

**30 November 2021**

## **WIMMERA MINERAL RESOURCE ESTIMATE**

Iluka Resources is pleased to announce inaugural Mineral Resource estimates for two of the company's Wimmera heavy mineral (HM) deposits, WIM100 and WIM50 respectively, with the latter split into WIM50 and WIM50 North sub-areas. These deposits are located along the south eastern margin of the Murray Basin geomorphological province in the state of Victoria, Australia.

- The WIM100 deposit contains an Indicated Mineral Resource estimate of 340Mt grading 4.7% HM for 16Mt of contained HM; and an Inferred Mineral Resource estimate of 100Mt grading 3.4% HM for 3.4Mt of contained HM – totalling 440Mt grading 4.4% HM for 19Mt of contained HM. WIM100 is the initial, primary focus of Iluka's Wimmera project, which is currently the subject of a preliminary feasibility study.
- The WIM50 deposit contains an Inferred Mineral Resource estimate of 360Mt grading 4.1% HM for 15Mt of contained HM.
- The WIM50 North deposit contains an Inferred Mineral Resource estimate of 580Mt grading 5.7% HM for 33Mt of contained HM.

The combined Indicated and Inferred Mineral Resource estimate for the WIM100 and WIM50 deposits is 1.38Bt grading 4.9% HM for 67Mt of contained HM, estimated in accordance with the guidelines of the JORC Code (2012 edition).

Iluka's Managing Director, Tom O'Leary said "The Wimmera region in Western Victoria has the potential to be a multi-decade future source of critical minerals, in particular zircon and rare earths. Deposits in this region have a range of technical challenges relative to traditional mineral sands developments; and, over the last decade, Iluka has invested material energy and resources in progressively overcoming these challenges. The key challenge relates to impurities in the region's zircon which, absent a processing solution, render it ineligible for most end-markets, including ceramics. Iluka's declaration of resources at the WIM100 and WIM50 deposits reflects our confidence in progress toward a processing solution, with larger scale piloting currently underway."

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

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## **ILUKA'S WIMMERA PROJECT**

The Wimmera project involves the mining and beneficiation of a fine grained heavy mineral sands ore body in the Victorian Murray Basin for the potential long term supply of zircon and rare earths.

The WIM100 deposit is the initial, primary focus of Iluka's Wimmera project, which is currently the subject of a preliminary feasibility study. Iluka also holds tenure over other similar deposits in the Wimmera region.

One characteristic shared by the fine grained mineral sands deposits located in Western Victoria (those held by Iluka and other project proponents) is higher levels of impurities in their zircon. Absent a processing solution to remove these impurities, the zircon is ineligible for sale into most end markets, including the ceramics market which accounts for approximately 50% of global demand.

The project is focussed on validating Iluka's zircon processing solution and on progressing baseline environmental studies. Test results for the zircon processing solution continue to be positive, with larger scale piloting currently underway. If commercialised, this solution would be applicable to other zircon found throughout the Wimmera region, as well as deposits located elsewhere with similar technical challenges. The Wimmera project would include the development of a zircon purification plant in Victoria.

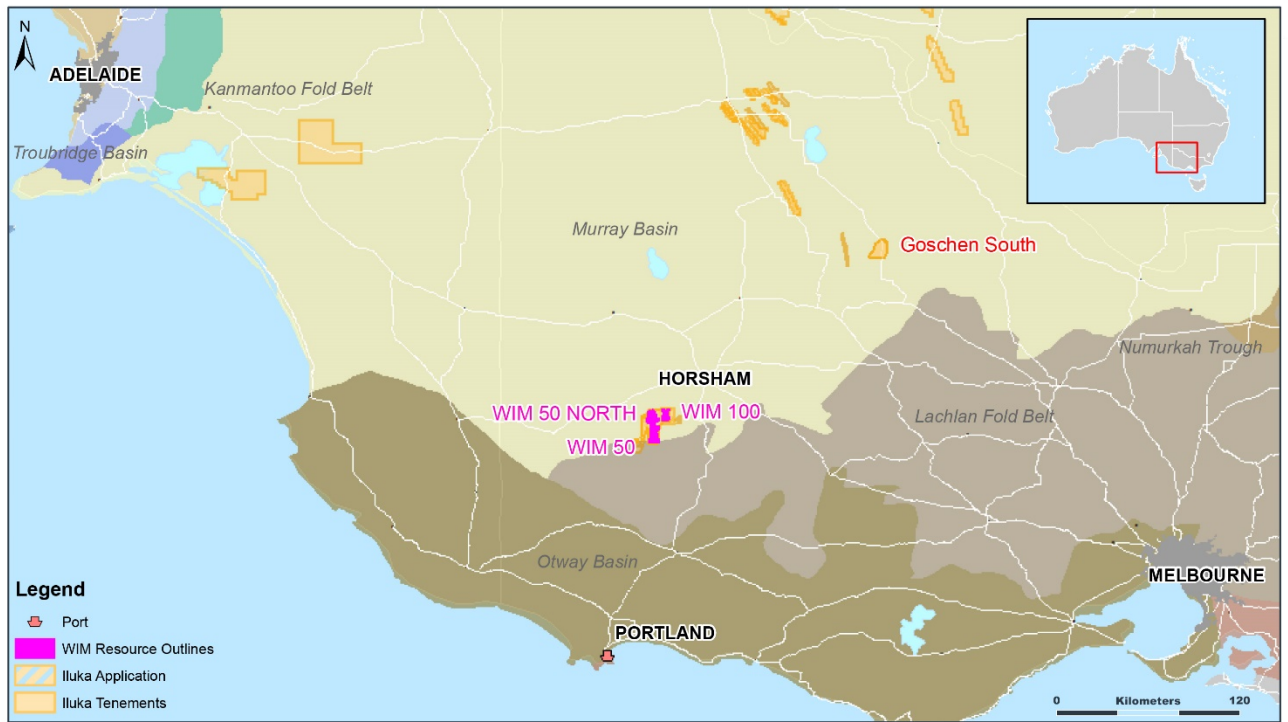
The Wimmera project's rare earth bearing minerals are very similar to Iluka's rare earths stockpile at Eneabba, Western Australia, with a slightly higher assemblage of the heavier rare earths dysprosium and terbium. The Wimmera project could supplement feed to Iluka's potential downstream refining activities at Eneabba in future years.

## **WIMMERA MINERAL RESOURCE ESTIMATE - OVERVIEW**

The WIM100 and WIM50 deposits are located along the south eastern margin of the Murray Basin geomorphological province in the state of Victoria, Australia (Figure 1). They comprise three zones of mineralisation being WIM50, WIM50 North (WIM50N) and WIM100.

The Wimmera Industrial Minerals (WIM) style HM deposits were historically delineated in the 1980s by CRA Exploration, which later became Rio Tinto. The HM differs from traditional beach placer deposits as the valuable minerals are very fine grained and difficult to recover using traditional HM concentrating equipment. In addition, the zircon contained in these deposits has higher levels of impurities which, absent a processing solution, render it ineligible for the ceramics market.

As a result, the WIM deposits have been known for a long time; but economic exploitation has not been feasible. Advances in mineral recovery and processing technology, including those being pursued by Iluka, now provide technical options which have a reasonable prospect of allowing eventual economic extraction of the fine grained HM and also producing saleable products.



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**Figure 1:** Location plan showing the WIM50, WIM50 North and WIM100 deposits relative to current infrastructure.

WIM50, WIM50 North and WIM100 present as large lobate sheets of low to moderate HM mineralisation, 3m to 15m thick, 3km to 5km in width and up to 14km in length. If WIM50 and WIM50 North prove to be contiguous, this will present a mineralised zone with a strike length of 22km. The deposits are located on tenements exclusively owned by Iluka’s wholly owned subsidiary company, Basin Minerals Holdings Pty Ltd.

The Mineral Resource Estimate for Iluka’s WIM50, WIM50 North and WIM100 deposits was conducted under the supervision of Brett Gibson, an employee of Iluka Resources (refer to Competent Persons Statement).

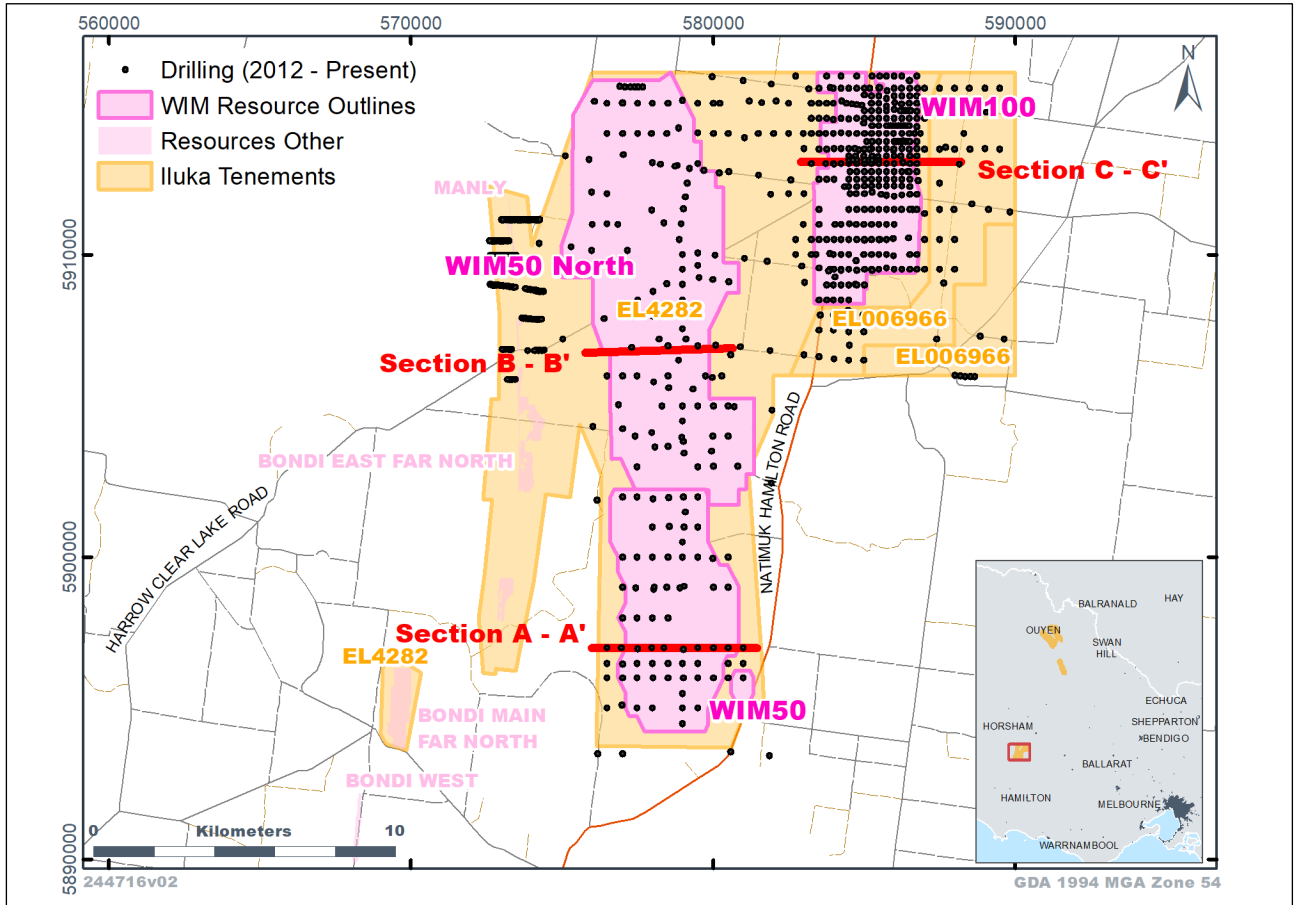
The Mineral Resource estimates for WIM50, WIM50 North and WIM100, reported in accordance with the guidelines of the JORC (2012 Ed.) are given in Table 1.

