ASX: ABX

Quarterly report and activity statement,
3 months to 30 June 2022

Highlights

Corporate

Group available cash at quarter end was $4.28 million and is currently about $3.8 million

Rare earth elements: ionic adsorption clays confirmed

Rare earth elements (REE) mineralisation at Deep Leads proven to be ionic adsorption clay (IAC), the major source of permanent magnet REEs

Recent intercepts of thicker higher grade REE zones have tripled the prospective area

Alcore (Production of aluminium fluoride from aluminium smelter waste): awarded grant and pilot plant program continuing

Granted $7.5M from the Australian Government's Modern Manufacturing Initiative to support its proposed $16.4M aluminium smelter bath recycling plant in Tasmania

Three new laboratory reactors commissioned, with results to aid finalisation of the continuous pilot plant design

Bauxite Operations: Sunrise Bauxite Project

Completed stage 1 terrestrial ecology studies and ground water monitoring of the Binjour mine and Bundaberg port operational sites.

ABx Group (ASX:ABX) is a uniquely positioned, high-tech Australian company at the cutting-edge of creating new sources and technologies for strategic minerals and chemicals.

Corporate

- ABx securities total 223,590,814 ordinary shares and 78,820,500 quoted options

Rare Earth Elements (REE) Exploration: ionic adsorption clays confirmed

- Desorption tests were done on 12 samples of ABx's REE mineralisation by ANSTO in Sydney, which has extensive experience in metallurgical testing of clay-hosted rare earth deposits worldwide, to assess REE extraction rates of the full range of mineralisation types from Deep Leads, Portrush and Windbreak deposits across northern Tasmania.
- The five best extraction results were excellent, ranging from 40% to 75% of each of the permanent magnet REE (Nd, Pr, Dy, Tb) using 'standard' desorption conditions of 0.5 M ammonium sulfate at pH 4, which is similar to the conditions used for ionic adsorption

clay type deposits in China. Some other clay-hosted REE deposits can require significantly more acid to achieve similar levels of REE extraction.

- ABx drilled 81 new holes at Deep Leads during the quarter, with a further 17 drilled during July. The improved drilling technology developed by ABx and Tasmania's edrill Pty Ltd has resulted in many holes now reaching target depths, confirming much thicker REE zones and collecting cores from important strata using push-tube methods.

Figure 1: Deep Leads REE project in recently harvested plantations, northern Tasmania (compare with Figure 2)

