

## Rio Tinto releases second quarter production results

16 July 2024

Rio Tinto Chief Executive Jakob Stausholm said: "Our operational performance continues to progress. While there are still significant improvements ahead, we are beginning to see a step-change in production, including from our Queensland bauxite business following the roll-out of the Safe Production System.

"We are growing with discipline in the materials the world needs for the energy transition. Construction of the Simandou high grade iron ore project in Guinea is advancing at pace, the ramp up of the Oyu Tolgoi underground is on track and we are set to achieve first production from the Rincon starter plant by the end of the year.

"We continue to prioritise the decarbonisation of our business, announcing the installation of carbon free aluminium smelting cells using ELYSIS technology at our Arvida smelter in Quebec and an investment in a R&D facility to test our low-carbon ironmaking process, Biolron, in Western Australia. We also signed 20-year electricity arrangements backed by renewable electricity to secure the future of the Tiwai Point aluminium smelter in New Zealand.

"As we progress against our four objectives and strategy, we have a clear long-term pathway to profitable growth and continued attractive shareholder returns."

Production*		Q2 2024	vs Q2 2023	vs Q1 2024	H1 2024	vs H1 2023
Pilbara iron ore shipments (100% basis)	Mt	80.3	+2%	+3%	158.3	-2%
Pilbara iron ore production (100% basis)	Mt	79.5	-2%	+2%	157.4	-2%
Bauxite	Mt	14.7	+9%	+10%	28.1	+10%
Aluminium**	kt	824	+1%	0%	1,650	+3%
Mined copper (consolidated basis)	kt	171	+18%	+10%	327	+13%
Titanium dioxide slag	kt	238	-22%	-6%	492	-16%
IOC*** iron ore pellets and concentrate	Mt	2.2	+6%	-16%	4.8	+5%

\* Rio Tinto share unless otherwise stated

\*\* Includes primary aluminium only

\*\*\* Iron Ore Company of Canada

### Q2 2024 operational highlights and other key announcements

- Our all injury frequency rate for the second quarter was 0.32, a decrease from both the first quarter of this year (0.37) and the same period in 2023 (0.38). We continue to prioritise the health, safety and well-being of our people and the communities where we operate. During the quarter, this included undertaking mid-year safety maturity assessments at our assets, helping us to continuously evaluate and evolve our safety approach across the organisation. The investigation by the authorities into the tragic plane crash at Diavik in January 2024 is ongoing.
- In the Pilbara, we produced 79.5 million tonnes (Rio Tinto share 67.5 million tonnes) in the second quarter, 2% lower than the corresponding period of 2023. Productivity gains offset ore depletion, however production and shipping in the quarter were impacted by a train collision in mid-May, which resulted in around six days of lost rail capacity and full stockpiles at some mines. Shipments of 80.3 million tonnes (Rio Tinto share 66.2 million tonnes) were 2% higher than the second quarter of 2023, with the draw down of port stocks.
- Bauxite production of 14.7 million tonnes was 9% higher than the second quarter of 2023. The increase reflects implementation of the Safe Production System (SPS), especially at Weipa where we achieved higher plant utilisation and feed rates. As a consequence, our Group full year bauxite production guidance is expected to be around the top end of our 53 to 56 million tonne range.
- Alumina production of 1.7 million tonnes was 10% lower than the second quarter of 2023 due to the continuing impacts to our Gladstone operations from the breakage of the third-party operated Queensland Gas Pipeline in March. As a result, we have reduced our Group full year alumina production guidance to 7.0 to 7.3 million tonnes (previously 7.6 to 7.9 million tonnes). We expect gas supplies from the pipeline to return to normal levels by the end of 2024.

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- Aluminium production of 0.8 million tonnes was 1% higher than the second quarter of 2023 with our smelters continuing to demonstrate stable performance during the period.
  - On 31 May, we [announced](#) that New Zealand Aluminium Smelters (NZAS) has signed 20-year electricity arrangements that secure the future of the Tiwai Point aluminium smelter to continue competitively producing high-purity, low carbon metal, backed by renewable electricity. In a separate transaction, we entered into an agreement to acquire Sumitomo Chemical Company Limited's (SCC's) 20.64% interest in NZAS for an undisclosed price. On completion of the transaction, NZAS will be 100% owned by Rio Tinto.
  - Mined copper production of 171 thousand tonnes (consolidated basis) was 18% higher than the second quarter of 2023.
    - Kennecott was 30% higher than the second quarter of 2023 following a conveyor outage in the prior period. However, production was 1% lower than the previous quarter following changes to the mine plan to manage geotechnical risk in our mining area. These changes delayed access to pit ore and resulted in additional lower grade stockpiled material being processed. We are currently reworking our mine plan and expect to provide a further update in our Third Quarter Operations Review. Our Group full year mined copper production guidance is therefore expected to be around the bottom end of the 660 to 720 thousand tonne range.
    - Escondida was 12% higher than the second quarter of 2023 due to a 7% improvement in concentrator feed grade as mining continued into higher grade zones, together with 12% higher concentrator output.
    - Oyu Tolgoi was 23% higher than the second quarter of 2023 as the ramp-up in underground production continued in line with our long term plan, delivering a copper head grade of 2.02% (vs 1.56% in the second quarter of 2023) for the underground and an overall copper head grade of 0.61% (vs 0.52%).
  - Titanium dioxide slag production was 22% lower than the second quarter of 2023, primarily driven by weak market conditions. Whilst a furnace reconstruction is underway at our RTIT Quebec Operations, we continue to operate six out of nine furnaces in Quebec and three out of four at Richards Bay Minerals (RBM).
  - IOC production was 6% higher than the second quarter of 2023 as production rates in the prior period were impacted by wildfires. However, production was 16% down quarter-on-quarter given lower output from the mine and an annual maintenance shut in June. Shipments were 7% lower than the second quarter of 2023 due to low portside inventories.
  - In the second quarter, we continued the deployment of SPS, now reaching 26 sites. We deepened the maturity of SPS at existing sites during the quarter, with three additional sites setting new best demonstrated throughput rates (over a 90 day period). We are on track to deliver our targeted 5 million tonne production uplift at Pilbara Iron Ore in 2024.
  - Subsequent to the end of the quarter, all conditions were satisfied for Rio Tinto's investment to develop the Simandou high-grade iron ore deposit in Guinea. The transaction to enable co-development of the infrastructure is now unconditional and expected to close during the week of 15 July. Chalco Iron Ore Holdings Ltd (CIOH) has now paid its share of capital expenditures incurred or required by Simfer to progress critical works up to completion. A first payment of approximately \$410 million, for expenditures until the end of 2023, was made on 28 June 2024, and a second payment of approximately \$575 million, for 2024 expenditures, was made on 11 July 2024. These amounts settle all expenditures incurred to date.
  - We saw a cash outflow of circa \$0.7 billion from an increase in working capital in the first half of 2024. This reflected the draw down of royalties and taxes payable in the period as prices fell from late 2023, along with seasonal movements in amounts due to JV partners and employees.

All figures in this report are unaudited. All currency figures in this report are US dollars, and comments refer to Rio Tinto's share of production, unless otherwise stated.

## 2024 guidance

Rio Tinto production share, unless otherwise stated	2023 Actuals	H1 2024 Actuals	2024 Previous	2024 Current
Pilbara iron ore (shipments, 100% basis) (Mt)	331.8	158.3	323 to 338	Unchanged
Bauxite (Mt)	54.6	28.1	53 to 56	53 to 56 <sup>1</sup>
Alumina (Mt)	7.5	3.5	7.6 to 7.9	7.0 to 7.3
Aluminium (Mt)	3.3	1.7	3.2 to 3.4	Unchanged
Mined copper (consolidated basis) (kt)	620	327	660 to 720	660 to 720 <sup>2</sup>
Refined copper (kt)	175	125	230 to 260	Unchanged
Titanium dioxide slag (Mt)	1.1	0.5	0.9 to 1.1	Unchanged
IOC <sup>3</sup> iron ore pellets and concentrate (Mt)	9.7	4.8	9.8 to 11.5	Unchanged
Boric oxide equivalent (Mt)	0.5	0.2	~0.5	Unchanged

<sup>1</sup> Around the top end.

<sup>2</sup> Around the bottom end.

<sup>3</sup> Iron Ore Company of Canada continues to be reported at Rio Tinto share.

- Guidance for 2024 alumina production has been reduced to 7.0 to 7.3 million tonnes (previously 7.6 to 7.9 million tonnes), as our Gladstone operations continue to operate at reduced rates following the breakage of a third party gas pipeline in March. We expect gas supplies from the pipeline to return to normal levels by the end of 2024.
- Expectations for Pilbara iron ore shipments in 2024 remain at 323 to 338 million tonnes. SP10 levels are expected to remain elevated until replacement projects are delivered. This guidance remains subject to the timing of approvals for planned mining areas and heritage clearances.
- Iron ore shipments and bauxite production guidance remain subject to weather impacts.

### Operating costs

- Guidance for 2024 Pilbara iron ore unit cash costs is unchanged at \$21.75 to \$23.50 per tonne (based on an average A\$:US\$ exchange rate of 0.66). Pilbara iron ore unit cash costs in the first half of 2024 are expected to be towards the top end of the full year guidance range, with shipments weighted to the second half.
- Guidance for 2024 copper C1 unit costs is unchanged at 140 to 160 US cents/lb.

## Aluminium modelling

To assist with modelling of aluminium operating costs during a volatile price environment for raw materials, we provide the following breakdown and sensitivities for the alumina and aluminium metal segments (Primary Metal and Pacific Aluminium). This excludes the effect of intra and inter segment eliminations on group profit.

