



21 March 2022

## REACH RESOURCES MAKES STRATEGIC INVESTMENT INTO CUTTING-EDGE RARE EARTH ELEMENT RECYCLING BUSINESS

- Strategic investment of \$1.8M into REEgenerate Pty Ltd, an Australian private company that owns 100% of the Coconut Club REE exploration project in Quebec, Canada and has an option to acquire 100% of REEcycle Inc, a US based Rare Earth Element (REE) separation and technology Company
- REEcycle has developed a process that has the potential to reclaim nearly all rare earth elements in discarded NdFeB magnets with a recovery efficiency demonstrated in pilot testing in excess of 99%
- The patented process developed at the University of Houston uses a proprietary solvent to safely and efficiently extract REEs from scrap with low temperatures, low pressures, and minimal energy needs and waste
- In pilot testing, REEcycle's technology has demonstrated an ability to safely extract 15 of the 17 rare earth elements found in discarded permanent magnets in electronic waste from its pilot plant in Houston, Texas
- NdFeB magnets will be sourced predominantly from end-of-life wind turbines, electric vehicles, electric bikes and electronic waste
- REEcycle aims to provide an alternative option to traditional mined sources of rare earth metals as well as reduce supply chain uncertainty and geopolitical risk for companies reliant on these materials
- REEcycle won top honours for the US Department of Energy's ("DOE") National Clean Energy Prize, and has received cash awards from the National Science Foundation ("NSF"), DOE, and top US universities
- REEgenerate has established a high-powered Board comprising of leading industry experts Ashley Zumwalt-Forbes and Daniel Marmadou, and Advisory team including Mick McMullen, and founder Casey McNeil
- The global permanent magnet market size was valued at USD\$17.85 billion in 2018 and is projected to reach USD\$34.70 billion by 2026, exhibiting a CAGR of 8.7% during the forecast period <sup>1</sup>, with the rare earth metals component being valued at US\$5.3 billion in 2021 with only 1% of REEs sourced from recycled end of life products <sup>2</sup>
- Shanghai Metals Market (SMM) forecast recycling of NdFeB magnets is likely to be the largest growth of neodymium and dysprosium supply from 2021 to 2025
- Reach Resources raises \$2.4M in new equity to fund its investment in REEgenerate and the development of its existing mineral resource exploration projects

<sup>1</sup>Advanced Materials: Permanent Magnets Market, 2020.

<sup>2</sup> Drobniak, A., and Mastalerz, M., 2022, Rare Earth Elements—A brief overview: Indiana Geological and Water Survey, Indiana Journal of Earth Sciences, v. 4.



Reach Resources (“Reach” or “Company”) is pleased to announce that it has made a strategic investment of \$1.8M into REEgenerate Pty Ltd (“REEgenerate”), **an Australian private company that owns 100% of the Coconut Club REE exploration project in Quebec, Canada. REEgenerate has an option to acquire 100% of REEcycle Inc (“REEcycle”), a US based Rare Earth Element (REE) separation and technology Company.**

REEcycle was established to create a dependable, renewable, secure source of rare earth elements, to reduce uncertainty for companies reliant on these materials. REEcycle has developed a cutting edge process that has the potential to reclaim 15 of the 17 rare earth elements locked inside of discarded NdFeB magnets with a recovery efficiency of greater than 99%. The patented process uses a proprietary solvent to extract REEs safely and efficiently from scrap with low temperatures, low pressures, and minimal energy needs and waste.

The REEcycle team has strategically concentrated on the recovery of neodymium and dysprosium, two REE’s that are ranked highest in both importance to clean energy and in supply risk. From 2014 to 2016, REEcycle won top honours and national awards at business plan competitions hosted by many top universities. In late 2014, REEcycle won all three top prizes at the U. S. Department of Energy’s National Clean Energy Prize Competition.

