21 February 2023

BALRANALD DEVELOPMENT – FINAL INVESTMENT DECISION

Iluka is pleased to announce Board approval of the Balranald critical minerals development (Balranald).

Balranald is located in the Riverina district of south western New South Wales. The development is focussed on the rutile and zircon rich West Balranald deposit, which also contains material quantities of rare earth minerals. Owing to its relative depth (approximately 60 metres below surface), Iluka has over several years assessed the potential to develop West Balranald via a novel, remotely operated, underground mining (UGM) technology.

Investment overview[1]

- Average annual production of 60ktpa rutile; 50ktpa zircon; 50-70ktpa synthetic rutile; 4ktpa rare earth concentrate (REC); and 150ktpa sulphate ilmenite
- Capital cost of $480 million
- Construction period of 18 months, with first production expected in H1 2025
- Initial anticipated mine life of 9.5 years
- Net present value of $400 million
- Significant technology evolution, with sustainability benefits including a substantially reduced disturbance footprint and carbon intensity

The definitive feasibility study (DFS) for Balranald was completed in late 2022 and a Production Target (see appendix 1) is released based on the results of the DFS and site trials. This has confirmed the technical and commercial viability of Iluka's UGM technology (patent pending). A visualisation can be viewed at the following link Iluka Website - Balranald. Other project infrastructure is consistent with the company's current mineral sands operations.

Managing Director commentary

With scarcity, security and reliability of supply increasingly prominent considerations for many downstream consumers, the Balranald development enhances Iluka's portfolio offering of high grade, high quality critical minerals products produced in Australia.

More significant still is the way these products will be delivered.

Iluka's UGM technology is akin to keyhole surgery for the mining of critical minerals. This enables access to ore bodies previously thought uneconomic, with marked reductions in both environmental disturbance and carbon intensity relative to traditional mineral sands extraction techniques, which are themselves less impactful than other commodities.

The company has invested substantially in this technology over a number of years and we are pleased and excited at the prospect of its first full scale commercial deployment.

[1] Refer to notes on page 2.

Furthermore, Balranald underscores the complementary nature of Iluka's mineral sands and rare earths businesses. Balranald's rare earth minerals deliver incremental additional feed and value to our Eneabba refinery and the refining of these minerals to produce separated light and heavy rare earth oxides at Eneabba increases the value generated from the Balranald development.

Key parameters and financial metrics	Unit
Average annual production (based on Production Target)	
• zircon	50ktpa
• rutile	60ktpa
• synthetic rutile[1]	50-70ktpa
• sulphate ilmenite	150ktpa
• rare earth concentrate[2]	4ktpa
Capital cost[3]	$480m
Price assumptions[4]	
• rutile, zircon, synthetic rutile	TZMI
• rare earth oxide	Adamas
Net present value (NPV)[4]	$400m
Internal rate of return (IRR)[4]	23%
Payback period[4]	3 years
Average unit cash costs of production (Z/R/SR)[5]	~$1,125 / tonne
Average production cash costs[5]	~$225m / year
Workforce	
• construction	~250
• operational (including contractors)	~270

Notes:

1. Synthetic rutile production range based on chloride ilmenite feed blending ratio range of 18.5% to 24%. Iluka also expects to sell some chloride ilmenite to customers directly.
2. Comprises the rare earth bearing minerals monazite and xenotime. These will be refined to produce separated rare earth oxides at Iluka's Eneabba Rare Earth Refinery in Western Australia, the final investment decision for which was announced on 4 April 2022 (refer ASX release *Eneabba Rare Earths Refinery Final Investment Decision*, 4 April 2022).
3. Class 3 capital estimate, target accuracy of -15% / +30%. Real cost 1 January 2023.
4. Valuation date 1 January 2023. Based on TZMI's pricing deck (base case from Issue 4, December 2022) for rutile, zircon and synthetic rutile, applying a long run FX forecast of US$0.73 and a post tax discount rate of 7.3% (real). Payback period is calculated from first full year of production (2025). Project NPV includes the value from refining Balranald's ilmenite and rare earth minerals at Capel and the Eneabba refinery respectively. Rare earth oxide prices based on Adamas' September 2021 price deck, applying a long run FX forecast of US$0.73 and a post tax discount rate of 5.6% (real).[3]
5. Production cash costs exclude royalties, rehabilitation and corporate overheads. Unit cash costs (Z/R/SR) are net of by-product credits (sulphate ilmenite, chloride ilmenite and ZIC). Real cost 1 January 2023.

[3] ASX release, *Eneabba rare earths refinery final investment decision,* 4 April 2022 discount rate nominal allowing for 2.5% inflation

Operational overview and construction

Balranald is expected to produce up to 1mtpa of run-of-mine ore and up to 0.5mtpa of heavy mineral concentrate (HMC). The HMC will be separated at site into magnetic (ilmenite) and non-magnetic (zircon, rutile and rare earths) streams, which will be trucked to a port in Victoria for shipping to Iluka's processing and refining assets in Western Australia. These are the Capel synthetic rutile kilns, Narngulu mineral separation plant, and Eneabba rare earths refinery.

The development plan for Balranald is to deploy two mining units from commencement of operations. Iluka's decision in this regard is based in part on the company's growing confidence in the reliability, ramp up profile and capability of the company's UGM technology.

Balranald will be executed under an EPCM contracting arrangement, the selection process for which is underway. Given the bespoke nature of the development and the advanced engineering associated with its mining systems, it is likely there will be several separable portions within the contracting plan.

Employment at Balranald is expected to comprise a workforce of ~250 for construction and ~270 for operations (including contractors). Most personnel will be housed in purpose built accommodation located close to site. Iluka anticipates that some employees will live in the town of Balranald.

All primary environmental approvals to commence operations at Balranald are in place. Approval for mining was granted via a Modification of Consent (MOD) to the approval granted in 2016 for an open cut operation.[4]

The project will be funded internally by Iluka.

Resource information

An update to the West Balranald Mineral Resource Estimate is summarised below and detailed in Appendix 2.

Table 1: West Balranald Mineral Resource Estimate

Mineral Resource Category	Material Tonnes[1]	In situ HM[2]	HM	Clay	Mineral Assemblage in HM[3]				
					Ilmenite	Leucoxene[4]	Rutile	Zircon	M + X[5]
	Mt	Mt	%	%	%	%	%	%	%
Measured	5.9	2.6	44	8	65	5	13	12	1.0
Indicated	26.3	8.6	33	6	64	6	12	11	0.9
Inferred	4.5	1.2	26	6	62	9	9	8	0.7
Total	**36.8**	**12.4**	**34**	**6**	**64**	**6**	**12**	**11**	**0.9**

Notes:
1. Rounding may generate differences in the last decimal place
2. Mineral Resources are reported at a cut-off grade of 3.0% HM
3. The mineral assemblage is given as a percentage of the HM content
4. Leucoxene comprises magnetic and non-magnetic leucoxene
5. M + X represents the rare earth bearing minerals monazite and xenotime

Importantly, the reported West Balranald Mineral Resource Estimate represents a combination of areas estimated using recent sonic drilling and aircore (AC) drilling. Sonic drilling undertaken during

[4] Further information on modification of consent provided on page 7.

the DFS has confirmed that, due to a variety of factors including geological and groundwater conditions, the AC drilling has understated by approximately 25% the estimated contained Heavy Mineral (HM) in a 4.2km length of the orebody tested with close spaced Sonic drilling technology.

Because of the significant and variable[5] underestimation having been identified following the recent sonic drilling, those parts of the resource estimate previously reported in the Measured category (where confirmatory sonic drilling has not yet been undertaken) have been reclassified as Indicated Resources. All current Measured Resources estimates for West Balranald are based solely on areas appropriately supported by sonic drilling. Iluka intends to undertake further sonic drilling within the areas of the West Balranald Resource Estimate classified in the Indicated category to improve confidence in the resource classification and to confirm the HM tonnage under-estimation in the areas supported by the proposed close spaced sonic drilling.

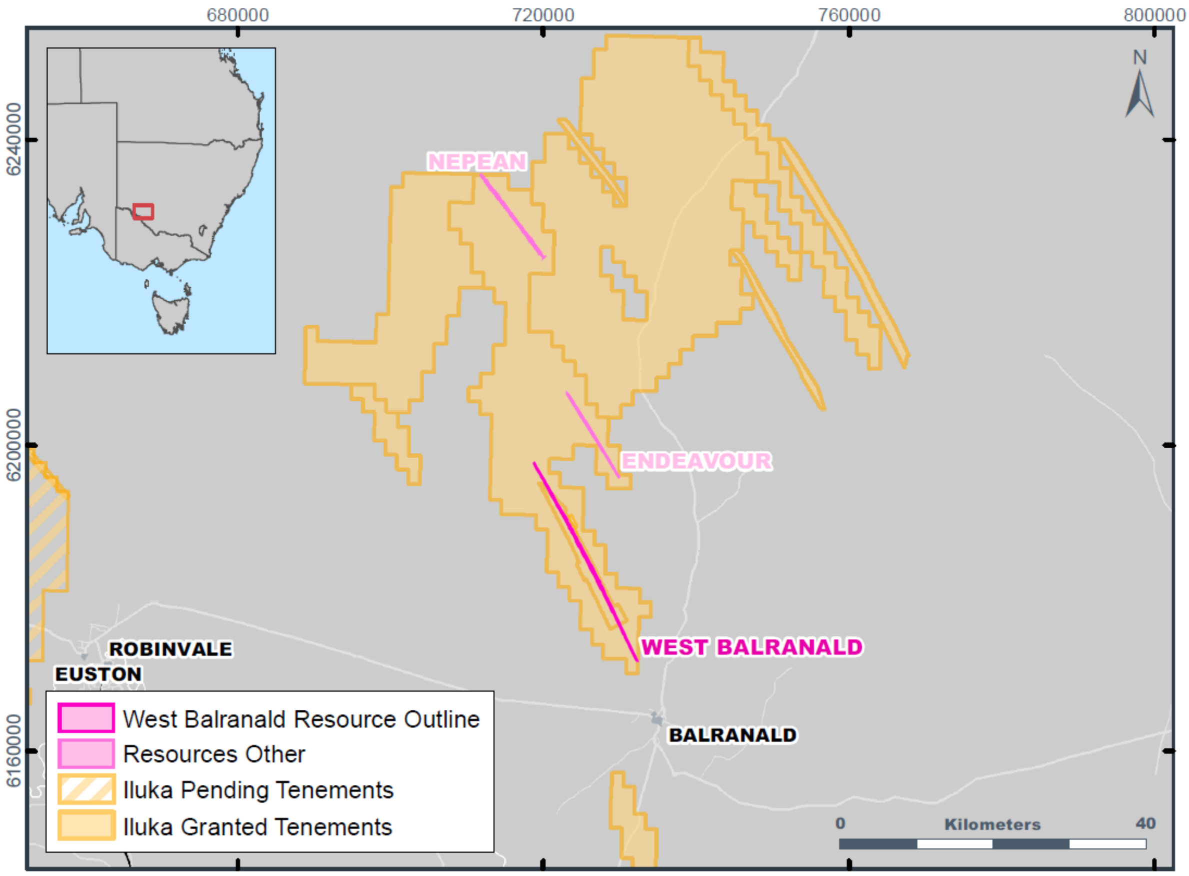

Figure 1: West Balranald deposit and other Balranald deposits

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[5] The average contained HM (length * HM average grade) value for all 78 strand intervals drilled with sonic in 2018 is 14% higher than in the twinned AC strand intervals. The average uplift in contained HM from AC to sonic sample data for each of the nine drill sections twinned in 2018 varies from +3.1% to +24%. The combination of the 14% uplift in HM grade and increased Slimes content contribute to an increase in the calculated bulk density which compounds the increase in estimated contained HM tonnage.

Production Target information

A Production Target for the West Balranald Project estimate is summarised below and the material assumptions upon which the production target is based are detailed in Appendix 1.

