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Lynas announces a 60% increase to Mt Weld Ore Reserves, one of the world's richest sources of Rare Earths

- Substantial increase in Mt Weld Rare Earth Mineral Resources and Ore Reserves
- Updated Ore Reserves confirm 25+ year mine life at Lynas NEXT output rates

Lynas Corporation Limited (ASX:LYC, OTC:LYSDY) is pleased to release its updated Mt Weld Rare Earth Mineral Resources and Ore Reserves Statement which shows a substantial increase in tonnage and contained TREO compared with the 2015 Mineral Resources and Ore Reserves Statement.

Lynas is a proven and profitable producer and supplier of Specialty Rare Earth Materials to customers all over the world who demand the best technical solution to produce essential, future-facing technologies. Over the past three years, Lynas has established itself as the world's second largest supplier of Neodymium and Praseodymium (NdPr), used in rare earth magnets employed by the automotive, consumer electronics, automation and wind energy industries.

A cornerstone of Lynas' strategy as a Specialty Materials company is ongoing access to an "assured" reserve. In practical terms, Lynas seeks to maintain Ore Reserves with greater than 25 years life. Mt Weld, in Western Australia, is one of the world's highest grade operating rare earth mines. The updated Mineral Resources and Ore Reserves Statement consolidates Mt Weld's position as a Tier 1 Rare Earth deposit.

Lynas CEO and Managing Director, Amanda Lacaze commented: "The 2018 Mineral Resources and Ore Reserves Statement demonstrates the overall superiority of the Lynas deposit at Mt Weld based on grade, NdPr content, total REO tonnage and life of mine."

"We are uniquely positioned as an integrated miner and producer of Rare Earths outside China and as a supplier to global manufacturing supply chains. Demand for Rare Earths continues to grow and this update confirms our ability to maintain 25+ year Ore Reserves at the higher output planned as part of our Lynas NEXT initiative, with potential for replenishment and further growth."

2018 Mt Weld Rare Earth Mineral Resource

- The Mt Weld Rare Earth Mineral Resources estimate is now 55.4 million tonnes at an average grade of 5.4% Total Rare Earth Oxide (TREO) for a total of 3.0 million tonnes of contained TREO. The estimate is summarised in Table 1.
- Compared to the October 2015 Mineral Resources estimate, the contained TREO has increased by over 70% from 1.74 million to 3.0 million tonnes TREO.

JORC Classification	Million tonnes	TREO (%)	TREO ('000 tonnes)
Measured	17.5	8.0	1,400
Indicated	12.0	5.5	660
Inferred	25.9	3.6	930
Total	55.4	5.4	3,000

Table 1: Mt Weld Rare Earth Deposit Mineral Resources 2018

TREO = total Rare Earth Oxides (La₂O₃, CeO2, Pr6011, Nd2O3, Sm2O3, Eu2O3, Gd2O3, Tb4O7, Dy2O3, Ho2O3, Er2O3, Tm2O3, Yb2O3, Lu2O3) + Yttrium (Y2O3). Totals may not balance due to rounding of figures.





- The increases are due to additional drilling which identified:
 - Depth extensions of the Apatite Zone (AP)
 - Lateral extension of lower grade material
 - Transitional (TR) and Fresh (FR) REO mineralisation below the AP zone

2018 Mt Weld Rare Earth Ore Reserve

- The Mt Weld Rare Earth Ore Reserves are now 19.7 million tonnes at 8.6% TREO for 1.69 million tonnes of contained TREO, as summarised in Table 2, and presented graphically in Figure 1.
- Compared to the October 2015 Ore Reserves, (i) Ore Reserves tonnage has increased 100%, (ii) average grade has reduced from 10.8% to 8.6% TREO and (iii) contained TREO has increased 60% from 1.07 million to 1.69 million tonnes.

Table 2: Mt Weld Rare Earth Deposit Ore Reserves 2018

JORC Classification	Million tonnes	TREO (%)	TREO ('000 tonnes)	
Proven	14.6	8.9	1,290	
Probable	5.1	7.7	390	
Total	19.7	8.6	1,690	

- Metallurgical test work has shown Duncan material performs in line with CLD ore and can be included in the Ore Reserves. The CLD and Duncan are now considered to be part of the same orebody representing a change from 2015 and increasing the area of the orebody.
 - The increases in the Ore Reserves are due to:
 - Depth extensions of the Apatite Zone
 - Inclusion of Duncan South Eastern Area
 - Lateral extension of halo surrounding the high grade core
- With the inclusion of Duncan, the 2018 Mt Weld Rare Earth Ore Reserves now contain 6,600 tonnes of Dysprosium which compares favourably with other pure heavy rare earth projects.



Figure 1: Changes to Mt Weld Rare Earth Ore Reserve Contained TREO





For further information please contact: Andrew Arnold **Company Secretary** E: general@lynascorp.com

For media enquiries, please contact:

Jennifer Parker or Lauren Stutchbury, Cannings Strategic Communications P: +61 2 8284 9990

www.lynascorp.com ACN 009 066 648







Background

Lynas Corporation Ltd (ASX: LYC) (OTC: LYSDY) ("Lynas" or the "Company") is pleased to announce results of its updated Mt Weld Mineral Resources estimate and Ore Reserves.

The Mineral Resource is depleted for mining up to 30 June 2018, and has been reported in accordance with the JORC Code¹. Mineral Resource estimation was completed by independent mining consultants CSA Global Pty Ltd (CSA Global), and was based on data from reverse circulation (RC) and air-core (AC) drilling programs completed in various phases from 1990 through 2017. A total of 801 drillholes have been used to define the Mount Weld Rare Earth deposit for a total of 49,306 m of drilling.

The Mineral Resource estimate represents an update to that previously reported by LYC on 5 October 2015, following additional drilling completed in 2016 and 2017. A drill hole location plan is shown in Figure 2.



Figure 2: Drillhole location plan, including drillhole MWEX10165 (red) examined during drilling by CSA Global.

The Ore Reserve includes stockpiles on the surface as at 30 June 2018, and has been reported in accordance with the JORC Code¹. Ore Reserves estimation was completed by independent mining consultants Auralia Mining Consulting Pty Ltd. The Ore Reserves estimate represents a major update to that previously reported by Lynas on 5 October 2015. Auralia also completed the Ore Reserves estimation in 2015 and has been involved in a strategic mine planning capacity supporting the operation since that time.

¹ Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. The JORC Code, 2012 Edition. Prepared by: The Joint Ore Reserves Committee of The Australasian Institute of Mining and Metallurgy, Australian Institute of Geoscientists and Minerals Council of Australia (JORC).



Experience gained through mining and processing material from Campaign 1B (mining from January 2017 to May 2017) and Campaign 2 (mining from September 2017 to present) and the continued processing of Campaign 1 ore has either confirmed the Modifying Factors related to the 2018 Ore Reserves or allowed refinement to match the operating conditions.

Two major changes have occurred that result in the increase in the Ore Reserves. Firstly, the geological conclusion that the CLD and Duncan can be considered to be part of one deposit resulting in a combined Mineral Resources estimate. Secondly, through metallurgical test work and evaluation, Duncan material can be economically treated through the Mt Weld Concentrator and subsequently processed at LAMP. Essentially, Duncan material is a comparable source of mill feed to CLD and can be viewed as the same ore body from a metallurgical perspective.

A plan view of the larger Life of Mine (LOM) open pit footprint from 2015 to 2018 is shown in Figure 3.



Figure 3: Increase in LOM Pit from 2015 to 2018.

Mt Weld Rare Earths Mineral Resource Estimate

Following significant drilling intersections showing extensions of REO mineralisation in several directions, the Central Lanthanide deposit (CLD) and Duncan deposit were combined and reported as the Mt Weld Rare Earth Deposit. This reinterpretation reflects results from process testwork in 2018, and improved understanding of the mineralisation controls.

The total tonnage of the Mt Weld Rare Earth deposit has increased by 138% since it was last reported in October 2015. The increase is primarily a result of new test work and additional drilling. The Mt Weld rare earth deposit consists of a high grade core comprising the CLD, dominated by light rare earth elements, surrounded by an outer mineralised zone termed the Duncan deposit, which is relatively enriched in heavy rare earth elements. The Duncan deposit material was previously constrained to the south-eastern part of the mineralisation in previous estimates, where concentrations of grades were highest. Results from process testwork in February 2018 have confirmed that the Duncan mineralisation can be processed in a very similar manner to the CLD mineralisation with comparable recoveries and performance. This has allowed the inclusion of all heavy enriched material >2.5 % REO which surrounds the CLD mineralisation.



The Mt Weld carbonatite REO mineralised regolith profile contains three layers of saprolite represented by limonitic and silica rich nodules known as the Limonite (Li) zone; a goethitic and haematitic silty layer of saprolite known as the Central (CZ) zone and a layer of apatite rich material known as the Apatite (AP) zone. REOs are found predominantly in monazite with minor cerianite, crandallite, florencite and xenotime. Below the regolith is the partially weathered saprock of the Mt Weld Carbonatite called the Transition (TR) zone followed by the unweathered Fresh (FR) zone. Figure 4 illustrates the lithological classification layers.

