

## ASX Announcement

11 December 2019

# *Ore Sorting Update – Technical Release*

### Ore Sorting Study

Magnetite Mines Limited (**Company**)(ASX:MGT) is pleased to announce the results of a technical investigation into the applicability of NextOre Pty Ltd's (**NextOre**) on-belt Magnetic Resonance ore sorting solution. Results to date indicate that the Razorback Iron Project ores are especially well suited to bulk ore sorting with substantial improvements to ore mass recovery demonstrated in the study completed by NextOre.

NextOre is a partnership between CSIRO and industry players Advisian and RFC Ambrian, focussed on producing the next generation of bulk ore sorting technology. This takes the form of an on-conveyor magnetic resonance sensor coupled with a downstream diverter gate. The sensor continually senses the grade of the material on the belt and this information is used to control a diverter gate that separates material above the selected cut-off grade (**Accepted Material**) from material below that grade (**Rejected Material**).

### Result Highlights

NextOre's report demonstrates that the heterogeneity of the Razorback and Iron Peak resources allows for the potential for significant upgrading from ore sorting. For example, at a **50% rejection** level (corresponding to a cutoff grade of approximately 16% at Iron Peak and 14% at Razorback), the grade of the Accepted Material would be increased by a **factor of about 1.4**. Were this to be implemented as part of a development of the project, by increasing mining rates, and pre-concentrating the plant feed, the throughput of a given plant capacity could be **increased by approximately 40%**, creating significant savings in capital and operating costs per tonne of concentrate product.

### The Study

NextOre completed modelling of the Razorback Ridge (RR) and Iron Peak (IP) prospects (collectively referred to as the Razorback Iron Project) to assess the calculated preconcentration impact of implementing an on-conveyor Bulk Ore Sorting (BOS) system that uses Magnetic Resonance (MR) analysers configured for detection of magnetite (Mt %) concentration.

In order to assess the potential for bulk ore sorting at Razorback, NextOre used data drawn from the overall geological model for the Razorback and Iron Peak resources (the two resources that make up the Razorback

Iron Ore Project). NextOre then applied a fractal model, applying a mixing model to assess the predicted grade variation or heterogeneity of 'pods' of ore as they would present to an on-conveyor bulk ore sorting implementation. Various sorting cut-off grades were selected to demonstrate a range of grade improvement scenarios.

### Bulk Ore Sorting Results

Feed Grade (Mt %)	Cut-off (Mt %)	Rejected		Accepted			
		Weight (% Tot.)	Grade (Mt %)	Weight (% Tot.)	Grade (MT %)	eDTR (%)	Recovery (%)
16.2	5	2%	4.2	98%	16.5	15.3	99%
16.2	6	5%	4.9	95%	16.8	15.6	98%
16.2	7	9%	5.6	91%	17.3	15.9	97%
16.2	8	14%	6.3	86%	17.9	16.3	94%
16.2	9	20%	6.9	80%	18.6	16.8	91%
16.2	10	27%	7.5	74%	19.3	17.4	88%
16.2	11	33%	8.1	67%	20.2	18.0	84%
16.2	12	39%	8.6	61%	21.0	18.7	79%
16.2	13	45%	9.2	55%	22.0	19.4	75%
16.2	14	51%	9.6	50%	22.9	20.1	70%
16.2	15	56%	10.1	44%	23.9	20.8	65%
16.2	16	60%	10.5	40%	24.9	21.6	61%
16.2	17	65%	10.9	35%	25.9	22.3	56%
16.2	18	69%	11.3	31%	27.0	23.1	52%
16.2	19	72%	11.6	28%	28.0	23.9	48%
16.2	20	75%	12.0	25%	29.1	24.7	45%

Table 1 – Razorback Ridge Deposit Bulk Ore Sorting Results

Feed Grade (Mt %)	Cut-off (Mt %)	Rejected		Accepted			
		Weight (% Tot.)	Grade (Mt %)	Weight (% Tot.)	Grade (MT %)	eDTR (%)	Recovery (%)
18.9	1	0%	0.0	100%	18.9	17.1	100%
18.9	2	0%	1.8	100%	18.9	17.1	100%
18.9	3	0%	2.5	100%	18.9	17.1	100%
18.9	4	0%	3.3	100%	18.9	17.2	100%
18.9	5	1%	4.2	99%	19.1	17.3	100%
18.9	6	3%	5.0	97%	19.3	17.5	99%
18.9	7	6%	5.7	94%	19.7	17.8	98%
18.9	8	9%	6.4	91%	20.2	18.2	97%
18.9	9	14%	7.0	86%	20.7	18.6	95%
18.9	10	19%	7.7	81%	21.4	19.2	92%
18.9	11	24%	8.3	76%	22.2	19.8	90%
18.9	12	29%	8.9	71%	23.0	20.4	86%
18.9	13	35%	9.4	65%	23.8	21.1	83%
18.9	14	40%	10.0	60%	24.7	21.8	79%
18.9	15	45%	10.5	55%	25.6	22.5	75%
18.9	16	49%	10.9	51%	26.5	23.2	71%

Table 2 – Iron Peak Deposit Bulk Ore Sorting Results

Physicals		RR	IP	Total
Without BOS				
DTR	%	15.6	17.1	15.7
BOS with 30% rejection				
BOS magnetite cut-off grade	%	9	10	
DTR	%	20	19.7	20
BOS with 50% rejection				
BOS magnetite cut-off grade	%	12	14	
DTR	%	23.3	22.7	23.3
BOS with 70% rejection				
BOS magnetite cut-off grade	%	16	20	
DTR	%	27.8	28	27.8