Table 2: West Balranald Production Target estimate

Mineral Resource Category	Material Tonnes[1]	In situ HM	HM	Clay	Mineral Assemblage in HM[2]				
					Ilmenite	Leucoxene[3]	Rutile	Zircon	M + X[4]
	Mt	Mt	%	%	%	%	%	%	%
Measured	2.4	1.4	56.3	8.6	64.5	4.8	12.7	11.6	1.0
Indicated	7.2	3.7	50.9	5.8	64.8	4.8	12.4	11.6	1.0
Total	**9.6**	**5.0**	**52.4**	**6.6**	**64.7**	**4.8**	**12.5**	**11.6**	**1.0**

Notes:
1. Rounding may generate differences in the last decimal place
2. The mineral assemblage is given as given as a percentage of the HM content
3. Leucoxene comprises magnetic and non-magnetic leucoxene
4. M + X represents the rare earth bearing minerals monazite and xenotime

An inaugural Production Target for West Balranald has been prepared following the completion of the DFS. The Production Target is an estimate of potentially mineable mineralised material based on the application of modifying factors. An Ore Reserve has not been reported for the West Balranald deposit at this time. West Balranald utilises a novel mining technology, which makes it challenging to meet JORC requirements regarding the declaration of an Ore Reserve ahead of demonstrating operational performance, specifically ore recovery and dilution factors in an operational setting (see Appendix 1 for additional details and material assumptions).

The Production Target is derived from West Balranald Mineral Resource Estimates in the Measured and Indicated Mineral classification set out in Table 1.

Potential applications of UGM technology

Iluka's UGM technology has the potential to unlock other development opportunities that, owing to their depth, would be otherwise unavailable via conventional mining techniques. These opportunities may include deposits in Iluka's portfolio. Conceptually, UGM technology could also be applied to other commodities. Further evaluation of these opportunities will be considered post implementation of UGM technology at Balranald.

This document was approved and authorised for release to the market by Iluka's Managing Director.

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APPENDIX 1 – PRODUCTION TARGET: MATERIAL ASSUMPTIONS

Mineral Resource estimate for conversion of Production Target

The West Balranald Production Target is a subset of the Measured and Indicated portions of the West Balranald Mineral Resource estimate as detailed in Appendix 2.

Study status

Feasibility studies have been ongoing on the Balranald Project for a number of years. Underground mining trials were undertaken during 2014-2015, 2016 and 2020 and a definitive feasibility study (DFS) concluded in December 2022.

The DFS contains mine plans based on the results from the site trials and subsequent technical assessments. The DFS details key metrics that Iluka uses to assess project development decisions, including IRR, NPV and payback.

Operational factors have been assessed, material modifying factors were considered and a detailed financial analysis completed.

Cut-off parameters

The cut-off grade has been calculated using optimisation software and an individual cut-off grade applied to each block within the model. The calculations consider overall HM grade and individual assemblage product values, operating costs, recoveries and other modifying factors. An economic optimisation is performed to determine if a block is viable to mine, and therefore be included in the production target.

Mining factors or assumptions

An optimisation was conducted by Iluka personnel. The optimisation included modifying factors that aligned with the financial modelling including recoveries, revenues and operating costs. A range of mine shells were produced, varying in tonnage and grade, based on incremental increases in revenue factors. Financial analysis determined the most favourable financial outcome which was used as the basis of detail design.

A novel, internally developed underground mining method utilising directional drilling technology has been developed for the mining of the West Balranald deposit. Studies using conventional mining methods have shown the deposit would be challenging to mine due to the depth to mineralisation, strip ratio and groundwater and trafficability issues and is why an alternative approach has been selected.

Underground mining will use a Mining Unit Plant (MUP) and ancillaries, Mobile Mining Plant (MMP) and subsurface equipment, supported by surface ancillary equipment. This equipment has been selected and designed specifically for this project.

Mining will commence and ramp up with 2 MUP pairs to deliver around 87 tph each to the wet concentrator plant (WCP). MUP pairs will commence on separate panels with identical layouts and infrastructure.

Mined material will be pumped from the Mobile Mining Plant (MMP) area to the processing plant. The MMP has been designed to be modular and semi-mobile. Sand tails will be returned to mining pits and covered with direct returned overburden, subsoil and topsoil prior to that area being mined. Fines tails, including iron sulphate tails, will be reintroduced into the underground mined voids.

An area of poor geotechnical conditions has been identified in a geological zone above some sections of the ore body. Mining this material during T3 proved problematic and it’s estimated that only 30%

of ore was recovered during the trial. A 30% ore recovery factor was applied to this material during the optimisation process which resulted in all of this material being excluded from the mine plan.

Ore recovery and dilution factors have been applied based on estimates derived from the mining trial and with consideration to process and equipment improvements informed by the trial outcomes. The factors used in estimating the remainder of the deposit were 90% ore recovery and 2.5% dilution based on estimates from analysis and data collected during the trials. Additional technology has been developed during DFS with the aim to better controlore extraction.

The stopes have been designed with thickness limits between 2.5 and 4m, depending on the geology geometry and material optimising, and widths of 9.5m. The stopes are arranged diagonally across the strike of the deposit and vary in length between 150m and 550m but are typically 400-500m long. Stopes are designed with 1m pillars separating each stope. Every 10 stopes make a panel with 1 stope left insitu for ground support between each panel which are planned to be extracted at the end of the mine life.

Metallurgical factors or assumptions

The process plant has been designed to treat the high-grade ore (~30% HM up to 60% HM) utilising processes typical of mineral sands operations and known flotation technologies.

Process Recoveries to the mine site HMC stockpiles are:

Material	Overall HM Recovery %
HM	86
Rutile	93
Zircon	96
Ilmenite	87
Mag Leucoxene	69
Non Mag Leucoxene	68
Monazite	94
Mag Others (garnet, staurolite)	51
Non Mag Others (kyanite)	49

Environmental

The Balranald Project was granted Mining Lease 1736 in May 2016. An application for an ancillary mining lease was lodged in August 2022 (MOD1) to accommodate the processing plant, a small section of the haul road and to extend the approved underground mining trial for up to six years. Approval of MOD1 was received in December 2022. It is expected that during the first four years of operation a second MOD would be submitted and approval received from the NSW government.

The following key approvals were identified as required and have received approval or are expected to be approved prior to Project execution.

- NSW approval under the EP&A Act through revision of existing approval through a Modification of Consent (MOD) process and associated modification report.
- Commonwealth approval under the EPBC Act through ensuring the revised project is consistent with the approved action.
- NSW groundwater allocation purchased through a competitive tendering process under a controlled allocation order.
- WA approvals to process HMC through Narngulu plant.

Land acquisitions and property lease agreements for the site have either been finalised or are expected to be finalised prior to requiring access for the Project.

Infrastructure

The design of the process plant has involved all relevant disciplines from several companies, being Worley, Mineral Technologies and Minsol. Metallurgical, mechanical and piping, civils, structural, electrical, instrumentation, control, IT and communications aspects have contributed to the overall design.

Appropriate processing equipment has been selected for the various process functions. The final design is for a modular Wet Concentrator Plant (WCP) including the Rougher Head Feed, oversize removal, spiral circuits, flotation plant, magnetic separation and UCC.

Other items of process plant and non-process infrastructure include product stacking, rougher head feed stockpiling and reclaiming, tails thickening, fines and iron sulphide storage dams, reagent storage and distribution, water supply, storage, distribution and waste water treatment, power supply and distribution, instrumentation and controls, IT and communications and service buildings such as laboratory, warehouse, workshops and office amenities.

A permanent accommodation village to house 160 personnel will utilise rooms and facilities from the Iluka Ouyen camp, plus additional accommodation as required. A temporary accommodation village for a maximum construction workforce of 250 will also be developed.

Costs

A Class 3 Capital Expenditure (CAPEX) estimate has been developed in accordance with Iluka estimating guidelines, with a target accuracy of -15% to +30%. The estimate includes information from all parties involved in the DFS, being Iluka, Worley, WAVE and Minerals Technology.

The operating costs have been estimated in 2 phases. Phase 1 assumes a contract supplied and operated diesel fired power station provides power to the site, operating for the first 2 calendar years.

Phase 2 details operating costs when the site is connected to the power grid, nominally in January 2026.

The Cash Cost of Production (CCOP) are based on an annualised (average) mine plan production. The cash costs are quantified up to the point at which the concentrates are discharged to ship including port handling costs at Geelong. General sustaining capital costs as well as those associated with moving mining panels have been included.

Fixed costs, being predominantly labour, department overheads and accommodation represent ~37.5% of total operating costs.

Variable costs are dominated by HMC logistics, underground mining and energy (diesel) and make up ~62.5% of the overall operating expenditure. The costs for trucking, handling and loading HMC to ship represent 25% of total operating costs.

Allowances have been made for royalties payable to Government and private stakeholders.

The project will be funded internally by Iluka.

Revenue Factors

The Production Target was estimated using internal Iluka long-term price forecasts for mineral sands products (which are confidential and commercially sensitive), and Adamas forecasts for rare earth products. Price assumptions are benchmarked against commercially available price forecasts by industry observers. Revenue factors are used to establish pit sensitivities and to test for robustness of the Production Target.

The forecast financial information derived from the Production Target included in this release has been calculated by applying the TZMI and Adamas product price forecasts to the Production Target. The TZMI and Adamas product price forecasts have been developed independently of Iluka and no representation is made by Iluka that the TZMI and Adamas product price forecasts will be achieved.

Market Assessment

Iluka establishes short, medium and long term contractual agreements with customers and these reflect the pricing and volume forecasts adopted. Contracts and agreements pertaining to the Balranald Project and the wider company are confidential and commercially sensitive.

Titanium

Overall, the forecasted West Balranald products generally align with previous and current Murray Basin products. Elevated impurities in ilmenite will be managed through feedstock blending for SR however very low levels of Th and U in all products is appealing to certain markets that have tight government restrictions on radioactivity levels and waste disposal.

Zircon

Customer assessment of samples indicate that the chemistry and usage performance of West Balranald zircon were suitable for major zircon segments without significant issues, such as ceramics, fused zirconia, and refractory coatings for foundry and investment casting.

No anticipated sales volume constraints are foreseen for West Balranald zircon at the planned production forecast.

Economic

Macro-economic assumptions used in the economic analysis of the mineral sands reserves such as foreign exchange, inflation and discount rates have been internally generated and determined through detailed analysis by Iluka and benchmarked against commercially available consensus data where applicable.

The price assumptions which underpin the Production Target are internally generated and are based on detailed supply and demand modelling. The price assumptions have also been benchmarked against commercially available consensus price forecasts. The detail of that process is confidential and commercially sensitive and is not disclosed.

Sensitivity analysis is undertaken on key economic assumptions such as price and exchange rates to ensure Iluka has a reasonable basis for the Production Target (and the forecast financial information derived from the Production Target) within reasonable limits. Changes in product prices have the potential to increase or decrease the total Production Target (and the forecast financial information derived from the Production Target).

Social

A Social Management Plan and Social Impact Assessment have been prepared and implemented as appropriate for the project. Based on the results of the Social Assessment, the net community benefit of the proposed modification for the Balranald community is considered to be positive.

The key social benefits of the proposed modification as a result of employment and expenditure are considered to be:

- Enhancement of the local and regional economies; and
- Assisting to arrest long-term local and regional population decline, diminishing availability of services and facilities in the Balranald region and declining community sustainability.

Cultural Heritage

Potential for areas of Aboriginal significance exist on the Mining Lease. Consultations with local Registered Aboriginal Parties are ongoing.

An Aboriginal Cultural Heritage Management Plan (ACHMP) has been developed and approved in consultation with Aboriginal stakeholders and was implemented during the mining trial and bulk sampling activities to mitigate impacts on cultural heritage.

There are potential for areas of aboriginal significance in the proposed mining footprint. Further heritage surveys are required to assess this area and any significant findings may impact access to sections of the Production Target.

Classification

An Ore Reserve will not be reported for the West Balranald deposit at this time due to level of confidence associated with ore recovery and dilution factors prior to the commencement of mining operations. As noted above, the ore recovery and dilution factor assumptions in the production target are based on estimates derived from the mining trial and with consideration to process and equipment improvements informed by the trial outcomes (which Iluka considers to be reasonable grounds for the ore recovery and dilution factor assumptions underpinning the production target). It is anticipated that a longer period of mining will provide a higher level of confidence on heavy mineral extracted against planned and the reporting of an Ore Reserve may occur at this later time.