**Table 1:** Mineral Resource Summary for WIM50, WIM50 North and WIM100 reported by deposit and JORC Code (2012 Ed.) Category.

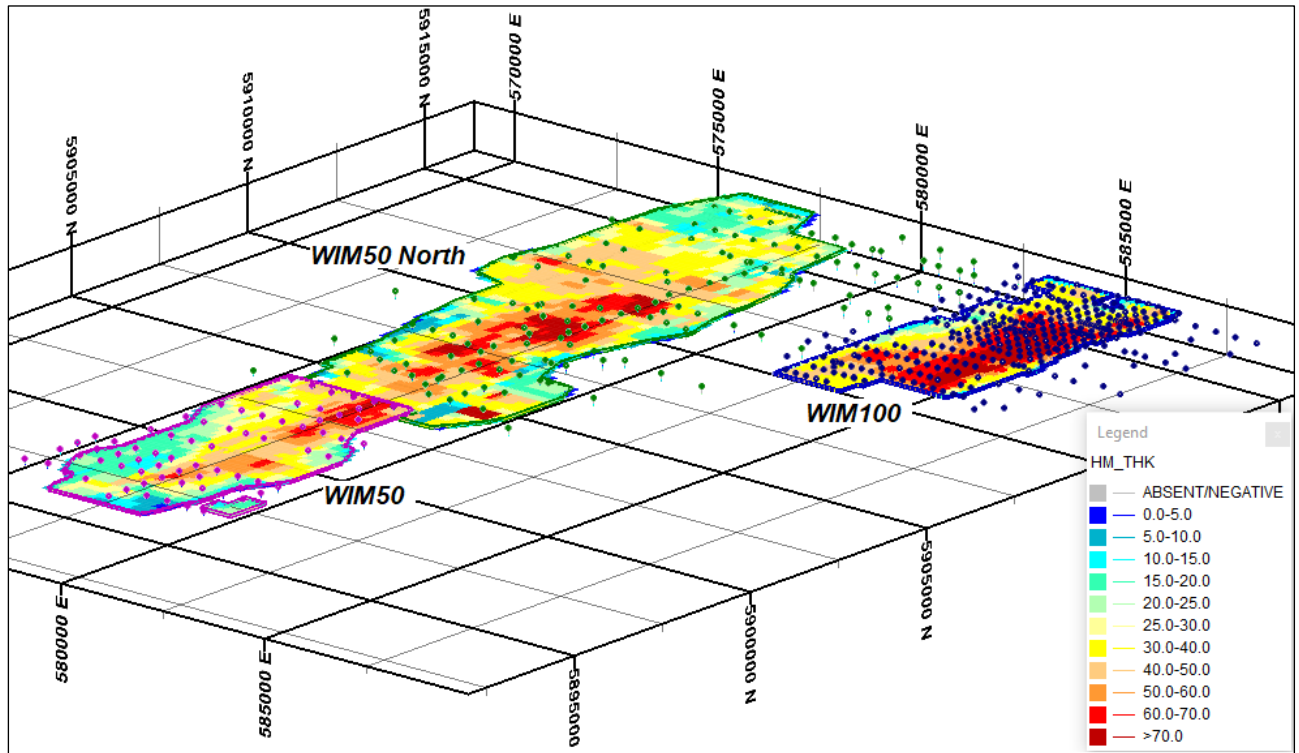
<b>MINERAL RESOURCE SUMMARY FOR WIM50, WIM50 North and WIM100</b>											
Deposit	Mineral Resource Category	Resource Tonnes <sup>(1)</sup>	In situ HM Tonnes <sup>(2)</sup>	HM	Clay	Mineral Assemblage in HM <sup>(3)</sup>					
						Ilmenite	Leucoxene	Rutile	Zircon	Monazite	Xenotime
		(Mt)	(Mt)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
WIM50	Inferred	360	15	4.1	12	38	7	7	16	1.8	0.4
WIM50 North	Inferred	580	33	5.7	14	29	4	4	15	1.8	0.4
WIM100	Indicated	340	16	4.7	13	33	7	6	17	2.2	0.5
WIM100	Inferred	100	3	3.4	14	35	7	6	17	2.2	0.5
WIM100	Sub Total	440	19	4.4	13	34	7	6	17	2.2	0.5
<b>Total</b>	<b>Indicated</b>	<b>340</b>	<b>16</b>	<b>4.7</b>	<b>13</b>	<b>33</b>	<b>7</b>	<b>6</b>	<b>17</b>	<b>2.2</b>	<b>0.5</b>
<b>Total</b>	<b>Inferred</b>	<b>1040</b>	<b>51</b>	<b>4.9</b>	<b>13</b>	<b>32</b>	<b>5</b>	<b>5</b>	<b>15</b>	<b>1.8</b>	<b>0.4</b>
<b>TOTAL<sup>(4)</sup></b>	<b>All</b>	<b>1380</b>	<b>67</b>	<b>4.9</b>	<b>13</b>	<b>33</b>	<b>5</b>	<b>5</b>	<b>16</b>	<b>1.9</b>	<b>0.4</b>

Notes:

- (1) A dry density of 1.7t/m<sup>3</sup> is used.
- (2) Mineral Resources are reported at a cut-off grade of 1.0% HM.
- (3) The mineral assemblage is given as a percentage of the HM content.
- (4) Rounding may generate differences in the last decimal place.



**Figure 2:** Mineral Resource outlines and drill collar locations for WIM50, WIM50 North and WIM100. The locations for cross sections A-A' (Figure 4), B-B' (Figure 6) and C-C' (Figure 8) are shown.



**Figure 3:** Summary plan showing HM grade \* thickness distribution for WIM50, WIM50 North and WIM100.

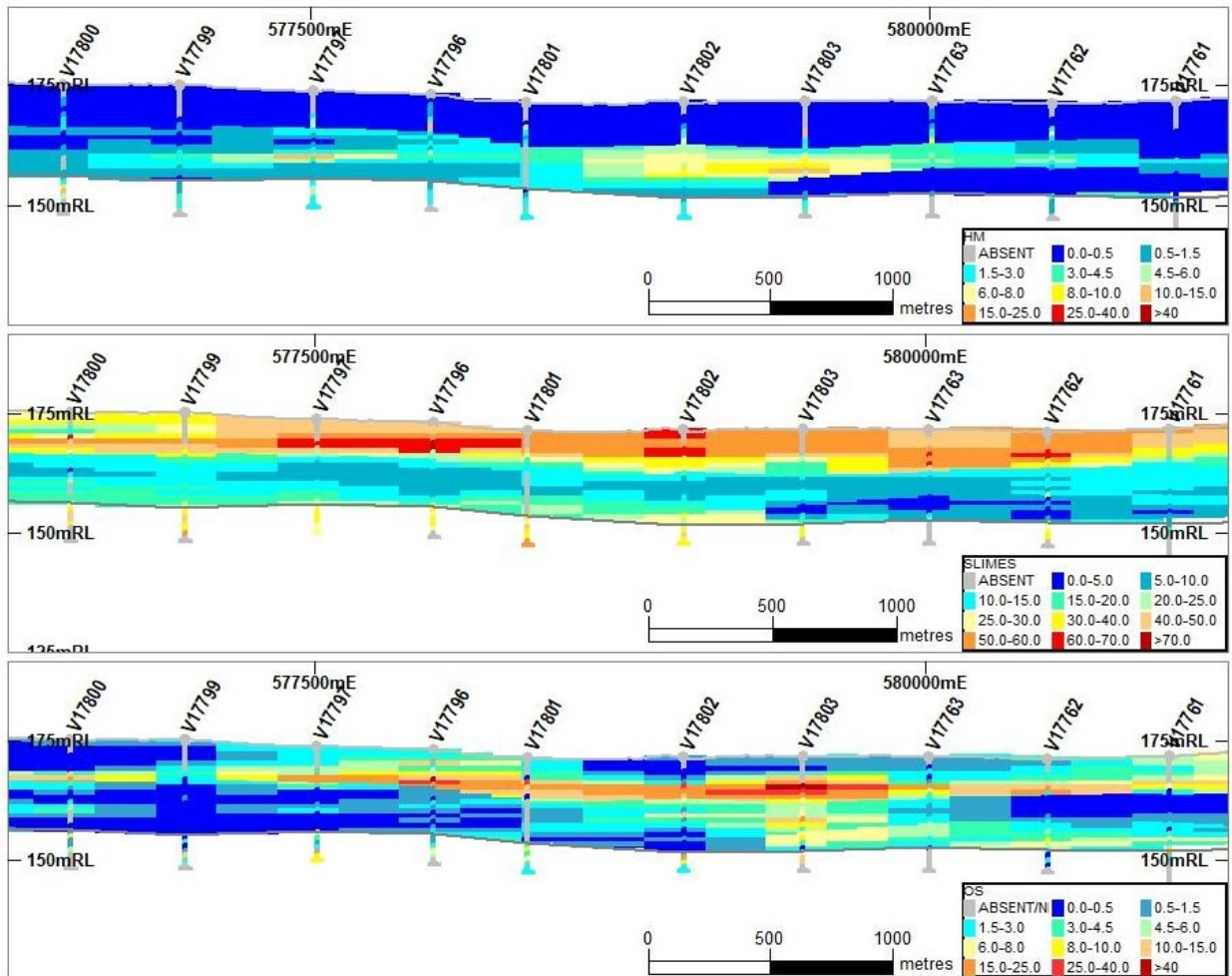


Figure 4: WIM50 deposit drill hole and block model section at 5,897,000mN (A – A') showing HM grade, slimes grade and oversize grade (looking north 20x VE).