**Table 3 – Calculated Bulk Ore Sorting Results at predetermined rejection rates.**

## Conclusion

Following the recently completed Scoping Study<sup>1</sup> for a low capital cost, staged development of the Razorback project resources, this study highlights the applicability of NextOre’s Magnetic Resonance bulk ore sorting technology to the processing of the Razorback ores.<sup>1</sup>

When applied to a large, heterogeneous, low strip ratio deposit such as Razorback, bulk ore sorting represents a pre-concentration technology ahead of the concentrator that can enhance throughput, improve economic efficiency and reduce tailings and water use.

As previously reported, the Company has secured the exclusive rights of the NextOre Magnetic Resonance analyser system for magnetite processing applications Australia-wide and all iron ore applications in the Braemar Iron Formation for a period of 4 years.<sup>2</sup>

Magnetite Mines Chairman, Peter Schubert commented ‘We are pleased to release the results of this ground breaking technology for the Razorback project. While our scoping study results for a low capital, staged development have been highly encouraging, we are now confident that the use of leading edge ore sorting technology can further enhance results, providing the Company with a sustainable competitive advantage.’

CEO of NextOre, Chris Beal, said ‘We are pleased to be working in partnership with Magnetite Mines and show how the application of NextOre proprietary technology can enhance efficiency and sustainability outcomes’.

## Note

For the purpose of clarity, the information as provided above follows a heterogeneity assessment of the wider Razorback Iron Project Resource Estimate released to the market in November 2018.<sup>2</sup> Using the data derived from that Resource Estimate, Next Ore applied their modelling to a sub-set of the Razorback and Iron Peak Resources. As per the previously released Scoping Study<sup>3</sup> the subset co-incides with near surface higher grade ore mineralisation. No new exploratory work/data has been generated following Resource Estimation in 2018<sup>2</sup> with the results presented above based on modelling of existing Resource Estimation datasets. The details of the sampling and drill hole information that co-incides with the area of mineralisation to which NextOre’s modelling has been applied is detailed in JORC Table 1 (Sections 1 and 2) below.

## Competent Persons Statement

The details regarding the Razorback Iron Project deposit contained in this report that pertain to ore and mineralisation are based upon information compiled by Mr Trevor Thomas, a full-time employee of Magnetite Mines Limited. Mr Thomas is a Member of the Australasian Institute of Geosciences (AIG) and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code). Mr Thomas consents to the inclusion in this report of the matters based upon his information in the form and context in which it appears.

The information in this report that relates to Mineral Resources has been compiled by Mr Lynn Widenbar. Mr Widenbar, who is a Member of the Australasian Institute of Mining and Metallurgy, is a full time employee of Widenbar and Associates and produced the Mineral Resource Estimate based on data and geological information supplied by Magnetite Mines Limited. Mr Widenbar has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity that he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Minerals Resources and Ore Reserves. Mr Widenbar consents to the inclusion in this report of the matters based on his information in the form and context that the information appears.

## References

1. ASX Announcement – 25/10/19 – Ore Sorting Technology Exclusivity Secured
2. ASX Announcement – 12/11/18 – Razorback Iron Project – JORC 2012 Update
3. ASX Announcement – 07/11/19 – Positive Razorback Scoping Study Results

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JORC Code, 2012 Edition – Table 1

Section 1 Sampling Techniques and Data

Criteria	JORC Code explanation	Commentary
<b>Sampling techniques</b>	<ul style="list-style-type: none"> <li>• Nature and quality of sampling (eg cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.</li> <li>• Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.</li> <li>• Aspects of the determination of mineralisation that are Material to the Public Report.</li> <li>• In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.</li> </ul>	<ul style="list-style-type: none"> <li>• RC samples are collected through a sampling trailer, which has a dust collector, cyclone and non-adjustable riffle splitter.</li> <li>• Each 1 meter drilled is captured in a plastic bag and kept at the drill site. A 2 meter composite for assay was collected as a ~ 3 kg sample in a calico bag, which is captured from the sampling chute at the side of the splitter.</li> <li>• The sampling was done on the rig by the drilling contractors and the process was supervised by Magnetite Mines' geological staff.</li> <li>• Duplicates were processed via a secondary riffle splitter whereby a 2m composite was split 50/50 and rebagged for assay.</li> <li>• All diamond drill cores were marked up on site by field technicians and core loss recorded. S.G. measurements were made on site with handheld magnetic susceptibility measurements taken every 25cm within mineralized zones (as defined by the geologist) and every 1 meter in interstitial material.</li> <li>• Core was cut on site and sampled at 1m intervals.</li> </ul>
<b>Drilling techniques</b>	<ul style="list-style-type: none"> <li>• 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).</li> </ul>	<ul style="list-style-type: none"> <li>• A series of 3 drill programs (Drill Phases 1, 2 and 3) were undertaken between 2010 and 2012 for a combination of reverse circulation (RC), diamond drill (DD) core and RC collar/DD tail (RCDD) drilling methodologies and equipment.</li> <li>• A total of 21,364.28m from 123 drill holes was drilled in the mineralised area as selected for the basis of the above 'Ore Sorting Study'.</li> <li>• RC drilling occurred for a total of 100 holes across the deposit (89 at the Razorback Ridge (RR) prospect, 11 at Iron Peak (IP) prospect).</li> <li>• RC drilling used 5 ½" face sampling hammers.</li> </ul>

