Australian Securities Exchange Notice

25 January 2019 ASX: ILU

PEJEBU INAUGURAL MINERAL RESOURCE ESTIMATE, SIERRA RUTILE

Iluka Resources Limited (Iluka) announces the inaugural Mineral Resource estimate of rutile mineralisation at the Pejebu Deposit, located adjacent to current mining operations in Sierra Leone.

The Pejebu Deposit Mineral Resource consists of 23.4Mt material at 0.95% in situ rutile, containing 0.22Mt of rutile, estimated in accordance with the guidelines of the JORC Code (2012 edition). This is in line with estimated parameters provided for the *Pejebu Exploration Target*, refer to ASX release 16 August 2018. 80% of the Pejebu Mineral Resource is in the Indicated Mineral Resource category while the remaining 20% is classified as Inferred.

This deposit is in addition to the current Mineral Resource at Sierra Rutile, as at 31 December 2017, comprising 7.3Mt of rutile hosted in 701Mt of Measured, Indicated and Inferred Mineral Resources at a grading of 1.0% rutile (refer Iluka 2017 Annual Report, released 27 February 2018).

Iluka noted at the time of acquiring Sierra Rutile in December 2016, the possibility of increased Mineral Resources through exploration. The success of brownfield exploration at Pejebu is an example of this and demonstrates the potential of the asset.

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Pejebu Inaugural Mineral Resource Estimate - Overview

The Pejebu Deposit is located 5 to 10km north-east of the Dry Mining 1 (DM1) processing plant and 5km south of the Mogbwemo Mineral Separation Plant (Figure 1).

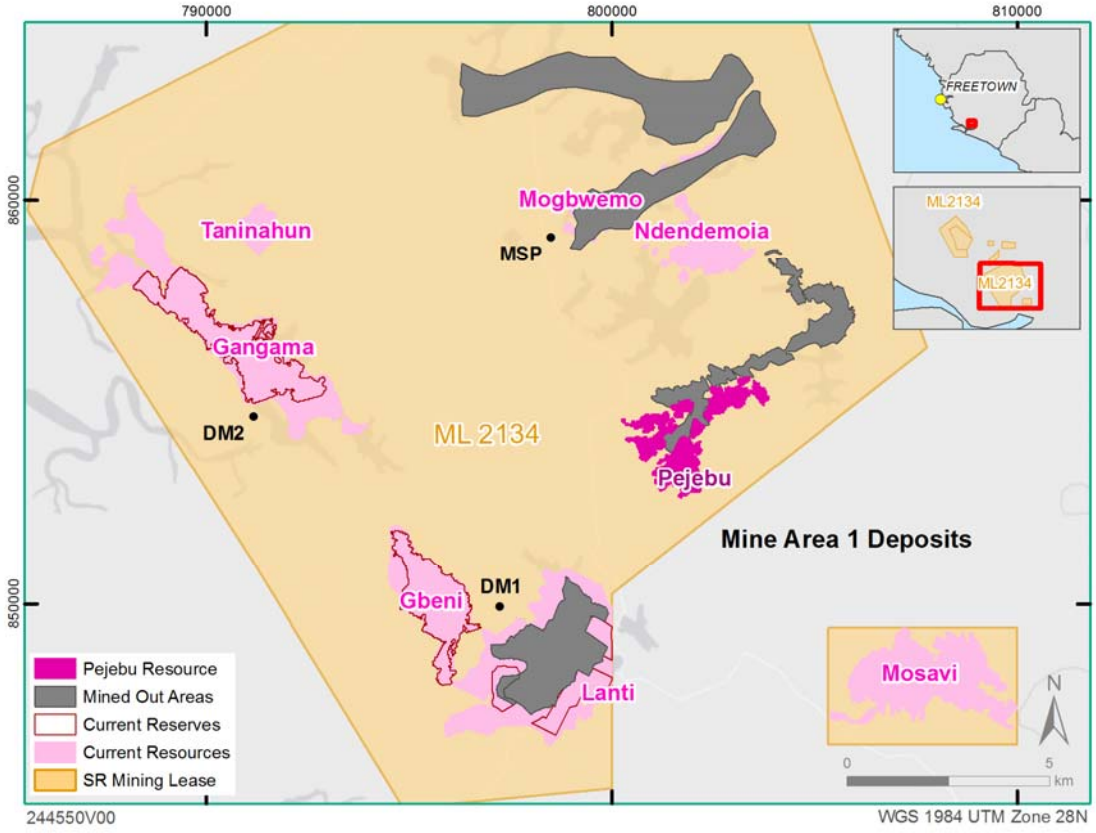

Figure 1: Sierra Leone summary plan showing the location of the Pejebu Deposit in relation to current infrastructure and mineral resources.

Historical records (Rothschild, 1999) indicated possible remnant mineralisation around the Pejebu Deposit, which was dredge mined between 1989 and 1992. The remnants were not accessible by dredge due to irregular topography and dredge-pond level constraints. However, the material may be suitable for dry mining as employed at the nearby Gbeni and Gangama operations.

In 2016, SRL drilled 58 holes for 320m on the Pejebu Deposit.

In 2018, a further 713 drill holes were completed for 4514m to 1 October 2018 which were used as a base for the resource estimation (ref. Figure 2).

The Mineral Resource Estimate for the Pejebu Deposit, broken down by Resource Category is presented in Table 1 below. This update represents a net increase of 0.22Mt of contained rutile compared to Iluka's current reported Mineral Resource inventory as at 31 December 2017.

Table 1: JORC Code (2012 Edition) Mineral Resource Summary for the Pejebu Deposit (reported using >0.25% rutile and a combined rutile grade*thickness value>2(%m) cut-off grades).

Deposit	Mineral Resource Category[1]	Material tonnes (Mt)[2]	In situ rutile[3] (%)	In situ ilmenite[3] (%)[5]	In situ zircon[3] (%)[5]	In situ rutile tonnes (Mt)	In situ ilmenite tonnes (Mt)	In situ zircon tonnes (Mt)
Pejebu	Indicated	18.6	1.0	1.0	0.1	0.18	0.19	0.02
Pejebu	Inferred	4.8	1.0	0.7	0.1	0.05	0.03	0.01
Pejebu	**TOTAL**	**23.4**	**1.0**	**1.0**	**0.1**	**0.22**	**0.22**	**0.03**

Notes:
(1) Mineral Resources are reported inclusive of Ore Reserves.
(2) In situ (dry) metric tonnage is reported.
(3) The mineral assemblage is reported as a percentage of the in situ material.
(4) Rounding may generate differences in the last decimal place.