The Production Target is based on Measured and Indicated Mineral Resources.

Audits or reviews

A review was undertaken by Snowden Optiro in 2022 which concluded the Production Target estimation process was sound.

APPENDIX 2 – WEST BALRANALD MINERAL RESOURCE ESTIMATE

The West Balranald Deposit is situated in Western NSW approximately 8km to the NW of the township of Balranald. The West Balranald deposit is located predominantly within tenement ML1736 while the northern and southern extremities extend in to EL7450, both exclusively held by Iluka Resources.

The West Balranald strand is ~29km in length when interpreted above a 3% HM cut-off. The width of the strand varies along the strike length from 160m at the southern and northern extremities to a maximum of 300m in the centre. Average thickness also varies along strike from approximately three metres at the southern and northern extremities to six metres through the central area of the strand and averaging 5m. The entire strand is located beneath the water table. A summary of the updated Mineral Resource estimate for West Balranald is tabled below.

Table 3: West Balranald Mineral Resource Estimate.

Mineral Resource Category	Material Tonnes[1]	In situ HM[2]	HM	Clay	Mineral Assemblage in HM[3]				
					Ilmenite	Leucoxene[4]	Rutile	Zircon	M + X[5]
	Mt	Mt	%	%	%	%	%	%	%
Measured	5.9	2.6	44	8	65	5	13	12	1.0
Indicated	26.3	8.6	33	6	64	6	12	11	0.9
Inferred	4.5	1.2	26	6	62	9	9	8	0.7
Total	**36.8**	**12.4**	**34**	**6**	**64**	**6**	**12**	**11**	**0.9**

Notes:

1. Rounding may generate differences in the last decimal place
2. Mineral Resources are reported at a cut-off grade of 3.0% HM
3. The mineral assemblage is given as given as a percentage of the HM content
4. Leucoxene comprises magnetic and non-magnetic leucoxene
5. M + X represents the rare earth bearing minerals monazite and xenotime

For West Balranald the ratio of monazite to xenotime is 9:1 (i.e. 90% monazite:10% xenotime) based on CeO_2 and Y_2O_3 assay data from laser ablation analysis of the HM from 19 mineralogy composite samples.

The ratio of rare earth elements contained in the rare earth bearing minerals monazite and xenotime is presented in Table 4 below.

Table 4: Ratio of rare earth oxide elements contained in the monazite and xenotime.

Rare earth oxide	Oxide %
Cerium (CeO_2)	39.9
Dysprosium (Dy_2O_3)	1.6
Erbium (Er_2O_3)	1.1
Europium (Eu_2O_3)	0.1
Gadolinium (Gd_2O_3)	2.0
Holmium (Ho_2O_3)	0.3
Lanthanum (La_2O_3)	18.6
Lutetium (Lu_2O_3)	0.2
Neodymium (Nd_2O_3)	16.3
Praseodymium (Pr_6O_{11})	4.6
Scandium (Sc_2O_3)	2.4
Samarium (Sm_2O_3)	2.8
Terbium (Tb_4O_7)	0.3
Thulium (Tm_2O_3)	0.2
Yttrium (Y_2O_3)	8.0
Ytterbium (Yb_2O_3)	1.4
Total	**100%**

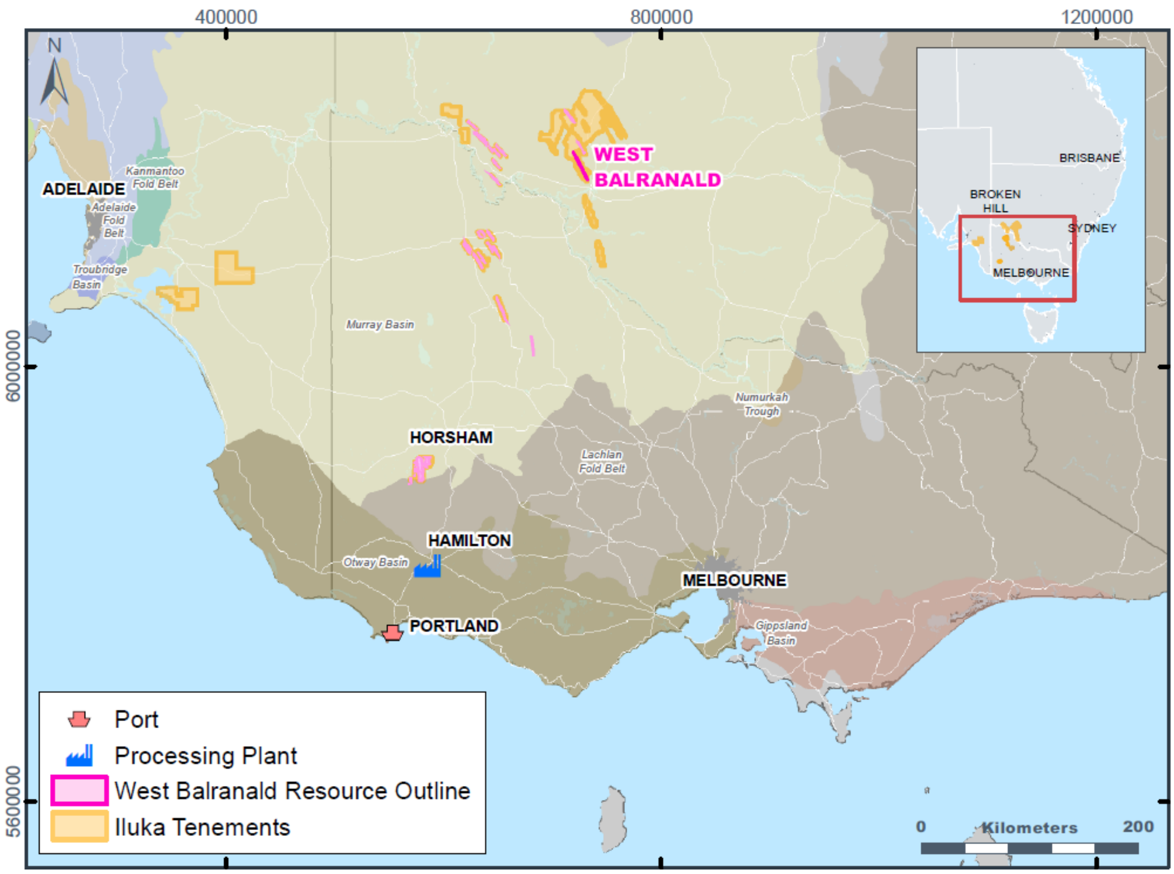

Figure 2: Location plan showing the West Balranald deposit relative to current infrastructure and the regional geology.

SUMMARY OF RESOURCE ESTIMATION AND REPORTING CRITERIA

As per ASX Listing Rule 5.8 and the 2012 JORC reporting guidelines, information material to the updated West Balranald Mineral Resource estimate is summarised below. More detail is provided in the JORC Code (2012 Ed.) Table 1 Summary, Sections 1 to 3 in Appendix 2.

Deposit geology and interpretation

West Balranald is located in the Murray Basin, a shallow, intra-cratonic Cainozoic basin covering an area of 300,000km^2 in south-eastern South Australia, south-western New South Wales and north-western Victoria as presented in Figure 2 The Murray Basin is flanked by low mountain ranges of Proterozoic and Palaeozoic rocks which are interpreted to be the originating source for the HM.

Much of the sedimentary sequence within the basin is the result of repeated marine incursions from the southwest, with the latest transgressive-regressive event resulting in deposition of the Late Miocene to Late Pliocene Loxton Parilla Sands (LPS). These sediments were deposited in shallow-marine, littoral and fluvial conditions and comprise of fine- to coarse-grained, generally well-sorted sand, with minor clay, silt and gravel and host the Murray Basin mineral sand deposits.

Overlying the LPS in the northern and eastern Murray Basin is the Shepparton Formation. This unit consists of mixed fluvial channel and flood-plain deposits, including some aeolian sediment. The lithology of the Shepparton Formation varies between gravel and clay. The source material varies between regions, leading to the subdivision of the unit based on geomorphic forms and soils; however, all are consistent with Riverine Plain sedimentation (Brown & Stephenson 1991).

The West Balranald deposit is hosted in the LPS and is interpreted to represent shoreface facies in a beach barrier sedimentary environment, formed in response to concentration and winnowing during storm events.

The southern end of the West Balranald strand has been interpreted to be affected by variable compaction of the underlying thick sediment pile with the majority of the deposit believed to be underlain by the Pitarpunga Granite. The strand plunges gently to the north over 17km strike length (-0.6º) north of about 531,700N (local grid). South of 531,700mN the strand plunges down about 45m over 3km of strike and then continues its (0.5º) southward plunge for another 3km as presented in Figure 4. Drilling also indicates about a 10m step in level at around 549500 mN. The magnitude of the plunges exhibited indicate that the strand has been affected by post emplacement slumping resulting from faulting of the basement rocks at depth. Notably the magnetic survey coverage did not indicate the presence of a break in the strand over the area where the strand plunges 20m lower.

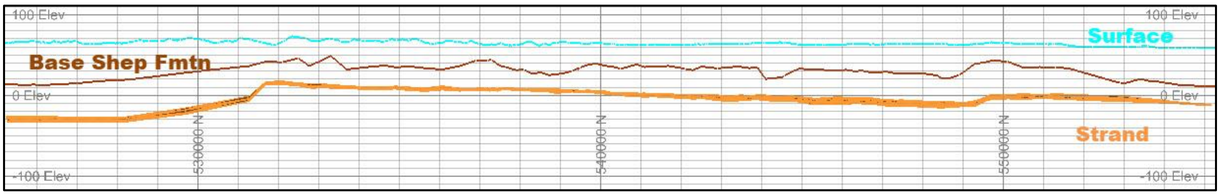

Figure 3: Long section of the West Balranald strand with the topography and base of Shepparton Formation, looking to the south-west (south to the left) with 5x vertical exaggeration.

The LPS often contain trace organics and iron sulphides in the form of pyrite, which may react and become acidic when exposed to surficial oxidation.

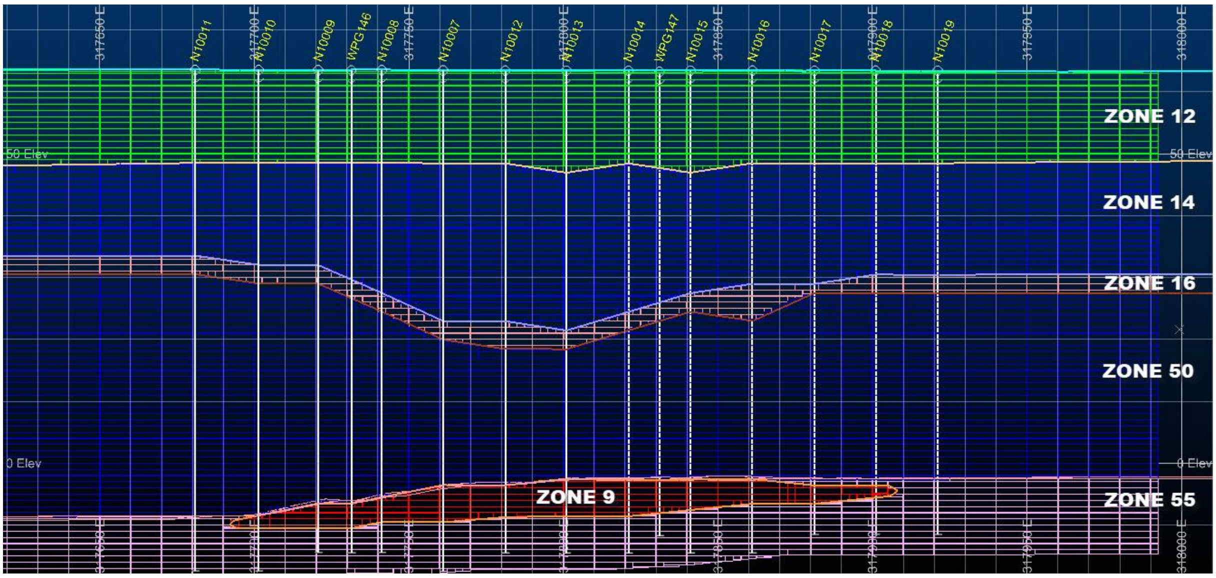

Figure 4: Cross section at about 546,500 mN displaying interpreted geology as applied to the West Balranald model.