### Alumina refining

Production cash cost (%)	FY 23	H1 24
Bauxite	31	32
Conversion	34	39
Caustic	22	17
Energy	13	12
Total	100	100

Input costs (nominal)	H1 23 Index price	H2 23 Index price	H1 24 Index price	FY 24 Annual cost sensitivity impact on underlying EBITDA
Caustic soda <sup>1</sup> (\$/t)	424	369	376	\$11m per \$10/t
Natural gas <sup>2</sup> (\$/mmbtu)	2.54	2.79	2.21	\$4m per \$0.10/GJ
Brent oil (\$/bbl)	79.7	85.5	84	\$2m per \$10/bbl

<sup>1</sup> North East Asia FOB | <sup>2</sup> Henry Hub

### Aluminium smelting

<b>Production cash cost (%)</b>	<b>FY 23</b>	<b>HY 24</b>
Alumina	38	41
Power	18	19
Conversion	21	22
Carbon	21	16
Materials	2	2
<b>Total</b>	<b>100</b>	<b>100</b>

<b>Input costs (nominal)</b>	<b>H1 23 Index price</b>	<b>H2 23 Index price</b>	<b>H1 24 Index price</b>	<b>FY 24 Annual cost sensitivity impact on underlying EBITDA</b>
Alumina <sup>1</sup> (\$/t)	352	335	400	\$65m per \$10/t
Petroleum coke <sup>2</sup> (\$/t)	631	491	394	\$11m per \$10/t
Coal tar pitch <sup>3</sup> (\$/t)	1,386	1,130	958	\$3m per \$10/t

<sup>1</sup>Australia FOB | <sup>2</sup>US Gulf FOB | <sup>3</sup>North America FOB

## Investments, growth and development projects

- Pre-tax and pre-divestment expenditure on exploration and evaluation charged to the income statement in 2024 was \$487 million, compared with \$392 million in 2023, on the same basis (excluding Simandou spend, which was \$318 million in the first half of 2023). Approximately 24% of the spend was by central exploration, 36% by minerals (with the majority focusing on lithium), 27% by copper, 12% by iron ore and 1% by aluminium. In 2024, all qualifying expenditure relating to Simandou is being capitalised.

### Pilbara projects

- Construction of our Western Range mine is now 70% complete, with the development of the initial mining area completed during the quarter. We continue to focus on construction of the greenfield crushing and screening plant, and Paraburdoo plant tie-in, with first ore from that new system on plan for 2025.
- We continue to advance our next tranche of Pilbara mine replacement studies including Hope Downs 1 (Hope Downs 2 and Bedded Hilltop), Brockman 4 (Brockman Syncline 1), Greater Nammuldi and West Angelas projects. Early works have commenced at Hope Downs 1. Project timelines remain subject to timing of approvals and heritage clearances with the Greater Nammuldi project starting to diverge from the original development schedule.
- The Rhodes Ridge pre-feasibility study (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, is expected to be completed in 2025. First ore is expected by the end of the decade.
- The Coastal Water desalination project received State Agreement approval in May 2024 allowing for commencement of early works. The \$395 million plant will provide water to our port operations in Dampier. At full capacity, it will produce approximately 4GL/year to reduce draw from the Bungaroo aquifer to sustainable levels.

### Oyu Tolgoi underground project

- The sinking of ventilation Shafts 3 and 4 was completed in April following the breakthrough to surface. Both shafts remain on track to be commissioned in the second half of 2024.
- Construction works for the conveyor to surface continued to plan and were 97% complete at the end of the quarter. Commissioning remains on track for the second half of 2024.
- Construction works for the concentrator conversion remains on schedule. Commissioning is expected to be progressively completed from the fourth quarter of 2024 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.

### Simandou iron ore project

- Subsequent to the end of the quarter, all conditions were satisfied for Rio Tinto's investment to develop the Simandou high-grade iron ore deposit in Guinea. Our transaction to implement a joint venture to co-develop the rail and port infrastructure with Winning Consortium Simandou (WCS)<sup>1</sup> is now unconditional and expected to close during the week of 15 July.
- The Simfer mine<sup>2</sup> is on track to deliver first production in 2025, ramping up over 30 months to an annualised capacity of 60 million tonnes per year<sup>3</sup> (27 million tonnes per year Rio Tinto share).
- For the Simfer mine, work on support facilities, including camps, roads, and water and waste facilities is progressing well. With 8,500 workers on site for the Simfer mine and Simfer-managed scope of the co-developed infrastructure, the focus for the second half of the year is bulk earthworks, construction of the stockyard and rail loop, installation of early ore crushers and mobilisation of primary crusher construction teams.
- During the second quarter, for the Simfer infrastructure scope, we completed preparatory work on the bridge foundations which will be used to construct the railway spur. All infrastructure contracts have now been awarded. The focus for the Simfer scope of rail and port for the remainder of the year is to advance construction for the earthworks, tunnels, piers, culverts, transshipment vessel (TSV) wharf and port facilities.

- Biodiversity monitoring continues with several local communities, as do our rehabilitation efforts with 7,000 trees propagated in the Canga nursery. Our community commitments continue, and include two completed programs on education and land use, in addition to ten ongoing projects to promote social, infrastructure and economic development.

### Other key projects and exploration and evaluation

- At Complexe Jonquière in Quebec, Canada, AP60 expansion construction activities progressed, with the first prefabricated steel structures delivered to site. 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.
- At Kennecott, first production from the Lower Commercial Skarn (LCS) area was achieved in June 2024, marking the mine's return to underground production after more than four decades. The LCS is expected to deliver about 30,000 tonnes of mined copper through to 2027 alongside open cut operations. Activities continued on the North Rim Skarn (NRS) underground development and infrastructure. Production from the NRS is forecast to commence around mid-year 2025 with a production target of approximately 250,000 tonnes through to 2033<sup>4</sup>.
- At the Resolution Copper project in Arizona, the Ninth Circuit Court of Appeals denied Apache Stronghold's request to further hear their case to stop the land exchange between Resolution Copper and the federal government. It is anticipated that Apache Stronghold will file a petition this fall for the case to be heard by the U.S. Supreme Court. We continue to progress the Final Environmental Impact Statement (FEIS) with the United States Forest Service (USFS), but they have yet to advise on the date of re-publication. We also advanced partnership discussions with federally-recognised Native American Tribes who are part of the formal consultation process. 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.
- Rio Tinto continues to work with the Traditional Owners to progress the Winu copper-gold project, which remains subject to all of the required approvals. Drilling, studies and fieldwork to advance the key environmental permitting and Project Agreement negotiations with Nyangumarta and the Martu remain our priority.
- Nuton, Rio Tinto's copper heap leaching technology venture, continues to develop its path towards deployment, with nine partnerships in four countries: United States, Chile, Peru and Argentina. In May, Excelsior announced the execution of an agreement with Nuton to build an industrial scale demonstration heap that is expected to produce first Nuton copper in the first half of 2025.
- The Constitutional Court of Serbia has issued a decision that states the 2022 decree to abolish the Jadar project spatial plan was unconstitutional and illegal. We welcome this decision and continue to believe that the Jadar project has the potential to be a world-class lithium-borates asset that could act as a catalyst for the development of other industries and thousands of jobs for the current and future generations in Serbia. We are focused on consultation with all key stakeholders, including providing comprehensive factual information about the project. To support a public dialogue, we recently released the draft Environmental Impact Assessment studies which provide insights into the project's potential environmental impacts and the proposed mitigation actions. Independent Serbian and international experts have confirmed the Jadar project can be implemented safely in line with the highest environmental standards.
- At the Rincon lithium project in Argentina, development of the three thousand tonne per annum lithium carbonate starter plant continues to progress to plan with civil concrete work completed and all steel, cable and piping on site, and being progressively installed. An additional 400-bed camp facility has also been constructed, bringing the total number of new beds on site to 900. Commissioning planning is advancing and we continue to expect first production from the starter plant by the end of 2024. We expect to complete the feasibility study for the full-scale operation in the third quarter of 2024. We continue to engage with communities, the province of Salta and the Government of Argentina to ensure an open and transparent dialogue with stakeholders about the works underway.

<sup>1</sup> 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 the WCS mine and infrastructure projects, with WCS Holdings owning the remaining 51%. In the case of the mine, Baowu also has an option to increase to 51% during operations. After Closing, Simfer will hold 34% of the shares in the WCS infrastructure entities during construction with WCS holding the remaining 66%.

<sup>2</sup> 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 Infracore Guinée S.A.U. will deliver Simfer's scope of the co-developed rail and port infrastructure, and is, on the date of this notice, a wholly-owned subsidiary of Simfer Jersey Limited, but will be co-owned by the Guinean State (15%) after closing of the co-development arrangements. Simfer Jersey will ultimately own 42.5% of Compagnie du Transguinée, which will own and operate the co-developed infrastructure during operations.

<sup>3</sup> 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 ASX dated 6 December 2023 titled "Investor Seminar 2023". Rio Tinto confirms that all material assumptions underpinning that production target and those production profiles continue to apply and have not materially changed.

<sup>4</sup> The LCS production target of around 30 thousand tonnes of additional mined copper over the period to 2027 and the NRS production target of around 250 thousand tonnes of additional mined copper over ten years (2023 to 2033) at Kennecott were 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 targets continue to apply and have not materially changed.

## Sustainability highlights

During the second quarter, we continued to work on the Everyday Respect recommendations. As part of this, we commenced our independently led Progress Review. The outcomes will enable us to understand where our actions have had the most impact and where we need to focus on our journey of culture change to continue to create a safe, respectful and inclusive organisation. We expect to receive the final report in the fourth quarter of 2024 and will subsequently make this publicly available.

