Shaw River Manganese Limited


11 March 2014

# FIRST AREA SUCCESSFULLY TESTED IN BLASTHOLE SAMPLING PROGRAM AT OTJOZONDU PROJECT

- **Shaw River Manganese Limited ("Shaw River") (ASX : SRR) advises that it has now completed the "Pit A" blast-hole-drilling and sampling program at its 87.2% owned Otjozondu Manganese Project ("Otjo"), in Namibia.**
- **This is the first of five areas to be tested to identify "at surface manganese lode" for the basis of a start-up inventory for mining and subsequent processing, to underpin the Start Up Production Plan ("SPP").**
- **Results from Pit A have outlined two zones of manganese mineralisation, at surface, for a combined tonnage of approximately 20,400 tonnes. This material is considered suitable as a bulk sample to test the performance of the surface mineralisation associated with the Labusrus Indicated Mineral Resource.**
- **This sampling program is the forerunner of a broader plan aimed at by-passing the need to complete a more costly Pre-Feasibility Study, whilst building confidence in key operational assumptions such as manganese grade, geological continuity, and metallurgical yield. This program aims to identify an at surface, open-pitable inventory, suitable for early production. These results will factor into a SPP and form the basis of a start-up inventory for mining and subsequent processing.**
- **The SPP is targeting a low capital, staged, development option for the project which would see operations commencing within six months of the order of the process (jig) plant. Shaw River is also seeking a strategic "cornerstone funding partner" to provide funding to implement this plan and to provide financial support to the Company.**
- **In preparation for the SPP, the Terex crusher and screen units have been moved from the Bosrand to the Labusrus site.**
- **Additional trench sampling has been implemented before the remaining four areas at Labusrus to S-Bend (refer to SRR : ASX release November 22nd, 2013) are assessed for bulk samples.**
- **Next steps include completion of the sampling program and reporting of the zones for bulk sampling.**

## About

Board of Directors

Mr Michael Walters

*Chairman*

Mr Peter Benjamin

*Managing Director*

Jeremy Sinclair

*Non-Executive Director*

ASX: SRR

Capital Structure

Shares on issue: 903,315,606

Unlisted options: 104,800,000

Major Shareholders

Atlas Iron: 53.45%

OM Holdings: 4.01%

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**Otjozondu Manganese Project (Figures, 1 to 4)**

During 2013 Shaw River continued to build confidence in key parameters of the Otjo Project including those deposits with higher grades and metallurgical response. Typically, the next step would be further investigation of project parameters such as manganese grade, geological continuity and metallurgical yield within a Pre-Feasibility Study (PFS). Shaw River has been reviewing operational plans that aim to improve our understanding of key operational assumptions whilst advancing the Otjo Project in the most cost effective manner. Considering the time and cost taken to complete a PFS, and for the reasons below, Shaw River has decided to obtain this information by commencing a blast hole surface drilling and sampling program at Labusrus, targeting the basis of a start-up, at surface inventory. The Labusrus area forms a subset of a broader, staged plan to subsequently scale the production up to full capacity once key physical parameters are confirmed.
This approach is considered appropriate because:

- The Otjo project manganese mineralisation occurs at surface or under shallow (<5 metres) Kalahari sands.
- The areas chosen, (Figure 1), contain Mineral Resources delineated during the 12,060 metre resource drilling program completed in December, 2012 (*refer SRR : ASX release December 11th, 2012 and Tables 1 and 2 below*).
- Extensive rock chip sampling indicates that material of suitable manganese mineralisation (>25% Mn) "occurs at surface", with the potential to be mined in the future, subject to drilling results (*refer SRR : ASX release November 22nd, 2013*). There is existing infrastructure and owned equipment (Terex crusher, screens, conveyors, a fines JIG, an electricity allocation, water, workforce) and a mining lease with all approvals in place. The wholly owned Terex crusher and Finlay screens have been successfully moved from Bosrand to the Labusrus site (a distance of about 9 kilometres) and are planned to undergo maintenance prior to commissioning. The weighbridge has been re-calibrated, pumps for the second water bore have been ordered and all on site (standby) electrical generators are now operational.
- Mining is expected to be via shallow open pit and the manganese processed using existing well established gravity technology, such as, a JIG plant.
- Two companies are operating nearby and have been producing manganese product using similar operational practices, one for 10+ years and who is producing >120-140Kt pa of manganese product from the same geological Otjo manganese field, albeit from small, unconnected mine leases representing about 10 percent of the area of the Otjo project.
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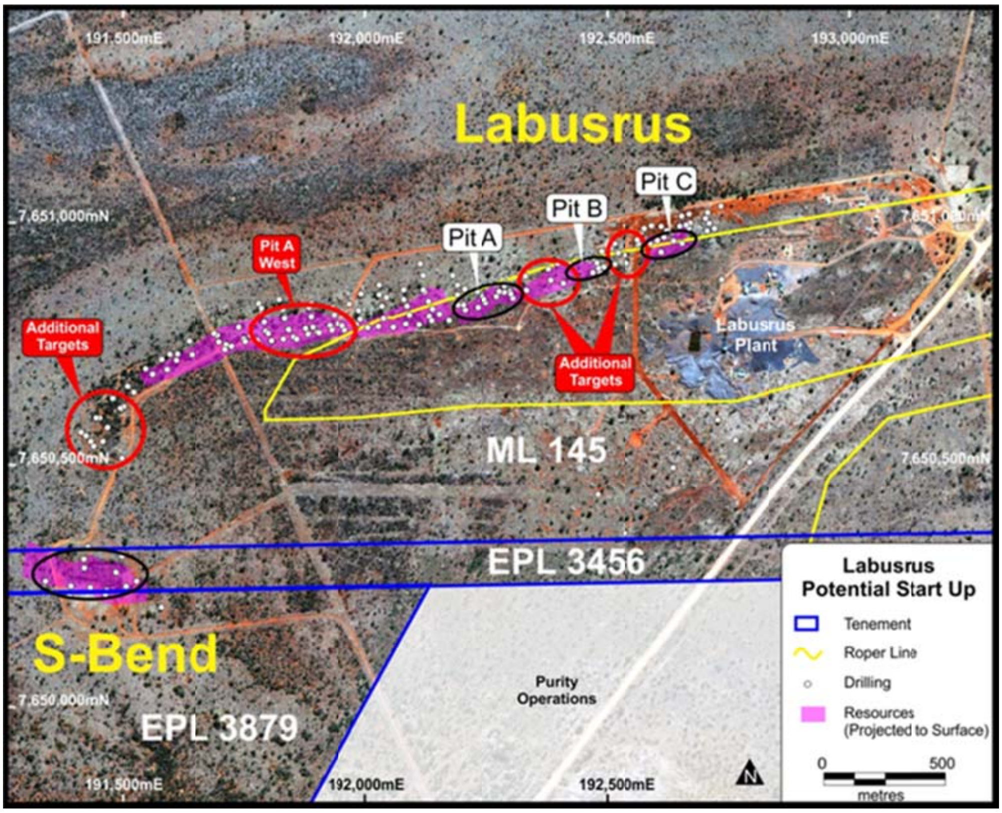