The base of the AP zone in previous Mineral Resource estimates was limited by penetration of historic AC drilling. In late 2017 a depth extension exploration program was completed using RC drilling beneath the life of mine (LOM) pit design. This resulted in extension of the AP zone which has added significant tonnes to the Mt Weld Rare Earth Mineral Resource estimate.



Figure 4: View of the main pit showing lithological classification, looking westwards Note: Field of view approximately 300 m. Photos taken on 27 November 2017

Drilling results also showed that primary REO mineralisation within the TR and FR carbonatite units was consistent with the mineral zonation found within the enriched regolith profile, with higher grades in the central area decreasing outwards. The primary mineralisation may have the potential to be amenable to gravity concentration, similar to deposits such as Mountain Pass in California, despite occurring at lower grades (between 2.5 % and 6 % REO) than found within the supergene regolith.

The depth extension exploration program completed in 2017 was Stage 1 of 6 drilling programs designed to extend the mineralisation at depth and laterally from the central zone of the Mt Weld Carbonatite.

Sampling was completed using AC and RC drilling at different grid spacings. Most of the deposit has been drilled on a nominal 40 m x 40 m grid spacing, with grade control drilling occurring on 10 m x 10 m and 20 m x 20 m spacings within the stage 1 and stage 2 pit areas respectively.

In situ, dry bulk densities were assigned based on lithology, which were coded into the model using digital terrain model (DTM) surfaces modelled from drilling data. Mineralisation domains that had low numbers of density measurements were classified as Inferred Mineral Resources (Domains 11 and 12). Table 3 shows the assigned values.



Mineralisation domains	Density(t/m3)
Limonitic (Domain 6)	1.9
Central monazite (Domain 7)	1.6
Manganese (Domain 8)	1.8
Apatite (Domain 9)	1.92
Transitional (Domain 10)	2.3
Fresh (Domain 11)	2.5
Overburden waste	
Alluvium	2.2
Haematitic clay	1.8
Plastic clays	1.6
Calcrete	2.5
Caprock	2.5
Dolerite waste	
Oxidised zone	2.5
Transitional zone	2.75
Fresh zone	2.8

Table 3: Assigned density in mineralised, overburden and waste domains

Mineral Resource Estimate – Material Information Summary, in accordance with ASX LR 5.8.1

Geology and Geological Interpretation

The Project area covers a near-vertical carbonatite plug known as the Mount Weld Carbonatite (MWC). The MWC has intruded strongly deformed Archaean volcanic and sedimentary rocks of the Laverton Tectonic Zone (LTZ) which are situated within the north-eastern section of the Yilgarn Craton. The MWC is a sub-vertical pipe intrusion approximately 3.5 km in diameter. Wall rocks are generally unaltered approximately 500 m away from the MWC boundary, with alteration progressively increasing towards the contact with the intrusion and associated dykes. Figure 5 is a plan view showing the geology of the Mount Weld Project area.

The carbonatite is generally massive with no evidence of large-scale shearing or faulting. This suggests that emplacement was after the last major regional deformation event. Local deformation has occurred from a dolerite dyke intrusion which runs from southeast to northwest through the centre of the MWC.

A complex regolith of variably oxidised carbonatite, residual mineral concentrations, palaeo-soils and locally transported alluvial sediments varying from a few metres to more than 50 m has developed over the MWC.

Rare earth mineralisation is present within the supergene and residual regolith units of the MWC. The REO grade enrichment generally follows the transitional and fresh carbonatite zones below, with an elevation of grades centrally that reduce outwards. REOs were concentrated in the regolith, while more mobile carbonate minerals were removed by fluids during the weathering process of the carbonatite.







Figure 5: Geology of the Mount Weld Project

There are three REO mineralogical layers of economic significance: LI, CZ and AP that form a concentric zonation of grades with light rare earths in the centre and heavy rare earths enrichment on the outside. The central zone is predominantly monazite with an overprint of cerianite and the outer zone comprises monazite with an overprint of xenotime, florencite and crandallite. Lithological descriptions are provided below.

- LI lithology: A yellow-brown, nodular to concretionary, variably cemented ironstone gravel to limonite clay with an irregular thickness and distribution. The REO content may be up to 30%.
- CZ lithology: This zone constitutes the main REE mineralised lithology of the Mount Weld rare earth deposit. It comprises mainly friable, extremely fine grained, low density, goethitic silty clay with variably visible secondary monazite. The major components are typically 30–50% iron oxides, 15–30% lanthanide oxides, 5–10% phosphate, 1–5% alumina, 2–6% silica and 1–10% manganese oxide.
- MN lithology: Secondary manganese oxidation is common along the boundary between residual apatite and the supergene regolith above. Localised areas of manganese mineralisation have been identified where the original lithology is indurated and cemented by MnO (approximately greater than 10%).
- AP lithology: The underlying Apatite Zone is the residual mineralised part of the carbonatite regolith. Apatite is not as heavily weathered as the lithological zones above with lower REO content, generally between 2% and 10%, however does exceed 10% below the central part of the CLD. The AP lithology varies from unconsolidated magnetite-apatite of pristine primary minerals to various states of oxidation, solution, reprecipitation and cementing with iron oxides, secondary carbonate, secondary apatite and crandallite.

Lithological features were modelled to support the Mineral Resource estimate including alluvium, haematitic clays, plastic clays, calcrete, caprock, dolerite dyke, and the limonite, carbonatite, manganese, apatite, transitional and fresh zones.



A total of six mineralisation domains were used to constrain grade estimation including the LI unit (Domain 6), the CZ unit (Domain 7), the MN unit (Domain 8), the AP unit (Domain 9), the transitional carbonatite unit (TR) (Domain 10) and the fresh carbonatite unit (DC) (Domain 11). Figure 6 illustrates the interpreted mineralisation domains.



Figure 6: Cross section of drillholes displaying REO grade and mineralisation wireframes – Section 455740 m E.

Note: Wireframes coloured by lithology, from top to bottom: light brown = QA, blue = BH, cyan = BP, dark green = BC, light green = CR, yellow = LI, Orange = CZ, red = MN, pink = AP (below = FR/DC), dolerite = light blue. REO grades styled by grade: blue = 0-1%, cyan = 1-2%, green = 2-2.5%, yellow = 2.5-5%, orange = 6-10%, red = 10-20%, pink = >20%.

Sampling and Sub-sampling

The Mount Weld deposit has been evaluated using RC and AC drilling.

RC and AC drill chip samples were collected at 1 m intervals into PVC and woven polypropylene bags. Radiation measurements for each 1 m sample pile were taken using a scintillometer. Increased radiation is an indicator for the presence of thorium within REOs and along with geological logging of lithology, it was used to determine where sampling intervals start downhole.

RC: 1 m or 2 m composites were collected into calico bags with a scoop, depending on where the lithology boundary falls. Each sample was weighed during compositing to take an equal weight from each 1 m interval, with samples averaging 2.5 kg.

AC: 1 m, 2 m, 3 m and 6 m composites were collected into calico sample bags using a scoop. Samples were weighed during compositing to take equal amounts per 1 m interval.

With each batch of samples sent to the laboratory, one certified standard for every 20th sample (every 50th sample for drill programs pre-Lynas) and one field repeat every 50th sample was inserted to check analytical accuracy and sampling precision.

Drilling Techniques

RC drilling used 110–140 mm diameter drill bits. RC drilling employed face sampling hammers and returning to the collection point inside the drill rods via a sampling cyclone, ensuring minimal contamination during sample extraction.

AC drilling used 87 mm, 112 mm and 150 mm diameter drill bits. Samples were collected from the face of the drill bit and returning to the collection point inside the drill rods via a sampling cyclone.



Classification Criteria

The Mineral Resource has been classified following due consideration of all criteria contained in Section 1, Section 2 and Section 3 of JORC 2012 Table 1. The classification level is based upon an assessment of geological understanding of the deposit, geological and mineralisation continuity, drillhole spacing, quality control results, search and interpolation parameters, and an analysis of available density information.

The Mineral Resource estimate for the Project is classified as Measured, Indicated and Inferred.

Holes have been drilled at different spacings throughout the life of the Project. The main part of the Mount Weld Rare Earth deposit has been drilled at spacing of no more than 40 m x 40 m with a nominal 100 m x 100 m spacing in the peripheral areas of the deposit. Grade control within Stage 1 and 2 pits have drillhole spacings of 10 m x 10 m and 20 m x 20 m respectively.

All Mineral Resources were classified above a classification shell created approximately 150 m outside the LOM pit boundary and the southeast drilling of the Duncan deposit, then projected on a - 35° angle downwards; the angle being the approximate intra-pit wall angle that includes both the pit wall and ramps for the clay zone.

The following approach was adopted to classify Measured Mineral Resources:

- Domains 6 to 9 were reviewed in sequence, at first independently.
- A boundary string was created to encapsulate continuous areas with high estimation confidence for key representative REO variables La₂O₃, Dy₂O₃, Eu₂O₃ and Y₂O₃ using the following criteria:
 - Blocks estimated by pass 1 and 2
 - Kriging efficiency >0.8
 - Slope of regression >0.8
 - Average distance to informing samples of 60 m or less
 - Minimum distance to samples of 40 m or less
 - Near the optimum of eight samples.
- The boundaries were reviewed in combination to determine a 'best-fit' boundary inside which Measured Mineral Resources were classified for domains 6 to 9.

