Australian Securities Exchange Notice

ILUKA

15 August 2018 ASX: ILU

SEMBEHUN MINERAL RESOURCE INCREASE AND PEJEBU EXPLORATION TARGET, SIERRA RUTILE

Iluka Resources Limited (**Iluka**) is pleased to announce an increase to rutile resources at the Sembehun Project (planned commissioning 2021) and the identification of the Pejebu Exploration Target based on Exploration Results, both with potential to extend the life of current mining operations at its wholly owned Sierra Rutile Limited (SRL) Operations.

- Mineral Resources for the Sembehun Group Deposits including Benduma, Dodo, Gbap, Kamatipa, Kibi and Komende increase by 0.62Mt of rutile, as a result of recent exploration and updated resource modelling, from 4.4Mt of rutile (427Mt at 1.0% in situ rutile) to 5.0Mt of rutile (463Mt at 1.1% in situ rutile).

- Pejebu Exploration Target, adjacent to current mining operation, comprising approximately 15Mt - 20Mt of material grading 0.9 to 1.1% in situ rutile identified based on historical documentation and assay results from recent exploration drilling.

Note, the Pejebu Exploration Target is based on a number of assumptions and limitations with the potential grade and quantity being conceptual in nature. To date, there has been insufficient exploration to estimate a Mineral Resource Estimate in accordance with the JORC Code (2012 Edition) and it is uncertain if future exploration will result in the estimation of a Mineral Resource.

Exploration including infill and extension drilling to improve the confidence of the Sembehun Mineral Resources and further test the Pejebu Exploration Target is ongoing.

Investment market enquiries:
Adele Stratton
General Manager Finance and Investor Relations
Phone: + 61 (0) 8 9360 4631
Mobile: +61 (0) 415 999 005
Email: adele.stratton@iluka.com

Media enquiries:
Luke Woodgate
Manager, Corporate Affairs
Phone: + 61 (0) 8 9360 4785
Mobile: +61 (0) 477 749 942
Email: luke.woodgate@iluka.com

Overview

As at 31 December 2017, the rutile Mineral Resources for Iluka's wholly owned Sierra Leone Deposits comprised 7.3Mt of rutile hosted in 701Mt of Measured, Indicated and Inferred Mineral Resources grading 1.0% rutile (refer Iluka 2017 Annual Report, released 27 February 2018).

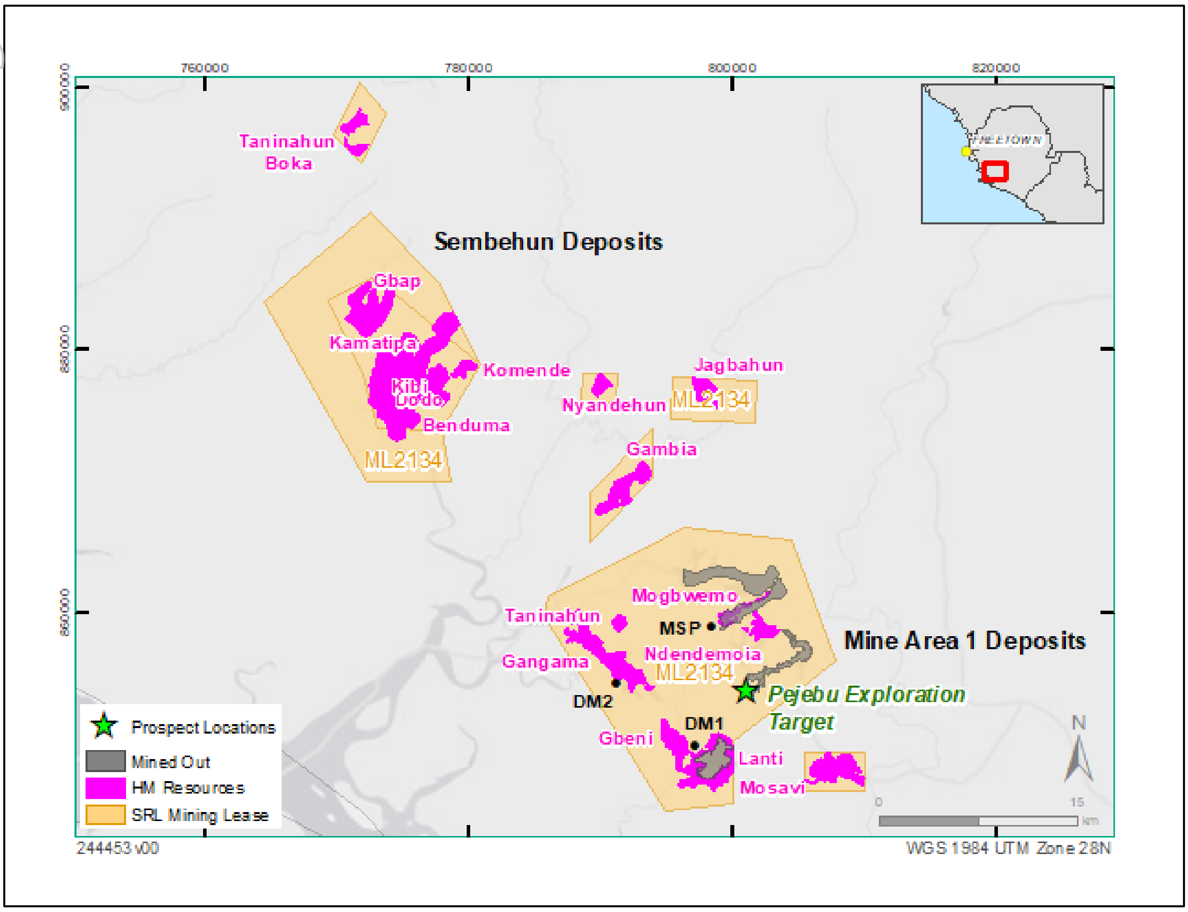

Figure 1: Sierra Leone summary plan showing the location of the Sembehun Group Deposits and Pejebu Exploration Target.

Sembehun Group Deposits Mineral Resource Increase

The updated Mineral Resource Estimate for the Sembehun Group Deposits, broken down by Resource Category is presented in Table 1 below and background information is presented in **Appendix 1** (JORC Code (2012 Edition)[1] Table 1).

This update represents a net increase of 0.62Mt of contained rutile compared to that reported at 31 December 2017 (ASX release, 20 February 2017, "Updated Mineral Resource & Ore Reserve Statement"). The Indicated Mineral Resource rutile tonnes have increased 5% (180Kt of rutile) and the Inferred Mineral Resource rutile tonnes have increased 65% (440Kt of rutile).

This is a result of:

- revised geological interpretation extending Inferred mineral resources in areas of favourable geomorphology adjacent to Indicated mineralisation;

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

- inclusion of infill drilling on the Kamatipa Deposit and exploratory drilling over the Gbap Deposit; and

detailed study and correction of historical drill collar locations improving geological coherence and continuity of mineralisation.

Table 1: JORC Code (2012 Edition) Mineral Resource Summary for the Sembehun Group Deposits (>0.25% rutile cut-off grade) as at 30 June2018

Deposit	Mineral Resource Category[1]	Material Tonnes	In Situ Rutile[3]	In Situ Ilmenite[3]	In Situ Zircon[3]	Insitu Rutile Tonnes	Insitu Ilmenite Tonnes	Insitu Zircon Tonnes
		(Mt)[2]	(%)	(%)[5]	(%)[5]	(Mt)	(Mt)	(Mt)
Benduma	Indicated	157	1.0	0.6	0.1	1.6	1.0	0.1
Benduma	Inferred	34	1.0	0.6	0.1	0.3	0.2	0.0
Benduma	**TOTAL**	**191**	**1.0**	**0.6**	**0.1**	**2.0**	**1.2**	**0.1**
Dodo	Indicated	70	1.3	0.7	0.1	0.9	0.6	0.1
Dodo	Inferred	17	1.3	0.7	0.1	0.2	0.2	0.0
Dodo	**TOTAL**	**87**	**1.3**	**0.7**	**0.1**	**1.1**	**0.8**	**0.1**
Gbap	Indicated	17	0.8	0.4	0.0	0.1	0.1	0.0
Gbap	Inferred	45	1.0	0.4	0.1	0.4	0.0	0.0
Gbap	**TOTAL**	**62**	**1.1**	**0.4**	**0.1**	**0.5**	**0.1**	**0.0**
Kamatipa	Indicated	55	1.2	0.7	0.1	0.7	0.5	0.1
Kamatipa	Inferred	6	0.8	1.1	0.1	0.0	0.1	0.0
Kamatipa	**TOTAL**	**61**	**1.2**	**0.8**	**0.1**	**0.7**	**0.6**	**0.1**
Kibi	Indicated	43	1.1	0.7	0.1	0.5	0.3	0.0
Kibi	Inferred	12	1.1	0.6	0.1	0.1	0.1	0.0
Kibi	**TOTAL**	**55**	**1.1**	**0.7**	**0.1**	**0.6**	**0.4**	**0.0**
Komende	Indicated	3	0.9	1.0	0.1	0.1	0.1	0.0
Komende	Inferred	1	1.0	0.8	0.1	0.0	0.0	0.0
Komende	**TOTAL**	**4**	**0.9**	**1.0**	**0.1**	**0.1**	**0.1**	**0.0**
Sembehun Group	Indicated	347	1.1	0.7	0.1	3.9	2.5	0.3
Sembehun Group	Inferred	116	1.0	0.6	0.1	1.1	0.7	0.1
Sembehun Group	**TOTAL**	**463**	**1.1**	**0.6**	**0.1**	**5.0**	**3.2**	**0.4**

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.
(5) The ilmenite and zircon grades are included for tabulation purposes under the Indicated and Inferred Resource category. The confidence in the estimate of the grade and tonnage of the ilmenite and zircon are however only to be considered as **Inferred** due to material factors influencing the confidence in the estimates for ilmenite and zircon.