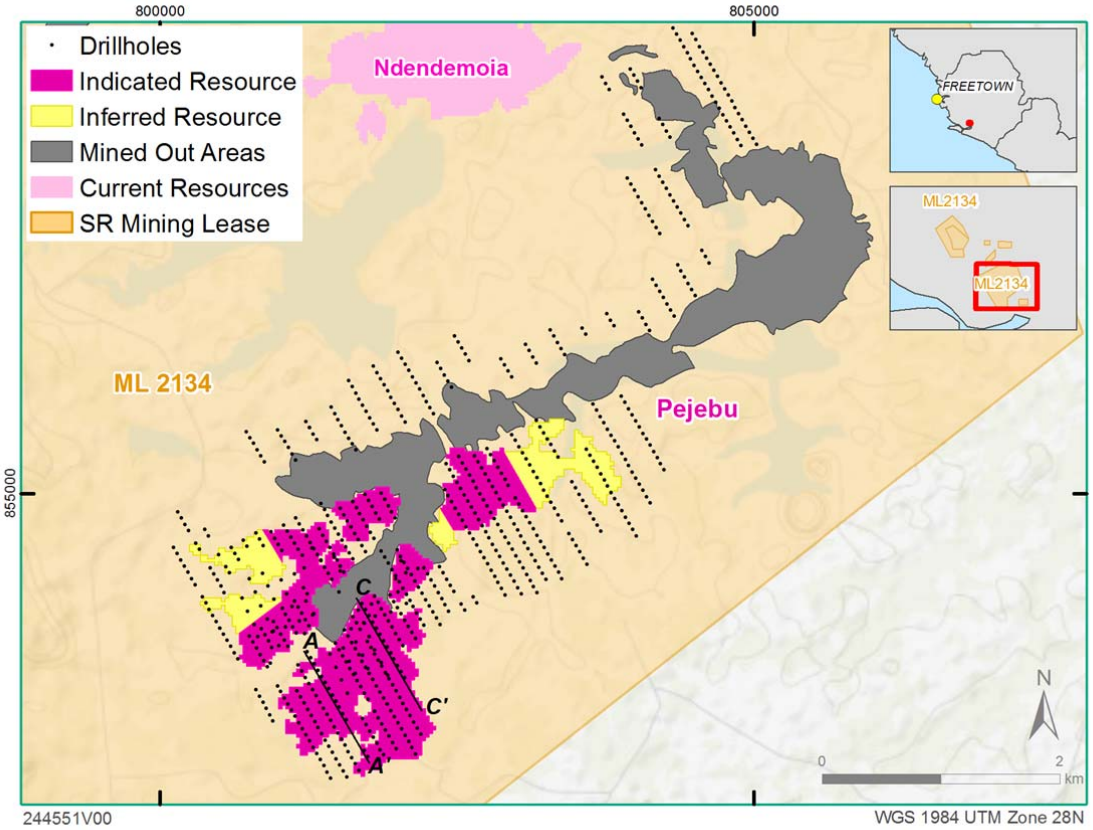

Figure 2: Pejebu drill collar locations and JORC Category distribution. The locations for cross section A – A' (Figure 3) and C – C' (Figure 4) are shown.

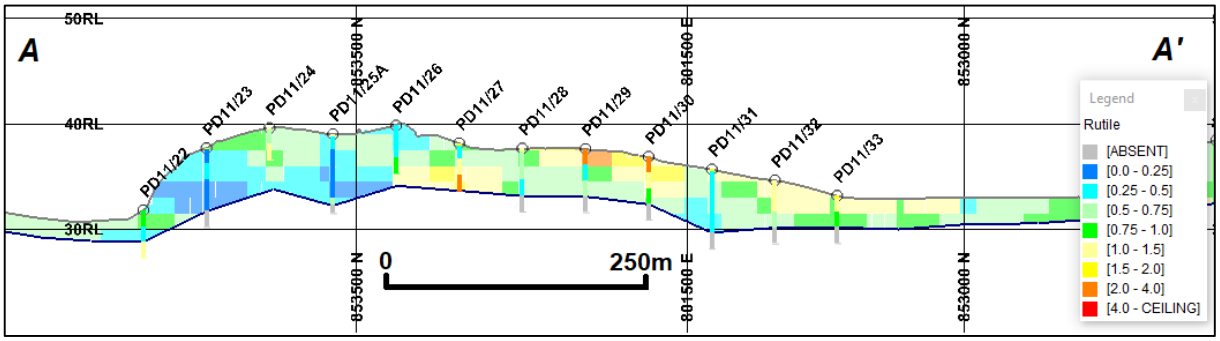

Figure 3: Pejebu drill hole and block model section showing in situ rutile grade (%) (looking east x10 VE).

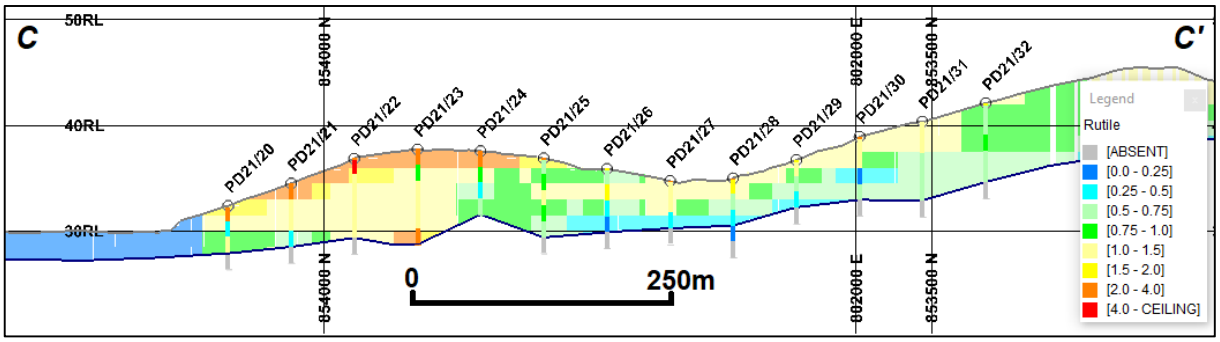

Figure 4: Pejebu drill hole and block model section showing in situ rutile grade (%) (looking east x10 VE).

Pejebu Mineral Resource - Summary of Reporting Criteria

As per ASX Listing Rule 5.8 and the 2012 JORC reporting guidelines, a summary of the information material for the Pejebu Mineral Resource estimate is summarised below. For more detail please refer to the JORC Code Table 1, Sections 1 to 3, included in **Appendix 1**).

Deposit Geology and Interpretation

A 20 to 40km wide coastal strip along the west coast of Sierra Leone comprising Tertiary to Recent sediments, known as the Bullom Group, unconformably overlays the crystalline basement rocks. The Bullom Group comprises sediments recognised as having been deposited in alluvial, fluvial, coastal marine and estuarine environments. The deposition of the Bullom Group followed a late Tertiary-age marine regression, which exposed the basement to chemical and mechanical erosion.

Rutile and other heavy minerals were liberated via erosion of topographically elevated areas of the Kasila Group and subsequently deposited in structurally controlled channels, erosional valleys or as alluvial fans on a topographically benign coastal plain.

The heavy minerals within the Sierra Leonean Rutile Deposits are typically angular, indicating minimal transport and re-working. The spatial distribution of heavy minerals along the length of the palaeo-channels also reflects this, with mineral grades typically decreasing with distance from the source and increasing in sand content replacing argillaceous material within the matrix.