In May, we published our [2023 Statement on Modern Slavery](#), which is our eighth report under Australian modern slavery reporting legislation, our fourth report under UK legislation and our first report under Canadian legislation. The statement highlights the steps we are taking to identify and address modern slavery risks in our global business, the communities in which we operate and across our supply chains.

### Communities & Social Performance (CSP)

Key highlights from the second quarter include:

[3 April 2024 | Rio Tinto to manage the Ranger Rehabilitation Project for ERA](#)

[8 April 2024 | Yinhawangka People and Rio Tinto partner to co-design 'Living Cultures Program'](#)

[12 April 2024 | Rio Tinto celebrates WA businesses as regional and Indigenous supplier spend grows](#)

[18 April 2024 | Rio Tinto donates \\$1.5 million to support the people and community of Grindavík in Iceland](#)

[3 June 2024 | Rio Tinto marks 70 years of operations in Kitimat](#)

[5 June 2024 | Rio Tinto invests \\$8 million in Pilbara conservation land management](#)

### Climate change, product stewardship and our value chain

We continued to make progress towards our 2030 goal of a 50% reduction in emissions (Scope 1 and 2) during the quarter with the signing of 20-year electricity arrangements backed by renewable electricity at NZAS, a partnership with BHP to collaborate on battery-electric haul truck trials in the Pilbara and a new renewable energy agreement at Richards Bay Minerals. Subsequent to the end of the quarter, we also announced the construction of two new solar farms on the Gove Peninsula to secure a more sustainable power supply for our Gove operations and the region.

On steel decarbonisation, we have committed to developing a Biolron™ R&D facility in Western Australia and, in aluminium, we continue to develop and test ELYSIS™ technology, with a new demonstration plant announced at our Arvida smelter in Quebec.

Further detail on these developments, and others in the second quarter, is provided in the links below:

[10 April 2024 | Rio Tinto to invest in the world's best technology startups](#)

[12 April 2024 | Rio Tinto spends more than A\\$16.1 billion with suppliers in Australia](#)

[14 May 2024 | Rio Tinto IOC recognized with Towards Sustainable Mining \(TSM\) Environmental Excellence Award](#)

[27 May 2024 | Rio Tinto and BHP collaborate on battery-electric haul truck trials in the Pilbara](#)

[31 May 2024 | Long-term future for New Zealand's Tiwai Point aluminium smelter secured with new power deal](#)

[4 June 2024 | Rio Tinto to develop Biolron™ R&D facility in Western Australia to test low-carbon steelmaking](#)

[6 June 2024 | Richards Bay Minerals signs agreement for an additional 140 MW of renewable energy](#)

[28 June 2024 | Rio Tinto to install carbon free aluminium smelting cells using first ELYSIS™ technology licence](#)

[3 July 2024 | Two new solar farms for Gove Peninsula as Rio Tinto works to secure more sustainable power](#)

## Our markets

The global economy remains resilient – industrial production is recovering, China's manufacturing growth is intact and the outlook for the US economy has improved through the year. Geopolitical tensions and monetary policy settings remain near-term global economic risks.

- China's economy continues to be supported by a manufacturing recovery and more resilient exports. The government has provided additional measures for the property market to destock the large inventory overhang; however, housing activity remains weak. Disinflation pressures persist amidst muted domestic demand, while manufacturing faces risks of overcapacity in some sectors and increasing tariffs from external markets.
- The US services sector continued to outperform manufacturing, with healthy consumer spending and modest construction investment. The labour market, resilient in the first half, is showing early signs of weakening. Similarly, latest inflation data shows further moderation, providing leeway for interest rate cuts in the second half.
- The eurozone economic outlook remains uncertain. The pace of recovery is uneven, with Germany lagging given weakness in its manufacturing sector. The eurozone monthly composite PMI expanded consecutively during the quarter, but this has been driven by services, as manufacturing PMIs continue to be in contraction for most countries in the region.
- Iron ore prices increased by 4% over the quarter, while the average monthly price in the second quarter of \$112/dmt (Platts CFR 62% Fe index) was 9% lower than the first quarter. In the two-month period of April to May, China's crude steel production contracted by 5% year-on-year, despite a 16% year-on-year increase in its steel exports. As a result, domestic steel consumption in the period declined by 7% year-on-year from the corresponding two-month period of 2023. Meanwhile, strong seaborne supply maintained China's monthly average iron ore imports at almost 110 million tonnes in the quarter and portside inventories increased by 5 million tonnes to 149 million tonnes during the period. Lump premiums recovered strongly during the same period, while iron ore fines price relativities widened.
- The LME aluminium price increased by 9% over the quarter, while the average price rose 15% from the first quarter to \$2,520/t. Aluminium demand growth eased in the US and Canada and stabilised in Europe, albeit at a low level. On the supply side, Chinese smelting production rose to an annualised rate of over 43 million tonnes in June, following restarts in Yunnan province and commissioning of new capacity, and is now close to the 45 million tonne cap. Global reported aluminium inventories increased over the quarter, but remain at low levels historically, supporting market premiums. Alumina prices rose firmly over the quarter on refinery disruptions outside China and constrained bauxite supply to refineries in China. Chinese import bauxite prices remained strong on firm demand.
- The LME copper price increased by 9% over the quarter, with the average price up 16% quarter-on-quarter to \$4.42/lb. Chinese copper demand growth slowed moderately into the second quarter, as rising prices temporarily hit demand. Elsewhere, demand has stabilised in developed markets, with a notable decline in US inventories. Globally, exchange inventories have increased but remain low on a historic basis. The copper concentrate market remains tight, which is reflected in historically low smelting and refining charges (TCRCs).
- Lithium prices remained subdued over the second quarter as demand growth continues to slow from very high rates amid robust supply growth in key producing countries. In the first five months of this year, global EV sales rose 21% year-on-year, compared to 40% over the same period in 2023. Europe and the US witnessed particularly weak growth (up ~6% year-on-year) due to the pull-back in EV subsidies and a high interest rate environment. On the supply side, upstream inventories are building and projects in Africa, Australia and China continue to progress despite softening lithium prices.
- Underlying demand for titanium dioxide feedstocks remains soft, especially from paints and coatings due to weak property markets. Inventory is building downstream after re-stocking in the first quarter and early second quarter. The European Commission proceeded with provisional anti-dumping duties against Chinese titanium dioxide importers. The proposal to impose close to 40% duties on Chinese titanium dioxide may curtail exports to the EU, but is likely to push more Chinese exports into other markets, particularly Asia. Meanwhile, temporary pigment production outages in May and June resulted in lower feedstock consumption.

- The borates market is recovering from supply chain disruptions surrounding the Red Sea and is returning to a well-supplied position. Some sectors are showing signs of gradual recovery, including South American agriculture and industrial-related applications (textile, fibreglass). Demand from the US construction sector has been robust to date, while demand from China's construction sector remains weak.

*Average realised prices achieved for our major commodities*

	Units	H1 2024	Q2 2024	Q1 2024	H1 2023	2023
Pilbara iron ore	FOB, \$/wmt	<b>97.3</b>	<b>92.1</b>	102.6	98.6	99.7
Pilbara iron ore*	FOB, \$/dmt	<b>105.8</b>	<b>100.1</b>	111.5	107.2	108.4
Aluminium**	Metal \$/t	<b>2,746</b>	<b>2,910</b>	2,587	2,866	2,738
Copper***	US c/lb	<b>419</b>	<b>446</b>	387	396	390
IOC pellets	FOB \$/wmt	<b>153.9</b>	<b>147.7</b>	159.9	154.7	155.0

\*Assuming 8% moisture.

\*\*LME plus all-in premiums (product and market).

\*\*\*Average realised price for all units sold. Realised price does not include the impact of the provisional pricing adjustments, which positively impacted revenues in the first half by \$93 million (first half 2023 negative impact of \$10 million).

## Iron Ore

Rio Tinto share of production (Million tonnes)	Q2 2024	vs Q2 2023	vs Q1 2024	H1 2024	vs H1 2023
Pilbara Blend and SP10 Lump <sup>1</sup>	20.8	-1%	+5%	40.7	0%
Pilbara Blend and SP10 Fines <sup>1</sup>	31.3	-1%	+5%	61.1	-2%
Robe Valley Lump	1.5	+4%	+1%	3.1	+17%
Robe Valley Fines	2.6	+10%	-3%	5.4	+22%
Yandicoogina Fines (HIY)	11.2	-5%	-7%	23.4	-9%
Total Pilbara production	67.5	-2%	+2%	133.6	-2%
Total Pilbara production (100% basis)	79.5	-2%	+2%	157.4	-2%

Rio Tinto share of shipments (Million tonnes)	Q2 2024	vs Q2 2023	vs Q1 2024	H1 2024	vs H1 2023
Pilbara Blend Lump	12.5	-15%	-3%	25.3	-17%
Pilbara Blend Fines	24.7	-10%	+7%	47.9	-15%
Robe Valley Lump	1.3	+16%	+9%	2.6	+16%
Robe Valley Fines	3.1	+24%	+5%	6.0	+27%
Yandicoogina Fines (HIY)	11.4	-10%	-7%	23.6	-10%
SP10 Lump <sup>1</sup>	5.1	+207%	+13%	9.5	+186%
SP10 Fines <sup>1</sup>	8.2	+24%	-11%	17.4	+30%
Total Pilbara shipments <sup>2</sup>	66.2	-1%	0%	132.3	-3%
Total Pilbara shipments (100% basis) <sup>2</sup>	80.3	+2%	+3%	158.3	-2%
Total Pilbara Shipments (consolidated basis) <sup>2,3</sup>	68.3	0%	+1%	136.2	-3%

Production figures are sometimes more precise than the rounded numbers shown, hence small rounding differences may appear.