Table 5: Interpreted geology zone descriptions as applied to the resource block model.

Model Zone	Zone Description
9	Strand interpreted above a 3% HM cut-off grade
12	Interpreted upper high slimes layer present from surface in the Shepparton Formation
14	Interpreted low slimes, sand layer present below Zone 12 in the Shepparton Formation
16	Interpreted high slimes layer present in the Shepparton Formation at the contact with the underlying LPS sands.
50	Interpreted upper LPS sands
55	Interpreted lower LPS sands which host the strand

Data Survey

Since 2006 the most of West Balranald drill hole collars have been surveyed using a DGPS_RTK unit (+/-1 cm horizontal and +/- 2cm vertical accuracy) with the drilling completed pre 2006 surveyed with a DGPS unit with metre accuracy, GPS unit or using a tape measure from surveyed location. A detailed LiDar topographic survey was obtained over the deposit in 2009 which enabled the projection of drillhole collars vertically onto this survey data. For the current resource estimate, any holes which weren't surveyed by an external surveyor using RTK_DGPS equipment were projected to the LiDar topography which has a vertical accuracy of +/- 15cm at one sigma.

Drill hole coordinates were transformed from MGA94 Zone 54 coordinates to a local grid using a two point transformation which effectively rotated the data 27^{O} clockwise such that the mineralisation effectively strikes north-south in the local grid system.

Drill technique and hole spacing

The deposit is covered by drilling with an average spacing of 20m across strike and 200m to 400m spacing between drill sections along strike. The northern and southern extremities of the deposit are covered by drilling on 1,600m spacings.

A total of 938 reverse circulation Air Core (AC) holes and 106 Sonic core holes have been used for the estimation of the updated Mineral Resource estimate for West Balranald. A low bias in AC sample Slimes grades and a variably low bias in AC sample HM grades have been demonstrated through Sonic twin check drilling at West Balranald. Sonic drilling has been adopted as the preferred method for resource definition drilling.

A total of 173 Sonic holes were completed between 2015 and 2022 of which 106, drilled on a close spaced 400 m by 20m grid, were used to support the estimation of the Measured mineral resources. These infill previous AC drilling spaced on 400m sections to create a 4.2km strike area between 543,290mN and 547690mN with alternating AC and Sonic drill sections. The remaining Sonic drill holes either twinned AC holes or were drilled on widely spaced sections over the deposit. The additional AC drilling completed since the previous estimate comprised 18 stope edge definition holes drilled in 2022 on ten existing AC drill sections.

Table 6: AC drill holes and assays completed at West Balranald and used in the Mineral Resource estimate.

	2001	2003	2006	2007	2008	2009	2011	2012	2022	Total
Drill holes	10	62	42	139	213	221	162	73	16	938
Assays	204	589	1,297	2,683	6,272	4,745	3,798	1,050	192	20,830

Table 7: Sonic drill holes and assays used in the Mineral Resource estimate for West Balranald

	2018	2021-22	Total
Drill holes	15	91	106
Assayed composites	139	830	969

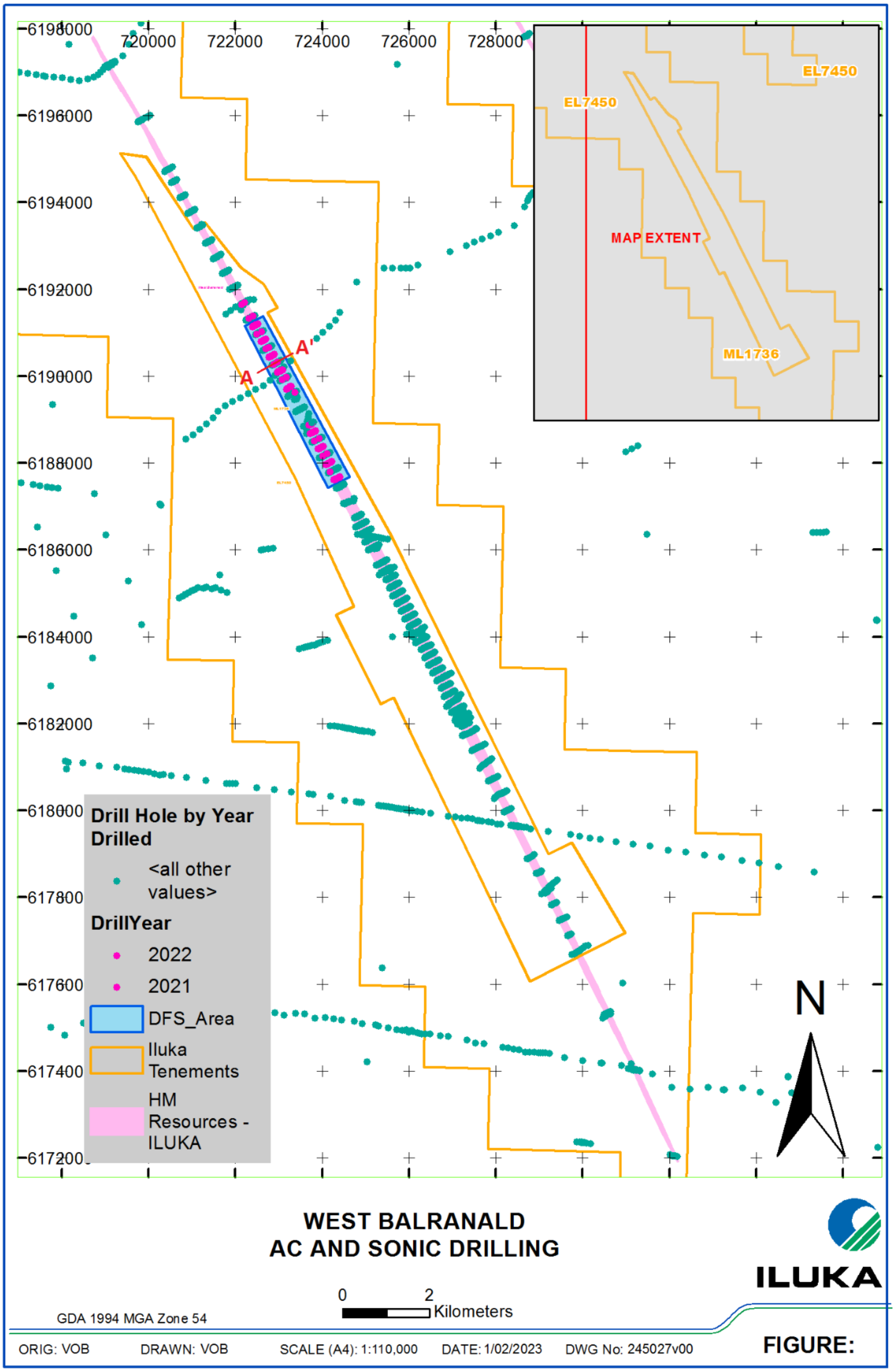

Figure 5: Plan of exploration drilling and location of Mineral Resource for West Balranald. A to A' represents the location of the cross section presented in Figure 4 and Figure 7.

Geological logging

All drill intervals have been logged by Iluka company or contracted geologists; or Iluka trained and supervised geo-technicians. The logging is done on site at the time of drilling and records pertinent information such as:

- colour;
- grainsize information;
- lithology;
- estimated HM and Slimes content;
- induration type and an estimate of the percentage of induration;
- quality of the HM including trash and grainsize; and
- presence of ground water.

Sampling and sub-sampling techniques

Most of the assayed samples are from and marginal to the mineralised strand, with minor assaying of the overlying waste for geotechnical purposes. The vast majority of strand samples used in estimation utilised one metre sample lengths. AC samples were taken as a 25% split using a rotary splitter mounted on the cyclone to produce a 2 to 3kg sample for assay. After 2008, if the sample size exceeded 2.5kg, the dried sample was riffle split to less than 2kg before analysis. The sampling of the Sonic core was done using quarter core or half core sampling at 1m intervals in the strand material with smaller subsampling intervals used to define the margin of the intersected mineralisation. These were composited to one metre intervals for comparison to the twinned AC drill holes and for grade interpolation during resource estimation. A total of 23,241 samples were analysed from the AC drilling of which 20,830 were used in the resource estimate. A further 969 assayed composites from the Sonic drilling were also used in the resource estimate.

Sample analysis method

All samples were analysed at Iluka owned and operated laboratories, located at either Hamilton (Vic) or Narngulu (WA). The analysis method for determining the HM content was the same for all samples. Samples were dried at 105^{O} C for a minimum of 24 hours and then wet sieved with removal of +2mm Oversize (OS) and -53um Slimes. About 100gm of the dried sand fraction was split out, screened at 710um with the 38um to 710um sand subjected to float sink analysis using Lithium Sodium Tungstate (LST) at 2.85 SG. The HM (sinks) from this fraction was used to calculate the in situ HM content.

Sand fraction-residues from similar geological domains were grouped together to form mineralogical composite samples to determine the mineral assemblage, mineral sizing and key mineral quality indicators. The mineralogical composite samples were wet tabled to recover HM concentrate and magnetically separated using a permanent magnetic roll separator at various roll speeds. The fractions isolated at various roll speeds were analysed by XRF with stoichiometric equations used to estimate the portion of HM mineral species on the basis of the elemental content. A small portion of the non-magnetic HM (10grams) was sent for densometric separation using Thallium Malonate Solution (TMF to determine grain size and indicative chemistry for Zircon and Rutile.

A total of 105 mineralogical composite samples have been completed for West Balranald of which 95 are linked to the dataset used for the updated resource estimation.

Data storage

Data supporting the Mineral Resource estimate for West Balranald was recorded on Toughbook field computers installed with appropriate software for recording the field logs. Data was electronically transferred to Iluka's Geology Database which current is currently accessed with acQuire GIM Suite, a geological data management system designed and licensed by acQuire Technology Solutions Pty Ltd. The field drill logs are validated on site by the operator and validation routines included in the logging software prior to importing into the database where additional validation routines are applied.

The results from sample analysis by Iluka owned/operated laboratories is hosted in CCLAS, a laboratory Information management system owned by Datamine Software Solutions. The assay results are also electronically transferred from CCLAS to the acQuire managed geology database.

Estimation methodology

Geological interpretation, wireframe surfaces and grade interpolation were completed using Datamine Studio RM Software.

Construction of the model was based on a combination of coding cells and drill hole samples within closed strand wireframes and sequential coding of cells and samples beneath open geological surface wireframes. The block model that the 2022 West Balranald mineral resource estimate is based on the combination of two different resource estimates. The primary model for the entire ~29 of strike length of the strand was estimated using only AC sample data as per the previous model. For the 4.2 km deposit strike length from 543,394N to 547,594N, "the DFS area", the model was estimated using only the Sonic drilling sample data set. The AC assay based model for the strike length from 543,394N to 547,594N was replaced by the model estimated using only Sonic drilling sample data to produce the final model for resource estimation.

The mineralogy and mineral quality data for the entire model is based on the mineralogical composite samples sourced from AC samples that were estimated in the AC parent model.

A parent cell size of 10m x 100m bx 1m in the X, Y and Z directions was adopted based on the predominant drill spacing of 20m x 200m X/Y and dominant 1m downhole sample length. Sub-celling in the X, Y and Z dimensions along zone boundaries is used to assist with volume representation. Grade interpolation was done using inverse distance weighting cubed (ID3) for primary assay data while hardness and composite identifier were interpolated using nearest neighbour (NN). Selected composite data was joined to the model using the composite identifier as a key value. The orientation of the search ellipse used for grade interpolation was dynamically adjusted to honour variation in geological and mineralised trends. Model and interpolation parameters are tabled below.

Table 8: West Balranald model parameters.

