructure in Multi-User Operation Agreement (MUOA) with other bauxite companies, GAC (EGA) and COBAD (RUSAL).

Property description/type of mine
Open cut.

Type of mineralisation
Bauxite.

Processing plants and other available facilities
The Sangaredi site is an open cut mine including the following operations: stripping, drilling, blasting, loading, hauling. The bauxite is transported by railway cars approximately 135km away from Sangaredi to Kamsar. In Kamsar, the installations include the following assets: locomotive repair shop, railway cars unloader, primary crusher, secondary crusher, scrubbers, conveyors, stacker, reclaimer, bauxite dryers, dry bauxite storage, bauxite sampling tower, power house, wharf and ship loader.

The crushing plant is used only to reduce oversize material – no screening required.

Four bauxite dryers are installed in order to reduce the moisture content of the bauxite before shipping.

Power source
On-site generation (fuel oil).

Property
Gove

Ownership
100% Rio Tinto

Operator
Rio Tinto through Rio Tinto Alumina Gove P/L

Location
Gove, Northern Territory, Australia

Access and infrastructure
Road, air and port.

Title/lease/acreage
All leases were renewed in 2011 for a further period of 42 years. The residue disposal area is leased from the Arnhem Land Aboriginal Land Trust. The Northern Territory Government is the lessor of the balance of the leases; however, on expiry of the 42-year renewed term, the land subject to the balances of the leases will all vest to the Arnhem Land Aboriginal Land Trust.

Leases comprise 233.5km^2.

Key permit conditions
Key permit conditions are prescribed by the Northern Territory Government in the form of a Mine Management Plan (MMP). The current MMP runs for a period of 12 years, until 2031, and authorises all activities at the operation. Lease payments are prescribed by the terms of the relevant leases.

History
Bauxite mining commenced in 1970, feeding both the Gove refinery and export market, capped at 2Mt per annum. Bauxite export ceased in 2006 with feed intended for the expanded Gove refinery. Bauxite exports recommenced in 2008 and will increase in the coming years following the curtailment of the refinery production in 2014 and a permanent shut decision made by the Board of Rio Tinto in October 2017. Current annual production capacity is 12.5Mt on a dry basis.

Property description/type of mine
Open cut.

Type of mineralisation
Bauxite.

Processing plants and other available facilities
Crushing plant only to reduce oversize material – no screening required.

Power source
On-site diesel fired power station.

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Property
MRN Porto Trombetas

Ownership
MRN's shareholders are: Rio Tinto (22%), Glencore (45%) and South32 (33%)

Operator
Mineração Rio do Norte (MRN) is a non-managed JV. All decisions are approved by shareholders Board of Directors

Location
Porto Trombetas, Para, Brazil

Access and infrastructure
Air and port.

Title/lease/acreage
Mining concession granted by Brazilian Mining Agency (ANM), following the Brazilian mining code with no expiration date.

The current 44 MRN mining leases cover 22 major plateaus, which spread across 143,000ha and all of them have the status of a mining concession.

Key permit conditions
All MRN mining leases in Pará State are within the Saracá-Taquera National Forest, a preservation environmental area. However, the right of mining is preserved initially by the Federal law which created the National Forest (that is subsequent to mining concessions), as well by the management plan, which acknowledges a formal mining zone within the confines of the National Forest.

Environmental licensing is granted by Brazilian Environmental Agency (IBAMA) for East Zone. MRN is working with IBAMA on permitting to extend the life of the mine from East Zone to West Zone.

In September 2024, MRN received the Preliminary Licence from IBAMA for the West Zone Project, after holding public hearings, forums and dialogs with stakeholders, including Quilombola communities. Work is ongoing to draft the Environmental Management Plan and the Quilombola Basic Plan required to obtain the Installation Licence from IBAMA.

MRN also obtained the Installation Licence for its Transmission Line Project which will connect the company to the national grid. The project, which is scheduled to be completed in 2027, is expected to reduce MRN's carbon emissions by approximately 20%.

History
Mineral extraction commenced in 1979. Initial production capacity was 3.4Mtpa. From 2003, production capacity went up to 16Mtpa on a dry basis. and in 2008, up to 18Mtpa.

Due to market and tailings facilities restrictions, the planned production is 11Mtpa on dry basis (up to 2043). The deposit has 2 mine planning sequences: East Zone (1979-2027) and West Zone Phase 1 (2028-2040).

On 30 November 2023, Rio Tinto completed an acquisition of Companhia Brasileira de Alumínio's 10% equity in the MRN bauxite mine in Brazil, raising the Rio Tinto stake from 12% to 22%.

Property description/type of mine
Open cut.

Type of mineralisation
Consists of a series of bauxite tabular deposits.

Processing plants and other available facilities
The beneficiation process is formed by a primary crusher, conveyors, scrubbers, secondary crushers, screenings, hydrocyclones and vacuum filters. The superfines tailings are pumped to a tailings storage facility.

Power source
On-site generation fuel (oil and diesel).

Property
Weipa/Ely

Ownership
100% Rio Tinto

Operator
Rio Tinto through Rio Tinto Alumina Weipa P/L

Location
Weipa, Queensland, Australia

Access and infrastructure
Road, air and port.

Title/lease/acreage
The Queensland Government Comalco (ML7024) lease expires in 2042 with an option of a 21-year extension, then two years' notice of termination; the Queensland Government Alcan lease (ML7031) expires in 2048 with a 21-year right of renewal with a 2-year notice period.

Leases comprise 2,716.9km^2 (ML7024 = 1340.8km^2; ML7031 = 1376.1km^2).

This property with the associated 2 leases, includes the deposits known as Andoom, East Weipa, Amrun, Norman Creek and North of Weipa.

Key permit conditions
The respective leases are subject to the Comalco Agreement Act (Comalco Agreement) and Alcan Agreement Act (Alcan Agreement); the relevant State Agreements for the Weipa operations. Key permit conditions are prescribed by the Queensland Government in the relevant Environmental Authority applicable to each lease (ML7024 and ML7031, respectively). Lease payments are subject to the terms of the leases and the respective State Agreements.

History
Bauxite mining commenced in 1961 at Weipa. Major upgrade completed in 1998. Rio Tinto interest increased from 72.4% to 100% in 2000. In 1997, Ely Bauxite Mining Project Agreement signed with local Aboriginal land owners. Bauxite Mining and Exchange Agreement signed in 1998 with Comalco to allow for extraction of ore at Ely. The Western Cape Communities Co-Existence Agreement, an ILUA, was signed in 2001. Following the ramp up to full production of Amrun the current annual production of the Weipa mine is 35.5Mt.

Property description/type of mine
Open cut.

Type of mineralisation
Bauxite.

Processing plants and other available facilities
Andoom, East Weipa and Amrun – wet crushing and screening plants to remove ultra fine proportion.

Power source
On-site generation (diesel) supplemented by a solar generation facility.

Other operations

Project

Property
Simandou, Blocks 3 & 4

Ownership
SimFer S.A., a joint venture between SimFer Jersey (85%) and the Republic of Guinea (15%)

SimFer Jersey is a joint venture between Rio Tinto (53%) and CIOH (47%), a Chinalco-led joint venture with Baowu, China Rail Construction Corporation and China Harbour Engineering Company

Operator
SimFer S.A. (mine)

Location
The SimFer Mining Concession is located ~550km east-southeast of Conakry in the Republic of Guinea

Access and infrastructure
The site has road access and is readily accessible for power, water, and additional infrastructure requirements. Existing camp facilities support construction activity and future Life of Mine operational teams. The existing Beyla airstrip is also being upgraded to enable greater access and larger capacity.

Iron ore extracted from the SimFer Mining Concession will be exported through a rail and port infrastructure which is being co-developed by the State, and dedicated infrastructure affiliates of SimFer Jersey (SimFer Infraco) and Winning Consortium Simandou (WCS Infraco). The infrastructure will also be used to export production from Simandou Blocks 1 & 2 which are independently owned and developed by Winning Consortium Simandou (WCS), a consortium comprising Winning International Group, China Hongqiao Group and in which Baowu acquired a 49% participation on 19 June 2024. The infrastructure includes a purpose-built port facility at Morebaya estuary (south of Conakry) to be accessed by a 536km main rail line with rail spurs connecting our Concession (68km) and WCS's (16km) respectively. The main rail line will have an initial capacity of up to 120Mtpa. The ultimate owner and operator of the infrastructure will be the Compagnie du Transguinéen (CTG), an incorporated joint venture between SimFer Infraco (42.5%), WCS Infraco (42.5%) and the State (15%).

Title/lease/acreage
SimFer Mining Concession was granted by Presidential Decree on 22 April 2011 under the conditions of the Amended and Consolidated Basic Convention (ACBC), which was ratified by the Guinean National Assembly on 26 May 2014. The SimFer Mining Concession duration is 25 years, renewed automatically for a further period of 25 years followed by further 10-year periods in accordance with the applicable Guinean Mining Code and the ACBC. It covers an area of 369km^2.

SimFer has also signed a Co-Development Agreement with the State and WCS on 10 August 2023, to enable co-development of the rail and port infrastructure for the Simandou iron ore projects. The Co-Development Agreement, which, along with bipartite amendments for each of the SimFer and WCS Mine Conventions, adapts the existing investment frameworks of SimFer (including its pre-existing BOT Convention) and WCS. These conventions and amendments were ratified by the Guinean National Transition Council on 3 February 2024 and came into force on 30 May 2024.