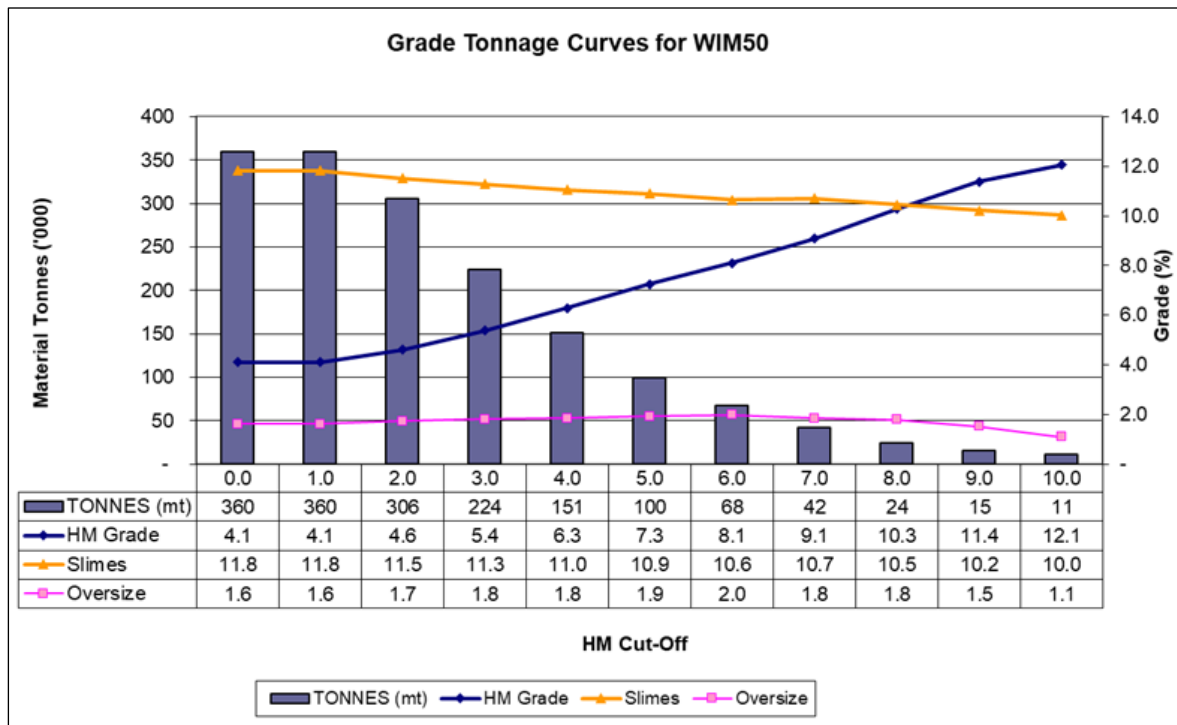
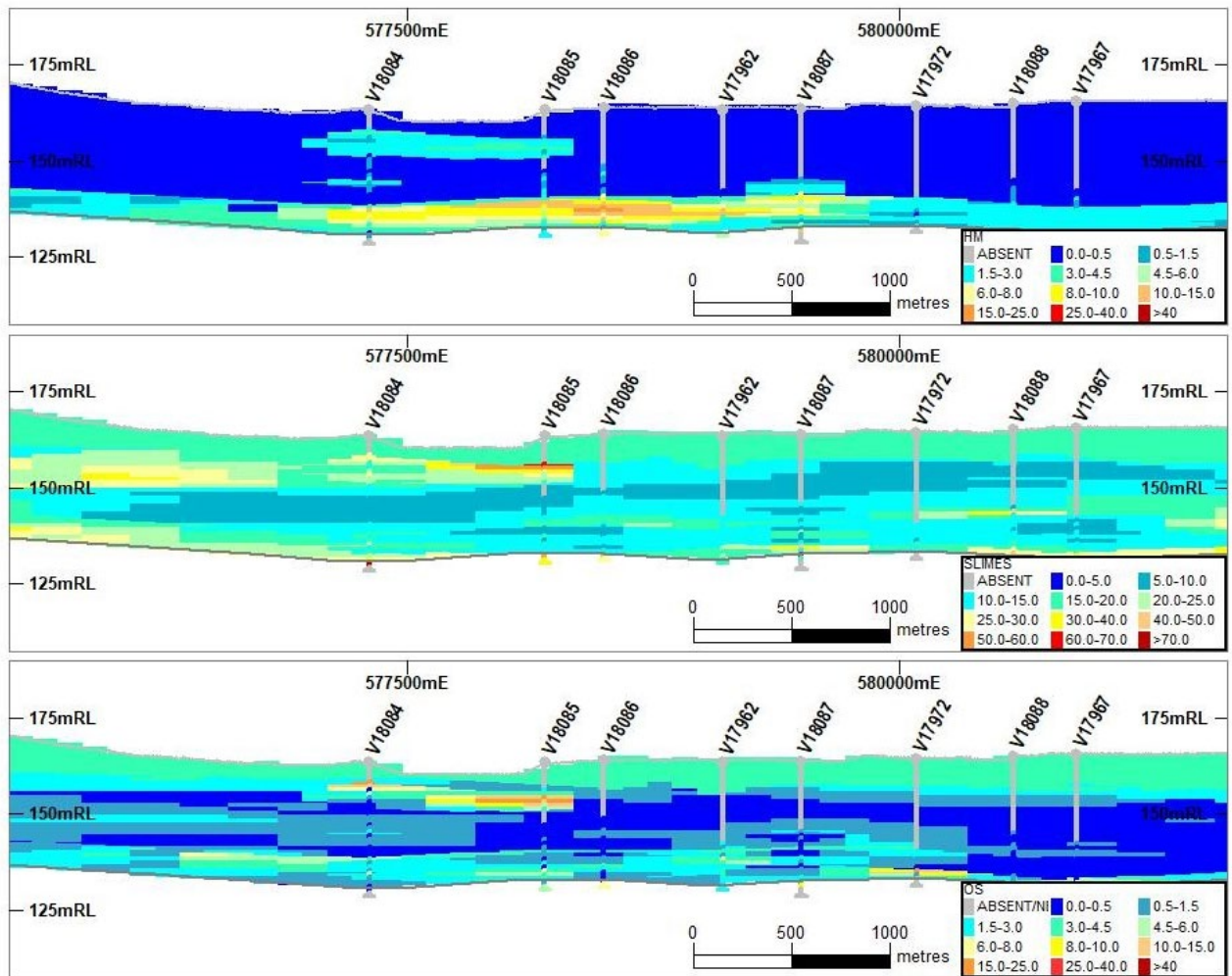
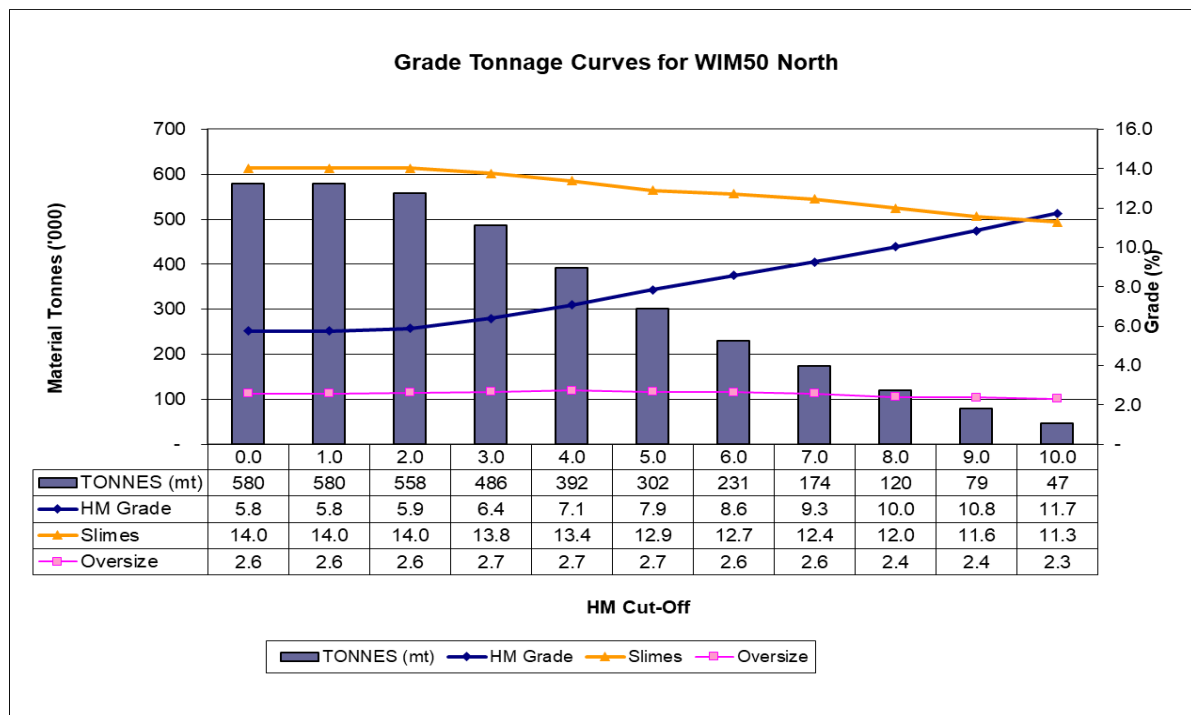


Figure 5: Grade tonnage curves for the WIM50 deposit.



**Figure 6:** WIM50 North deposit drill hole and block model section at 5,907,000mN (B – B') showing HM grade, slimes grade and oversize grade (looking north 20x VE).



**Figure 7:** Grade tonnage curves for the WIM50 North deposit.

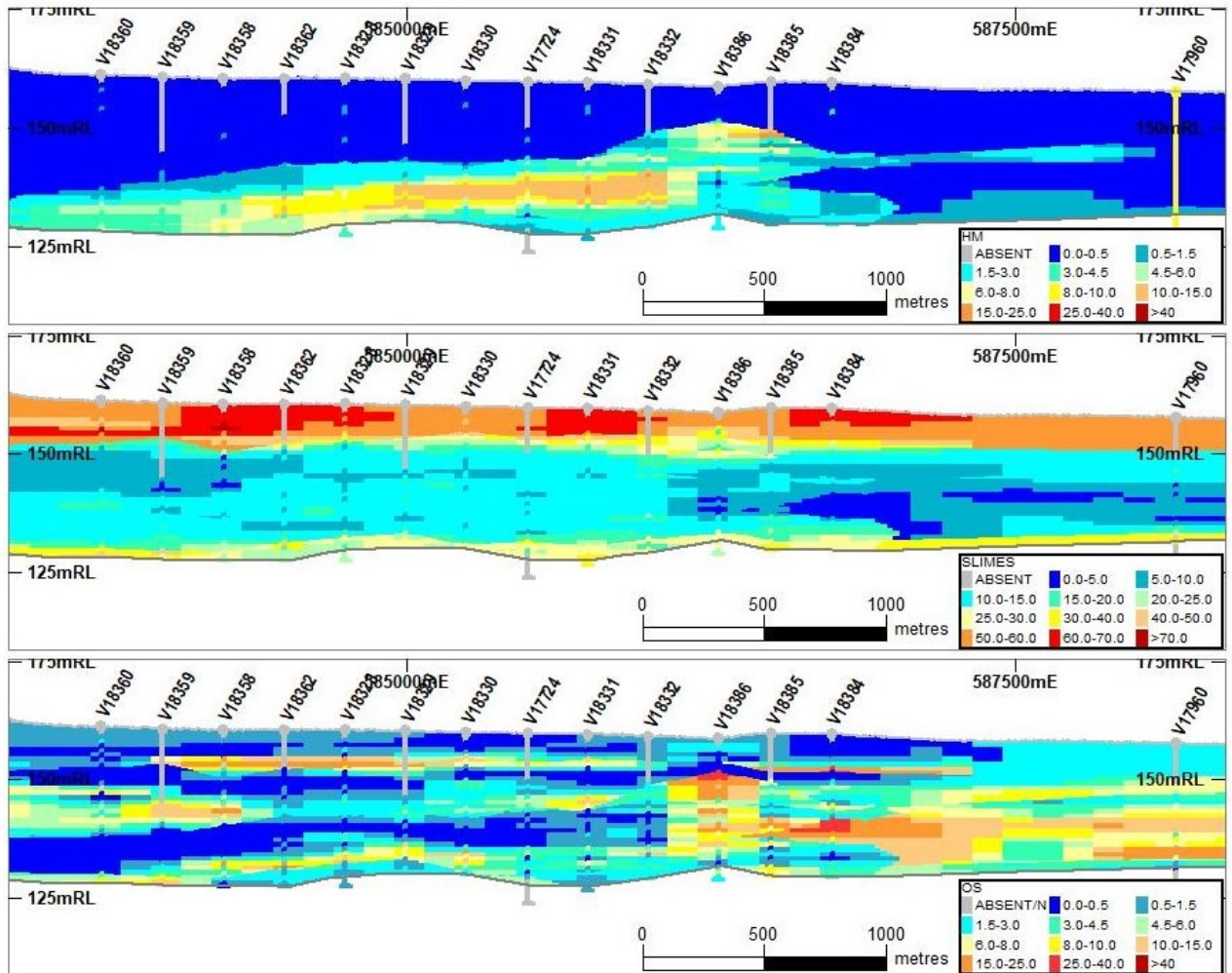


Figure 8: WIM100 deposit drill hole and block model section at 5,913,000mN (C – C') showing HM grade, slimes grade and oversize grade (looking north 20x VE).