	Model			Cells		Search Distance	
Axis	Origin	Extent	Size	Number	Splits	Primary Assay	Composite ID
X	317,130	318,240	10	111	4	50	100
Y	523,894	556,094	100	322	4	600	1000
Z	-53	93	1	146	10	3	15

Successive search volume factors of 3 and 7 were applied if insufficient data was available to inform the model cells with the primary search dimensions. This typically transpired at the southern and northern extent of the deposit where the drilling is widely spaced and this was taken into consideration when assigning the JORC Code Mineral Resource Category.

Variogram analysis was carried out on the West Balranald data set to provide information on the continuity of the HM grades and verify the search ellipse dimensions, and also to support the JORC Code Mineral Resource Category assigned.

Cut-off grade

The West Balranald Mineral Resource estimate was reported using a lower HM cut-off grade of 3% and only mineralisation within the defined HM strand. A "HM grade*thickness to depth of burial ratio" was applied to exclude deeply buried, thin and lower grade mineralisation that is unlikely to ever be economic to mine.

Pending the outcome of the UGM mining method it is possible the HM cut-off will need to be revised but at this point in time the continuity of mineralisation in combination with a 3% lower HM cut-off grade provides a reasonable perspective of the West Balranald HM mineral inventory. Various open cut mining options have shown economic promise but have been discounted at this time in favour of the UGM mining due to significant environmental and technical risks associated with large scale open pit mining at depth below the water table.

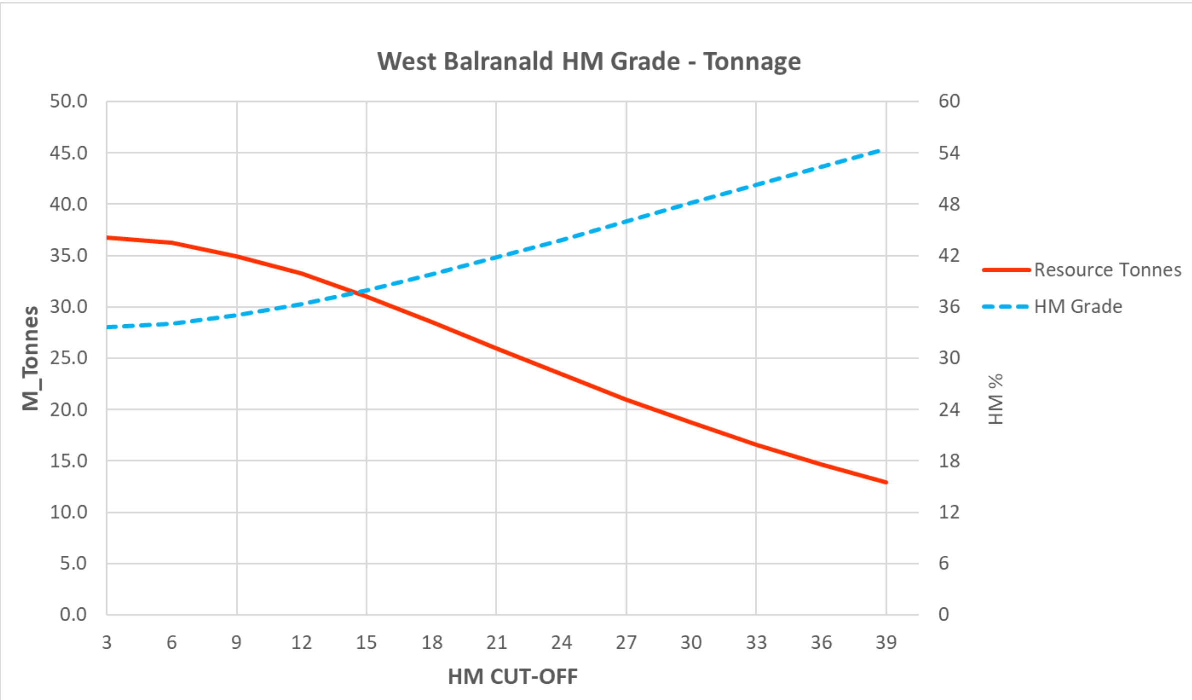

Figure 6: HM Grade tonnage curve for West Balranald.

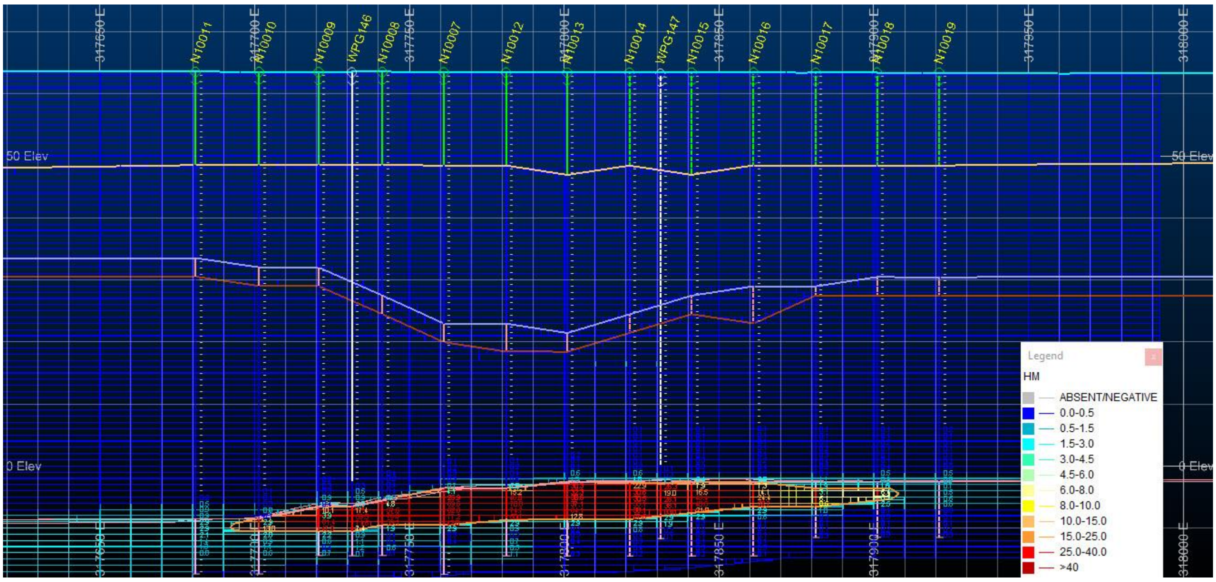

Figure 7: Cross section through the model at about 546500 mN (location A – A' on Figure 5) annotated on HM grade (2x vertical exaggeration).

Resource classification assignment

The Mineral Resource estimates for West Balranald was assigned a resource category based on the definitions espoused in the JORC Code (2012 Ed.). The resource category applied is based on:

- drill hole spacing and sample density, supported by established grade continuity (Variogram and Conditional Simulation studies);
- continuity of geological domains;
- confidence in the supporting analytical data;
- distribution of mineral assemblage composites; and
- prospects for economic extraction

The allocation of resource classification for the West Balranald deposit is complicated by consideration of the low HM and slimes biases present in the AC sample assays. Variogram analysis of the AC data concluded a 20m x 200m drill spacing was required to support a Measured Mineral Resource estimate. However, due to the magnitude of the low bias in HM and slimes from the AC drilling resulting in an underestimation of about 25% in contained HM in the DFS area, the resource previously classified as Measured was re-assigned to Indicated.

The 4.2 km strike section of the deposit with 400m x 20m spaced Sonic drilling data used to inform the model, with AC drilling on the intervening 200m spaced sections which confirmed the strand location, was assigned a Measured Resource classification. Support for the Measured classification was verified by Snowden Optiro through multiple processes including:

- normal score variograms;
- a kriging neighbourhood analysis showing a drill spacing density of 20m by 400m achieves the highest combination of kriging efficiency and regression slope metrics; and
- conditional simulation (CS) studies completed by Snowden Optiro using the Sonic drilling data within the 4.2km DFS area reported that all blocks within the proposed stope design for underground mining can be classified as Measured.

For other areas of the deposit defined by AC drilling spaced at 20m by 400m (or closer) an Indicated classification has been assigned and an Inferred classification applied to areas informed by drilling spaced at greater than 20m by 400m. The net decrease in Measured Resources is 6.0 Mt of material and 1.2 Mt of contained HM. Conversely the Indicated Resource has increased by 6.5 Mt of material for 1.6 Mt of contained HM. The total Mineral Resources have increased by 0.5 Mt of material and 0.4 Mt of contained HM.

Less than 0.4% of the reported HM tonnage is extrapolated beyond drill sections at the southern and northern extremities of the deposit.

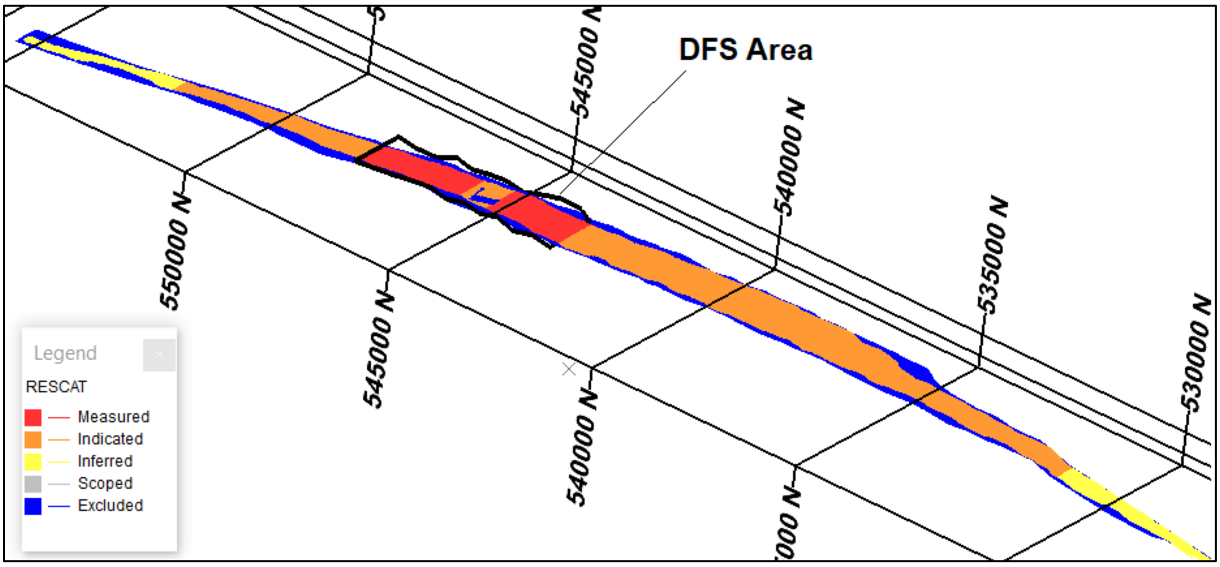

Figure 8: JORC Code Resource Category assignment for West Balranald (5x exaggeration in X direction).

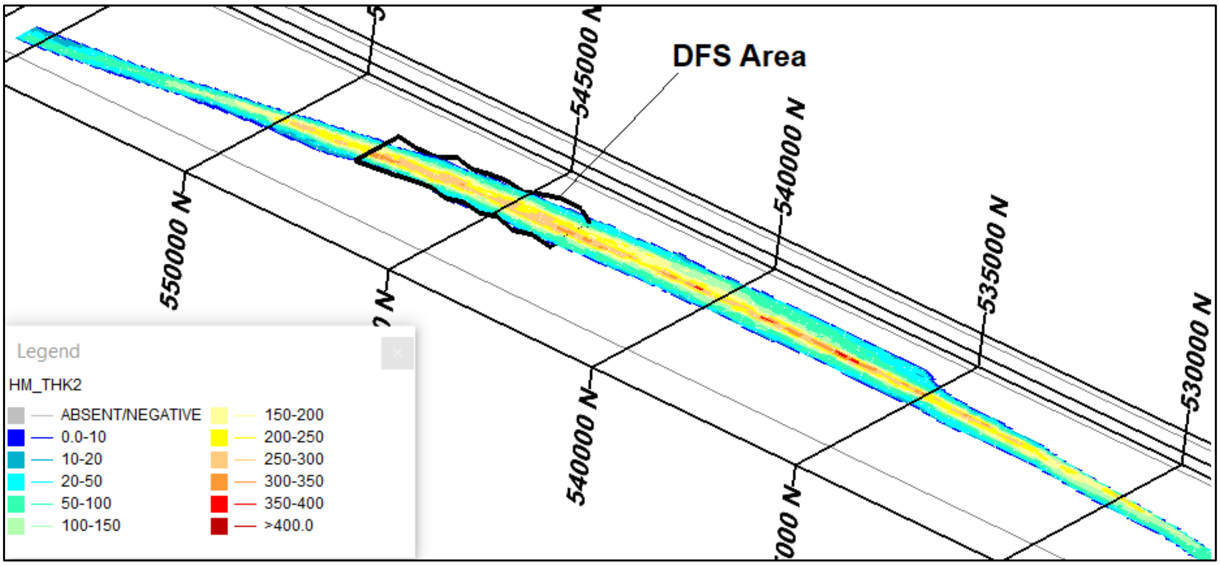

Figure 9: West Balranald average HM grade * strand thickness (5x exaggeration in X direction).