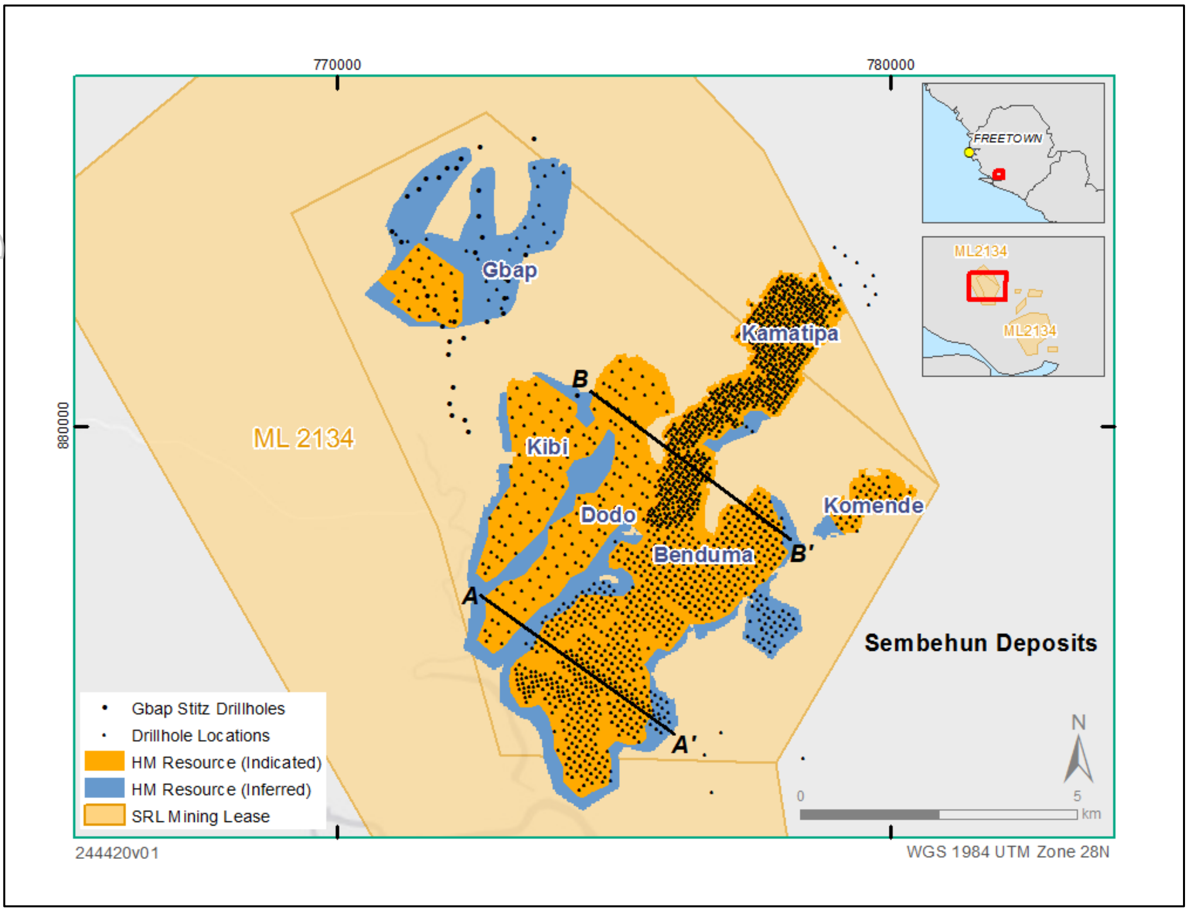

Figure 2: Sembehun drill collar locations and JORC category distribution.

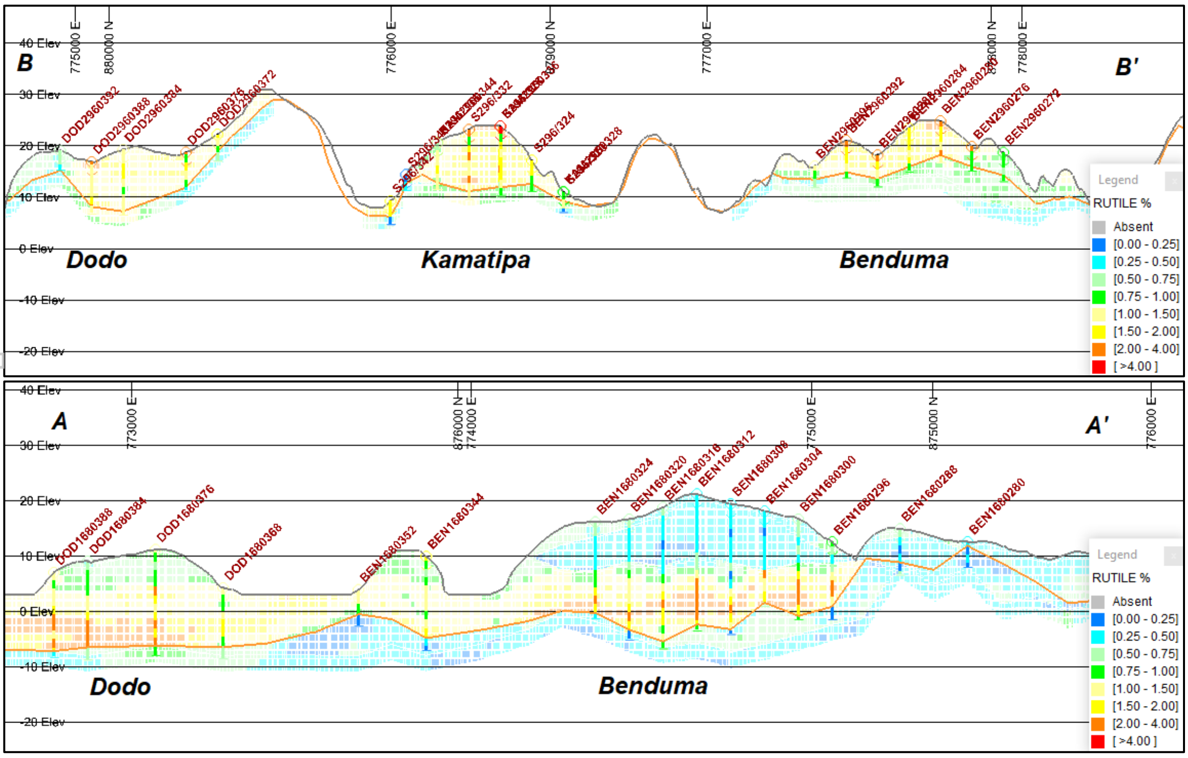

Figure3: Sembehun Block model and drill sections (looking north east x20 VE).

Pejebu Exploration Target

The Pejebu Exploration Target comprises approximately 15 to 20 million tonnes of material grading between 0.9% and 1.1% rutile containing between 135,000 and 220,000 tonnes of rutile. It is located 7km north-east of the Dry Mining 1 processing plant and 5km south of the Mogbwemo Mineral Separation Plant (Figure 4).

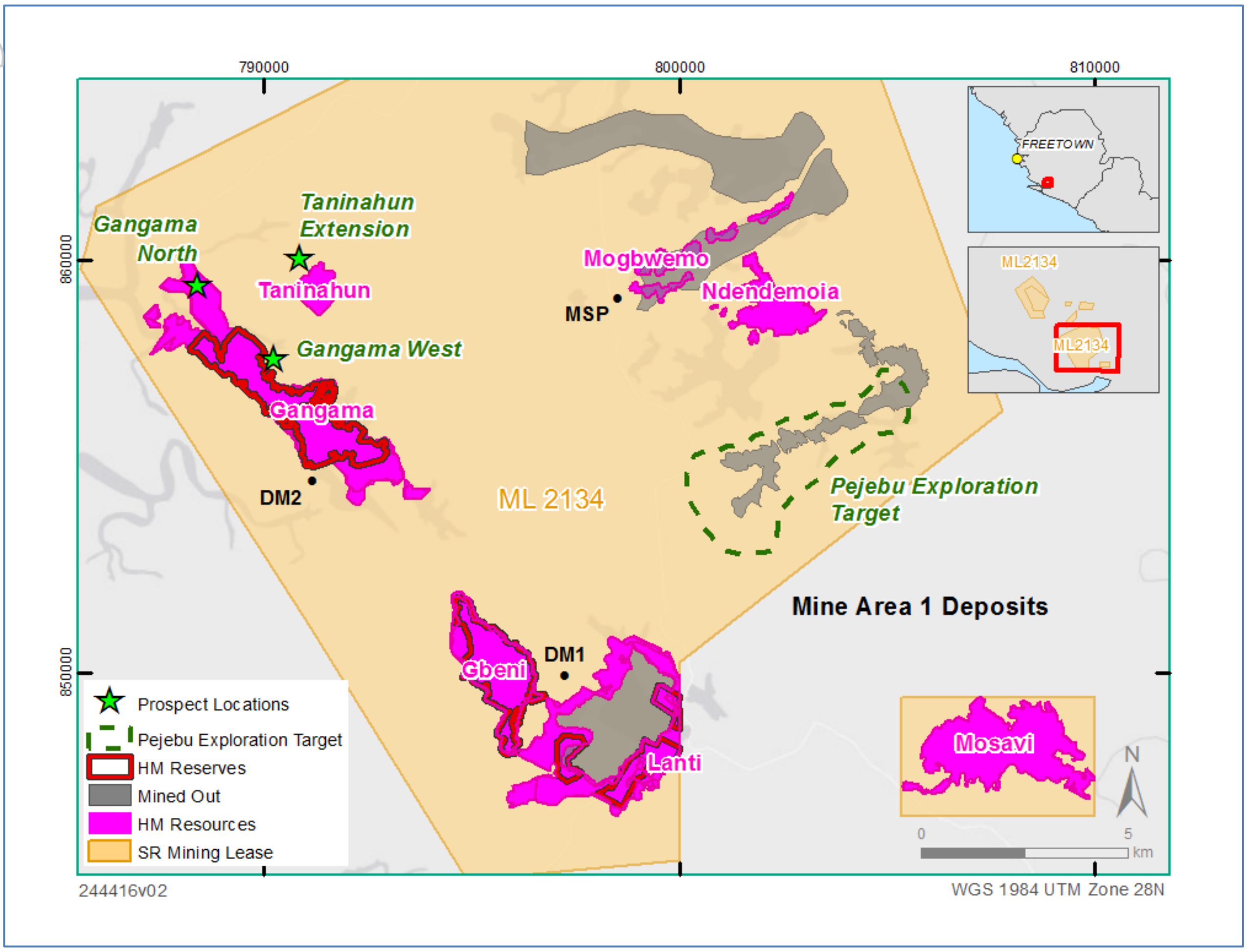

Figure 4: Location of the Pejebu Exploration Target on ML 2134, Sierra Leone.
(MSP – Mineral Separation Plant, DM – Dry Mining Processing Plant)

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 done at the nearby Gbeni and Gangama operations.

In 2016, SRL completed 58 holes for 320m of drilling on the Pejebu Exploration Target. In 2018, a dedicated exploration program commenced on ML 2134 (Area 1) targeting material to extend mine life at SRL operations and potentially delay migration of DM1 and DM2 to the Sembehun Group Deposits. The Pejebu Exploration Target is a key part of this effort, along with resource development drilling potentially upgrading Mineral Resources at various Prospects (Figure 4).

To 30 June 2018, 4,860.2m in 775 holes were drilled at the Pejebu Exploration Target. HM float/sink analysis was complete on 3,427 samples and rutile grades determined for 1,096 records via compositing and assemblage determination.

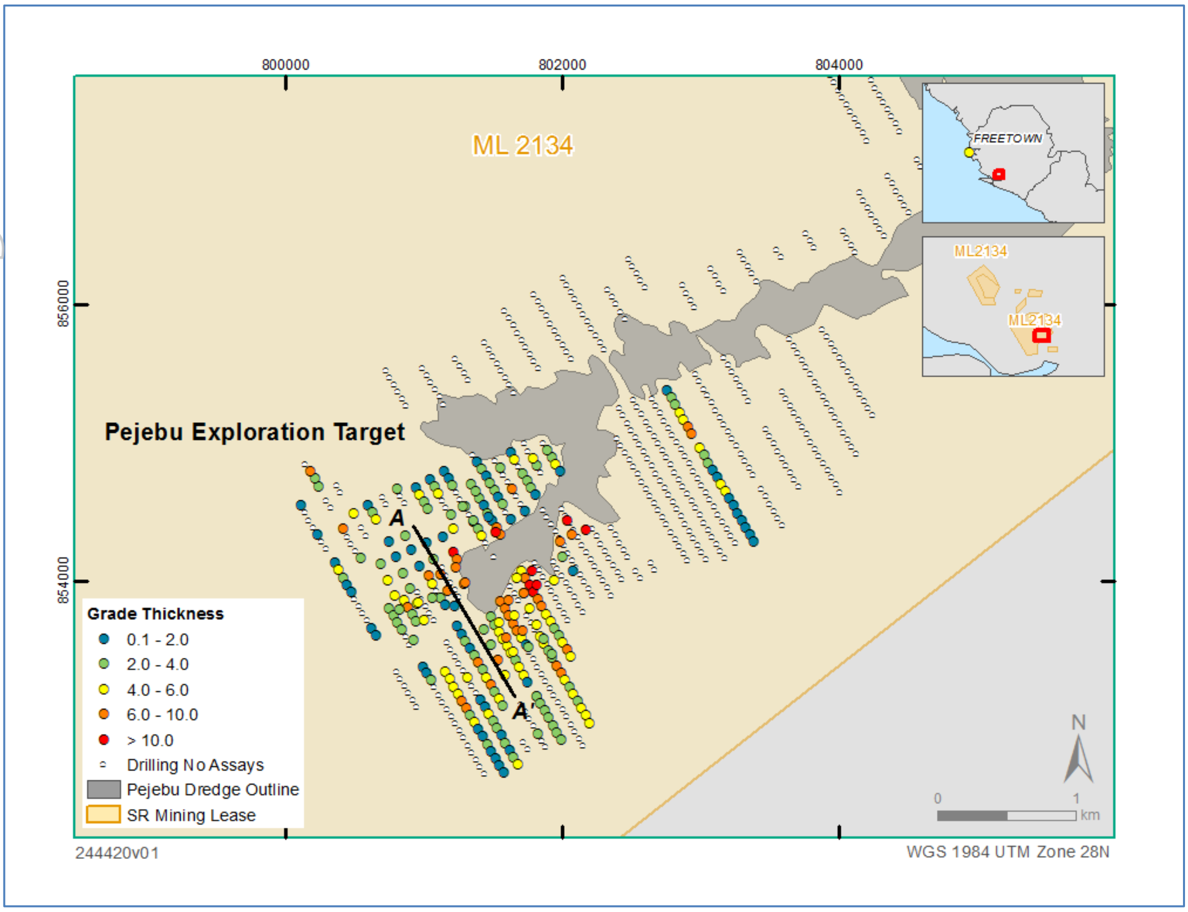

Figure 5: Pejebu Exploration Target drillhole location and assayed rutile grade x thickness plan.