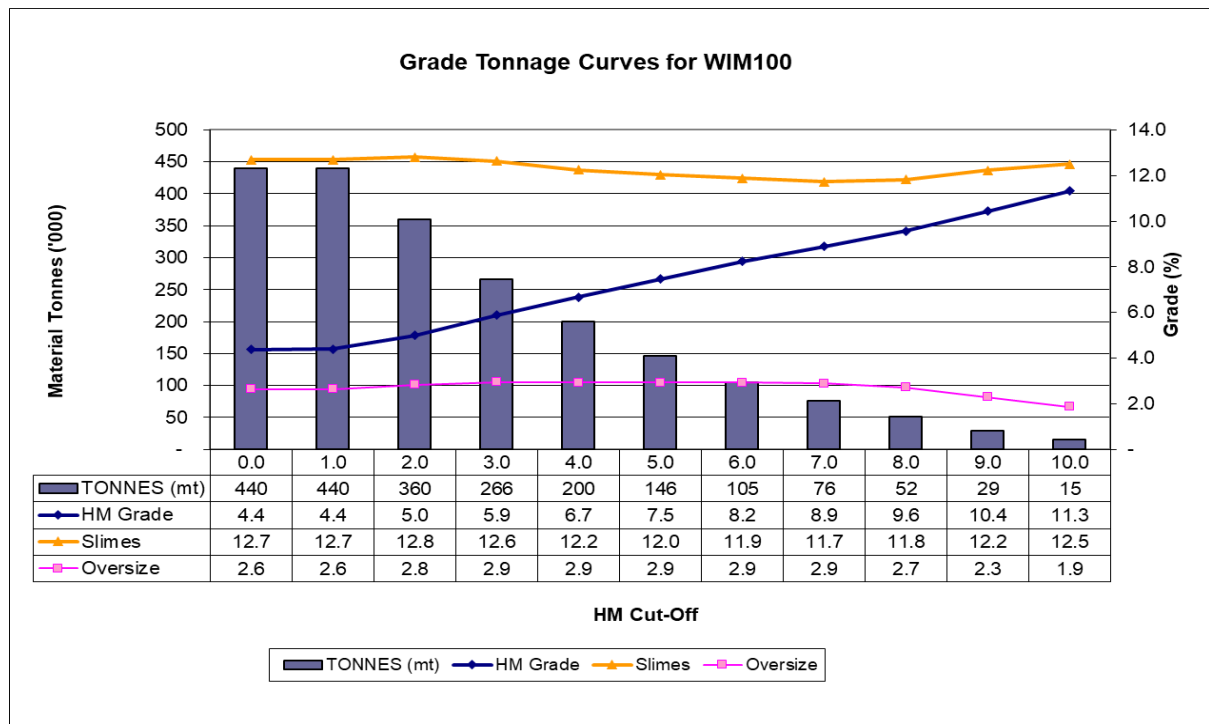


Figure 9: Grade tonnage curves for the WIM100 deposit.



## SUMMARY OF RESOURCE ESTIMATION AND REPORTING CRITERIA

As per ASX Listing Rule 5.8 and the 2012 JORC reporting guidelines, information material to the WIM50, WIM50 North and WIM100 Mineral Resource estimates is summarised below. More detail is provided in the JORC Code (2012 Ed.) Table 1 Summary, Sections 1 to 3 in **Appendix 1**.

### Deposit geology and interpretation

WIM50, WIM50 North and WIM100 are located along the southern margin of the Murray Basin, a shallow, intracratonic basin of Cainozoic age. The basin covers a saucer-shaped area around 300,000km<sup>2</sup> in South Australia, south-western New South Wales and north-western Victoria. It is flanked by uplands of Proterozoic and Palaeozoic rocks.

The Murray Basin contains a succession of freshwater, marine, coastal and continental sediments deposited in the basin by repeated incursions from the south west during the Tertiary Period. The latest marine transgression-regression event resulted in the deposition of the Late Miocene to Late Pliocene Loxton-Parilla Sand (LPS). These sediments were deposited in shallow marine, littoral and fluvial environments and are characterised by fine to coarse-grained, generally well sorted sand with minor clay silt and gravel.

The LPS extends over large parts of the basin and is the host of many known HM deposits within the Murray Basin. These include many coarse-grained HM deposits, some of which have been mined, which formed in a beach placer environment through the interaction of longshore drift and storm activity. Within the basin are large mineralised zones containing very fine grained HM (WIM style deposits), of which WIM50, WIM50 North and WIM100, are examples. The WIM deposits are interpreted to be hosted in low energy offshore shallow marine environments.

The HM in the WIM deposits likely originate from river systems eroding elevated areas of Paleozoic igneous rocks and Mesozoic sandstones, draining into the Murrumbidgee Sea. These sediments included quantities of valuable HM such as rutile and zircon, ilmenite and monazite which were concentrated through the winnowing action of storms, tides and currents.

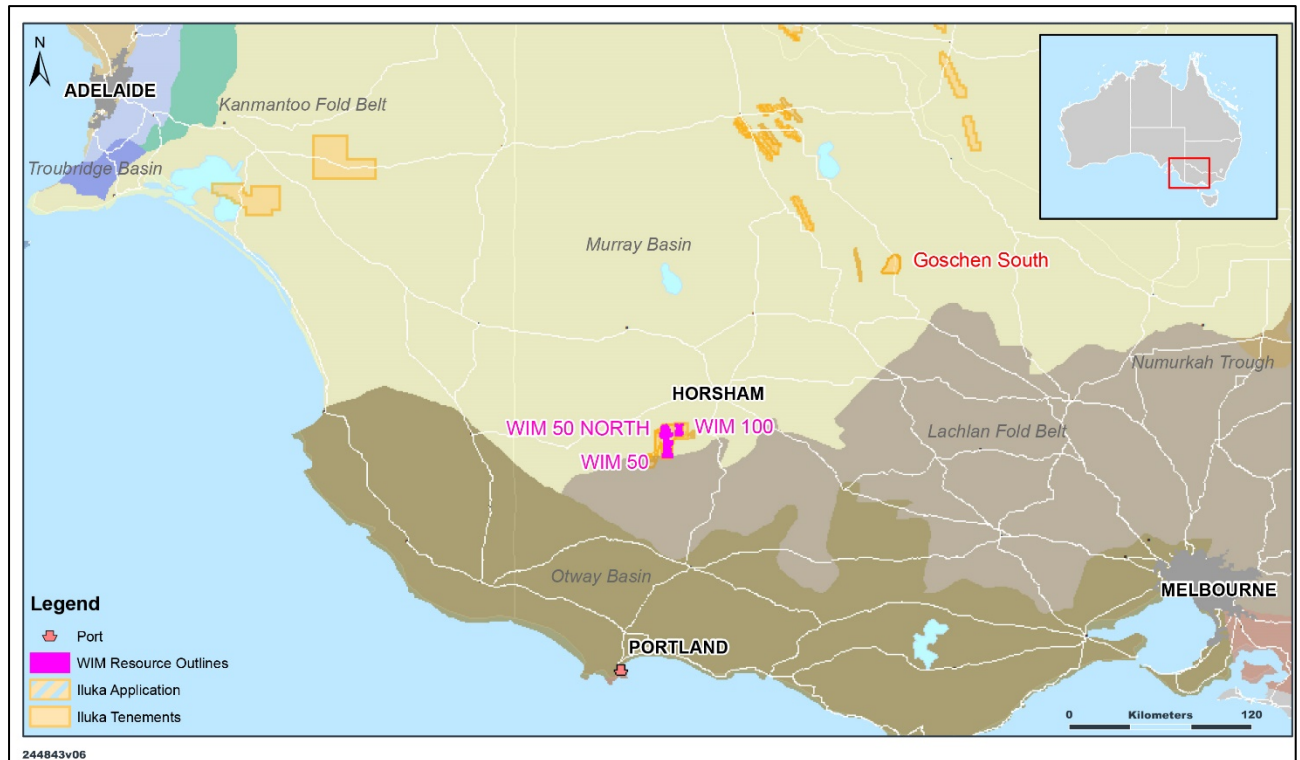
The basic stratigraphy for Iluka's WIM deposits comprises Shepparton Formation, overlaying LPS which in turn overlays sediments of the Winnambool Formation or Ettrick Formation. The Shepparton Formation blankets the area and is described by Brown and Stevens (BMR235, 1991). It is typically 3 to 6 metres thick and consists of clay and silty clay with intercalated lenses of fine to coarse sand and gravel. The clay is silty, variegated grey, red-brown, yellow and white; the sand consists of poorly sorted, rounded to angular, high sphericity to low sphericity polymictic grains. The LPS presents as an extensive blanket of fine to very coarse sand about 20 metres thick underlying the Shepparton Formation.

The LPS intersected within Iluka's Wimmera deposits is typically unconsolidated although erratic soft to medium and rare hard iron cementing is prevalent in places. Induration is more pronounced in the WIM50 deposit.

The WIM style HM deposits are typically: large, tabular deposits that formed in an offshore marine sedimentary environment below the wave base, where fine grained heavy mineral particles settled. WIM50, WIM50 North and WIM100 are dominantly contained within the lower shore facies of the LPS. The lower shore is defined as very fine to fine, well sorted, silty sand which contains abundant mica.

These offshore sediments of the LPS locally overlay fossiliferous and glauconitic grey-green silty-clay and clay of the Winnambool and Ettrick Formations.

Thickness of the Winnambool and Ettrick Formation vary but are generally 30 meters thick in the project area where they overlie Paleozoic basement rocks.



**Figure 10:** Regional geology plan and WIM50, WIM50 North and WIM100 deposit locations.

**Table 2:** Typical stratigraphy through the WIM deposits.

Formation	Environment	Thickness	Description	
Shepparton Formation	Fluvial Lacustrine sediment	5 - 10m	White, orange, brown to dark grey Clay, silty clay and poorly sorted fluvial sand	
Loxton Parilla Sand	Beach placer and shallow marine sediment	10 - 15m	White, yellow orange mottled moderate to well sorted silt to coarse sand and occasional grit/pebbles	
Winnambool Formation	Fossiliferous silty clay and clay clay	+10m	Brown to blue grey and grey very fine grained silt, silty clay and clay, richly fossiliferous	
Ettrick Formation	Glaucconitic clay unit		Grey, green fossiliferous silty clay and clay	

### Data storage

Data supporting the Mineral Resource estimate for the WIM50, WIM50 North and WIM100 deposits was recorded on Toughbook field computers installed with acQuire data management software. Data was electronically transferred to acQuire GIM Suite, a geological data management system designed and licensed by acQuire Technology Solutions Pty Ltd. Currently, drill logs and assay data are validated on site, then imported directly into the database. 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 database system.

### Drill technique and hole spacing

Historically close spaced drilling was done by Iluka and predecessor companies, during the period from 1980 to 2010, in the search for high grade beach placer strand mineralisation. This drilling often intersected the fine grained WIM style mineralisation but was given little attention and assay data was often unreliable as a result of the fine grained nature of the HM. Drilling targeting the WIM mineralisation was originally completed on widely spaced drill lines several kilometers apart, typically on road verges, with drill holes spaced at about 500m on the lines. This was subsequently infilled to 1km to 2km spaced drill lines on areas of anomalous or known mineralisation with further infill on a regularised grid spacing at WIM100 of about 500m by 500m and down to 250m by 250m spacing to support increased resource confidence and future mine planning.