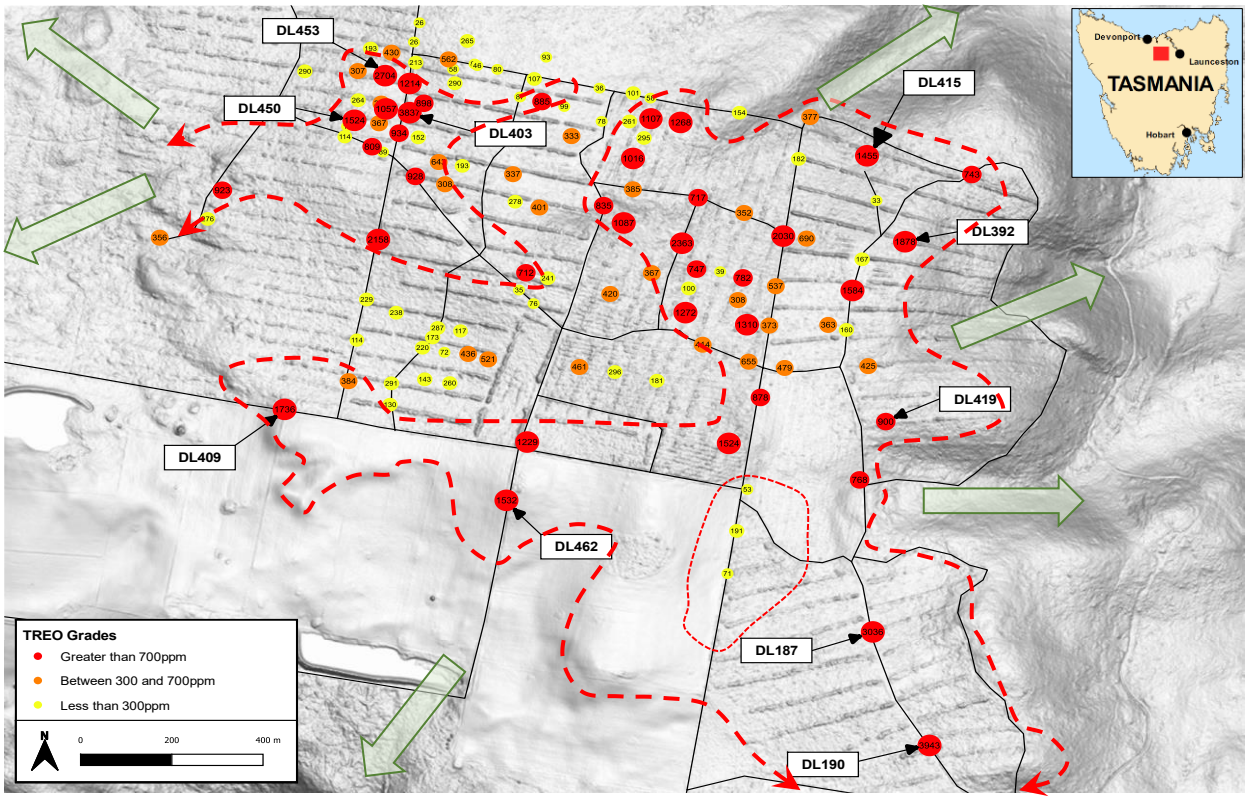

Figure 2: Deep Leads drillhole REE grades as total rare earth oxide (TREO). Channel targets shown as green arrows. Holes DL403 and DL409 achieved excellent REE extraction rates of 48% to 71% under low-cost, relatively benign leaching conditions and are therefore considered premium targets (see ASX release dated 31 May 2022)

- Assays for the first 20 holes were received. Whilst some holes ended while still in the strongly mineralised zone due to drill difficulties, results indicated thicker intercepts. For example, hole DL450 returned 10 metres of REE mineralisation averaging 863 ppm TREO, including 6 metres averaging 1,122 ppm TREO from 5 metres depth. More importantly, this hole revealed the channel that carries the high-grade ionic adsorption clay REE mineralisation westwards towards major channels.
- **High grades**: Holes DL450, DL453 and DL462 returned high-grade REE results that extended the area of strong mineralisation. DL453 and DL462 ended while still in the strongly mineralised zone due to drill difficulties with water and broken ground. Hole DL453 intersected 4 metres of high REE grades and assays for shallower samples are pending. See ASX release dated 31 May 2022.
- These drilling results have tripled the prospective area, including six major channels that can extend ABx's ionic adsorption clay REE mineralisation by over 6.5km towards the Rubble Mound discovery

ABx Rare Earths Strategy

Rare earths have many applications in a wide variety of industries. Permanent magnets are the most valuable application, representing over 90% of the total value of rare earths consumption. Permanent magnets are used in electric vehicles, wind turbines, smart phones and military applications. The four most important rare earths for permanent magnets are neodymium, praseodymium, dysprosium and terbium. Furthermore, the demand for these four 'supermagnet' rare earths is predicted to grow faster than for other rare earths. Prices for these rare earths have risen significantly in the last two years (Figure 4).

Globally, most rare earths are sourced from hard-rock mines. These typically require large, costly processing plants and a significant lead time to reach production.

A less common source of rare earths is ionic adsorption clay (IAC) deposits. Historically, these have only been mined in southern China. A major advantage of IAC deposits is that the rare earths can be extracted from the clay via a simple leaching process, enabling a project to be developed rapidly and at lower cost. A second advantage of IAC deposits is that they are relatively richer in the four main rare earths needed for permanent magnets.

For these reasons, ABx has explored for IAC rare earth deposits, and we have discovered rare earth accumulations within our bauxite tenements in northern Tasmania. ABx is the first company to discover rare earths in Tasmania. This IAC type of deposit is rare, with commercial production only occurring in China. ABx will conduct exploration on several other target areas within its tenements that have the geological features that ABx considers to be prospective for rare earths.

The ABx strategy is to produce an intermediate rare earth concentrate that can be sold to existing processing plants to increase their production. ABx's rare earths are low in radioactive elements and so our concentrates will be attractive to many rare earth processing plants.