- RC hole depth varied according to geometry of mineralisation from 34m to 300m for an average of 167.97m.
- RC drilling total drilled metres was 16,797m.
- DD drilling occurred for a total of 15 holes across the deposit (13 at the RR prospect, 2 at IP prospect).
- DD drilling used a combination of HQ and NQ drill diameters with NQ only occurring on holes with an RC pre-collar.
- DD coring was undertaken via standard tube drilling method.
- DD hole depth varied according to geometry of mineralisation from 36m to 387.6m for an average of 163.7m.
- DD Core was oriented at the site of drilling and was marked via the use of an electronic orientation tool with core blocks used to state the measurement of depth and any loss of core at the end of each run.
- DD drilling total drilled metres was 2,455.48m.
- RCDD drilling (holes with RC collars with DD tails) occurred for a total of 8 holes across the deposit (7 at the RR prospect, 1 at IP prospect).
- RCDD drilling used a combination of RC for the pre-collar followed by HQ or NQ DD coring or a combination of both core diameters. Hole depths of RCDD hole depths varied according to the geometry of mineralisation from 135m to 426m. Average RC pre-collar depth was 121.93m, Average HQ DD tail was 120.83m. Average NQ tail was 108.46m.
- RCDD drilling total meters was 2,111.80m.
- Drilling programs were completed on both the Razorback and Iron Peak prospects where the drilling and sampling procedures between the two projects were equivalent.

**Drill sample recovery**

- *Method of recording and assessing core and chip sample recoveries and results assessed.*
- *Measures taken to maximise sample recovery and ensure representative nature of the samples.*
- *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.*
- Nearly all of the RC samples showed good recovery and there were very few issues with wet samples (< 1% would be considered poor or wet). Any wet or poorly recovered sample was recorded by the geologist and entered into the database.

	<ul style="list-style-type: none"> <li>• The HQ diamond core was shown to be quite cohesive and have good recovery of &gt;98%, with issues only occurring in the first few meters near surface, where drilling occurred within broken ground, or in minor fault zones.</li> <li>• All cores were marked up on site by field technicians and core loss recorded.</li> </ul>
<p><b>Logging</b></p> <ul style="list-style-type: none"> <li>• <i>Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.</i></li> <li>• <i>Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.</i></li> <li>• <i>The total length and percentage of the relevant intersections logged.</i></li> </ul>	<ul style="list-style-type: none"> <li>• RC and diamond drilling were supervised and drill chips geologically logged (using Magnetite Mines' geological rock codes) by contractor and Magnetite Mines' geological staff.</li> <li>• For each RC drill hole, meter samples were collected for reference in chip trays.</li> <li>• Photography of marked core samples was undertaken for both dry and wet samples.</li> </ul>
<p><b>Sub-sampling techniques and sample preparation</b></p> <ul style="list-style-type: none"> <li>• <i>If core, whether cut or sawn and whether quarter, half or all core taken.</i></li> <li>• <i>If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.</i></li> <li>• <i>For all sample types, the nature, quality and appropriateness of the sample preparation technique.</i></li> <li>• <i>Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.</i></li> <li>• <i>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.</i></li> <li>• <i>Whether sample sizes are appropriate to the grain size of the material being sampled.</i></li> </ul>	<ul style="list-style-type: none"> <li>• DD core was sampled as 1m intervals. For HQ core one quarter of the core was sampled, while for NQ core half core samples were submitted for XRF and magnetic susceptibility assay with DTR compositing to follow at a later date, one quarter for metallurgical analysis at AMTEC and half core kept for reference.</li> <li>• Twenty five centimetre whole-core segments were retained for all mineralized lithological units for future metallurgical testing.</li> <li>• In RC holes, a 2 meter composite for assay was collected as a ~ 3 kg sample.</li> <li>• Duplicates were processed via a secondary riffle splitter whereby a 2m composite was split 50/50 and rebagged for assay by the geologist.</li> </ul>
<p><b>Quality of assay data and laboratory tests</b></p> <ul style="list-style-type: none"> <li>• <i>The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.</i></li> <li>• <i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>• Both the RC and diamond samples were assayed at ALS Chemex Laboratories, with sample preparation done in Adelaide and analysis carried out in Perth.</li> <li>• In Adelaide, the samples were sorted, dried, and sample numbers reconciled. The dry sample weights were recorded, then crushed to a nominal 3mm and pulverised to -75µm size.</li> </ul>