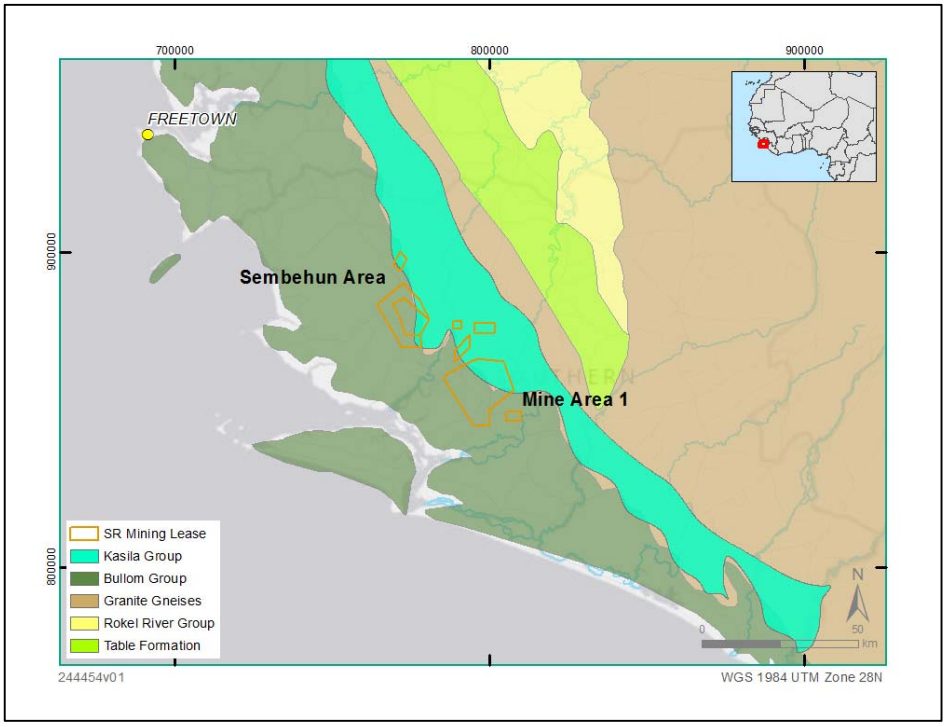

Figure 5: Regional Geology Plan for Sierra Leone.

Data Storage

Data supporting the Mineral Resource estimate for the Pejebu Deposit was recorded in MS Excel spreadsheets until December 2016 (Iluka acquisition of SRL). Subsequently, to ensure data quality and security, original laboratory information and its supporting data has been migrated into Iluka's SQL hosted Geology Database (GDMS), interfaced via an acQuire data management system. Currently, drill logs and assay data is validated on site, then imported directly into the GDMS, undergoing further validation. Where the original source files cannot be found, the data was imported directly from SRL's spreadsheets.

Drill technique and hole spacing

Drilling is completed on a regularised grid with closer spaced drilling used to support an increased confidence in the Mineral Resource estimate. Initial drilling was completed at 60m hole spacing on drill lines 240m apart. Infill drilling has been completed on intervening 120m spaced drill lines with a 60m hole spacing.

Drilling completed at the Pejebu Exploration Target area has utilised Hollow Flight Auger (4,686.2m), Air Core (82.5m) and Tripod (65.3m) techniques.

Table 2 presents a summary of the drilling carried out on the Pejebu Deposit.

Table 2: Drill summary supporting the Pejebu Mineral Resource estimate

Drill Type	2016			2018			Total		
	Holes	Metre	Samples	Holes	Metre	Samples	Holes	Metre	Samples
Auger	48	282	190	693	4404.2	3653	741	4686.2	3843
Air-core	6	25.5	17	9	57	47	15	82.5	64
Tripod	4	12.5	10	11	52.8	45	15	65.3	55
Total	58	320	217	713	4514	3745	**771**	**4834**	**3962**

Geological Logging

Sample intervals are logged qualitatively in accordance with SRL standard operating procedures. The main geological criteria recorded includes:

- interval length
- depth to base of interval
- percentage sample recovery
- colour
- main lithology
- lithological qualifiers
- estimates of slime, oversize and valuable heavy mineral

Sampling and sub-sampling techniques

Sampling of drill holes is conducted at 0.2m to 1.5m intervals with all samples submitted for assay. Smaller intervals of geologically unique material, such as topsoil, may be taken from auger drilling to honour geology/grade relationships. Approximately 2.0kg of sample per interval is collected in pre-labelled calico bags. Unique sample identifiers (e.g. location, line, Hole No, interval) are recorded on metallic tags and placed in the sample bag for submission to the SRL laboratory. A duplicate tag is inserted for validation purposes. The sample bags for each hole are placed in sacks labelled for each hole. A sample submission form itemising the samples recovered per hole is completed, photocopied and submitted to the Data-Capture Clerk and laboratory for further processing.

Sample Analysis Method

The method for determining the mineral assemblage and, particularly the rutile content, has varied over time.

For exploration carried out during 2016, the samples were oven dried and weighed, then soaked for 12 hours, wet screened to remove the slimes (-63µm) and oversize at +1.0mm and +9.5mm. The +63µm - 1.0mm fraction was riffle split to produce one sample of about 100g for further analysis and the remainder was bagged for storage. The sub-sample for further analysis was sieved at 710µm with approximately 30gm of -710µm material subjected to float/sink determination using Lithium-Sodium-Tungsten (LST) (SG=2.85) to determine the Heavy Mineral (HM) content. A split of the 63um to 1mm sand fraction for each sample was subjected to magnetic fractionation and the weight of magnetic and non-magnetic fractions recorded. The non-magnetic fraction was then pulverised and a pressed powder pellet analysed by MRS 400 XRF for TiO_2, Cr_2O_3, V_2O_5, Fe_2O_3 and ZrO_2. The rutile and zircon content for each sample was determined from the TiO_2 and ZrO_2 content of each sample respectively. A LECO analysis was also carried out on a sub-sample to determine sulphur content. In addition, 58 composite samples were created from the sand fraction for

samples from each drill hole. The composited sand was subjected to float sink determination and the composite HM was subjected to magnetic separation. The magnetic and non-magnetic splits were subjected to point count analysis and XRF analysis of a pressed pellet to provide supporting information on the mineral assemblage.

For exploration carried out during 2018, the samples were oven dried and weighed, then soaked for 12 hours, wet screened to remove the slimes (-63µm) and oversize at +1.0mm and +9.5mm. The +63µm - 1.0mm (sand) fraction was riffle split to produce one sample of about 100g for further analysis and the remainder was bagged for storage. The 100g sub sample for further analysis was subjected to float/sink determination using Lithium-Sodium-Tungsten (SG=2.85) to determine the Heavy Mineral (HM) content. In early 2018 the method for rutile determination was adjusted. HM was recovered by the same method but a weighted portion of the HM from geologically unique facies was combined to form HM composites. 285 composite samples were available for the Pejebu mineral resource estimate. The HM composite was then subject to Longset screening and Permroll™ magnetic separation at 270rpm. The magnetic and non-magnetic fractions were then pulverised and a pressed pellet (58 out of 285 composites from 2018) or fused bead (227 out of 285 composites from 2018) analysed by XRF. XRF of a fused bead is considered more reliable for the determination of the TiO_2 content and was part of ongoing improvement in analytical determination at SRL since acquisition in December 2016. Stoichiometric calculations were used to determine the content of rutile, zircon, ilmenite and monazite. Residual minerals are then classed as magnetic or non-magnetic "others". A LECO analysis was done on a sub-sample of the non-magnetic HM to determine the sulphur content. The mineral assemblage content of individual samples was then calculated from the composite assemblage and the sample HM content.

Estimation methodology

The resource modelling and estimation for the Pejebu Deposit was done using Datamine Software. The three-dimensional solid formed between the topographic and basement surfaces was used to constrain the resource estimate. The modelling was typically limited to the extent of the drilling. The software and the modelling technique used are considered to be industry standard and appropriate for modelling and supporting the resource estimate at Pejebu. The rutile mineralisation is typical of the Sierra Leone rutile deposits and exhibits a low grade variability so no grade cutting was required.

The model block dimension adopted is 30*30*1.5m (X*Y*Z) with an allowance for sub-celling down to 6*6*0.15m cell dimensions to provide volume definition. The parent cell dimension is about half to a quarter of the modal 120 x 60m drill spacing for Pejebu.

The grade estimation was done using Inverse Distance squared (ID2) for all analytes with the exception of the lithology code and density which have been interpolated using Nearest Neighbour (NN). An elliptical search volume was used for grade variables of 100*150*3m (in the rotated X*Y*Z direction) with the search ellipse axis orientated along the geological strike. The orientation of the search was dynamically modified using functionality associated with the Datamine software to cater for changes in the dip and trend of the geology and mineralisation. The search volume was increased by factors of 2 and 3 to inform model cells not assigned values in the primary search.