The following approach was adopted to determine Indicated Mineral Resources:

- Domains 6 to 9 were reviewed in sequence, at first independently.
- A boundary string was created to visually constrain each, initially independent assessment of La₂O₃, Dy₂O₃, Eu₂O₃ and Y₂O₃ estimation indicators:
 - Blocks estimated by pass 1 and 2
 - Kriging efficiency >0.8
 - Slope of regression >0.6
 - Average distance to informing samples of 140 m or less
 - Minimum distance to samples of 100 m or less
 - Near the optimum number of eight samples.
- The boundaries were reviewed in combination to determine a 'best-fit' boundary inside which Indicated Mineral Resources were classified for domains 6 to 9 and outside the boundary inside which Measured Mineral Resources were classified.

The remainder of blocks in Domains 6 to 9 above the classification shell and outside the Indicated Mineral Resource boundary were classified as Inferred Mineral Resources.

The confidence in the density for Domains 10 (TR) and 11 (FR) is low. The low confidence in density, lower estimation quality and lower sample density led CSA Global to classify all Mineral Resources for transitional and fresh carbonatite above the classification shell as Inferred.



Figure 7 illustrates the Mineral Resource classification in plan view and Figure 8 illustrates the classification in section view.



Figure 7: Mineral Resource classification: Measured (inside red boundary), Indicated (inside green boundary) and Inferred Mineral Resource classifications (above blue shell).



Figure 8: Cross section through block model showing Measured (red), green (Indicated) and Inferred Mineral Resources – Section 455860 m E.



Sampling Analysis Method

A considerable amount of work was completed by Lynas Corporation and Intertek Genalysis Laboratory in Perth to develop analytical techniques appropriate for determination of rare earth and associated gangue element concentrations. ICP-MS (FP6/MS) and ICP-OES (FP6/OE) methods were adopted. ICP-MS and ICP-OES instruments were calibrated to industry standard requirements.

Estimation Methodology

Samples were composited to 2 m within domains based on assessment of the raw drillholes. The variables all showed very continuous distributions, therefore no top-cutting was applied.

Variography was conducted for every mineralisation domain.

Kriging Neighbourhood Analysis (KNA) was undertaken using Supervisor[™] software to assess the effect of changing kriging neighbourhood parameters on block grade estimates. Kriging efficiency and slope of regression were determined for a range of block sizes, minimum and maximum samples, search dimensions and discretisation grids.

All variables were estimated using block ordinary kriging (OK) in four expanding search-ellipse passes honouring anisotropic ratios for each variable in each domain from the corresponding semi-variogram models. The first pass ellipse size was 50 m in the major direction for each variable, roughly double the pit drillhole spacing of 25 m x 25 m. The second pass size was 50% of each variable's maximum variogram range, the third pass 100% and the fourth 200%. By-product variables, niobium, strontium and scandium, were estimated with variable coverage, largely dependent on the availability of heterotopically sampled assay data for input composites.

The composite average for each variable in each domain was assigned to blocks un-estimated in the four passes.

All geological modelling and grade estimation was undertaken using Surpac[™] V6.6 software.

Validation of the grade estimates was completed by visual checks on screen in cross section and plan view to ensure that block model grades honour the grade of sample composites, statistical comparison of sample and block grades and generation of swath plots to compare input and output grades in a semi-local sense, by easting, northing and elevation.

Cut-off Grade

The adopted reporting cut-off grade of 2.5% REO is considered to be the minimum grade required to cover costs associated with direct cracking processing technology developed from 2011 to 2012 using long term REO prices.

Mining and Metallurgical Methods and Parameters

Open pit mining using selective mining of the rare earth mineralisation has been assumed for the entire deposit. A 30–40 m layer of waste is pre-stripped using a large excavator and then the mineralisation is mined selectively using a smaller excavator. The mining is carried out in campaigns.

Considerable metallurgical testwork on the different mineralisation types has been carried out over the life of the project. Current production figures demonstrate that LI and CZ mineralisation can achieve economic recovery with the current processing facility. Reconciliation of milled grades through the plant gives a high confidence on the metallurgical recoveries, costs and methods used in the resource estimation.

Lynas has undertaken testwork for the AP zone on approximately 6,000 tonnes of material from a 2017 mining campaign. The material was crushed and screened, then sent through a laboratory flotation circuit. The results indicate that a saleable product can be achieved from the AP zone.



Mt Weld Rare Earths Ore Reserves Estimate

The Ore Reserve is based on Mt Weld Rare Earth Mineral Resource estimate, a combined CLD – Duncan evaluation. Following significant drilling intersections showing extensions of REO mineralisation in several directions, the Central Lanthanide deposit (CLD) and Duncan deposit were combined and reported as the Mt Weld Rare Earth Deposit. This reinterpretation reflects the results of process test work in 2018 and improved understanding of the mineralisation controls.

The total tonnage of the Mt Weld Rare Earth Ore Reserve has increased by 100% since it was last reported in October 2015. Average grade has reduced by 20%, from 10.8% to 8.6% REO, as more material in the halo surrounding the high grade core (CLD) forms part of the estimation. An overall increase of 60% in contained TREO occurred. The increase is primarily a result of new test work and additional drilling.

The Mt Weld rare earth deposit consists of a high grade core comprising the CLD, dominated by light rare earth elements, surrounded by an outer mineralised zone. Part of the halo was termed the Duncan deposit which is relatively enriched in heavy rare earth elements. The Duncan deposit material was previously constrained to the south-eastern part of the mineralisation in previous estimates, where concentrations of grades were highest. Results from process test work in 2018 have confirmed that the Duncan mineralisation can be processed in a very similar manner to the CLD mineralisation with comparable recoveries and performance. This has allowed the inclusion of all heavy enriched material which surrounds the CLD mineralisation.

In late 2017 a depth extension exploration program was completed using RC drilling beneath the life of mine (LOM) pit design. This resulted in extension of the AP zone which has added significant tonnes to the Mt Weld Rare Earth Ore Reserves estimate.

Modifying factors for the 2015 Ore Reserve remained substantially the same as for 2018. Adjustments were made based on experience from operations.



Figure 9: View looking south of the original Campaign 1 pit and the commencement of waste stripping for the Campaign 2 pit north of the original pit (November 2017).



Mining Campaign 1B (January to May 2017) and Campaign 2 (September 2017 to present) extracted all lithology types, including material classed as Duncan. Figure 9 illustrates Campaign 2 mining in November 2017.

The increase in Ore Reserves due to the depth extension and lateral increases away from the high grade core (CLD) are significant. Table 4 provides an approximation of the area where the increase occurred. Due to pit shapes and boundaries, these numbers are indicative only.

Table 4: Approximate increases in contained TREO from 2015 to 2018 Ore Reserves due to depth and lateral extension

Area	Contained TREO ('000 t)
Depth Extension	232
Duncan South Eastern Area	206
Lateral extension of halo surrounding high grade core	208

Table 5 provides details on the key rare earth distributions in the 2018 Ore Reserve.

Source	Class	МТ	REO %	REO ('000) Tonnes	Nd₂O₃+ Pr₀O₁₁ (NdPr) ppm	NdPr ('000) Tonnes	Dy ₂ O ₃ ppm	Dy₂O₃ Tonnes	La₂O₃ ppm	La₂O₃ ('000) Tonnes	CeO₂ ppm	CeO ₂ ('000) Tonnes
Pit	Proven	14.1	8.8	1,240	20,200	285	300	4,210	21,200	299	41,560	584
	Probable	5.1	7.7	390	17,500	90	430	2,220	17,800	91	35,630	182
		19.2	8.5									
Stocks	Proven	0.5	10.6	50	23,457	11	410	230	26,341	15	44,672	27
	Probable											
Total		19.7	8.6	1,690	19,500	386	338	6,660	20,558	405	40,254	793

Table 5: Mt Weld Rare Earths Project Ore Reserves with key metal distribution

Ore Reserves – Material Information Summary, in accordance with ASX LR 5.8.2

Geology and Geological Interpretation

Refer to details in the Mineral Resource section above in accordance with ASX LR 5.8.1.

Material outcomes

Geological modelling and metallurgical test work completed since the last major Reserve Upgrade in 2015 has determined that CLD and Duncan can be considered as one deposit. The larger Ore Reserve can support a long life operation of more than 25 years at planned higher throughputs. The four ore types based on the lithologies (Cz, Li, Mn and AP) are all considered sources of ore for the Mt Weld Concentrator. There has been no material change in the Modifying Factors.

Classification criteria

Only the Measured and Indicated Mineral Resource classified material types were used in the optimisations; while the final design may contain Inferred material as part of the final material inventory, Inferred classified material was not utilised as an economic driver and thus not included for consideration for any of Ore Reserve calculations. 100% of the Measured Mineral Resources were converted into Proven Ore Reserves. 100% of the Indicated Mineral Resources were converted into Proven Ore Reserves. Existing ROM Stocks were converted into Proven Ore Reserves.



Any material classified as an Inferred Mineral Resource was not included in any of the updated Ore Reserves calculations. There was minimal Inferred Material of Cz, Li, Mn and AP ore type within the LOM Pit design (less than 0.5Mt). Any material designated as Transitional or Fresh was not included in any of the updated Ore Reserves calculations nor production targets due to no processing route having been confirmed to date for that material.