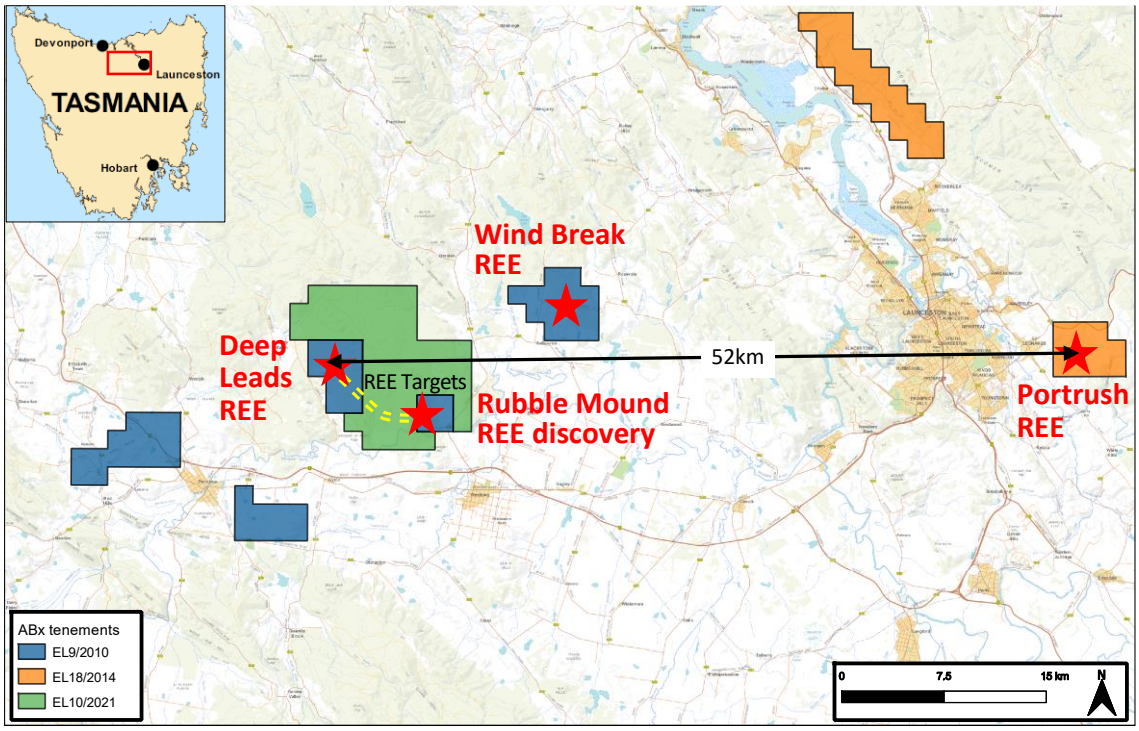

Figure 3: ABx leases in the 52km wide REE province. Note that the Deep Leads REE trend may extend 6km towards Rubble Mound (yellow dashes)