**Figure 1: Start Up Drilling Localities, Pits A to C & Additional Targets**

"Following an extensive review of options, and after careful consideration to determine the most appropriate use of shareholder's funds, we believe this is a very good outcome for Shaw River shareholders," Mr. Benjamin said. "We understand the geology at Otjo which is characterised by manganese mineralisation outcropping at surface, in a number of locations, along a clearly defined trend of some 144 line kilometres."

Consequently, the Company is pursuing a Start-up Production Plan ("SPP") for its Otjo Project. This SPP is targeting a very low capital, staged, development option which would see operations commencing within six months of the order of the process plant. The Company is also seeking a "cornerstone funding partner" to provide the necessary funding to the Company to fully implement this plan and to provide financial support to the Company until it is cash flow positive. The Company has appointed corporate advisory firm PCF Capital Group Pty Ltd to assist with this process and initial indications of securing a strategic investor have been positive.

## Pit A – Blast-Hole Drilling & Sample Results (Figures 2 to 3, Tables 1 to 2 & Appendices)

The areas chosen preferentially for this drilling and sampling program were those that were on the granted mining lease, had a mineral resource reported in accordance with JORC 2004, contained areas of higher grades, were close to the planned process plant site and had visual "at surface" manganese mineralisation. This area corresponded with the Labusrus then westwards to S-Bend deposits (Figure 2).

The Labusrus deposit is within 500 to 1,000 metres of an envisaged plant site *(refer SRR : ASX release November 22nd, 2013)*. Labusrus has a mineral resource*, reported in accordance with JORC 2004, of 800kt of Indicated Mineral Resource at 23.3% Mn and 800kt of Inferred Mineral Resource 21.8% Mn for a total of 1.6Mt at 22.6% Mn, at a cut-off grade of 15% Mn. *(Refer SRR : ASX release December 11th, 2012 and Tables 1 and 2).*

The blasthole drilling and sampling program commenced in early December 2013, over Pit A at Labusrus and was completed before the Christmas break. This is the first of five areas to be tested to identify "at surface manganese mineralisation" for the basis of a start-up inventory for mining and subsequent processing, to underpin the SPP.

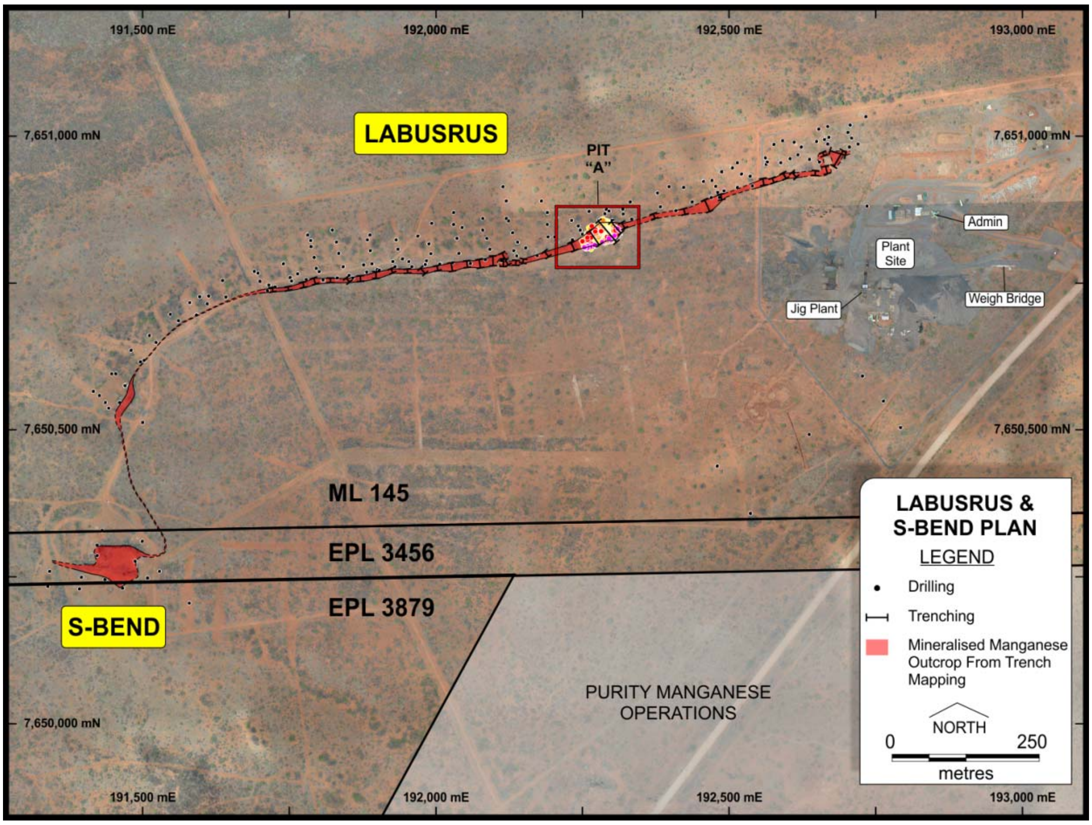


**Figure 2: Labusrus and S Bend Plan: Position of Drill Sampled Area A and Trenches**

318 vertical blast holes were drilled to 5.5 metres depth (including a 0.5m sub-drill) and sampled in one metre intervals. Once drilled a poly pipe was inserted in the open hole to ensure that these holes remain open for future selective, blasting. Each sample was geologically logged and assayed using a NITON hand held analyser. Approximately 1 in 8 samples have been sent for check assaying by XRF by an independent laboratory. Review of the check assays indicates that there is good agreement with the NITON results. The results for the blast holes and the surface trenching were received and plotted onto the surface plan (Figure 3) and two higher grade zones of manganese mineralisation were outlined, separated by a lower grade zone. The zones are a hanging wall and a footwall zone, varying from 60 to 70 metres in length, from 3 to 20 metres estimated horizontal width and to a depth of 5 metres and separated by a lower grade zone (<25% Mn) of manganese lode. The mineralisation dips variably (shallow to steeply) to the north and north west. The two zones of manganese mineralisation, at surface, report a combined tonnage of approximately 20,400 tonnes to a depth

of 5 metres. This material is being considered as suitable as a “bulk sample” to test for grade, geological continuity, and metallurgical yield.