- *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.*
- Samples were analysed using XRF fusion (ALS code ME-XRF11b), with Fe, Al<sub>2</sub>O<sub>3</sub>, SiO<sub>2</sub>, TiO<sub>2</sub>, MnO, CaO, P, S, MgO, K<sub>2</sub>O, Na<sub>2</sub>O, Cu, Ni, Pb, V, and LOI measured. Accuracies for each element are stated in the database.
- Within Drilling Phase 1 for the purpose of QA/QC, every 50th sample was a standard. The standards consisted of a certified standard (magnetite standard GIOP-31 with a value of 37.37% +/- 0.28% Fe ) from Geostats Pty Ltd of Perth and an “in-house” standard from tillitic material sampled from the Adit stockpile and assayed by ALS Perth 15 times to produce a standard of 25.4%, +/- 0.1% Fe.
- Six field duplicate samples were submitted for every 100 samples sent to the lab. Field duplicates are principally a measure of the field RC sampling collection procedure but also test analytical precision.
- Within drilling Phase 2 the frequency of standard insertion increased to every 20th sample. Similarly for duplicates, every 20th sample was a duplicate.
- For additional QA/QC, one hundred and fifty seven samples were split from the original field sample at ALS Laboratory Adelaide, and sent to AMDEL Adelaide as an umpire sample for laboratory analytical validation. In addition, one hundred field duplicates were re-sampled from the 1m bulk sample on site and composited by a ripple splitter to make a 2kg x 2m sample. This was sent to ALS laboratories, Perth for analysis to test the competence of the RC cone splitter at the rig site.
- Duplicate, Resample and Umpire sampling was also carried out.

**Verification of sampling and assaying**

- *The verification of significant intersections by either independent or alternative company personnel.*
- *The use of twinned holes.*
- *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.*
- *Discuss any adjustment to assay data.*
- As per previously announced Resource Estimation (November 2018). Six twinned DD and RC holes have been drilled and compared, demonstrating good repeatability of results.
- All data was entered into either a customized Excel spreadsheet or Access database and then entered into the Datashed database.
- QAQC data was managed within Datashed software.
- No adjustments of assay data are considered necessary.



**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.
- Specification of the grid system used.
- Quality and adequacy of topographic control.
- The co-ordinates for each drill hole collar were initially surveyed by GPS, where the accuracy was within 3-5 metres. Subsequent DGPS hole collar surveying has been undertaken. The current database contains the coordinates for all drill holes in the MGA 94/54 grid system and this grid was used for the estimation.
- Topography RL's are based on a Digital Terrain Model, derived from a 50m line-spaced aeromagnetic survey captured by UTS for Magnetite Mines Ltd, during December 2009 and January 2010.
- Drill hole azimuth and dip at surface were determined by compass and clinometer respectively. Due to the magnetic nature of rocks at Razorback Ridge and Iron Peak, only the dips were recorded from the Eastman single and multi-shot surveys taken at approximately every 40m and azimuth data discarded.
- Given the shallow nature of the holes, the azimuths are assumed to be similar to that on surface. Subsequent gyroscopic work was conducted between Phase 1 and 2 drilling on a combination of 10 DD and RC holes

**Data spacing and distribution**

- Data spacing for reporting of Exploration Results.
- 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.
- Whether sample compositing has been applied.
- Drill hole spacing is considered appropriate for the level of confidence quoted.
- The data on which the 'Ore Sorting Study' was applied is derived from the existing Razorback Iron Project JORC 2012 Resource Estimate (November 2018). No new Mineral Resources have been established as part of this study or announcement.

**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.
- If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.
- RC and diamond drill holes were oriented, wherever possible, perpendicular to the mineralisation dip.

<b>Sample security</b>	<ul style="list-style-type: none"> <li>The measures taken to ensure sample security.</li> </ul>	<ul style="list-style-type: none"> <li>The chain of custody was controlled by Magnetite Mines. Samples were delivered to ALS Adelaide by either Magnetite Mines staff or by Burra Couriers.</li> </ul>
<b>Audits or reviews</b>	<ul style="list-style-type: none"> <li>The results of any audits or reviews of sampling techniques and data.</li> </ul>	<ul style="list-style-type: none"> <li>No independent reviews of audits of sampling have been carried out.</li> </ul>

## Section 2 Reporting of Exploration Results

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

Criteria	JORC Code explanation	Commentary
<b>Mineral tenement and land tenure status</b>	<ul style="list-style-type: none"> <li>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.</li> <li>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.</li> </ul>	<ul style="list-style-type: none"> <li>Magnetite Mines Limited, through its 100% owned subsidiary Razorback Iron Pty Ltd, has secured the EL6353 (ex. EL5432) and EL6126 leases over the Razorback Ridge and Iron Peak iron deposits. The Razorback/Iron Peak tenement EL5432 and EL6126 covers approximately 60 km<sup>2</sup> and 840km<sup>2</sup> respectively and contains the Razorback, Interzone and Iron Peak Prospects.</li> <li>Resource payments calculated at \$0.01 per DTR tonne of measured resources (resource payment = tonne of measured resource x \$0.01 x DTR%).</li> <li>A 1% royalty on the value of the product produced from the tenement measured at the 'mine gate'.</li> <li>All tenements are in good standing and no known impediments exist.</li> </ul>
<b>Exploration done by other parties</b>	<ul style="list-style-type: none"> <li>Acknowledgment and appraisal of exploration by other parties.</li> </ul>	<ul style="list-style-type: none"> <li>Whitten, on behalf of the Geological Survey of South Australia, carried out a detailed study at the Razorback Ridge area during the 1950's and 60's.</li> <li>This work was structured to assess the iron content, possible metallurgical processing and costs of mining the iron at the prospect. Detailed geological mapping, 3 diamond drill holes and an adit reaching 134.1 metres were carried out on the ridge itself.</li> </ul>
<b>Geology</b>	<ul style="list-style-type: none"> <li>Deposit type, geological setting and style of mineralisation.</li> </ul>	<ul style="list-style-type: none"> <li>The magnetite host rock at Razorback and Iron Peak occurs as either tillitic or bedded siltstone. The bedded or laminated ore is dense dark blue and can show sedimentary features such as cross bedding and slumping. The Geology of the Iron Peak Prospect is an extension of the geology at Razorback as following the consistent lateral continuity of the Braemar Iron Formation.</li> </ul>