Mining method

The selected method was open cut mining. A standard 90t truck fleet was selected to be applied to the bulk of the project and the associated costs were applied to the mining study. The fleet calculations included standard ancillary machinery – grader, dozer and water cart. Geotechnical factors have not changed since the 2015 Ore Reserve and mining has been undertaken confirming suitability of design inputs. Mining dilution was set at 4% and mining recovery was set at 98% for the mine design.

The flat lying nature of the orebody with minimal overburden provides a low risk mining method.

Three of the four ore types (Cz, Li and Mn lithologies) are free dig requiring no blasting. AP lithology type which underlies the Cz, Li and Mn requires some blasting.

Processing method

The Mt Weld concentrator uses existing, well tested and conventional technology (crusher, ball mill, flotation, thickeners and filters). The concentrator has been adequately tested at full scale having been in operation since 2011. The Mt Weld concentrator is a 242ktpa facility with planned staged upgrades.

The flotation concentrate from Mt Weld is treated in the Lynas processing facility at Kuantan (Malaysia), known as LAMP (Lynas Advanced Material Plant). The LAMP uses existing, well tested and conventional technology (cracking, leaching, solvent extraction, precipitation and calcination). Rare Earth oxides and carbonates are produced for sale. The suitability of this plant for processing the Mt Weld concentrate has been adequately demonstrated at full scale (on three of the four mineralisation types). The LAMP has been operating since commission in 2013.

The metallurgical test work and evaluation in 2018 showed Duncan material performed in line with CLD material and confirmed the geological conclusion that CLD and Duncan are essentially the same orebody. Duncan is not a different ore category within the Mt Weld Rare Earth Project and can be subject to the same modelling for recovery and cost. The material is essentially not as high in REO as the core area. This extension or halo radiates out in all directions from the very high grade core (previously separated as the CLD Deposit) and has an elevated Heavy Rare Earth content, (particularly Dy) due to the presence of xenotime and florencite minerals. The key economic driver of value in this material is still NdPr.

Basis of the cut-off grade

A cut-off grade of 4% TREO was selected for the Ore Reserves. The basis was a cost analysis completed with the latest cost information. Due to the application of linear regression process cost and mill recovery equations that are based on varying grade inputs per compound, it is necessary to apply a cash flow scenario to the optimisation work.

Estimation methodology

Optimisation work was conducted in Whittle using mining operating costs, processing costs, processing recoveries and other operating parameters. Regression equations for each lithology, (Cz, Li, Mn and AP) were used to determine processing recovery and processing cost per block. This included the optimisation of the block model within the Whittle software program via application of updated Modifying Factors and subsequent design(s) to obtain the Ore Reserve. The current throughput limitation on the operation is the processing facility at LAMP. Projected throughput rates were provided for the LOM to maintain output of 600 tonnes per month of NdPr as per expansion plans. As detailed in previous Company reports, the Lynas NEXT project includes the upgrade of the



Mt Weld Concentrator and LAMP operations to a production capacity of 600 tonnes/month of NdPr. Mining and processing at Mt Weld used scheduled pit cutbacks and stockpiling to meet the financial model requirements. Mine design was completed using the Geovia SurpacTM software suite. The current configuration of the Mt Weld Concentrator has capability through blending to process the material to a concentrate for LAMP. No distinction is made in the evaluation and modelling between CLD and Duncan due to geological and metallurgical work.

Sensitivity studies were carried out. Standard linear deviations were observed. The project displayed physical robustness to variation in Modifying Factors. A sell price of US25/kg REO was used as the basis for the ore reserve work. Optimisation work used an equivalent Nd₂O₃+Pr₆O₁₁ price representing US25/kg REO. All selling costs, royalties and other related operational expenses have been accounted for as part of the processing cost equations. Exchange rates were set at 0.76 AUD/USD. A discount rate of 12.5% was applied. Sensitivity work was completed down to US12/kg REO showing the pit shells were insensitive to this price level.

Material modifying factors

All current deposits are located on granted Mining Leases and mining will be subject to the DMIRS approval process. There are no currently identified grounds upon which it is likely that mining approvals will be withheld. All Mining Proposal and clearing permits and Project Management Plans have been submitted for review. Additionally, no native title determination exists over the Mt Weld project.

Infrastructure and logistics is well established in Australia and Malaysia. Incremental capital upgrades and sustaining capital has been evaluated and included in financial models.



Competent Person's Statement

Mineral Resources

The information in this report that relates to the 2018 Mineral Resources is based on information compiled by Mr Alex Whishaw under the guidance of Dr Andrew Scogings. Mr Wishaw and Dr Scogings are full-time employees of CSA Global. Mr Wishaw is a member of the Australasian Institute of Mining and Metallurgy. Dr Scogings is a Member of the Australasian Institute of Mining and Metallurgy, a Member of the Australian Institute of Geoscientists and an RPGeo (Industrial Minerals). Dr Scogings has sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as Competent Person as defined in the 2012 Edition of the Australasian Code for the Reporting of Exploration Results, Mineral Resources, and Ore Reserves (JORC Code). Dr Scogings consents to the disclosure of information in this report in the form and context in which it appears.

Ore Reserves

The information in this Release which relates to the 2018 Ore Reserves estimate accurately reflect information prepared by Competent Persons (as defined by the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves). The information in this public statement that relates to the Mt Weld Rare Earths Project is based on information resulting from Feasibility works carried out by Auralia Mining Consulting Pty Ltd. Mr Steve Lampron completed the Ore Reserve estimate. Mr Steve Lampron is a Member and Chartered Professional (Mining) of the Australasian Institute of Mining and Metallurgy and has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity that he is undertaking to qualify him as a Competent Person as defined in accordance with the 2012 Edition of the Australasian Joint Ore Reserves Committee (JORC). Mr Steve Lampron consents to the inclusion in the document of the information in the form and context in which it appears.

Qualifying Statement

This release may include forward-looking statements. These forward-looking statements are based on a number of assumptions made by the Company and its consultants in light of experience, current conditions and expectations concerning future events which the Company believes are appropriate in the present circumstances. Forward-looking statements are necessarily subject to risks, uncertainties and other factors, many of which are outside the control of Lynas Corporation, which could cause actual results to differ materially from such statements. The Company makes no undertaking to subsequently update or revise the forward-looking statements made in this release to reflect the circumstances or events after the date of this release.



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JORC TABLE 1

JORC Table 1 Section 1 – Key Classification Criteria

5	Criteria	Commentary				
]	Sampling techniques	The Mount Weld Rare Earth deposit has been evaluated using reverse circulation (RC) and aircore (AC) drilling.				
)		RC and AC drill chip samples were collected at 1 m intervals into PVC and woven polypropylene bags. Radiation measurements for each 1 m sample pile were taken using a scintillometer. Increased radiation is an indicator for the presence of thorium within rare earth oxides (REOs) and along with geological logging of lithology, it was used to determine where sampling intervals start downhole.				
		RC: 1 m or 2 m composites were collected into calico bags with a scoop, depending on where the lithology boundary falls. Each sample was weighed during compositing to take an equal weight from each 1 m interval, with samples averaging 2.5 kg.				
)		AC: 1 m, 2 m, 3 m and 6 m composites were collected into calico sample bags using a scoop. Samples were weighed during compositing to take equal amounts per 1 m interval.				
)		With each batch of samples sent to the laboratory, one certified standard for every 20 th sample (every 50 th sample for drill programs pre-Lynas) and one field repeat every 50 th sample was inserted to check the repeatability of the sampling and the accuracy of the laboratory.				
)		Collar positions were surveyed using global positioning system (GPS) Real Time Kinematic (RTK) equipment, accurate to 0.1 m in the Z direction.				
		RC and AC core drill chip samples were sent to a laboratory for assaying. Samples were, crushed and split at the laboratory with up to 3 kg sampled. For 89% of assays in the database, the REOs were assayed using industry standard inductively coupled plasma – mass spectrometry (ICP-MS) assaying techniques for REOs, and inductively coupled – optical emission spectrometry (ICP-OES) for gangue elements. 11% of the database was assayed using x-ray fluorescence (XRF) at a lower precision than ICP-MS – to a level of 100 ppm for light rare earths and 10 ppm for heavy rare earths. Holes assayed by XRF are on the periphery of the deposit and were only used to estimate in the Inferred category.				
)	Drilling techniques	RC drilling used 110–140 mm diameter drill bits. RC drilling employed face sampling hammers and returning to the collection point inside the drill rods via a sampling cyclone, ensuring minimal contamination during sample extraction. AC drilling used 87 mm, 112 mm and 150 mm diameter AC drill bits. Samples were collected from the face of the drill bit and returning to the collection point inside the drill rods via a sampling cyclone				
)	Drill sample recovery	Logging of all samples followed established company procedures which included recording of qualitative fields to allow discernment of sample reliability. This included (but was not limited to) recording: sample recovery %, sample moisture, sample split method.				
)		The drill rigs had metre marks on the mast and as each metre was reached the driller stopped and alerted the offsider to change the sample bag to ensure the correct 1 m interval was sampled. The use of a "drop box" was used on RC drill rigs to open and close when the 1 m interval is reached.				
)	1	Grain size tended to be very uniform within 1 m intervals with no bias in grade between fine and coarse grains. Also, within a sample from a 1 m interval of the REO mineralisation there is very little variation in the grade.				
]	Logging	Each 1 m sample was logged by a competent geologist to a level of detail sufficient to support geological interpretations and resource estimation.				
)		The logging is qualitative in nature with a review of the logging carried out after the assay data was received to ensure the logging agreed with the geochemistry of the sample.				
		A grab sample from each 1 m sample was sieved and logged by the geologist.				
]	Subsampling techniques	No diamond core assay data was used in the Mineral Resource estimate (MRE). Historical core data was used for density measurements.				
	and sample preparation	The entire 1 m interval was captured through the cyclone for both RC and AC drill programs. For RC drilling dry samples were collected in green PVC bags and wet samples were collected in woven polypropylene bags and allowed to dry before sampling. For a 2 m composite, a 1.5 kg sample was taken from each bag using a scoop or PVC spear with care taken to sample from the top to bottom and at different parts of the bag. The two 1.5 kg samples were then mixed together into a calico bag for dispatch to the laboratory.				