Key permit conditions
In addition to the SimFer Mining Concession, the ACBC, as amended by the mine bipartite agreement, establishes the legal regime for the mine project and sets out SimFer's key legal rights and protections. The Simandou mine SEIA was originally approved in 2012 and has been updated through an approved SEIA in 2024. A SEIA for the mine and rail spur was approved in July 2024, and updated SEIA for Port terrestrial works approved in September 2024. An updated SEIA for Port marine works is undergoing regulatory approvals as of December 2024. Approvals have been maintained in accordance with applicable law throughout construction, through annual renewals of certificates of conformance.

History
SimFer submitted a bankable feasibility study to the State in 2016, with further feasibility studies for mine and infrastructure to reflect the infrastructure co-development arrangements completed in 2022, 2023 and 2024, and which have been submitted to or approved by the State as required by the infrastructure co-development arrangements and the investment framework.

Property description/type of mine
Open pit.

Type of mineralisation
Supergene-enriched itabirite hosted iron ore deposits. The deposits are part of a supracrustal belt with the banded iron formation proto-ore likely deposited in a shallow marine setting within a forearc basin. The age of deposition is considered to be between 2.7Ga and 2.2Ga.

Processing plants and other available facilities
Current plans are for the run-of-mine ore to be coarsely crushed at the Ouéléba mine site at a maximum rate of 60Mtpa phase 1 capacity to P100 of ~100mm through 2 identical primary and secondary crushing stations in a staged arrangement. The coarsely crushed ore will then be conveyed to the mine stockyard. The ore will be reclaimed from the stockpiles and conveyed to the train load-out facility for loading into trains which transport materials to the port facility where it will be likely shipped by bulk carrier to several ports including in China. Other major facilities that will support the operations include power generation, explosives facilities, fuel and lubricants facilities, administration buildings, workshops and a permanent village.

Power source
Current designs contemplate that power for the mine site and other areas will be supplied by a hybrid power plant consisting of diesel generators and a regenerative battery power solution. Further, there is a plan to connect the facility to the power grid local operator Électricité de Guinée. This will require an approximately 20km connection line to the main grid once it is available and would substantially reduce energy costs and fuel consumption.

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Group smelters, refineries and remelting & casting facilities (Rio Tinto's interest 100% unless otherwise shown)

Smelter/refinery/facility	Location	Title/lease	Plant type/product	Capacity (based on 100% ownership)
Aluminium				
Alma	Alma, Quebec, Canada	100% freehold	Aluminium smelter producing aluminium rod, t-foundry, molten metal, high purity, remelt	480,000 tonnes per year aluminium
Alouette (40%)	Sept-Îles, Quebec, Canada	100% freehold	Aluminium smelter producing aluminium high purity, remelt	627,000 tonnes per year aluminium
Arvida	Saguenay, Quebec, Canada	100% freehold	Aluminium smelter producing aluminium billet, molten metal, remelt	145,000 tonnes per year aluminium
Arvida AP60	Saguenay, Quebec, Canada	100% freehold	Aluminium smelter producing aluminium high purity, remelt	60,000 tonnes per year aluminium
Bécancour (25.1%)	Bécancour, Quebec, Canada	100% freehold	Aluminium smelter producing aluminium slab, billet, t-foundry, remelt, molten metal	460,000 tonnes per year aluminium
Bell Bay	Bell Bay, Northern Tasmania, Australia	100% freehold	Aluminium smelter producing aluminium slab, molten metal, small form and t-foundry, remelt	195,000 tonnes per year aluminium
Boyne Smelters (73.5%)	Boyne Island, Queensland, Australia	100% freehold	Aluminium smelter producing aluminium billet, EC grade, small form and t-foundry, remelt	584,000 tonnes per year aluminium
ELYSIS (48.24%)	Saguenay, Quebec, Canada	100% freehold	Industrial research and development centre producing commercial grade aluminium using carbon free smelting technology	275 tonnes per year aluminium
Grande-Baie	Saguenay, Quebec, Canada	100% freehold	Aluminium smelter producing aluminium slab, molten metal, high purity, remelt	235,000 tonnes per year aluminium
ISAL	Reykjavik, Iceland	100% freehold	Aluminium smelter producing aluminium remelt, billet	212,000 tonnes per year aluminium
Jonquière (Vaudreuil)	Jonquière, Quebec, Canada	100% freehold	Smelter grade alumina	1,560,000 tonnes per year alumina
Kitimat	Kitimat, British Columbia, Canada	100% freehold	Aluminium smelter producing aluminium slab, remelt, high purity	432,000 tonnes per year aluminium
Laterrière	Saguenay, Quebec, Canada	100% freehold	Aluminium smelter producing aluminium slab, remelt, molten metal	255,000 tonnes per year aluminium
Queensland Alumina (80%)	Gladstone, Queensland, Australia	73.3% freehold; 26.7% leasehold (of which more than 80% expires in 2026 and after)	Refinery producing alumina	3,950,000 tonnes per year alumina
São Luis (Alumar) (10%)	São Luis, Maranhão, Brazil	100% freehold	Refinery producing alumina	3,830,000 tonnes per year alumina
Sohar (20%)	Sohar, Oman	100% leasehold (expiring 2039)	Aluminium smelter producing aluminium, high purity, remelt	395,000 tonnes per year aluminium
Tiwai Point (New Zealand Aluminium Smelters)	Invercargill, Southland, New Zealand	19.6% freehold; 80.4% leasehold (expiring in 2029 and use of certain Crown land)	Aluminium smelter producing aluminium billet, slab, small form foundry, high purity, remelt	373,000 tonnes per year aluminium
Tomago (51.6%)	Tomago, New South Wales, Australia	100% freehold	Aluminium smelter producing aluminium billet, slab, remelt	590,000 tonnes per year aluminium
Yarwun	Gladstone, Queensland, Australia	97% freehold; 3% leasehold (expiring 2101 and after)	Refinery producing alumina	3,200,000 tonnes per year alumina
Matalco Bluffton Manufacturing (50%)	Bluffton, Indiana, US	100% freehold	Remelt and manufacture of aluminium billet and slab	104,000 tonnes per year
Matalco Brampton Manufacturing (50%)	Brampton, Ontario, Canada	100% freehold	Remelt and manufacture of aluminium billet	109,000 tonnes per year
Matalco Canton Manufacturing (50%)	Canton, Ohio, US	100% freehold	Remelt and manufacture of aluminium billet	64,000 tonnes per year
Matalco Franklin Manufacturing (50%)	Franklin, Kentucky, US	100% freehold	Remelt and manufacture of aluminium slab	122,000 tonnes per year
Matalco Lordstown Manufacturing (50%)	Lordstown, Ohio, US	100% freehold	Remelt and manufacture of aluminium billet	159,000 tonnes per year
Matalco Shelbyville Manufacturing (50%)	Shelbyville, Kentucky, US	100% freehold	Remelt and manufacture of aluminium billet	154,000 tonnes per year
Matalco Wisconsin Rapids Manufacturing (50%)	Wisconsin Rapids, Wisconsin, US	100% freehold	Remelt and manufacture of aluminium billet and slab	104,000 tonnes per year

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Group smelters and refineries and remelting & casting facilities (Rio Tinto's interest 100% unless otherwise shown)

Smelter/refinery/facility	Location	Title/lease	Plant type/product	Capacity (based on 100% ownership)
Copper				
Rio Tinto Kennecott	Magna, Salt Lake City, Utah, US	100% freehold	Flash smelting furnace/Flash convertor furnace copper refinery and precious metals plant	335,000 tonnes per year refined copper
Minerals				
Boron	Boron, California, US	100% freehold	Borates refinery	576,000 tonnes per year boric oxide
IOC pellet plant (58.7%)	Labrador City, Newfoundland and Labrador, Canada	100% freehold (asset), 100% freehold (land) under sublease from Labrador Iron Ore Royalty Corporation for life of mine.	Pellet induration furnaces producing multiple iron ore pellet types	13.5 million tonnes per year pellet
Richards Bay Minerals (74%)	Richards Bay, South Africa	100% freehold	Ilmenite smelter	1,050,000 tonnes per year titanium dioxide slag, 565,000 tonnes per year iron
Rio Tinto Iron and Titanium Quebec Operations - Sorel-Tracy plant	Sorel-Tracy, Quebec, Canada	100% freehold	Ilmenite smelter	1,300,000 tonnes per year titanium dioxide slag, 1,000,000 tonnes per year iron

Group power plants (Rio Tinto's interest 100% unless otherwise shown)