	<p>For this reason there are no deviations to the methodologies/ procedures utilised towards drilling and sampling between the two prospects.</p> <ul style="list-style-type: none"> <li>• The magnetite occurs as 10 to 150 micron euhedra in layers up to 500 micron thick, and can form up to 80% of the rock. Haematite can occur associated with crosscutting right angle cleavage, related to later deformation.</li> <li>• The tillitic ore is medium to dark grey, massive and contains erratics from 10mm to 1m in diameter. The fragments are typically metasediments, metavolcanics and granites.</li> <li>• The magnetite is similar to that seen in the bedded ore type. Haematite occurs, but is irregularly distributed through the rock.</li> </ul>
<p><b>Drill hole Information</b></p> <ul style="list-style-type: none"> <li>• A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes: <ul style="list-style-type: none"> <li>○ easting and northing of the drill hole collar</li> <li>○ elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar</li> <li>○ dip and azimuth of the hole</li> <li>○ down hole length and interception depth</li> <li>○ hole length.</li> </ul> </li> <li>• 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.</li> </ul>	<ul style="list-style-type: none"> <li>• Refer to details of drilling in Appendix 1 below.</li> <li>• It is noted that the study as undertaken by NextOre included a assessment of heterogeneity of the greater Razorback Resource Estimation (November 2018) with the application of those results to an area of near-surface high grade mineralisation as defined by block modelling in 2018. The drill hole information for the entirety of the Razorback Resource Estimate was released to the ASX in November 2018. This report deals with the drill hole information as derived from a higher grade area of interest of the RR and IP deposits on which the NextOre heterogeneity assessment was applied to calculate ore sorting efficiencies.</li> </ul>
<p><b>Data aggregation methods</b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail.</li> </ul>	<ul style="list-style-type: none"> <li>• No new exploration results are being reported.</li> <li>• NextOre completed modelling of the Razorback Ridge (RR) and Iron Peak (IP) prospects to assess the calculated preconcentration impact of implementing an on-conveyor Bulk Ore Sorting (BOS) system that uses Magnetic Resonance (MR) analysers configured for detection of magnetite (Mt %) concentration.</li> <li>• In order to assess the potential for bulk ore sorting at Razorback, NextOre used data drawn from the overall geological model for the Razorback and Iron Peak resources (the two resources that make up the Razorback Iron Ore Project).</li> </ul>

	<ul style="list-style-type: none"> <li><i>The assumptions used for any reporting of metal equivalent values should be clearly stated.</i></li> </ul>	<p>NextOre then applied a fractal model, applying a mixing model to assess the predicted grade variation or heterogeneity of ‘pods’ of ore as they would present to an on-conveyor bulk ore sorting implementation. Various sorting cut-off grades were selected to demonstrate a range of grade improvement scenarios.</p>
<b>Relationship between mineralisation widths and intercept lengths</b>	<ul style="list-style-type: none"> <li><i>These relationships are particularly important in the reporting of Exploration Results.</i></li> <li><i>If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.</i></li> <li><i>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’).</i></li> </ul>	<ul style="list-style-type: none"> <li>No new exploration results are being reported.</li> <li>However, where possible drill holes are oriented to cut at right angles across the mineralised zones.</li> </ul>
<b>Diagrams</b>	<ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>Appropriate maps and sections are available Appendix 2 and 3 for map and Cross-Section respectively.</li> </ul>
<b>Balanced reporting</b>	<ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>Reporting of results in this report is considered balanced.</li> </ul>
<b>Other substantive exploration data</b>	<ul style="list-style-type: none"> <li><i>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.</i></li> </ul>	<ul style="list-style-type: none"> <li>No further data has been collected following resource estimation in November 2018.</li> </ul>
<b>Further work</b>	<ul style="list-style-type: none"> <li><i>The nature and scale of planned further work (eg tests for lateral extensions, depth extensions or large-scale step-out drilling).</i></li> <li><i>Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.</i></li> </ul>	<ul style="list-style-type: none"> <li>At present, no further drilling work is planned for the Razorback/Iron Peak resource. Future upgrades towards improved JORC categorisation will require additional infill drilling and associated modelling.</li> </ul>