Cut-off Grade

The Mineral Resources were reported using a 0.25% rutile cut-off grade in conjunction with delimiting resource outlines and a minimum grade*thickness value of 2 (i.e. material grading 0.25% rutile must have a thickness of 4m to meet the reporting criteria). This ensures thin low grade mineralisation, unlikely to ever be economic, is excluded from the reported Mineral Resource. The grade is slightly lower than would be considered economic under the current mineral pricing conditions but allows for potential price increases and for consideration of more cost effective mining methods and economic efficiencies from increased mine through-put.

Resource Classification Assignment - Pejebu

The mineral resource estimates have been classified and reported in accordance with the guidelines of the JORC Code (2012 ed.). The resource category applied is based on:

- data provenance and availability;
- drill hole spacing and sample density;

- confidence in the analytical data;
- established geological continuity which is corroborated by a long history of mining;
- the confidence in the rutile and mineralogical grade continuity; and
- information from historical plans recording the spatial distribution of rutile mineralisation.

The drill spacing in conjunction with rutile kriging variance was used to define areas for the appropriate resource classification. In general, a drill grid spacing of 60 to 240m spacing was used to define resources with an Indicated classification and Mineral Resources defined by drilling spaced at greater than ~240m were assigned an Inferred Resource classification. The mineralisation continuity ranges from variogram analysis were also used to support the resource classification.

Mining and Metallurgical Methods and Parameters

Mining of the Sierra Leone rutile deposits has been carried out semi-continuously for nearly 50 years. The metallurgical amenity of the deposits is well understood from this historical mining and processing. As a result, metallurgical recoveries are factored on the basis of historical recovery trends. A portion of the Pejebu Deposit was successfully mined from 1989 to 1991. The remaining Pejebu mineralisation is of similar dimensions and geologically identical to that being mined nearby at the Gangama (DM2) and Gbeni (DM1) open pit dry mines.

The economic viability of the mineralisation and options for development of the Pejebu Deposit will be subject of future assessment in conjunction with other development options at Sierra Rutile.

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 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 (Pejebu Deposit)

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

Criteria	Commentary
Sampling techniques	The Pejebu Rutile Deposit has been explored by a number of drilling methods and supporting equipment including Hollow Flight Auger (HFA), Reverse Circulation Aircore (RC) and Aluminum Derrick Tripod Rig (TRIP). A total of 4834 m of drilling in 771 holes were completed on the Pejebu Deposit, from which 3962 samples were taken. The samples are geologically logged on site and a nominal 2kg sample obtained by splitting of core from the HFA and Tripod drilling, or through the use of a rotary slitter in the case of the RC drilling. Sample lengths are typically 0.2 to 1.5 m intervals and all the drill sample is presented for subsampling. Smaller sample interval lengths are adopted to reflect geological variability and reduce the influence of high grade residual topsoil or exclude basement material. All samples were submitted for assay. The mineralisation is determined by both visual inspection of panned sample and laboratory assays. No geophysical methods were used in the estimation of the Pejebu Mineral Resource. Samples have been analysed by industry typical methods for heavy minerals at the on-site laboratory attached to the Mogbwemo Mineral Separation Plant in Sierra Leone. The same basic determination method with minor variations has been used for over 45 years The earlier mineral analyses were typically more rudimentary and focused on the determination of the rutile resulting in a lower knowledge base for minerals such as ilmenite and zircon. For exploration carried out during 2016, the samples were oven dried and weighed, then soaked for 12 hours, wet screened to remove the slimes (-63µm) and oversize at +1.0mm and +9.5mm. The +63µm - 1.0mm fraction was riffle split to produce one sample of about 100g for further analysis and the remainder was bagged for storage. The sub sample for further analysis was sieved at 710µm with approximately 30gm of -710µm material subjected to float/sink determination using Lithium-Sodium-Tungsten (LST) (SG=2.85) to determine the Heavy Mineral (HM) content. A split of the 63um to 1mm sand fraction for each sample was subjected to magnetic fractionation and the weight of magnetic and non-magnetic fractions recorded. The non-magnetic fraction was then pulverised and a pressed powder pellet analysed by MRS 400 XRF for TiO_2, Cr_2O_3, V_2O_5, Fe_2O_3 and ZrO_2 The rutile and zircon content for each sample was determined from the TiO2 and ZrO2 content of each sample respectively. A LECO analysis was also carried out on a subsample to determine sulphur content. In addition, 58 composite samples were created from the sand fraction for samples from each drill hole. The composited sand was subjected to float sink determination and the composite HM was subjected to magnetic separation. The magnetic and non-magnetic splits were subjected to point count analysis and XRF analysis of a pressed pellet to provide supporting information on the mineral assemblage. For exploration carried out during 2018, the samples were oven dried and weighed, then soaked for 12 hours, wet screened to remove the slimes (-63µm) and oversize at +1.0mm and +9.5mm. The +63µm - 1.0mm (sand) fraction was riffle split to produce one sample of about 100g for further analysis and the remainder was bagged for storage. The 100g sub sample for further analysis was subjected to float/sink determination using Lithium-Sodium-Tungsten (SG=2.85) to determine the Heavy Mineral (HM) content. In early 2018 the method for rutile determination was adjusted. HM was recovered by the same method but a weighted portion of the HM from geologically unique facies was

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	combined to form HM composites. 285 composite samples were available for the Pejebu mineral resource estimate. The HM composite was then subject to Longset screening and Permroll™ magnetic separation at 270rpm. The magnetic and non-magnetic fractions were then pulverised and a pressed pellet (58 out of 285 composites from 2018) or fused bead (227 out of 285 composites from 2018) analysed by XRF. XRF of a fused bead is considered more reliable for the determination of the TiO2 content and was part of ongoing improvement in analytical determination at SRL since acquisition in December 2016. Stoichiometric calculations were used to determine the content of rutile, zircon, ilmenite and monazite. Residual minerals are then classed as magnetic or non-magnetic "others". A LECO analysis was done on a sub-sample of the non-magnetic HM to determine the sulphur content. The mineral assemblage content of individual samples was then calculated from the composite assemblage and the sample HM content.
Drilling techniques	The Pejebu Rutile Deposit was explored by a number of drilling methods and supporting equipment including Hollow Flight Auger (HFA), Reverse Circulation Aircore (RC) and Aluminum Derrick Tripod Rig (TRIP). A total of 4834m of drilling has been completed on the Pejebu Deposit. The hole diameter is 63mm for the HFA and 50mm for TRIP drilling and 76mm for RC drilling. All holes have been drilled vertically. A summary of the drilling and method for the data used in the resource estimation is given in the table below.
Drill sample recovery	All drill samples are qualitatively logged in accordance with company (SRL) standard operation procedures which record commentary on the sample recovery and lithology. All drilling is supervised and logged by company geologists or trained technicians under the supervision of company geologists. If sample recovery is compromised a decision is made at the time of drilling to determine if redrilling is required. The weight of the sample is recorded at the laboratory and monitored by the site geology staff to confirm the representivity. Sampling by the HFA method generally provides a representative sample. In some instances the HFA samples are split to produce a duplicate sample without core loss. The RC drilling has been shown to give a low bias of the oversize content as a result of mechanical grinding of the sediment back to the depositional grainsize, at the bit face. Also the RC drilling is prone to slimes loss when samples are dry with fine material "blowing" away. The wet clay rich nature of the Sierra Leone rutile deposits tends to result in samples "holding up" in the sample cyclone and rotary splitting equipment. This results in potential contamination and reduced sample representivity for the RC drilling. For these reasons the HFA drilling is favoured over RC drilling. Less than 2% of the samples used in the Pejebu resource estimate were generated from RC drilling methods.
Logging	All samples are geologically logged by site geologists or trained technicians under the supervision of company geologists at the time of drilling. Information recorded includes the length and diameter of the sample, sample recovery, colour, lithology, lithological characteristics and qualifiers relating to slimes and oversize characteristics. Prior to 2018 the geological data was captured as hard copy. From 2018 on the information was directly entered into acQuire software on toughbooks in the field and downloaded via electronic transfer to Iluka's SQL