Power plant	Location	Title/lease	Plant type/product	Capacity (based on 100% ownership)
Iron Ore				
Cape Lambert power station (67%)	Cape Lambert, Western Australia, Australia	Lease	Two LM6000PF dual-fuel turbines	80MW
Paraburdoo power station	Paraburdoo, Western Australia, Australia	Lease	Three LM6000PC gas-fired turbines	120MW
West Angelas power station (67%)	West Angelas, Western Australia, Australia	Miscellaneous licence	Two LM6000PF dual-fuel turbines	80MW
Yurralyi Maya power station (84.2%)	Dampier, Western Australia, Australia	Miscellaneous licence	Four LM6000PD gas-fired turbines One LM6000PF gas-fired turbine	200MW
Gudai-Darri solar farm	Gudai-Darri, Western Australia, Australia	Miscellaneous licence	Solar PV single-axis tracking	up to 34MW
Aluminium				
Amrun power station	Amrun, Australia	100% leasehold	Diesel generation	24MW
Gladstone power station (42%)	Gladstone, Queensland, Australia	100% freehold	Thermal power station	1,680MW
Gove power station	Nhulunbuy, Northern Territory, Australia	100% leasehold	Diesel generation	24MW
Kemano power station	Kemano, British Columbia, Canada	100% freehold	Hydroelectric power	1,014MW installed capacity
Quebec power stations	Saguenay, Quebec, Canada (Chute-à-Caron, Chute-à-la- Savane, Chute-des-Passes, Chute-du-Diable, Isle-Maligne, Shipshaw)	100% freehold (certain facilities leased from Quebec Government until 2058 pursuant to Peribonka Lease)	Hydroelectric power	3,147MW installed capacity
Weipa power stations and solar generation facility	Lorim Point, Andoom, and Weipa, Australia	100% leasehold	Diesel generation supplemented by solar generation facility	38MW
Yarwun alumina refinery co-generation plant	Gladstone, Queensland, Australia	100% freehold	Gas turbine and heat recovery steam generator	160MW

Group power plants (Rio Tinto's interest 100% unless otherwise shown)

Power plant	Location	Title/lease	Plant type / Product	Capacity (based on 100% ownership)
Copper				
Rio Tinto Kennecott power stations	Salt Lake City, Utah, US	100% freehold	Steam turbine running off waste heat boilers at the copper smelter	31.8MW
			Combined heat and power plant supplying steam to the copper refinery	6.2MW
			Solar power plant	5MW
Minerals				
Boron co-generation plant	Boron, California, US	100% freehold	Co-generation uses natural gas to generate steam and electricity, used to run Boron's refining operations	48MW
Energy Resources of Australia (98.43%)	Ranger Mine, Jabiru, Northern Territory, Australia	Lease	Five diesel generator sets rated at 5.17MW; one diesel generator set rated at 2MW; 4 additional diesel generator sets rated at 2MW	35.8MW
IOC power station (58.7%)	Sept-Îles, Quebec, Canada	Statutory grant	Hydroelectric power	22MW
QMM power plant	Fort Dauphin, Madagascar	100% freehold	Diesel generation supplemented by solar generation facility	32MW

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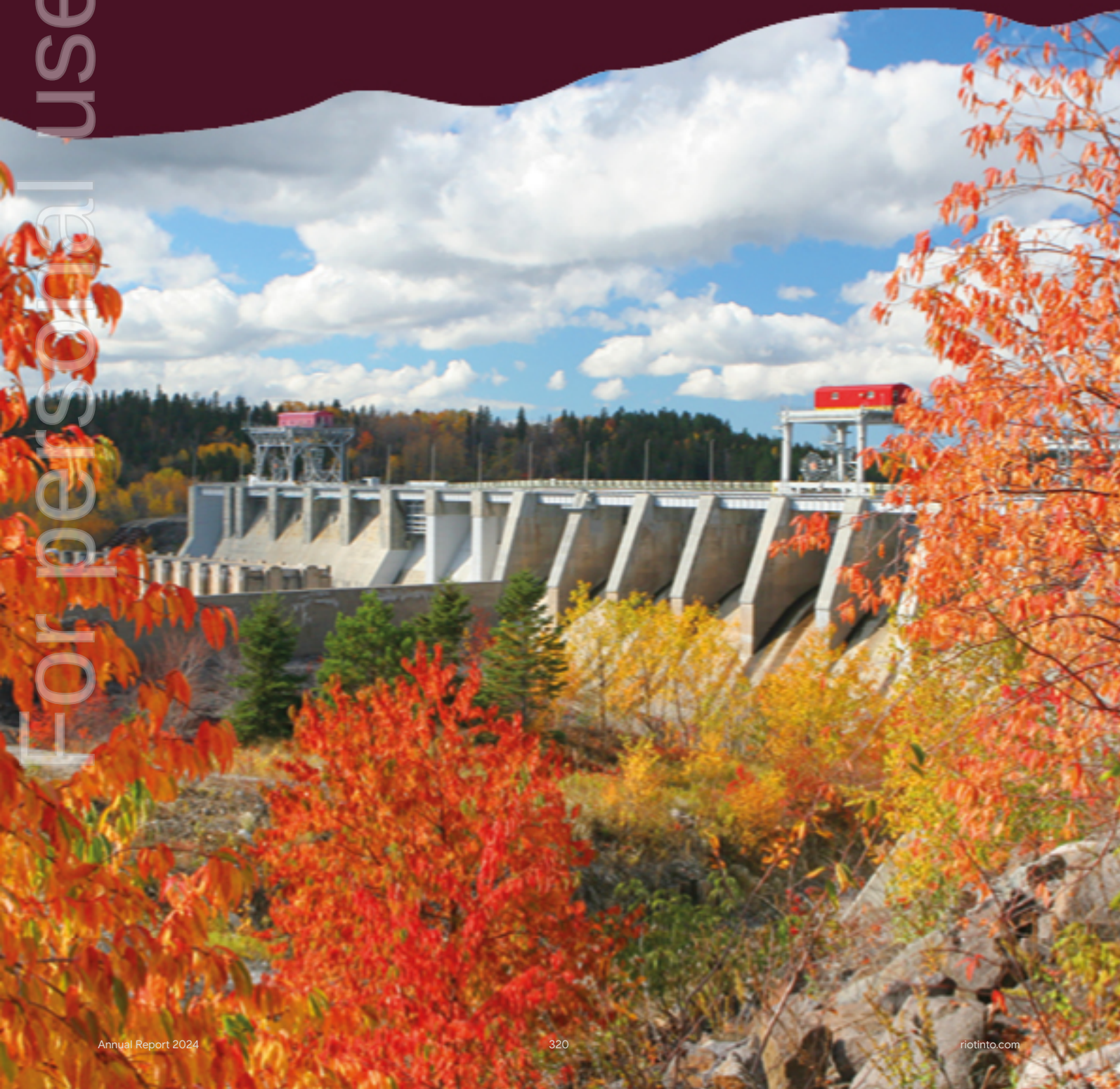


Image: Chute-à-Caron hydroelectric power plant Quebec, Canada.

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Independent assurance report

Of KPMG (KPMG Australia) to the Directors of Rio Tinto plc and Rio Tinto Limited (Rio Tinto)

Report on selected Sustainability Information Subject to Assurance presented in the Rio Tinto 2024 Reports (being the Annual Report 2024, the Rio Tinto Sustainability Fact Book 2024, and Scope 1, 2 and 3 Emissions Calculation and Climate Methodology 2024) for the year ended 31 December 2024.

CONCLUSION

a) Reasonable assurance opinion: Scope 1 and 2 GHG Emissions

In our opinion, Total gross Scope 1 and Scope 2 (Location-Based) Greenhouse Gas (GHG) Emissions (equity basis) of 30.8 Mt CO_2e and Total gross Scope 1 and Scope 2 (Market-Based) Greenhouse Gas (GHG) Emissions (equity basis) of 29.8 Mt CO_2e presented in the Sustainability sections of the Rio Tinto 2024 Reports for the year ended 31 December 2024 are prepared, in all material respects, in accordance with the Reporting Criteria.

b) Limited assurance conclusion: Sustainability Information

Based on the procedures performed and evidence obtained, nothing has come to our attention to cause us to believe that the Sustainability Information Subject to Assurance presented in the Sustainability sections of the Rio Tinto 2024 Reports for the year ended 31 December 2024 are not prepared, in all material respects, in accordance with Reporting Criteria.

Information Subject to Assurance

We have performed reasonable and limited assurance engagements on the Information Subject to Assurance, which has been prepared by Rio Tinto plc and Rio Tinto Limited (together, Rio Tinto) in accordance with the Reporting Criteria.

The Information Subject to Assurance comprised the following data and information in the Sustainability section of the Rio Tinto 2024 Reports for the year ended 31 December 2024:

- Rio Tinto's assertion that it has incorporated the requirements of the ICMM 10 Principles, the relevant Performance Expectations (PEs), and the mandatory requirements set out in the ICMM Position Statements into its own policies, strategies and standards.
- Rio Tinto's assertion regarding the approach it has adopted to identify and prioritise its material Sustainability risks and opportunities included within the Sustainability section of the Annual Report 2024, the Strategic Report 2024 and the Fact Book 2024.
- Rio Tinto's assertion regarding the existence and status of implementation of systems and approaches used to manage the following Sustainability risk areas:
  - GHG Emissions
  - Communities
  - Human Rights
  - Health, Safety and Wellbeing
  - Transparent and Responsible Business
  - Alignment with ICMM Performance Expectations (PEs)
- The following performance information:

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Independent assurance report

Of KPMG (KPMG Australia) to the Directors of Rio Tinto plc and Rio Tinto Limited (Rio Tinto)

