Nelson Bay River Iron Project (EL 41/2004)

Exploration - 2011

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Introduction

During the 2011 field season, Shree Minerals Limited (the Company) carried out 1568 m drilling (1259 m RC along 23 holes for resource delineation, 236 m RC along 6 holes for ground water studies and ~73 m PQ diamond drilling for metallurgical studies) along 32 holes (Table 1 and Figure 2) and collected and analysed 280 samples for resource delineation. Additionally, logging of drill cuttings, magnetic susceptibility reading, some geological mapping, significant upgrading of access tracks and preparation of drill sites was under taken.

Drilling commenced on 7th March 2011 and completed on 29th May 2011. The drilling principally aimed to better define the goethitic–hematite resource with the view to commencing mining of Direct Shipping Ore (DSO) as soon as possible.

The existing resource identified in the DSO Resource area was targeted first, followed by along strike drilling to the southeast. Additional work included the completion of 6 ground water bores strategically placed for monitoring related to the planned mine layout.
All activities were undertaken within the guidelines outlined in the Mineral Resources Tasmania's Mineral Exploration Code of Practice.

Location and access

The Nelson Bay River tenement (EL41/2004) cover an area of 50 km^2 and is located about 5 km east of the town of Temma and about 70 km southwest of Smithton, in North West Tasmania (Figure 1). Access to the tenement is via the Temma and Heemskirk sealed road and thereon via nicely maintained forestry tracks

Figure 1: Location & access - Nelson Bay River Iron Project (EL41/2004)

Work Conducted

During the 2011 field season, Shree Minerals Limited (the Company) carried out 1568 m drilling (1259 m RC along 23 holes for resource delineation, 236 m RC along 6 holes for ground water studies and ~73 m PQ diamond drilling for metallurgical studies) along 32 holes (Table 1 and Figure 2) and collected and analysed 280 samples for resource delineation.

Additionally, surveying, logging of drill cuttings, magnetic susceptibility reading, weighing of a series of samples for density determinations, some geological mapping, significant upgrading of access tracks and preparation of drill sites was under taken.

The drilling commenced on 7th March with a track mounted SD 800 drill rig capable of drilling both RC (150 m) and diamond (1000 m). The drilling was completed on 29th May 2011. The drill was supplied by Spaulding Drilling from Devonport, Tasmania.

Complete drillhole data is given in an Excel Spreadsheet - NBR_Drilling Compilation280711.xls)

Surveying

Drillhole collars in the DSO Resource area were marked out initially with GPS with proximity to cropping out iron mineralisation. Subsequent 20 m spaced collars on section were located with tape and compass. At some drill sites for drillhole collar location, ore body strike projection, ground magnetics and GPS were used. Once drilled the new collars were GPS located utilising a waypoint averaging function (Garmin Oregon 300), undertaken at each site up to 5 times. All drill collar locations, relative to other holes on each section, are likely to be within 10 cm accuracy, with an overall accuracy better than ± 2m (GDA94).