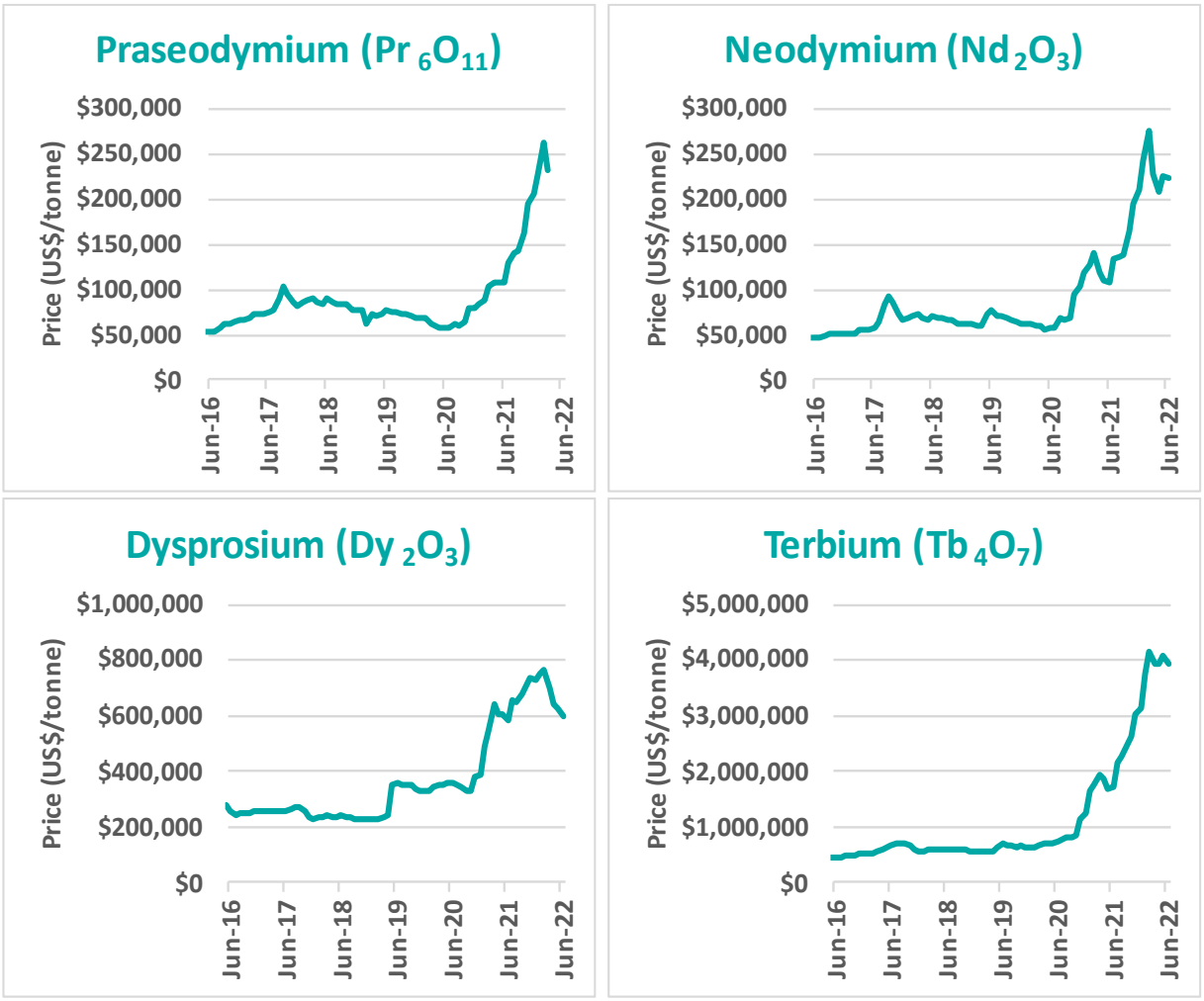

Figure 4: Prices for permanent magnet rare earths have increased significantly in the last 2 years (source: Kitco)

ALCORE (83%-owned by ABx): Awarded grant and pilot plant program continuing

- Alcore was granted $7.5M from the Australian Government's Modern Manufacturing Initiative[1] to support its proposed $16.4M aluminium smelter bath recycling plant in Bell Bay, Tasmania. The plant is proposed to transform 1,600 tonnes per year of aluminium smelter bath into hydrogen fluoride and other industrial chemicals. Most of the hydrogen fluoride will be further processed to aluminium fluoride (AlF_3).
- A section of the Alcore Technology Centre in Berkeley Vale, NSW was upgraded to allow the operation of three new laboratory reactors (Figure 5).
- The first stage of the Alcore process is to produce oleum, which is highly concentrated sulfuric acid. Working closely with one of its engineering partners, BFluor Chemicals, Alcore has designed, constructed and commissioned two reactors that can produce sufficient oleum for tests with bath in the specialised laboratory reactor.
- In parallel, Alcore has purchased, modified and commissioned a third specialised laboratory reactor to react oleum with bath to recover fluorine. This enables Alcore to rapidly investigate a larger range of process conditions with improved process control compared to previous experiments in the original Alcore laboratory. This is a significant step forward in Alcore capability.
- Alcore is well advanced in its design of its continuous pilot plant bath reactor, which is intended to process 20 kg per hour of bath. This was previously planned to be 10 kg per hour, but has been increased because the larger size allows a better representation of the reactor design to be used in the commercial plants. The pilot plant design will be finalised using data from tests on the specialised laboratory reactor. It is planned to be located in the same section of the Alcore Technology Centre as the three new laboratory reactors.

Alcore Strategy

Aluminium fluoride is a strategically important mineral that is an essential ingredient for aluminium smelting and is being investigated for advanced lithium-ion batteries. Australia is the largest producer of primary aluminium metal without its own domestic aluminium fluoride production, so Australian aluminium smelters rely entirely on imported aluminium fluoride. This is typically more than 70% from China, but this proportion reduced by more than 50% in 2021, illustrating the supply risks (Figure 6). Aluminium fluoride prices have been above US$1,450/t for the last eight months (Figure 7).

[1] The grant provides for up to 50% of eligible project expenditure. See Grant Opportunity Guidelines: Modern Manufacturing Initiative-Manufacturing Translation Stream – Recycling and Clean Energy Priority Round 2

Figure 5: Section of the Alcore Technology Centre upgraded to allow the operation of three new laboratory reactors

Most modern aluminium smelters produce excess bath, for which the only meaningful market is new smelters, which require bath to commence operations. Aluminium industry forecasts suggest that the global bath market will increasingly be in surplus, because far fewer new smelters are being constructed. All of the major global aluminium producers are eager for alternative applications for bath, to avoid the unpalatable options of on-site storage or landfill.

Alcore has developed a world-first process to recover fluorine from aluminium smelter bath. This is combined with aluminium hydroxide to produce aluminium fluoride. Alcore is also investigating the use of dross (another aluminium smelter waste) and bauxite as alternatives to aluminium hydroxide as the source of aluminium. The use of dross or bauxite would further lower the production cost.

Alcore intends to construct a commercial aluminium fluoride plant in Bell Bay, Tasmania. The aluminium source for the initial production is likely to be aluminium hydroxide, as this is less risk and allows a faster path to production. Subsequent production may use aluminium from dross or bauxite to further improve the financial and environmental outcomes.

The initial plant is proposed to transform 1,600 tonnes per year of aluminium smelter bath into hydrogen fluoride and other industrial chemicals. Most of the hydrogen fluoride will be further processed to aluminium fluoride. Alcore's longer term plan is to expand the plant by 15 times, which will process all of Australia's aluminium smelter bath, and supply more than 80% of Australia's aluminium fluoride requirements.