Performance Information	Level of Assurance	Performance Result	Criteria used as the basis of reporting (the Reporting Criteria)
GHG Emissions			
Total gross Scope 1 and Scope 2 (Location-Based) Greenhouse Gas (GHG) Emissions (equity basis)	Reasonable	30.8 Mt CO_2e	World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD)'s GHG Protocol: A Corporate Accounting and Reporting Standard (Revised Edition (2015); GHG Protocol: Scope 2 Guidance; and Basis of Preparation (BoP) as described and presented within the *Scope 1, 2 and 3 Emissions Calculation and Climate Methodology* available on Rio Tinto's website at https://www.riotinto.com/en/sustainability/climate-change
Total gross Scope 1 and Scope 2 (Market-Based) Greenhouse Gas (GHG) Emissions (equity basis)	Reasonable	29.8 Mt CO_2e	
Total Scope 3 Greenhouse Gas (GHG) Emissions (equity basis)	Limited	574.6 Mt CO_2e	WRI and WBSCD's GHG Protocol Corporate Value Chain (Scope 3) Accounting and Reporting Standard (2013) and Technical Guidance for Calculating Scope 3 Emissions (version 1.0); and BoP as described and presented within the *Scope 1, 2 and 3 Emissions Calculation and Climate Methodology* available on Rio Tinto's website at https://www.riotinto.com/en/sustainability/climate-change.
Total energy (managed basis)	Limited	402 PJ	Definitions and approached within the basis of reporting glossary presented on Rio Tinto's website at riotinto.com/reports
Operation emissions intensity (equity basis)	Limited	6.1 tCO_2e/t Cu-eq	
Health, Safety and Wellbeing			
Occupational Illnesses	Limited	217	Definitions and approaches within the basis of reporting glossary presented on Rio Tinto's website at riotinto.com/reports
Number of fatalities		5	
All injury frequency rate (AIFR)		0.37	
Lost time injury frequency rate (LTIFR)		0.23	
Number of lost time injuries (LTIs)		270	
Permanent Disability Injuries (PDIs)		0	
Human Rights			
Target to train 100% of high-risk human rights roles by end of 2024	Limited	85%	Definitions and approaches within the basis of reporting glossary presented on Rio Tinto's website at riotinto.com/reports
Communities			
Voluntary payments ($ USD)	Limited	95.9	Definitions and approaches within the basis of reporting glossary presented on Rio Tinto's website at riotinto.com/reports
Development contributions		23.3	
Landowner payments		221.9	
Transparent and Responsible Business			
Number of cases reported to the Business Conduct Office	Limited	1,920	Definitions and approaches within the basis of reporting glossary presented on Rio Tinto's website at riotinto.com/reports

Performance Information	Level of Assurance	Location	Criteria used as the basis of reporting (the Reporting Criteria)
Climate Action Plan			
Scope 1 and 2 emission targets and roadmap	Limited	Page 51 - 52	World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD)'s GHG Protocol: A Corporate Accounting and Reporting Standard (Revised Edition (2015); GHG Protocol: Scope 2 Guidance; Basis of Preparation (BoP) as described and presented within the *Scope 1, 2 and 3 Emissions Calculation and Climate Methodology*; and Definitions and approaches within the basis of reporting glossary presented on Rio Tinto's website at riotinto.com/reports
Scope 3 emissions goals and customer		Page 62	
Capital allocation and investment framework		Page 63	
Just transition		Page 64	
Climate policy and advocacy		Page 64 - 66	
Climate-related governance		Page 69 - 71	

Our opinion/conclusion on the Information Subject to Assurance does not extend to earlier periods or to other information that accompanies or contains the Information Subject to Assurance and our assurance report (hereafter referred to "other information"). We have read other information, but we have not performed any procedures with respect to the other information.

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Independent assurance report

Of KPMG (KPMG Australia) to the Directors of Rio Tinto plc and Rio Tinto Limited (Rio Tinto)

Basis for conclusion

We conducted our engagement in accordance with International Standard on Assurance Engagements (ISAE) 3000 (Revised), Assurance Engagements Other Than Audits or Reviews of Historical Financial Information and ISAE 3410, Assurance Engagements on Greenhouse Gas Statements issued by the International Auditing and Assurance Standards Board (IAASB), and Australian Standard on Assurance Engagements (ASAE) 3000, Assurance Engagements Other Than Audits or Reviews of Historical Financial Information and ASAE 3410, Assurance Engagements on Greenhouse Gas Statements issued by the Australian Auditing and Assurance Standards Board (AUASB). Our responsibilities under this standard are further described in the "Our responsibilities" section of our report.

We have complied with the independence and other ethical requirements of the Code of Ethics for Professional Accountants (including Independence Standards) issued by the Accounting Professional Ethical Standards Board (APESB).

Our firm applies International Standard on Quality Management (ISQM1), Quality Management for Firms that Perform Audit or Reviews of Financial Statements, or Other Assurance or Related Service Engagements, issued by the IAASB and Auditing Standard ASQM1 Quality Management for Firms that Perform Audits or Reviews of Financial Reports and Other Financial Information, or Other Assurance or Related Services Engagements, issued by the AUASB. This standard requires the firm to design, implement and operate a system of quality management, including policies or procedures regarding compliance with ethical requirements, professional standards and applicable legal and regulatory requirements.

We believe that the evidence we have obtained is sufficient and appropriate to provide a basis for our conclusion.

Restriction on use or distribution

This report has been prepared for the Directors of Rio Tinto, to assist the Directors in responding to their governance responsibilities by obtaining an independent assurance report in connection with the subject matter information, for the purpose of providing assurance conclusions on the Information Subject to Assurance and may not be suitable for another purpose.

We disclaim any assumption of responsibility for any reliance on this report, to any person other than the Directors of Rio Tinto or for any other purpose other than that for which it was prepared.

Our conclusion is not modified in respect of this matter.

Responsibilities for the information subject to assurance

Management of Rio Tinto are responsible for:

- designing, implementing and maintaining internal control relevant to the preparation of the Information Subject to Assurance such that it is free from material misstatement, whether due to fraud or error;
- selecting or developing suitable criteria for preparing the Information Subject to Assurance and appropriately referring to or describing the criteria used;
- determining appropriate reporting topics and selected or establishing suitable criteria for measuring, evaluation and preparing the Information Subject to Assurance;
- making judgements and estimates that are reasonable in the circumstances; and
- preparing the Information Subject to Assurance in accordance with Reporting Criteria.

Those charged with governance are responsible for overseeing the reporting process for the entity's Information Subject to Assurance.

Inherent limitations

Inherent limitations exist in all assurance engagements due to the selective testing of the information being examined. It is therefore possible that fraud, or error may occur and not be detected. Non-financial data may be subject to more inherent limitations than financial data, given both its nature and the methods used for determining, calculating, and estimating such data. The precision of different measurement techniques may also vary. The absence of a significant body of established practice on which to draw to evaluate and measure non-financial information allows for different, but acceptable, evaluation and measurement techniques that can affect comparability between entities and over time.

Greenhouse gas quantification is subject to inherent uncertainty due to the nature of the information and the uncertainties inherent in: (i) the methods used for determining or estimating the appropriate amounts, (ii) information used to determine emission factors and (iii) the values needed to combine emissions of different gases.

Our responsibilities

We are responsible for:

- planning and performing the engagement to obtain reasonable and limited assurance about whether the Information Subject to Assurance is free from material misstatement, whether due to fraud or error;
- forming an independent conclusion, based on the procedures we have performed and the evidence we have obtained; and
- reporting our conclusion to the Directors of Rio Tinto.

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Independent assurance report

Of KPMG (KPMG Australia) to the Directors of Rio Tinto plc and Rio Tinto Limited (Rio Tinto)

Summary of procedures performed as the basis of our opinion and conclusion

We exercised professional judgment and maintained professional skepticism throughout the engagement. We designed and performed our procedures to obtain evidence that is sufficient and appropriate to provide a basis for our reasonable assurance opinion and limited assurance conclusion.

Reasonable assurance opinion

The nature, timing, and extent of the procedures selected depended on our judgement, including an assessment of the risks of material misstatement of the Information Subject to Reasonable Assurance, whether due to fraud or error. We identified and assessed the risks of material misstatement through understanding the Information Subject to Reasonable Assurance and the engagement circumstances. We also obtained an understanding of the internal control relevant to the Information Subject to Reasonable Assurance in order to design procedures that are appropriate in the circumstances but not for the purpose of expressing an opinion on the effectiveness of internal controls. In carrying out our engagement, the procedures we performed primarily consisted of:

- Analytical procedures over the Total Scope 1 and 2 GHG Emissions;
- Substantively tested the Total Scope 1 and 2 GHG Emissions, on a sample basis at corporate and operational level, which included testing a selection of 18 operations being Bell Bay Aluminium, Boyne Smelters, Gladstone Power Station, Queensland Alumina Ltd, Yarwun, Tomago, RTA Alma, RTA Isal, Pilbara Rail Operations, Tom Price, Brockman 2 Nammuldi, Escondida, Richards Bay Minerals, Alouette, Power Operations, Sept-Iles, Sohar and Oyu Tolgoi;
- Interviews and walkthroughs with corporate and operational level personnel to assess the key systems, processes and internal controls to capture, collate, calculate and report the Total Scope 1 and 2 GHG Emissions at an operational level, and how this information is reported and captured at corporate level;
- Testing the mathematical accuracy of a sample of calculations underlying the Total Scope 1 and 2 GHG Emissions; and
- Assessing the appropriateness of a sample of emission factors applied in calculating the Total Scope 1 and 2 GHG Emissions.

