ASX: ABX

ANSTO Leach Tests Confirm High Extractions of Crucial Heavy Rare Earths

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- Excellent ANSTO diagnostic leach test results on the 100 kg Deep Leads bulk sample, consistent with ABx's in-house leach test results
- Greater than 70% extractions of dysprosium (Dy) and terbium (Tb) achieved – the two most sought-after heavy rare earths
- Results indicate that Deep Leads can be effectively leached above pH 4, which reduces impurities, reduces reagent costs and makes processing benign
- ANSTO remains on track to deliver a mixed rare earth carbonate (MREC) sample in Q4 2025
- Prospective customers eagerly anticipating MREC compositions and samples

ANSTO has completed its diagnostic leach tests on sub-samples of the 100 kg sample of ionic adsorption clay (IAC) rare earth material from the Company's Deep Leads rare earth project, located in a pine plantation 45 km west of Launceston in northern Tasmania.

The ANSTO diagnostic leach tests were conducted at pH 4.0, pH 4.5 and pH 4.7 (see Table 1 and Appendix A) to test progressively lower acidity, nearer to neutral pH 7. Lower acidity delivers lower capital/operating costs and reduced environmental impact.

Table 1: Extraction of magnetic rare earths from bulk sample; ABx in-house tests (pH 4.0) and ANSTO diagnostic leach tests (pH 4.0, 4.5 and 4.7). Full results in Appendix A.

REO	ABx in-house (pH 4.0)	ANSTO (pH 4.0)	ANSTO (pH 4.5)	ANSTO (pH 4.7)
Pr_6O_{11}	66%	74%	75%	73%
Nd_2O_3	69%	76%	77%	74%
Tb_4O_7	60%	74%	73%	71%
Dy_2O_3	65%	72%	72%	70%
MREO*	**68%**	**75%**	**76%**	**74%**
TREO-Ce	66%	75%	76%	74%
TREO	60%	68%	69%	67%

MREO* = Pr_6O_{11} + Nd_2O_3 + Tb_4O_7 + Dy_2O_3

ABx Group Limited
Suite 2, Level 11, 385 Bourke St, Melbourne VIC 3000, Australia
ABN 14 139 494 885
P: +61 3 9692 7222 | F: +61 2 9956 7355

The ANSTO results are similar or better than ABx's in-house leach test results,[1] with very high extractions (above 70%) achieved for dysprosium (Dy) and terbium (Tb), the two most crucial heavy rare earth elements.

The extraction results were very similar at pH 4 and 4.5, and only slightly lower at pH 4.7, indicating that the Deep Leads deposit could be effectively leached at an exceptionally benign pH above 4 (the acidity of apple juice), which is valuable because contamination by impurity elements such as aluminium and iron is typically much lower at higher pH.

These results are consistent with previous leach tests conducted by ANSTO that found that samples from Deep Leads exhibited the highest extractions under near-neutral conditions reported from any clay-hosted resource in Australia. This means the ABx resource has the highest ionic proportion of any clay-hosted rare earths resource in the country.[2,3]

ABx Group Managing Director and CEO Mark Cooksey said:

"Confirmation of our in-house results by ANSTO – one of the world's leading rare earth laboratories – is an important milestone. Achieving such high extractions of dysprosium and terbium is particularly encouraging, as these are the most strategically valuable rare earths. The ability for Deep Leads to effectively be leached above pH 4 reduces impurities and points to lower operating costs and a cleaner process. With the program on track to deliver our first MREC sample later this year, we are advancing rapidly towards commercial outcomes.

"ABx is aiming to be first MREC producer from an ionic adsorption clay resource in Australia. China's ionic adsorption clay mines that dominate the supply of Dy and Tb are typically smaller than ABx's current resource. Additionally, ABx has already discovered new rare earth resources and aspires to further grow its resource."

Next Steps

The next step in the program is slurry tests, where the leaching performance will be measured when a higher solids loading is used.

The overall program is on schedule, with ANSTO's production of a Mixed Rare Earth Carbonate (MREC) sample expected in Q4 2025. Results and samples will be provided to prospective customers, who are keenly anticipating these outcomes.

Strategic Importance of MREC Production

Producing a high-purity MREC from a bulk sample represents a critical milestone for ABx in the development of the Deep Leads project. Existing and prospective rare earth refineries are seeking high quality MRECs that can be produced at low cost. MRECs with high proportions of Dy and Tb are in particular demand, because these elements have the most acute supply risk.[4] ABx has excellent prospects of meeting these requirements because:

[1] ASX Announcement, 6 August 2025
[2] ASX Announcement, 31 May 2022
[3] ASX Announcement, 2 February 2023
[4] ASX Announcement, 23 April 2025

1. Achieving high extractions at ambient temperatures and pressures with minimal acid in a short time is likely to lead to lower cost and lower impurities in the MREC product
2. The ABx resource has a higher proportion of Dy and Tb, which is likely to lead to an MREC with a higher proportion of Dy and Tb compared to peers

The Company has already executed a Memorandum of Understanding with Ucore Rare Metals Inc. (TSXV: UCU) (OTCQX: UURAF)[5], which is focussed on rare-earth processing facilities in North America, and ABx is also in discussions with additional potential offtake partners.