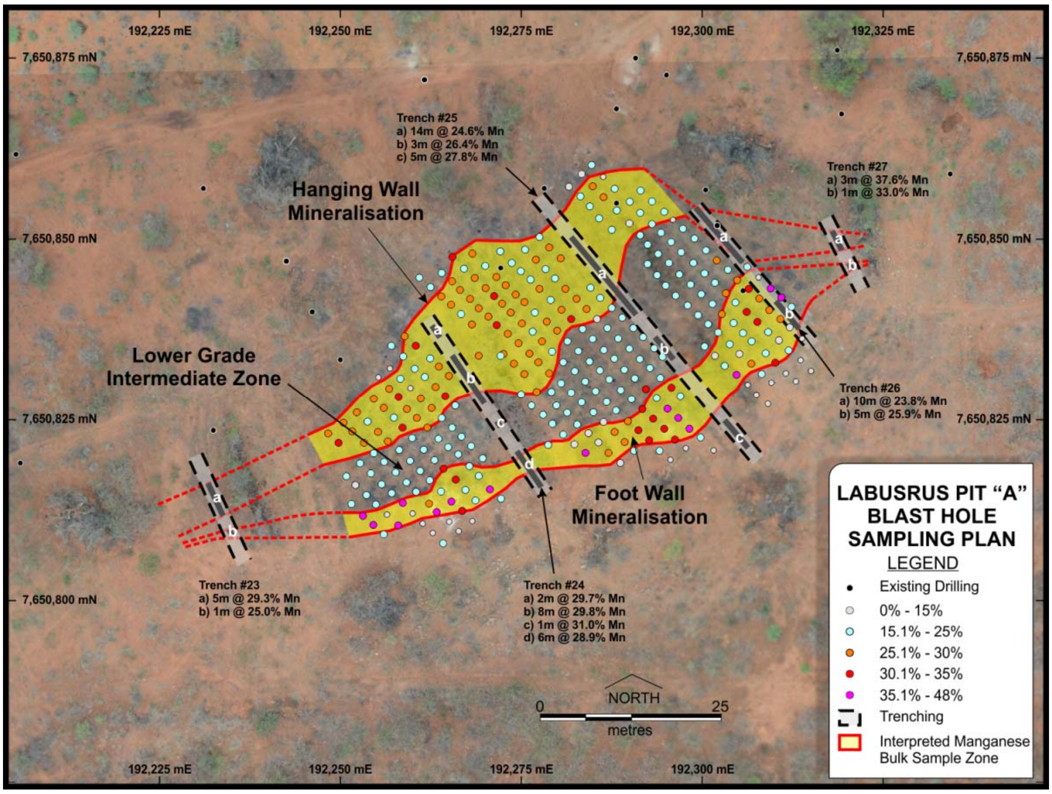


**Figure 3: Blast Hole Drill Sample Results for Pit A, percentage Manganese content.**

*(The outline represents the area under consideration for Manganese Bulk Sample)*

This sampling program also indicated that there is a variable layer of detritus (eluvium) overlying the manganese lode in parts, varying from less than a metre to over 2 metres in depth which may result in contamination of some of the holes. Consequently, the sampling process has been supported by “Trenching” across the manganese horizon. This has now led to a modified sampling protocol with trenches being dug by an Excavator every 25 metres from east of Pit C, west to the S Bend mineralised area. 63 trenches have been completed, (see Figure 2) and will be cleaned, mapped and sampled with the NITON analyser. Subsequently the trench is grade control sampled using a blasthole rig to drill a vertical, 5 metre depth hole and sampled every metre.

Encouragingly, the manganese lode has now been exposed along more than 1,100 metres of strike, which is considerably in addition to the original five Pit areas outlined in the November 22nd, 2013 ASX release. Visual estimates put the thickness of the manganese lode between 4.5 and up to 40 metres, estimated horizontal width (EHW), averaging more than 9 metres (EHW) at surface. It is anticipated that zones of manganese mineralisation, suitable for the delineation of bulk sample(s) will be located at surface and form the basis of “at surface mineralised material or inventory” for the scaled SPP.

Once all of the sample results are collated, this will then determine how much material will be available for the bulk sampling program and which order to mine and process this material.

Managing Director, Peter Benjamin stated "I remain confident that this program should be capable of outlining a suitable, start-up "at surface mineral inventory" which will initially allow bulk samples of manganese mineralisation to be mined and processed leading to the testing of the key physical parameters, usually estimated in a Pre-Feasibility Study and thence provide confidence to progressively scale up the project to full production."

At "S-Bend", 5 trenches have been completed with visual results from logging reporting at surface manganese mineralisation over a strike length of 75 metres and widths up to 55 metres wide (EHW).

In addition, 10 Trenches have also been dug across the manganese lode at the nearby Ongorussengo deposit, some 4 kilometres to the east of Labusrus. To date the visual trench results from logging indicate at surface manganese mineralisation over a considered strike length of 415 metres and widths varying from 3 to 8 metres (EHW). The Ongorussengo area is also within Mining Lease 145.

The wholly owned Terex J1175 jaw crusher and Terex Finlay 604 Supertrack screen units have now been successfully moved from Bosrand to the Labusrus site a distance of about 9 kilometres and are planned to undergo minor maintenance prior to commissioning. The weighbridge has been re-calibrated, pumps for the second water bore have been ordered and all on site electrical generators are now operational.

**Figure 4: Terex J1175 Crusher and Terex Finlay 604 Supertrack Screen at Labusrus Plant Site**

Preliminary mining and ore haulage contract rates have been obtained enabling a short list of potential suppliers to be developed.

**Baramine, Pilbara**

Work completed included rehabilitated areas affected during the 2010 exploration program and Shaw has obtained reimbursement of environmental bonds for this and other tenements.

**Corporate**

Iron ore producer Atlas Iron Limited holds 53.45% of Shaw River and is a strong supporter of Shaw River's manganese strategy.