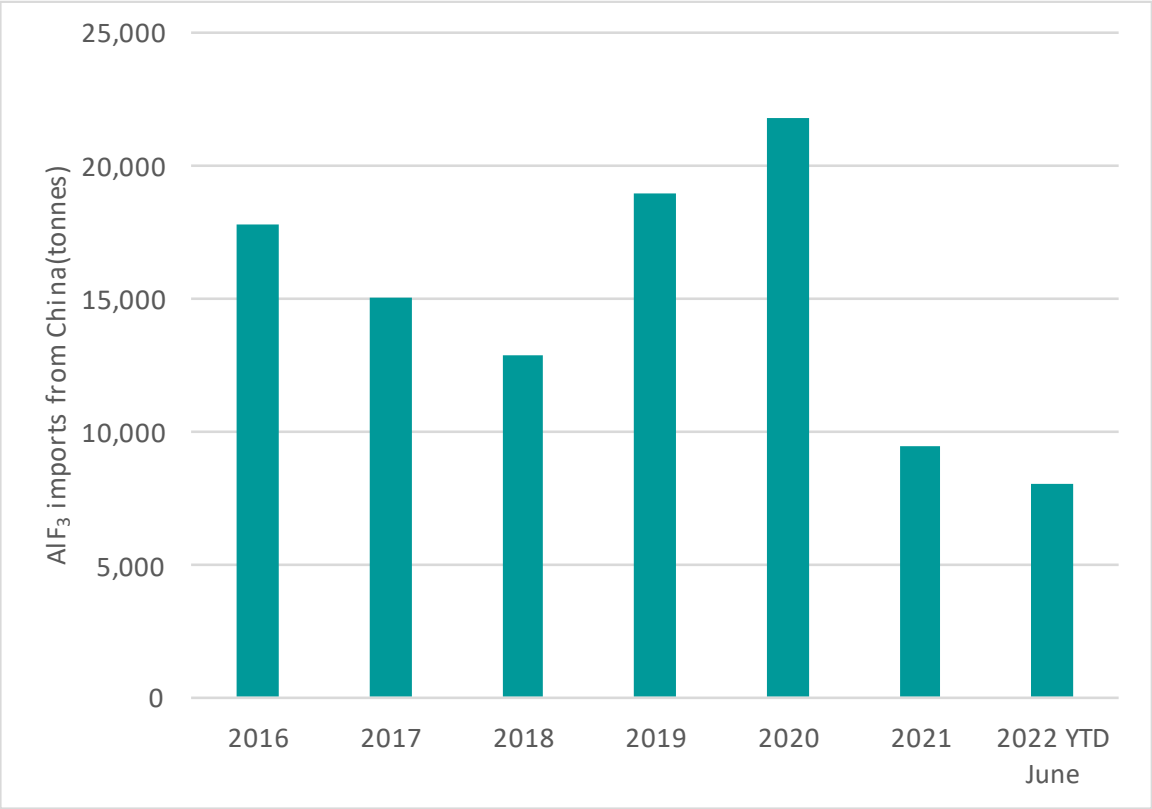

Figure 6: Imports of aluminium fluoride from China into Australia contracted substantially in 2021, and continue to be low in 2022 (source: China Customs Statistics)