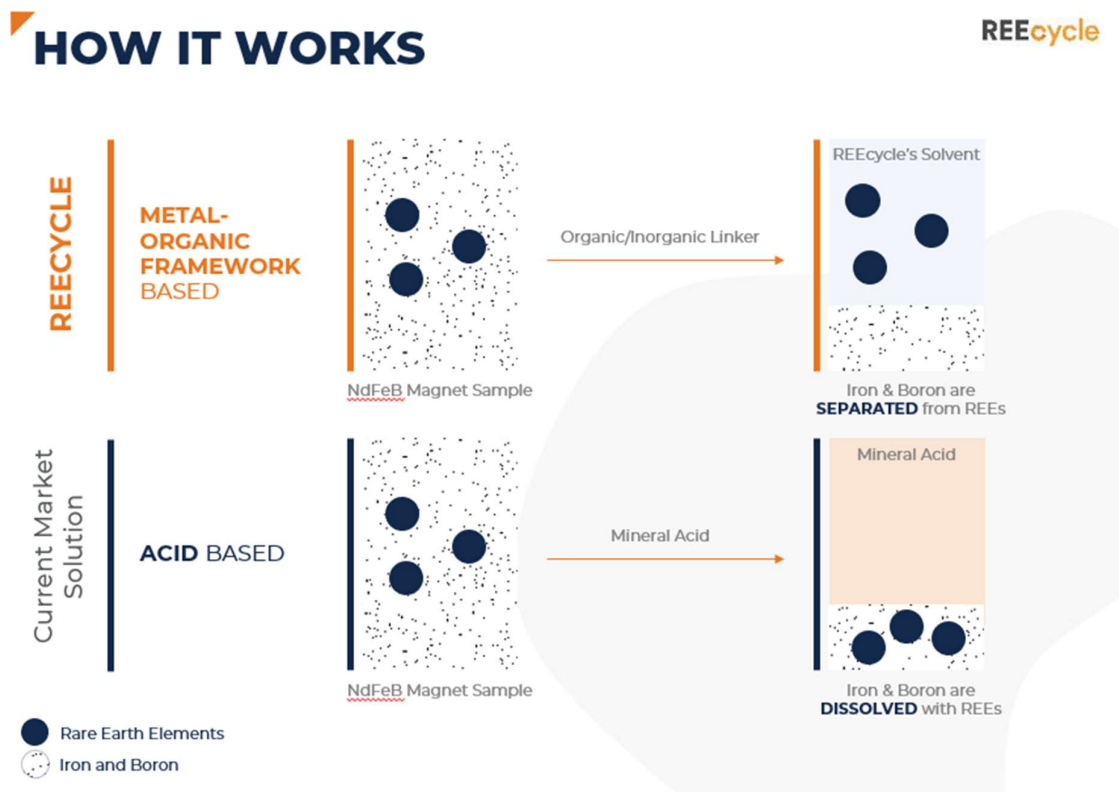


Figure 1: REEcycle Separation Technology

In pilot testing, REEcycle has been able to achieve up to **99.8% separation/recovery efficiency** of pure rare earth elements from the other materials in the magnet (Iron and Boron). The process is carried out at atmospheric pressure, under mild temperatures, producing water (pH 6) which contains Iron and Boron at concentrations compliant with those specified by municipal sewage treatment systems. **Rare Earth Oxide (REO) concentrate exists in carbonate form but can easily be converted to an oxide.**