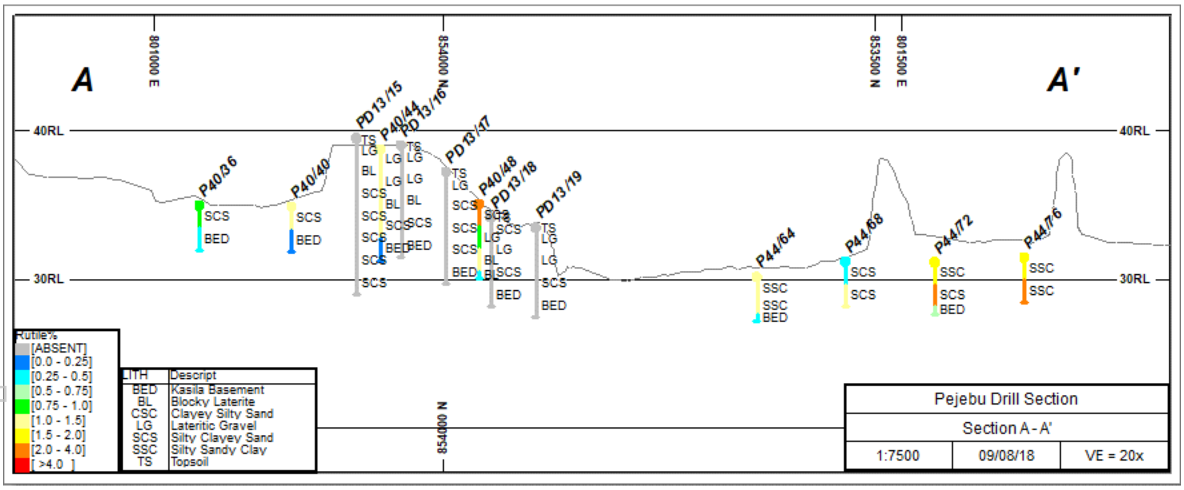

Figure 6: Typical cross section through the Pejebu Exploration Target showing rutile mineralisation.

A summary table of significant rutile intercepts received from exploration drilling at the Pejebu Exploration Target to 30 June 2018 is included as **Appendix 2**.

Summary of Resource Estimate and Exploration Results Reporting Criteria

As per ASX Listing Rule 5.8 and the 2012 JORC reporting guidelines, a summary of the material information used to estimate the Sembehun Mineral Resource estimate and Pejebu Exploration Results is detailed below (for more detail please refer to Table 1, Sections 1 to 3 included as **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.

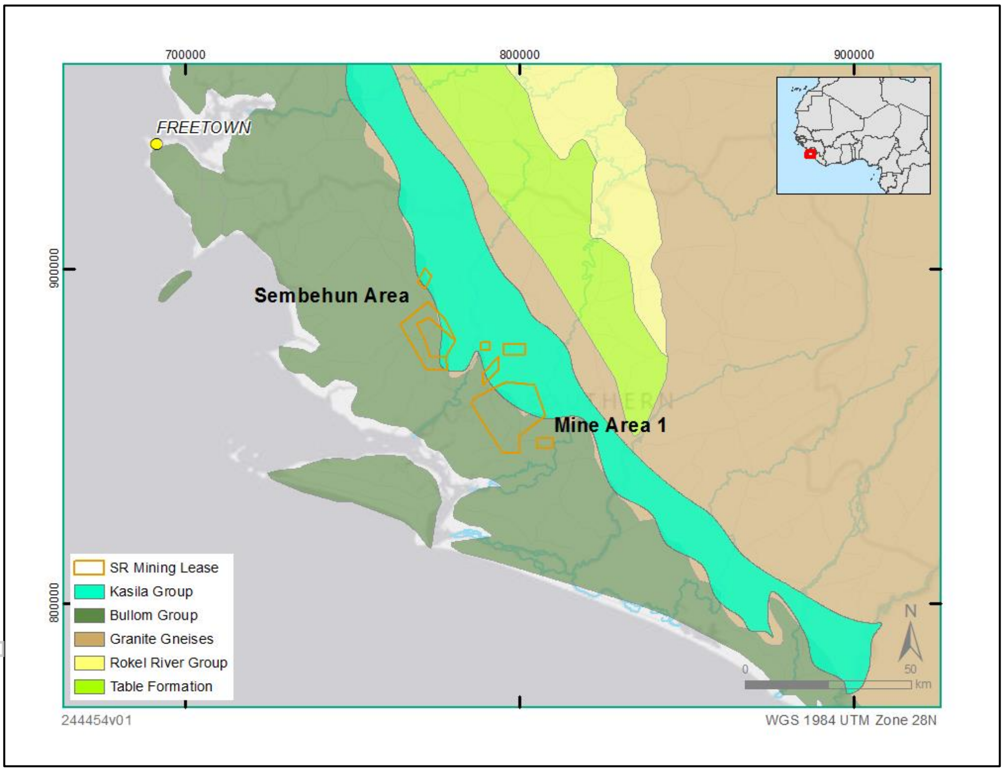

Figure 7: Regional Geology Plan for Sierra Leone.

Data Storage

Data supporting the Mineral Resource estimate for the Sembehun Deposits 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 or were destroyed during civil unrest, the data was imported directly from SRL's "master" spreadsheets.

Drill technique and hole spacing - Sembehun

In the 1970's the area was largely tested by "Stitz" drilling on cut lines and paths. Subsequent exploration has predominantly used Hollow-flight Auger (HA) and Air Core (AC) drilling on surveyed gridlines.

Table 2 presents a summary of the drilling carried out on each sub-area of the Sembehun Group Deposits.

Table 2: Drill summary supporting the Sembehun Group Mineral Resource estimates.

Year	Holes	Metres	Assays (rutile)	Comment
1970's	39	159	53	Stitz drilling, only at Gbap
1980's	815	8010.6	5937	Hollow flight auger drilling - Sembehun Deposits
2012	526	7462.5	1087	RC drilling Benduma, large number missing assays
2015	357	2362	1575	Auger infill Kamatipa
2016	449	3436.64	2379	35% auger, 65% RC drill m
2017	173	1198.25	824	Infill Kamatipa, Gbap. 20% auger, 77% RC, 3% Tripod
Total	**2359**	**22628.99**	**11,955**	

Drilling is completed on a regularised grid with closer spaced drilling used to support an increased confidence in Mineral Resource estimates, as per Figure 3. Prior to 1995, drilling was completed at a 240m (800ft) to 488m (1,600ft) line spacing. Subsequent infill drilling over some of the deposits was on a 122m (400ft) spacing, often with an additional drill hole in the centre of each 122m grid block. The post-2011 drilling campaigns generally start at a 240m by 240m drill spacing, with progressive infill to 120m by 120m depending on mineralisation potential. In areas of higher geological variability such as palaeochannels, drilling is usually tightened to a 60m by 60m spacing.

Collars for the 1980's series drill holes were shifted the equivalent of 122.4m towards 305.56^{O} to rectify an apparent grid transformation error, relative to the modern exploration grid utilised. The coordinate error was identified due to poor correlation of the 1980's holes and new drill hole sourced geology and grades. Substantiation of the shift is further supported by the close correlation of original survey RL's and modern LiDAR elevation values.

Drill technique and hole spacing – Pejebu Exploration Target area

Drilling completed at the Pejebu Exploration Target area has utilised Hollow Flight Auger (4,712.8m), Air Core (82.5m) and Tripod (65.3m) techniques. It is situated on 120m or 240m spaced drill lines with a hole spacing of 60m to 120m. This hole spacing is adopted with a view to support Mineral Resource estimation, pending receipt of suitable exploration results.

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 0.5m 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 is collected in pre-labelled calico bags per interval. 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. Typically, drill samples are oven dried, weighed and then soaked in Tetra-Sodium Pyrophosphate (TSPP) solution. Samples are then dried, attritioned and wet screened to remove slimes (-63µm) and oversize (+1.0mm) material. Until 2018, the +63µm to -1.0mm ("sand") fraction was riffle split to produce a sub-sample of between 30 and 50 grams which was then subject to magnetic separation. The non-magnetic sand fraction was analysed by XRF and the rutile content calculated from the TiO_2 assay result.

Between 2011 and 2017, TiO_2 analysis supporting determination of the rutile content was from XRF analysis of pressed pellets. Analysis of duplicate samples using alternative techniques, such as wet chemical analysis or XRF of fusion beads from other SRL rutile deposits, has shown a significant low bias for TiO_2 resulting in an under-call of rutile by about 10% to 15%. This method of analysis was used during exploration of some of the Kamatipa and Gbap Deposits. No correction factor is applied to compensate for the expected low rutile bias as TiO_2 analysis of duplicate samples from Kamatipa and Gbap is yet to be completed. It is expected duplicate analyses will confirm a slight under-call in the rutile resource estimates for the Kamatipa and Gbap Deposits.

Composite Assemblage Determination

A second sub-sample split from each retained sand fraction is subjected to float sink analysis to obtain the Heavy Mineral (HM) from each sample. Composite samples are collated from samples of individual drill holes or of material with similar geological and grade characteristics. The HM composite is subject to sizing analysis and magnetic separation. The magnetic and non-magnetic fractions then undergo XRF analysis and 500 point grain count to support the estimated proportion of rutile, ilmenite, zircon and various trash minerals as well as to determine the intensity of iron oxide and clay coatings. The ratios of rutile to ilmenite and rutile to zircon are used to indicate in-situ content of ilmenite and zircon in relation to the analytically determined rutile content. While the analysis of the rutile content is deemed to be comprehensive, the method and integrity of determining the associated ilmenite and zircon content is less rigorous. The confidence of the ilmenite and zircon content is lower, as reflected in the associated JORC classification assigned to rutile, ilmenite and zircon for the Sembehun Group Deposits.