<sup>1</sup> SP10 includes other lower grade products.

<sup>2</sup> Shipments includes material shipped from the Pilbara to our portside trading facility in China which may not be sold onwards by the group in the same period.

<sup>3</sup> While Rio Tinto has a 53% net beneficial interest in Robe River Iron Associates, it recognises 65% of the assets, liabilities, sales revenues and expenses in its accounts (as 30% is held through a 60% owned subsidiary and 35% is held through a 100% owned subsidiary). The consolidated basis sales reported here include Robe River Iron Associates on a 65% basis to enable comparison with revenue reported in the financial statements.

### Pilbara operations

We produced 79.5 million tonnes (Rio Tinto share 67.5 million tonnes) in the second quarter, 2% lower than the corresponding period of 2023. Productivity gains offset ore depletion, however production and shipping in the quarter were impacted by a train collision in mid-May, which resulted in around six days of lost rail capacity and full stockpiles at some mines.

Shipments of 80.3 million tonnes (Rio Tinto share 66.2 million tonnes) were 2% higher than the second quarter of 2023, with the draw down of port stocks. SP10 volumes accounted for 17%<sup>1</sup> of shipments in the second quarter, in line with the first quarter of 2024.

Approximately 10% of sales in the second quarter were priced by reference to the prior quarter's average index lagged by one month. The remainder was sold either on current quarter average, current month average, average of two months, forward month or on the spot market. Approximately 25% of sales in the second quarter were made on a free on board (FOB) basis, with the remainder sold including freight.

Achieved average pricing in the first half of 2024 was \$97.3 per wet metric tonne (\$98.6 in the first half of 2023) on an FOB basis (equivalent to \$105.8 per dry metric tonne, with an 8% moisture assumption). This compares to the average first half price for the monthly average Platts index for 62% iron fines converted to a FOB basis of \$106.0 per dry metric tonne.

## China Portside Trading

Our iron ore portside sales in China were 14.0 million tonnes in the first half of 2024 (11.9 million tonnes in the first half of 2023). At the end of June, inventory levels were 6.1 million tonnes (6.4 million tonnes at the end of December 2023), including 3.2 million tonnes of Pilbara product. In the first half of 2024, approximately 90% of our portside sales were either screened or blended in Chinese ports.

<sup>1</sup> Based on total Pilbara shipments on a 100% basis.

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## Aluminium

Rio Tinto share of production ('000 tonnes)	Q2 2024	vs Q2 2023	vs Q1 2024	H1 2024	vs H1 2023
Bauxite	14,723	+9%	+10%	28,142	+10%
Bauxite third party shipments	10,691	+17%	+26%	19,187	+13%
Alumina	1,676	-10%	-10%	3,540	-5%
Aluminium	824	+1%	0%	1,650	+3%
Recycled aluminium	70	n/a	-6%	144	n/a

### Bauxite

Bauxite production of 14.7 million tonnes was 9% higher than the second quarter of 2023. The increase reflects implementation of the Safe Production System, especially at Weipa where we achieved higher plant utilisation and feed rates. As a consequence, our Group full year bauxite production guidance is expected to be around the top end of our 53 to 56 million tonne range.

We shipped 10.7 million tonnes of bauxite to third parties in the second quarter, 17% higher than the same period of 2023.

### Alumina

Alumina production of 1.7 million tonnes was 10% lower than the second quarter of 2023 due to the continuing impacts to our Gladstone operations from the breakage of the third-party operated Queensland Gas Pipeline in March. Gas supplies are currently meeting ~90% of our requirements and are expected to return to normal levels by the end of 2024. As a result, we have reduced our Group full year alumina production guidance to 7.0 to 7.3 million tonnes (previously 7.6 to 7.9 million tonnes).

The gas pipeline outage has reduced our third party sales but there has been no impact on our aluminium production. As a result, our net long alumina position in the first half of 2024 was only 0.1 million tonnes.

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

Aluminium production of 0.8 million tonnes was 1% higher than the second quarter of 2023. Our smelters continued to demonstrate stable performance during the quarter, with ISAL returning to 100% capacity after reducing its electricity load following volcanic eruptions in the prior quarter.

Average realised aluminium prices including premiums for value-added products (VAP) decreased 4% to \$2,746 per tonne in the first half of 2024 (first half 2023: \$2,866 per tonne). The LME price increased by 1% to \$2,358 per tonne (first half 2023: \$2,329 per tonne), whilst the mid-west premium duty paid declined 28% to \$417 per tonne in the first half of 2024 (first half 2023: \$583 per tonne), which is 59% of our total volumes (56% in the first half of 2023). Our VAP sales decreased to 45% of primary metal sold in the first half of 2024 (first half 2023: 47%). Product premiums for VAP sales decreased, averaging \$287 per tonne of VAP sold (first half 2023: \$377 per tonne).

On 11 June, we [announced](#) that we will acquire Mitsubishi Corporation's 11.65% interest in Boyne Smelters Ltd (BSL), which owns and operates the Boyne Island aluminium smelter. Earlier in the quarter, we also [announced](#) that we will acquire SCC's 2.46% interest in BSL. On completion of these transactions, Rio Tinto's interest in BSL will increase to 73.5%.

In addition, on 18 June, we [announced](#) that we will invest \$165 million in our Grande-Baie smelter to refurbish two anode baking furnaces that have reached the end of their useful life.

### Recycled aluminium

Rio Tinto's share of production from Matalco was 70 thousand tonnes in the second quarter (139 thousand tonnes on a 100% basis), as production was impacted by weak market conditions in North America. Full year 2023 production from Matalco was 582 thousand tonnes (on a 100% basis) of recycled aluminium products.

## Copper

Rio Tinto share of production ('000 tonnes)	Q2 2024	vs Q2 2023	vs Q1 2024	H1 2024	vs H1 2023
<b>Mined copper</b>					
Kennecott	32.3	+30%	-1%	64.8	+18%
Escondida	86.4	+12%	+12%	163.5	+9%
Oyu Tolgoi (66% basis)	34.7	+23%	+14%	65.1	+15%
Total mined copper production	153.3	+17%	+9%	293.4	+12%
Total mined copper production (consolidated basis <sup>1</sup> )	171.2	+18%	+10%	326.9	+13%
<b>Refined copper</b>					
Kennecott	47.5	+229%	-1%	95.3	+64%
Escondida	15.2	-30%	+3%	29.9	-19%

<sup>1</sup> Includes Oyu Tolgoi and Kennecott on a 100% consolidated basis, and Escondida on an equity share basis.

### Kennecott

Mined copper production was 30% higher than the second quarter of 2023 following a conveyor outage in the prior period. However, production was 1% lower than the previous quarter following changes to the mine plan to manage geotechnical risk in our mining area. These changes delayed access to pit ore and resulted in additional lower grade stockpiled material being processed. The change in ore type also impacted recoveries. We are currently reworking our mine plan and expect to provide a further update in our Third Quarter Operations Review. Our Group full year mined copper production guidance is therefore expected to be around the bottom end of our 660 to 720 thousand tonne range.

Refined copper production was 229% higher than the second quarter of 2023 and 1% lower than the prior quarter. The smelter continued normal operations, processing both material from the mine and concentrate inventory, following the largest rebuild of the smelter and refinery in Kennecott's history in 2023.

### Escondida

Mined copper production was 12% higher than the second quarter of 2023 due to a 7% improvement in concentrator feed grade to 0.99% (0.93% in second quarter of 2023) as mining continued into higher grade zones, together with 12% higher concentrator output. Refined copper production was 30% lower than the same quarter of last year due to lower oxide ore grade and lower sulphide ore stacking.

### Oyu Tolgoi

Mined copper production increased 23% from the second quarter of 2023. We continue to see good performance from the underground mine, with a total of 114 drawbells opened from Panel 0, including 14 during the quarter.

During the quarter, we delivered 1.5 million tonnes of ore milled from the underground mine at an average copper head grade of 2.02% and 9.3 million tonnes from the open pit with an average grade of 0.37%. This 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<sup>1</sup>.

We expect to enter negotiations on a new Collective Labour Agreement in the second half of the year. Our current agreement expires in April 2025.

<sup>1</sup> The 500 thousand tonnes per annum 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 ASX dated 11 July 2023 "[Investor site visit to Oyu Tolgoi copper mine, Mongolia](#)". All material assumptions underpinning that production target and those production profiles continue to apply and have not materially changed.

## Minerals

Rio Tinto share of production (million tonnes)	Q2 2024	vs Q2 2023	vs Q1 2024	H1 2024	vs H1 2023
<b>Iron ore pellets and concentrate</b>					
IOC	2.2	+6%	-16%	4.8	+5%
<b>Rio Tinto share of production ('000 tonnes)</b>					
<b>Minerals</b>					
Borates - B <sub>2</sub> O <sub>3</sub> content	125	-6%	+3%	246	-4%
Titanium dioxide slag	238	-22%	-6%	492	-16%
<b>Rio Tinto share of production ('000 carats)</b>					
Diavik	702	-28%	-5%	1,441	-25%

### Iron Ore Company of Canada (IOC)

Iron ore production was 6% higher than the second quarter of 2023, as production rates in the prior period were impacted by wildfires. However, production was 16% down quarter-on-quarter given lower output from the mine and an annual maintenance shut in June. Production is expected to be weighted to the second half of 2024 supported by seasonal factors.

Shipments were 7% lower than the second quarter of 2023 due to low portside inventories.