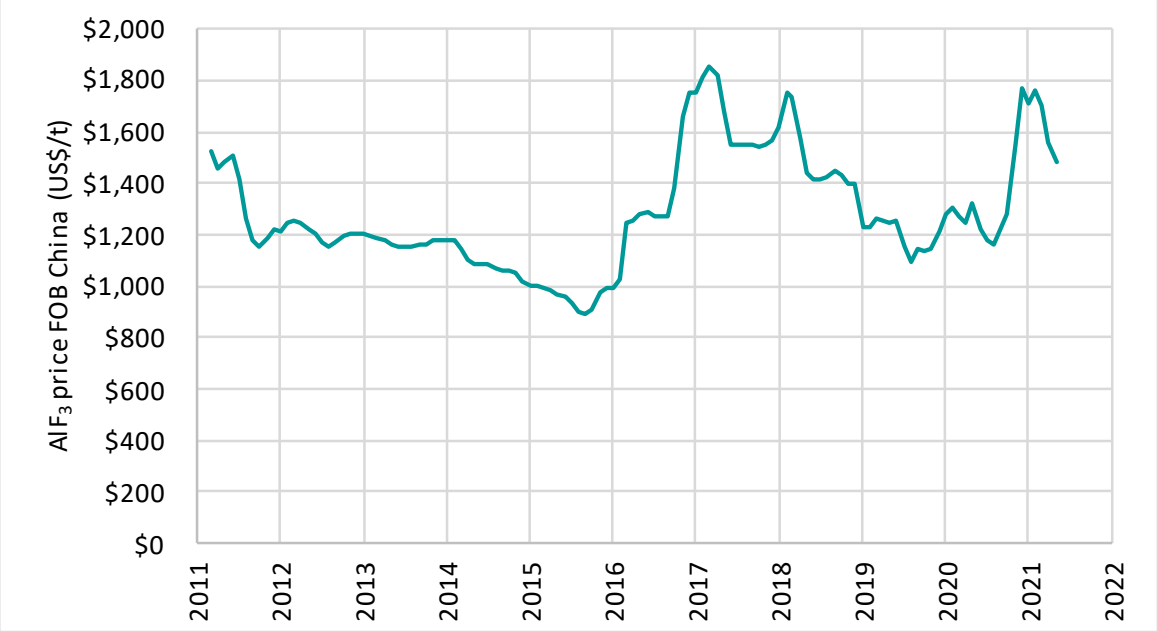

Figure 7: Aluminium fluoride monthly prices FOB China (source: China Customs Statistics)

Bauxite Operations

Sunrise Bauxite Project: Binjour, Queensland

- ABx has completed its scheduled project stage 1 terrestrial ecology studies and ground water monitoring of the Binjour mine and Bundaberg port operational sites
- ABx is completing its scheduled tender and selection process for engineering studies to be conducted on its mine, port, and transhipping operations

ABx plans to begin exporting product in Q3, 2023, with a JORC compliant resource of 37 million tonnes, supporting 20-25 years production. it is anticipated that the mine at Binjour will export 500,000 tonnes per year of metallurgical grade bauxite in its first year of production, then scaling up to full operational capacity of 2 million tonnes.

Alumin is an Australian special purpose vehicle company associated with our strategic marketing partner, Rawmin India, having extensive experience in funding long term sustainable investments in projects involving mining and bulk-shipping of metallurgical grade bauxite to end users around the world.

Tasmania

- ABx continued to evaluate its options for producing cement grade and fertiliser grade bauxite, including discussions with customers

ABx has several Tasmanian bauxite deposits that can supply cement and fertiliser grade bauxite for many years, including deposits located near the new rare earth discoveries.

An updated Business Plan presentation has been placed on the ABx website www.abxgroup.com.au.

This announcement is approved for release by the board of directors.

For further information please contact:

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Website: abxgroup.com.au

Qualifying statements

General: The information in this report that relate to Exploration Information and Mineral Resources are based on information compiled by Jacob Rebek and Ian Levy who are members of The Australasian Institute of Mining and Metallurgy and the Australian Institute of Geoscientists. Mr Rebek and Mr Levy are qualified geologists and Mr Levy is a director of Australian Bauxite Limited.

Mainland: The information relating to Mineral Resources on the Mainland was prepared and first disclosed under the JORC Code 2004. It has not been updated since to comply with the JORC Code 2012 on the basis that the information has not materially changed since it was last reported. Mr Rebek and Mr Levy have sufficient experience, which is relevant to the style of mineralisation and type of deposit under consideration and to the activity, which they are undertaking to qualify as a Competent Person as defined in the 2004 Edition of the Australasian Code for Reporting of exploration Results, Mineral Resources and Ore Reserves. Mr Rebek and Mr Levy have consented in writing to the inclusion in this report of the Exploration Information in the form and context in which it appears.

Tasmania: The information relating to Exploration Information and Mineral Resources in Tasmania has been prepared or updated under the JORC Code 2012. Mr Rebek and Mr Levy have sufficient experience, which is relevant to the style of mineralisation and type of deposit under consideration and to the activity, which they are undertaking to qualify as a Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and **Ore Reserves.** Mr Rebek and Mr Levy have consented in writing to the inclusion in this report of the Exploration Information in the form and context in which it appears.

Disclaimer Regarding Forward Looking Statements

This ASX announcement (Announcement) contains various forward-looking statements. All statements other than statements of historical fact are forward-looking statements. Forward-looking statements are inherently subject to uncertainties in that they may be affected by a variety of known and unknown risks, variables and factors which could cause actual values or results, performance or achievements to differ materially from the expectations described in such forward-looking statements.

ABx does not give any assurance that the anticipated results, performance or achievements expressed or implied in those forward-looking statements will be achieved.

Patent

Refined Ore Industries Ltd (ROIL) was the owner of the CORE process technology via ROIL's intellectual property company, Berkeley Process Technologies Pty. Ltd which issued a global exclusive licence for the aluminium-related portion of the CORE process technology to ABx in November 2017 and ABx has issued a global exclusive sub-licence to ALCORE when ALCORE was incorporated on 1 July 2018.

After a company restructure and expansion of the patent definition to cover isolation and extraction of mineral compounds, metals, metalloids, alloys and elements from waste streams, mineral ores, recyclable commodities, industrial by-products and mixed substances, the holding company is now named Core Refining Limited (CRL) and the intellectual property company is Core Intelligence Australia Pty Ltd (CIAL) which holds the Patent Application No. 2019904311 and the global exclusive licences to ABx and ALCORE continue in force.