Limited assurance conclusion

Our procedures selected depended on our understanding of the Information Subject to Limited Assurance and other engagement circumstances, and our consideration of areas where material misstatements are likely to arise. In carrying out our engagement, the procedures we performed primarily consisted of:

- Enquiries with relevant Rio Tinto personnel to understand and evaluate the design and implementation of the key systems, processes and internal controls to capture, collate, calculate and report the Information Subject to Assurance;
- Assessment of the suitability and application of the Reporting Criteria in respect of the Information Subject to Assurance;
- Analytical procedures over the Information Subject to Assurance;
- Testing the Scope 3 GHG Emissions to source documentation on a sample basis;
- Substantively testing the Information Subject to Assurance on a sample basis at corporate and operational level, which included testing a selection of six managed operations and projects being NZAS, Resolution Copper, Paraburdoo, QIT Madagascar Minerals, Oyu Tolgoi (Projects and Operations) and Kitimat with a focus on Safety Maturity Model testing during those site visits;
- Testing the mathematical accuracy of a sample of calculations underlying the Information Subject to Assurance;
- Corroborative enquiries with relevant management to understand progress against the Climate Action Plan commitments;
- Testing the disclosed information on CAP Progress to source documentation on a sample basis;
- Reconciling the Information Subject to Assurance to underlying information;
- Assessing Rio Tinto's incorporation of the requirements of the ICMM 10 principles for sustainable development, and the mandatory requirements set out in the ICMM Position Statements, into its own policies, strategies and standards; and
- Reviewing the Scope 1, 2 and 3 Emissions Calculation and Climate Methodology for the year ended 31 December 2024 and the Information Subject to Assurance in its entirety to ensure it is consistent with our overall knowledge of Rio Tinto and our observation of its operations.

The procedures performed in a limited assurance engagement vary in nature and timing from, and are less in extent than for, a reasonable assurance engagement. Consequently, the level of assurance obtained in a limited assurance engagement is substantially lower than the assurance that would have been obtained had a reasonable assurance engagement been performed.

KPMG

Adrian V. King

KPMG

Adrian King
Partner

19 February 2025

Melbourne, Australia

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Shareholder information

Organisational structure

The Rio Tinto Group consists of Rio Tinto plc (registered in England and Wales as company number 719885 under the UK *Companies Act 2006* and listed on the London Stock Exchange as RIO.L), and Rio Tinto Limited (registered in Australia as ABN 96 004 458 404 under the Australian *Corporations Act 2001* and listed on the Australian Securities Exchange as RIO.AX). LSX is the principal trading market for Rio Tinto plc shares, and ASX for Rio Tinto Limited shares.

Rio Tinto plc has a sponsored American Depositary Receipts (ADR) facility, with underlying shares registered with the US Securities and Exchange Commission (SEC) and listed on the New York Stock Exchange as RIO.N.

Further details on Rio Tinto plc ADRs are available in Rio Tinto's annual reports on Form 20-F.

Rio Tinto is headquartered in London with a corporate office in Melbourne.

Nomenclature and financial data

Rio Tinto plc and Rio Tinto Limited operate together and are referred to in this report as Rio Tinto, the Rio Tinto Group or the Group. These expressions are used for convenience notwithstanding that they are separate and distinct legal entities. Likewise, the words "we", "us", "our" and "ourselves" are used in some places to refer to one, some or the companies of the Rio Tinto Group in general. Financial data in US dollars ($) is derived from, and should be read in conjunction with, the 2024 financial statements. In general, where we have provided financial data in other currencies, it has been translated from the consolidated financial statements, and is provided solely for convenience. Exceptions arise where data has been extracted directly from source records.

History

Rio Tinto plc was incorporated on 30 March 1962, as The Rio Tinto-Zinc Corporation Limited (RTZ). Rio Tinto Limited was incorporated (under a different name) on 17 December 1959 and following a merger with other Australian interests in 1962, formed a group that was later renamed CRA Limited (CRA).

In 1997, RTZ became Rio Tinto plc and CRA became Rio Tinto Limited.

Dual-listed companies structure

The businesses of RTZ and CRA were merged contractually in 1995 by way of a dual-listed companies structure ('DLC structure'). Both companies agreed to be managed in a unified way, implementing arrangements to provide shareholders of both companies with a common economic interest in the DLC structure, under a common board of directors.

The ratio of dividend, voting and capital distribution rights attached to each share in Rio Tinto plc and Rio Tinto Limited was fixed by a "DLC Sharing Agreement" at an Equalisation Ratio of 1:1. This has remained unchanged, although can be revised in special circumstances or with the approval of shareholders of each company under the class rights action approval procedure (described below) and subject to any adjustments to be confirmed by the Group's external auditors. Rio Tinto shareholders cannot directly enforce the provisions of the DLC Sharing Agreement.

To ensure that the Boards of both companies are identical, resolutions to appoint or remove Directors must be put to shareholders of both companies as Joint Decisions (described below), and Directors can only be a Director of one company if they are a Director of both companies.

Dividend arrangements

Dividends paid on Rio Tinto plc and Rio Tinto Limited shares are equalised on a net cash basis without taking into account any associated tax credits. Dividends are determined in US dollars (except for ADR holders) and both companies must announce and pay distributions (including dividends) as close to the same time as possible.

If the payment of an equalised dividend would contravene the law applicable to one of the companies, they can depart from the Equalisation Ratio but the relevant company must put aside reserves for payment on the relevant shares at a later date.

Voting arrangements

The shareholders of Rio Tinto plc and Rio Tinto Limited vote as one combined body on any matters that affect them similarly, subject to limited exceptions. These are called Joint Decisions, and include creating new classes of share capital, changing directors and auditors, and receiving annual financial statements.

In class rights actions, where both companies are not affected equally such as changes to a company's articles of association or constitution, the resolution must be passed by the shareholders of each company on a standalone basis.

In other circumstances, only one company requires a vote, and these matters are single electorate matters.

All shareholder resolutions that include a Joint Decision or class rights action are decided by a poll, although in exceptional circumstances, certain shareholders can be excluded from voting at their respective company's general meeting (such as where they have breached the limitations on ownership of shares discussed below).

Where a matter has been expressly categorised as a Joint Decision or a class rights action, the Directors cannot change that categorisation. If a matter is categorised as both, it is treated as a class rights action. Otherwise, the Directors decide how issues should be put to shareholders for approval.

Both companies have entered into shareholder joint voting agreements, where a Special Voting Share is issued to a special purpose company and held in trust for shareholders by a trustee.

When a resolution is put as a Joint Decision, each Rio Tinto plc share carries one vote at Rio Tinto plc shareholders meeting. The holder of the Special Voting Share has one vote for each vote cast by the public shareholders of Rio Tinto Limited in their parallel meeting. Holders of Rio Tinto Limited ordinary shares do not hold voting shares in Rio Tinto plc by virtue of their holding in Rio Tinto Limited, and cannot enforce the voting arrangements relating to the Special Voting Share. Instead, the trustee holding the Special Voting Share must vote in accordance with the votes cast by public shareholders on the equivalent resolution at the parallel Rio Tinto Limited shareholders' meeting.

The same arrangements apply for the trustee holding the Special Voting Share issued by Rio Tinto Limited to cast a vote at the Rio Tinto Limited shareholders meeting for each vote cast by the public shareholders of Rio Tinto plc in their parallel meeting.

Capital distribution arrangements

If either company goes into liquidation, the surplus assets of both companies are valued. If the surplus assets available for distribution by one company exceed the surplus assets available for distribution by the other company (on each of the shares held by its shareholders), then, to the extent permitted by law, an equalising payment must be made so that the amount available for distribution on each share held by shareholders of both companies reflects the Equalisation Ratio.

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Limitations on ownership of shares and merger obligations

Control of interests in publicly listed companies in excess of defined thresholds, is regulated in both Australia and the UK. Under UK law, which applies to Rio Tinto plc, the threshold is 30% and under Australian law which applies to Rio Tinto Limited, the threshold is 20%. These thresholds also apply on a joint basis as Rio Tinto plc's Articles of Association and Rio Tinto Limited's Constitution extend these laws to apply to the combined entity. These provisions also ensure that a person cannot exercise control over one company without having made offers to the public shareholders of both companies. If one of these thresholds is exceeded, the person's voting and distribution rights are suspended, and their shares may be divested – until they offer for all publicly held shares of the other company, reduce their controlling interest below the thresholds specified, or acquire (by a permitted means) at least 50% of each company's publicly held shares.

This ensures equal treatment for all shareholders, with the Directors unable to offer exemptions.

Guarantees

Subject to limited exceptions, each company guarantees the other company's contractual obligations, creditors and the obligations of other persons guaranteed by the other company. All creditors can make demands on their guarantor without first having recourse to the company or persons whose obligations are being guaranteed.

The guarantor's obligations expire on termination of the Sharing Agreement (but only for obligations arising after termination) and under other limited circumstances (after due notice is given).

Markets

Rio Tinto plc

The principal market for Rio Tinto plc shares is the London Stock Exchange, with shares trading through the Stock Exchange Electronic Trading Service (SETS) system.

Rio Tinto plc American Depositary Receipts (ADRs) are listed on the New York Stock Exchange.

Rio Tinto Limited

Rio Tinto Limited shares are listed on the Australian Securities Exchange (ASX).

The ASX is the principal trading market for Rio Tinto Limited shares. The ASX is a national stock exchange with an automated trading system.