All the drilling carried out on the WIM deposits to support the Mineral Resource estimates was done by suitably equipped contractor companies using Reverse Circulation Air Core (RCAC) drilling techniques and using NQ diameter (76mm) drill string.

**Table 3:** Summary of exploration on WIM50, WIM50 North and WIM100 deposits.

Deposit	Holes	Records	Metres	Interval Length (m)	Assays
WIM50	71	2,389	1,825.5	1	1,385
WIM50N	136	4,897	5,079.75	1 to 1.5	1,787
WIM100	200	7,244	8,549	1 to 1.5	4,178
<b>WIM Total</b>	<b>407</b>	<b>14,530</b>	<b>15,454.25</b>		<b>7,350</b>

### 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

Seventy per cent of the drill sampling was done at 1m intervals with the remainder predominantly at 1.5m intervals. Sample was delivered via the RC rod string and sample hose to a rig mounted cyclone and rotary splitter. About a 1.5kg to 2kg quarter sample split was collected beneath the rotary splitter for sample analysis.

## 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° C for a minimum of 24 hours and then wet sieved with removal of +2mm oversize (OS) and -38um 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 then back calculated as the total in situ HM.

Composite sampling of the HM from the float/sink analysis was done to determine the mineral assemblage, mineral sizing and key mineral quality indicators. This involved combination of weighted amounts of HM from geologically unique zones, which was subjected to magnetic separation followed with density separation using Thallium Malonate Formate (TMF) liquid at various SG's. XRF analysis of selected magnetic and non-magnetic SG fractions was done to infer the HM assemblage. Additional magnetic separation was done to isolate a high susceptibility magnetic fraction which was subjected to XRF analysis to provide information on the ilmenite quality. Inherent zircon quality was determined from the XRF analysis of the +4.38 SG non-magnetic fraction. This was augmented with QEMSCAN analysis of a split of the HM composite head feed to support the mineral assemblage determination.

## Estimation methodology

Geological interpretation, wireframe surfaces and grade interpolation were completed using Datamine Studio RM Software. The geological interpretation was done on east-west drill sections through all the WIM deposits. This was used to create open and closed wireframe surfaces to code the 3D block model with geological and mineralised domains. The drill hole data was also coded so that only values within each domain were used to inform model cells within the corresponding model domains.

Iluka modelling convention is to have a parent cell dimension that is about half the spacing between supporting drill holes. The drill hole spacing at the time of modelling the WIM deposits varied from about 500m x 2000m down to 250m x 500m. A parent cell dimension of 250m x 500m was selected for WIM50 and WIM50 North based on drill holes spaced from 250m x 1000m to 500m x 2000m. A smaller parent cell dimension was used for the WIM100 deposit given the predominantly 250m x 500m drill spacing. Sub-celling in the X, Y and Z dimensions is used to assist with volume representation within closed surfaces and along domain boundaries.

Models were generated for WIM50, WIM50 North and WIM100 using inverse distance weighting cubed (ID3) to interpolate grade into the model cells. The mineralogy composite identifier was interpolated through the model using nearest neighbour method with assemblage and quality data joined to the model following primary grade interpolation. The orientation of the search ellipse used for grade interpolation was dynamically adjusted using a routine in Datamine to honour variation in geological and grade trends. A summary of key interpolation parameters for each of the WIM50, WIM50 North and WIM100 deposits is presented below.

Deposit	Cell Dimension			Interpolation Method	Search Ellipse Dimension			2 <sup>nd</sup> Search Vol Factor	3 <sup>rd</sup> Search Vol Factor
	East	North	RL		X	Y	Z		
<b>WIM50</b>	250	500	1	ID3	700	1400	3	2	3
<b>WIM50N</b>	250	500	1	ID3	700	1400	3	2	3
<b>WIM100</b>	125	250	1	ID3	700	1400	3	2	3

Variography was carried out on the WIM data sets to verify the appropriate search ellipse dimensions. The variograms provide information on the continuity of HM grade which in turn was used to support the JORC Mineral Resource Category assigned.

### Cut-off grade

The WIM50, WIM50 North and WIM100 Mineral Resource estimates were reported using several criteria:

- a lower HM cut-off grade of 1% was adopted;
- an upper slimes cut-off of 35% was applied;
- material below 38µm removed;
- material logged with significant hardness was excluded; and
- a “grade\*thickness to depth of burial” ratio was applied in conjunction with the 1% HM cut-off.

The “grade\*thickness to depth of burial” ratio assists in identifying lower grade and/or deeply burial mineralisation that is unlikely to be economic to mine.

The 1% HM cut-off was adopted on the basis of the percentage and composition of VHM in the mineral suite, a deposit morphology that allows for large scale low cost mining and is supported by preliminary mine optimisation studies.

### Resource classification assignment

The Mineral Resource estimates for WIM50, WIM50 North and WIM100 were 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 (variography);
- continuity of geological domains;
- confidence in the supporting analytical data; and
- distribution of mineral assemblage composites.

Variogram analysis on the WIM mineralised domains typically shows continuity ranges of 1000m to 1500m along strike (north-south) and 500m to 1000m across strike (east-west) for HM. This provided confidence that model cells supported by drill holes spaced 500m across strike and 1000m along strike and suitably informed with composite data can be considered Indicated. Mineral Resources supported by drill holes spaced at greater than 1000m have been assigned an Inferred JORC Code Classification. There is limited extrapolation of Inferred mineralisation up to distances of 750m from drillholes along strike to the south at WIM50 and up to 900m along strike to the north at WIM50 North. Less than 5%

of the Inferred Mineral Resources for WIM50 and WIM50 North are based on the extrapolation of geological continuity beyond the limit of current drill hole information.

### **Mining and metallurgical methods and parameters**

WIM50, WIM50 North and WIM100 comprise large horizontal, lobate and consistently mineralised entities. They are covered by unmineralised sediments varying from 10m to 20m in thickness that would need to be removed as overburden during mining. The geomorphology and unconsolidated nature of the resource allows for large scale low cost earthmoving options to be deployed in an open pit scenarios. The mineralised layer could conceivably be mined using large scale truck and shovel or dredge.

Iluka has developed extensive knowledge in applied mineral separation and processing techniques which will be unique to mineral sands production, some of which are considered commercial in confidence. Ore will be screened and deslimed with the sand fraction being subjected to flotation. Test work has shown greater than 90% recovery of zircon, rare earth and titanium minerals to concentrate at suitable quality for downstream processing. Options for mineral separation and value added processing are still to be finalised through current feasibility studies.

An innovative process has also been developed in conjunction with Australia's Nuclear Science and Technology Organisation (ANSTO) to remove contaminants from zircon, which have historically hindered marketability, resulting in a high quality premium product.

### **Competent Persons Statement**

The information in this report that relates to Exploration Results or Mineral Resource estimates is based on, and fairly represents information and supporting documentation prepared by or under the supervision of Mr Brett Gibson, a permanent employee of Iluka. Mr Gibson is a member of the Australian Institute of Geoscientists (MAIG) and he has sufficient experience which is relevant to the style of mineralisation and the type of deposits under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the "Australian Code for reporting of Exploration Results, Mineral Resources and Ore reserves". Mr Gibson 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 Gibson is a shareholder of Iluka.



## Appendix 1

JORC Code 2012 edition – Table 1 Commentary  
**Section 1 Sampling Techniques and Data**  
(Criteria in this section apply to all succeeding sections)

Criteria	Commentary
<b>Sampling techniques</b>	<p>WIM50, WIM50 North and WIM100 were sampled using Reverse Circulation Air-Core (RCAC) drill holes. All 407 drill holes used in the resource estimation were drilled vertically which is essentially perpendicular to the mineralisation. Samples were collected at 1m or 1.5m intervals. A rotary splitter was used to disperse material exiting the cyclone and a sub sample was collected from a quadrant beneath the splitter. Duplicate samples were taken from a second quadrant at a rate of approximately 1 in 40 primary samples assayed. All of the drilling utilised the same drilling and assay methodology, and mineralogical composite sample analysis techniques.</p> <p>Samples estimated to contain greater than of 0.5% heavy mineral or greater were considered 'mineralised' and submitted for analysis. The samples were dried, weighed, de-slimed (material &lt;38µm removed) and oversize (material +2mm) was removed. About 100g of the 38µm to 2000µm sand fraction was sieved at 710µm with the 38µm to 710µm (sand) fraction subjected to float/sink analysis using Lithium-Sodium-Tungsten (LST, SG=2.85). The resulting HM concentrate was dried and weighed to determine the in situ HM percentage.</p> <p>Following interpretation of the deposit geology, HM concentrate from similar geological domains was grouped together to form mineralogical composite samples. The composite samples were subjected to magnetic separation with the magnetic and non-magnetic fractions subjected to densometric separation using Thallium Malonate Solution (TMF). Various fractions were then analysed using XRF analysis to determine the mineral assemblage. This separation technique was used to isolate a zircon rich fraction to determine grain size and indicative quality for zircon. Another split of about 20 grams of HM was sent to an external laboratory for QEMSCAN Analysis to support the interpretation of the mineral assemblage.</p>
<b>Drilling techniques</b>	<p>All sampling was based on vertical RCAC drilling boring a 76mm hole diameter.</p>
<b>Drill sample recovery</b>	<p>Both sample quality and water content were recorded in the field logging. Any factors that have affected sample recovery were recorded in the logging comments.</p> <p>Sample weights were recorded by the laboratory which in conjunction with QA/QC data provides an indication of the effectiveness and representativeness of the sample splitting. Sample weights were generally in the order of 1.5kg although some variation is noted. RCAC samples were visually checked for recovery, moisture and contamination and a check was done to ensure a consistent rate of penetration was maintained. Sample weights recorded at the laboratory indicate reasonable sample quality and representativity. The mineralised samples were not typically affected by the presence of rock or induration and no sample bias is evident. Minor slimes loss may have occurred with moisture seeping through the calico sample bags as water injection was used to facilitate sample recovery during the drilling.</p>





Criteria	Commentary
	<p>No relationship exists between grade and recovery with mineralised samples exhibiting good recovery.</p>
<b>Logging</b>	<p>Geological logging of RCAC samples recorded colour, lithology, grain size, sorting, induration type, hardness and an estimate of the rock, clay and HM content. Whether the sample was dry or wet or water was injected during drilling was also noted.</p> <p>A small portion of all samples were panned and logged on site at the time of drilling.</p>
<b>Sub-sampling techniques and sample preparation</b>	<p>No diamond coring was used to support the estimate on contained mineralisation. Diamond drilling was conducted at WIM100 as part of the geotechnical studies.</p> <p>A rotary splitter was used to produce sub samples of typically wet substrate. Most of the mineralisation drilled at the Wimmera deposits is located below the water table and some water injection was used to assist the sample return.</p> <p>Sample preparation is consistent with industry standard techniques used for sampling mineral sand deposits. A typical sample of about 1.5kg was taken which is considered to provide a representative sample.</p> <p>Duplicate sample pairs consisting of an additional quarter split are collected from the rig mounted rotary splitter at specified rates. A total of 227 field duplicates were collected from drilling on the WIM50, WIM50 North and WIM100 deposits and analysed (1 in 32 samples) which show good correlation between the original and duplicate values for HM, slimes and oversize, despite some scatter in the received weight. A comparison of the HM and slimes gave correlation coefficients of 0.99 and 0.92 respectively with no significant bias.</p> <p>Regular duplicate sample analysis is undertaken at Iluka's laboratory with a 50/50 split generated from a rotary splitting unit. A total of 229 laboratory duplicate samples were analysed with no significant bias evident in the results for HM, slimes and oversize. Although the precision for the slimes values was noted to be moderate at times. This reflects the difficult nature of achieving reliable analytical data for the very fine grained material hosting the WIM mineralisation but will not have a significant impact on the mineral resource estimate.</p> <p>The sampling methodology is considered consistent with typical industry methods for sampling HM mineralisation and appropriate for providing representative samples of the material hosting the Wimmera deposits.</p> <p>The sample size collected at the time of drilling is deemed appropriate for the fine grain sand material intersected in the Wimmera deposits to provide a reliable representation of the HM, slime, sand and oversize characteristics.</p>
<b>Quality of assay data and laboratory tests</b>	<p>The assay method used is appropriate for assessment of the mineralisation at WIM50, WIM50 North and WIM100. Wet sieving at 38um has been used to ensure appropriate recovery of the fine grained mineral associated with this style of mineralisation. The mineralogical composite sample evaluation processes are appropriate for the current level of study. While the QA/QC data indicates some difficulty in analysis for</p>

**Criteria****Commentary**

the fine grained samples, the quality of the data is considered appropriate for the estimate of mineral resources. The technique is considered a total analysis.