CRL's CORE process technology involves the refining of a wide range of ore types using a combination of fluorine acids and related thermal energy process steps. The technology that is licensed to ABx and ALCORE by CRL is part of CRL's broader Core technology.

Table 1: Tenement information required under LR 5.3.3

Tenement No.	Location
New South Wales	
EL 6997	Inverell
EL 7357	Taralga
EL 8600	Penrose Quarry
Queensland	
MLA 100277	Sunrise ML application
EPM 27787	Binjour
ML 80126	Toondoon ML
Tasmania	
EL 7/2010	Conara
EL 9/2010	Deloraine
EL 18/2014	Prosser's Road
EL 10/2021	Rubble Mound

Notes:

EL10/2021 was granted during the quarter. No tenements were relinquished.

All tenements are in good standing, 100% owned and not subject to any third-party royalties nor are they encumbered in any way.

Information required under Listing Rule 5.31:- Exploration expenditure reported during the quarter related to the REE program development ($582,000), research conducted by Alcore with respect to its reported advancements ($380,000).

Information required under Listing Rule 5.31:- No mining production was conducted during the quarter.

Information required under Listing Rules 5.3.5:- $193,825 director fees were paid to Paul Lennon, Ian Levy and Kenneth Boundy for services rendered during the quarter.

Appendix 5B

Mining exploration entity or oil and gas exploration entity quarterly cash flow report

Name of entity	
ABx Group Limited	
ABN	**Quarter ended ("current quarter")**
14 139 494 885	30 June 2022

	Consolidated statement of cash flows	**Current quarter $A'000**	**Year to date (6 months) $A'000**
1.	**Cash flows from operating activities**		
1.1	Receipts from customers	-	56
1.2	Payments for		
	(a) exploration & evaluation	(582)	(934)
	(b) development	(380)	(794)
	(c) production	-	-
	(d) staff costs	(268)	(361)
	(e) administration and corporate costs	(153)	(337)
1.3	Dividends received (see note 3)	-	-
1.4	Interest received	1	5
1.5	Interest and other costs of finance paid	-	-
1.6	Income taxes paid	-	-
1.7	Government grants and tax incentives	-	-
1.8	Other (Government RD/Innovation Grant)	-	486
1.9	**Net cash from / (used in) operating activities**	**(1,382)**	**(1,879)**

2.	**Cash flows from investing activities**		
2.1	Payments to acquire or for:		
	(a) entities	-	-
	(b) tenements	-	-
	(c) property, plant and equipment	(38)	(72)
	(d) exploration & evaluation	-	-
	(e) investments	-	-
	(f) other non-current assets	-	-

Consolidated statement of cash flows		Current quarter $A'000	Year to date (6 months) $A'000
2.2	Proceeds from the disposal of:		
	(a) entities	-	-
	(b) tenements	-	-
	(c) property, plant and equipment	-	-
	(d) investments	-	-
	(e) other non-current assets	-	-
2.3	Cash flows from loans to other entities	-	-
2.4	Dividends received (see note 3)	-	-
2.5	Other (provide details if material)	-	-
2.6	**Net cash from / (used in) investing activities**	**(38)**	**(72)**

3.	**Cash flows from financing activities**		
3.1	Proceeds from issues of equity securities (excluding convertible debt securities)	-	-
3.2	Proceeds from issue of convertible debt securities	-	-
3.3	Proceeds from exercise of options	-	-
3.4	Transaction costs related to issues of equity securities or convertible debt securities	-	-
3.5	Proceeds from borrowings	-	-
3.6	Repayment of borrowings	-	-
3.7	Transaction costs related to loans and borrowings	-	-
3.8	Dividends paid	-	-
3.9	Other (Net proceed from issuing of equity securities – controlled entity)	-	-
3.10	**Net cash from / (used in) financing activities**	**-**	**-**

4.	**Net increase / (decrease) in cash and cash equivalents for the period**		
4.1	Cash and cash equivalents at beginning of period	5,564	6,095
4.2	Net cash from / (used in) operating activities (item 1.9 above)	(1,382)	(1,879)
4.3	Net cash from / (used in) investing activities (item 2.6 above)	(38)	(72)
4.4	Net cash from / (used in) financing activities (item 3.10 above)	-	-

Consolidated statement of cash flows		**Current quarter $A'000**	**Year to date (6 months) $A'000**
4.5	Effect of movement in exchange rates on cash held	-	-
4.6	**Cash and cash equivalents at end of period**	**4,144**	**4,144**

5.	**Reconciliation of cash and cash equivalents** at the end of the quarter (as shown in the consolidated statement of cash flows) to the related items in the accounts	**Current quarter $A'000**	**Previous quarter $A'000**
5.1	Bank balances	428	929
5.2	Call deposits	3,686	4,605
5.3	Bank overdrafts	-	-
5.4	Other (Held in trust)	30	30
5.5	**Cash and cash equivalents at end of quarter (should equal item 4.6 above)**	**4,144**	**5,564**

6.	**Payments to related parties of the entity and their associates**	**Current quarter $A'000**
6.1	Aggregate amount of payments to related parties and their associates included in item 1	-
6.2	Aggregate amount of payments to related parties and their associates included in item 2	194
6.3	Include below any explanation necessary to under the transactions included in items 6.1 and 6.2	
	$193,825 director fee were paid to Paul Lennon, Ian Levy and Kenneth Boundy for their services rendered.	