ABx Rare Earth Resource

The Deep Leads – Rubble Mound and Wind Break discoveries contain a resource estimate of 89 million tonnes[6] averaging 844 ppm total rare earth oxides (TREO). The resource contains 36 ppm Dy+Tb (Dy+Tb is 4.4% of TREO), the highest of any ionic clay deposit in Australia and among the highest globally. [7]

This resource estimate has been defined from only 29% of the project's mineralised outline.

This announcement is approved for release by the board of ABx Group Limited.

Go to the ABx Investor Hub to watch a video of this announcement and ask any questions of management.

For further information please contact:

Dr Mark Cooksey
MD & CEO
ABx Group
+61 447 201 536
mcooksey@abxgroup.com.au
www.abxgroup.com.au

Media
Chapter One Advisors
David Tasker / Alex Baker
+61 433 112 936 / +61 432 801 745
dtasker@chapteroneadvisors.com.au /
abaker@chapteroneadvisors.com.au

[5] ASX Announcement, 4 September 2024
[6] 41 Mt inferred, 42 Mt indicated and 6 Mt measured
[7] ASX Announcement, 2 May 2024

About ABx Group Limited

ABx Group Limited (ABx) is a uniquely positioned Australian company delivering materials for a cleaner future.

The three priority projects are:

- **Heavy rare earths**: Supplying light and heavy rare earths from Tasmania into Western supply chains
- **Clean fluorine chemical production**: Producing industrial chemicals from aluminium smelter waste (ALCORE)
- **Near-term bauxite production**: Mining bauxite resources for the aluminium, cement and fertiliser industries

ABx endorses best practices on agricultural land and strives to leave land and environment better than we find it. We only operate where welcomed.

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.

Competent Persons Statement

The information in this report that relate to Exploration Information and Mineral Resources is based on information compiled by Ian Levy who is a member of The Australasian Institute of Mining and Metallurgy and the Australian Institute of Geoscientists. Mr Levy is a qualified geologist and a director of ABx Group Limited.

Mr Levy has sufficient experience, which is relevant to the style of mineralisation and type of deposit under consideration and to the activity, which he is 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 Levy has consented in writing to the inclusion in this report of the Exploration Information in the form and context in which it appears.

The sub-sample preparation was conducted by Operations Manager Nathan Towns in the ABx Research Lab in accordance with the increment division method in ISO Standard 6140.

ABx's leach tests on four 20g representative sub-samples were conducted at the ABx Research Lab by ex-CSIRO Senior Research Engineer, Dr Daniel Jewell, to the highest standards.

Table 2 - Summary of sampling information referred to above, in accordance with LR 5.8.1

Geology and geological interpretation	REE mineralisation occurs in clay layers that overlie a Jurassic age dolerite basement in a district with some residual weathered Tertiary age alkali basalt.
Sampling and sub-sampling techniques	Pit sampling was done at 1 metre intervals using a large excavator with an 8 metre boom. Subsampling of ~180kg was done by fractional shovelling. This sample was dried, crushed to 25mm and ground to minus 5mm. Further subsampling to collect the 100kg samples for ANSTO processing was done by increment division on disk-ground powder in accordance ISO Standard 6140. See Figures 5 & 6 below.
Drilling techniques	Not applicable (N.A.). Bulk pit sampling by excavator
Criteria used for resource classification, drill & data spacing & distribution.	N.A.
Sample analytical method	Assay samples are analysed by standard NATA-approved induction coupled plasma analytical methods for rare earth elements at ALS labs in Brisbane (method ME-MS81). Interlab comparisons were satisfactory.
Estimation methodology, cut off grade, mining, metallurgy and other modifying factors	All N.A.