Downhole gamma logging conducted in 125 RCAC holes confirmed the presence of HM mineralisation corresponding to elevated U and Th present in certain heavy minerals but the geophysical logging was not used in the resource estimation process.

<b>Deposit</b>	<b>Field Standard</b>	<b>Field Duplicate</b>	<b>Twin Holes</b>	<b>Laboratory Standard</b>	<b>Laboratory Duplicate</b>
WIM50	53	36	3	127	41
WIM50N	42	32	4	28	5
WIM100	128	91	19	119	91
<b>WIM Total</b>	<b>223</b>	<b>159</b>	<b>26</b>	<b>274</b>	<b>137</b>

A total of 223 field standards were analysed (1 per 33 routine samples) in conjunction with the Wimmera exploration programs carried out between 2013 and 2020. The HM analysis of the field standards returned a fail rate of 5% (11 fails) while the slimes fail rate was 13% which was mainly attributed to laboratory practices. HM standard results reported outside the 3 standard deviations (SD) triggered re-split and re-assay of the standard and selected samples that were processed at same time as the standard. The repeat assays were assessed and if the standard returned HM results within specification, then all the repeat assays replaced the original results in the Geology acQuire Database. Slimes results outside of 3SD did not trigger repeat assays as the slimes component of the sample is lost during initial processing.

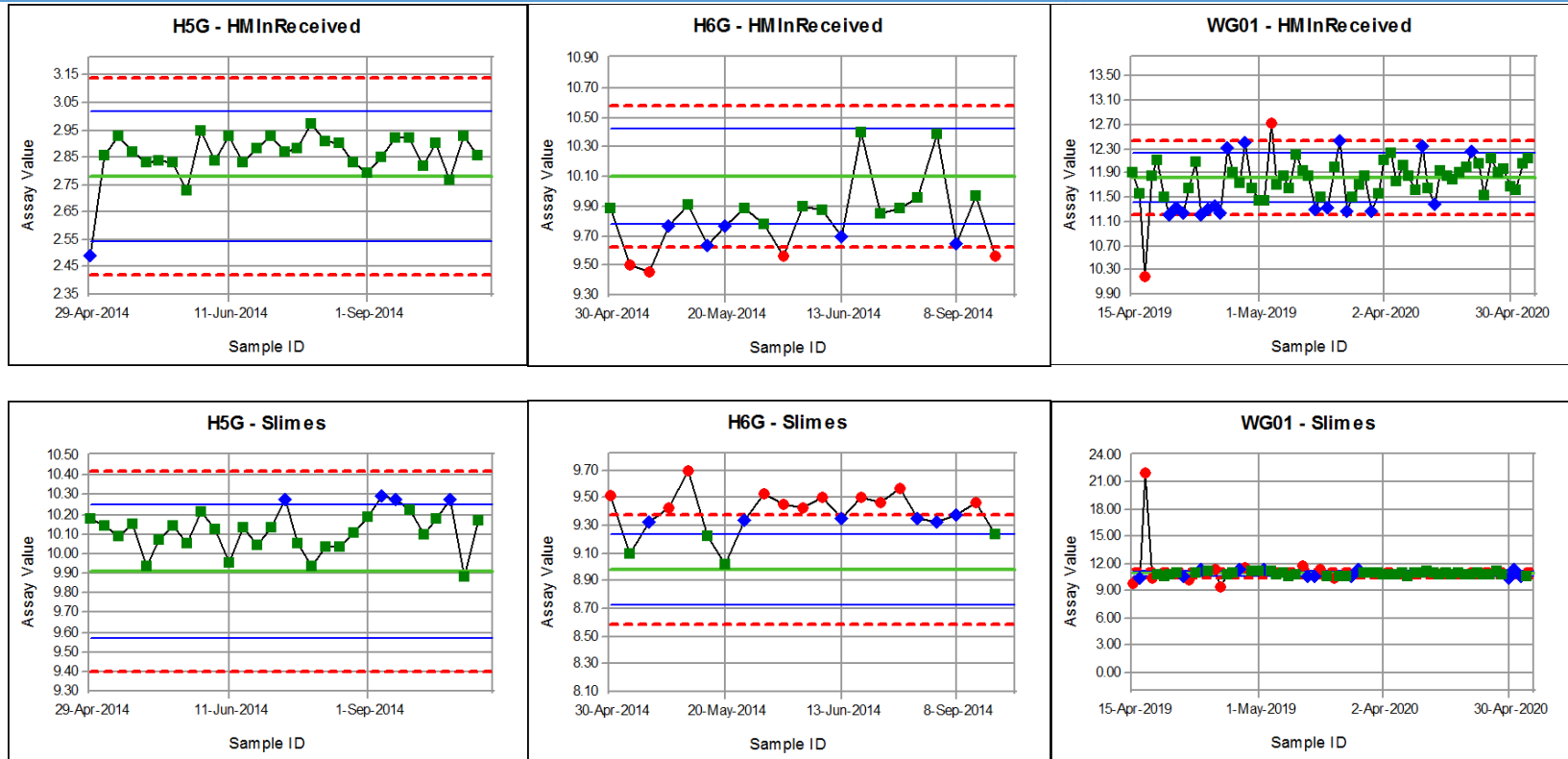
A total of 274 laboratory reference standards were assayed in conjunction with exploration programs carried out on Iluka's WIM50, WIM50 North and WIM100 deposits. This represents a submission rate of 1 per 27 primary samples. The HM fail rate was 3% while the slimes fail rate was 4%. A total of 159 field and 137 laboratory duplicate sample were assayed synchronously with the analysis of the Wimmera samples.

The field and laboratory standard analysis show reasonable procedural control with no significant bias noted for HM. Some apparent bias observed was deemed to be primarily due to a slight shift in the expected values of the standard material rather than poor laboratory control.



Criteria

Commentary

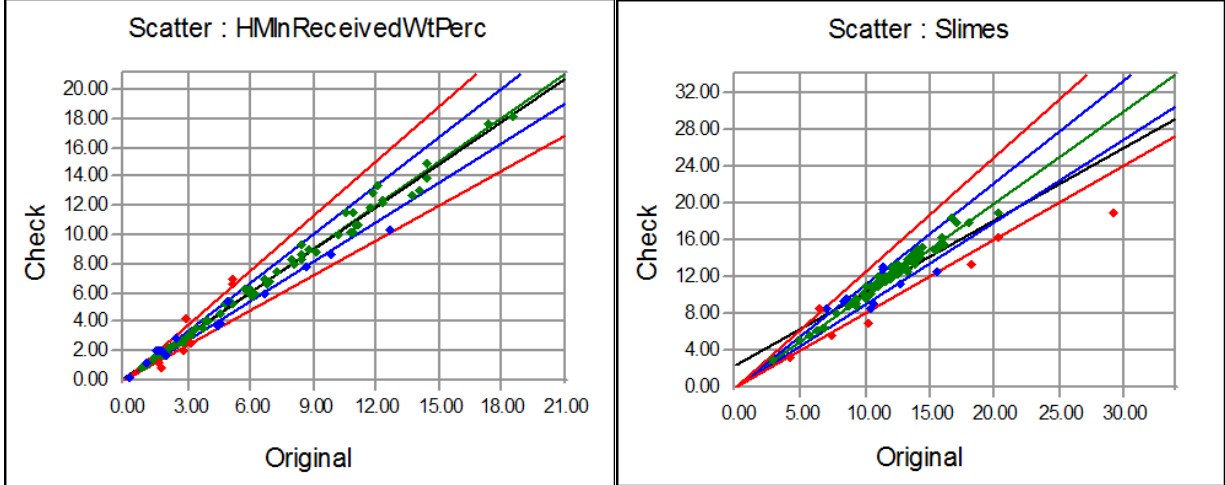


The duplicate samples also show good correlation as shown in the charts below confirming the data set is robust and appropriate to support resource estimation.



**Criteria**

**Commentary**



The results from the QAQC are considered acceptable although there appears to be scope for improvement in the determination of the slimes content. The modest precision shown by the slimes data does not impact on the estimate of the contained HM.

**Verification of sampling and assaying**

All assay data is routinely inspected visually and statistically prior to resource estimation. The data has been reviewed by both exploration and resource development personnel at Iluka. The HM component from all samples was verified by examining the sinks after LST separation under a microscope and comparison to adjacent samples within the drill hole and drill holes on the same section.

Thirteen pairs of true twin holes (completed on the same day with the same drill rig and personnel) were completed as part of the routine exploration at a rate of 1:30 holes drilled. A comparison of the drill grades between twinned holes show acceptable correlation. Downhole the high and low grade sections compared well, however metre by metre comparison was modest suggesting some in ground variability. One of the twinned pair was removed during resource estimation process.

Logging of RCAC samples was input directly into a laptop computer using acQuire software with data verification routines enabled. Data was then electronically transferred into Iluka's SQL hosted geology database interfaced with acQuire data management software which incorporates further verification routines.

No bias or errors were identified in the assay data and no adjustments were made.