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# HOW IT WORKS

REECycle

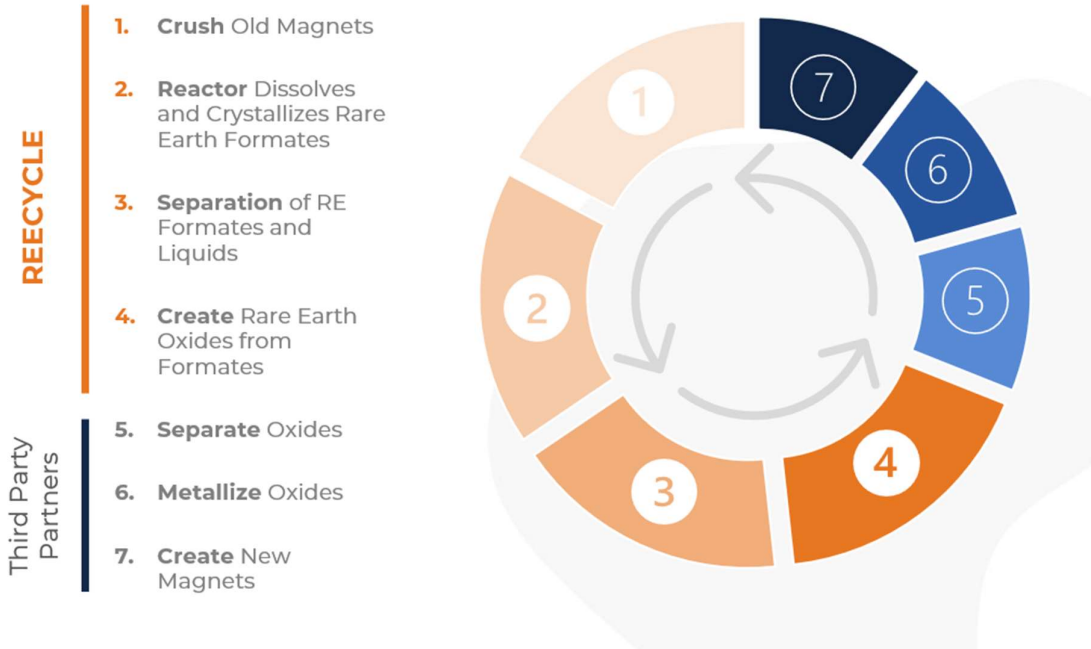


Figure 2: REECycle Flow Sheet



## REECycle PROCESS

- Extracts using Metal-organic Frameworks (MOFs)
- Uses controlled temperatures < 100 °C
- Uses autogenous pressure
- REEs selectively grouped in crystalline structure
- Allows for simple gravity separation
- Leaves behind no acidic waste

## PROCESS ADVANTAGES

- High Selectivity
- Ease of REE Isolation
- Purity of Raw Materials

## ENVIRONMENTAL BENEFITS

- Low Temperature Requirements
- Low Disposal Costs
- Low Hazardous Waste
- Low Energy Consumption

Figure 3: REECycle Technology Characteristics

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REcycle aims to provide an alternative option to traditional mined sources of rare earth metals as well as reduce supply chain uncertainty and geopolitical risk for companies reliant on these materials. Some benefits of this process include:

- New revenue stream from electronic waste
- Dependable, renewable, secure source of REEs
- Source REEs domestically
- Reduce landfill waste and support sustainable end-of-life process
- Truly circular and sustainable product
- Very low carbon footprint process.

REcycle has received significant positive support from reputable sources like the Scientific American, stating *“With their innovative (and proprietary) approach to recycling a pair of critical rare earth materials, the REcycle team introduced the energy industry to an innovative way to turn waste into a domestic stream of rare earth elements.”*

## OUR STRATEGY

REcycle

End-of-Life Products to REE Recovery

### 01 MAGNET PROCUREMENT

**Hard Drive:**  
Lease DDM to e-scrap facilities, ship magnets to our plant to input into process

**Electric Vehicles:**  
License existing retrieval technology to expedite this pathway to market

**Wind Turbines:** Direct Shipment

**MRI:** Direct Shipment

### 02 REE RECOVERY HUB

Recover REE Concentrate from magnets with patented technology.  
**99.8% recover efficiency**

- Extracts using Metal-organic Frameworks (MOFs)
- Uses controlled temperatures < 100 °C
- Uses autogenous pressure
- REEs selectively grouped in crystalline structure
- Allows for simple gravity separation
- Leaves behind no acidic waste