Drill Type	2016			2018			Total		
	Holes	Metre	Samples	Holes	Metre	Samples	Holes	Metre	Samples
Auger	48	282	190	693	4404.2	3653	741	4686.2	3843
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Total	58	320	217	713	4514	3745	**771**	**4834**	**3962**

Criteria	Commentary
	hosted Geology Database. The logging is considered qualitative and is appropriate for supporting the Mineral Resource estimate. The geological logging is also used as a guide to the allocation of samples assigned to composites for assemblage determination.
Sub-sampling techniques and sample preparation	No core sampling was done on the Sierra Leone rutile deposits, although the HFA drilling often returns a solid "core" of sample material similar to more sophisticated "diamond" core drilling. The entire sample returned from the HFA drilling was submitted for analysis, while the sample material from RC drilling was presented to a rotary splitter mounted beneath a cyclone at the time of drilling. About a ¼ split weighing 1.5 to 2.0kg was taken for analysis. As previously discussed there is potential for the sample to "hang-up" on the sampling equipment due to the wet clayey nature of the mineralised material. As a result, the use of the RC drilling in resource delineation for the Pejebu Deposit was limited. Samples presented to the SRL site laboratory were collected in pre-labelled calico bags. Unique sample identifiers were recorded on metallic tags and placed in the sample bag for verification. Duplicate samples are taken at the rate of about 1:20 samples from the HFA drilling by halving the material taken from the sample tube. Anomalous results are investigated for obvious errors and if none are apparent the associated sample batch is re-analysed. The pass criteria for the sample program as a whole, is 90% of duplicates within 20% difference. The sample size is considered appropriate for the material hosting the mineralisation, which is supported by Gy's sampling theory and the variability of duplicate sample results.
Quality of assay data and laboratory tests	The analysis method used is industry standard for mineral sands and appropriate for the style of mineralisation under consideration. Wet sieving and screening of the sample was used for all samples. HM determination was done using LST heavy liquid separation on a sand sub-sample of approximately 30 to 100 grams. Additional sand fraction was subject to float/sink determination as required to provide HM for correctly weighted composite samples. The majority of samples analysed at SRL were analysed using MRS 400 XRF, analysing either a fused bead where assayed prior to 2011 or pressed pellet (from 2011 to early 2018), in combination with support from 500 point grain counting. The XRF analysis on pressed pellets was demonstrated to yield a low bias for TiO_2 when compared to the results from Wet Chemical (WC) determined TiO_2 or TiO_2 from fused beads. This was exacerbated when the XRF analysis was done on sand fractions containing a high portion of quartz sand. Due to the low TiO_2 bias resulting from the analysis of pressed pellets, the analysis of beads was re-instated in early 2018. This issue is not considered as significant for Pejebu as the XRF analyses was done on composited HM fractions. Certified standards were used for the calibration of both the WC and XRF equipment. In addition 5 to 10% of the analytical submissions are duplicated to verify analytical precision. The pass criteria for analytical samples as a whole, is 90% of duplicates within 20% difference. Anomalous samples are investigated for errors and if no errors are apparent, the entire batch is either re-analysed, confirmed by wet chemistry or the estimate confidence is downgraded.
Verification of sampling and assaying	All results are reviewed by a site based geologist to ensure the values are valid prior to forwarding to the Geology Database Administrator for loading into the Geology Database. Any anomalous results are queried with the laboratory and repeated as necessary. The assay results are again reviewed visually and statistically by the practitioner preforming the resource estimation, which is subsequently reviewed by a

Criteria	Commentary
	suitably qualified person either internal or external to SRL/Iluka. A small number of twinned holes were completed in unison with the exploration on the Pejebu Prospect. Results were received for two "twinned" holes while results were outstanding for seven other holes at the time of the estimation and reporting. Given the small sample population for the twinned holes no meaningful conclusions can be drawn. Since acquisition, a concerted effort to collate all available assay data into Iluka's Geology Data Management System (GDMS), operating via an acQuire^{TM} software interface. Where available, the original digital assay data has been imported to ensure the data is accurate as possible and free of any transcription or spreadsheet manipulation errors. Otherwise the digital data was imported directly from the spreadsheets. Validation of the data against historical information was carried out as importing of datasets were completed. This process has resolved some errors in the historical data, mostly relating to absent data and rounding/truncation errors. Since early 2017 the data has been electronically recorded, which incorporates validation rules, and transferred directly to the Geology Database. No adjustment is made to the data within the datasets. Some adjustment to the TiO_2 grades from the 2011 – 2017 TiO_2 values has been done at times on values which have a demonstrated low TiO_2 bias when compared to WC TiO_2 analyses. The analyses for these programs have used pressed pellets for cost efficiency and time expediency. The pressed pellets have been demonstrated to be prone to a low bias due to matrix and mineralogical effects. A positive correlation (r^2 =0 93) is shown by the comparative datasets. Two linear algorithms were used to adjust the TiO_2 data for the purpose of resource estimation where analyses were derived from pressed pellets (PP) for these programs. Where TiO_2<1.0%: WC TiO_2 = (0.9368)*PPTiO_2 + 0.9482, otherwise WC TiO_2 = (0.8149)*PPTiO_2 + 0.2168. TiO_2 analysis by pressed pellet on non-magnetic sand fractions for Pejebu is limited to 217 samples representing ~ 5% of the of all the rutile values supporting the Mineral Resource estimate. Hence any bias introduced from these samples will not have a significant impact on the resource estimate for Pejebu.
Location of data points	Each drill hole position is located using company owned Leica Viva GS10 GPS equipment, with X, Y, Z accuracy of +/-0.2m. All data points are recorded in the UTM Zone 28 (Northern Hemisphere) using the Sierra Leone National Grid as per the transformation given below.

<table>
<tr><th>Criteria</th><th>Commentary</th></tr>
<tr><td></td><td>
<table>
<tr><th>Survey Descriptor</th><th>Projection Information</th></tr>
<tr><td>Coordinate system</td><td>UTM Zone 28, Northern Hemisphere</td></tr>
<tr><td>Earth projection</td><td>8, 104, “m”, -15, 0, 0, 9996, 500000, 0”</td></tr>
<tr><td>Projection</td><td>Transverse Mercator (Gauss-Kruger)</td></tr>
<tr><td>Datum</td><td>World Geodetic System, 1984</td></tr>
<tr><td>Ellipsoid</td><td>WGS 84</td></tr>
<tr><td>Units</td><td>Metres</td></tr>
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</table>
During 2013 LiDAR surveys were conducted over the SRL Mining Leases producing data with a vertical resolution of +/- 0.15 m. Drill hole collar points were projected to the LiDAR surface for the purpose of resource modelling. This provides excellent spatial positioning for data points and subsequent mine planning.
</td></tr>
<tr><td>Data spacing and distribution</td><td>The drilling at Pejebu was done on a 240*60 m spacing, which has subsequently been closed down to a 120*60 m grid in areas showing significant mineralisation. Access to some areas, particularly the historically dredged areas and areas under plantation has been restricted. The drill lines have been oriented perpendicular to the long axis of the mineralisation as dictated by the direction of the mineralised paleo-channels at a spacing of 240m or 120m in locations with more favourable geology and mineralisation. Holes have been spaced at 60m along the lines. Samples are typically taken at 1.5 m intervals down the hole although smaller intervals were selected from the auger samples in line with geological variability.