For further information please contact:

Investors

**Peter Benjamin**

**Managing Director**

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*Join the electronic mailing list and find more information about Shaw River at*: www.shawriver.com.au

## About Shaw River

Shaw River is a manganese-focused development and exploration company headquartered in Perth, Western Australia. The Company is targeting a low-cost, scalable start-up development of its flagship 87.2%-owned Otjozondu Manganese Project in Namibia.

Otjo has a 17 million tonne resource with significant exploration upside and is located in an area from which high grade manganese has been exported for more than 50 years. In addition to Otjo, Shaw River owns the Baramine Project in the East Pilbara region of Western Australia and the Butre Project in Ghana. Shaw River has a supportive major shareholder in Atlas Iron which owns 53.45% of the Company.


**Otjo Project – Location Diagram**

**Table 1: Otjo Project – Mineral Resources at 15% Manganese Cut-Off Grade**

| 11 December 2012* | Mt | % Mn |
|---|---|---|
| **Inferred Mineral Resource** | 12.7 | 22.6 |
| **Indicated Mineral Resource** | 4.3 | 22.3 |
| **Mineral Resource (Total)** | 17.0 | 22.5 |

** Refer to SRR: ASX report 11th December, 2012.*

**Table 2: Otjo Project – Mineral Resources* at 15% Manganese Cut-Off Grade**

| | Indicated | | Inferred | | Combined | |
|---|---|---|---|---|---|---|
| **Deposit** | **Mt** | **%Mn** | **Mt** | **%Mn** | **Mt** | **%Mn** |
| Bosrand*# | 2.6 | 21.8 | 1.4 | 20.9 | 4.0 | 21.5 |
| North Bosrand*# | 0.8 | 22.9 | 1.5 | 21.3 | 2.3 | 21.9 |
| Labusrus*# | 0.8 | 23.3 | 0.8 | 21.8 | 1.6 | 22.6 |
| Uitkomst$ | | | 1.8 | 22.7 | 1.8 | 22.7 |
| Kopje# | | | 1.3 | 25.1 | 1.3 | 25.1 |
| Labusrus S bend# | | | 0.9 | 24.4 | 0.9 | 24.4 |
| Jeppe# | | | 0.2 | 22.1 | 0.2 | 22.1 |
| East Otjozondu# | | | 2 | 19.8 | 2 | 19.8 |
| Ouparakane*# | | | 1.7 | 24.1 | 1.7 | 24.1 |
| Ongorussengo*# | | | 0.6 | 26.6 | 0.6 | 26.6 |
| Waterloo# | | | 0.7 | 23.3 | 0.7 | 23.3 |
| **Total In Situ** | **4.3** | **22.3** | **12.7** | **22.6** | **17.0** | **22.5** |

*(* Deposit wholly located within current Mining Lease. # - Inferred and indicated Resources estimated by Cube Consulting. $ - Inferred resources estimated by SRR, AEMCO) All tonnage and grade values have been rounded to relevant significant figures. Slight errors may occur due to this rounding of values.*

***Competent Person Statement:***

*Cube Consulting Pty Ltd (Cube) was commissioned by Shaw River Resources Ltd to estimate and classify the resources for the Bosrand, Labusrus, North Bosrand, Kopje, Jeppe, Labusrus S-Bend, East Otjozondu, Ongorussengo, Waterloo and Ouparakane deposits at its Otjozondu project, in accordance with The 2004 Australasian Code for Reporting of Mineral Resources and Ore Reserves (JORC Code). Mineral Resources were modeled, estimated and classified by Cube Consulting ("Cube") except Uitkomst area, where a model was created by Shaw River Geologists using Surpac software and reviewed and classified by AEMCO consultants, who have over 10 years' experience in the Otjozondu manganese field.*

*The information in this report that relates to Mineral Resources for Bosrand, Labusrus, Ouparakane, Kopje, Labusrus S-Bend, Jeppe, East Otjozondu, Ongorussengo, Waterloo and North Bosrand is based on information compiled by Jason Harris of Cube Consulting, who is a Member* *of the Australian Institute of Geoscientists. Jason Harris has sufficient experience which is relevant to the style of mineralization and type of deposit under consideration and to the activity which they are undertaking to qualify as a Competent Person as defined in the 2004 Edition of the "Australasian Code for Reporting of Mineral Resources and Ore Reserves". Mr. Jason Harris consents to the inclusion in the report of the matters based on his information in the form and context in which it appears.*

*The information in this report to which this statement is attached that relates to the Uitkomst area for Mineral Resources or Ore Reserves is based on information compiled by Mr. Vincent Algar, a former employee of Shaw River Manganese Ltd and Mr. Adriaan du Toit of AEMCO Pty Ltd, who are Members of the Australasian Institute of Mining and Metallurgy. Mr. Vincent Algar and Mr. Adriaan du Toit, an independent consultant, have sufficient experience which is relevant to the style of mineralization and type of deposit under consideration and to the activity which they are undertaking to qualify as Competent Persons as defined in the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves. Mr. Vincent Algar and Mr. Adriaan du Toit consent to the inclusion in the report of the matters based on their information in the form and context in which it appears.*

*The information in this report to which this statement is attached that relates to Exploration Results, is based on information compiled by Mr. Braam Jankowitz of Gemsbok Consulting Services CC. Mr. Jankowitz is an Independent Consultant, currently contracted to the company, and a Member of the South African Council for Natural Scientists and Professionals, and has sufficient experience which is relevant to the style of mineralization and type of deposit under consideration and to the activity which they are undertaking to qualify as Competent Persons as defined in the 2004 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr. Jankowitz consents to the inclusion in the report of the matters based on their information in the form and context in which it appears.*

***Forward Looking and Exploration Target Statements:***

*Some statements in this announcement regarding future events are forward-looking statements. They involve risk and uncertainties that could cause actual results to differ from estimated results. Forward-looking statements include, but are not limited to, statements concerning the Company's exploration program, outlook, target sizes, resource and mineralized material estimates. They include statements preceded by words such as "potential", "target", "scheduled", "planned", "estimate", "possible", "future", "prospective" and similar expressions. The terms "Direct Shipping Ore (DSO)", "Target" and "Exploration Target", where used in this announcement, should not be misunderstood or misconstrued as an estimate of Mineral Resources and Reserves as defined by the JORC Code (2004), and therefore the terms have not been used in this context. The potential quantity and grade of Exploration Targets are conceptual in nature and it is uncertain if further exploration or feasibility study will result in the determination of a Mineral Resource or Reserve.*