### 03 RARE EARTH SEPERATION & METALLIZATION

### 04 MAGNET MANUFACTURERS

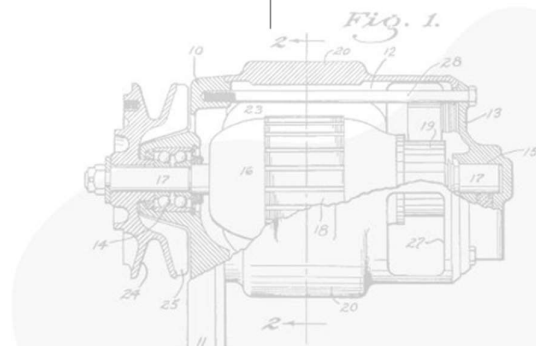


Figure 4: REEcycle Strategy

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## RECYCLING VS MINING

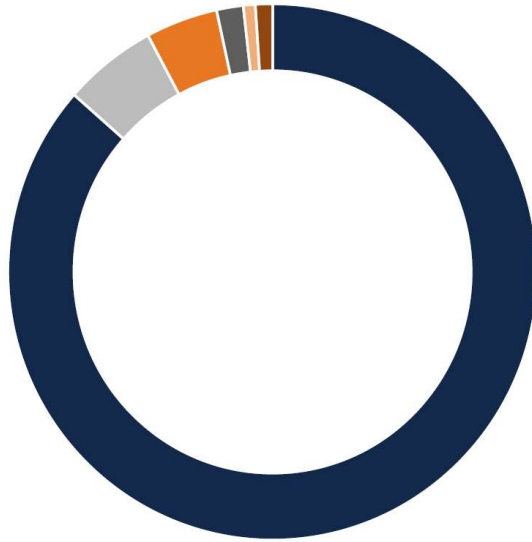
	REECYCLE	MINING
Capital Intensity	Low	High - Very High
Carbon Footprint	Very Low	High - Very High
Element Location	Collection at Source Final Process at Central Hub	At the Deposit
Impact on First Nations	Nil	Potentially Large
Permitting	Limited and Fast	Extensive and Long
Time to Market	Fast	Slow

Figure 5: REEcycle vs Rare Earth Mining

## OUTPUT BREAKDOWN

Per kilogram from patented REE Process

REEcycle



**86.5%** Nd<sub>2</sub>O<sub>3</sub>  
Neodymium

**5.7%** Pr<sub>2</sub>O<sub>3</sub>  
Praseodymium

**4.4%** Dy<sub>2</sub>O<sub>3</sub>  
Dysprosium

**1.63%** Tb<sub>2</sub>O<sub>3</sub>  
Terbium

**0.73%** Fe<sub>2</sub>O<sub>3</sub>  
Ferric Oxide

**1.04%**  
Combination of Cu, Ni, Cu, and B

Figure 6: Pilot Plant REE Output Breakdown per kg

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Rare Earth Elements are a part of the unstoppable macro-environment movement with the global economy transitioning to cleaner energy sources. Market applications of NdFeB magnets include wind turbines, electric vehicles, electric bikes and air conditioning with demand increasing by 17.5% annually<sup>3</sup>. REEcycle is positioned to take advantage of growing applications of NdFeB magnets by recycling end-of-life products and supply ethically sourced REEs to the market.

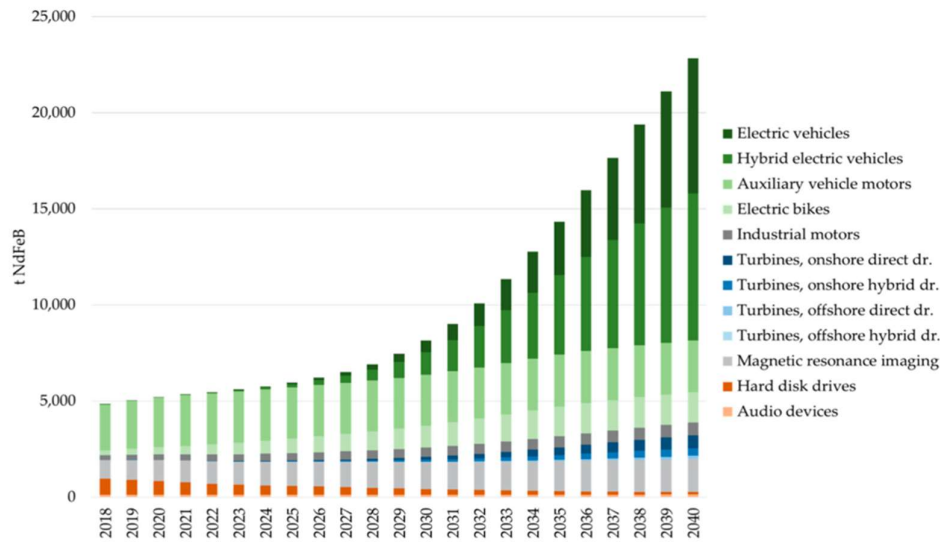


Figure 7: Potential Return Flows by Application | Tons of NdFeB Magnets<sup>4</sup>

Reach Resources non-executive Chairman, Robert Downey said, “With respect to the investment in REEgenerate, the Board and management of Reach Resources are very excited about the potential that this strategic investment brings to the Company. Notwithstanding the growing body of scientific research and development for REE recycling methods thus far, most technologies are only economically viable on a small scale, prompting several countries to export their e-waste to countries such as China for processing. The most common recycling methods employed are liquid-liquid extraction processes, which dissolve the end-of-life products/wastes in strong acids prior to the use of various solvents for extraction of REEs as is common practice in REE mining and processing. The consequences of these existing applications are that they have high energy demands and the generation of vast amounts of toxic waste as a chemical by-product.