Compositing of samples was used to assist in mineral assemblage determination. Heavy mineral fractions from either individual drill holes or geologically similar units were combined and subject to magnetic fractionation and XRF analysis of the magnetic and non-magnetic components. Point counting of the magnetic and non-magnetic fractions was also done during the 2016 exploration program to support the XRF analyses and elucidate trash mineralogy. The mineral assemblage, including rutile, ilmenite and zircon content is currently determined from weighted HM composites of the geologically similar materials, often from several adjacent drill holes.</td></tr>
<tr><td>Orientation of data in relation to geological structure</td><td>All drilling was done vertically, which is perpendicular to the mineralisation and geology orientation so no bias is presented.</td></tr>
<tr><td>Sample security</td><td>At the time of logging, duplicate aluminium tags are inserted into the sample bag. Bags were placed in sacks labelled with the corresponding drill hole ID. The geologist in charge prepares a sample dispatch form each day, which was presented to the laboratory with the samples from that days drilling.</td></tr>
<tr><td>Audits or reviews</td><td>No external review of the sampling techniques is known. All sampling was conducted as per internal site procedures under the supervision</td></tr>
</table>

Criteria	Commentary
	of the on-site geologists.

Section 2 Reporting of Exploration Results (Pejebu Deposit)

(Criteria listed in the preceding section also apply to this section.)

Criteria	Commentary
Mineral tenement and land tenure status	The Sierra Leone rutile deposits are covered by seven Mining Leases which are wholly owned by Iluka through its subsidiary company Iluka Investments (BVI). The Pejebu Deposit is located in tenement area ML011/72 covered under License Number 2134.

Licence Name	Licence Number	Area (km^2)	Date Issued	Expiry Date
ML011/72 – Area 1	2134	290.60	01-Jul-1984	23-Jan-2039
ML012/72 - Gambia	2134	17.50	01-Jul-1984	23-Jan-2039
ML013/72 - Jagbahun	2134	20.65	01-Jul-1984	23-Jan-2039
ML014/72 - Nyandehun	2134	5.64	01-Jul-1984	23-Jan-2039
ML015/72 - Sembehun	2134	73.63	01-Jul-1984	23-Jan-2039
ML015/72 – Sembehun Ext	2134 Ext	125.10	17-Sep-1991	23-Jan-2039
ML016/72 – Taninahun Boka	2134	12.47	01-Jul-1984	23-Jan-2039
ML017/72 - Mosavi	2134	13.32	01-Jul-1984	23-Jan-2039
Total		**558.91**		

The tenement grants the right to mine rutile, zircon, ilmenite, monazite, columbite, graphite, garnet and other titanium bearing minerals. Provision to mine is made under the Sierra Rutile Agreement (Ratification) Act of 2002, whereby payment of Surface Rent is made on all land used by the company, with rental payments distributed to the landowner, Paramount Chiefs and Native Administration.

The Mining Licenses is valid for a period of 33 years from the commencement of mining in 2006 and may be extended by a further (minimum) term of 15 years.

Exploration done by other parties	The author acknowledges the considerable effort by many teams and individuals to carry out the exploration over the SRL area since discovery in the 1960's. All this work was done under the Sierra Rutile Limited company name. In the compilation of the resource estimates, the subject of this report, information from the following qualified reports has been used and accordingly are acknowledged: ACA Howe, 2005: Sierra Rutile, Sierra Leone; Scoping Study on the Mogbwemo Wet Plant Tailings and Other Satellite Deposits. ACA Howe, Unpubl. Rpt. Author unknown. 1996. Mineral Sands Mining in Sierra Leone. Internal SRL Rep. Unpubl. Boli, C., 1982,"Regional Reconnaissance Exploration". Internal SRL Rep. Unpubl. Button, MTG., 2016. "Competent Persons Report, Mineral Resource Statement November 2016". Internal SRL Rep. Unpubl. Button, M., 2016: Pressed Pellet TiO2 Bias, Unpublished SRL file note.

Criteria	Commentary
	Mackenzie, DH Dr. 1961. Geology and Mineral Resources of Gbangbama Area. Geological Survey of Sierra Leone, Bulletin No. 3. Mining Development Associates (MDA) 2002,"Resource Estimates of the Lanti, Gangama, Gbeni, and Sembehun Heavy Mineral Sands Deposits, Sierra Leone. MDA 2002, unpubl. Mining Development Associates (MDA) 2003, "Sierra Rutile Limited, Resources, Reserves, Mine Plans, Site Observations. MDA 2003, unpubl. Ransome, I., 2010, "Resource and Reserve Estimates, Sierra Rutile Limited". Internal SRL Rep. Unpubl.
Geology	The Sierra Leone rutile mineralisation is hosted within alluvial and fluvial sedimentary facies of the Bullom Group Sediments. Mineralisation has been derived by the erosion of quartzo-feldspathic gneiss of the Precambrian Kasila group during the Tertiary and redeposited in pre-incised channel systems and alluvial fans flanking topographically elevated areas of the Kasila Group. The host sediments are typically poorly sorted sandy clay and clayey sand. Rubbly surficial laterite development is prevalent through the near surface material of the Bullom Group but does not typically hinder mining. In places more competent Blocky Laterite development is recorded.
Drill hole Information	The Pejebu dataset used for the resource estimation comprises 4834m of drilling from 771 boreholes (excluding twinned holes). As such it is impractical to provide a tabulation of all the significant intercepts. This is in part compensated for in the presentation of the Mineral Resource estimates derived from the data. The distribution of drill holes is presented in Figure 2 in the accompanying text for this announcement. A total of 3962 samples have been collected from the drilling and submitted for HM determination. All holes were drilled vertically and as such are perpendicular to the mineralisation. A length weighting was used in instances of irregular sample intervals to report mean rutile values, otherwise the mineralisation intercepts represent true mineralised thickness.
Data aggregation methods	No cutting of the mineral grades was used and is not considered appropriate due to the typically low grade variance within the Sierra Leone rutile deposits under consideration. Length weighted averaging was used to report the mean rutile grade for exploration intercepts, and a length weighting has been applied in the estimation of the Pejebu Mineral Resource. No metal equivalent values was used in the reporting of mineralisation intercepts.
Relationship between mineralisation widths and intercept lengths	The geology and geometry of the Sierra Leone rutile deposits is well understood. The drilling is all vertical which is perpendicular to the mineralisation orientation, and as a result the mineralisation intercepts represent true thickness of the mineralisation.
Diagrams	A drill hole location plan and representative cross sections are presented in the accompanying summary text of this document to assist in the understanding of the rutile mineralisation at Pejebu.
Balanced reporting	A summary of significant Exploration Results, available prior to June 30 2018, has previously been presented in a statement to the ASX titled "Sembehun Mineral Resource Increase and Pejebu Exploration Target" dated the 16th of August 2018. This announcement detailed mineralised intercepts available at the time, and while not complete, gives a balanced overview of the mineralisation intersected in drilling at