### Borates

Borates production in the second quarter was 6% lower than the corresponding period of 2023 but 3% higher than the previous quarter. Second quarter production rates benefited from improved market demand and the re-start of the plant during the first quarter, following completion of a scheduled shut in December. These impacts were partially offset by unplanned plant downtime in April.

### Iron and Titanium

Titanium dioxide slag production was 22% lower than the second quarter of 2023, primarily driven by weak market conditions. Whilst a furnace reconstruction is underway at our RTIT Quebec Operations, we continue to operate six out of nine furnaces in Quebec and three out of four at Richards Bay Minerals (RBM).

### Diamonds

At Diavik, carat production was 28% lower than the second quarter of 2023. Production was impacted by the tragic plane crash earlier in the year, as well as cessation of A21 open pit mining in the third quarter of 2023.

## Exploration and evaluation

Pre-tax and pre-divestment expenditure on exploration and evaluation charged to the income statement in 2024 was \$487 million, compared with \$392 million in 2023 on the same basis (excluding Simandou, where spend for the first half of 2023 was \$318m). Approximately 24% of the spend was by central exploration, 36% by minerals (with the majority focusing on lithium), 27% by copper, 12% by iron ore and 1% by aluminium. In 2024, all qualifying expenditure relating to Simandou has been capitalised.

### Exploration highlights

Rio Tinto has a strong portfolio of projects with activity in 18 countries across eight commodities in early exploration and studies stages. The bulk of the exploration expenditure in the second quarter focused on copper in Chile, Kazakhstan and Serbia, nickel in Brazil and Canada, lithium in Canada, US, Chile, Rwanda and Australia, potash in Canada and heavy mineral sands (HMS) in South Africa and Rwanda. Rio Tinto operated Nuevo Cobre joint venture copper project in Chile continues to make good progress, with geological field programs, environmental studies and community engagement ongoing. Mine-lease exploration continued at Rio Tinto managed businesses including Bingham Canyon in the US and Pilbara Iron Ore in Australia.

A summary of activity for the quarter is as follows:

Commodities	Studies Stage	Advanced projects	Greenfield/ Brownfield programs
<b>Bauxite</b>			Cape York, Australia
<b>Battery Materials</b>	Rincon Lithium, Argentina Lithium borates: Jadar, Serbia Nickel: Tamarack, US (3rd party operated)		Nickel Greenfield: Australia, Brazil, Canada, Finland Lithium Greenfield: Australia, Brazil, Canada, Chile, China, Finland, Rwanda, US
<b>Copper</b>	Copper/molybdenum: Resolution, US Copper/Gold: Winu, Australia	Copper: La Granja, Peru (3rd party operated)	Copper Greenfield: Angola, Australia, Brazil, Canada, Chile, China, Colombia, Kazakhstan, Laos, Peru, Papua New Guinea, Serbia, US, Zambia Copper Brownfield: US (Bingham), Australia (Winu)
<b>Diamonds</b>		Chiri, Angola	
<b>Iron Ore</b>	Pilbara, Australia	Pilbara, Australia	Greenfield and Brownfield: Pilbara, Australia
<b>Minerals</b>	Potash: KL262 (3rd party operated), Canada HMS: Mutamba, Mozambique	Texas, Canada (potash), Kamiesberg, South Africa (HMS) (3rd party operated), Kasiya, Malawi (rutile-graphite) (3rd party operated)	

## Forward-looking statement

This announcement 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 statement.

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, particularly in light of the current economic climate and the significant volatility, uncertainty and disruption arising in connection with the Ukraine conflict. 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; 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; the impacts of the Ukraine conflict; breaches of Rio Tinto’s policies, standard 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 United States Securities and Exchange Commission (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 announcement 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. Past performance cannot be relied on as a guide to future performance.

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This announcement is authorised for release to the market by Andy Hodges, Rio Tinto's Group Company Secretary.

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Classification: 3.1 Additional regulated information required to be disclosed under the laws of a Member State

# Rio Tinto production summary

## Rio Tinto share of production

		Quarter			Half Year		% change		
		2023 Q2	2024 Q1	<b>2024 Q2</b>	2023 H1	<b>2024 H1</b>	Q2 24 vs Q2 23	Q2 24 vs Q1 24	H1 2024 vs H1 2023
<b>Principal commodities</b>									
Alumina	('000 t)	1,861	1,864	<b>1,676</b>	3,720	<b>3,540</b>	-10%	-10%	-5%
Aluminium (Primary)	('000 t)	814	826	<b>824</b>	1,598	<b>1,650</b>	+1%	0%	+3%
Bauxite	('000 t)	13,492	13,418	<b>14,723</b>	25,581	<b>28,142</b>	+9%	+10%	+10%
Borates	('000 t)	133	121	<b>125</b>	257	<b>246</b>	-6%	+3%	-4%
Copper - mined (consolidated)	('000 t)	145.0	155.8	<b>171.2</b>	290.2	<b>326.9</b>	+18%	+10%	+13%
Copper - refined	('000 t)	36.2	62.5	<b>62.7</b>	95.0	<b>125.2</b>	+73%	0%	+32%
Iron Ore	('000 t)	70,632	68,701	<b>69,712</b>	140,416	<b>138,413</b>	-1%	+1%	-1%
Titanium dioxide slag	('000 t)	303	254	<b>238</b>	589	<b>492</b>	-22%	-6%	-16%
<b>Other Metals &amp; Minerals</b>									
Diamonds	('000 cts)	970	740	<b>702</b>	1,924	<b>1,441</b>	-28%	-5%	-25%
Gold - mined	('000 oz)	61.4	66.6	<b>67.1</b>	125.7	<b>133.6</b>	+9%	+1%	+6%
Gold - refined	('000 oz)	19.2	35.3	<b>39.7</b>	41.2	<b>75.0</b>	+107%	+12%	+82%
Molybdenum	('000 t)	0.3	0.7	<b>0.6</b>	0.4	<b>1.3</b>	+102%	-12%	+206%
Salt	('000 t)	1,652	1,425	<b>1,540</b>	3,101	<b>2,965</b>	-7%	+8%	-4%
Silver - mined	('000 oz)	775	973	<b>1,072</b>	1,710	<b>2,046</b>	+38%	+10%	+20%
Silver - refined	('000 oz)	329	550	<b>606</b>	761	<b>1,156</b>	+84%	+10%	+52%

Throughout this report, figures in italics indicate adjustments made since the figure was previously quoted on the equivalent page or reported for the first time. Production figures are sometimes more precise than the rounded numbers shown, hence small differences may result between the total of the quarter figures and the year to date figures.

# Rio Tinto share of production

	Rio Tinto interest	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	H1 2023	H1 2024
<b>ALUMINA</b>								
<b>Production ('000 tonnes)</b>								
Jonqui�re (Vaudreuil)	100 %	346	325	349	352	328	717	681
Jonqui�re (Vaudreuil) specialty Alumina plant	100 %	27	28	29	27	30	51	57
Queensland Alumina	80 %	677	720	664	675	602	1,309	1,277
S�o Luis (Alumar)	10 %	66	88	90	87	93	159	179
Yarwun	100 %	745	736	786	722	624	1,483	1,346
<b>Rio Tinto total alumina production</b>		<b>1,861</b>	<b>1,897</b>	<b>1,919</b>	<b>1,864</b>	<b>1,676</b>	<b>3,720</b>	<b>3,540</b>
<b>ALUMINIUM</b>								
<b>Primary production ('000 tonnes)</b>								
Australia - Bell Bay	100 %	46	47	47	47	47	92	93
Australia - Boyne Island	59 %	73	76	76	75	75	143	150
Australia - Tomago	52 %	75	77	77	73	75	150	148
Canada - six wholly owned	100 %	389	398	410	405	399	756	804
Canada - Alouette (Sept-�les)	40 %	63	64	64	63	63	126	126
Canada - B�cancour	25 %	29	28	30	29	30	58	59
Iceland - ISAL (Reykjavik)	100 %	52	52	54	49	50	103	99
New Zealand - Tiwai Point	79 %	66	66	67	66	65	132	131
Oman - Sohar	20 %	20	20	20	20	20	39	40
<b>Rio Tinto total primary aluminium production</b>		<b>814</b>	<b>828</b>	<b>846</b>	<b>826</b>	<b>824</b>	<b>1,598</b>	<b>1,650</b>
<b>Recycled production ('000 tonnes)</b>								
Matalco	50 %	—	—	—	74	70	—	144
<b>Rio Tinto total recycled aluminium production</b>		<b>—</b>	<b>—</b>	<b>—</b>	<b>74</b>	<b>70</b>	<b>—</b>	<b>144</b>
<b>BAUXITE</b>								
<b>Production ('000 tonnes) (a)</b>								
Gove	100 %	2,739	3,015	3,234	3,104	3,172	5,317	6,276
Porto Trombetas (b)	22 %	327	391	509	508	667	601	1,176
Sangaredi	(c)	1,614	1,524	1,544	1,583	1,622	3,358	3,204
Weipa	100 %	8,813	9,010	9,811	8,224	9,262	16,304	17,486
<b>Rio Tinto total bauxite production</b>		<b>13,492</b>	<b>13,940</b>	<b>15,098</b>	<b>13,418</b>	<b>14,723</b>	<b>25,581</b>	<b>28,142</b>

(a) Mine production figures for metals refer to the total quantity of metal produced in concentrates, leach liquor or dor  bullion irrespective of whether these products are then refined onsite, except for the data for bauxite and iron ore which represent production of marketable quantities of ore plus concentrates and pellets.

(b) 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.

(c) Rio Tinto has a 22.95% shareholding in the Sangaredi mine but benefits from 45.0% of production.