Criteria	Commentary
)	The wet samples dried into hard lumps requiring breaking up with a rubber mallet. The broken sample in each 1 m bag was then thoroughly mixed before sampling. For composite samples taken at 3 m intervals (10% of assays) the sample was collected in woven polypropylene bags before drying and then sieved and passed through a splitter to create a 1 kg sample. The three samples were then mixed together into a calico bag to make a 3 kg for dispatch to the laboratory.
	Field repeats have correlated well with original samples with a high degree of repeatability, showing the sampling method was appropriate.
	Sampling followed established company sampling and quality assurance/quality control (QAQC) procedures. Composites are weighed for equal measures from each 1 m interval.
	A field duplicate was collected for approximately every 50 samples submitted to the laboratory to ensure the field sampling had good repeatability. Field repeats correlated very well with original samples showing the sampling method was appropriate.
	The grain size of the particles in the samples is generally less than 1 mm and hence 2.5 kg of sample is considered an appropriate sample size.
Quality of assay data and laboratory tests	A considerable amount of work was carried out by Lynas Corporation and Intertek Genalysis Laboratory in Perth to develop accurate assaying of rare earths and associated gangue elements using ICP-MS (FP6/MS) and ICP-OES (FP6/OE). This was achieved, and the techniques developed have been implemented for analysis of the drill samples.
	ICP-MS and ICP-OES used and calibrated to industry standard requirements. ICP-MS = Agilent 7900, which uses a dilution factor of 1,000 then 1:30 for the instrument read to give a final factor of 30,000. Instrument read cycle time is 1 minute 45 seconds. Calibration check of equipment per job to machine specifications and certified standards.
	With each batch of samples sent to the laboratory, one certified standard for every 20 th sample (every 50 th sample for drill programs pre-Lynas) and one field repeat every 50 th sample was inserted. The repeatability of the sampling and the accuracy of the laboratory is within acceptable limits.
Verification of sampling and assaying	An area of the project has been mined and processed with very good reconciliation between resource modelling, grade control data and processing. Verification of significant intercepts has been completed by an alternative company geologist who is familiar with the deposit and sampling protocols used.
	Limited twin holes have been used to verify accuracy of assaying and variability of ore mineralisation.
	Lynas Corporation has strict procedures for data capture, flow, data storage and validation of drilling information.
	All analyses used in this MRE were verified against original analytical certificates and reloaded into the drillhole database. This was done to correct potential precision errors in loading of assays in the previous resource drillhole database. All analyses used within this MRE are at the precision and accuracy as was first assayed by the laboratory. Values returned lower than detection level were set to the methodology's detection level, and this was flagged by code in the database.
1	The assaying gives rare earth element (REE) grades whereas rare earths are produced and sold as oxides. For consistency all the REE grades have been converted to REO grades in the database.
Location of data points	Each drillhole collar has been surveyed to an accuracy of ±1 cm by an authorised mine surveyor. Holes are predominantly vertical. Downhole surveys for recent grade control angled holes were taken using an electronic single shot instrument – Reflex EZ-Shot™ technology.
	MGA 94 – Zone 51
	Each metre downhole is measured from marks on the drill rig indicating to the drilling crew when the end of one metre finishes and the start of the next metre. The depth of each metre interval is likely to have an accuracy of ±10 cm.
Data spacing and distribution	The majority of the Mount Weld Rare Earth deposit has been drilled on a 40 m x 40 m drill spacing with a nominal 100 m x 100 m spacing in the peripheral areas of the deposit. Grade control holes within Stage 1 and Stage 2 pits were spaced at 10 m x 10 m and 20 m x 20 m respectively.
	The drilling supplied consistent spacing on section and between section, which allowed clear and



Criteria	Commentary
	Samples have been composited in 1 m, 2 m, 3 m and 4 m composites. Composites were made following established company procedures, with samples weighed to ensure equal weight is collected per 1 m interval.
Orientation of data in relation to geological	The rare earth mineralisation in the carbonatite regolith is in sub-horizontal layers derived by weathering and oxidation processes. Vertical holes were drilled to intersect the mineralisation at approximately 90° to the strike and dip of the mineralisation.
structure	No sampling bias has been introduced by the drilling orientation.
Sample security	All samples were collected and bagged by Lynas staff and transported directly to the analytical laboratory by a reputable trucking company.
Audits or reviews	Internal review of all analytical data completed for this MRE. Analytical certificates were verified, and analytical data reloaded into drillhole database.

JORC 2012 Table 1 Section 2 – Key Classification Criteria

Criteria	Commentary
Mineral tenement and land tenure status	The Mount Weld Rare Earths Project is covered by four mining tenements with long-term tenure that can be renewed for 21-year periods upon application. These tenements are M38/58, M38/59, M38/326 and M38/327. Mt Weld Mining Pty Ltd, a subsidiary of Lynas Corporation, has 100% rights to all mining tenements outlined above. No current ownership issues or native title determinations are known.
	There are no known impediments to operations at Mount Weld with mining and operating licenses secured
Exploration done by other parties	Exploration drilling at the Mount Weld Project has been undertaken by Utah Development company (1969–1973), Union Oil (1981–1984), Wesfarmers (1985–1987) and Carr-Boyd/Ashton Joint Venture (1988–1990) using AC, RC and diamond core drilling techniques.
	Feasibility studies were carried out by Wesfarmers on mining of phosphates in the 1980s and Ashton on mining the rare earths in the 1990s.
Geology	The Mount Weld Rare Earth deposit is hosted within a supergene enriched zone within the Mount Weld Carbonatite (MWC) regolith. REOs found within the fresh carbonatite are concentrated due to the removal of calcium carbonate and other elements during the weathering and oxidation process. This has created sub-horizontal units enriched in REOs.
	The project covers a near-vertical carbonatite plug known as the MWC. The MWC has intruded strongly deformed Archaean volcanic and sedimentary rocks of the Laverton Tectonic Zone (LTZ) which are situated within the north-eastern section of the Yilgarn Craton.
	A series of Proterozoic dolerite dykes have intruded the LTZ in the project area, with one crosscutting the MWC from the northwest to the southeast. The carbonatite is generally massive with no evidence of large-scale shearing or faulting. This suggests that emplacement was after the last major regional deformation event.
1	The mineralisation reflects the distribution of rare earth minerals within the underlying carbonatite. Extensive weathering and erosion of carbonate minerals has caused supergene enrichment and secondary mineralisation of rare earth minerals. The central core of the MWC is the highest grade of REOs, with decreasing zonation of grade towards the margins of the MWC. Heavy REO enrichment in the Duncan deposit forms a halo surrounding the central high-grade core.
	The regolith units consist of sub-horizontal weathering surfaces that are deepest in the central area of the deposit on the western margin of the dolerite dyke.
	Identified REO, rare metal, and phosphate Mineral Resources of the MWC are distributed within three main, sub-horizontal regolith units. The layers are:
	• An iron oxide and monazite-rich saprolite layer, containing limonite, goethite, and silica nodules known as the "LI" zone. This is yellow-brown variably cemented ironstone gravel to limonite clay, with an irregular thickness and distribution.
	 A saprolite layer termed "CZ" contains monazite and goethite, which constitutes the main REE mineralised lithology of the Mount Weld Rare Earth deposit.
	• At the base of the regolith is a variably oxidised, apatite-rich residual mineralised layer termed "AP". The AP lithology varies from unconsolidated magnetite-apatite of pristine primary minerals to



Criteria	Commentary
	various states of oxidation, with iron oxides, secondary carbonate, secondary apatite and crandallite. The basal contact of AP is an irregular karstic surface with residual transitional carbonatite. Secondary manganese oxidation is common along the boundary between residual apatite and the supergene regolith above and is known as the "MN" zone.
D	There are rare metal deposits surrounding the central REE mineralised core of the MWC; these are known as Anchor, Crown, Coors, Swan and Emu and contain niobium, tantalum, titanium and phosphates. Mineralisation is hosted within the same weathered carbonatite regolith units with niobium, tantalum and titanium concentrated within the supergene enriched LI and CZ layers, and phosphates concentrated within the residual AP layer. These deposits also contain REO mineralisation in the range of 1% to 5% but are not included within this MRE.
Drillhole Information	Not relevant. Exploration results are not being reported. Mineral Resources are being disclosed (see Section 3).
	Not relevant. Exploration results are not being reported. Mineral Resources are being disclosed (see Section 3).
Data aggregation	Not relevant. Exploration results are not being reported. Mineral Resources are being disclosed (see Section 3).
methods	Not relevant. Exploration results are not being reported. Mineral Resources are being disclosed (see Section 3).
	Not relevant. Exploration results are not being reported. Mineral Resources are being disclosed (see Section 3).
Relationship between	Not relevant. Exploration results are not being reported. Mineral Resources are being disclosed (see Section 3).
mineralisation widths and intercent	Not relevant. Exploration results are not being reported. Mineral Resources are being disclosed (see Section 3).
lengths	Not relevant. Exploration results are not being reported. Mineral Resources are being disclosed (see Section 3).
Diagrams	Appropriate diagrams contained in the report to which this Table 1 applies, and also in LYC ASX announcements, (e.g. Lynas, 28 November 2017).
Balanced reporting	Not relevant. Exploration results are not being reported. Mineral Resources are being disclosed (see Section 3).
Other substantive exploration data	Not relevant. Exploration results are not being reported. Mineral Resources are being disclosed (see Section 3).
Further work	Further work is expected to consist of infill and extensional drilling.
	Not relevant. Exploration results are not being reported. Mineral Resources are being disclosed (see Section 3).