Criteria	Commentary
	Pejebu. For Pejebu, this is superseded as the estimation of the Mineral Resources considers all material with in the mineralised domains.
Other substantive exploration data	The density for different lithology types was determined using a sand replacement technique. A number of 3 foot deep test pits were excavated. About a 1 cubic foot volume of material was removed and the volume of the hole determined through sand replacement. This in conjunction with the dry weight of the material removed from the test volume was used to calculate the density of the dry in situ material. The dry density of materials encountered in the Sierra Leone rutile deposits was found to range from 1.57 t/m^3 to 1.73 t/m^3 using this methodology. While this information is recorded in historical reports, the data and location of the samples sites was destroyed at the time of civil unrest in the 1990's. Mining of the SRL rutile deposits has been ongoing for ~40 years and no significant issues have been noted with the applied density factor although the author considers the density factor is likely to be conservative. Typically the mineralisation is hosted in unconsolidated sediments which can be excavated with conventional equipment including dozer or excavators. Some induration is associated with the development of surficial laterite but this is not developed to the extent that it impedes mining. The drill logs for Pejebu refer to blocky laterite in places and this represents approximately 12%% of the reported resource. Mining and processing equipment will need to be designed to cater for this material or it may need to be discarded as waste during mining. No deleterious elements are known to be present in the Pejebu Deposit. Minor iron sulphide development is known to be present in the lower lying portions of some of the Sierra Leone rutile deposits. This is a low risk given the relatively elevated position of the Pejebu Deposit and sulphides can be removed using flotation circuit at the Mogbwemo MSP and re-deposited below the water to prevent oxidation and acidification.
Further work	Future exploration on the Pejebu Deposit will focus on proving up the current mineralisation in a timely manner to support ongoing mining operations. Further exploration will also be carried out to close-off mineralisation which is open in some places, particularly along the western margin of the modelled area.

Section 3 Estimation and Reporting of Mineral Resources (Pejebu Deposit)

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

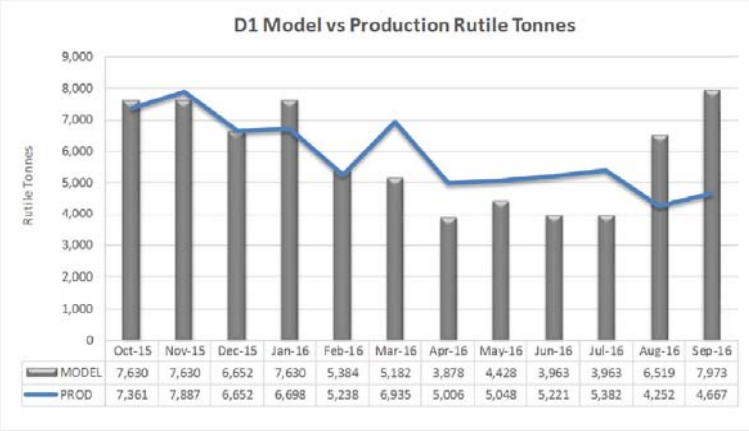
Criteria	Commentary
Database integrity	The data undergoes several levels of verification prior to modelling. This includes the interrogation of data for outliers such as: • non-resource units with lab numbers; • sample prep vs XRF submissions; • collar duplication; and • missing assays. Other forms of interrogation include analysis of mineral ratios such as: • the portion of rutile>ilmenite>zircon is seldom violated; • the VHM % (rutile + ilmenite + zircon) is < than the THM % • size fractions add to 100% where expected; • the sum of the magnetic and non-magnetic HM fractions corroborates the reported HM; and • the percentage of mags + non-mags add up to 100%. A spatial review of the data is carried out by viewing in plan and cross sections to ensure the drill holes are in valid locations and the assay values corroborate the lithological distribution. Initial recording and loading of data into Iluka's Geology Database is dominated by digital recording and electronic transfer of information to minimise potential errors and corruption.
Site visits	A site visit was undertaken by Brett Gibson for two days during May 2016. During the site visit the geological structure of the Sierra Leone rutile deposits, the exploration activities and ongoing mining operations were reviewed. Prior to this, the Competent Person (Mark Button) visited the site 2 or 3 times per year and compiled resource risk reviews and site visit reports. Numerous other site visits have been undertaken by other Competent Persons since the commencement of mining operations in the 1967.
Geological interpretation	The geology of the style of mineralisation under consideration is well understood from supporting exploration data and exposure to mining over the past 50 years. All drilling was logged by qualified geologists or trained geological technicians at the time of drilling and is adequate for supporting the resource estimate and classification applied. All the data supporting the Pejebu resource estimate was derived from recent exploration programs. The data is considered to be comprehensive. At the time of modelling and resource reporting a number of composite samples were yet to be analysed. These were minimal and will not have a significant impact on the resource estimate. Given the current detail afforded by the geological dataset and mining over the past 50 years no other geological interpretation has been considered for the Sierra Leone rutile deposits. The geological data from drill hole logs was used to create a basement wireframe surface, which in conjunction with the topographic surface, was used to constrain the mineralisation to the intersected host alluvial and fluvial sediments. Statistical analysis of the deposit was undertaken to determine if sub-domaining was required. No sub-domaining was warranted for the Pejebu Deposit with the exception of

Criteria	Commentary
	defining the basement surface. The sediments hosting the mineralisation appear to become more “mature” with distance from the source topographic highs. As a rule the rutile content in the sediments decreases with distance from the source. Near the source the host sediments tend to be present as structurally controlled incised valley fill. As distance from the source increases and the basement gradient decreases, the deposits tend to present as alluvial fans or infilling on localised “topographic depressions”.
Dimensions	The Mineral Resources under consideration, represent surficial alluvial accumulations and have a wide variation in physical dimensions. The Pejebu Deposit is mineralised from surface and varies from a few metres to over 20m in thickness. The deposit, prior to being dredged, extended over a strike length of 5km and upto 2km in width. Towards the eastern extent of the deposit, a separate mineralised channel trending north-north-west joins up with the primary Pejebu Deposit. This “arm” of mineralisation, referred to as the Pejebu North Deposit, extends for about 2km and is 200 to 500 m wide.
Estimation and modelling techniques	The resource modelling and estimation for the Pejebu Deposit was done using Datamine Software. The three-dimensional solid formed between the topographic and basement surfaces was used to constrain the resource estimate. The modelling was typically limited to the extent of the drilling. The software and the modelling technique used are considered to be industry standard and appropriate for modelling and supporting the resource estimate at Pejebu. The rutile mineralisation is typical of the Sierra Leone Rutile deposits and exhibits a low grade variability so no grade cutting was required. The model block dimension adopted is 30*30*1.5m (X*Y*Z) with an allowance for sub-celling down to 6*6*0.15m cell dimensions to provide volume definition. The parent cell dimension is about half to a quarter of the modal 120 x 60m drill spacing for Pejebu.. The grade estimation was done using Inverse Distance squared (ID2) for all analytes with the exception of the lithology code and density which have been interpolated using Nearest Neighbour (NN). An elliptical search volume was used for grade variables of 100*150*3m (in the rotated X*Y*Z direction) with the search ellipse axis orientated along the geological strike. The orientation of the search was dynamically modified using functionality associated with the Datamine software to cater for changes in the dip and trend of the geology and mineralisation. The search volume was increased by factors of 2 and 3 to inform model cells not assigned values in the primary search. No assumption was made in relation to the recovery of by-products, although ilmenite and zircon are present in the mineral assemblage and are included in the resource model. No assumptions have been made in relation to modelling of selective mining units in the estimation of the Pejebu resource. No assumptions were made during the resource modelling in relation to correlation of grade variables. A simple model controlled by a basement and the topographic surface was created to constrain the estimated block grades. A nominal 3 m thick basement layer was added to support the inclusion of dilution for mine optimisation studies. No cutting of grades has been done as it is not considered applicable in deposits of this nature with low grade variability. The resource models were validated by visually comparing the interpolated grades to the drill hole grades and comparison of model and drill data statistics (basic statistics and histogram comparison of drill and model values).
Moisture	All tonnages are estimated using dry in-situ density factors.