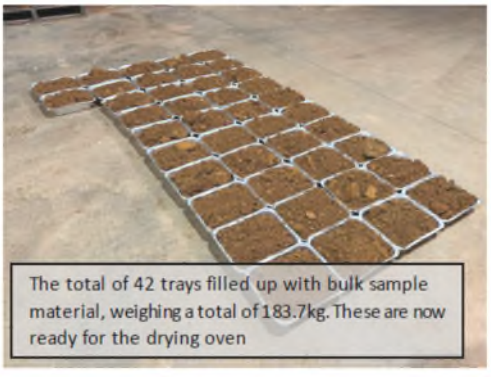

Figure 1 (left): handling the bulk sample from the pit, Preparations for drying the 183.7kg bulk sample in 42 trays

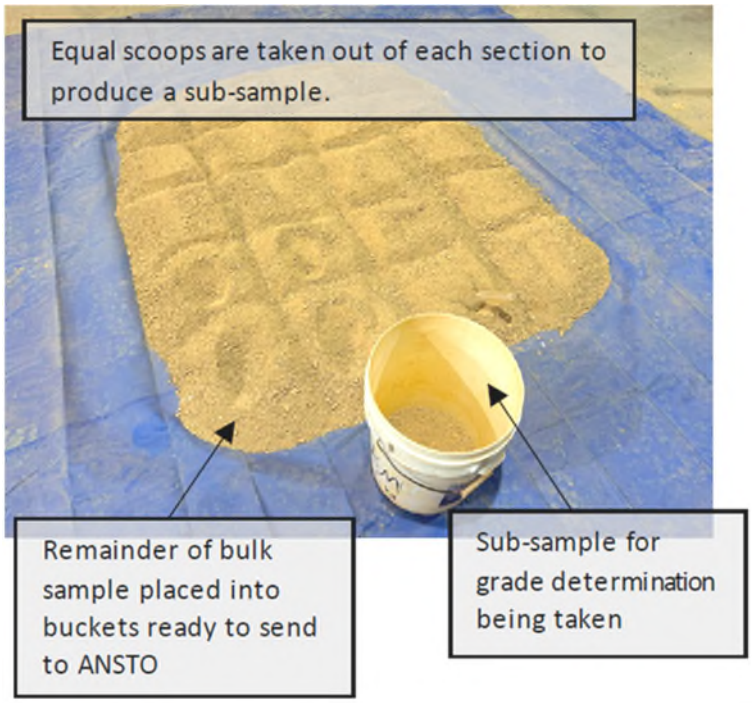

Figure 2 (above): Increment subsampling of the 100kg ANSTO sample crush and ground to less than 5mm.

Subsampling done in accordance with International Standard ISO 6140 at the ABX Research Laboratory at Western Junction, Launceston, Tasmania.

APPENDIX A: Extraction of rare earths from bulk sample; ABx in-house tests (pH 4.0) and ANSTO diagnostic leach tests (pH 4.0, 4.5 and 4.7).

Oxide / Element	ABx in-house (pH 4.0)	ANSTO		
		(pH 4.0)	(pH 4.5)	(pH 4.7)
La_2O_3	56%	72%	73%	72%
CeO_2	6%	8%	8%	7%
Pr_6O_{11}	66%	74%	75%	73%
Nd_2O_3	69%	76%	77%	75%
Sm_2O_3	59%	71%	72%	70%
Eu_2O_3	65%	80%	80%	77%
Gd_2O_3	68%	76%	77%	75%
Tb_4O_7	60%	73%	73%	71%
Dy_2O_3	65%	72%	72%	70%
Ho_2O_3	62%	70%	71%	69%
Er_2O_3	65%	70%	68%	67%
Tm_2O_3	59%	69%	69%	69%
Yb_2O_3	57%	67%	68%	65%
Lu_2O_3	53%	65%	64%	64%
Y_2O_3	72%	79%	80%	79%
TREO	60%	68%	69%	67%
TREO-Ce	66%	75%	76%	74%
LREO	52%	61%	62%	60%
HREO	68%	76%	76%	75%
MREO	**68%**	**75%**	**76%**	**74%**

ABx leach conditions:

- 20g sample and 80mL of 4wt% (0.3M) ammonium sulfate (i.e. 20wt% slurry solids loading)
- pH maintained at pH 4 by continuous monitoring and manual addition of small quantities of dilute (3.45wt%) sulfuric acid
- Ambient temperature and pressure
- Overhead stirring at moderate speed
- 15 min

Compositions of sample and leached solution measured at ALS
Leach results are the average of tests on four sub-samples from the bulk sample

ANSTO leach conditions:

- 80g sample and 1920mL of 4wt% (0.3M) ammonium sulfate (i.e. 4wt% slurry solids loading)
- Maintained at pH 4 by continuous monitoring and automated addition of small quantities of 1M sulfuric acid
- Ambient temperature and pressure
- Overhead stirring
- 30 min