Mining and metallurgical methods and parameters

The West Balranald Deposit comprises a single high HM grade strandline buried under 50 to 100m of unmineralised sediment. The geomorphology, depth of burial and unconsolidated nature of the mineralisation lends to an underground mining technique. This negates the risks associated with the removal of large volumes of overburden and extensive dewatering.

The mineralised host is identical to the strandline style of mineralisation mined at other sites in the Murray Basin By Iluka and other operators and the metallurgical performance is well understood. The mineral can be recovered and products separated using current processing technology.

Competent Persons Statement

The information in this report that relates to the reporting of Exploration Results and the estimation of Mineral Resources is based on, and fairly represents information and supporting documentation compiled by Mr Vincent O'Brien, a full time employee of Iluka. Mr O'Brien is a Member of the Australasian Institute of Mining and Metallurgy (MAusIMM) and he has sufficient experience which is relevant to the style of mineralisation and the type of deposit under consideration and to the activity being undertaken 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 O'Brien consents to the inclusion in this release of the matters based on the information in the form and the context in which they appear. Mr O'Brien is a shareholder of Iluka.

JORC Code, 2012 Edition – Table 1 report

Section 1 Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	JORC Code explanation	Commentary
Sampling techniques	*Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.*	The deposit was sampled using dominantly Reverse Circulation Air-Core (AC) drill holes (1,035 in total) with a contribution of 192 Sonic drill holes. AC truck mounted drill rigs with NQ (76 mm) diameter drill rods were used for all bar 17 holes of the AC drilling on the deposit. 17 twin holes were drilled with BQ (56m) diameter drill rods in 2007. A total of 216 drill holes (drilled prior to 2004) do not have the hole size recorded however it is assumed that the hole size is NQ although some may be BQ (56 mm) diameter. Fifteen of the Sonic drill holes were cored from surface through to the end of the drill hole. For the remainder of the Sonic drill holes the overburden was flushed with no coring, sampling or logging completed and only the last 9 to 12m interval of the hole was cored, logged and sampled for assay. Gamma logging data was obtained from the majority of Sonic drill holes using a Reflex EZ-Gamma probe that was run inside the 6” diameter casing string on completion of the drill hole.
	Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.	All phases of AC drilling have utilised the same drilling methodology and assay techniques. AC drilling was used to obtain 1.0 m length samples from within the mineralised intervals from which approximately 1.5-2.0 kg was collected using a rotary splitter. Further subsampling by riffle splitting of the dried sub samples occurred from September 2008, wherein rotary split samples exceeding 2.5 kg had a 2kg sub sample riffle split dry in the laboratory. Drill core from Sonic drilling was extruded from the core barrel into plastic sleeves at surface and cut using a putty knife. Quarter core sub-samples taken for assay from all bar the six Sonic holes drilled in 2015 which had 50% splits subsampled for analysis.
	Aspects of the determination of mineralisation that are Material to the Public Report.	Large AC sample weights and erratic sample volume delivery to the rotary splitter occur when drilling the deep, unconsolidated West Balranald strand which is located a considerable distance beneath the water table. The potential for fines loss through the calico sample bags with the groundwater was noted. These observations led to numerous drilling trials to attempt to

Criteria	JORC Code explanation	Commentary
		verify if the AC drilling and sampling methods were providing samples which accurately characterised the strand. A low bias in AC sample Slimes grades and a variably low bias in AC sample HM grades were demonstrated through Sonic twin check drilling. The 2018 Sonic twin check drilling study included three consecutive 200m spaced sections of Sonic drillholes which twinned AC drilling. This allowed estimation of two comparison model estimates (one based on AC data only and one based on Sonic data only). In the comparison models the combination of increases in HM grade (+16.7%), in bulk density (+7.1%), in Slimes (+63.6%) and in volume (+0.5%) produced a 25.7% increase in contained HM tonnage in the Sonic model compared to the AC model. Note that the calculated bulk density values increase with increasing HM and Slimes grades. The Measured Resources reported in 2022 were estimated using only Sonic sample data. The combined increases in HM grade (+18%), in Slimes grade (+40%) and bulk density (+6%) produced a 25% increase in contained HM tonnage compared to the alternate estimate for the same area based on AC drill sample data on a similar drill spacing. Variable low HM and Slimes biases are present in the AC sample data but no adjustments were made.
	In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.	All samples were assayed at Iluka internal laboratories using industry standard techniques for HM determination. Heavy mineral determination for all 23,241 samples assayed: The sample was dried, de-slimed (material <53µm removed) and then had Oversize (material +2mm) removed. 100g of the sample then had a float/sink performed on it using Lithium-Sodium-Tungsten (SG=2.85t/m^3). The resulting HM concentrate was then dried and weighed to calculate the insitu HM grade. Mineralogical Composite Samples were sourced from the AC drill programs which utilised the sand fraction retained during the assay process. Wet tabling was conducted to produce a HM concentrate which underwent magnetic separation using a permanent magnetic roll separator set up and electrostatic separation. The various fractions were then subjected to analysis using XRF to determine the mineral species present and mineral chemistry. A small portion

Criteria	JORC Code explanation	Commentary
		(10g) was sent for densometric separation using Thallium Malonate Solution (TMF). This separation technique was used to determine grain size and indicative chemistry for zircon and rutile.
Drilling techniques	*Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, Sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	All AC sampling was based on vertical drill holes with a diameter of either NQ (76 mm) or BQ (56mm). All Sonic sampling was based on vertical drilling utilising 4” diameter core drill string and a 6” casing string.
Drill sample recovery	*Method of recording and assessing core and chip sample recoveries and results assessed.*	Both sample quality and water content were recorded in the field logging. Sub sample weights were recorded for every assayed sample. Larger than expected AC sample weights were noted from the West Balranald deposit which is located beneath the water table.
	Measures taken to maximise sample recovery and ensure representative nature of the samples.	A trial was completed in 2007 where the entire sample return from BQ (56 mm diameter) RC-AC drilling was collected and analysed, confirmed that approximately twice the expected sample return was delivered to surface. Where possible a consistent rate of penetration was maintained during drilling. Numerous Sonic check twin drilling programs have been completed at the West Balranald deposit to verify the RC-AC sampling and characterise the nature and variability of the biases in contained HM and Slimes (<53µm).
	Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	Larger than expected RC-AC sample weights were noted from the West Balranald deposit which is located beneath the water table. A low bias in AC sample Slimes grades and a variably low bias in AC sample HM grades were demonstrated through Sonic twin check drilling.
Logging	*Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.*	Geological logging was carried out for all AC and Sonic samples submitted for assay.
	Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.	Logging of AC and Sonic samples recorded estimated Slimes, washing, colour, lithology, dominant grainsize, coarsest grainsize, sorting, induration type, hardness, estimated rock and estimated HM.
	The total length and percentage of the relevant intersections logged.	All samples that were submitted for assay had lithological data logged as did almost all drilled AC samples. The 18 AC holes for 1,374m that were drilled in

Criteria	JORC Code explanation	Commentary
		2022 to assist in definition of stope edges were the only AC drill holes that were not logged.
Sub-sampling techniques and sample preparation	*If core, whether cut or sawn and whether quarter, half or all core taken.*	Core from Sonic drilling was cut lengthwise using a putty knife with quarter core sub-samples taken for assay from all bar six holes that were drilled in 2015 which had 50% splits subsampled for assay.
	If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.	A rotary splitter was used to produce 25% sub samples from AC samples, with all mineralised samples located beneath the water table. However due to excessive sample weights, the adoption of secondary riffle splitting occurred from September 2008 for large samples typically collected below the water table. For those 25% rotary splits collected after this period that exceeded 2.5kg had a 2kg sub sample riffle split on dry samples in the laboratory. This excluded samples with elevated slimes which would not disaggregate appropriately for riffle splitting.
	For all sample types, the nature, quality and appropriateness of the sample preparation technique.	Sample preparation is consistent with industry best practice and is deemed to be appropriated for Heavy Mineral determination.
	Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.	There is little QA/QC data for drilling conducted prior to 2007 when the current QA/QC practices were introduced. Since 2007 duplicate samples were collected from the rotary splitter at the drill rig at the same time as the primary samples. There have been 1,071 field duplicates collected at a rate of 1:22 of all samples submitted for assay. There have been 306 duplicate samples riffle split at the laboratory whilst processing West Balranald 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.	Duplicate HM assay data demonstrates good correlation with primary sample data as expected.
	Whether sample sizes are appropriate to the grain size of the material being sampled.	The sampling sizes employed for both RC-AC and Sonic are considered appropriate for the mineralisation at West Balranald.
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.*	The assay technique utilised is appropriate for the mineralisation at West Balranald and is supported by decades of reconciliation of mining of other deposits delineated using the same or very similar techniques. The Mineralogical Composite Bulk Sample evaluation processes are appropriate for the current level of study and applied Mineral Resource classification.

Criteria	JORC Code explanation	Commentary
	For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.	Gamma logging data was obtained from the majority of Sonic drill holes using a Reflex EZ-Gamma probe that was run inside the 6" diameter casing string on completion of the drill hole.
	Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.	Since 2007 reference standards were inserted with assayed samples both in the field and in the laboratory at a nominal combined rate of 1:20 samples assayed. There have been 570 reference standards (1:41 submission rate) inserted in the field during drilling at West Balranald and 545 reference standards (1:43 submission rate) inserted at the laboratory. Some short periods of bias are evident in the results for HM and Slimes which were quickly addressed by the laboratory. HM results outside the 3SD Failure Limits triggered re-split and re-assay of the standard and samples with HM > 3% from the corresponding holes. The repeat assays were assessed and if the standard returned HM results within specifications then all the repeat assays replaced the original results in the resource estimation process. Duplicate samples were taken in the field during AC drilling and at the laboratory at a nominal rate of 1:20 samples assayed. Duplicate assay data demonstrate good correlation with primary sample data for HM and Slimes data as expected. Correlation for Oversize data is notoriously poor in mineral sand AC drill samples due to the practicalities of sampling this size fraction in AC samples. A limited program of 135 field duplicate samples from the Sonic drill programs demonstrate improved correlation with the primary samples for HM, compared to the RC-AC duplicate pairs.
Verification of sampling and assaying	*The verification of significant intersections by either independent or alternative company personnel.*	No verification of significant results was undertaken but the assay grades from laboratory determination are corroborated by the field visual estimated HM grades.
	The use of twinned holes.	There have been 22 pairs of true twin AC drill holes, drilled on the same day by the same driller. There have been 17 pairs of twin AC drill holes with NQ diameter drill holes twinned with BQ diameter holes and a further 4 AC holes twinned with one or more AC drill holes from later generations of drilling. A 78 drill hole Sonic check twin drill hole program twinning AC drill holes was completed. There were three pairs of twin Sonic drill holes.