JORC 2012 Table 1 Section 3 – Key Classification Criteria

Criteria	Commentary
Database integrity	Internal review of all assay data was completed for this MRE. Pre-Lynas datasets were thoroughly reviewed by a suitably qualified geologist to ensure they were consistent with the original data. Assay certificates were verified, and assay data reloaded into drillhole database. Data collected by Lynas has been transposed electronically from the laboratory spreadsheets to the database. A thorough inspection of the database for each drilling campaign has been carried out to check the data has not been corrupted. All assays are at the precision reported from the laboratory.
Site visits	Site visit undertaken by Andrew Scogings on 27 November 2017, while drilling of RC hole MWEX10165 was in progress.
	The site visit confirmed that industry best practice procedures were in place and being followed, with drilling, sampling and logging practice being observed. Selected drill collar locations were verified by handheld GPS confirming their stated survey locations. Mineralisation types and extents were observed in the mining pit and confirmed to be in accordance with the geological model.



Criteria	Commentary
	Historical and recent RC percussion drill chips and diamond drill core was viewed by Andrew Scogings during the site visit. Visual validation of lithologies against analytical results was undertaken for RC drillhole MWEX10165 and the following points were noted:
Ð	REO values are highest in the CZ and AP zones
	MnO values are highest at the base of the CZ
	• MgO values are highest in the TR zone, reflecting the presence of original carbonate minerals
	• P ₂ O ₅ is highest in the AP zone, reflecting the presence of apatite.
Geological interpretation	The rare earth deposits are sub-horizontal layers within the carbonatite regolith and have good horizontal continuity. There is a high level of confidence in the geological interpretation based on the drilling results and experience during mining operations.
	The Mineral Resource estimation has been constrained within the boundaries of the MWC. Wireframes of the top and bottom of the regolith, transitional and fresh units have been used to constrain the limits of REO grade estimation. Assay data used to estimate the MRE are yielded from ICP-MS and ICP-OES within the Mineral Resource area and XRF data outside this area, although the composites formed from this data were allowed to influence the statistics due to the continuous distributions.
	No effect foreseen as lithological units are not complex, with a high level of confidence in geological interpretation, underpinned by knowledge derived during open pit mining activities.
	The mineralisation reflects the distribution of rare earth minerals within the underlying carbonatite. Extensive weathering and erosion of carbonate minerals has caused supergene enrichment and secondary mineralisation of rare earth minerals. The central core of the MWC is the highest grade of REOs, with decreasing zonation of grade towards the margins of the MWC. Heavy REO enrichment in the Duncan deposit forms a halo surrounding the central high-grade core.
	Identified REO, rare metal, and phosphate Mineral Resources of the MWC are distributed within three main, sub-horizontal regolith units known as LI, CZ and AP. See Section 2 of Table 1 for further details.
Dimensions	The block model is constrained to an area of 1,700 m along strike, 1,700 m in width and to a depth of 165 m. The mineralisation within the carbonatite regolith begins at 405 m RL and goes to 295 m RL. The Transitional and Fresh units are estimated to a depth of 215 m RL.
Estimation and modelling	Samples were composited to 2 m within domains based on assessment of the raw drillholes. The variables all showed very continuous distributions, therefore no top-cutting was applied.
techniques	Kriging Neighbourhood Analysis (KNA) was undertaken using Supervisor [™] software to assess the effect of changing kriging neighbourhood parameters on block grade estimates. Kriging efficiency and slope of regression were determined for a range of block sizes, minimum and maximum samples, search dimensions and discretisation grids.
31	All variables were estimated using block ordinary kriging (OK) in four expanding search-ellipse passes honouring anisotropic ratios for each variable in each domain from the corresponding semi- variogram models. The first pass ellipse size was 50 m in the major direction for each variable, roughly doubly the life of mine (LOM) pit drillhole spacing of 25 m x 25 m. The second pass size was 50% of each variable's maximum variogram range, the third pass 100% and the fourth 200%. For REOs, 50% of the model (100% of LOM volume) was covered in the first and second passes for domains 6 to 9, those of primary interest. The third pass estimated the remainder of the model for
	REOs (6 to 9). By-product variables, niobium, strontium and scandium, were estimated with variable coverage, largely dependent on the availability of heterotopically sampled assay data for input composites.
	The composite average for each variable in each domain was assigned to blocks un-estimated in the four passes.
	All geological modelling and grade estimation was undertaken using Surpac™ V6.6 software.
	Previous resource estimates for the Mount Weld Rare Earth deposit were in 2010, 2012 and 2015. These reports were available to the authors and Competent Person of this report.
	No by-products are currently being recovered for economic extraction.
	All variables considered deleterious were modelled. The following variables were modelled: REO%, la ₂ o ₃ _ppm, ceo ₂ _ppm, pr ₆ o11_ppm, nd ₂ o ₃ _ppm, sm ₂ o ₃ _ppm, eu ₂ o ₃ _ppm, gd ₂ o ₃ _ppm, tb ₄ o ₇ _ppm, dv ₂ o ₃ _ppm, bo ₂ o ₃ _ppm, tb ₄ o ₇ _ppm, dv ₂ o ₃ _ppm, bo ₂ o ₃ _ppm, tb ₄ o ₇ _ppm, dv ₂ o ₃ _ppm, bo ₂ o ₃ _ppm, tb ₄ o ₇ _ppm, dv ₂ o ₃ _ppm, bo ₂ o ₃ _ppm, tb ₄ o ₇ _ppm, dv ₂ o ₃ _ppm, bo ₂ o ₃ _ppm, tb ₄ o ₇ _ppm, dv ₂ o ₃ _ppm, bo ₂ o ₃ _ppm, tb ₄ o ₇ _ppm, dv ₂ o ₃ _ppm, bo ₂ o ₃ _ppm, tb ₄ o ₇ _ppm, dv ₂ o ₃ _ppm, bo ₃ _ppm, bo ₃ _ppm, bo ₂ o ₃ _ppm, bo ₄ o ₃ _ppm, bo ₂ _ppm, bo ₃ _ppm, bo ₄ o ₃ _ppm, bo ₄ _ppm, bo ₅