**Location of data points**

The 2019 and 2020 RCAC drilling was surveyed using RTK\_DGPS equipment, however the drill holes surveyed prior to 2019 used GPS or DGPS. The DGPS and GPS located drill holes are considered to have an accuracy of +/- 5m in X/Y which is adequate considering the special



Criteria	Commentary
	<p>extent of the WIM style deposits. The RL was taken from a LiDar survey completed by AAM Hatch which had a project vertical design accuracy of 0.5m at one sigma.</p> <p>The eastings and northings were recorded in GDA94 MGA Zone 54.</p> <p>The topographic surface used for the Wimmera deposits was generated from the 2005 Airborne Laser Scanning (LiDar) survey completed by AAM Hatch which had a project vertical design accuracy of 0.5m at one sigma. This was supplemented with the SRTM 90m surface to complete areas not covered by the AAM Hatch surface. The surface provides good geomorphological detail and drill hole collar points were projected to this surface to ensure the mineralisation was at a correct position relative to the surface.</p>
<b>Data spacing and distribution</b>	<p>Drilling targeting the WIM mineralisation was originally completed on widely spaced drill lines several km apart, typically on road verges, with drill holes spaced at about 500m on the lines. This was subsequently infilled to 1 to 2 km spaced drill lines on areas of anomalous or known mineralisation with further infill on a regularised grid spacing.</p> <p>Drilling spacing for WIM50 varies from about 1000m by 500m with some infill at 500m by 500m and averaging one drill hole per 400,000m<sup>2</sup>.</p> <p>The drill holes at WIM50 North are more widely and irregularly spaced with a drill density of about one drill hole per 600,000m<sup>2</sup> with exploration at a relatively early stage of development.</p> <p>The drilling at WIM100 was spaced at about 500m by 250m at the time of resource estimation (2019) but further infill drill was completed over the northern portion of the deposit in early 2020, down to 250m by 250m spacing to support increased resource confidence and future mine planning.</p> <p>Access issues, either social or environmental, meant that there are some gaps in the grid and some holes were required to be offset.</p> <p>Given the nature of the WIM style of mineralisation, there is sufficient confidence in the interpreted geometry and grade continuity for the Resource classification that has been applied. This is corroborated using geostatistical analysis – particularly variography.</p> <p>No compositing was used for assay data however assemblage and mineral quality information was derived from composites of HM sinks.</p>
<b>Orientation of data in relation to geological structure</b>	<p>No bias has been identified or expected as the vertically orientated drill holes are effectively perpendicular to the horizontal mineralisation of the WIM50, WIM50 North and WIM100 deposits.</p>
<b>Sample security</b>	<p>Samples were stored at secure Iluka compounds following transport from the exploration site. The samples received at Iluka's laboratory were compared to the dispatch notes generated from the logged data lodged within the acQuire software. No discrepancies were noted.</p>



Criteria	Commentary
<b>Audits or reviews</b>	<p data-bbox="421 215 2092 319">No audits have been conducted of the sampling done on the WIM50, WIM50 North and WIM 100 deposits. However the sampling techniques used were audited for Iluka during exploration over other deposits. A similar assaying process supports Iluka's current mining operations and is a standard method used widely in the exploration for mineral sands.</p> <p data-bbox="421 359 2092 391">The in-house laboratory undergoes regular inspections by Iluka geology staff.</p>

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

Criteria	Commentary																																			
<b>Mineral tenement and land tenure status</b>	<p>Iluka’s WIM50, WIM50 North and WIM100 deposits are located approximately 60km south west of Horsham in Western Victoria.</p> <p>The deposits are located within RLAs 6904, 6905 and 6906 which were applied for in respect of areas of expiring license EL4282, originally granted on the 30 April 1998. EL4282 which remains “live” until the RLAs are determined ensuring continuity of tenure. The tenements are held by Basin Minerals Holdings Pty Ltd, a wholly owned subsidiary of Iluka Resources Limited.</p> <p>The tenements predominantly cover privately owned freehold land with some Crown land under reserve, road reserves and the Toolondo State Forest which impinges on the very western margin of retention license RLA006905. Some potentially sensitive cultural heritage areas have been identified and investigative studies on these areas are in progress. Some ephemeral lakes are present in the area which will need consideration from an environmental and social perspective when access to mining is assessed. At this point in time, the resource has not been penalised in respect of these areas.</p>																																			
<b>Exploration done by other parties</b>	The Wimmera Fine Mineral (WIM) deposits were initially investigated by CRA in the 1980s. While the CRA data has assisted in targeting WIM style mineralisation, no historical information by CRA or any other company was used in the estimation of the mineral resource estimates for Iluka’s WIM50, WIM50 North and WIM100 deposits.																																			
<b>Geology</b>	The WIM style deposits manifest as extensive lobate mineralised zones interpreted to have accumulated in a low energy near/offshore marine setting peripheral to the margin of the Murray Basin geomorphological province. The mineralisation occurs in fine to very fine grained, well sorted, silty sand and is dominantly hosted in lower shore facies of the Lower Loxton-Parilla Sands (LPS). Wimmera HM deposits are typically extensive with strike lengths of 5km to 20 km and widths of 2km to 5km. The mineralisation is generally between 5m and 10m in thickness and shows good lateral continuity.																																			
<b>Drill hole Information</b>	<p>A summary of the data used in the resource estimation for Iluka’s WIM50, WIM50 North and WIM100 deposits is tabled below.</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>Deposit</th> <th>Holes</th> <th>Records</th> <th>Metres</th> <th>Interval Length(m)</th> <th>HM Assays</th> <th>HM Composite</th> </tr> </thead> <tbody> <tr> <td>WIM50</td> <td>71</td> <td>2389</td> <td>1825.5</td> <td>1</td> <td>1385</td> <td>12</td> </tr> <tr> <td>WIM50N</td> <td>136</td> <td>4897</td> <td>5079.75</td> <td>1 - 1.5</td> <td>1787</td> <td>24</td> </tr> <tr> <td>WIM100</td> <td>200</td> <td>7244</td> <td>8549</td> <td>1 to 1.5</td> <td>4178</td> <td>55</td> </tr> <tr> <td><b>WIM Total</b></td> <td><b>407</b></td> <td><b>14530</b></td> <td><b>15454.25</b></td> <td></td> <td><b>7350</b></td> <td><b>91</b></td> </tr> </tbody> </table>	Deposit	Holes	Records	Metres	Interval Length(m)	HM Assays	HM Composite	WIM50	71	2389	1825.5	1	1385	12	WIM50N	136	4897	5079.75	1 - 1.5	1787	24	WIM100	200	7244	8549	1 to 1.5	4178	55	<b>WIM Total</b>	<b>407</b>	<b>14530</b>	<b>15454.25</b>		<b>7350</b>	<b>91</b>
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Criteria	Commentary
	<p>Significant intercepts are not presented due to the large number of drill holes and (in the context of the disclosure of the Mineral Resource estimate(s)) is not material. The Competent Person confirms that this exclusion does not detract from the understanding of the Report, on the basis that all relevant drill hole information was used in the estimation of the reported Mineral Resources.</p> <p>All drill holes were drilled vertically with the top of mineralisation intercepted at depths of 10m to 25m downhole. The mineralisation ranges from 5m to 15m in thickness averaging about 7m.</p>
<b>Data aggregation methods</b>	No weighting or bottom/top cuts were deemed necessary and have not been used in the estimation of mineral resources for the Wimmera deposits. Envelopes defining a +1 HM grade were used to constrain the grade interpolation and the Mineral Resource estimates were reported using a 1% lower HM cut-off grade.
<b>Relationship between mineralisation widths and intercept lengths</b>	All holes were drilled vertically which is essentially perpendicular to the horizontally orientated mineralisation so all intercepts represent true widths.
<b>Diagrams</b>	Figures and representative cross sections showing the distribution of drill hole and grade information are presented in the main text of the Release.
<b>Balanced reporting</b>	Mineral resource estimates are presented which consider the grade distribution and supersede the reporting on exploration results.
<b>Other substantive exploration data</b>	<p>Logging of the HM sink includes visually estimating the HM present with the results corroborating the presence of valuable HM mineralisation. This is taken into account when creating the geological and mineralised framework for the block modelling and resource estimation.</p> <p>Composite samples were taken from the HM sink fractions from on the HM determinations. The composited samples generate between 20g and 200g of HM which is then subjected to a process of magnetic and heavy liquid separation followed with XRF, QEMSCAN and laser ablation analysis of the fractions to determine the assemblage and quality of the mineral present.</p> <p>A test pit was dug with in the WIM100 deposit area during 2019. About 500 tonnes of mineralised material was excavated and sent to Iluka's metallurgical test facility at Capel, Western Australia for processing to support assumptions on mineral recovery, quality and isolate HM products for marketability. Material from the test pit was used to pilot the mineral processing techniques to recover separated heavy mineral products (zircon, ilmenite, rare earth concentrate and HyTi).</p>





Criteria	Commentary
	<p>Zircon recovered from the test pit sample has been retained for validation testing of the Zircon Purification Process (ZPP). Once process conditions have been optimised this material will be refined to demonstrate the quality and marketability of the Wimmera zircons.</p> <p>Geophysical gamma surveys were acquired with downhole logging of 125 RCAC drill holes over Iluka's WIM50, WIM50 North and WIM100 deposits. The surveys are generally considered qualitative but high gamma responses corroborate the presence of radionuclides associated with the HM.</p> <p>A density factor of 1.7 t/m<sup>3</sup> was adopted for the reporting of Iluka's WIM50, WIM50 North and WIM100 Mineral Resource estimates. This is based on a review of density factors reported by other explorers and Iluka's internal test work.</p> <p>An additional 134 holes were drilled on the WIM100 mineralisation in early 2020 to improve the confidence of the mineralisation over portions of the WIM100 deposit. The drilling was analysed for HM content and drill grades were in line with expectation. The results have not been incorporated into the WIM100 Mineral Resource estimate to date as technical research and development to resolve mineral quality has taken precedence.</p> <p>As with all WIM deposits the effective recovery of the fine grained HM has been considered to be problematic. Also the Uranium and Thorium levels are above the current typical specification for marketable zircon (a key value component of the WIM50 deposit) which is also typical of all WIM deposits. As previously mentioned, Iluka has developed an innovative process which testing has shown significantly reduces the contaminants in zircon.</p>
<b>Further work</b>	<p>Further drilling and complementary metallurgical testing will be done on the Wimmera mineralisation in a timely manner to support project development. Drill programs are forecast to be done at the WIM50, WIM50 North and WIM100 deposits in 2022 which are designed to support increased resource confidence. Further investigation into material density is proposed.</p> <p>Infill drilling has also been designed for the WIM50 and WIM50 North to improve resource confidence for these deposits.</p>

**Section 3 Estimation and Reporting of Mineral Resources**  
(Criteria listed in section 1, and section 2, also apply to this section)

Criteria	Commentary
<b>Database integrity</b>	<p>Logging of RCAC samples were input directly into a laptop computer using acQure software with data verification routines enabled. Data was then transferred into Iluka's acQure Geology Database with further validation routines enabled. Assay data was stored in Iluka's CCLAS laboratory database at the time of analysis and transferred electronically to the acQure hosted Geology Database.</p> <p>Drill data was reviewed to ensure no duplicate records were present and statistical evaluation was conducted to ensure all results were within acceptable ranges. Datamine Software was used to visually check the grade magnitude and spatial distribution of data was as expected.</p>
<b>Site visits</b>	<p>All RCAC programs were visited by experienced Iluka staff geologists.</p> <p>The Competent Person visited site over the period of 18 to 23 March 2019 during drilling of RCAC and diamond core geotechnical programs. All work was being conducted in accordance with Iluka and industry standard practice.</p>
<b>Geological interpretation</b>	<p>The geological framework for the WIM50, , WIM50 North and WIM100 deposits is well understood from many years of exploration by Iluka and other exploration companies. The mineralisation is dominantly confined to the interpreted Lower LPS unit which is tabular and flat lying. At the current drill spacing, the geometry and continuity of the mineralisation is well defined. The density of drilling done by Iluka varies considerably and some assumption of the continuity of mineralisation is made based on the typical continuity of grade for the WIM style deposits. The deposits show consistent and continuous mineralisation over large areas.</p> <p>The valid reportable mineralisation was restricted to that hosted in the LPS unit. HM values at the base and transitional to the underlying Winnambool Formation which are logged with high trash or contaminated with carbonate shell fragments are domained separately and excluded from the resource estimate.</p> <p>Appropriate geological domaining and corresponding flagging of drill data was used to control the mineralisation estimation.</p> <p>No factors are known which might affect the continuity of the geology. There are no indications of post depositional fluvial wash-outs impacting the deposit. Some induration is noted which is recorded in terms of the logged hardness and oversize values and incorporated into the geology block models.</p>
<b>Dimensions</b>	<p>This model covers the full extent of drilling conducted by Iluka on the WIM50, , WIM50 North and WIM100 deposits. Average deposit extents are tabled below. The thickness of mineralisation varies from a few metres to 15m.</p>



Criteria	Commentary	Mineralisation Extents			Depth to Resource
		Strike (Nm)	Width (Em)	Thickness (m)	
		8000	3500	8	17
		13000	5000	6	20
		7500	3500	10	15

**Estimation and modelling techniques**

Grade interpolation was done 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. Mineralogy composite identifier and Hardness values were interpolated using Nearest Neighbour (NN) method. No HM top cut has been used nor deemed necessary. Drill hole sample data were flagged with domain codes corresponding to the geology of the deposit and a +1% HM grade domain. The domains were imprinted on the model from 3-dimensional surfaces generated from the geological and mineralisation interpretations. A primary search dimension of 700\*1400\*3 (X\*Y\*Z) was used for all assay data with limitations placed on the minimum and maximum number of samples used to inform model cells. Successive search volume factors of 2 and 3 were adopted to interpolate grade in areas of lower data density with the exception of the composite identifier which used a successive search volume factors of 2 and 8. In the event that a cell still remained unformed, a domain average value was applied and the cell would be excluded from the resource estimate. The estimation parameters for the WIM50, WIM50 North and WIM100 deposits are tabled below.