<table>
<tr><th>Criteria</th><th>JORC Code explanation</th><th>Commentary</th></tr>
<tr><td></td><td>Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.</td><td>Logging of drill samples was input directly into a laptop computer using Micromine software pre 2015 and Acquire software after 2015, both with data verification routines enabled. Data was then transferred into Iluka's Geology Database at the time (custom tailored geological data management system based on a SQL database) which incorporated further verification routines.</td></tr>
<tr><td></td><td>Discuss any adjustment to assay data.</td><td>Variable low HM and Slimes biases are present in the AC sample data but no adjustments were made.</td></tr>
<tr><td>Location of data points</td><td>Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.</td><td>The majority of drill holes had the collar locations surveyed using RTK_DGPS equipment with a vertical accuracy of ± 0.1m. All of the holes drilled prior to 2006 had their collars surveyed using a handheld GPS unit with a horizontal accuracy of ±5m and vertical accuracy of ±10m, therefore these were projected vertically to the LiDar topographic survey that was flown over the deposit in 2009. The LiDar topographic survey has an absolute vertical accuracy of ± 0.15m at one sigma on bare ground.</td></tr>
<tr><td></td><td>Specification of the grid system used.</td><td>The eastings and northings were recorded in MGA94 Zone 54, but these were converted to a local grid in Datamine Studio. The local grid conversion is a two-point transformation resulting in a 27° rotation clockwise. The pairs of transformation points are:
<table>
<tr><td>LOCAL_N</td><td>LOCAL_E</td><td>MGA94_N</td><td>MGA94_E</td></tr>
<tr><td>536491.4</td><td>317902.7</td><td>6181439.9</td><td>727586.1</td></tr>
<tr><td>547293.6</td><td>317747.4</td><td>6190994.2</td><td>722543.2</td></tr>
</table></td></tr>
<tr><td></td><td>Quality and adequacy of topographic control.</td><td>A LiDar topographic survey was flown over the deposit in 2009. The LiDar topographic survey has an absolute vertical accuracy of ± 0.15m at one sigma on bare ground.</td></tr>
<tr><td>Data spacing and distribution</td><td>Data spacing for reporting of Exploration Results.</td><td>The deposit is covered by drilling with an average spacing of 20m east-west between holes and 200m north-south spacing between drill sections. The northern and southern extremities of the deposit are covered by drilling on either 400m or 1,600m spacings.</td></tr>
</table>

Criteria	JORC Code explanation	Commentary
	Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.	Given the nature of beach placer strands and supporting statistical evaluations, there is sufficient confidence in the interpreted geometry and grade continuity for the Mineral Resource classifications applied.
	Whether sample compositing has been applied.	All AC samples within the mineralised interval were from 1.0 m length intervals and the Sonic samples were composited to 1.0 m length samples (0.4 to 1.5m acceptable length range) within the interpreted model domains.
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.*	No bias has been identified or expected as drilling was conducted effectively perpendicular to the mineralisation.
	If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.	No bias identified.
Sample security	*The measures taken to ensure sample security.*	Samples were stored at secure Iluka compounds when not in transport.
Audits or reviews	*The results of any audits or reviews of sampling techniques and data.*	No audits were conducted of sampling at West Balranald however the sampling techniques used were audited for Iluka elsewhere. The same sampling and assay processes support Iluka's current mining operations. Numerous audits and reviews were completed to investigate the AC drill sample quality and determine the drill spacings required to support Measured Resource classification including the following: 1) A variography study by Iluka in 2007 to determine the range of correlation of HM assays along and across strike. The findings of the study demonstrated that the drill grid spacing should not exceed 20m across-strike by 200m along-strike for a Measured Resource to be defined, and that the drill grid spacing should not exceed 40m across-strike by 400m along-strike for an Indicated Resource to be defined within these zones 2) In 2007 a 17 drill hole RC-AC trial was completed using BQ drill rods to verify sample representivity of the strand interval from the 25% rotary split sub samples of NQ drilling. The entire sample return was collected for each metre length sample through the strand and dried at the laboratory before riffle splitting into 2.0kg sub-samples which were all analysed for HM. The volume of sample recovered per one metre interval was approximately double

Criteria	JORC Code explanation	Commentary
		that expected for the BQ drill diameter. Use of BQ drill rods was not adopted and the riffle splitting of NQ AC subsamples was approved from September 2008. For those 25% rotary split sub samples collected after this period that exceeded 2.5kg had a 2kg sub-sample riffle split dry in the laboratory (excluding samples with elevated Slimes or any Oversize present). 3) A four drill hole Sonic check twin drilling program was completed at West Balranald in 2008. The Sonic drilling suffered core loss from the strand intervals but the holes confirmed the existing position of interpreted top and base of strand and broadly confirmed the HM content of the strand intervals in the twinned AC drill holes. 4) A review by Golders Associates in 2010 to cover the robustness and validity of the Mineral Resource estimation and classification of the 2009 estimate, which included a review of sampling techniques. Key conclusions include the following: o Iluka's investigation into sampling issues have been thorough; o Sonic drilling is most appropriate for achieving the best results in difficult drilling conditions; o The QAQC procedures are adequate and logical; and o Sample preparation and assaying has acceptable errors of precision and no significant bias can be observed. 5) A drill hole density study based on analysis of Kriging relative error was completed by external consulting group in 2010. This indicated that a drill spacing of 20m by 200m is optimal for the definition of Measured Resources. For definition of an Indicated Resource a drill spacing of 20m by 700m was acceptable. 6) A 15 drill hole Sonic check twin drilling program was completed at various locations along the West Balranald deposit in 2011. Only in six of the 15 Sonic drill holes was the entire strand interval recovered without significant core loss (>0.3m). Analysis of the 2011 Sonic program indicated that a low HM

Criteria	JORC Code explanation	Commentary
		bias exists in AC sample data, but not the likely magnitude or distribution of this bias. 7) A variography study by Iluka in 2011 incorporated additional close spaced drilling. The study recommended that the drill grid spacing should not exceed 20m across-strike by 200m along-strike for a Measured Resource to be defined. The drill grid spacing should not exceed 40m across-strike by 700m along-strike for an Indicated Resource to be defined. 8) In 2011 Optiro completed a drill density study based on conditional simulation. The conditional simulation analysis, based on the HM continuity within the study area at West Balranald, indicates that a drill spacing of 20m by 200m is optimal for the definition of Measured Resources. For definition of an Indicated Resource a drill spacing of 20m by 700m was recommended. 9) A six drill hole Sonic check twin drilling program was completed on a single drill section at West Balranald in 2015. The 2015 program utilised an experienced Sonic driller, flapper drill bits and all core was extruded into plastic sleeves at surface. The program clearly demonstrated that when correctly configured for the ground conditions present, Sonic drilling is capable of consistently recovering undisturbed samples. Analysis of the results from the 2015 Sonic program indicated that a low HM bias exists in AC sample data. 10) A 73 drill hole Sonic check twin drilling program was completed at West Balranald in 2018. Drilling was completed on nine drill sections distributed along the central 12km strike length of the deposit, including three consecutive 200m spaced drill sections. Evaluation included five of the Sonic check drill holes drilled in 2015. The Sonic sample data from the 2018 program demonstrates a clear low slimes (<53µm) bias in the AC sample data for the strand intervals. The Sonic mean Slimes grade of the Sonic strand intervals was 8.3%, compared to the mean AC Slimes grade of 5.3%. As the AC and Sonic strand intervals have different strand thicknesses, comparisons of the contained HM (HM x thickness = HMm) were made between the Sonic and AC strand intervals. The average contained HM value for all 78 Sonic strand intervals is 14% higher than in the AC strand

Criteria	JORC Code explanation	Commentary
		intervals. The uplift in contained HM from AC to Sonic sample data for each of the nine drill sections varied from +3.1% to +24%. 11) In 2020 Optiro completed a drill density study based on conditional simulation restricted to sample data within the strand interpreted above a 19% HM cut-off grade. This study was to confirm the drill density requirements to support the proposed underground mining. The conditional simulation analysis indicated that a drill spacing of 20m by 200m is optimal for the definition of Measured Resources based on an assumed bimonthly production period. The study reported that for the study area, drilling on 20m by 400m spacing was sufficient for classification of 75% of the resources in the area as Measured Resources. It was noted that this assumes a high degree of confidence in the sampling and assay data from the AC drilling that was used for this analysis.

Section 2 Reporting of Exploration Results

(Criteria listed in the 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.*	The West Balranald deposit is situated mostly within Mining Licence ML1736, with the northern and southern extremities situated within Exploration Licence EL7450. Iluka holds the perpetual Western Land Leases for properties hosting over 50% of the length of the deposit. Iluka is in negotiations to secure the tenure for the remaining property over the deposit.
	The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.	In April 2016, Iluka was granted development consent from the NSW Government to undertake open-cut mining and removal of up to 100,000 tonnes of mineral ore as part of a bulk sampling activity at the site of the Balranald Mineral Sands Project. An application to modify the consent to undertake an extended underground mining trial was lodged with the NSW Department of Planning and Environment (DPE) in May 2022. There are no expected impediments to receiving the requested modification of consent.
Exploration done by other parties	*Acknowledgment and appraisal of exploration by other parties.*	There is no exploration by other parties' relevant to the discovery or development of the West Balranald deposit.
Geology	*Deposit type, geological setting and style of mineralisation.*	The West Balranald deposit is a beach deposited HM strandline hosted within the Loxton Parilla Sands of the Murray Basin. The Murray Basin is a shallow intra-cratonic Cainozoic basin. Much of the sedimentary sequence within the basin is the result of repeated marine incursions with the last major transgressive-regressive event resulting in the deposition of the Late Miocene to Late Pliocene Loxton Parilla Sands (LPS).
Drill hole Information	*A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:* *easting and northing of the drill hole collar* *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* *dip and azimuth of the hole* *down hole length and interception depth*	The total West Balranald dataset comprises 1,035 AC and 192 Sonic drill holes with a combined total length of 89,146.4m. The dataset used in this estimation comprises 1,044 drill holes (938 AC, 106 Sonic). It is impractical to tabulate all the collar and downhole information within this Table but representative sections are provided in the main text of this report.

Criteria	JORC Code explanation	Commentary
	hole length.	
	If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.	The Mineral Resource estimate is presented in-lieu of a summary of drill intercepts. The presentation of mineralised intercepts is immaterial to the Mineral Resource being presented.
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.*	Not considered applicable, refer to the commentary in Section 3 "Reporting of Mineral Resources"
	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.	Not considered applicable.
	The assumptions used for any reporting of metal equivalent values should be clearly stated.	No metal equivalents are used in this report.
Relationship between mineralisation widths and intercept lengths	*These relationships are particularly important in the reporting of Exploration Results.*	The West Balranald deposit is hosted within a palaeo beach placer. The geology, geometry and mineralisation of this style of deposit is well understood.
	If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.	The drilling is essentially perpendicular to the mineralisation so all intercepts represent true widths.
	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').	
Diagrams	*Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported*	Several representative cross sections through the West Balranald deposit and a plan showing the drill hole distribution are given in the attached text.

Criteria	JORC Code explanation	Commentary
	These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.	
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.*	Exploration results have not been presented as they are superseded by the reporting of the Mineral Resource Estimate based on the available drill data.
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.*	Geological observations are consistent with beach placer mineralisation. Logging of the samples includes visually estimating the HM present the results of which corroborate the presence of HM mineralisation. Composite samples have been taken from the sand residue fractions of exploration samples which also corroborate the validity of the HM mineralisation. The composited samples generate between 0.5 and 2kg of HM which is then subjected to a process of magnetic, electrostatic and heavy liquid separation followed with XRF analysis of the fractions to determine the mineral assemblage and mineral quality. This information has been use to support the assemblage of the HM present. The bulk density applied is the Iluka Standard formula applied to all resource models in the Murray Basin outside the Douglas district. The calculation of the bulk density takes into account the weight percent of each of the major components of a typical mineral sands sample: HM, SAND and SLIMES. The formula used accounts for the ratio of HM and Quartz present in a sample and the weight percentage of clay which can be added to that sample without changing the volume that sample occupies. The formula was used for other geologically similar HM deposits, including those mined by Iluka Resources in the Ouyen region of the Murray Basin. The lower sequence of the Loxton Parilla Sands which hosts the strand contains iron sulphides. The requirements for controlling potential acid mine drainage derived from the sulphide bearing ore and overburden material during mine production have been investigated and determined.