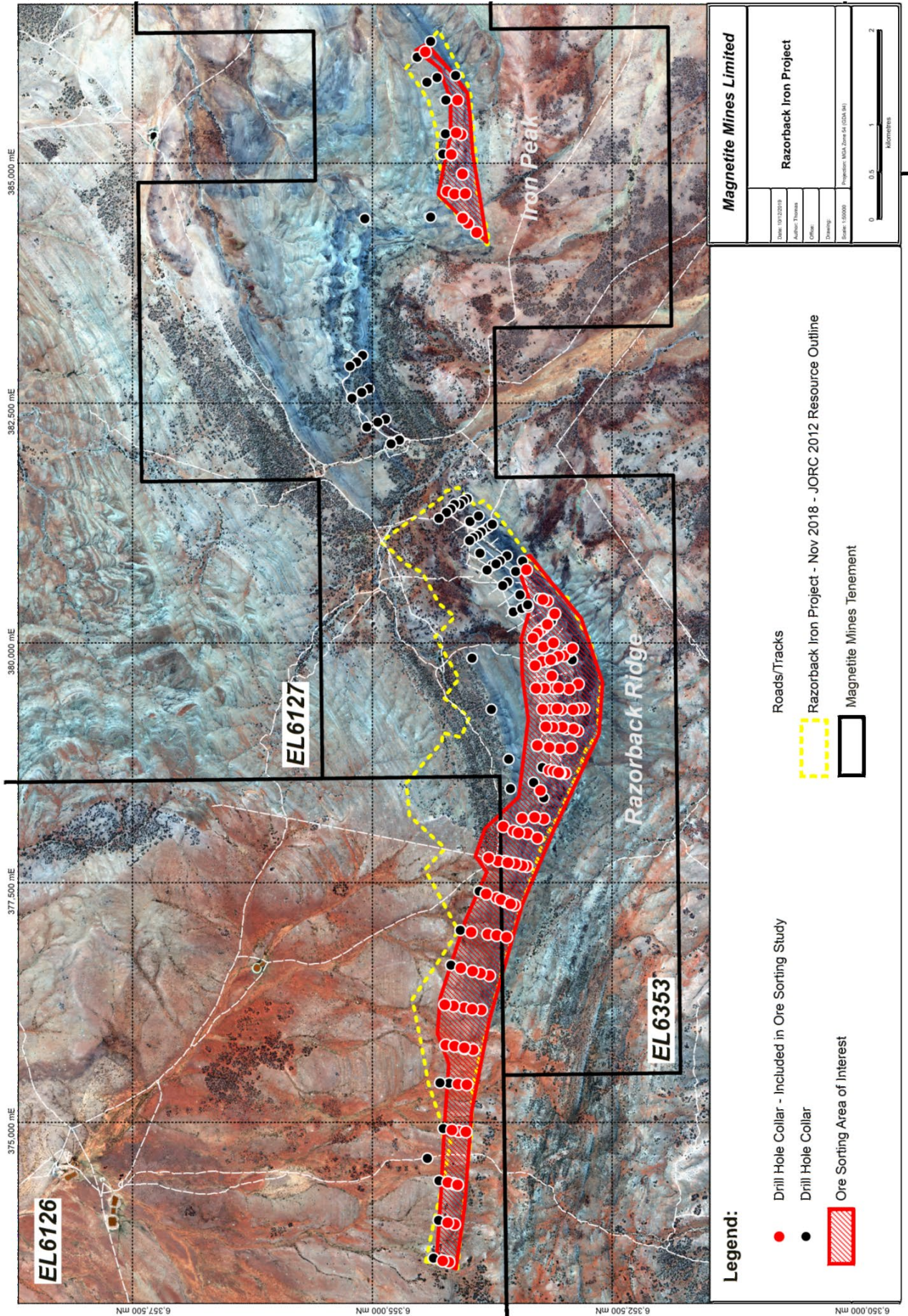
## Appendix 1 – Drill hole Data

Razorback Holes								
Hole_ID	Deposit	Hole_Type	Max_Depth	Easting	Northing	RL	Azimuth	Dip
RRDD0044	Razorback Ridge	RCDD	215.10	378671.10	6353172.80	367.37	180	60
RRDD0055	Razorback Ridge	RCDD	203.50	379306.70	6353159.80	352.35	180	60
RRDD0057	Razorback Ridge	RCDD	239.50	379761.50	6353322.40	341.11	155	60
RRDD0095	Razorback Ridge	RCDD	217.20	376963.10	6353812.40	369.71	205	60
RRDD0101	Razorback Ridge	DD	107.70	380453.80	6353236.90	384.12	145	60
RRDD0102	Razorback Ridge	DD	171.70	379310.20	6353090.00	355.60	180	60
RRDD0103	Razorback Ridge	DD	60.00	379314.10	6352813.00	383.34	180	60
RRDD0104	Razorback Ridge	DD	36.00	378639.50	6353007.50	385.99	180	60
RRDD0105	Razorback Ridge	DD	90.10	380302.90	6353116.40	382.95	150	60
RRDD0107	Razorback Ridge	DD	78.30	379940.70	6352929.80	390.18	155	60
RRDD0111	Razorback Ridge	DD	152.60	378010.50	6353397.20	383.60	205	60
RRDD0112	Razorback Ridge	DD	234.80	377301.70	6353631.60	374.26	205	60
RRDD0117	Razorback Ridge	DD	83.30	379569.10	6352870.00	389.62	170	60
RRDD0118	Razorback Ridge	DD	137.60	379519.70	6352963.80	394.36	170	60
RRDD0123	Razorback Ridge	DD	150.20	375770.00	6354053.00	370.03	190	60
RRDD0124	Razorback Ridge	DD	192.60	375398.00	6354123.00	369.76	190	60
RRDD0125	Razorback Ridge	DD	387.60	377731.00	6353705.00	371.35	200	60
RRDD0222	Razorback Ridge	RCDD	426.10	378084.60	6353651.80	356.31	205	60
RRDD0235	Razorback Ridge	RCDD	135.00	374902.00	6354116.00	370.03	198	60
RRDD0258	Razorback Ridge	RCDD	357.20	376982.00	6353985.00	362.81	200	60
RRRC0003	Razorback Ridge	RC	43.00	380155.40	6353229.40	370.90	150	60
RRRC0004	Razorback Ridge	RC	63.00	380131.70	6353263.80	365.34	150	60
RRRC0005	Razorback Ridge	RC	91.00	380101.40	6353298.00	360.44	150	60
RRRC0006	Razorback Ridge	RC	151.00	379913.00	6352969.60	380.48	155	60
RRRC0007	Razorback Ridge	RC	190.00	379866.30	6353021.10	371.05	155	60
RRRC0008	Razorback Ridge	RC	36.00	379836.00	6353117.10	370.07	155	60
RRRC0009	Razorback Ridge	RC	160.00	379825.30	6353152.40	364.00	155	60
RRRC0010	Razorback Ridge	RC	79.00	379807.10	6353196.70	358.32	155	60
RRRC0033	Razorback Ridge	RC	100.00	380435.90	6353191.90	388.20	145	60
RRRC0034	Razorback Ridge	RC	106.00	380451.80	6353238.30	384.08	145	60
RRRC0036	Razorback Ridge	RC	106.00	379082.80	6352876.00	383.82	200	60
RRRC0037	Razorback Ridge	RC	112.00	379100.50	6352918.40	377.43	200	60
RRRC0038	Razorback Ridge	RC	160.00	379105.00	6352998.30	376.82	200	60
RRRC0039	Razorback Ridge	RC	170.00	379120.10	6353035.40	372.91	200	60
RRRC0040	Razorback Ridge	RC	100.00	379118.10	6353134.20	361.47	200	60
RRRC0041	Razorback Ridge	RC	60.00	378642.00	6353058.20	379.90	180	60
RRRC0042	Razorback Ridge	RC	184.00	378662.20	6353124.80	370.86	180	60
RRRC0043	Razorback Ridge	RC	160.00	378647.20	6353073.30	379.06	180	60
RRRC0046	Razorback Ridge	RC	76.00	380761.90	6353409.80	360.71	145	60
RRRC0050	Razorback Ridge	RC	186.00	379528.00	6353125.30	361.49	170	60
RRRC0051	Razorback Ridge	RC	82.00	379312.10	6352866.90	372.56	180	60