Deposit	Cell Dimension			Interpolation Method	Search Ellipse Dimension			2 <sup>nd</sup> Search Vol Factor	3 <sup>rd</sup> Search Vol Factor
	East	North	RL		X	Y	Z		
WIM50	250	500	1	ID3	700	1400	3	2	3
WIM50N	250	500	1	ID3	700	1400	3	2	3
WIM100	125	250	1	ID3	700	1400	3	2	3

Inverse Distance Squared and Nearest Neighbour comparison estimates were carried out with very similar grade distribution as the Inverse Distance Cubed results.

No by-products were considered as part of the resource estimates for WIM50, WIM50 North and WIM100.

Deleterious minerals (trash minerals) were identified as part of the mineralogical composites. Various mineral quality attributes are also included in the grade interpolation which inform the marketability of the Wimmera HM. The zircon contains elevated uranium and thorium which is typical for all the fine grained WIM deposits and renders a high portion unsalable or of low value. Iluka has carried out metallurgical testing and developed a process to remove deleterious contaminants from the zircon.

The parent cell size used for interpolation is generally designed to reflect about half the average drill hole spacing. A parent cell size of 250m x 500m x 1m was used for WIM50 and WIM50 North given the generally wide drill hole spacing. The drill spacing over WIM100 was



Criteria	Commentary
	<p>dominantly 500m x 250m at the time of resource estimation and a parent cell of 125m x 250m was adopted. Sub-celling of 2 x 2 x 10 (X/Y/Z) was used to improved volume resolution along domain boundaries.</p> <p>Based on the material type and mineralisation geomorphology it is assumed that a form of open cut mining such as truck and shovel or dredging would be employed.</p> <p>No correlations or assumptions were used in this resource estimation.</p> <p>Appropriate geological domaining and corresponding flagging of drill data and model cells was used to control the grade interpolation. Closed wireframes outlining the extent of +1% HM grade was used to constrain the extent of mineralisation.</p> <p>A top cut was not deemed necessary for HM assays following evaluation of statistics and consideration of the extent and consistency of the sample grades.</p> <p>Validation of the grade interpolation was done for WIM50, WIM50 North and WIM100 by comparing model statistics to sample statistics and a visual comparison of drill to model grades using Datamine Studio Software. Swath plots comparing the sample grades to the model grades were done for the WIM100 deposit as shown below.</p>



Criteria	Commentary																																																		
	<p style="text-align: center;"><b>Swath Plot for HM by Northing, ZONE 101</b></p> <table border="1"> <caption>Data extracted from the Swath Plot for HM by Northing, ZONE 101</caption> <thead> <tr> <th>Slice</th> <th>N_SAMPS</th> <th>M_TONNES</th> <th>S_HM</th> <th>M_HM</th> </tr> </thead> <tbody> <tr> <td>5908500</td> <td>0</td> <td>7331300</td> <td>0</td> <td>~850</td> </tr> <tr> <td>5909500</td> <td>~100</td> <td>~1000</td> <td>~4.2</td> <td>~900</td> </tr> <tr> <td>5910500</td> <td>~100</td> <td>~1100</td> <td>~5.0</td> <td>~1150</td> </tr> <tr> <td>5911500</td> <td>~150</td> <td>~1100</td> <td>~4.8</td> <td>~1050</td> </tr> <tr> <td>5912500</td> <td>~100</td> <td>~1200</td> <td>~4.9</td> <td>~1100</td> </tr> <tr> <td>5913500</td> <td>~150</td> <td>~1050</td> <td>~4.8</td> <td>~1100</td> </tr> <tr> <td>5914500</td> <td>~100</td> <td>~1000</td> <td>~3.6</td> <td>~950</td> </tr> <tr> <td>5915500</td> <td>~100</td> <td>~750</td> <td>~2.6</td> <td>~650</td> </tr> <tr> <td>5916500</td> <td>0</td> <td>7331300</td> <td>0</td> <td>~550</td> </tr> </tbody> </table> <p>Given no mining has taken place no reconciliation data is available.</p>	Slice	N_SAMPS	M_TONNES	S_HM	M_HM	5908500	0	7331300	0	~850	5909500	~100	~1000	~4.2	~900	5910500	~100	~1100	~5.0	~1150	5911500	~150	~1100	~4.8	~1050	5912500	~100	~1200	~4.9	~1100	5913500	~150	~1050	~4.8	~1100	5914500	~100	~1000	~3.6	~950	5915500	~100	~750	~2.6	~650	5916500	0	7331300	0	~550
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<b>Moisture</b>	The tonnages are estimated on a dry basis.																																																		
<b>Cut-off parameters</b>	A nominal cut-off grade of 1.0% HM was chosen for reporting of WIM50, WIM50 North and WIM100. A 1.0% HM cut-off is considered appropriate for a deposit of this magnitude and contained valuable HM assemblage to represent an inventory of the contained mineralisation.																																																		
<b>Mining factors or assumptions</b>	Mining at WIM50, WIM50 North and WIM100 is likely to be by open cut mining using suitable excavation machinery or dredging. The geometry of the deposit makes it amenable to bulk open cut mining methods currently employed in other open cut mines operated by Iluka and in other mineral sands mines with similar geomorphology. The unconsolidated nature of the sediments allow for a range of options to be considered including the use of scrapers, large scale truck and shovel, dredging or dozer trap.																																																		



Criteria	Commentary
<b>Metallurgical factors or assumptions</b>	<p>The metallurgical assumptions are based on mineralogical data and comprehensive testing of a number of bulk samples (including the test pit sample) collected from WIM 100 between 2015 to 2019. This has included detailed analysis of recovery and the quality of various marketable mineral species.</p> <p>Iluka has also developed a process that is expected to remove contaminants from the zircon that currently restricts the saleability of zircon in all the fine grained WIM style HM deposits and has historically economically constrained the development of the WIM deposits.</p>
<b>Environmental factors or assumptions</b>	<p>Iluka has completed the following studies, principally in the context of the WIM100 deposit, but which will also provide a knowledge base for possible development of the WIM50 and WIM50 North deposits:</p> <ul style="list-style-type: none"><li>- baseline ecological (flora and fauna) assessment;</li><li>- vegetation offset requirements assessment;</li><li>- baseline groundwater assessment;</li><li>- baseline surface water assessment;</li><li>- baseline noise assessment;</li><li>- baseline vibration assessment; and</li><li>- desktop and standard (non-intrusive) cultural heritage assessment.</li></ul> <p>Studies underway are:</p> <ul style="list-style-type: none"><li>- baseline soil assessment;</li><li>- baseline radiation assessment;</li><li>- targeted ecological assessment; and</li><li>- targeted field based cultural heritage assessment.</li></ul> <p>The studies were initiated with the expectation that metallurgical test work, currently being undertaken will be successful thus providing a rapid progression to mining.</p> <p>No assumptions were made regarding possible waste and process streams for the estimation of WIM50, WIM50 North and WIM100 mineral resources.</p>
<b>Bulk density</b>	<p>An assumed in situ dry bulk density of 1.7t/m<sup>3</sup> was used in the estimation of WIM50, WIM50 North and WIM100 Mineral Resource estimates.</p> <p>A review of available density information in the public domain for WIM style deposits along with Iluka's test results from a variety of sources including triaxial testing, block testing, Troxler testing, sand replacement test work and selection of triple tube drill core gives a considerable range of density values ranging from 1.4 to 2.1 t/m<sup>3</sup>. Reporting by Optiro on the nearby WIM150 HM deposit stated 58 bulk</p>



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	<p>density measurements from 200mm diameter triple tube coring ranged from 1.5 to 2.46 t/m<sup>3</sup> with an average 1.8 t/m<sup>3</sup> adopted for the volume to tonnage conversion. Historical exploration reports by CRA in estimation of Wimmera Mineral Resources adopted a range of density factors varying from 1.65 to 1.75 t/m<sup>3</sup> which are understood to be derived from sand replacement method and weighing competent sections of drill core.</p> <p>This led to the adoption of a 1.7t/m<sup>3</sup> dry density for resource estimation which is in line with test work reported to have been done by CRA at WIM150 and the expected value based on the formula presented in Baxter (1977) of [1.68 + (0.01xHM%)]. This is more conservative than the bulk density of about 1.85t/m<sup>3</sup> generated from Iluka's standard bulk density formula applied to traditional mineral sands deposits. Adopting the relatively low density mitigates against potential overstatement of the resource tonnage and contained HM.</p> <p>Further test work will be done as part of future exploration programs to provide improved confidence of the bulk density for the Wimmera deposits.</p>
<b>Classification</b>	<p>To this point in time Iluka has refrained from reporting mineral resource estimates for the fine grained Wimmera style deposits as the "Reasonable Prospects for Eventual Economic Extraction" (RPEEE) as stipulated in the JORC Code 2012 Ed. were constrained by poor mineral recovery and mineral quality. While the Wimmera deposits have been known for many decades, metallurgical factors have precluded the recovery and saleability of the contained HM.</p> <p>Iluka has carried out considerable testing and developed innovative technological processes which will mitigate against the factors that previously precluded the economic viability of the Wimmera deposits.</p> <p>In consideration of the JORC Code Classification of Measured, Indicated and Inferred applied the following aspects were considered:</p> <ul style="list-style-type: none"><li>• the drill hole spacing;</li><li>• the quality of sample data as demonstrated by supporting QA/QC;</li><li>• level of supporting mineralogical data;</li><li>• confidence in the style of mineralisation under consideration; and</li><li>• continuity of grade within the geological framework as assessed both visually and geostatistically.</li></ul> <p>The QA/QC data associated with the WIM100 samples demonstrate sound data integrity which is suitable to for resource estimation.</p> <p>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 the Resource Classification applied.</p>
<b>Audits or reviews</b>	Internal review processes within Iluka assisted in the development of the resource estimates reported on in this announcement.



Criteria	Commentary
	External reviews were undertaken by Optiro Consultants for each of the deposits reported on in this announcement which corroborated the Mineral Resource estimates.
<b>Discussion of relative accuracy/confidence</b>	<p>No geostatistical process was done (such as kriging or conditional simulation) for the resource estimation of the WIM50, WIM50 North and WIM100 deposits. Variography was undertaken on the HM grade distribution to determine the optimal sample spacing to support the JORC classification assigned. Validation of the model against drill grades by visual assessment, swathe plot and statistical comparison supports the integrity of the resource estimates for the WIM50, WIM50 North and WIM100 deposits.</p> <p>This statement refers to global estimates for the entire known extent of the WIM50, WIM50 North and WIM100 HM deposits.</p> <p>No production data is available for the WIM50, WIM50 North and WIM100 deposits.</p>