From February 2018, the rutile content has been determined on weighted composites of HM from float sink analysis. HM samples from lithological units with similar geological and grade characteristics are composited and analysed by XRF of fused beads. The key mineral assemblage components including rutile, ilmenite, zircon and monazite along with magnetic others and non-magnetic others are calculated using stoichiometric assignment of key chemical analytes. The mineral assemblage is then assigned to the drill data file based on its composite identifier. This method supports the rutile content and mineral assemblage for the Pejebu Exploration Results.

Estimation methodology

All sub-areas of the Sembehun Group Deposits were modelled as a single entity to ensure geological continuity and spatial relativity. Geological interpretation, wireframing, 3D block model creation and grade interpolation was carried out using Datamine Studio RM mining software. The volume model was constructed by flagging model cells and drill holes using a series of open wireframe surfaces. Surfaces included topography, an upper alluvial zone, a lower transitional zone of very clayey Bullom Group Sediment or very weathered Kasila Group and a definitive basement zone of variably weathered Kasila Group. A closed surface was also used to isolate a high sand content zone with correspondingly low rutile content.

A uniform parent cell dimension of 30 X 30 X 1.5 m was adopted over the modelled area. While the parent cell dimensions are smaller than what might be typically adopted for the more widely spaced drilling at Kibi, Dodo and Gbap, this does not impact the overall mineral resource estimate.

Grade for all analytes was interpolated using the Inverse Distance Squared method, with the exception of Lithology and density, interpolated using a Nearest Neighbour algorithm. A primary search ellipse dimension of 150 x 250 x 3m was used with a maximum sample number of 10. In addition, Datamines' Dynamic

Anisotropy functionality was used, allowing alignment of the search orientation with geological and grade trends to improve localised grade estimation. Increased search volumes, by factors of 2 and 3 were used for successive search runs when the interpolation failed to find sufficient data to satisfy the requirements of the primary search volume.

Cut-off Grade

The mineral resources were reported using a 0.25% rutile cut-off grade in conjunction with delimiting mineral resource outlines. The grade is slightly lower than that considered economic under current mineral pricing conditions but allows for:

- potential mineral price increases;
- the recovery of ilmenite and zircon credits;
- consideration of more cost effective mining methods (e.g. dredging); and
- efficiencies gained from increased mine through put.

Resource Classification Assignment - Sembehun

JORC Code (2012 Edition) Mineral Resource categories were assigned after consideration of:

- rutile grade continuity supported by variogram analysis;
- drill density and distribution;
- review of the search volume factor employed to assign a grade;
- continuity of the geological framework; and
- confidence in the dataset used.

Variograms suggest that ranges in excess of 500m along strike (040^{O}) and approximately 300m across strike (130^{O}) are prevalent. If a range corresponding to two thirds of the sill is adopted as a guide for defining a Measured Mineral Resource, then the drill spacing needs to be within 80 x 80m. As a result, an Indicated Mineral Resource estimate is assigned to most of the Sembehun mineralisation. Areas defined by widely spaced drilling at Gbap, historical Stitz drilling in the north portion of Gbap and potential extensions of mineralisation left open by drilling, but with a favourable geomorphology, were classified as Inferred under JORC Code guidelines.

A Measured Mineral Resource classification could be considered for the areas of Kamatipa that are drilled at a close spacing, but this has been upheld pending clarification of the extent of the low TiO2 bias from duplicate analyses.

Mining and Metallurgical Methods and Parameters

The Sierra Leone Rutile deposits have been mined for over 50 years. The Sembehun rutile deposits are geologically identical to those being mined in the Gbangbama region, 30 km to the south-east e.g. Gangama and Lanti. Their metallurgy and mineral separation characteristics are well understood. There is no indication that the Sembehun deposits will be any different. A PFS study is underway in preparation for expansion of the mining operations to Sembehun with commissioning planned for 2021.

Competent Persons Statement

The information in this report that relates to Exploration Results, Exploration Targets and 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 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 (Sembehun Group Deposits and Pejebu Exploration Target)

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

Criteria	Commentary
Sampling techniques	The Sierra Leone rutile deposits have been explored by a number of drilling methods and supporting equipment including Hollow Flight Auger (HA), Reverse Circulation Aircore (AC), Stitz Drill, Bangka Drill and Aluminum Derrick Tripod Rig. A total of 22,629 m of drilling in 2359 holes was completed on the Sembehun deposits. A total of 4860.6 m of drilling was completed in 775 drill holes on the Pejebu Exploration Target to the 30th of June 2018. The samples are geologically logged on site and a nominal 2kg sample obtained by splitting of core from the HA, Stitz, Tripod and Banka drilling, or through the use of a rotary slitter in the case of the AC 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 area adopted to 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 determination of the Sierra Rutile mineral resources. Samples have been analysed by industry typical methods for heavy minerals at the on-site laboratory attached to the Mogbwemo Mineral Separation Plant. The same basic determination method with minor variations was 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. Prior to disruption in the 1990's the method for sample analysis entailed oven drying, weighing, attrition and desliming at 63um. Oversize material was screened off at +1mm, which at times was also screened at +4.8mm and +9.5mm to provide resolution on the coarse oversize material. A split of the 63um – 1mm sand fraction for each sample was then subject to magnetic fractionation and the weight of mag and non-mags recorded. The non-magnetic fraction was then pulverised and a fused bead analysed by MRS 400 XRF for TiO_2, Cr_2O_3, V_2O_5, Fe_2O_3 and ZrO_2. A Leco analysis was also carried out on a sub-sample to determine Sulphur content. Compositing of the sand fraction for samples from each drill hole was done which was then subject to Longset screening. Also, a subsample of the sand was subject to float sink determination with the composite HM subject to magnetic separation. The magnetic and non-magnetic splits were subjected to point count analysis and a further sub-sample of the non-magnetic HM was then pulverised, pelletised and analysed by XRF analysis. Since the recommencement of operations in 2006 to early 2018, the following process has been in effect. The samples are oven dried and weighed. The sample is then soaked for 12 hours and then wet screened to remove the slimes (-63µm) and oversize at +1.0mm and +9.5mm. The +63µm - 1.0mm fraction is riffle split to produce one sample of about 100g for further analysis and the remainder is bagged for storage. The sample for further analysis is then sieved at 710µm with approximately 30gm of -710µm material being subjected to float/sink determination using Lithium-Sodium-Tungsten (SG=2.85) or Bromoform (SG=2.86) prior to 2002 to determine the Heavy Mineral (HM) content. The mineral assemblage data was t obtained by compositing the HM component of samples from similar geological facies, screening across a series of size ranges, conducting a magnetic separation (Permroll Magnet) and XRF analysis on the magnetic and non-

Criteria	Commentary
	magnetic fractions. This is supported by 500 point grain count analysis to assist in identifying the mineral species present. The method of compositing the samples has varied and at times was done on samples from individual drill holes or from samples composited from geologically unique zones. 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 composites was combined. The composite HM was then subject to Longset screening and Permroll^{TM} magnetic separation @ 270rpm. The magnetic and non-magnetic fractions are then pulverised and a fused bead analysed by XRF. Various stoichiometric calculations are 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 S content.
Drilling techniques	The Sierra Leone rutile deposits have been explored by a number of drilling methods and supporting equipment including Hollow Flight Auger (HA), Reverse Circulation Aircore (AC), Stitz Drill, Mechanical Bangka Drill and Aluminum Derrick Tripod Rig. A total of 22,629m of drilling has been completed on the Sembehun Group rutile deposits. The Stitz drilling which is critical to supporting the Inferred Mineral Resources is sampled via slots in the sample barrel and is recognised as being prone to contamination from previously intersected substrate. Other failings of the Stitz drilling include the inability to penetrate more competent lateritic material and a 6m depth limitation. The resource estimates for mineralisation defined by the Stitz drilling, which was used prior to 1970, have ubiquitously been deemed to have a low confidence in resource estimates which is reflected in the Inferred Resource classification awarded. Only a small portion of the Gbap sub-deposit comprising ~2% of the total reported rutile resource for SRL is now based on information from the historical Stitz drilling. The hole diameter is typically 63 to 76 mm for the HA and AC drilling and all holes have been drilled vertically. The diameter of the drillhole for other methods is 40 to 50mm. A summary of the drilling and method is given in the table below.

Year	Holes	Metres	Assays (rutile)	Comment
1970's	39	159	53	Stitz drilling, only at Gbap
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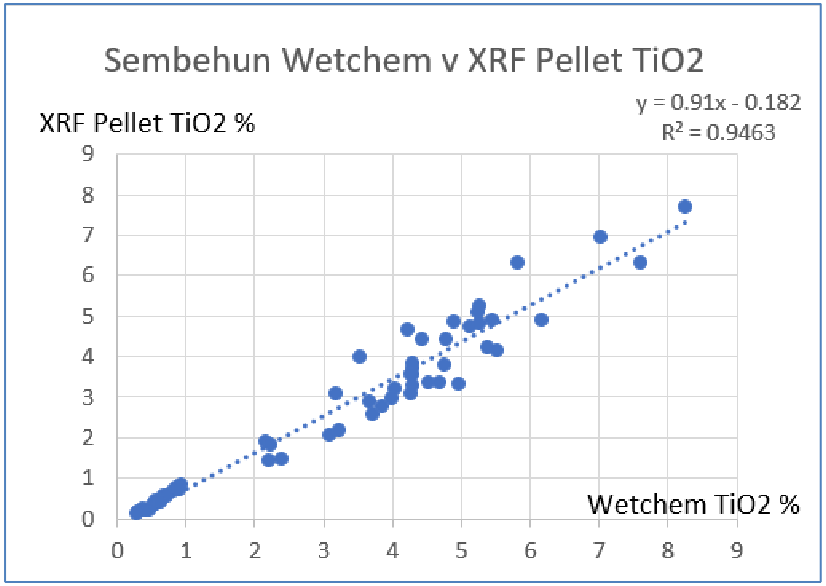
Total	**2359**	**22628.99**	**11,955**	

Criteria	Commentary
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 lithological qualifiers. All drilling is supervised and logged by company geologists. If sample recovery is compromised a decision is made at the time of drilling whether to redrill the hole. The weight of the sample is recorded at the laboratory and monitored by the site geology section staff to confirm the representivity. Sampling by auger methods generally provides a representative sample. In some instances the auger samples are split to produce a duplicate sample without core loss. The AC drilling has been shown to give a low bias of the oversize content. Also the AC drilling is prone to slimes loss when samples are dry with fine material "blowing" away. The wet clay rich nature of the Sierra Leonean 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 AC drilling. For these reasons the HA drilling is favoured over AC drilling.

Criteria	Commentary
Logging	All samples are geologically logged by site 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. The logging is considered qualitative and is appropriate for supporting the Mineral Resource estimates. The geological logging is also used as a guide to the allocation of samples assigned to metallurgical composites for assemblage determination. No geological logs are available for the Stitz drilling carried out during the 1960/70's due to the destruction of these records. This has been taken into consideration when assigning the JORC Code Resource Classification for the mineral resources supported by this drilling.
Sub-sampling techniques and sample preparation	No core sampling was done on the Sierra Leonean rutile deposits. The entire sample returned from the HA drilling is submitted for assay, while the sample material from AC drilling is presented to a rotary splitter mounted beneath a cyclone at the time of drilling. About a ¼ split weighing 1.5 to 2.0kg is 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 AC drilling in resource delineation for the Sembehun Group Deposits is limited. Samples presented to the SRL site laboratory are collected in pre-labelled calico bags. Unique sample identifiers are recorded on metallic tags and placed in the sample bag for validation. Duplicate samples are taken at the rate of 1:20 samples from the HA drilling by halving the material taken from the sample tube. This QA/QC protocol has only been in place since 2013 and prior to this no QA/QC control in relation to the sampling is recorded. 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 modest 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 since the recommencement of operations in 2006. The method used prior to 1990 is unknown but communication with site staff indicate these samples were cone and quartered and a sub-sample washed and decanted. HM determination was done using either TBE (prior to 2006) or LST heavy liquid separation on a sand sub-sample of approximately 30 to 50 grams. The majority of samples analysed at SRL have been analysed using MRS 400 XRF, analysing either a fusion bead where assayed prior to 2011 or pressed pellet (from 2011 onwards), 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. Wet chemical determination for TiO_2 is also used as a check analysis of the XRF TiO_2 results. Due to the low bias resulting from the analysis of pressed pellets, the analysis of beads was re-instated in early 2018. Certified standards are used for the calibration of both the Wet chem 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 5% 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. Checks are also run from time to time by analysis at external laboratories.