Share ownership

Substantial shareholders in Rio Tinto plc

The following table shows holdings of 3% or more of voting rights in Rio Tinto plc's ordinary shares as per the most recent notification of each respective holder to Rio Tinto plc under the UK Disclosure and Transparency Rule 5. The percentage of voting rights detailed below was calculated as at the date of the relevant disclosures. The following table shows shareholders who have provided this notice or an equivalent as of 4 February 2025.

Rio Tinto plc	Date of notice	Number of shares	Percentage of capital
BlackRock, Inc.[1]	4 Dec 2009	127,744,871	8.38
Shining Prospect Pte. Ltd	7 Dec 2018	182,550,329	14.02
The Capital Group Companies, Inc.	6 Jul 2022	51,648,733	4.13
JPMorgan Nominees Australia Ltd	28 Jan 2025	37,704,651	3.01

1. On 25 January 2024, BlackRock, Inc. filed an Amendment to Schedule 13G with the SEC and disclosed beneficial ownership of 112,980,265 ordinary shares in Rio Tinto plc as of 31 December 2023, representing 9.0% of that class of shares.

Substantial shareholders in Rio Tinto Limited

Under the Australian *Corporations Act 2001,* any person with 5% or more voting power in Rio Tinto Limited is required to provide the company with notice. The following table shows shareholders who have provided this notice or an equivalent as of 4 February 2025:

Rio Tinto Limited	Date of notice	Number of shares	Percentage of capital[2]
State Street Corporation	23 Jan 2025	31,424,591	8.47
The Vanguard Group, Inc.[3]	4 Jul 2024	22,353,663	6.02
BlackRock, Inc.[4, 5]	5 Dec 2022	26,031,175	7.01
Shining Prospect Pte. Ltd	9 Feb 2018	see footnote[6]	see footnote[6]

2. The percentage of voting rights detailed was as disclosed in the notice received by the company, calculated at the time of the relevant disclosure.
3. On 13 February 2024, The Vanguard Group Inc. filed an Amendment to Schedule 13G with the SEC and disclosed beneficial ownership of 21,071,571 ordinary shares in Rio Tinto Limited as of 29 December 2023, representing 5.68% of that class of shares.
4. In its substantial holding notice filed on 5 December 2022, BlackRock, Inc. and its associates disclosed a holding of 115,764,125 shares in Rio Tinto plc and 26,031,175 shares in Rio Tinto Limited, which gave BlackRock, Inc. and its associates voting power of 8.74% in the Rio Tinto Group on a Joint Decision matter. Accordingly, in addition to being substantial shareholders of Rio Tinto Limited by virtue of interests held in Rio Tinto Limited's shares, through the operation of the Australian Cor*porations Act 2001* as modified to apply to the DLC structure, these entities disclosed voting power of 8.74% in Rio Tinto Limited. Based on this notification, as at 5 December 2022, BlackRock, Inc. directly held a 7.01% interest in Rio Tinto Limited.
5. On 2 February 2024, BlackRock, Inc. filed an Amendment to Schedule 13G with the SEC and disclosed beneficial ownership of 24,991,523 ordinary shares in Rio Tinto Limited as of 31 December 2023, representing 6.7% of that class of shares.
6. In its substantial holding notice filed on 9 February 2018, Shining Prospect Pte. Ltd disclosed that its holding of 182,550,329 Rio Tinto plc shares gave Shining Prospect Pte. Ltd and its associates voting power of 10.32% in the Rio Tinto Group on a Joint Decision matter. Accordingly, through the operation of the Australian *Corporations Act 2001* as modified to apply to the DLC structure, these disclosed voting power of 10.32% in Rio Tinto Limited.

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As far as is known, Rio Tinto plc and Rio Tinto Limited are not directly or indirectly owned or controlled by another corporation or by any government or natural person. Rio Tinto is not aware of any arrangement that may result in a change in control of Rio Tinto plc or Rio Tinto Limited. No shareholder possesses voting rights that differ from those attaching to Rio Tinto plc's and Rio Tinto Limited's securities.

As of 4 February 2025, the total amount of the Group's voting securities owned by the Directors and Executives in Rio Tinto plc was 381,338 ordinary shares of 10p each or ADRs. There were 23,270 holders of record of Rio Tinto plc's shares. Of these holders, 337 had registered addresses in the US and held a total of 286,520 Rio Tinto plc shares, representing 0.02% of the total number of Rio Tinto plc shares issued and outstanding as at such date. In addition, 187,497,933 Rio Tinto plc shares were registered in the name of a custodian account in London which represented 14.93% of Rio Tinto plc shares issued and outstanding. These shares were represented by 187,497,938 Rio Tinto plc ADRs held on record by 411 ADR holders. In addition, certain accounts on record with registered addresses other than in the US hold shares, in whole or in part, beneficially for US persons.

As of 4 February 2025, the total amount of the Group's voting securities owned by Directors and Executives in Rio Tinto Limited was 80,391 shares, in aggregate representing less than 0.01% of the Group's total number of ordinary shares in issue. There were 186,022 holders of record of Rio Tinto Limited shares. Of these holders, 239 had registered addresses in the US, representing approximately 0.03% of the total number of Rio Tinto Limited shares issued and outstanding as of such date. In addition, nominee accounts of record with registered addresses other than in the US may hold Rio Tinto Limited shares, in whole or in part, beneficially for US persons.

Unquoted equity securities in Rio Tinto Limited

As at 4 February 2025, there were Rio Tinto Limited unquoted equity securities on issue, comprising 39,652 unvested Bonus Deferral Awards held by 4 holders; 1,211,294 unvested Management Share Awards held by 1,154 holders; and 1,384,779 unvested Performance Share Awards held by 67 holders, all of which were granted under the Rio Tinto Limited Equity Incentive Plan, and 1,592,590 unvested matching share rights were granted under the Rio Tinto Limited Global Employee Share Plan held by 17,993 holders. This information is provided in compliance with ASX Listing Rule 4.10.16.

Analysis of ordinary shareholders

	Rio Tinto plc				Rio Tinto Limited			
As at 4 February 2025	No. of accounts	%	Shares	%	No. of accounts	%	Shares	%
1 to 1,000 shares	17,412	74.84	5,392,447	0.43	160,885	86.49	39,986,230	10.77
1,001 to 5,000 shares	4,159	17.88	8,409,963	0.67	22,619	12.16	45,069,109	12.14
5,001 to 10,000 shares	464	2	3,269,939	0.26	1,756	0.94	12,095,600	3.26
10,001 to 25,000 shares	322	1.38	5,255,377	0.42	608	0.33	8,922,442	2.40
25,001 to 125,000 shares	436	1.87	26,361,847	2.1	115	0.06	5,475,069	1.47
125,001 to 250,000 shares	140	0.6	25,182,780	2.01	9	0.00	1,510,416	0.41
250,001 to 1,250,000 shares	224	0.96	127,229,621	10.13	16	0.01	8,075,866	2.18
1,250,001 to 2,500,000 shares	45	0.19	81,956,292	6.52	7	0.00	13,270,211	3.57
2,500,001 shares and over	64	0.28	972,901,325[1]	77.46	7	0.00	236,811,271	63.79
			1,255,959,591[2]	100.00			371,216,214[3]	100.00
Number of holdings less than marketable parcel of A$500					2,858			

1. This includes 187,507,978 shares held in the name of a nominee on the share register. The shares are listed on the New York Stock Exchange (NYSE) in the form of American Depositary Receipts (ADRs).
2. The total issued share capital is made up of 1,255,959,591 publicly held shares and 2,907,902 shares held in Treasury.
3. Publicly held shares in Rio Tinto Limited.

Twenty largest registered shareholders

The following table lists the 20 largest registered holders of Rio Tinto Limited shares in accordance with the ASX listing rules, together with the number of shares and the percentage of issued capital each holds, as of 4 February 2025.

Rio Tinto Limited	Number of shares	Percentage of issued share capital
HSBC Custody Nominees (Australia) Limited	113,368,977	30.54
J. P. Morgan Nominees Australia Pty Limited	57,336,317	15.45
Citicorp Nominees Pty Ltd	43,888,604	11.82
BNP Paribas Nominees Pty Ltd (Agency Lending A/C)	8,189,356	2.21
BNP Paribas Noms Pty Ltd	7,401,091	1.99
National Nominees Limited	3,830,790	1.03
Citicorp Nominees Pty Limited (Colonial First State Inv A/C)	3,358,616	0.90
Australian Foundation Investment Company Limited	2,200,553	0.59
Argo Investments Limited	2,200,139	0.59
HSBC Custody Nominees (Australia) Limited (NT-Comnwlth Super Corp A/C)	2,141,508	0.58
BNP Paribas Nominees Pty Ltd Hub24 Custodial Serv Ltd	1,970,724	0.53
BNP Paribas Nominees Pty Ltd (ACF Clearstream)	1,869,358	0.50
Netwealth Investments Limited (WRAP Services A/C)	1,794,437	0.48
Mutual Trust Pty Ltd	1,432,029	0.39
Custodial Services Limited	1,120,911	0.30
BNP Paribas Noms (NZ) Ltd	774,816	0.21
CGU Insurance	753,190	0.20
IOOF Investment Services Limited (IPS Superfund A/C)	608,918	0.16
IOOF Investment Services Limited (IOOF IDPS A/C)	598,554	0.16
Peter & Lyndy White Foundation Pty Ltd	591,877	0.16

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Material contracts

Articles of Association, Constitution, and DLC Sharing Agreement

As explained on page 325, under the terms of the DLC structure, shareholders of Rio Tinto plc and of Rio Tinto Limited entered into certain contractual arrangements designed to place the shareholders of both companies in substantially the same position as if they held shares in a single entity that owned all the assets of both companies. As far as is permitted by the UK *Companies Act 2006*, the Australian *Corporations Act 2001* and ASX Listing Rules, this principle is reflected in the Articles of Association of Rio Tinto plc and in the Constitution of Rio Tinto Limited.