Criteria	JORC Code explanation	Commentary
		Gamma logging of the majority of Sonic drill holes was completed to verify the interpreted strand intervals and provided additional data on the high clay intervals present in the overlying Shepparton Formation Three underground mining trials have been completed at the West Balranald deposit between 2014 and 2020. These ranged from proof-of-concept trials through to definitive large scale tests to confirm the proposed method as a viable mining method. A combined total of approximately 37kt of ore has been extracted across the three trials with the resultant HM concentrate stored on-site.
Further work	*The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).*	Additional infill Sonic drilling will be required to support the upgrade in classification of Indicated Resources to Measured Resources.
	Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	The West Balranald mineralisation is effectively closed off.

Section 3 Estimation and Reporting of Mineral Resources

(Criteria listed in section 1, and where relevant in section 2, also apply to this section.)

Criteria	JORC Code explanation	Commentary
Database integrity	*Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.*	Logging of drill samples was input directly into a laptop computer using Micromine software pre 2015 and Acquire software after 2015, both with data verification routines enabled. Data was then transferred into Iluka's Geology Database at the time (custom tailored geological data management system based on a SQL database) which incorporated further verification routines.
	Data validation procedures used.	Drill data was manipulated to ensure no duplicate records were present and statistical evaluation was conducted to ensure all results were within acceptable ranges.
Site visits	*Comment on any site visits undertaken by the Competent Person and the outcome of those visits.*	The Competent Person has undertaken dozens of site visits to the West Balranald deposit. The Competent Person has observed the drilling of many AC and Sonic drill holes at the deposit. These visits led to the various trials and reviews of AC drill sampling detailed above and the adoption of Sonic drilling for use in resource estimation.
	If no site visits have been undertaken indicate why this is the case.	
Geological interpretation	*Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit.*	The interpreted mineralised strand at West Balranald is a narrow HM strandline which exhibits a simple geometry with excellent correlation demonstrated between drill sections. It is recognised that the AC drilling method used to delineate the West Balranald mineralisation can be prone to down hole contamination under the conditions present as the deposit is a considerable distance below the water table. AC samples with elevated HM grades from suspected down hole contamination have been excluded from the base of the interpreted strand.
	Nature of the data used and of any assumptions made.	All relevant information has been sourced from the drill samples and the interpretations have developed over successive drill campaigns, including twin AC studies and check Sonic drilling twinning AC drill holes.
	The effect, if any, of alternative interpretations on Mineral Resource estimation.	There is no potential for alternate interpreted geometries for the mineralised strand. AC samples with elevated HM grades from suspected down hole contamination have been excluded from the base of the interpreted strand.

Criteria	JORC Code explanation	Commentary
		To include these samples in the interpreted strand would produce a marginal increase in material tonnes, marginally reduce the average modelled HM grade and produce an irregular geometry for the base of the strand.
	The use of geology in guiding and controlling Mineral Resource estimation.	Appropriate geological domaining and corresponding flagging of drill data has been used to control grade interpolation and distribution during resource estimation.
	The factors affecting continuity both of grade and geology.	There are no indications of post depositional fluvial wash-outs impacting the deposit. A ground magnetic survey was completed over a 21.5km length of the West Balranald deposit in 2011. The survey covered where the strand was shallowest and excluded 3.3km and 4.5km lengths from the northern and southern extremities respectively of the reported Mineral Resource. The survey clearly demonstrated that there are no washouts present along the strike length of the deposit that was surveyed. The deposit geometry has been interpreted to be affected by variable compaction of the underlying thick sediment pile and potential faulting of the basement rocks at depth. At the southern end of the deposit the strand plunges 20 m vertically between drill sections 430 m apart. The magnetic survey covered that area and it did not indicate the presence of a break in the strand. Strand continuity across fault slumps has been demonstrated by close spaced drilling by Iluka Resources over similar faulted areas at other deposits in the northern Murray Basin.
Dimensions	*The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.*	The West Balranald deposit has a 29km strike extent for the strand interpreted above a 3% HM cut-off grade with an average thickness of five metres and strand widths of up to 280m along the middle of the deposit, which narrows down to 120m at the extremities. The strand occurs beneath overburden depths of 47m midway along strike and up to 99m at the southern extremity.
Estimation and modelling techniques	*The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.*	The grade interpolation was carried out using the Estima Superprocess within Datamine Studio software. Grade estimation was completed using Inverse Distance Cubed which is an Iluka standard and is deemed appropriate for this style of mineralisation. Composite Identifier and Hardness values were interpolated using Nearest Neighbour (NN) method. No HM top cuts have been used nor deemed necessary. Drill hole sample data was flagged with

Criteria	JORC Code explanation	Commentary
		domain codes corresponding to the geology of the deposit and the domains imprinted on the model from 3-dimensional surfaces generated from the geological and mineralisation interpretations. A primary search dimension of 50*600*3m (X*Y*Z) was used for all assay data with the exception of the Mineralogical Bulk Sample Composite Identifier which was assigned using a primary search dimension of 100*1,000*15m (X*Y*Z). Successive search volume factors of 3 and 7 have been adopted to interpolate grade in areas of lower data density.
	The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.	Detailed comparisons were made with the previous estimate to identify the areas where discrepancies occurred and whether they were due to additional drilling or changes in the interpretation or modelling methodology. For the area estimated using Sonic sample data comparisons were made with estimates performed using only AC data and using a combination of Sonic and AC data.
	The assumptions made regarding recovery of by-products.	No by-products have been considered as part of this estimate.
	Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).	No deleterious elements have been included in the resource estimation. The presence of sulphide minerals within the strand and the surrounding LPS sand unit and the potential for acid mine drainage is recognised and has been investigated.
	In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.	A parent cell size of 10*100*1m was used with 4*4*10 (X*Y*Z) cell splitting in comparison to the predominant drill and sample spacing of 20m * 200 to 400m * 1m (X*Y*Z).
	Any assumptions behind modelling of selective mining units.	If the deposit was to be mined then either a novel underground mining method or bulk open cut mining method would be employed.
	Any assumptions about correlation between variables.	No correlation between variables has been considered.
	Description of how the geological interpretation was used to control the resource estimates.	Appropriate geological domaining and corresponding flagging of drill data and model cells has been used to control the interpolation of grade during the resource estimation process.

Criteria	JORC Code explanation	Commentary
	Discussion of basis for using or not using grade cutting or capping.	A top cut was not deemed necessary for HM assays following evaluation of the sample assay statistics and consideration of the spatial relationship and the consistency of the relatively high grade sample grades. Some samples containing grades greater than 3% HM were excluded from the base of the interpreted strand because the elevated grades were suspected to be due to down hole sample contamination. These samples had the HM grade re-set to 2.9% prior to use in estimation.
	The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.	The volume model was validated on-screen against the geology wireframes to ensure zone allocation had been correctly assigned and that adequate resolution was obtained with the use of sub-celling. The coded drill hole file was also validated on screen against the geology wireframes and volume model. The model and drill hole files were evaluated to ensure they both had the same domains present. On-screen validation of the resource estimates was conducted by viewing the coded drill holes with the estimates for each field. The block model statistics for each domain was validated against the sample statistics. The model assay values are considered to be an appropriate reflection of the input assay data.
Moisture	*Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.*	The tonnages are estimated on a dry basis using an Iluka proprietary density formula. The formula is considered appropriate and has been used and verified at other Iluka deposits which are geologically similar and were mined for HM.
Cut-off parameters	*The basis of the adopted cut-off grade(s) or quality parameters applied.*	A nominal grade cut-off of 3.0% HM was applied. An Iluka in-house pseudo optimisation process was used to identify and exclude material above the 3% HM cut-off grade but which attracts a prohibitive stripping ratio. Whilst the current DFS is predicated on use of novel underground mining techniques, Iluka has received development consent from the NSW Government to mine the deposit as an open pit and has not ruled out the application of open pit mining techniques. As such resource reporting criteria based on open pit mining parameters have been maintained for West Balranald.
Mining factors or assumptions	*Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and*	Resource reporting criteria based on open pit mining parameters have been maintained for West Balranald. Areas of high potential aboriginal significance exist on the Mining Lease. Further heritage surveys are required to assess this area and any significant

Criteria	JORC Code explanation	Commentary
	parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.	findings may require sterilization of a significant portion of areas available for mining.
Metallurgical factors or assumptions	*The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.*	The nature and grain size of the mineralisation is geologically consistent with mineral sands deposits that have historically been mined by Iluka in the Murray Basin. Detailed metallurgical testing has been undertaken on West Balranald strand samples to determine the methods for optimal mineral recovery.
Environmental factors or assumptions	*Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.*	Waste disposal assumptions for the proposed underground mining method include sand tails to be deposited on the surface and fines tails to be returned to underground mined out areas
Bulk density	*Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.*	The tonnages are estimated on a dry basis using an Iluka proprietary density formula. The formula is considered appropriate and has been used and verified at other Iluka deposits which are geologically similar and were mined for HM.
	The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.	The Iluka Standard Bulk Density formula used accounts for void space and variable material composition.
	Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.	It is assumed that the material in the West Balranald deposit has the same density relationship that is seen in other Iluka deposits that were previously mined in the Murray Basin. This assumption is considered valid as the deposit is geologically identical to other deposits mined in the Murray Basin region by Iluka.

Criteria	JORC Code explanation	Commentary
Classification	*The basis for the classification of the Mineral Resources into varying confidence categories.*	The resource classification applied has predominantly been based on evaluation of the drill hole spacing, supporting Mineralogical Bulk Sample data and the confidence in the interpreted mineralisation geometry. Consideration of AC sample quality issues and the low HM and Slimes biases present led to the down grading to Indicated classification the area previously reported as Measured Resources that was based on AC drilling on a 20m * 200m spacing. Drill density studies utilising Sonic data only and evaluations of variograms, kriging neighbourhood analysis and conditional simulation all support the application of Measured Resource classification to the area estimated using only Sonic sample data on 20m * 400m spacing.
	Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).	The West Balranald HM Mineral Resource estimate is considered to have taken into account all pertinent factors including but not limited to: quality of input data, spatial density and reliability of the input data, confidence in the continuity of mineral grade and the controlling geological framework, possible mineral pricing and potential mining scenarios.
	Whether the result appropriately reflects the Competent Person's view of the deposit.	It is the view of the Competent Person that the frequency and integrity of data, and the resource estimation methodology are appropriate for this style of mineralisation and support the resource classifications applied.
Audits or reviews	*The results of any audits or reviews of Mineral Resource estimates.*	A review by Golders Associates in 2010 to cover the robustness and validity of the Mineral Resource estimation and classification of the 2009 estimate, which included a review of sampling techniques. Iluka enacted Golders Associates recommendations for further Sonic twin check drilling both at randomly selected locations and in an area of focussed Sonic drilling. On completion of recommended further close spaced AC drilling a conditional simulation drill density study was completed in 2011. A 2022 Snowden Optiro review of the 2022 West Balranald block model and Mineral Resource estimate reported that there is a clear bias to higher HM and Slimes in the Sonic samples and, in Snowden Optiro's opinion, the data sets cannot be combined for grade estimation. Snowden Optiro recommended the resource classification scheme used in the 2022 Mineral Resource estimate.

Criteria	JORC Code explanation	Commentary
		Snowden Optiro recommended that Iluka investigate calibration equations determined by Snowden Optiro for AC Slimes and HM data against future Sonic drilling.
Discussion of relative accuracy/ confidence	*Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.*	In 2022 Snowden Optiro completed a drill density study based on conditional simulation restricted to Sonic sample data for the area informed by 20m by 400m spaced Sonic drilling. The conditional simulation analysis indicated that, for the calculated confidence intervals (±15% with 90% confidence) for the assumed quarterly mined tonnage, all blocks within the proposed stope designs can be classified as Measured. Consideration of AC sample quality issues and the low HM and Slimes biases present led to re-assigning to an Indicated classification the area previously reported as Measured Resources that was based on RC-AC drilling on a 20m * 200m spacing.
	The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.	The statement relates to the global estimate of tonnes and grade.
	These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	There is a lack of suitable production data or stope surveys from the underground mining trials to allow meaningful verification of the block model estimates.