Criteria	Commentary
Verification of sampling and assaying	All results are reviewed by the resource geologist to ensure the values are valid. Twinned drill holes are completed against historical drill sites during infill drilling campaigns to confirm the historical rutile grades. Ninety three twinned drill hole pairs are present in the Kamatipa sub area of Sembehun. The twinned pairs comprise both recently drilled holes (drilled concurrently) and recent holes paired with 1980's aged drill holes. A direct sample for sample comparison is not possible because of differing sample lengths so weighted average statistics were compared. The pairs drilled recently and in concurrent programs returned a reasonable comparison for TiO_2 analysis (3.79 v 3.74) and rutile grade (1.06 v 1.02). The geomean for the rutile values was 0.83 v 0.82 indicating some outliers exist in the twinned dataset. Three chronologically distinct databases existed at SRL at the time of acquisition by Iluka: 1) A historical analogue database, which comprises analogue records for reconnaissance drilling completed in the early 1970's. It comprises various reports and maps which contain the information supporting the resource estimates for the "satellite" deposits including Gbap. 2) A historical digital database which contains information from drill conducted over ML011/72 and ML105/72 prior to 1995. The information is preserved as text files containing drill hole interval logs and assay data, and historical point count data. The information in this database was originally recorded as imperial units of measurement. Check drilling was carried out during 2002 by MDA which verifies this information. 3) The "pre-acquisition" digital database which retains records for data collected since 2002 and has adopted a metric data format. The data is hosted in MS Excel spreadsheets monitored by the site resource geologist. Since acquisition SRL has made a concerted effort to collate all available assay data into Iluka's Geology Data Management System (GDMS), operating via an acQuire™ software interface. Where available, 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 has been imported directly from the spreadsheets. Validation of the data against historical information is carried out as datasets are deemed to be complete. This process has resolved some errors in the historical data, mostly relating to absent data and rounding/truncation errors. It also allowed for the capture of additional information No adjustment is made to the data within the datasets. Some adjustment to the TiO_2 grades from the 2013 – 2017 TiO_2 values has been done at times on data which have a demonstrated low TiO_2 bias when compared to Wet Chemical (WC) TiO_2 analyses. The analyses for these programs have used Pressed Pellets (PP) 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 = 93%) is shown by the comparative datasets. Two linear algorithms have been 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 has been used in the analysis of 4778 samples which equates to 44% of all the rutile values supporting the Mineral Resource estimate for the Sembehun Group Deposits. These are solely from exploration of the Kamatipa and Gbap deposits during the period from 2011 to 2017. Wet chemical duplicate analysis of a small population of samples from the exploration program at Kamatipa was done in 2015, which confirmed a bias is present for the pressed powder TiO_2 XRF analyses at Sembehun. Repeat TiO_2 analysis of a representative number of samples using a more reliable and accurate method is planned for later in 2018 to verify the low TiO_2 bias at Sembehun. At this point in time the reported mineral resources for the Sembehun Group deposits use the unadjusted

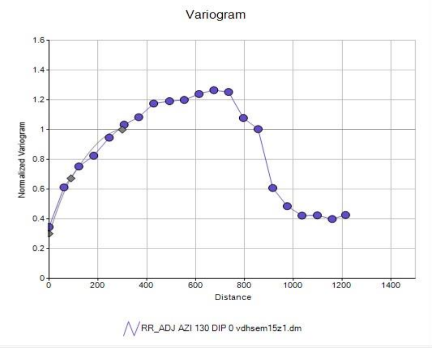
Criteria	Commentary
	TiO_2 assays meaning the rutile resource will be slightly conservative in the order of 2 to 4% based on the magnitude of the bias and influence of TiO_2 assays from the XRF of pressed pellets. 
Location of data points	Each borehole position is located using company owned Leica Viva GS10 GPS equipment, with X, Y, Z accuracy of +/-0.5m. Review by company geologists of the historical holes drilled in the 1980's twinned with recent drill holes at Sembehun alluded to a poor correlation of collar height, hole depth and assay grades. It was concluded from a correlation of the historically surveyed RL's and the LiDAR elevation values that the historical collar locations had been shifted by a Grid unit (400ft/~122m to the south east). The shifted collar positions have been adopted and used in the current resource estimate. The correction of the historical collar locations resulted in a more rational basement position and improved geological and grade continuity. Historically SRL worked within the Clarke 1880 datum, but has subsequently converted all survey information into the World Geodetic System (WGS) 1984. All data points are recorded in the UTM Zone 28 (Northern Hemisphere) using the Sierra Leone National Grid as per the transformation given below.

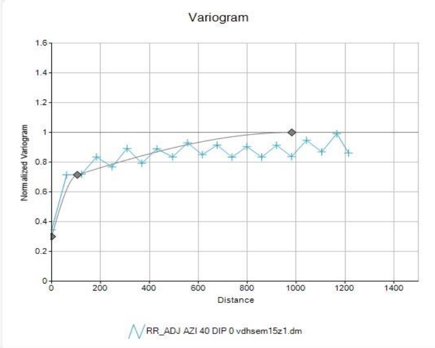
Criteria	Commentary
	(table below)

Survey Descriptor	Projection Information
Coordinate system	UTM Zone 28, Northern Hemisphere
Earth projection	8, 104, “m”, -15, 0, 0, 9996, 500000, 0”
Projection	Transverse Mercator (Gauss-Kruger)
Datum	World Geodetic System, 1984
Ellipsoid	WGS 84
Units	Metres
Origin, Longitude	-15”
Origin, Latitude	0”
Scale factor	0.9996
False Easting	500,000
False Northing	0

Criteria	Commentary
	During 2013 LiDAR surveys were conducted over the SRL Mining Leases producing data with a vertical resolution of +/- 0.15 m. Drill collar points are projected to the LiDAR surface for the purpose of resource modelling. This provides excellent spatial location for data points and subsequent mine planning.
Data spacing and distribution	The drilling prior to 1995 was conducted on regular grid spacing to define the mineralisation and support Mineral Resource and Ore Reserve estimation. Initial drilling is conducted on an ~244m (800ft) to 488m (1600ft) grid array. Subsequent infill drilling is done on a ~122m grid spacing, often with an additional hole at the centre of each 122m grid block. Post 2002 drilling campaigns were phased, starting with a 240m by 240m drill spacing with subsequent infill to 120m by 120m spacing depending on the mineralisation potential. Select areas were drilled at a 60m by 60m spacing, particularly over palaeochannels where the geological variability is higher. From 2012, grade control drilling was done in some areas at 20 to 25m grid spacing to support mining operations. The drill spacing in conjunction with rutile kriging variance is 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 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 are also considered when allocating a JORC Code Resource Classification. Variography was done on the Sembehun dataset to provide an estimate of grade continuity. Normal variograms show ranges of up to 1000m in the along strike (040^{O} orientation) and 250m across strike (130^{O} orientation) for the mineralised host unit. If $2/3^{rd}$ the population variance (the sill) is used as a guide for supporting measured resources, then the drilling grid should be spaced at no more than 80m x 80m.

Criteria	Commentary





A summary of the drill hole spacing over the Sembehun group deposit is given below.

	Drill Spacing (m)	
	Minimun	**Maximun**
Benduma	122 x 122	245 x 245
Dodo	122 x 245	245 x 245
Kamatipa	60 x 60	60 x 122
Kibi	122 x 245	245 x 245
Komende	122 x 122	122 x 245
Gbap	245 x 245	245 x 490

Compositing of samples has been used to assist in assemblage determination. Heavy mineral fractions from either individual drill holes or geologically similar units are 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 is also done 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.

Orientation of data in relation to geological structure	All drilling has been done vertically, which is perpendicular to the mineralisation and geology orientation so no bias is presented.
Sample security	At the time of logging, duplicate aluminium tags are inserted into the bag. Bags are placed in sacks labelled with the corresponding drill hole ID. The geologist in charge prepares a sample dispatch form each day, which is presented to the laboratory with the samples from that days drilling.
Audits or reviews	No external review of the sampling techniques is known. All sampling is conducted as per internal site procedures under the supervision of the on-site geologists.

Section 2 Reporting of Exploration Results (Sembehun Group Deposits and Pejebu Exploration Target)

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

Criteria	Commentary
Mineral tenement and land tenure status	The Sierra Leonean Rutile deposits are covered by 7 Mining Leases which are wholly owned by Iluka through its subsidiary company Iluka Investments (BVI). The Sembehun deposits are within 2 tenement areas (ML015/72 and ML015/72-Ext) covered by one License number (2134). The Pejebu Exploration target is located on ML11/72 – Area 1 under licence 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**		

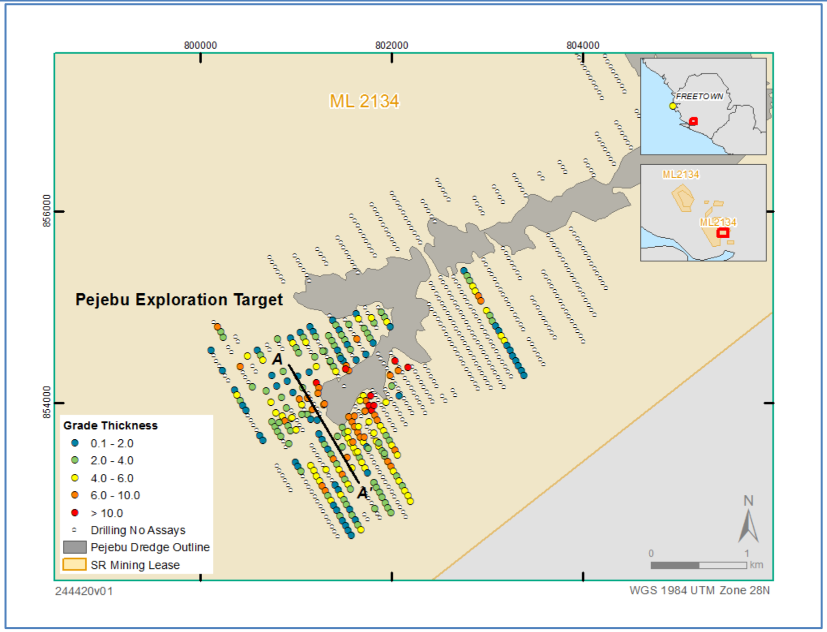
The tenements give the right to mine rutile, zircon, ilmenite, monazite, columbite, graphite, garnet and other titanium bearing minerals. Provision to mine is made under the Sierra Rutile Agreement (Ratification) Act of 2002, whereby payment of Surface Rent is made on all land used by the company, with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

Each of the 7 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.