REEcycle’s extraction method involves crushing recycled NdFeB magnets and placing their contents into a proprietary solvent. The neodymium and dysprosium separate from other materials (i.e., iron and boron) to form REE-rich metal organic frameworks that can easily be converted to oxides. The iron and boron are dissolved in the process, simplifying separation and removal. The resulting liquid—which is water with dissolved iron and boron—is then gravity separated, leaving behind a high purity REE mixture. The extracted mixture can then be sold on to permanent magnet manufacturers and other consumers. Importantly, the resulting water can be recycled several times as a means of minimising disposal cost and improving green efficiencies.”

<sup>3</sup> Green Car Congress, 2021, Roskill: rare earth magnet applications to account for ~40% of total RE demand by 2030, up from 29% in 2020.

<sup>4</sup> Reimer, Maximilian, 2018, “Recycling Decisions in 2020, 2030, and 2040—When Can Substantial NdFeB Extraction be Expected in the EU?”, Metals - Open Access Metallurgy Journal

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## COCONUT CLUB EXPLORATION PROJECT

The tenements are located approximately 37km north-east of Temisaming, Quebec, Canada.

The Coconut Club Project is best accessed from the town of Bearn near the Ontario border in Temiscamingue County, south-central western Quebec. The tenements are accessible via gravel roads.

The Coconut Club showing is a quartzo-feldspathic gneiss hosted REE showing intruded pegmatitic mobiliza.

Limited drilling has been conducted at the Coconut Club Project with most historic drill holes reaching less than 30m depth from the surface, with only one hole reaching over 100m depth from surface.

### ACQUISITION TERMS

The Company has entered into a definitive Subscription Agreement with REEgenerate Pty Ltd to subscribe for 10% of the outstanding share capital in REEgenerate by way of the issue of new fully paid ordinary shares for \$1,800,000.

The subscription for shares in REEgenerate is anticipated to complete on Monday 28 March, 2022.

The Company, REEgenerate and the other shareholders in REEgenerate also intend to enter into a shareholders' agreement on customary terms. Barclay Wells Limited, an unrelated party to Reach, will receive 12,500,000 ordinary shares in RR1 (issued at \$0.008 per share) for corporate strategic services provided in conjunction with the acquisition of REEgenerate.

### PLACEMENT TERMS

The Company has received binding letters of commitment to raise \$2,400,000 to finance the acquisition of REEgenerate, and provide additional working capital, by way of a placement of Shares to sophisticated and professional investors (Capital Raising). The Capital Raising will occur through an offer of up to 300,000,000 Shares at an issue price of \$0.008 per Share to raise \$2,400,000 together with 1 free attaching listed Option (ASX: RR1O) for every 2 Shares subscribed, exercisable at \$0.01 per Option on or before 20 May 2024. Westar Capital Limited acted as lead manager. Surplus funds remaining upon payment of \$1.8 million for REEgenerate will be employed to the Company's existing rare earth and gold projects, in addition to providing working capital.

The shares issued under the placement will be issued under the Company's existing Listing Rule 7.1 and 7.1A placement capacity in the following proportion:

- 150,000,000 shares issued pursuant to 7.1, and
- 150,000,000 shares pursuant to 7.1A

A cleansing prospectus will be prepared for the issue of shares under the placement. Additionally, the free attaching listed options issued under the placement will be issued subject to shareholder approval and will be issued under a prospectus. A Notice of Meeting and Prospectus will be prepared in due course.

Settlement of funds under the placement is proposed for 23 March 2022, with the allotment of shares to follow on 24 March 2022. Free attaching listed options issued under the placement will be settled in due course, with dates to be included and announced on the ASX over the coming weeks in conjunction with the completion of the prospectus.

### EXISTING PROJECTS

The Company's existing activities relate to exploration and development of the following projects:

- a) Primrose Gold Project in the Yalgoo region (WA);
- b) Gascoyne Rare Earth Project in the Yinnietharra region (WA); and
- c) Skyline Rare Earth Project in the Gascoyne Province (WA).