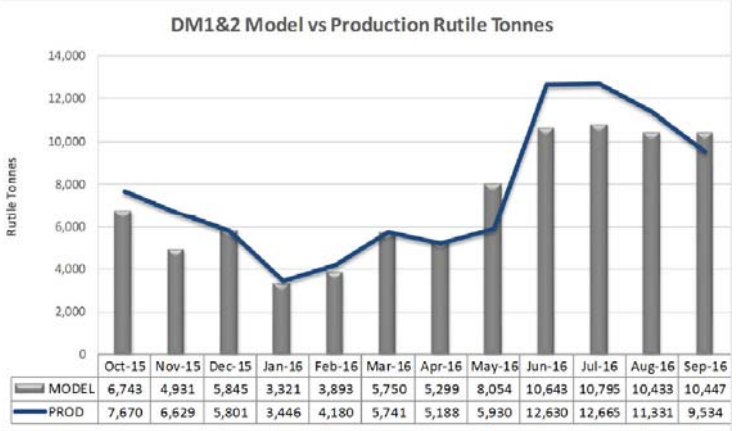
Criteria	Commentary
Cut-off parameters	The Mineral Resources were reported using a 0.25% rutile cut-off grade in conjunction with delimiting resource outlines and a minimum grade*thickness value of 2 (i.e. material grading 0.25% rutile must have a thickness of 4m to meet the reporting criteria). This ensures thin low grade mineralisation that is unlikely to ever be economic is excluded from the Mineral Resource. The grade is slightly lower than would be considered economic under the current mineral pricing conditions but allows for potential price increases and for consideration of more cost effective mining methods and economic efficiencies from increased mine through-put.
Mining factors or assumptions	Historically the Sierra Leone rutile deposits were almost exclusively dredge mined. From 2016 only about 30% of the rutile production was from dredge mining with 70% attributable to dry mining which commenced during 2014. The Lanti Dredge operation is scheduled to be closed in Q1 2019 after which all production will be by open pit dry mining methods. Dry mining is considered to be a higher cost method but affords improved selectivity and lower capital set up costs. It also allows access to mineralisation in deposits not morphologically favourable for dredge mining The geomorphological traits of the Pejebu Deposit favour open pit dry mining methods, being topographically elevated and having little or no overlaying waste. In reporting the Mineral Resource, an appropriate cut-off grade in combination with a minimum thickness factor was applied to exclude material that is unlikely to ever be economic.
Metallurgical factors or assumptions	Mining of the Sierra Leone rutile deposits has been carried out semi-continuously for nearly 50 years. The metallurgical amenity of the deposits is reasonably well understood from this historical mining and processing. As a result the metallurgical recoveries are factored on the basis of historical recovery trends. Many modifications to the processing method and equipment have been made to optimise the recovery of the rutile and to some extent ilmenite and zircon, which were discarded historically.
Environmental factors or assumptions	Current mining practice is to return all waste materials to the mine void as soon as reasonably possible after mining. After mining the surface is re-contoured to as reasonably close to original as possible and revegetation or some other acceptable land use is established.
Bulk density	The density for different lithology types was determined using a sand replacement technique. A number of 3 foot deep test pits were excavated. About a 1 cubic foot volume of material was removed and the volume of the hole determined through sand replacement. This in conjunction with the dry weight of the material removed from the test volume was used to calculate the density of the dry insitu material. The dry density of materials encountered in the Sierra Leone rutile deposits was found to range from 1.57 t/m^3 to 1.73 t/m^3 depending on the sediment type. The original source data supporting the density test work was destroyed during the rebel insurgency in 1995. Test work is being undertaken at the current minesites on geologically similar host material to ratify the historically accepted dry material density factors. Current mining corroborates the historical density. The sand replacement method adequately takes into consideration the potential for void space between sediment grains and was carried out on a number of different materials encountered in the Sierra Leone rutile deposits. The density value is assigned in the drill data file in line with the logged lithology and then interpolated into the model using a Nearest Neighbour algorithm.
Classification	The mineral resource estimates have been classified and reported in accordance with the guidelines of the JORC Code (2012 ed.). The resource category applied is based on a combination of: • data provenance and availability; • drillhole spacing and sample density;

Criteria	Commentary
	• confidence in the analytical data; • established geological continuity which is corroborated by a long history of mining; • the confidence in the rutile and mineralogical grade continuity; and • information from historical plans recording the spatial distribution of rutile mineralisation. The drill spacing in conjunction with rutile kriging variance was used to support the application of an appropriate resource classification. Typically a drill grid spacing of 60m or less supports a Measured Resource classification, while drilling from 60 to 240m spacing typically supports an Indicated Resource classification. Mineral Resources defined by drilling spaced at greater than ~240m are typically awarded an Inferred Resource classification. Note that other factors were also considered when allocating a JORC Code Resource Classification. The ranges from variogram analysis were also used to support the resource classification and corroborate mineral continuity. The current mineral resource estimate for the Pejebu Deposit is considered to be a fair representation of the mineralisation. Consideration of all factors available has been taken into consideration and where appropriate conservatism was adopted (e.g. not applying the rutile adjustment factor, isolating material of uncertain geological affinity and using boundaries and geomorphology to restrict the extent of reported resource distribution). The result appropriately reflects the view of the Competent Person.
Audits or reviews	Mining consultants Optiro Pty Ltd (Optiro) reviewed the resource estimation and reporting of the Pejebu Mineral Resource. Minor adjustments to the resource category assignment were adopted. Optiro also recommend additional QA/QC data for future exploration programs. Blank standards have been made up and will be incorporated into all exploration programs as soon as they are available on site.
Discussion of relative accuracy/ confidence	It is the view of the Competent Person(s) that the frequency and accuracy of the data and the process in which the Mineral Resources were estimated and reported are appropriate for the style of mineralisation under consideration. The relative accuracy of the estimates is reflected in the reporting of the Mineral Resources and the Resource Category assigned as per the guidelines set out in the JORC Code (2012 ed.). The statement refers to global estimates of tonnage and grade. Portions of the Pejebu Deposit were dredge mined around 1989 to 1991 but virtually all records were destroyed during civil unrest, so no reconciliation data is available for Pejebu. Where mining of similar rutile deposits has been undertaken at the Sierra Leone Rutile Project, the production figures agree to within a few percent of the estimated rutile tonnages over the longer term although there is increased variability over shorter (monthly) reporting periods (see mine reconciliation figures presented below).

Criteria	Commentary



	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16
MODEL	7,630	7,630	6,652	7,630	5,384	5,182	3,878	4,428	3,963	3,963	6,519	7,973
PROD	7,361	7,887	6,652	6,698	5,238	6,935	5,006	5,048	5,221	5,382	4,252	4,667



	Oct-15	Nov-15	Dec-15	Jan-16	Feb-16	Mar-16	Apr-16	May-16	Jun-16	Jul-16	Aug-16	Sep-16
MODEL	6,743	4,931	5,845	3,321	3,893	5,750	5,299	8,054	10,643	10,795	10,433	10,447
PROD	7,670	6,629	5,801	3,446	4,180	5,741	5,188	5,930	12,630	12,665	11,331	9,534