# Rio Tinto share of production

	Rio Tinto interest	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	H1 2023	H1 2024
<b>BORATES</b>								
<b>Production ('000 tonnes B<sub>2</sub>O<sub>3</sub> content)</b>								
Rio Tinto Borates - borates	100 %	133	127	111	121	125	257	246
<b>COPPER</b>								
<b>Mine production ('000 tonnes) (a)</b>								
Bingham Canyon	100 %	24.8	48.8	47.8	32.5	32.3	55.1	64.8
Escondida	30 %	77.4	78.6	71.6	77.2	86.4	149.7	163.5
Oyu Tolgoi	66 %	28.3	27.7	26.8	30.4	34.7	56.4	65.1
Rio Tinto total mine production		130.5	155.1	146.2	140.1	153.3	261.1	293.4
Rio Tinto total mine production - consolidated basis		145.0	169.4	160.0	155.8	171.2	290.2	326.9
<b>Refined production ('000 tonnes)</b>								
Escondida	30 %	21.7	15.6	14.1	14.7	15.2	37.0	29.9
Kennecott (b)	100 %	14.4	18.5	32.0	47.8	47.5	58.1	95.3
Rio Tinto total refined production		36.2	34.1	46.1	62.5	62.7	95.0	125.2

(a) 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 represent production of marketable quantities of ore plus concentrates and pellets.

(b) We continue to process third party concentrate to optimise smelter utilisation, including 1.6 thousand tonnes of cathode produced from purchased concentrate in 2024 year-to-date. Purchased and tolled copper concentrates are excluded from reported production figures and production guidance. Sales of cathodes produced from purchased concentrate are included in reported revenues.

## DIAMONDS

<b>Production ('000 carats)</b>								
Diavik	100 %	970	757	659	740	702	1,924	1,441

## GOLD

<b>Mine production ('000 ounces) (a)</b>								
Bingham Canyon	100 %	18.7	32.0	33.5	26.7	22.5	39.3	49.2
Escondida	30 %	16.1	14.4	14.6	11.7	13.6	30.7	25.3
Oyu Tolgoi	66 %	26.6	33.8	27.5	28.2	30.9	55.7	59.2
Rio Tinto total mine production		61.4	80.2	75.6	66.6	67.1	125.7	133.6
<b>Refined production ('000 ounces)</b>								
Kennecott (b)	100 %	19.2	12.4	20.6	35.3	39.7	41.2	75.0

(a) 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 represent production of marketable quantities of ore plus concentrates and pellets.

(b) We continue to process third party concentrate to optimise smelter utilisation, including 1.6 thousand tonnes of cathode produced from purchased concentrate in 2024 year-to-date. Purchased and tolled copper concentrates are excluded from reported production figures and production guidance. Sales of cathodes produced from purchased concentrate are included in reported revenues.

# Rio Tinto share of production

	Rio Tinto interest	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	H1 2023	H1 2024
<b>IRON ORE</b>								
<b>Production ('000 tonnes) (a)</b>								
Hamersley mines	(b)	55,004	57,322	59,138	53,373	<b>54,691</b>	109,437	<b>108,064</b>
Hope Downs	50 %	5,763	5,519	6,074	5,081	<b>5,044</b>	11,649	<b>10,125</b>
Iron Ore Company of Canada	59 %	2,063	2,384	2,703	2,613	<b>2,185</b>	4,589	<b>4,798</b>
Robe River - Pannawonica (Mesas J and A)	53 %	3,897	4,106	4,330	4,245	<b>4,186</b>	7,020	<b>8,431</b>
Robe River - West Angelas	53 %	3,905	3,910	4,269	3,388	<b>3,607</b>	7,721	<b>6,995</b>
<b>Rio Tinto iron ore production ('000 tonnes)</b>		<b>70,632</b>	<b>73,241</b>	<b>76,514</b>	<b>68,701</b>	<b>69,712</b>	<b>140,416</b>	<b>138,413</b>
<b>Breakdown of Production:</b>								
Pilbara Blend and SP10 Lump (c)		21,042	21,418	22,228	19,885	<b>20,828</b>	40,654	<b>40,714</b>
Pilbara Blend and SP10 Fines (c)		31,750	31,700	33,485	29,836	<b>31,277</b>	62,601	<b>61,114</b>
Robe Valley Lump		1,488	1,665	1,592	1,534	<b>1,546</b>	2,624	<b>3,080</b>
Robe Valley Fines		2,409	2,441	2,739	2,711	<b>2,640</b>	4,395	<b>5,351</b>
Yandicoogina Fines (HIY)		11,880	13,633	13,768	12,122	<b>11,235</b>	25,552	<b>23,357</b>
<b>Pilbara iron ore production ('000 tonnes)</b>		<b>68,569</b>	<b>70,857</b>	<b>73,811</b>	<b>66,088</b>	<b>67,527</b>	<b>135,827</b>	<b>133,615</b>
IOC Concentrate		1,120	1,137	1,298	1,130	<b>930</b>	2,361	<b>2,060</b>
IOC Pellets		943	1,247	1,405	1,483	<b>1,255</b>	2,228	<b>2,738</b>
<b>IOC iron ore production ('000 tonnes)</b>		<b>2,063</b>	<b>2,384</b>	<b>2,703</b>	<b>2,613</b>	<b>2,185</b>	<b>4,589</b>	<b>4,798</b>
<b>Breakdown of Shipments:</b>								
Pilbara Blend Lump		14,691	14,812	14,533	12,844	<b>12,463</b>	30,380	<b>25,307</b>
Pilbara Blend Fines		27,474	25,375	23,706	23,168	<b>24,702</b>	56,002	<b>47,870</b>
Robe Valley Lump		1,152	1,297	1,506	1,223	<b>1,337</b>	2,203	<b>2,560</b>
Robe Valley Fines		2,489	2,706	3,054	2,943	<b>3,095</b>	4,751	<b>6,038</b>
Yandicoogina Fines (HIY)		12,558	13,669	13,628	12,228	<b>11,364</b>	26,247	<b>23,592</b>
SP10 Lump (c)		1,652	4,180	4,620	4,474	<b>5,071</b>	3,338	<b>9,544</b>
SP10 Fines (c)		6,613	9,699	12,208	9,221	<b>8,218</b>	13,446	<b>17,439</b>
<b>Pilbara iron ore shipments ('000 tonnes) (d)</b>		<b>66,629</b>	<b>71,736</b>	<b>73,255</b>	<b>66,100</b>	<b>66,250</b>	<b>136,367</b>	<b>132,350</b>
<b>Pilbara iron ore shipments - consolidated basis ('000 tonnes) (d) (f)</b>		<b>68,322</b>	<b>73,553</b>	<b>75,058</b>	<b>67,910</b>	<b>68,281</b>	<b>139,827</b>	<b>136,191</b>
IOC Concentrate		1,247	1,232	1,196	1,162	<b>986</b>	2,231	<b>2,147</b>
IOC Pellets		1,352	1,066	1,369	1,493	<b>1,438</b>	2,495	<b>2,931</b>
<b>IOC Iron ore shipments ('000 tonnes) (d)</b>		<b>2,599</b>	<b>2,298</b>	<b>2,565</b>	<b>2,654</b>	<b>2,423</b>	<b>4,726</b>	<b>5,078</b>
<b>Rio Tinto iron ore shipments ('000 tonnes) (d)</b>		<b>69,228</b>	<b>74,034</b>	<b>75,820</b>	<b>68,755</b>	<b>68,673</b>	<b>141,093</b>	<b>137,428</b>
<b>Rio Tinto iron ore sales ('000 tonnes) (e)</b>		<b>71,678</b>	<b>74,488</b>	<b>76,269</b>	<b>69,356</b>	<b>71,920</b>	<b>145,951</b>	<b>141,275</b>

(a) 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 represent production of marketable quantities of ore plus concentrates and pellets.

(b) Includes 100% of production from Paraburdoo, Mt Tom Price, Western Turner Syncline, Marandoo, Yandicoogina, Brockman, Nammuldi, Silvergrass, Channar, Gudai-Darri, Eastern Range and Western Range mines. Whilst Rio Tinto owns 54% of the Eastern Range and the Western Range mines, 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.

(c) SP10 includes other lower grade products.

(d) Shipments includes material shipped to our portside trading facility in China which may not be sold onwards in the same period.

(e) Represents the difference between amounts shipped to portside trading and onward sales from portside trading, and third party volumes sold.

(f) While Rio Tinto has a 53% net beneficial interest in Robe River Iron Associates, it recognises 65% of the assets, liabilities, sales revenues and expenses in its accounts (as 30% is held through a 60% owned subsidiary and 35% is held through a 100% owned subsidiary). The consolidated basis sales reported here include Robe River Iron Associates on a 65% basis to enable comparison with revenue reported in the financial statements.

# Rio Tinto share of production

	Rio Tinto interest	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	H1 2023	H1 2024
<b>MOLYBDENUM</b>								
<b>Mine production ('000 tonnes) (a)</b>								
Bingham Canyon	100 %	0.3	0.6	0.8	0.7	<b>0.6</b>	0.4	<b>1.3</b>

(a) 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 represent production of marketable quantities of ore plus concentrates and pellets.

<b>SALT</b>								
<b>Production ('000 tonnes)</b>								
Dampier Salt	68 %	1,652	1,434	1,438	1,425	<b>1,540</b>	3,101	<b>2,965</b>

<b>SILVER</b>								
<b>Mine production ('000 ounces) (a)</b>								
Bingham Canyon	100 %	296	462	504	370	<b>368</b>	652	<b>738</b>
Escondida	30 %	302	350	420	398	<b>465</b>	706	<b>863</b>
Oyu Tolgoi	66 %	177	189	176	205	<b>239</b>	352	<b>444</b>
Rio Tinto total mine production		775	1,001	1,100	973	<b>1,072</b>	1,710	<b>2,046</b>
<b>Refined production ('000 ounces)</b>								
Kennecott (b)	100 %	329	240	406	550	<b>606</b>	761	<b>1,156</b>

(a) 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 represent production of marketable quantities of ore plus concentrates and pellets.