# APPENDIX 1: JORC Code, 2012 Edition – Table 1 (Pit A Blast Hole Drilling)

## Section 1 Sampling Techniques and Data

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

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| ***Sampling techniques*** | • *Nature and quality of sampling (e.g. cut channels, random chips, or specific specialized industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.*<br>• *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.*<br>• *Aspects of the determination of mineralisation that are Material to the Public Report.*<br>• *In cases where 'industry standard' work has been done this would be relatively simple (e.g. 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to* | • All the drill chip material is collected at 1 metre intervals (a nominal 15-20kg), then riffled and split at bore hole locality to approximately 2.0 kg to 3.0 kg per sample. This sample is pulverized onsite and analysed with NITON (handheld) XRF instruments.<br>• The NITON (handheld) XRF instruments Models XL2 & XL3 are calibrated monthly as per instrument supplier instructions and daily measurements of both standards and blanks are applied every 100 measurements. Each sample is analyzed 3 times for 30 seconds each and the average of the 3 readings is reported.<br>• Rotary air blast drilling (DTH hammer) was used to obtain 1 m samples from which 2-3 kg was pulverized to produce a 150-200g material for NITON XRF. The following used elements were analyzed at OM internal lab i.e. Mn, Fe, Ba, Ag, As, Bi, Cd, Co, Cr, Cu, Mo, Nb, Ni, Pb, Rb, Sb, Se, Sn, Ti, V, W, Zn, Zr |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | *produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.* | |
| ***Drilling techniques*** | • *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).* | • Drill type: Rotary air blast with an 89mm hammer was used on a 2.0m by 2.5m staggered drill pattern, a total of 318 vertical holes were drilled to 5.5m depth (the 0.5m subsample was not sampled. |
| ***Drill sample recovery*** | • *Method of recording and assessing core and chip sample recoveries and results assessed.*<br>• *Measures taken to maximise sample recovery and ensure representative nature of the samples.*<br>• *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.* | • Method of recording: All material is collected for each 1m interval and the gross weight of each 1m sample has been recorded at the drill site after which it has been riffled and split down to 2-3kg – this latter weight has also been recorded and captured with the geological logging in the central OM database.<br>• Flushing of each hole has been applied at 1m intervals to ensure all drilled material has been collected before commencing with the next meter.<br>• All material of each 1m sample has been collected, from fine to coarse chip before riffling and splitting commenced |
| ***Logging*** | • *Whether core and chip samples have been geologically and geotechnically logged to a level* | • A representative portion of chip sample for each 1m interval drilled has been geologically logged and captured on paper log sheets and then digitally recorded in |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | *of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.*<br>• *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.*<br>• *The total length and percentage of the relevant intersections logged.* | a central database for future reference<br>• Qualitative and quantitative data of the drill chips have been recorded, all chip trays are stored in the OM store room, no photographs of the chip trays have been taken yet.<br>• The total length of each bore hole or trench has been logged on 1m intersections, including FW and HW host rock. |
| ***Sub-sampling techniques and sample preparation*** | • *If core, whether cut or sawn and whether quarter, half or all core taken.*<br>• *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.*<br>• *For all sample types, the nature, quality and appropriateness of the sample preparation technique.*<br>• *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.*<br>• *Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.* | • All drill chip material has been collected, all dry samples<br>• Each 1m sample has been riffled and split through a Standard Riffler and 2-3kg of material collected (from 15-20kg)<br>• All the material of each chip sample was pulverized and riffled and split to 150-200g for NITON XRF. The pulverizer has been cleaned with compressed air between samples to minimize any potential contamination.<br>• No duplicate samples were collected either in the field and/or in the laboratory.<br>• A 150-200g sample of pulverized material has been taken from each 2-3kg chip sample. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | • *Whether sample sizes are appropriate to the grain size of the material being sampled.* | |
| ***Quality of assay data and laboratory tests*** | • *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.*<br>• *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.*<br>• *Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.* | • Each sample has been analyzed 3 times for 30 seconds per analysis using a handheld NITON XRF Model XL2 or XL3, assaying for a suite of major and trace elements (see above)<br>• Two NITON (Models XL2 and XL3) handheld XRF instruments have been used in determining the analysis, 3 reading times per sample for 30 seconds per reading has been applied, calibrations have been conducted monthly, standards and blanks have been read daily to ensure calibration are correct, no factors have been applied<br>• Standards and blanks have been inserted with every batch of 50 samples, no duplicates have been applied; A total of 200 check samples were analyzed by an external laboratory using XRF assaying techniques, acceptable levels of accuracy (ie lack of bias) and precision have been established. No standards or blanks were sent to the external lab. |
| ***Verification of sampling and assaying*** | • *The verification of significant intersections by either independent or alternative company personnel.*<br>• *The use of twinned holes.*<br>• *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* | • No external verification has been conducted, data validation has been done by alternative company personnel<br>• No twinned holes were drilled since the drill pattern was drilled on a 2.0m by 2.5m burden and spacing<br>• Trenches were sampled across strike at 1 metre intervals.<br>• All physical records are kept on site, data capturing is done on site and validated by project geologists and then send to the central database at Perth HO for |


Shaw River Manganese Limited

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | • *Discuss any adjustment to assay data.* | independent validation by the Database Manager<br>• No adjustment to assay data |
| ***Location of data points*** | • *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.*<br>• *Specification of the grid system used.*<br>• *Quality and adequacy of topographic control.* | • Apart from an airborne DTM survey of a larger area, each collar was surveyed by an independent contract surveyor by Realtime GPS<br>• UTM WGS84, Zone 34 Southern Hemisphere<br>• 9 Control Points and 24 pre-marked collars were used as reference for the topographic control |
| ***Data spacing and distribution*** | • *Data spacing for reporting of Exploration Results.*<br>• *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.*<br>• *Whether sample compositing has been applied.* | • The drill pattern was drilled at 2.5m by 2.0m burden and spacing<br>• The spacing of 2.5m by 2.0m together with surface geological mapping proved to be sufficient for geological and grade continuity<br>• No sample composition was applied at this stage<br>• Trenches are spaced at 25 metre intervals along strike. |
| ***Orientation of data in relation to geological structure*** | • *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.*<br>• *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have* | • No unbiased sampling was applied since a fixed pattern of 2.5m by 2.0m was drilled across and along strike of the ore body<br>• All blast holes were drilled vertically to 5.5m depth although the mineralized horizon dips mostly at 45° to 65°<br>• The trenches were set across the strike of the mineralised lodes. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | *introduced a sampling bias, this should be assessed and reported if material.* | |
| ***Sample security*** | • *The measures taken to ensure sample security.* | • Sample submission sheets sent to external lab for check assaying and pre-pulverised samples are tied up in plastic backs and shipped in boxes. 2kg sub sample at drill rigs are contained in calico bags for transport to on site lab. |
| ***Audits or reviews*** | • *The results of any audits or reviews of sampling techniques and data.* | • No external audits have been conducted but internal reviews and adjustments of sampling techniques have been done since the drill rig was not fitted with a cyclone and sample collection facility. |