Criteria	Commentary
	u ₃₀₈ _ppm, al ₂ 0 ₃ _pct, p ₂ 0 ₅ _pct, mno_pct, fe ₂ 0 ₃ _pct, nb ₂₀₅ _ppm, cao_pct, sio ₂ _pct, mgo_pct, sro_ppm and sc ₂ 0 ₃ _ppm.
)	A 10 mE x 10 m mN x 10 mRL cell size was used. Sub-celling on 5 mE x 5 mN x 2.5 mRL was used. The drillhole spacing varies from 10 m x 10 m grid spacing in the central area of the deposit to 250 m spaced holes on the periphery of the deposit.
	No assumptions were made regarding selective mining units, as the grade control model is built independently from the MRE model. However, the MRE model matches previous MRE models for direct reconciliation.
	Very strong correlations were found between the light rare earth oxides (LREOs) (la ₂ 0 ₃ _ppm, ceo ₂ _ppm, pr ₆ 011_ppm, nd ₂ 0 ₃ _ppm, sm ₂ 0 ₃ _ppm) and to a lesser extent the HREOs, (gd ₂ 0 ₃ _ppm, tb ₄ 0 ₇ _ppm, dy ₂ 0 ₃ _ppm, ho ₂ 0 ₃ _ppm, er ₂ 0 ₃ _ppm tm ₂ 0 ₃ _ppm, yb ₂ 0 ₃ _ppm); therefore, best fit models were calculated. However, statistical analysis was undertaken on each variable independently and where materially different experimental semi-variogram structures existed for an individual variable, an independent semi-variogram model was calculated. An independent model was built for eu203_ppm, as the species is compatible with calcium in the carbonate minerals and shows deviant behaviour.
	Logged geology and geochemistry data were used in defining lithological boundaries and associated ore domains. Mineralogical wireframes were designed from the mineralisation/lithological domain attribute. Composites were defined between the top and bottom of mineralised wireframes and used to constrain the estimation to that mineralised zone.
	No grade-cutting or capping was used. REO grades are very continuous and zoned concentrically within the deposit from high centrally to lower on the outer for LREOs, with an inverse relationship with HREOs lower in centrally and higher on the outer; the whole data range was required for an accurate estimate locally and globally.
	Standard model validation has been completed using numerical methods (histogram and swath plots) and validated visually against the input raw drillhole data, composites and blocks.
Moisture	Wet samples were collected from 120 small-scale test pits dug by an excavator and weighed using calibrated weightometer on a Cat 777 dump truck. These were measured for wet and dry bulk density and were then verified against large-scale excavation pits.
	A sample of the material was taken within each test pit and dried at the laboratory to determine the moisture content and cross reference against the average of the smaller pit moistures. The pits were surveyed to determine the volume to an accuracy of 0.01 m ³ .
	Moisture content was calculated by the difference in original sample weight to dry sample weight. The dry weight was then used to calculate density from the volume of material taken. Therefore, tonnages have been estimated on a dry, in situ basis.
Cut-off parameters	The cut-off grade of 2.5% REO used for the resource estimation is considered to be close to breakeven for direct cracking processing technology developed in 2011–2012 at long term REO prices.
Mining factors or	Mining has been carried out successfully on a portion of the Central Lanthanide and Duncan deposit using the assumptions made for the MRE.
assumptions	Open pit mining using selective mining of the rare earth mineralisation has been assumed for the entire deposit. The 30–40 m layer of waste is pre-stripped using a large excavator and then the mineralisation is mined selectively using a smaller excavator. The mining is carried out in campaigns with one year of mining producing approximately three years of feed to the processing plant.
Metallurgical factors or	Considerable metallurgical testwork on the different mineralisation types CLD/Duncan – LI/CZ/AP has been carried out over the life of the project.
assumptions	Current production figures demonstrate that LI and CZ mineralisation can achieve economic recovery with the current processing facility.
	Reconciliation of milled grades through the plant gives a high confidence on the metallurgical recoveries, costs and methods used in the ore resource estimation. Lynas has undertaken testwork for the AP zone on approximately 6,000 tonnes of material from a 2017 mining campaign (Lynas, 2017). The material was crushed and screened, then sent through a laboratory flotation circuit. The results indicate that a saleable product can be achieved from the AP zone.



Criteria	Commentary
Environmental factors or assumptions	All waste disposal is either in place or accounted for both from a planning perspective and a regulatory perspective, seeing that this is an operational and fully permitted mine.
Bulk density	Bulk density testwork was carried out on 71 samples of diamond core in 1986 and again during a feasibility study carried out in 2003 before mining began. Since then mining and processing has been carried out with a good reconciliation between the feasibility study bulk densities and the tonnes mined and processed since the operation began.
	In 2018, testwork was completed within the current exposed regolith ore zones LI, CZ, and AP to confirm historical density values. Wet samples were collected from 120 small-scale test pits dug by an excavator and weighed using calibrated weightometer on a Cat 777 dump truck. These were measured for wet and dry bulk density and were then verified against large-scale excavation pits.
	A sample of the material was taken within each test pit and dried at the laboratory to determine the moisture content and cross reference against the average of the smaller pit moistures. The pits were surveyed to determine the volume to an accuracy of 0.01 m ³ .
	The densities for the main mineralised lithologies LI, CZ and AP range from approximately 1.6 t/m ³ to 1.9 t/m ³ . The bulk densities used in the resource model have a high level of confidence within the regolith. Confidence in the density for domains 10 (Transitional) and 11 (Fresh Carbonatite) is lower than the main regolith zones, due to lower drill density difficulties with visual identification in RC samples; these two domains have been assigned a density of 2.3 t/m ³ .
	Bulk density samples from drill core and bulk test pits adequately account for the nature of the mineralisation, voids and moisture of material.
	Bulk density values are derived from diamond core samples, test pits and are reconciled against mined to milled figures.
Classification	The Mineral Resource has been classified based on the guidelines specified in the JORC Code. The classification level is based upon an assessment of geological understanding of the deposit, geological and mineralisation continuity, drillhole spacing, quality control results, search and interpolation parameters, and an analysis of available density information.
	All Mineral Resources were classified above a classification shell created approximately 150 m outside the LOM pit boundary and the southeast drilling of the Duncan deposit, then projected on a - 35° angle downwards; the angle being the approximate intra-pit wall angle that includes both the pit wall and ramps for the clay zone.
	The following approach was adopted to classify Measured Mineral Resources:
	 Domains 6 to 9 were reviewed in sequence, at first independently. A boundary string was created to encapsulate continuous areas with high estimation confidence for key representative REO variables La2O3, Dy2O3, Eu2O3 and Y2O3 using the following criteria: Blocks estimated by pass 1 and 2
3	 Kriging efficiency >0.8 Slope of regression >0.8 Average distance to informing samples of 60 m or less Minimum distance to samples of 40 m or less Near the optimum of eight samples.
	Measured Mineral Resources were classified for domains 6 to 9.
	The following approach was adopted to determine Indicated Mineral Resources:
	 Domains 6 to 9 were reviewed in sequence, at first independently. A boundary string was created to visually constrain each, initially independent assessment of La2O3, Dy2O3, Eu2O3 and Y2O3 estimation indicators: Blocks estimated by pass 1 and 2
	 Kriging efficiency >0.8 Class of the second se
	 Slope of regression >0.6 Average distance to informing samples of 140 m or less
	 Minimum distance to samples of 100 m or less Near the optimum number of eight samples.



Criteria	Commentary
	• The boundaries were reviewed in combination to determine a 'best-fit' boundary inside which Indicated Mineral Resources were classified for domains 6 to 9 and outside the boundary inside which Measured Mineral Resources were classified.
)	The remainder of blocks in Domains 6 to 9 above the classification shell and outside the Indicated Mineral Resource boundary were classified as Inferred Mineral Resources.
	The confidence in the density for Domains 10 (TR) and 11 (FR) is low. The low confidence in density, lower estimation quality and lower sample density led CSA Global to classify all Mineral Resources for transitional and fresh carbonatite above the classification shell as Inferred.
	All relevant factors have been taken into account.
	The result reflects the Competent Person's view of the deposit.
Audits or reviews	SRK Consulting carried out a due diligence audit on a JORC Code (2004) Mineral Resource estimation and concluded at the time the resources were within 10% of the stated quantities.
Discussion of relative accuracy/ confidence	Reconciliation of the first mining campaign tonnes and REO content with the resource modelling shows the mining and resource modelling data is within 10% of each other for tonnes and within 5% of each other for grade. Considering the density of the drilling is similar in the rest of the Measured and Indicated Resource area it can be assumed these areas have an accuracy of ±10%. The Inferred Resource estimation has a wider drillhole spacing delineating it and some of the data is of a lower estimation quality. For this reason, Inferred Resource accuracy will be lower than the areas within Indicated and Measured Resources. It is not known what the accuracy of the Inferred Resources is likely to be.
	Reconciliation of actual mined production to the Mineral Resource models has confirmed relative accuracy of the current Mineral Resource models.

	lower estimation quality. For this reason, Inferred Resource accuracy will be lower than the areas within Indicated and Measured Resources. It is not known what the accuracy of the Inferred Resources is likely to be.
	Reconciliation of actual mined production to the Mineral Resource models has confirmed relative accuracy of the current Mineral Resource models.
JORC 2012 Ta	able 1 Section 4 – Estimation and Reporting of Ore Reserves
Criteria	Commentary
Ore Reserves estimate for	The Mineral Resource model has been used to generate the Mt Weld Rare Earths Project Ore Reserve- CLD and Duncan.
conversion to Ore Reserves	The Ore Reserves estimate document is "2018 Ore Reserves estimate Mt Weld Rare Earth Proje CSA Global Report No. 242.2018 20 July 2018".
	The Niobium Rich Rare Metals Mineral Resources is excluded from the Mt Weld Rare Earths Ore Reserve.
	The Central Lanthanide and Duncan Deposit Mineral Resources are inclusive of the total Ore Reserves.
Site visits	A previous site visit was undertaken by the Competent Person in 2017 during operation.
Study status	This is an updated mining study carried out to Feasibility level. The Ore Reserve portion was carried out on the updated Mineral Resource model. Only the Central Lanthanide and the Duncan Deposivere considered for economic review.
	The updated Feasibility study accounts for past mining depletion of the Central Lanthanide Depose (Stage 1, 1B and 2 of the previous mining campaigns).
	The Mt Weld plant is currently in operation. Operational costs exist for the processing stream. Where available, actual operational costs, values and parameters have been utilised for Modifying Factors as part of this updated Feasibility study. Otherwise, existing Modifying Factors from the prior Feasibility study have been applied.
	Mr Ben Broad of Lynas Corporation supplied updated mining costs to Auralia Mining Consulting to create the necessary mining cost model.
	Any material classified as an Inferred Mineral Resource was not included in any of the updated Feasibility Study Ore Reserves calculations.
Cut-off parameters	Due to the application of linear regression process cost and mill recovery equations that are base on varying grade inputs per compound it is necessary to apply a cash flow scenario to the optimisation work. All figures reported as ore tonnes contained within the Ore Reserve are based upon a 4% REO cut-off grade.