Criteria	Commentary
Exploration done by other parties	The author acknowledges the considerable effort by many teams and individuals to carry out the exploration over the Sembehun area since discovery in the 1960's. All this work was done under the Sierra Rutile Limited company name. In the compilation of the mineral 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 Leonean 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 sandy clays. Rubbly surficial laterite development is prevalent through the near surface material of the Bullom Group but does not hinder mining.
Drill hole Information	The Sembehun database comprises 22,629m of drilling from 2359 boreholes . 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. All holes are drilled vertically and as such are perpendicular to the mineralisation. A total of 775 holes representing 4860.2m of drilling have been completed on the Pejebu Exploration Target. A total of 3427 samples have been subjected to float/sink analysis to determine the HM content. The HM from the float/sink analysis is composited to determine the mineral assemblage. To the 30th of June composite assay results were received to support the rutile grades associated with 1096 drill records. A table summarising the exploration results to date is presented in **Appendix 2** below. A length weighting is used in instances of irregular sample intervals to report mean rutile values, otherwise the mineralisation intercepts represent true widths.
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 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 Leonean rutile deposits is well understood. The drilling is all done vertically which is perpendicular to the mineralisation orientation, and as a result the mineralisation intercepts represent true thickness of the mineralisation.
Diagrams	Drill hole location plans and representative cross sections are presented in the accompanying summary text of this document to assist in the understanding of the rutile mineralisation for Sembehun.

Criteria	Commentary
	A plan of the location of the Pejebu Exploration target and holes drilled to date is presented in the accompanying summary text. Representative cross sections of the Pejebu prospect are also presented in the accompanying summary text.
Balanced reporting	The significant intercepts presented in the associated text are typical of the mineralisation under consideration. For Sembehun, this is superseded as the estimation of the Mineral Resources considers all material with in the mineralised domains. A summary of all significant Exploration Results is given as Appendix 2 and a representative cross-section for the Pejebu Exploration Target is presented in the accompanying summary text.
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. Typically the mineralisation is hosted in unconsolidated sediments which can be excavated with conventional equipment including excavators or bucket ladder dredge. Some minor 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 Sembehun refer to blocky laterite in places but modelling shows this to represent only 0.3% of the total resource and will not have a significant impact on mining. No deleterious elements are known of. However, significant euxinic iron sulphide development is known to be present in the lower lying portions of the Sembehun deposits adjacent to intertidal/swampy environments. The Sulphide is removed using flotation techniques and re-deposited below water to prevent oxidation and acidification.
Further work	Future exploration on the Sembehun group deposits will focus on proving up the current mineralisation in a timely manner to support the development of the Sembehun deposits. Exploration will also be carried out to close-off mineralisation which is open in many places, particularly along the south and west margins of Benduma, Dodo and Kibi, and in all directions around the Gbap Deposit. Areas of additional mineralisation are proposed for: • East of Benduma; • Along strike to the south-west of Benduma, Dodo and Kibi where exploration has been restricted by swampy areas associated with the Bagru river; • West of Kibi where a favourable geomorphology is present and drilling has not closed of the mineralisation. Mineralisation in this area may even continue through and join with the Gbap deposit 1 to 2 km to the north west; and • In all directions around the Gbap deposit. It is envisaged that exploration for additional mineral resources will be carried out in a timely manner to support the current and future mining operations. Drill testing of the Pejebu Exploration target is currently in progress and the 1st pass on 120m or 240m spaced lines will be completed in the 3rd quarter 2018. Exploration results are expected to be also be completed in the 3rd quarter 2018 and modelling and resource estimation will be done for Pejebu in the 4th quarter 2018. A plan summarising the drilling and available rutile assays at the end of H1 2018 is presented below.

Criteria	Commentary
	

Section 3 Estimation and Reporting of Mineral Resources (Sembehun Group Deposits)

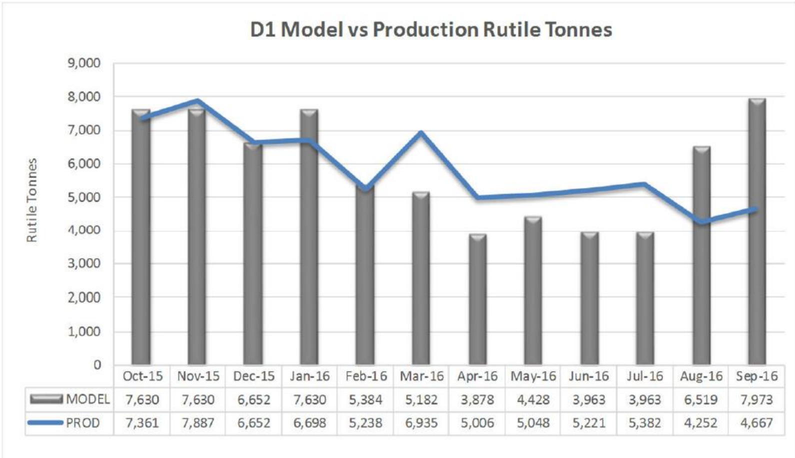
(Criteria listed in section 1, and where relevant in section 2, also apply to this section in relation to the resource estimation for the Sembehun Group Deposits.)

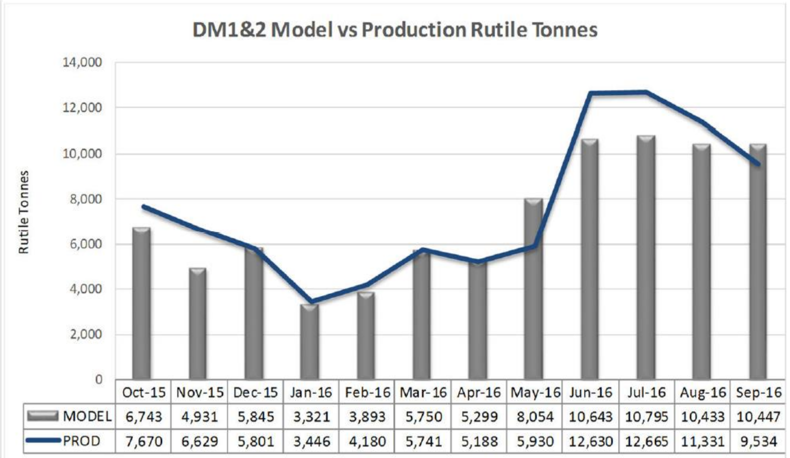
Criteria	Commentary
Database integrity	The data undergoes several levels of verification prior to modelling. This includes the interrogation of data for outliers such as: • Non-resource units with lab numbers; • Sample prep vs XRF submissions; • Collar duplication; and • Missing assays. Other forms of interrogation include mineral ratios such as: • The portion of rutile>ilmenite>zircon is seldom violated; • The VHM % (rutile + ilmenite + zircon) is < than the THM % • Sizing fractions add to 100%; and • The mags + non-mags add up to 100%. Also a visual spatial review of the data is carried out by viewing cross sections to ensure the drill holes are in valid locations and the assay values corroborate with the lithological distribution. Due to the age of the dataset it is apparent that a number of the older analytes were not analysed for. In most instances these values are presented as absent but in some instance a "0" value has been errantly substituted for HM%, HM(+70), HM(-70), Fe_2O_3, ZrO_2 and possibly Sulphide. This does not have any impact on the magnitude or robustness of the Mineral Resource estimate for rutile.
Site visits	A site visit was undertaken by Brett Gibson for 2 days during May 2016. The site visit witnessed the geological structure of the Sierra Leone rutile deposits, the exploration activities and ongoing mining operations. 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 relevant information has been sourced from the drill samples and the interpretations have developed over successive drill campaigns which have included both in-fill drilling within known resources and extensions on the margins of the known deposits. A considerable portion of the data is quite old having come from exploration during the 1980's. Original hard copies of the drill logs and assay results were destroyed and the only remaining reference to this exploration is from digital files saved from old computer hard drives. The assumption is that the survey, geology and assay data in these digital files is correct as there is no way of verifying. 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 Leonean rutile deposits.

Criteria	Commentary
	The geological data from borehole logs was used to create a basement wireframe surface, which in conjunction with the topographic surface, is used to constrain the mineralisation to the intersected host alluvial and fluvial sediments. Statistical analysis of each deposit was also undertaken to determine if sub-domaining was required. As a result a low slime, low rutile grade zone which is present in the upper part of the stratigraphy, particularly in the south west of the modelled area was domained separately. Some inconsistency in the depth to basement has resulted from logging in programs carried out at different times. The 2012 AC exploration drilling at Benduma indicated a greater depth to basement but this was deemed inconclusive. Material of uncertain affiliation (Bullom Group as opposed to weathered gneissic basement) has been domained separately in the current block model, and has been excluded from the resource estimate pending further exploration to confirm the actual nature of this material. 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 and the deposits tend to present as alluvial fans accreting on a topographically benign coastal plain.
Dimensions	The mineral resources under consideration have a wide variation in physical dimensions. The deposits vary from a few metres to over 20m in thickness. The deposits vary in width from 100m to over 2000m in places. If the leading edge of the Sembehun group of deposits is considered as a single mineralised entity then the width of the mineralisation is over 5000m. The deposits length varies from about 1000m to over 6000m. The deposits vary significantly in mass from a few million tonnes to over 150million tonnes. In general the mineralisation is present from surface. Some poorly mineralised interburden layers are present towards the south/west portion of the Benduma, Dodo and Kibi sub-deposits.
Estimation and modelling techniques	The resource modelling and estimation for the Sembehun rutile deposits was done using Datamine Software. The three dimensional solid formed between the topographic and basement surfaces defines the volume to be interpolated for each deposit. The wireframes were typically extended from the outer boreholes by several hundred meters to allow for extension of the models into geologically favourable areas, which currently have little or no drilling. Sub-domaining was carried where justified by supporting statistical analysis and geological interpretation of the data. The model block dimension adopted is 30*30*1.5m (X*Y*Z) with an allowance for sub-celling down to 10*10*0.15m cell dimensions. The parent cell dimension is about half of the modal drill spacing for Kamatipa and Benduma. While the drill spacing for Kibi and Dodo sub deposits is around 245*245m the relatively small parent cell size will not impact on the resource estimate. The grade interpolation was done using Inverse Distance squared (ID2) for all analytes with the exception of the lithology code anddensity which have been interpolated using Nearest Neighbour (NN). An elliptical search volume was used for grade variables comprising 150*250*3m (X*Y*Z) 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 assumptions was made in relation to the recovery of by-products although the confidence in the grade of the ilmenite and zircon is lower due to a relative paucity of data compared to the rutile dataset. Confidence in the ilmenite and zircon content has been declared as Inferred because of this. No assumptions have been made in relation to modelling of selective mining units in the estimation of the Sembehun rutile resource.

Criteria	Commentary
	No assumptions were made during the resource modelling in relation to correlation of grade variables. 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 grade 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.
Cut-off parameters	The mineral resources were reported using a 0.25% rutile cut-off grade in conjunction with delimiting mineral resource outlines. 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 (e.g. dredging) and economic efficiencies from increased mine through put.
Mining factors or assumptions	Historically the Sierra Leone rutile deposits were 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. 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 It is feasible that a combination of dry and dredge mining will continue to be adopted being dependent on the physical attributes of the deposit under consideration.
Metallurgical factors or assumptions	Mining on the Sierra Leonean 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. As a result the metallurgical recoveries are factored on the basis of historical recoveries. 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.
Environmen-tal 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. Some areas along the south-west margin of the currently defined mineral resource are in relatively low lying terrain close to sea-level. While there is no restriction to these areas, a sound mining technique which works with the local hydrology such as dredging may be required, along with comprehensive planning for rehabilitation.
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 testwork was destroyed during the rebel insurgency in 1995. Testwork is being undertaken at the current minesites on geologically similar host material to ratify the historically accepted dry material density factors. The sand replacement method adequately takes into consideration the potential for void space between sediment grains and has also been carried out on a number of different materials encountered in the mineral 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.