# APPENDIX 2: Section 2 Reporting of Exploration Results

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

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| ***Mineral tenement and land tenure status*** | • *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.*<br>• *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.* | • Mining License 145, issued to Otjozondu Mining (Pty) Ltd by the Ministry of Mines and Energy, Namibia |
| ***Exploration done by other parties*** | • *Acknowledgment and appraisal of exploration by other parties.* | • Prior exploration results conducted by other parties, although held by the company, have not been used as part of this review |
| ***Geology*** | • *Deposit type, geological setting and style of mineralisation.* | • The Otjozondu Manganese Field is located at the eastern exposed extent of the inland branch of the late Proterozoic Damara Orogen, and situated just north of the Okahandja Lineament within the Southern Central Zone of the Damara Orogen, on Central and North Eastern Namibia.<br>• The manganese mineralization found is associated with post-glacial BIF sequences on low to high grade folded and metamorphic continental margin sediments. The manganese mineralised layer is lying between a feldspathic meta-quartzite (original coarse arkosic sandstone to conglomerate) and a thinly laminated |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | | facies, composed of millimetre to centimetre thick quartz-feldspathic beds, finely crystallised iron oxide (Itabirite) beds and ferro-magnesian mineral (biotite, amphibole, clinopyroxene) beds considered as BIFs. (**Itabirite**, also known as banded-quartz hematite and hematite schist, is a laminated, metamorphosed oxide-facies iron formation in which the original chert or jasper bands have been recrystallized into megascopically distinguishable grains of quartz and the iron is present as thin layers of hematite, magnetite, or *martite* – pseudomorphs of hematite after magnetite).<br>• The manganese mineralisation is found to outcrop over large areas and is exposed over a distance of at least 144km. The Neo-Proterozoic Otjosondu Mn-ore district at Otjosondu in linked to biochemical Mn-oxides deposition at a peculiar redox window, during post-glacial snowball Earth meltdown, at the margin of a hyperstratified ocean. These conditions favoured high-grade Mn concentration controlled at first order by depositional processes and paleogeography. The original manganese series was subjected to successive phases of intense tectono-metamorphism, with partial melting, folding and stretching that contorted and dislocated the ore layer without primary grade changes.<br>• A superficial "nodule" ore layer (detrital ore) is found to be associated with most outcrop and is linked to local weathering and mechanical reworking of the primary mineralization. |
| ***Drill hole Information*** | • *A summary of all information material to the understanding of the exploration results* | • The assay results are presented in Figure 3 and represent the composite average manganese grade over the 5 metre sampled interval. The pattern of results |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | *including a tabulation of the following information for all Material drill holes:*<br>o *easting and northing of the drill hole collar*<br>o *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar*<br>o *dip and azimuth of the hole*<br>o *down hole length and interception depth*<br>o *hole length.*<br>• *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.* | provide an understanding of the outline of the area for consideration of a bulk sample. Thus no requirement for a list of individual 1 metre assays was considered necessary. |
| ***Data aggregation methods*** | • *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.*<br>• *Where aggregate intercepts incorporate short* | • The grade of the 5 metre intervals was estimated using the arithmetic averages<br>• Trench samples were individual (See table) and aggregated to represent areas with a manganese grade >25% Mn with a minimum internal interval of 2 metres of waste, approximately. |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| | *lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.*<br>• *The assumptions used for any reporting of metal equivalent values should be clearly stated.* | |
| ***Relationship between mineralisation widths and intercept lengths*** | • *These relationships are particularly important in the reporting of Exploration Results.*<br>• *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.*<br>• *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').* | • All blast holes were drilled at a dip of -90° whilst the Manganese layer dips at 45° to 65°, varying dip over short distances along strike.<br>• Drill hole composites are based on "down hole lengths" and not adjusted for true or estimated width.<br>• Trench samples were taken on surface, generally at right angles to strike and along the estimated horizontal width. |
| ***Diagrams*** | • *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.* | • Maps attached |

| Criteria | JORC Code explanation | Commentary |
|---|---|---|
| ***Balanced reporting*** | • *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.* | • The blast hole assay results are presented in Figure 3 and represent the composite average manganese grade over the 5 metre sampled interval. The pattern of results provide an understanding of the outline of the area for consideration of a bulk sample. Thus no requirement for a list of individual 1 metre assays was considered necessary.<br>• Refer attached table for trench results |
| ***Other substantive exploration data*** | • *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.* | • Previous exploration drilling have been reported with previous resource statements |
| ***Further work*** | • *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).*<br>• *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.* | • Extensions both west and east of Pit A are being tested with trenching at 25m intervals with further grade control drilling after trench mapping and sampling have been completed. |

## APPENDIX 3: Assay Results Trench Sampling – All Intervals 1.0 metre

| Trench ID | Sample ID | Sample_East | Sample_North | Sample_RL | Mn (%) |
|---|---|---|---|---|---|
| LTR023 | A | 192,236.645 | 7,650,805.446 | 1,523.288 | 4.22 |
| LTR023 | B | 192,236.270 | 7,650,806.259 | 1,523.250 | n/s |
| LTR023 | C | 192,235.895 | 7,650,807.073 | 1,523.212 | 21.76 |
| LTR023 | D | 192,235.521 | 7,650,807.886 | 1,523.174 | 23.24 |
| LTR023 | E | 192,235.146 | 7,650,808.700 | 1,523.135 | 25.25 |
| LTR023 | F | 192,234.771 | 7,650,809.513 | 1,523.097 | 23.05 |
| LTR023 | G | 192,234.396 | 7,650,810.327 | 1,523.059 | 16.09 |
| LTR023 | H | 192,234.022 | 7,650,811.140 | 1,523.021 | 27.74 |
| LTR023 | I | 192,233.647 | 7,650,811.954 | 1,522.983 | 26.35 |
| LTR023 | J | 192,233.272 | 7,650,812.767 | 1,522.945 | 35.99 |
| LTR023 | K | 192,232.897 | 7,650,813.580 | 1,522.906 | 29.63 |
| LTR023 | L | 192,232.522 | 7,650,814.394 | 1,522.868 | 27.01 |
| LTR023 | M | 192,232.148 | 7,650,815.207 | 1,522.830 | 8.95 |
| LTR023 | N | 192,231.773 | 7,650,816.021 | 1,522.792 | 1.63 |
| LTR023 | O | 192,231.398 | 7,650,816.834 | 1,522.754 | 1.66 |
| LTR023 | P | 192,231.023 | 7,650,817.648 | 1,522.716 | n/s |
| LTR023 | Q | 192,230.649 | 7,650,818.461 | 1,522.677 | n/s |
| LTR023 | R | 192,229.899 | 7,650,820.088 | 1,522.601 | n/s |