Note: if any amounts are shown in items 6.1 or 6.2, your quarterly activity report must include a description of, and an explanation for, such payments.

7.	**Financing facilities** *Note: the term "facility' includes all forms of financing arrangements available to the entity.* *Add notes as necessary for an understanding of the sources of finance available to the entity.*	**Total facility amount at quarter end $A'000**	**Amount drawn at quarter end $A'000**
7.1	Loan facilities	-	-
7.2	Credit standby arrangements	-	-
7.3	Other (please specify)	-	-
7.4	**Total financing facilities**	-	-

7.5	**Unused financing facilities available at quarter end**	-

7.6 Include in the box below a description of each facility above, including the lender, interest rate, maturity date and whether it is secured or unsecured. If any additional financing facilities have been entered into or are proposed to be entered into after quarter end, include a note providing details of those facilities as well.

8.	**Estimated cash available for future operating activities**	**$A'000**
8.1	Net cash from / (used in) operating activities (item 1.9)	(1,382)
8.2	(Payments for exploration & evaluation classified as investing activities) (item 2.1(d))	-
8.3	Total relevant outgoings (item 8.1 + item 8.2)	(1,382)
8.4	Cash and cash equivalents at quarter end (item 4.6)	4,144
8.5	Unused finance facilities available at quarter end (item 7.5)	-
8.6	Total available funding (item 8.4 + item 8.5)	4,144
8.7	**Estimated quarters of funding available (item 8.6 divided by item 8.3)**	2.9

Note: if the entity has reported positive relevant outgoings (ie a net cash inflow) in item 8.3, answer item 8.7 as "N/A". Otherwise, a figure for the estimated quarters of funding available must be included in item 8.7.

8.8 If item 8.7 is less than 2 quarters, please provide answers to the following questions:

8.8.1 Does the entity expect that it will continue to have the current level of net operating cash flows for the time being and, if not, why not?

Answer: N/A

8.8.2 Has the entity taken any steps, or does it propose to take any steps, to raise further cash to fund its operations and, if so, what are those steps and how likely does it believe that they will be successful?

Answer: N/A

8.8.3	Does the entity expect to be able to continue its operations and to meet its business objectives and, if so, on what basis?
Answer: N/A	
Note: where item 8.7 is less than 2 quarters, all of questions 8.8.1, 8.8.2 and 8.8.3 above must be answered.	

Compliance statement

1 This statement has been prepared in accordance with accounting standards and policies which comply with Listing Rule 19.11A.

2 This statement gives a true and fair view of the matters disclosed.

Date: .....29 July 2022.....

Authorised by: .....Mark Cooksey, CEO.....
(Name of body or officer authorising release – see note 4)

Notes

1. This quarterly cash flow report and the accompanying activity report provide a basis for informing the market about the entity's activities for the past quarter, how they have been financed and the effect this has had on its cash position. An entity that wishes to disclose additional information over and above the minimum required under the Listing Rules is encouraged to do so.

2. If this quarterly cash flow report has been prepared in accordance with Australian Accounting Standards, the definitions in, and provisions of, *AASB 6: Exploration for and Evaluation of Mineral Resources* and *AASB 107: Statement of Cash Flows* apply to this report. If this quarterly cash flow report has been prepared in accordance with other accounting standards agreed by ASX pursuant to Listing Rule 19.11A, the corresponding equivalent standards apply to this report.

3. Dividends received may be classified either as cash flows from operating activities or cash flows from investing activities, depending on the accounting policy of the entity.

4. If this report has been authorised for release to the market by your board of directors, you can insert here: "By the board". If it has been authorised for release to the market by a committee of your board of directors, you can insert here: "By the [*name of board committee – eg Audit and Risk Committee*]". If it has been authorised for release to the market by a disclosure committee, you can insert here: "By the Disclosure Committee".

5. If this report has been authorised for release to the market by your board of directors and you wish to hold yourself out as complying with recommendation 4.2 of the ASX Corporate Governance Council's *Corporate Governance Principles and Recommendations*, the board should have received a declaration from its CEO and CFO that, in their opinion, the financial records of the entity have been properly maintained, that this report complies with the appropriate accounting standards and gives a true and fair view of the cash flows of the entity, and that their opinion has been formed on the basis of a sound system of risk management and internal control which is operating effectively.