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Since re-instatement the Company has already completed a major drilling program at the Company's Primrose Gold Project and announced a total Inferred Mineral Resource of approximately 1.035 Mt @ 3.2g/t Au for 105,000oz Au (1.0g/t cut off) at the Blue Heaven Prospect<sup>5</sup>. Since the Company was successfully re-instated to trading on the ASX on 4 June 2021, the Company has expended approximately \$700,000 on exploration activities at the Primrose Gold Project up to the half year ended, 31 December 2021, exceeding the first 12 months proposed exploration program and budget.

Additionally, recently acquired rare earth project acquisitions, the Skyline Rare Earth Project and Critical Elements Rare Earth Project continue to be progressed internally.

Reach Resources Limited confirms that the Company intends to continue to spend funds on its existing exploration projects as outlined in the Prospectus dated 16 April 2021, including its pre-reinstatement disclosure released to the ASX Market Announcement Platform on 2 June 2021.

#### **ASX DISCLOSURE REQUIREMENT FOR THE ACQUISITION**

ASX has advised that, based upon all available information and subject to the following conditions, Listing Rules 11.1.2 and 11.1.3 do not apply to the Transaction:

- 1.1 Reach Resources Limited (the 'Company') must, as part of any announcement regarding its intention to enter into an agreement to acquire 10% of the issued shares in REEgenerate Pty Ltd (the 'Transaction') ('REEgenerate'), re-affirm the Company's intention to continue to spend funds on its existing exploration projects as outlined in its Prospectus dated 16 April 2021 and its Pre-reinstatement Disclosure released to the ASX Market Announcement Platform ('MAP') on 2 June 2021;
- 1.2 The Company must disclose in each of its quarterly activities reports until 30 June 2024, the proportion of expenditure incurred in relation to exploration and evaluation of its exploration projects and the proportion of expenditure incurred in relation to funding the REEcycle Waste Recycling Technology. These items of expenditure must be disclosed as separate line items in any such quarterly reports;
- 1.3 The Company must consult with ASX for the purposes of Listing Rule 11.1 prior to making any contribution of capital, whether by way of debt, equity or otherwise, to REEgenerate beyond providing the initial \$1,800,000 cash consideration as part of the Transaction. ASX reserves the right to aggregate any proposed future increases in the Company's economic interest in REEgenerate and or the REEcycle Waste Recycling Technology such that it may re-consider its position in relation to the application of Chapter 11 of the Listing Rules.

*This announcement has been authorised by the Board of Reach Resources Limited.*

#### **For Further information please contact:**

Chris Achurch  
Company Secretary

-ENDS-

<sup>5</sup> ASX Announcement dated 6 December 2021 'Maiden Resource at Blue Heaven – Primrose Gold Project'





#### **About REEcycle Inc**

REEcycle was formed in 2014 to develop efficient processes for the reclamation of rare earth elements from various streams of electronic waste. REEcycle's core process was developed alongside the University of Houston, who has granted a worldwide, exclusive license to its use. REEcycle has continued R&D on additional technologies that simplify the recovery of REE rich feedstocks for recycling, including systems for recovering NdFeB magnets from hard disk drives.

#### **About REEgenerate Pty Ltd**

REEgenerate Pty Ltd was incorporated in late 2021 to chase strong strategic opportunities in the rare earth space, including owning 100% of REEcycle Inc as well as several rare earth tenements.

#### **About Reach Resources Limited**

Reach Resources is an emerging gold explorer and aspiring gold miner and more recently has broadened its strategy to increase its land holdings focussing on areas prospective for rare earth elements.

#### **No New Information**

Except where explicitly stated, this announcement contains references to prior exploration results and Mineral Resource estimates, all of which have been cross-referenced to previous market announcements made by the Company. The Company confirms that it is not aware of any new information or data that materially affects the information included in the relevant market announcements and, in the case of estimates of Mineral Resources, that all material assumptions and technical parameters underpinning the results and/or estimates in the relevant market announcement continue to apply and have not materially changed.

#### **Forward Looking Statement**

This report contains forward looking statements concerning the projects owned by Reach Resources Limited. If applicable, statements concerning mining reserves and resources may also be deemed to be forward looking statements in that they involve estimates based on specific assumptions. Forward-looking statements are not statements of historical fact and actual events and results may differ materially from those described in the forward looking statements as a result of a variety of risks, uncertainties and other factors. Forward looking statements are based on management's beliefs, opinions and estimates as of the dates the forward looking statements are made and no obligation is assumed to update forward looking statements if these beliefs, opinions and estimates should change or to reflect other future developments.

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