| Trench ID | Sample ID | Sample_East | Sample_North | Sample_RL | Mn (%) |
|---|---|---|---|---|---|
| LTR024 | A | 192,278.188 | 7,650,814.936 | 1,526.057 | 3.04 |
| LTR024 | B | 192,277.680 | 7,650,815.689 | 1,526.169 | 37.42 |
| LTR024 | C | 192,277.171 | 7,650,816.443 | 1,526.280 | 29.53 |
| LTR024 | D | 192,276.663 | 7,650,817.196 | 1,526.392 | 19.28 |
| LTR024 | E | 192,276.155 | 7,650,817.950 | 1,526.504 | 29.97 |
| LTR024 | F | 192,275.646 | 7,650,818.703 | 1,526.616 | 28.73 |
| LTR024 | G | 192,275.138 | 7,650,819.456 | 1,526.727 | 28.37 |
| LTR024 | H | 192,274.630 | 7,650,820.210 | 1,526.839 | 23.06 |
| LTR024 | I | 192,274.122 | 7,650,820.963 | 1,526.951 | 15.16 |
| LTR024 | J | 192,273.613 | 7,650,821.716 | 1,527.062 | 21.88 |
| LTR024 | K | 192,273.105 | 7,650,822.470 | 1,527.174 | 20.47 |
| LTR024 | L | 192,272.597 | 7,650,823.223 | 1,527.286 | 30.59 |
| LTR024 | M | 192,272.088 | 7,650,823.977 | 1,527.398 | 14.65 |
| LTR024 | N | 192,271.580 | 7,650,824.730 | 1,527.509 | 24.00 |
| LTR024 | O | 192,271.072 | 7,650,825.483 | 1,527.621 | 19.79 |
| LTR024 | P | 192,270.563 | 7,650,826.237 | 1,527.733 | 32.76 |
| LTR024 | Q | 192,270.055 | 7,650,826.990 | 1,527.845 | 20.38 |
| LTR024 | R | 192,269.547 | 7,650,827.743 | 1,527.956 | 38.85 |
| LTR024 | S | 192,269.038 | 7,650,828.497 | 1,528.068 | 34.74 |
| LTR024 | T | 192,268.530 | 7,650,829.250 | 1,528.180 | 31.83 |
| LTR024 | U | 192,268.022 | 7,650,830.004 | 1,528.291 | 17.06 |
| LTR024 | V | 192,267.513 | 7,650,830.757 | 1,528.403 | 30.99 |
| LTR024 | W | 192,267.005 | 7,650,831.510 | 1,528.515 | 31.89 |
| LTR024 | X | 192,266.497 | 7,650,832.264 | 1,528.627 | 22.97 |
| LTR024 | Y | 192,265.989 | 7,650,833.017 | 1,528.738 | 9.73 |
| LTR024 | Z | 192,265.480 | 7,650,833.770 | 1,528.850 | 1.30 |
| LTR024 | AA | 192,264.972 | 7,650,834.524 | 1,528.962 | 32.74 |
| LTR024 | AB | 192,264.464 | 7,650,835.277 | 1,529.073 | 26.68 |
| LTR024 | AC | 192,263.955 | 7,650,836.031 | 1,529.185 | 1.25 |
| LTR024 | AD | 192,263.447 | 7,650,836.784 | 1,529.297 | 1.93 |
| LTR024 | AE | 192,262.939 | 7,650,837.537 | 1,529.409 | 1.19 |
| LTR024 | AF | 192,261.922 | 7,650,839.044 | 1,529.632 | n/s |