(b) We continue to process third party concentrate to optimise smelter utilisation, including 1.6 thousand tonnes of cathode produced from purchased concentrate in 2024 year-to-date. Purchased and tolled copper concentrates are excluded from reported production figures and production guidance. Sales of cathodes produced from purchased concentrate are included in reported revenues.

<b>TITANIUM DIOXIDE SLAG</b>								
<b>Production ('000 tonnes)</b>								
Rio Tinto Iron & Titanium (a)	100 %	303	247	275	254	<b>238</b>	589	<b>492</b>

(a) Quantities comprise 100% of Rio Tinto Fer et Titane and Rio Tinto's 74% interest in Richards Bay Minerals (RBM).

Production figures are sometimes more precise than the rounded numbers shown, hence small differences may result between the total of the quarter figures and the year to date figures.

Rio Tinto percentage interest shown above is at 30 June 2024.

## Rio Tinto operational data

	Rio Tinto interest	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	H1 2023	H1 2024
<b>ALUMINA</b>								
<b>Smelter Grade Alumina - Aluminium Group</b>								
Alumina production ('000 tonnes)								
<i>Australia</i>								
Queensland Alumina Refinery - Queensland	80 %	846	900	830	844	752	1,637	1,597
Yarwun refinery - Queensland	100 %	745	736	786	722	624	1,483	1,346
<i>Brazil</i>								
São Luis (Alumar) refinery	10 %	657	883	899	867	926	1,593	1,793
<i>Canada</i>								
Jonquière (Vaudreuil) refinery - Quebec (a)	100 %	346	325	349	352	328	717	681
<i>(a) Jonquière's (Vaudreuil's) production shows smelter grade alumina only and excludes hydrate produced and used for specialty alumina.</i>								
<b>Speciality Alumina - Aluminium Group</b>								
Speciality alumina production ('000 tonnes)								
<i>Canada</i>								
Jonquière (Vaudreuil) plant – Quebec	100 %	27	28	29	27	30	51	57

Rio Tinto percentage interest shown above is at 30 June 2024. The data represents production and sales on a 100% basis unless otherwise stated.

# Rio Tinto operational data

	Rio Tinto interest	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	H1 2023	H1 2024
<b>ALUMINIUM</b>								
<b>Primary Aluminium</b>								
Primary aluminium production ('000 tonnes)								
<i>Australia</i>								
Bell Bay smelter - Tasmania	100 %	46	47	47	47	47	92	93
Boyne Island smelter - Queensland	59 %	123	127	128	126	126	240	252
Tomago smelter - New South Wales	52 %	146	149	149	142	146	291	288
<i>Canada</i>								
Alma smelter - Quebec	100 %	121	121	123	121	119	241	240
Alouette (Sept-Îles) smelter - Quebec	40 %	159	159	160	157	158	314	315
Arvida smelter - Quebec	100 %	43	43	43	43	37	85	80
Arvida AP60 smelter - Quebec	100 %	14	15	15	15	15	29	31
Bécancour smelter - Quebec	25 %	118	114	119	116	119	232	235
Grande-Baie smelter - Quebec	100 %	57	58	58	57	57	114	114
Kitimat smelter - British Columbia	100 %	92	103	109	107	107	165	214
Laterrière smelter - Quebec	100 %	62	59	62	61	63	123	124
<i>Iceland</i>								
ISAL (Reykjavik) smelter	100 %	52	52	54	49	50	103	99
<i>New Zealand</i>								
Tiwai Point smelter	79 %	83	83	85	83	82	166	165
<i>Oman</i>								
Sohar smelter	20 %	99	100	100	99	99	197	198
<b>Recycled Aluminium</b>								
Recycled aluminium production ('000 tonnes)								
Matalco	50 %	—	—	—	148	139	—	288

Rio Tinto percentage interest shown above is at 30 June 2024. The data represents production and sales on a 100% basis unless otherwise stated.

# Rio Tinto operational data

	Rio Tinto interest	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	H1 2023	H1 2024
<b>BAUXITE</b>								
Bauxite production ('000 tonnes)								
<i>Australia</i>								
Gove mine - Northern Territory	100 %	2,739	3,015	3,234	3,104	3,172	5,317	6,276
Weipa mine - Queensland	100 %	8,813	9,010	9,811	8,224	9,262	16,304	17,486
<i>Brazil</i>								
Porto Trombetas (MRN) mine	22 %	2,724	3,258	3,202	2,310	3,034	5,012	5,344
<i>Guinea</i>								
Sangaredi mine (a)	23 %	3,586	3,387	3,430	3,517	3,604	7,462	7,121

<b>Rio Tinto share of bauxite shipments</b>								
Share of total bauxite shipments ('000 tonnes)		13,603	13,954	15,513	12,715	15,177	25,867	27,892
Share of third party bauxite shipments ('000 tonnes)		9,159	9,550	10,749	8,496	10,691	17,039	19,187

(a) Rio Tinto has a 22.95% shareholding in the Sangaredi mine but benefits from 45.0% of production.

	Rio Tinto interest	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	H1 2023	H1 2024
<b>BORATES</b>								
Rio Tinto Borates - borates	100 %							
<i>US</i>								
Borates ('000 tonnes) (a)		133	127	111	121	125	257	246

(a) Production is expressed as B<sub>2</sub>O<sub>3</sub> content.

	Rio Tinto interest	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	H1 2023	H1 2024
<b>COPPER &amp; GOLD</b>								
Escondida	30 %							
<i>Chile</i>								
Sulphide ore to concentrator ('000 tonnes)		30,749	33,332	34,752	31,653	34,377	64,058	66,030
Average copper grade (%)		0.93	0.85	0.77	0.92	0.99	0.85	0.96
Mill production (metals in concentrates):								
Contained copper ('000 tonnes)		228.9	225.7	217.6	238.6	279.5	438.9	518.2
Contained gold ('000 ounces)		53.5	48.1	48.6	39.0	45.4	102.5	84.4
Contained silver ('000 ounces)		1,008	1,168	1,401	1,328	1,549	2,353	2,877
Recoverable copper in ore stacked for leaching ('000 tonnes) (a)		29.1	36.4	21.0	18.6	8.4	60.2	27.0
Refined production from leach plants:								
Copper cathode production ('000 tonnes)		72.4	52.0	46.9	49.0	50.7	123.2	99.8

(a) The calculation of copper in material mined for leaching is based on ore stacked at the leach pad.

Rio Tinto percentage interest shown above is at 30 June 2024. The data represents production and sales on a 100% basis unless otherwise stated.

# Rio Tinto operational data

	Rio Tinto interest	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	H1 2023	H1 2024
<b>COPPER &amp; GOLD (continued)</b>								
<b>Kennecott</b>								
<b>Bingham Canyon mine</b>	100 %							
<i>Utah, US</i>								
Ore treated ('000 tonnes)		5,339	9,804	10,579	8,271	<b>10,257</b>	12,744	<b>18,528</b>
Average ore grade:								
Copper (%)		0.52	0.56	0.50	0.43	<b>0.36</b>	0.49	<b>0.39</b>
Gold (g/t)		0.16	0.16	0.14	0.14	<b>0.11</b>	0.14	<b>0.12</b>
Silver (g/t)		2.36	2.10	2.10	1.97	<b>1.79</b>	2.24	<b>1.87</b>
Molybdenum (%)		0.018	0.018	0.019	0.021	<b>0.020</b>	0.014	<b>0.020</b>
Copper concentrates produced ('000 tonnes)		92	180	191	127	<b>135</b>	208	<b>262</b>
Average concentrate grade (% Cu)		26.8	26.8	25.0	25.6	<b>23.9</b>	26.4	<b>24.7</b>
Production of metals in copper concentrates:								
Copper ('000 tonnes) (a)		24.8	48.8	47.8	32.5	<b>32.3</b>	55.1	<b>64.8</b>
Gold ('000 ounces)		18.7	32.0	33.5	26.7	<b>22.5</b>	39.3	<b>49.2</b>
Silver ('000 ounces)		296	462	504	370	<b>368</b>	652	<b>738</b>
Molybdenum concentrates produced ('000 tonnes):								
Molybdenum in concentrates ('000 tonnes)		0.6	1.4	1.6	1.6	<b>1.6</b>	0.7	<b>3.2</b>
		0.3	0.6	0.8	0.7	<b>0.6</b>	0.4	<b>1.3</b>
<b>Kennecott smelter &amp; refinery</b>								
	100 %							
Copper concentrates smelted ('000 tonnes)		41	59	187	171	<b>227</b>	241	<b>398</b>
Copper anodes produced ('000 tonnes) (b)		18.2	1.4	44.1	56.7	<b>54.4</b>	73.3	<b>111.2</b>
Production of refined metal:								
Copper ('000 tonnes) (c)		14.4	18.5	32.0	47.8	<b>47.5</b>	58.1	<b>95.3</b>
Gold ('000 ounces) (d)		19.2	12.4	20.6	35.3	<b>39.7</b>	41.2	<b>75.0</b>
Silver ('000 ounces) (d)		329	240	406	550	<b>606</b>	761	<b>1,156</b>

(a) Includes a small amount of copper in precipitates.

(b) New metal excluding recycled material.