Criteria	Commentary
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 (Indicated or Inferred) is based on a combination of: • Data provenance and availability; • Drillhole spacing and sample density; • Confidence in the analytical data; • Established geological continuity which is corroborated by a long history of mining; and • The confidence in the rutile and mineralogical grade continuity. The current mineral resource estimate for the Sembehun Group Deposits 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 honoured (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).
Audits or reviews	The Sembehun model, resource estimate and supporting documentation was peer reviewed within Iluka and was subjected to an external review by IHC Mining Consultants. Neither of these reviews found any significant issues with the modelling or resource estimation.
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 have 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. No mining of the Sembehun mineralisation has taken place to date so no reconciliation is available. Where mining of similar rutile deposits has undertaken in Sierra Leone, the production figures agree to within a few percent of the model estimated rutile tonnages over the longer term although there is increased variability over shorter (monthly) reporting periods.





Appendix 2: Significant Exploration Results – Pejebu Exploration Target

BHID	X	Y	Z	FROM	TO	LENGTH	Rutile %	Ilmenite %	Zircon %
PD11/15	801031	854039	32.0	0	6.75	6.75	0.90	0.70	0.16
PD11/16	801061	853987	32.0	0	6	6	0.70	0.41	0.29
PD11/18	801121	853883	28.8	0	6	6	0.42	0.74	0.16
PD11/19	801151	853831	31.5	0	3	3	0.58	0.88	0.08
PD11/22	801241	853675	28.9	0	3	3	0.62	0.61	0.13
PD11/23	801271	853623	32.1	0	6	6	0.27	1.50	0.31
PD11/24	801301	853571	37.0	0	3	3	0.91	5.39	0.13
PD11/25	801331	853519	32.1	0	6.75	6.75	0.28	1.54	0.29
PD11/26	801361	853467	36.6	0	4.5	4.5	0.51	3.24	0.09
PD11/27	801391	853415	34.2	0	4.5	4.5	1.36	2.35	0.31
PD11/28	801421	853363	33.4	0	4.5	4.5	0.54	0.74	0.06
PD11/29	801451	853311	33.4	0	4.5	4.5	1.11	1.21	0.23
PD11/30	801481	853259	32.7	0	4.5	4.5	1.38	1.68	0.14
PD11/31	801511	853207	30.0	0	6	6	0.42	0.68	0.19
PD11/32	801541	853155	30.6	0	4.5	4.5	1.07	1.17	0.10
PD11/33	801571	853104	30.5	0	3	3	1.02	1.07	0.08
PD13/38	801825	852904	36.1	0	4.5	4.5	0.78	1.24	0.33
PD13/4	800805	854670	31.3	0	4.5	4.5	0.52	0.72	0.14
PD15/14	801209	854211	34.6	0	6	6	1.99	0.93	0.21
PD15/15	801239	854159	34.5	0	6	6	1.24	0.53	0.32
PD15/23	801479	853743	30.0	0	4.5	4.5	0.60	0.46	0.08
PD15/24	801509	853691	31.4	0	3.2	3.2	1.01	0.77	0.01
PD15/25	801539	853639	32.4	0	4.5	4.5	1.22	0.89	0.13
PD15/26	801569	853587	33.5	0	4.5	4.5	1.19	0.78	0.14
PD15/27	801599	853535	33.6	0	4.5	4.5	1.09	0.89	0.17
PD15/28	801629	853483	35.5	0	6	6	0.83	0.66	0.12
PD15/29	801659	853431	27.7	0	8.25	8.25	0.45	1.17	0.26
PD15/30	801689	853379	31.5	0	6	6	0.70	1.46	0.25
PD15/31	801719	853327	31.6	0	6	6	0.78	1.47	0.35
PD15/32	801749	853275	32.5	0	4.5	4.5	0.35	0.72	0.10
PD15/33	801809	853172	30.9	0	5.25	5.25	0.66	0.78	0.21
PD15/34	801809	853172	32.1	0	4.5	4.5	0.81	0.96	0.33
PD15/35	801839	853120	31.7	0	5.25	5.25	0.63	0.60	0.23
PD15/36	801869	853068	33.0	0	5.25	5.25	0.68	0.62	0.29
PD15/37	801899	853016	33.7	0	6	6	0.63	0.66	0.29
PD15/38	801929	852964	36.1	0	6	6	0.63	0.66	0.18
PD15/39	801959	852912	38.7	0	4.5	4.5	0.58	0.59	0.18
PD15/40	801989	852860	39.8	0	3.2	3.18	0.80	0.78	0.27
PD15/5	800939	854678	35.1	0	4.5	4.5	0.45	1.31	0.04
PD15/6	800969	854626	35.6	0	4.5	4.5	1.00	0.57	0.04
PD15/7	800999	854575	35.3	0	4.5	4.5	0.63	0.56	0.07
PD15/8	801029	854523	37.6	0	3.75	3.75	0.89	0.58	0.11
PD17/22	801553	853855	26.7	0	6	6	1.09	1.27	0.11
PD17/23	801583	853803	29.1	0	6	6	1.11	1.17	0.17
PD17/24	801613	853751	31.4	0	6	6	1.01	0.90	0.23
PD17/25	801643	853699	31.4	0	6	6	1.57	1.47	0.15
PD17/26	801673	853647	31.5	0	6	6	1.14	1.02	0.05
PD17/27	801703	853595	31.7	0	6	6	0.81	0.62	0.08
PD17/28	801733	853543	35.0	0	3	3	0.33	0.24	0.02
PD17/5	801043	854738	31.4	0	4.5	4.5	0.35	0.38	0.08
PD17/6	801073	854686	34.3	0	4.5	4.5	0.51	0.59	0.05
PD17/7	801103	854635	34.7	0	6	6	0.88	0.63	0.21
PD19/10	801297	854539	35.8	0	4.5	4.5	0.57	0.33	0.11
PD19/12	801357	854435	33.3	0	4.5	4.5	0.26	0.41	0.29
PD19/13	801387	854383	33.7	0	3	3	1.18	0.96	0.16
PD19/14	801417	854331	28.8	0	6	6	0.82	0.54	0.33
PD19/28	801837	853603	36.3	0	4.5	4.5	1.13	1.29	0.14
PD19/29	801867	853551	36.5	0	4.5	4.5	0.95	1.36	0.04
PD19/30	801897	853499	37.3	0	4.5	4.5	0.85	1.22	0.07
PD19/31	801927	853447	39.5	0	3	3	1.05	1.18	0.07
PD19/32	801957	853395	33.8	0.28	9.75	9.47	1.06	1.28	0.16
PD19/33	801987	853344	33.7	0	9	9	1.03	2.02	0.15
PD19/34	802017	853292	34.4	0	7.5	7.5	0.63	0.74	0.11
PD19/35	802047	853240	36.4	0	6	6	0.55	1.07	0.19
PD19/36	802077	853188	37.5	0	6	6	0.78	0.92	0.13
PD19/37	802107	853136	39.5	0	4.5	4.5	0.87	0.95	0.09
PD19/38	802137	853084	39.4	0	4.5	4.5	1.02	1.21	0.08
PD19/39	802167	853032	39.4	0	4.5	4.5	1.20	1.41	0.10
PD19/40	802197	852980	38.6	0	4.5	4.5	0.98	1.17	0.10

BHID	X	Y	Z	FROM	TO	LENGTH	Rutile %	Ilmenite %	Zircon %
PD19/5	801147	854798	33.6	0	1.5	1.5	0.31	0.60	0.00
PD19/6	801177	854746	34.2	0	4.5	4.5	0.43	0.57	0.01
PD19/7	801207	854695	35.4	0	4.5	4.5	0.55	0.77	0.05
PD21/10	801401	854599	35.2	0	4.5	4.5	0.78	1.34	0.20
PD21/11	801431	854547	34.0	0	4.5	4.5	0.45	0.73	0.01
PD21/12	801461	854495	31.7	0	5.25	5.25	0.63	0.93	0.06
PD21/13	801491	854443	32.6	0	4.5	4.5	0.29	0.54	0.06
PD21/14	801521	854391	28.5	0	7.5	7.5	0.82	0.65	0.16
PD21/15	801551	854339	26.6	0	4.5	4.5	1.37	-	0.12
PD21/20	801702	854079	28.4	0	4.5	4.5	1.24	2.04	0.17
PD21/21	801731	854027	29.0	0	6	6	1.29	1.02	0.24
PD21/22	801761	853975	29.6	0	7.5	7.5	1.82	1.05	0.23
PD21/23	801791	853923	29.0	0	9	9	1.63	1.32	0.19
PD21/24	801821	853871	32.1	0	6	6	1.21	0.83	0.20
PD21/25	801851	853819	29.8	0	7.5	7.5	0.92	1.54	0.14
PD21/26	801881	853767	30.3	0	6	6	0.77	1.24	0.13
PD21/27	801911	853715	30.6	0	4.5	4.5	0.96	1.20	0.20
PD21/28	801941	853663	29.3	0	6	6	0.66	1.13	0.17
PD21/29	801971	853611	32.5	0	4.5	4.5	0.85	1.51	0.09
PD21/30	802001	853559	33.2	0	6	6	0.79	1.66	0.20
PD21/31	802031	853507	33.2	0	7.5	7.5	0.86	1.05	0.08
PD21/32	802061	853455	34.9	0	7.5	7.5	0.77	1.79	0.10
PD21/8	801341	854703	36.4	0	4.5	4.5	0.75	0.76	0.14
PD21/9	801371	854651	36.5	0	4.5	4.5	0.51	0.45	0.06
PD23/10	801505	854659	34.8	0	4.5	4.5	0.54	0.70	0.04
PD23/11	801535	854607	35.1	0	3	3	0.50	0.52	0.15
PD23/12	801565	854555	32.9	0	4.5	4.5	0.66	1.18	0.05
PD23/14	801625	854451	31.9	0	3	3	0.34	1.36	0.09
PD23/6	801385	854866	33.9	0	4.5	4.5	0.33	0.69	0.09
PD23/7	801415	854815	35.3	0	4.5	4.5	0.52	1.17	0.15
PD23/8	801445	854763	35.6	0	4.5	4.5	0.40	1.44	0.07
PD23/9	801475	854711	35.8	0	4.5	4.5	0.48	0.61	0.21
PD25/11	801639	854667	30.2	0	7.5	7.5	1.05	1.00	1.46
PD25/14	801729	854511	27.2	0	3	3	0.31	-	0.21
PD25/8	801549	854823	33.9	0	5.25	5.25	0.60	1.07	0.20
PD27/10	801713	854779	33.6	0	4.5	4.5	0.90	1.04	0.22
PD27/11	801743	854727	31.9	0	4.5	4.5	0.57	0.86	0.07
PD27/12	801773	854675	28.8	0	6	6	0.48	0.56	0.13
PD27/13	801803	854623	31.1	0	1.5	1.5	0.36	1.86	0.03
PD27/7	801623	854935	33.3	0	3	3	0.62	1.16	0.08
PD27/8	801653	854883	32.2	0	5.25	5.25	1.07	2.24	0.19
PD29/10	801817	854839	33.2	0	4.5	4.5	0.57	0.88	0.03
PD29/9	801787	854891	35.2	0	4.5	4.5	1.15	0.70	0.21
PD2/0	800114	854548	40.5	0	1.5	1.5	0.69	1.02	0.12
PD2/10	800414	854029	41.6	0	6	6	0.58	0.65	0.12
PD2/11	800444	853977	42.5	0	4.5	4.5	0.39	0.77	0.18
PD2/12	800474	853925	43.4	0	3	3	0.48	0.49	0.15
PD2/17	800624	853665	38.4	0	3	3	0.27	1.81	0.05
PD2/18	800654	853613	32.0	0	2.25	2.25	0.46	0.53	0.11
PD2/4	800234	854340	42.5	0	3	3	0.51	0.53	0.21
PD2/8	800354	854133	43.0	0	4.5	4.5	0.38	0.92	0.09
PD2/9	800384	854081	43.3	0	6	6	0.71	0.57	0.17
PD31/10	801921	854899	33.9	0	3	3	0.96	1.33	0.23
PD31/11	801951	854847	29.9	0	4.5	4.5	1.03	0.65	0.12
PD31/12	801981	854795	28.3	0	3	3	0.37	0.66	0.05
PD31/9	801891	854951	35.0	0	3	3	1.20	1.21	0.18
PD47/10	802752	855379	26.3	0	3	3	0.42	0.60	0.11
PD47/11	802782	855327	28.1	0	4.5	4.5	0.55	0.77	0.30
PD47/12	802812	855275	30.4	0	3	3	0.81	1.16	0.07
PD47/13	802842	855223	26.4	0	7.5	7.5	0.71	0.65	0.15
PD47/14	802872	855171	26.7	0	9	9	0.66	0.55	0.19
PD47/15	802902	855119	27.2	0	9	9	0.81	0.71	0.10
PD47/16	802932	855067	27.2	0	12	12	0.78	0.69	0.14
PD47/18	802992	854963	33.9	0	6	6	0.58	0.52	0.15
PD47/19	803022	854911	33.5	0	6	6	0.53	0.48	0.08
PD47/20	803052	854859	37.4	0	3	3	0.83	0.74	0.04
PD47/21	803082	854807	41.1	0	0.15	0.15	0.68	0.63	0.00
PD47/22	803112	854755	40.7	0	1.5	1.5	0.42	0.39	0.07
PD47/23	803142	854703	38.4	0	3	3	1.75	3.16	0.70