The following summaries describe the material rights of shareholders of both Rio Tinto plc and Rio Tinto Limited.

Objects

At the 2009 AGMs, shareholders of Rio Tinto plc and Rio Tinto Limited approved amendments to their Articles of Association and Constitution whereby the object clauses were removed to allow the companies to have the widest possible scope of activities.

Directors' interests

Under Rio Tinto plc's Articles of Association, a Director may not vote in respect of any proposal in which he or she, or any other person connected with him or her, has any interest, other than by virtue of his or her interests in shares or debentures or other securities of, in or through the company, except in certain circumstances, including in respect of resolutions:

- Indemnifying him or her or a third party in respect of obligations incurred by the Director on behalf of, or for the benefit of, the company, or in respect of obligations of the company, for which the Director has assumed responsibility under an indemnity, security or guarantee.
- Relating to an offer of securities in which he or she may be interested as a holder of securities or as an underwriter.
- Concerning another body corporate in which the Director is beneficially interested in less than 1% of the issued shares of any class of shares of such a body corporate.
- Relating to an employee benefit in which the Director will share equally with other employees.
- Relating to liability insurance that the company is empowered to purchase for the benefit of Directors of the company in respect of actions undertaken as Directors (or officers) of the company.
- Concerning the giving of indemnities in favour of Directors or the funding of expenditure by Directors to defend criminal, civil or regulatory proceedings or actions against a Director.

Under Rio Tinto Limited's Constitution, a Director may be present at a meeting of the Board while a matter in which the Director has a material personal interest is being considered and may vote in respect of that matter, except where a Director is constrained by Australian law.

The Directors are empowered to exercise all the powers of the companies to borrow money; to charge any property or business of the companies or all, or any, of their uncalled capital; and to issue debentures or give any other security for a debt, liability or obligation of the companies or of any other person. The Directors shall restrict the borrowings of Rio Tinto plc to the limitation that the aggregate amount of all monies borrowed by the company and its subsidiaries shall not exceed an amount equal to 1.5 times the companies' share capital plus aggregate reserves unless sanctioned by an ordinary resolution of the company.

Directors are not required to hold any shares of either company by way of qualification. The Remuneration Report on pages 119–145 provides information on shareholding policies relating to Executive and Non-Executive Directors. Please refer to the Directors' Report for information on the appointment of Directors.

Rights attaching to shares

Under UK law, dividends on shares may only be paid out of profits available for distribution, as determined in accordance with generally accepted accounting principles and by the relevant law. Shareholders are entitled to receive such dividends as may be declared by the Directors. Directors may also pay interim dividends to shareholders as justified by the financial position of the Group.

Under the Australian *Corporations Act 2001*, dividends on shares may only be paid if the company's assets exceed its liabilities immediately before the dividend is declared, the excess is sufficient for the payment of the dividend, the payment is fair and reasonable to the company's shareholders as a whole, and the payment does not materially prejudice the company's ability to pay its creditors. Any Rio Tinto plc dividend unclaimed after 12 years from the date the dividend was declared, or became due for payment, will be forfeited and returned to the company. Any Rio Tinto Limited dividend unclaimed may be invested or otherwise used by the Board for the benefit of the company until claimed or otherwise disposed of according to Australian law. Rio Tinto Limited is governed by the State of Victoria's unclaimed monies legislation, which requires the company to pay to the state revenue office any unclaimed dividend payments of A$20 or more that on 1 March each year have remained unclaimed for over 12 months.

Voting

Voting at any general meeting of shareholders on a resolution on which the holder of the Special Voting Share is entitled to vote shall be decided by a poll, and any other resolution shall be decided by a show of hands unless a poll has been duly demanded. On a show of hands, every shareholder who is present in person or by proxy (or other duly authorised representative) and is entitled to vote, has one vote regardless of the number of shares held. The holder of the Special Voting Share is not entitled to vote in a show of hands. On a poll, every shareholder who is present in person or by proxy (or other duly authorised representative) and is entitled to vote, has one vote for every ordinary share for which he or she is the holder. In the case of Joint Decisions, the holder of the Special Voting Share has one vote for each vote cast in respect of the publicly held shares of the other company.

A poll may be demanded by any of the following:

- The Chair of the meeting.
- At least 5 shareholders entitled to vote on the resolution.
- Any shareholder(s) representing in the aggregate not less than one tenth (Rio Tinto plc) or one 20th (Rio Tinto Limited) of the total voting rights of all shareholders entitled to vote on the resolution.
- Any shareholder(s) holding Rio Tinto plc shares conferring a right to vote at the meeting on which there have been paid-up sums in the aggregate equal to not less than one tenth of the total sum paid up on all the shares conferring that right.
- The holder of the Special Voting Share of either company.

A proxy form gives the proxy the authority to demand a poll, or to join others in demanding one.

The necessary quorum for a Rio Tinto plc general meeting is 3 members present (in person or by proxy or other duly authorised representative) and entitled to vote. For a Rio Tinto Limited general meeting it is 2 members present (in person or by proxy or other duly authorised representative).

Matters are transacted at general meetings by the proposing and passing of resolutions as:

- Ordinary resolutions (for example the election of Directors), which require the affirmative vote of a majority of persons voting at a meeting for which there is a quorum.
- Special resolutions (for example amending the Articles of Association of Rio Tinto plc or the Constitution of Rio Tinto Limited), which require the affirmative vote of not less than three-quarters of the persons voting at a meeting at which there is a quorum.

The Sharing Agreement further classifies resolutions as Joint Decisions and class rights actions as explained on page 325-326.

AGMs must be convened with 21 days' written notice for Rio Tinto plc and with 28 days' notice for Rio Tinto Limited. In accordance with the authority granted by shareholders at the Rio Tinto plc AGM in 2024, other meetings of Rio Tinto plc may be convened with 14 days' written notice for the passing of a special resolution, and with 14 days' notice for any other resolution, depending on the nature of the business to be transacted. All meetings of Rio Tinto Limited require 28 days' notice. In calculating the period of notice, any time taken to deliver the notice and the day of the meeting itself are not included. The notice must specify the nature of the business to be transacted.

Variation of rights

If, at any time, the share capital is divided into different classes of shares, the rights attached to each class may be varied, subject to the provisions of the relevant legislation, the written consent of holders of three-quarters in value of the shares of that class, or upon the adoption of a special resolution passed at a separate meeting of the holders of the shares of that class. At every such meeting, all of the provisions of the Articles of Association and Constitution relating to proceedings at a general meeting apply, except that the quorum for Rio Tinto plc should be 2 or more persons who hold or represent by proxy not less than one-third in nominal value of the issued shares of the class.

Rights upon a winding-up

Except as the shareholders have agreed or may otherwise agree, upon a winding-up, the balance of assets available for distribution after the payment of all creditors (including certain preferential creditors, whether statutorily preferred creditors or normal creditors), and subject to any special rights attaching to any class of shares, is to be distributed among the holders of ordinary shares according to the amounts paid-up on the shares held by them. This distribution should generally be made in cash. A liquidator may, however, upon the adoption of a special resolution of the shareholders, divide among the shareholders the whole or any part of the assets in specie or kind.

The Sharing Agreement describes the distribution of assets of each of the companies in the event of a liquidation, as explained on page 325.

Facility agreements

Details of the Group's credit facilities are set out in the Our capital and liquidity section to the financial statements on page 197.

Exchange controls and foreign investment

Rio Tinto plc

There are no UK foreign exchange controls or other restrictions on the import or export of capital by, or on the payment of dividends to, non-resident holders of Rio Tinto plc shares, or that materially affect the conduct of Rio Tinto plc's operations. It should be noted, however, that various sanctions, laws, regulations or conventions may restrict the import or export of capital by, or the payment of dividends to, non-resident holders of Rio Tinto plc shares. There are no restrictions under Rio Tinto plc's Articles of Association or under UK law that specifically limit the right of non-resident owners to hold or vote in Rio Tinto plc shares. However, certain of the provisions of the *Australian Foreign Acquisitions and Takeovers Act 1975* (the Takeovers Act) described below also apply to the acquisition by non-Australian persons of interests in securities of Rio Tinto plc.

Rio Tinto Limited

Under current Australian legislation, Australia does not impose general exchange or foreign currency controls. Subject to some specific requirements and restrictions, Australian and foreign currency may be freely brought into and sent out of Australia. There are requirements to report cash transfers in or out of Australia of A$10,000 or more. There is a prohibition on (or in some cases the specific prior approval of the Department of Foreign Affairs and Trade or Minister for Foreign Affairs must be obtained for) certain payments or other dealings connected with countries or parties identified with terrorism, or to whom United Nations or autonomous Australian sanctions apply. Sanction, anti-money laundering and counter terrorism laws may restrict or prohibit payments, transactions and dealings or require reporting of certain transactions.

Rio Tinto Limited may be required to deduct withholding tax from foreign remittances of dividends, to the extent that they are unfranked, and from payments of interest.