(c) We continue to process third party concentrate to optimise smelter utilisation, including 1.6 thousand tonnes of cathode produced from purchased concentrate in 2024 year-to-date. Purchased and tolled copper concentrates are excluded from reported production figures and production guidance. Sales of cathodes produced from purchased concentrate are included in reported revenues.

(d) Includes gold and silver in intermediate products.

Rio Tinto percentage interest shown above is at 30 June 2024. The data represents production and sales on a 100% basis unless otherwise stated.

# Rio Tinto operational data

	Rio Tinto interest	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	H1 2023	H1 2024
<b>COPPER &amp; GOLD (continued)</b>								
<b>Oyu Tolgoi mine</b>	66 %							
<i>Mongolia</i>								
Ore Treated ('000 tonnes) - Open Pit		8,809	8,789	8,714	9,011	9,284	18,421	18,295
Ore Treated ('000 tonnes) - Underground		900	900	888	1,313	1,533	1,575	2,845
Ore Treated ('000 tonnes) - Total		9,709	9,689	9,602	10,323	10,817	19,996	21,140
Average mill head grades:								
Open Pit								
Copper (%)		0.41	0.39	0.42	0.39	0.37	0.42	0.38
Gold (g/t)		0.19	0.25	0.22	0.19	0.17	0.20	0.18
Silver (g/t)		1.10	1.19	1.24	1.25	1.12	1.13	1.18
Underground								
Copper (%)		1.56	1.73	1.59	1.67	2.02	1.47	1.86
Gold (g/t)		0.38	0.37	0.37	0.42	0.62	0.36	0.53
Silver (g/t)		3.67	3.94	3.42	3.28	4.75	3.49	4.07
Total								
Copper (%)		0.52	0.52	0.53	0.55	0.61	0.51	0.58
Gold (g/t)		0.21	0.26	0.23	0.22	0.24	0.21	0.23
Silver (g/t)		1.34	1.44	1.44	1.50	1.64	1.32	1.57
Copper concentrates produced ('000 tonnes)		200.3	197.6	196.0	208.5	246.2	402.0	454.7
Average concentrate grade (% Cu)		21.4	21.3	20.8	22.1	21.3	21.2	21.7
Production of metals in concentrates:								
Copper in concentrates ('000 tonnes)		42.8	42.0	40.7	46.1	52.5	85.4	98.6
Gold in concentrates ('000 ounces)		40.3	51.2	41.7	42.8	46.9	84.4	89.6
Silver in concentrates ('000 ounces)		268	287	266	311	363	534	673
Sales of metals in concentrates:								
Copper in concentrates ('000 tonnes)		43.2	42.7	38.4	43.7	48.3	84.6	92.0
Gold in concentrates ('000 ounces)		40.4	48.7	41.5	41.5	43.3	84.4	84.8
Silver in concentrates ('000 ounces)		257	269	240	272	317	499	588

	Rio Tinto interest	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	H1 2023	H1 2024
<b>DIAMONDS</b>								
<b>Diavik Diamonds</b>	100 %							
<i>Northwest Territories, Canada</i>								
Ore processed ('000 tonnes)		446	427	388	343	361	873	705
Diamonds recovered ('000 carats)		970	757	659	740	702	1,924	1,441

Rio Tinto percentage interest shown above is at 30 June 2024. The data represents production and sales on a 100% basis unless otherwise stated.

# Rio Tinto operational data

	Rio Tinto interest	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	H1 2023	H1 2024
<b>IRON ORE</b>								
<b>Rio Tinto Iron Ore</b>								
<i>Western Australia</i>								
<b>Pilbara Operations</b>								
Saleable iron ore production ('000 tonnes)								
Hamersley mines	(a)	55,004	57,322	59,138	53,373	<b>54,691</b>	109,437	<b>108,064</b>
Hope Downs	50 %	11,527	11,037	12,148	10,163	<b>10,087</b>	23,298	<b>20,250</b>
Robe River - Pannawonica (Mesas J and A)	53 %	7,353	7,747	8,171	8,009	<b>7,898</b>	13,244	<b>15,907</b>
Robe River - West Angelas	53 %	7,368	7,377	8,054	6,393	<b>6,805</b>	14,568	<b>13,198</b>
<b>Total production ('000 tonnes)</b>		<b>81,251</b>	<b>83,484</b>	<b>87,511</b>	<b>77,938</b>	<b>79,481</b>	<b>160,547</b>	<b>157,420</b>
Breakdown of total production:								
Pilbara Blend and SP10 Lump (b)		24,910	25,268	26,308	23,386	<b>24,416</b>	48,106	<b>47,802</b>
Pilbara Blend and SP10 Fines (b)		37,108	36,836	39,264	34,422	<b>35,932</b>	73,645	<b>70,354</b>
Robe Valley Lump		2,808	3,142	3,004	2,894	<b>2,916</b>	4,952	<b>5,811</b>
Robe Valley Fines		4,544	4,605	5,167	5,115	<b>4,982</b>	8,293	<b>10,096</b>
Yandicoogina Fines (HIY)		11,880	13,633	13,768	12,122	<b>11,235</b>	25,552	<b>23,357</b>
Breakdown of total shipments:								
Pilbara Blend Lump		17,757	17,785	17,355	15,635	<b>15,832</b>	36,489	<b>31,467</b>
Pilbara Blend Fines		33,668	31,008	29,840	28,475	<b>31,336</b>	69,018	<b>59,811</b>
Robe Valley Lump		2,173	2,447	2,842	2,308	<b>2,522</b>	4,156	<b>4,830</b>
Robe Valley Fines		4,696	5,105	5,762	5,553	<b>5,839</b>	8,964	<b>11,392</b>
Yandicoogina Fines (HIY)		12,558	13,669	13,628	12,228	<b>11,364</b>	26,247	<b>23,592</b>
SP10 Lump (b)		1,652	4,180	4,620	4,612	<b>5,141</b>	3,338	<b>9,753</b>
SP10 Fines (b)		6,613	9,699	12,208	9,221	<b>8,275</b>	13,446	<b>17,496</b>
<b>Total shipments ('000 tonnes) (c)</b>		<b>79,118</b>	<b>83,892</b>	<b>86,255</b>	<b>78,033</b>	<b>80,309</b>	<b>161,658</b>	<b>158,342</b>
<hr/>								
	Rio Tinto interest	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	H1 2023	H1 2024
<b>Iron Ore Company of Canada</b>								
59 %								
<i>Newfoundland &amp; Labrador and Quebec in Canada</i>								
Saleable iron ore production:								
Concentrates ('000 tonnes)		1,908	1,936	2,210	1,924	<b>1,584</b>	4,021	<b>3,508</b>
Pellets ('000 tonnes)		1,605	2,124	2,393	2,526	<b>2,137</b>	3,794	<b>4,663</b>
<b>IOC Total production ('000 tonnes)</b>		<b>3,513</b>	<b>4,060</b>	<b>4,603</b>	<b>4,450</b>	<b>3,721</b>	<b>7,816</b>	<b>8,171</b>
Shipments:								
Concentrates ('000 tonnes)		2,124	2,098	2,037	1,978	<b>1,678</b>	3,800	<b>3,657</b>
Pellets ('000 tonnes)		2,302	1,815	2,331	2,542	<b>2,449</b>	4,248	<b>4,991</b>
<b>IOC Total Shipments ('000 tonnes) (c)</b>		<b>4,426</b>	<b>3,913</b>	<b>4,368</b>	<b>4,520</b>	<b>4,127</b>	<b>8,048</b>	<b>8,647</b>
<b>Global Iron Ore Totals</b>								
Iron Ore Production ('000 tonnes)		84,764	87,543	92,114	82,388	<b>83,203</b>	168,363	<b>165,591</b>
Iron Ore Shipments ('000 tonnes)		83,543	87,805	90,623	82,553	<b>84,436</b>	169,706	<b>166,989</b>
Iron Ore Sales ('000 tonnes) (d)		85,601	88,030	91,072	82,790	<b>87,479</b>	174,091	<b>170,270</b>

(a) Includes 100% of production from Paraburdoo, Mt Tom Price, Western Turner Syncline, Marandoo, Yandicoogina, Brockman, Nammuldi, Silvergrass, Channar, Gudai-Darri, Eastern Range and Western Range mines. Whilst Rio Tinto owns 54% of the Eastern Range and the Western Range mines, 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.

(b) SP10 includes other lower grade products.

(c) Shipments includes material shipped to our portside trading facility in China which may not be sold onwards in the same period.

(d) Include Pilbara and IOC sales adjusted for portside trading movements and third party volumes sold.

Rio Tinto percentage interest shown above is at 30 June 2024. The data represents production and sales on a 100% basis unless otherwise stated.

## Rio Tinto operational data

	Rio Tinto interest	Q2 2023	Q3 2023	Q4 2023	Q1 2024	Q2 2024	H1 2023	H1 2024
<b>SALT</b>								
Dampier Salt	68 %							
<i>Western Australia</i>								
Salt production ('000 tonnes)		2,416	2,097	2,103	2,085	2,253	4,537	4,337
<b>TITANIUM DIOXIDE SLAG</b>								
Rio Tinto Iron & Titanium	100 %							
<i>Canada and South Africa</i>								
(Rio Tinto share) (a)								
Titanium dioxide slag ('000 tonnes)		303	247	275	254	238	589	492

(a) Quantities comprise 100% of Rio Tinto Fer et Titane and Rio Tinto's 74% interest in Richards Bay Minerals' production. Ilmenite mined in Madagascar is being processed in Canada.

Rio Tinto percentage interest shown above is at 30 June 2024. The data represents production and sales on a 100% basis unless otherwise stated.