LREO (Light REO) = $La_2O_3 + CeO_2 + Pr_6O_{11} + Nd_2O_3$
HREO (Heavy REO) = $Sm_2O_3 + Eu_2O_3 + Gd_2O_3 + Tb_4O_7 + Dy_2O_3 + Ho_2O_3 + Er_2O_3 + Tm_2O_3 + Yb_2O_3 + Lu_2O_3 + Y_2O_3$
MREO (Magnet REO) = $Pr_6O_{11} + Nd_2O_3 + Tb_4O_7 + Dy_2O_3$

JORC Code, 2012 Edition – Table 1

Section 1 Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
Sampling techniques	• *Nature and quality of sampling* • *Include reference to measures taken to ensure sample representivity* • *Aspects of the determination of mineralisation that are Material to the Public Report.* • *Industry standard work:*	• Bulk pit dug by excavator • Samples taken at 1 metre intervals by cleaning pit at the metre interval, then taking full 1 metre slice for the samples. • Subsampling the metre samples done as per ISO bauxite sampling processes
Drilling techniques	• *Drill type*	• Not applicable to bulk pits excavated by excavator with 8 metre boom
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.*	• Not applicable to bulk pits
Logging	• *Whether samples have been geologically and geotechnically logged to an appropriate level for metallurgical studies.* • *Whether sampling is qualitative or quantitative.* • *Total length & percentage of the relevant intersections logged.*	• Pits sampled, assayed, logged, photographed & stored to ISO standards. See below • All 8 metres was logged and sampled • Depth 5m to 6m selected – see below
Sub-sampling techniques and sample preparation	• *If core, whether cut or sawn, quarter, half or all core.* • *If non-core, sample method, whether sampled wet or dry.* • *Nature, quality & appropriateness of the sample preparation.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	• Depth 5m to 6m selected for the sample to be used to produce a mixed carbonate rare earth carbonate (MREC) • 100kg samples produced by drying 600kg, comminution, subsampling by increment division in accordance ISO Standard 6140 at ABx Research Lab, Launceston that is a recognised sampling lab for bulk products including shipping of bauxite. • Separate subsamples assayed the same
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* • *Geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis* • *Nature of quality control procedures adopted.*	• Assaying done by NATA-registered ALS laboratories, Brisbane • N.A. Assays are by ALS which is a major mineral laboratory • ALS is industry-standard and publishes its QA/QC protocols and results on its website
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	• Pit sampling supervised by 4 ABx senior staff – see Competent Person & Expert Statement for details. • Repeated subsampling assayed the same. • Metal assays from ALS converted to oxides as per industry standards for reporting
Location of data points	• *Accuracy & quality of surveys used to locate drill holes & pits.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• Location by GPS • Pit DLP002 location: 477720E , 5410126N (WGS 84 56S grid). RL 287.675m by LiDAR.
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *Whether the data spacing and distribution is sufficient.* • *Whether sample compositing has been applied.*	• Bulk pit sampling at 1m intervals considered appropriate and sufficient
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *Does the drilling orientation introduce a sampling bias*	• Vertical bulk pit sampling is appropriate for the horizontal layers of REE mineralisation
Sample security	• *The measures taken to ensure sample security.*	• Chain of custody protocols were applied to secure the bulk bag samples.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• Two bulk samples taken simultaneously assayed the same

Section 2 Reporting of Exploration Results (Criteria listed in preceding section also apply to this section.)

Criteria	JORC Code explanation	Commentary
Mineral tenement and land tenure status	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* • *Security of tenure and impediments to obtaining a licence to operate.*	• EL7/2010 100% owned and unencumbered. Pit located in a pine plantation with approvals from owner and government agencies.
Exploration by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• ABx sole discoverer and first to explore this area.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• REE mineralisation occurs in clay layers that overlie a Jurassic age dolerite basement in a district with some residual weathered Tertiary age alkali basalt.
Drill hole Information	• *Summary of information for understanding exploration results including a tabulation of the following information for all material drill holes:* o *easting and northing of the drill hole collar* o *elevation or RL (Reduced Level – elevation above sea level in metres)* o *dip and azimuth of the hole* o *down hole length and interception depth* o *hole length.* • *If exclusion of this information is justified, the Competent Person should clearly explain why this is the case.*	• Pit DLP002 location: 477720E , 5410126N (WGS 84 56S grid). RL 287.675m by LiDAR.
Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.* • *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.* • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	• No aggregation or any cutting of assays done • Metal assays from ALS converted to oxides as per industry standards for reporting
Relationship between mineralisation widths & intercept lengths	• *These relationships are particularly important.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').*	• Vertical bulk pit sampling is appropriate for the horizontal layers of REE mineralisation
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	• See report
Balanced reporting	• *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.*	• All data to date is reported in this report
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	• All data to date is reported in this report
Further work	• *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• ANSTO labs are engaged to undertake the processing on the 100kg sample to produce a mixed rare earth carbonate concentrate (MREC)

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