RRRC0052	Razorback Ridge	RC	100.00	379302.60	6352922.80	363.40	180	60
RRRC0053	Razorback Ridge	RC	154.00	379305.60	6353045.70	357.09	180	60
RRRC0054	Razorback Ridge	RC	172.00	379312.90	6353090.10	355.73	180	60
RRRC0056	Razorback Ridge	RC	244.00	379307.70	6353241.20	348.03	180	60
RRRC0058	Razorback Ridge	RC	154.00	379859.50	6353080.80	374.49	155	60
RRRC0059	Razorback Ridge	RC	134.00	380191.50	6353192.70	376.95	150	60
RRRC0060	Razorback Ridge	RC	210.00	379807.70	6353249.40	352.62	155	60
RRRC0061	Razorback Ridge	RC	222.00	379525.60	6353222.40	348.40	170	60
RRRC0062	Razorback Ridge	RC	178.00	379530.80	6353076.60	368.40	170	60
RRRC0063	Razorback Ridge	RC	214.00	380048.70	6353342.70	352.51	150	60
RRRC0064	Razorback Ridge	RC	88.00	379940.00	6352930.00	390.03	155	60
RRRC0091	Razorback Ridge	RC	120.00	377669.90	6353408.60	386.82	205	60
RRRC0092	Razorback Ridge	RC	222.00	377690.00	6353490.20	380.70	205	60
RRRC0093	Razorback Ridge	RC	294.00	377721.00	6353635.40	373.15	205	60
RRRC0094	Razorback Ridge	RC	180.00	376949.40	6353718.90	376.77	205	60
RRRC0097	Razorback Ridge	RC	240.00	379124.90	6353209.70	355.26	200	60
RRRC0098	Razorback Ridge	RC	282.00	379524.40	6353311.20	341.11	170	60
RRRC0099	Razorback Ridge	RC	228.00	378909.00	6353173.10	357.12	200	60
RRRC0201	Razorback Ridge	RC	300.00	378929.20	6353296.40	364.44	200	60
RRRC0203	Razorback Ridge	RC	186.00	379958.20	6353235.40	353.33	155	60
RRRC0204	Razorback Ridge	RC	144.00	379999.90	6353128.00	369.00	155	60
RRRC0205	Razorback Ridge	RC	186.00	379655.00	6353145.20	362.14	155	60
RRRC0206	Razorback Ridge	RC	162.00	378896.00	6353058.70	365.19	200	60
RRRC0210	Razorback Ridge	RC	300.00	377341.80	6353718.90	369.03	205	60
RRRC0211	Razorback Ridge	RC	270.00	377703.00	6353563.30	375.35	205	60
RRRC0212	Razorback Ridge	RC	252.00	378038.00	6353543.70	369.01	205	60
RRRC0213	Razorback Ridge	RC	204.00	378169.40	6353455.50	358.89	205	60
RRRC0214	Razorback Ridge	RC	174.00	378012.20	6353401.90	383.26	205	60
RRRC0216	Razorback Ridge	RC	142.00	378460.40	6353265.30	371.77	205	60
RRRC0217	Razorback Ridge	RC	214.00	379823.10	6353155.50	363.70	155	60
RRRC0218	Razorback Ridge	RC	196.00	378019.40	6353492.30	374.67	205	60
RRRC0219	Razorback Ridge	RC	58.00	377964.80	6353296.70	388.36	205	60
RRRC0220	Razorback Ridge	RC	58.00	378164.00	6353228.20	377.44	205	60
RRRC0221	Razorback Ridge	RC	86.00	378179.10	6353325.00	370.18	205	60
RRRC0223	Razorback Ridge	RC	160.00	377302.50	6353624.00	374.84	205	60
RRRC0224	Razorback Ridge	RC	106.00	377264.60	6353535.60	384.76	205	60
RRRC0225	Razorback Ridge	RC	34.00	376931.00	6353618.00	385.10	205	60
RRRC0226	Razorback Ridge	RC	106.00	378909.40	6352943.20	377.75	185	60
RRRC0232	Razorback Ridge	RC	150.00	377681.00	6353449.00	383.64	205	60
RRRC0233	Razorback Ridge	RC	276.00	377696.00	6353526.00	377.76	205	60
RRRC0234	Razorback Ridge	RC	300.00	377705.00	6353603.00	374.05	205	60
RRRC0236	Razorback Ridge	RC	72.00	374900.00	6354041.00	374.65	198	60
RRRC0237	Razorback Ridge	RC	198.00	377383.00	6353828.00	366.34	205	60
RRRC0238	Razorback Ridge	RC	300.00	377323.00	6353677.00	370.84	200	60
RRRC0239	Razorback Ridge	RC	138.00	377278.00	6353575.00	380.06	200	60