| Trench ID | Sample ID | Sample_East | Sample_North | Sample_RL | Mn (%) |
|---|---|---|---|---|---|
| LTR025 | A | 192,307.432 | 7,650,819.658 | 1,518.555 | 1.12 |
| LTR025 | B | 192,306.694 | 7,650,820.539 | 1,518.719 | 22.77 |
| LTR025 | C | 192,305.957 | 7,650,821.421 | 1,518.882 | 36.03 |
| LTR025 | D | 192,305.219 | 7,650,822.302 | 1,519.046 | 33.28 |
| LTR025 | E | 192,304.481 | 7,650,823.183 | 1,519.209 | 30.13 |
| LTR025 | F | 192,303.744 | 7,650,824.065 | 1,519.373 | 1.44 |
| LTR025 | G | 192,303.006 | 7,650,824.946 | 1,519.536 | 38.38 |
| LTR025 | H | 192,302.268 | 7,650,825.828 | 1,519.700 | 20.91 |
| LTR025 | I | 192,301.531 | 7,650,826.709 | 1,519.863 | 13.41 |
| LTR025 | J | 192,300.793 | 7,650,827.590 | 1,520.027 | 18.98 |
| LTR025 | K | 192,300.055 | 7,650,828.472 | 1,520.190 | 18.61 |
| LTR025 | L | 192,299.318 | 7,650,829.353 | 1,520.354 | 19.21 |
| LTR025 | M | 192,298.580 | 7,650,830.234 | 1,520.517 | 16.48 |
| LTR025 | N | 192,297.842 | 7,650,831.116 | 1,520.681 | 14.89 |
| LTR025 | O | 192,297.105 | 7,650,831.997 | 1,520.844 | 17.39 |
| LTR025 | P | 192,296.367 | 7,650,832.878 | 1,521.008 | 24.39 |
| LTR025 | Q | 192,295.629 | 7,650,833.760 | 1,521.171 | 20.98 |
| LTR025 | R | 192,294.892 | 7,650,834.641 | 1,521.335 | 23.28 |
| LTR025 | S | 192,294.154 | 7,650,835.523 | 1,521.498 | 29.61 |
| LTR025 | T | 192,293.416 | 7,650,836.404 | 1,521.662 | 21.26 |
| LTR025 | U | 192,292.679 | 7,650,837.285 | 1,521.825 | 25.24 |
| LTR025 | V | 192,291.941 | 7,650,838.167 | 1,521.989 | 29.39 |
| LTR025 | W | 192,291.204 | 7,650,839.048 | 1,522.152 | 22.59 |
| LTR025 | X | 192,290.466 | 7,650,839.929 | 1,522.316 | 22.70 |
| LTR025 | Y | 192,289.728 | 7,650,840.811 | 1,522.479 | 22.74 |
| LTR025 | Z | 192,288.991 | 7,650,841.692 | 1,522.643 | 23.90 |
| LTR025 | AA | 192,288.253 | 7,650,842.574 | 1,522.806 | 28.29 |
| LTR025 | AB | 192,287.515 | 7,650,843.455 | 1,522.970 | 22.89 |
| LTR025 | AC | 192,286.778 | 7,650,844.336 | 1,523.133 | 27.13 |
| LTR025 | AD | 192,286.040 | 7,650,845.218 | 1,523.297 | 23.18 |
| LTR025 | AE | 192,285.302 | 7,650,846.099 | 1,523.460 | 29.31 |
| LTR025 | AF | 192,284.565 | 7,650,846.980 | 1,523.624 | 27.23 |
| LTR025 | AG | 192,283.827 | 7,650,847.862 | 1,523.787 | 24.66 |
| LTR025 | AH | 192,283.089 | 7,650,848.743 | 1,523.951 | 25.78 |
| LTR025 | AI | 192,282.352 | 7,650,849.624 | 1,524.114 | 28.60 |
| LTR025 | AJ | 192,281.614 | 7,650,850.506 | 1,524.278 | 27.80 |
| LTR025 | AK | 192,280.876 | 7,650,851.387 | 1,524.441 | 29.34 |
| LTR025 | AL | 192,280.139 | 7,650,852.269 | 1,524.605 | 28.28 |
| LTR025 | AM | 192,279.401 | 7,650,853.150 | 1,524.768 | 31.63 |
| LTR025 | AN | 192,278.663 | 7,650,854.031 | 1,524.932 | 38.54 |
| LTR025 | AO | 192,277.188 | 7,650,855.794 | 1,525.259 | 23.26 |

| Trench ID | Sample ID | Sample_East | Sample_North | Sample_RL | Mn (%) |
|---|---|---|---|---|---|
| LTR026 | A | 192,315.152 | 7,650,835.394 | 1,528.636 | 1.31 |
| LTR026 | B | 192,314.503 | 7,650,836.155 | 1,528.498 | 22.56 |
| LTR026 | C | 192,313.853 | 7,650,836.915 | 1,528.361 | 14.64 |
| LTR026 | D | 192,313.204 | 7,650,837.676 | 1,528.223 | 29.44 |
| LTR026 | E | 192,312.555 | 7,650,838.436 | 1,528.086 | 20.21 |
| LTR026 | F | 192,311.905 | 7,650,839.197 | 1,527.948 | 17.89 |
| LTR026 | G | 192,311.256 | 7,650,839.957 | 1,527.811 | 37.87 |
| LTR026 | H | 192,310.607 | 7,650,840.718 | 1,527.673 | 23.90 |
| LTR026 | I | 192,309.957 | 7,650,841.478 | 1,527.536 | 17.90 |
| LTR026 | J | 192,309.308 | 7,650,842.239 | 1,527.398 | 13.80 |
| LTR026 | K | 192,308.659 | 7,650,843.000 | 1,527.261 | 22.00 |
| LTR026 | L | 192,308.009 | 7,650,843.760 | 1,527.123 | 23.60 |
| LTR026 | M | 192,307.360 | 7,650,844.521 | 1,526.986 | 23.30 |
| LTR026 | N | 192,306.711 | 7,650,845.281 | 1,526.848 | 24.30 |
| LTR026 | O | 192,306.062 | 7,650,846.042 | 1,526.711 | 21.70 |
| LTR026 | P | 192,305.412 | 7,650,846.802 | 1,526.573 | 25.30 |
| LTR026 | Q | 192,304.763 | 7,650,847.563 | 1,526.436 | 22.68 |
| LTR026 | R | 192,304.114 | 7,650,848.324 | 1,526.298 | 13.04 |
| LTR026 | S | 192,303.464 | 7,650,849.084 | 1,526.161 | 31.36 |
| LTR026 | T | 192,302.815 | 7,650,849.845 | 1,526.023 | 22.89 |
| LTR026 | U | 192,302.166 | 7,650,850.605 | 1,525.886 | 23.90 |
| LTR026 | V | 192,301.516 | 7,650,851.366 | 1,525.748 | 23.13 |
| LTR026 | W | 192,300.867 | 7,650,852.126 | 1,525.611 | 23.13 |
| LTR026 | X | 192,300.218 | 7,650,852.887 | 1,525.473 | 24.41 |
| LTR026 | Y | 192,298.919 | 7,650,854.408 | 1,525.198 | 27.85 |
| LTR027 | A | 192,321.866 | 7,650,843.154 | 1,526.105 | 2.01 |
| LTR027 | B | 192,321.412 | 7,650,844.038 | 1,525.880 | 13.28 |
| LTR027 | C | 192,320.958 | 7,650,844.922 | 1,525.654 | 1.04 |
| LTR027 | D | 192,320.503 | 7,650,845.805 | 1,525.429 | 33.14 |
| LTR027 | E | 192,320.049 | 7,650,846.689 | 1,525.203 | 5.93 |
| LTR027 | F | 192,319.595 | 7,650,847.573 | 1,524.978 | 2.95 |
| LTR027 | G | 192,319.141 | 7,650,848.457 | 1,524.752 | 33.06 |
| LTR027 | H | 192,318.687 | 7,650,849.341 | 1,524.527 | 34.32 |
| LTR027 | I | 192,318.233 | 7,650,850.225 | 1,524.301 | 45.26 |
| LTR027 | J | 192,317.778 | 7,650,851.108 | 1,524.076 | 20.89 |
| LTR027 | K | 192,316.870 | 7,650,852.876 | 1,523.625 | 1.92 |