	Criteria	Commentary
	Mining factors or assumptions	The Mt Weld plant is currently in operation, and such operational costs exist for the processing stream. Thus, where available, actual operational costs, values and parameters have been utilised for Modifying Factors as part of this updated Feasibility study, otherwise existing Modifying Factors from the prior Feasibility study have been applied.
Ĩ		Mr Ben Broad of Lynas Corporation supplied updated mining costs to Auralia Mining Consulting to create the necessary mining cost model and MCAFs to apply to the optimisation works.
		The final calculation of the Ore Reserve figures was performed using the Geovia SurpacTM software suite.
		As per previous and current mining campaigns, the selected method was open cut mining.
		A standard 90t truck fleet was selected to be applied to the bulk of the project and these associated costs were applied to the mining study. The fleet calculations included standard ancillary machinery – grader, dozer and water cart.
		Mining dilution was set at 4% during the Ore Reserve works.
		Mining recovery was set at 98% during the Ore Reserve works.
		Appropriate minimum mining widths were applied to allow mining access at depth. Where possible and appropriate a minimum pre- goodbye cut mining width of 20m was applied as a constraint to the final Ore Reserve design.
		Only the Measured and Indicated Mineral Resource classified material types were used in the optimisations; while the final design may contain Inferred material as part of the final material inventory, Inferred classified material was not utilised as an economic driver and thus not included for consideration for any of Ore Reserve calculations.
		Sensitivities were run which included the Inferred classified material to determine its impact upon the project within the defined CLD Mineral Resource area. Given the proportion of Inferred material in comparison to the Measured and Indicated materials is very low, the impact of its inclusion is minimal.
		Any infrastructure required has already been established on the Mt Weld Project.
	Metallurgical	Ore is treated through the existing 242 ktpa facility at Mt Weld to produce a flotation concentrate.
	factors or	The concentrator has been well tested on the four mineralisation types (Cz, Li, Mn and AP).
	assumptions	Since the 2015 Ore Reserve Update, geological modelling and metallurgy test work determined that CLD and Duncan were not separate ore bodies. The current configuration of the Mt Weld Concentrator has current capability through blending to process the material to a concentrate for LAMP. No distinction is made in the evaluation and modelling between CLD and Duncan due to geological and metallurgical work.
		The Cz and Li ore types are mined combined as one ore feed source for blending.
		The Mn ore type contains high manganese and is blended as a feed source in small quantities.
		Processing of AP ore type will occur after a front end upgrade to the Mt Weld concentrator facility planned for 2022. Test work has been completed on the AP ore type that confirms performance
		The flotation concentrate from Mt Weld is treated in the Lynas processing facility at Kuantan (Malaysia), known as LAMP (Lynas Advanced Material Plant). Rare earth oxides and carbonates are produced for sale. The suitability of this plant for processing the Mt Weld concentrate has been adequately demonstrated at full scale (on three of the four mineralisation types). LAMP was commissioned in 2013.
		The Mt Weld concentrator uses existing, well tested and conventional technology (crusher, ball mill, flotation, thickeners and filters). The concentrator has been adequately tested at full scale.
		LAMP uses existing, well tested and conventional technology (cracking, leaching, solvent extraction, precipitation and calcination). LAMP has been adequately tested at full scale.
		The ore has been divided into four mineralisation types. Metallurgical test samples, representative of a range of REO grades within each mineralisation type, were selected from drill chips by the Geological department. REO flotation grade and recovery is dependent on the REO ore feed grade. No factors have been applied to the flotation data.
		Laboratory cracking, leaching and precipitation tests have been completed to confirm the amenability of the flotation concentrate from the various mineralisation types to treatment at LAMP.
		Modelled or forecast LAMP REO recovery includes allowances for changes in the flotation concentrate REO grade feeding the plant.



Criteria	Commentary		
	Several deleterious elements in the flotation concentrate are monitored and mitigated as per detailed plans. Pilot scale testing of a bulk sample was completed, but this data is irrelevant as the full-scale plant is now operating.		
Environmental	Prior detailed environmental studies have been carried out with the assumption that there are no major potential environmental impacts that have not been addressed in the approved project management plan (PMP)		
Infrastructure	The Mt Weld project is currently in operation and as such all the necessary infrastructure already exists.		
	Lynas has secured leases outside of the carbonatite area that have been converted to General Purposes Leases to allow future plant and associated infrastructure expansions.		
Costs	The Lynas infrastructure at the Mt Weld Concentrator and LAMP is currently in operation and as such significant major capital costs relating to the project have already been sunk. Sustaining capital, specifically for tailings storage facility, has been included in cost estimates.		
	Engineering estimates of upgrades to the plant have been completed and allow for higher throughputs as less high grade ore is processed. Planned upgrades have been included in cost estimates and financial evaluations.		
	The Mt Weld plant is currently in operation, and as such operational costs exist for the processing stream. Thus, where available, actual operational costs, values and parameters have been utilised for Modifying Factors as part of his updated Feasibility study, otherwise existing Modifying Factors from the prior Feasibility study have been applied.		
	Mr Ben Broad of Lynas Corporation supplied updated mining costs to Auralia Mining Consulting to create the necessary mining cost model and MCAFs to apply to the optimisation works. Costs were based on existing contract and owner costs.		
	Comprehensive management plans exist for the allowances of any deleterious elements. Copies of these plans are available.		
	A sell price of US\$25/kg REO was used as the basis for the ore reserve work. Optimisation work used an equivalent Nd2O3+Pr6O11 price representing US\$25/kg REO. Sensitivity work was completed down to US\$12/kg REO showing the pit shells were insensitive to this price level.		
	Exchange rates were set at 0.76 AUD/USD, the average rate during the study period.		
	Transportation charges have been accounted for and included in the calculation and creation of the processing cost regression equations.		
	The Mt Weld plant is currently in operation, and as such all treatment and refining charges that form part of the processing cost equations are actuals.		
	All selling costs, royalties and other related operational expenses have been accounted for as part of the processing cost equations.		
Revenue factors	The head grade is derived from the Mineral Resource and applied Modifying Factors as described above.		
	The product price as described above was derived from a base price of US\$25/kg REO.		
Market assessment	Rare earths are essential for numerous new technologies in high growth industries, (including electric vehicles and wind turbines).		
	China currently produces approximately 85% of the global rare earths market supplies.		
	Lynas is the second largest producer of Neodymium-Praseodymium (NdPr) material in the world and the leading supplier of NdPr to the free market.		
	Lynas has quality, long term relationships with direct customers and end users around the world, primarily magnet and automobile component manufacturers in Japan and China.		
	Lynas currently supplies a range of products to a wide base of customers –		
	NdPr oxide, SEG oxide, Lanthanum oxide, Cerium carbonate, LaCe carbonate, Ce Oxide, LaCe oxide		
	Other product variants and further stages of processing are being developed.		
	The highest value product produced is NdPr oxide. LAMP is currently operating at above design rates and is in the process of ramping up production capacity further. There has been strong demand for NdPr, and the demand is forecast to increase with the growth of new technologies		

including wind turbines and electric vehicles.



Criteria	Commentary
Economic	A discount rate of 12.5% was applied to the optimisation works for this updated Feasibility study.
	Inputs to the economic analysis include Modifying Factors as described above.
Ď	Sensitivity studies were carried out. Standard linear deviations were observed. The project displayed physical robustness to variation in Modifying Factors.
Social	No native title determination exists over the Mt Weld project.
	Lynas Corp has a good relationship with Mt Weld Pastoral Station stakeholder
	There are no heritage sites located within the mining disturbance footprint.
Other	There are no known fibrous materials or acid forming materials that could impact the operation.
	Any radioactive material is managed under Lynas Corp's WA DMIRS approved Radiation Management plan.
	There is a risk of sheet flow flooding the project. To mitigate this, we have construction flood control bunds to direct water around the project (Approved by the WA DMIRS)
	All current deposits are located on granted Mining Leases and mining will be subject to the DMIRS approval process. There are no currently identified grounds upon which it is likely that mining approvals will be withheld; all Mining Proposal and clearing permits and Project Management Plans have been submitted for review.
Classification	100% of the Measured Mineral Resources were converted into Proven Ore Reserves. 100% of the Indicated Mineral Resources were converted into Probable Ore Reserves.
	Existing ROM Stocks were converted into Proven Ore Reserves.
	These conversions were based upon prior discussions on surrounding Modifying Factors.
	The estimated Ore Reserves are, in the opinion of the Competent Person, appropriate for this style of deposit.
Audits or reviews	Auralia Mining Consulting has completed an internal review of the Ore Reserve estimate resulting from this updated Feasibility study.
Discussion of	Standard industry best-practice procedures and techniques were applied to obtain the Central Lanthanide and Duncan Deposit Ore Reserves.
relative accuracy/ confidence	This included the optimisation of the block model within the Whittle software program via application of updated Modifying Factors and subsequent design(s) to obtain the Central Lanthanide and Duncan Deposit Ore Reserve.
	Sensitivity studies were carried out. Standard linear deviations were observed. The project displayed physical robustness to variation in Modifying Factors.
	A continuous LOM schedule was constructed for the purposes of the Ore Reserve works.
	All applicable standard cross checks were carried out during the process.
	The Mt Weld and LAMP Operation is currently in production and thus for the most part actual operational costs, values and parameters have been utilised.