BHID	X	Y	Z	FROM	TO	LENGTH	Rutile %	Ilmenite %	Zircon %
PD47/24	803172	854651	38.1	0	3	3	1.49	2.86	0.07
PD47/25	803202	854599	37.9	0	3	3	0.22	0.40	0.08
PD47/26	803232	854547	37.3	0	3	3	0.62	1.19	0.04
PD47/27	803262	854495	37.5	0	1.5	1.5	0.76	1.29	0.40
PD47/28	803292	854443	29.6	0	5.25	5.25	0.30	0.31	0.10
PD47/29	803322	854391	29.8	0	4.5	4.5	0.45	0.85	0.10
PD47/30	803352	854339	29.8	0	7.5	7.5	0.20	0.38	0.09
PD47/31	803382	854287	31.7	0	7.5	7.5	0.10	0.15	0.05
PD5/16	800750	853807	37.4	0	4.5	4.5	0.75	1.40	0.06
PD5/17	800780	853755	36.7	0	4.5	4.5	0.69	1.13	0.03
PD5/18	800810	853703	35.8	0	4.5	4.5	0.83	0.77	0.14
PD5/19	800840	853651	31.6	0	7.5	7.5	0.53	0.45	0.11
PD5/24	800993	853386	35.5	0	4.5	4.5	0.22	0.84	0.44
PD5/25	801020	853339	36.9	0	3	3	0.30	0.32	0.02
PD5/26	801050	853287	35.8	0	7.5	7.5	0.53	0.59	0.21
PD5/5	800420	854378	36.7	0	4.5	4.5	1.87	0.26	0.13
PD5/9	800540	854171	40.5	0	6	6	0.40	0.43	0.14
PD5/-1	800240	854690	33.3	0	6	6	0.35	0.33	0.18
PD5/-2	800210	854742	36.4	0	4.5	4.5	0.64	0.98	0.18
PD5/-3	800180	854794	35.6	0	7.5	7.5	0.82	0.75	0.15
PD7/16	800854	853867	33.7	0	6	6	0.81	0.46	0.20
PD7/17	800884	853815	33.5	0	6	6	1.13	0.68	0.28
PD7/18	800914	853763	33.0	0	4.5	4.5	0.74	0.72	0.12
PD7/19	800944	853711	31.5	0	4.5	4.5	0.48	0.52	0.20
PD7/26	801154	853347	38.4	0.3	4.5	4.2	1.01	2.52	0.05
PD7/27	801184	853295	38.2	0.2	6	5.8	0.90	2.27	0.12
PD7/28	801214	853243	39.1	0.22	6	5.78	0.82	1.55	0.12
PD7/29	801244	853191	39.2	1.5	6	4.5	1.01	1.78	0.06
PD7/30	801274	853139	39.0	0	6	6	1.52	1.30	0.21
PD7/31	801304	853087	37.7	0	6	6	1.27	1.84	0.19
PD7/32	801334	853035	37.5	0	4.5	4.5	0.75	1.49	0.19
PD7/33	801364	852984	35.4	0	6	6	0.97	1.64	0.12
PD7/34	801394	852932	38.8	0	4.5	4.5	0.14	1.33	0.01
PD7/35	801425	852881	40.1	0	4.5	4.5	0.31	2.50	0.09
PD7/36	801454	852828	41.1	0	4.5	4.5	0.58	4.84	0.08
PD7/37	801484	852776	42.8	0	3	3	0.52	6.43	0.10
PD7/38	801514	852724	43.1	0	3	3	0.40	4.23	0.15
PD7/39	801544	852672	43.4	0	3	3	0.31	3.11	0.12
PD7/4	800494	854490	32.9	0	3	3	1.60	0.93	0.09
PD7/40	801574	852620	43.3	0	3	3	0.26	2.83	0.10
PD9/28	801317	853303	38.3	0	4.5	4.5	1.16	0.90	0.09
PD9/31	801407	853147	37.8	0	3	3	0.45	1.44	0.06
PD9/32	801437	853095	35.5	0	4.5	4.5	0.36	0.56	0.12
PD9/33	801467	853044	32.9	0	4.5	4.5	0.92	1.03	0.14
PD9/34	801497	852992	32.5	0	6	6	0.38	0.86	0.17
PD9/35	801527	852940	37.1	0	4.5	4.5	0.61	1.47	0.03
PD9/36	801557	852888	37.9	0	4.5	4.5	0.40	0.64	0.16
PD9/37	801587	852836	36.9	0	6	6	0.41	0.71	0.11
PD9/38	801617	852784	38.1	0	3	3	0.51	0.89	0.07
PD9/39	801647	852732	31.5	0	3.75	3.75	0.74	0.48	0.13
PD9/4	800597	854550	33.9	0	5.25	5.25	0.28	0.49	0.03
PD9/40	801677	852680	32.3	0	3	3	1.70	0.97	0.15
PD9/5	800627	854498	37.7	0	3	3	1.03	0.81	0.09
PD9/6	800657	854446	36.3	0	4.5	4.5	0.96	0.77	0.15
P28/36	800689	854126	37.8	0	3	3	0.91	1.01	0.12
P28/40	800736	854011	35.5	0	4.5	4.5	1.00	0.42	0.14
P28/44	800789	853902	34.1	0	6	6	0.90	0.34	0.12
P28/48	800823	853799	34.1	0	6	6	0.67	0.32	0.12
P28/60	800927	853580	29.3	0	6	6	0.40	0.26	0.11
P32/32	800750	854286	35.9	0	1.5	1.5	0.80	0.64	0.00
P32/36	800800	854175	35.7	0	1.5	1.5	0.96	0.59	0.00
P32/40	800847	854060	34.1	0	3	3	0.79	0.34	0.02
P32/44	800900	853949	33.6	0	4.5	4.5	0.85	0.46	0.06
P32/48	800949	853839	32.9	0	6	6	0.98	0.44	0.03
P32/49	800957	853845	32.9	0	6	6	0.98	0.33	0.15
P32/56	801001	853725	30.5	0	3.5	3.5	1.46	0.56	0.17
P36/32	800861	854331	34.1	0	3	3	1.01	0.40	0.03
P36/36	800909	854225	34.4	0	1.5	1.5	0.42	0.29	0.00
P36/40	800963	854114	34.1	0	1.5	1.5	1.14	1.21	0.00

BHID	X	Y	Z	FROM	TO	LENGTH	Rutile %	Ilmenite %	Zircon %
P36/48	801058	853882	31.9	0	4.5	4.5	0.68	0.57	0.02
P40/36	801022	854276	34.2	0	1.5	1.5	0.85	0.49	0.00
P40/40	801070	854162	34.1	0	1.5	1.5	1.46	0.37	0.00
P40/44	801116	854052	33.5	0	6	6	1.17	0.45	0.03
P40/48	801173	853932	30.3	0	5	5	1.32	0.65	0.24
P40/56	801221	853826	29.0	0	3	3	0.48	0.31	0.03
P44/36	801133	854324	35.7	0	1.5	1.5	0.31	0.18	0.00
P44/44	801233	854101	32.3	0	7.5	7.5	1.23	0.54	0.12
P44/48	801285	853985	29.7	0	6	6	1.15	0.50	0.30
P44/49	801296	853991	29.7	0	6	6	1.25	0.45	0.16
P44/64	801433	853652	28.1	0	2.5	2.5	1.26	0.72	0.03
P44/68	801482	853545	28.9	0	3	3	0.89	0.51	0.24
P44/72	801530	853435	28.9	0	3	3	2.29	1.21	0.64
P44/76	801581	853326	29.2	0	3	3	1.89	0.82	0.09
P48/32	801199	854485	34.5	0	3	3	1.15	1.03	0.03
P48/36	801215	854378	34.5	0	3	3	1.66	3.06	0.03
P48/64	801543	853705	32.3	0	4.5	4.5	1.16	1.79	0.22
P48/68	801596	853594	32.0	0	6	6	1.19	0.79	0.15
P48/72	801643	853490	32.8	0	6	6	0.89	1.08	0.12
P52/32	801281	854545	36.5	0	3	3	0.84	0.25	0.05
P52/36	801357	854440	35.1	0	3	3	0.71	0.97	0.01
P52/60	801608	853866	29.8	0	4.5	4.5	1.38	2.25	0.11
P52/64	801650	853756	33.1	0	4.5	4.5	1.21	1.10	0.06
P52/68	801708	853642	30.0	0	7.5	7.5	1.02	1.47	0.19
P52/72	801750	853531	35.0	0	3	3	0.87	0.59	0.01
P56/36	801469	854470	35.2	0	3	3	0.55	0.52	0.03
P56/40	801521	854353	25.0	0	9	9	1.15	0.82	0.20
P56/56	801669	854023	28.9	0	4.5	4.5	1.01	0.94	0.06
P56/60	801717	853917	29.6	0	7.5	7.5	1.21	1.14	0.33
P56/61	801719	853912	29.6	0	7.5	7.5	1.34	1.32	0.32
P56/64	801760	853802	34.1	0	3.5	3.5	1.28	1.12	0.03
P56/68	801809	853690	35.2	0	4.5	4.5	0.97	0.59	0.01
P56/72	801865	853583	37.2	0	3	3	0.74	0.45	0.02
P56/76	801920	853475	38.7	0	3	3	0.94	0.65	0.07
P60/56	801780	854075	28.5	0	7.5	7.5	1.57	1.11	0.33
P60/60	801813	853975	29.3	0	9	9	1.39	1.32	0.39
P64/60	801942	854008	26.6	0	4.5	4.5	1.10	1.12	0.06
P68/48	801982	854287	28.0	0	7.5	7.5	1.14	0.43	0.07
P68/56	802003	854174	33.4	0	3	3	0.73	1.36	0.07
P68/60	802076	854078	37.1	0	3	3	0.33	0.29	0.05
P72/44	802029	854439	26.8	0	9	9	1.49	1.20	0.40
P72/48	802071	854337	28.0	0	10.5	10.5	0.77	0.91	0.28
P76/48	802171	854371	28.8	0	9	9	1.83	1.29	0.28