Acquisitions of interests in shares, and certain other equity instruments in Australian companies by non-Australian ("foreign") persons are subject to review and approval by the Treasurer of the Commonwealth of Australia under the Takeovers Act.

In broad terms, the Takeovers Act applies to acquisitions of interests in securities in an Australian entity by a foreign person where, as a result, a single foreign person (and any associate) would control 20% or more of the voting power or potential voting power in the entity. The potential voting power in an entity is determined having regard to the voting shares in the entity that would be issued if all rights (whether or not presently exercisable) in the entity were exercised.

The Takeovers Act also applies to direct investments by foreign government investors, in certain circumstances regardless of the size of the investment. Persons who are proposing relevant acquisitions or transactions may be required to provide notice to the Treasurer before proceeding with the acquisition or transaction, and may be required to register their interest on the Register of Foreign Ownership of Australian Assets.

The Treasurer has the power to order divestment in cases where relevant acquisitions or transactions have already occurred, including where prior notice to the Treasurer was not required. The Takeovers Act does not affect the rights of owners whose interests are held in compliance with the legislation.

Limitations on voting and shareholding

Except for the provisions of the Takeovers Act, there are no limitations imposed by law, Rio Tinto plc's Articles of Association or Rio Tinto Limited's Constitution, on the rights of non-residents or foreigners to hold the Group's ordinary shares or ADRs, or to vote that would not apply generally to all shareholders.

Directors

Appointment and removal of Directors

The appointment and replacement of Directors is governed by Rio Tinto plc's Articles of Association and Rio Tinto Limited's Constitution, relevant UK and Australian legislation, and the UK Corporate Governance Code. The Board may appoint a Director either to fill a casual vacancy or as an addition to the Board, so long as the total number of Directors does not exceed the limit prescribed in these constitutional documents. An appointed Director must retire and seek election to office at the next AGM of each company. In addition to any powers of removal conferred by the UK *Companies Act 2006* and the Australian *Corporations Act 2001*, the company may by ordinary resolution remove any Director before the expiry of his or her period of office and may, subject to these constitutional documents, by ordinary resolution appoint another person who is willing to act as a Director in their place. In line with the UK *Corporate Governance Code*, all Directors are required to stand for re-election at each AGM.

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Directors' powers

The Board manages the business of Rio Tinto under the powers set out in these constitutional documents. These powers include the Directors' ability to issue or buy back shares. Shareholders' authority to empower the Directors to purchase its own ordinary shares is sought at the AGM each year. The constitutional documents can only be amended, or replaced, by a special resolution passed in general meeting by at least 75% of the votes cast.

UK listing rules cross-reference table

The following table contains only those sections of UK listing rule 6.6.1 which are relevant. The remaining sections of listing rule 6.6.1 are not applicable.

UK Listing rule	Description of listing rule	Reference in report
6.6.1 (1)	A statement of any interest capitalised by the Group during the year	Note 9 Finance income and finance costs.
6.6.1 (11)	Details of any arrangement under which a shareholder has waived or agreed to waive any dividends	See page 147.

Metal prices and exchange rates

Metal prices – average for the year		2024	2023	Increase/ (Decrease)
Copper	– US cents/lb	**415**	386	8 %
Aluminium	– $/tonne	**2,419**	2,250	8 %
Gold	– $/troy oz	**2,386**	1,941	23 %

Average exchange rates against the US dollar			
Sterling	**1.28**	1.24	3 %
Australian dollar	**0.66**	0.66	(1)%
Canadian dollar	**0.73**	0.74	(1)%
Euro	**1.08**	1.08	— %
South African rand	**0.055**	0.054	1 %

Year-end exchange rates against the US dollar			
Sterling	**1.25**	1.28	(2)%
Australian dollar	**0.62**	0.69	(9)%
Canadian dollar	**0.70**	0.76	(8)%
Euro	**1.04**	1.11	(7)%
South African rand	**0.053**	0.054	(2)%

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Financial calendar

2025		
16	January	Fourth quarter 2024 operations review
30	January	Closing date for receipt of nominations for candidates other than those recommended by the Board to be elected as directors at the 2025 annual general meetings
19	February	Announcement of results for 2024
6	March	Rio Tinto plc and Rio Tinto Limited ordinary shares quoted "ex-dividend" for the 2024 final dividend
7	March	Rio Tinto plc ADRs quoted "ex-dividend" for the 2024 final dividend
7	March	Record date for the 2024 final dividend for Rio Tinto plc and Rio Tinto Limited ordinary shares and Rio Tinto plc ADRs
27	March	Final date for elections under the Rio Tinto plc and Rio Tinto Limited dividend reinvestment plans and under facilities for dividends to be paid in alternative currency for the 2024 final dividend
3	April	Annual general meeting for Rio Tinto plc, UK
8	April	Dividend currency conversion date
16	April	First quarter 2025 operations review
17	April	Payment date for the 2024 final dividend to holders of ordinary shares and ADRs
1	May	Annual general meeting for Rio Tinto Limited, Australia
16	July	Second quarter operations review 2025
30	July	Announcement of half-year results for 2025
14	August	Rio Tinto plc and Rio Tinto Limited ordinary shares quoted "ex-dividend" for the 2025 interim dividend
15	August	Rio Tinto plc ADRs quoted "ex-dividend" for the 2025 interim dividend
15	August	Record date for the 2025 interim dividend for Rio Tinto plc and Rio Tinto Limited ordinary shares and Rio Tinto plc ADRs
4	September	Final date for elections under the Rio Tinto plc and Rio Tinto Limited dividend reinvestment plans and under facilities for dividends to be paid in alternative currency for the 2025 interim dividend
16	September	Dividend currency conversion date
25	September	Payment date for the 2025 interim dividend to holders of ordinary shares and ADRs
16	October	Third quarter 2025 operations review

Cautionary statement about forward-looking statements

This report includes "forward-looking statements" within the meaning of the *Private Securities Litigation Reform Act of 1995*. All statements other than statements of historical facts included in this report, including, without limitation, those regarding Rio Tinto's financial position, business strategy, plans and objectives of management for future operations (including development plans and objectives relating to Rio Tinto's products, production forecasts, and reserve and resource positions), are forward-looking statements. The words "intend", "aim", "project", "anticipate", "estimate", "plan", "believes", "expects", "may", "should", "will", "target", "set to" or similar expressions, commonly identify such forward-looking statements.

Such forward-looking statements involve known and unknown risks, uncertainties and other factors which may cause the actual results, performance or achievements of Rio Tinto, or industry results, to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements. Such forward-looking statements are based on numerous assumptions regarding Rio Tinto's present and future business strategies and the environment in which Rio Tinto will operate in the future. Among the important factors that could cause Rio Tinto's actual results, performance or achievements to differ materially from those in the forward-looking statements include, but are not limited to: an inability to live up to Rio Tinto's values and any resultant damage to its reputation; the impacts of geopolitics on trade and investment; the impacts of climate change and the transition to a low-carbon future; an inability to successfully execute and/or realise value from acquisitions and divestments; the level of new ore resources, including the results of exploration programs and/or acquisitions; disruption to strategic partnerships that play a material role in delivering growth, production, cash or market positioning; damage to Rio Tinto's relationships with communities and governments; an inability to attract and retain requisite skilled people; declines in commodity prices and adverse exchange rate movements; an inability to raise sufficient funds for capital investment; inadequate estimates of ore resources and reserves; delays or overruns of large and complex projects; changes in tax regulation; changes in environmental, social and governance reporting standards; safety incidents or major hazard events; cyber breaches; physical impacts from climate change; the impacts of water scarcity; natural disasters; an inability to successfully manage the closure, reclamation and rehabilitation of sites; the impacts of civil unrest; breaches of Rio Tinto's policies, standards and procedures, laws or regulations; trade tensions between the world's major economies; increasing societal and investor expectations, in particular with regard to environmental, social and governance considerations; the impacts of technological advancements; and such other risks identified in Rio Tinto's most recent *Annual Report* and accounts in Australia and the United Kingdom and the most recent annual report on Form 20-F filed with the SEC or Form 6-Ks furnished to, or filed with, the SEC. Forward-looking statements should, therefore, be construed in light of such risk factors and undue reliance should not be placed on forward-looking statements. These forward-looking statements speak only as of the date of this report. Rio Tinto expressly disclaims any obligation or undertaking (except as required by applicable law, the UK Listing Rules, the Disclosure Guidance and Transparency Rules of the Financial Conduct Authority and the Listing Rules of the Australian Securities Exchange) to release publicly any updates or revisions to any forward-looking statement contained herein to reflect any change in Rio Tinto's expectations with regard thereto or any change in events, conditions or circumstances on which any such statement is based.

Nothing in this report should be interpreted to mean that future earnings per share of Rio Tinto plc or Rio Tinto Limited will necessarily match or exceed its historical published earnings per share.

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Investor Centre

Investor Centre is Computershare's free, secure, self-service website, where shareholders can manage their holdings online. The website enables shareholders to:

- View share balances
- Change address details
- View payment and tax information
- Update payment instructions

In addition, shareholders who register their email address can be notified electronically of events such as annual general meetings, and can receive shareholder communications such as the *Annual Report* or notice of meeting electronically.

Rio Tinto plc shareholders

Website: investorcentre.co.uk

Rio Tinto Limited shareholders

Website: www-au.computershare.com/Investor

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