RRRC0240	Razorback Ridge	RC	150.00	374360.00	6354175.00	375.62	190	60
RRRC0241	Razorback Ridge	RC	258.00	374373.00	6354229.00	371.73	190	60
RRRC0242	Razorback Ridge	RC	114.00	374346.00	6354132.00	378.74	190	60
RRRC0243	Razorback Ridge	RC	270.00	374922.00	6354184.00	367.25	190	60
RRRC0244	Razorback Ridge	RC	252.00	375793.00	6354157.00	367.48	190	60
RRRC0245	Razorback Ridge	RC	90.00	375758.00	6353960.00	372.79	190	60
RRRC0246	Razorback Ridge	RC	90.00	376530.00	6353792.00	380.64	190	60
RRRC0247	Razorback Ridge	RC	180.00	376556.00	6353888.00	371.81	190	60
RRRC0248	Razorback Ridge	RC	300.00	376579.00	6353972.00	367.78	190	60
RRRC0249	Razorback Ridge	RC	138.00	375775.00	6354058.00	369.80	190	60
RRRC0251	Razorback Ridge	RC	216.00	376612.00	6354089.00	366.52	190	60
RRRC0252	Razorback Ridge	RC	90.00	376164.00	6353878.00	385.64	195	60
RRRC0253	Razorback Ridge	RC	210.00	376194.00	6354057.00	375.54	195	60
RRRC0254	Razorback Ridge	RC	186.00	376182.00	6353976.00	375.90	195	60
RRRC0255	Razorback Ridge	RC	180.00	376213.00	6354160.00	369.64	195	60
RRRC0256	Razorback Ridge	RC	102.00	375387.00	6354030.00	370.98	195	60
RRRC0261	Razorback Ridge	RC	90.00	373937.00	6354159.00	379.25	190	60
RRRC0262	Razorback Ridge	RC	150.00	373957.00	6354229.00	375.06	190	60
RRRC0264	Razorback Ridge	RC	90.00	373544.00	6354218.00	372.77	185	60
RRRC0265	Razorback Ridge	RC	150.00	373554.00	6354279.00	370.33	185	60
RRRC0270	Razorback Ridge	RC	294.00	375805.00	6354254.00	365.39	190	60
RRRC0271	Razorback Ridge	RC	300.00	376226.00	6354261.00	364.40	190	60
RRRC0273	Razorback Ridge	RC	300.00	377736.00	6353806.00	368.03	190	60
RRDD0113	Iron Peak	DD	297.02	384431.00	6354072.00	290.39	225	60
RRDD0120	Iron Peak	DD	275.96	384682.00	6354159.00	291.78	180	60
RRDD0274	Iron Peak	RCDD	318.20	384706.00	6354235.00	294.87	185	60
RRRC0078	Iron Peak	RC	136.00	384376.00	6354017.00	285.50	225	60
RRRC0079	Iron Peak	RC	105.00	384888.40	6354076.70	303.01	180	60
RRRC0082	Iron Peak	RC	94.00	385299.30	6354091.30	265.68	180	60
RRRC0083	Iron Peak	RC	152.00	385318.00	6354144.00	262.61	180	60
RRRC0084	Iron Peak	RC	187.00	384679.10	6354160.60	291.74	180	60
RRRC0085	Iron Peak	RC	166.00	384427.00	6354075.50	290.68	225	60
RRRC0275	Iron Peak	RC	174.00	384685.00	6354048.00	288.83	185	60
RRRC0276	Iron Peak	RC	282.00	385093.00	6354193.00	273.68	180	60
RRRC0278	Iron Peak	RC	198.00	385661.00	6354128.00	295.50	180	60
RRRC0283	Iron Peak	RC	300.00	386163.00	6354463.00	270.84	140	60
RRRC0285	Iron Peak	RC	180.00	384279.00	6353930.00	296.37	225	60

Appendix 2 – Drill Hole Locations





# Appendix 3 – Typical Cross Section (Iron Peak)