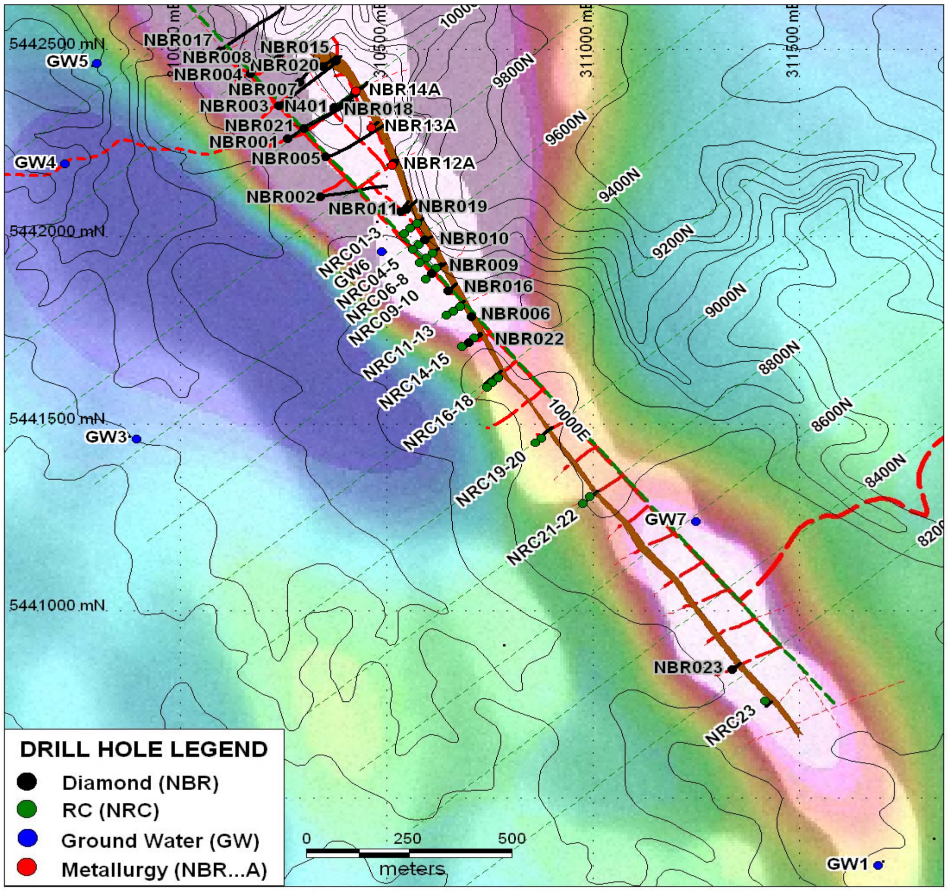
Drilling

During the 2011 field season Shree Minerals carried out 1568 m drilling (1259 m RC along 23 holes for resource delineation, 236 m RC along 6 holes for ground water studies and ~73 m PQ diamond drilling for metallurgical studies) along 32 holes (Table 1 and Figure 2). Details are given in Appendix-1 (*NBR_Drilling Compilation280711.xls).*

Table 1: NBR 2011 drilling summary

Hole_ID	East MGA94	North MGA94	RL (m)	Azimuth	Dip	Depth (m)	Secti on	Date Commence d	Date Completed
RC Resource drilling									
NRC01	310573	5442036	81.0	50	-45	27	9650	9/03/2011	10/03/2011
NRC02	310556	5442023	85.4	50	-45	48	9650	10/03/2011	10/03/2011
NRC03	310541	5442010	88.3	50	-45	69	9650	10/03/2011	11/03/2011
NRC04	310577	5441980	87.7	50	-55	55	9600	15/03/2011	16/03/2011
NRC05	310562	5441968	90.6	50	-55	74	9600	16/03/2011	17/03/2011
NRC06	310612	5441956	85.0	50	-55	33	9550	17/03/2011	17/03/2011
NRC07	310597	5441944	88.8	50	-55	55	9550	17/03/2011	18/03/2011
NRC08	310580	5441931	91.2	50	-55	74	9550	18/03/2011	22/03/2011
NRC09	310620	5441917	90.1	50	-55	40	9500	22/03/2011	22/03/2011
NRC10	310595	5441888	92.8	50	-55	74	9500	22/03/2011	24/03/2011
NRC11	310679	5441815	95.3	50	-55	27	9400	24/03/2011	24/03/2011
NRC12	310661	5441801	95.9	50	-55	52	9400	24/03/2011	25/03/2011
NRC13	310644	5441792	96.1	50	-55	64	9400	28/03/2011	28/03/2011
NRC14	310682	5441708	99.1	50	-55	79	9300	29/03/2011	31/03/2011
NRC15	310712	5441731	99.2	50	-55	34	9300	31/03/2011	31/03/2011
NRC16	310743	5441599	100.4	50	-55	82	9200	31/03/2011	31/03/2011
NRC17	310756	5441612	100.3	50	-55	62	9200	0/01/1900	0/01/1900
NRC18	310771	5441624	100.2	50	-55	30	9200	4/04/2011	4/04/2011
NRC19	310875	5441462	100.2	50	-55	41	9000	4/04/2011	5/04/2011
NRC20	310861	5441451	100.2	50	-55	74	9000	5/04/2011	5/04/2011
NRC21	310993	5441305	99.9	50	-55	46	8800	5/04/2011	6/04/2011
NRC22	310976	5441288	100.0	50	-55	67	8800	6/04/2011	6/04/2011
NRC23	311416	5440759	101.0	50	-55	52	8100	6/04/2011	7/04/2011
Sub Total						**1259**			
RC Hydrological drilling									
GW1	311703	5440331	110.3	0	-90	35		11/04/2011	11/04/2011
GW3	309894	5441462	80.6	0	-90	35		14/04/2011	14/04/2011
GW4	309716	5442199	73.4	0	-90	35		14/04/2011	14/04/2011
GW5	309788	5442458	63.0	0	-90	28		13/04/2011	13/04/2011
GW6	310487	5441962	89.0	0	-90	35	9600	14/04/2011	15/04/2011
GW6A	310459	5441935	89.3	0	-90	33	9600	14/04/2011	14/04/2011
GW7	311249	5441240	101.4	0	-90	35	8600	12/04/2011	13/04/2011
Sub Total						**236**			
PQ diamond drilling (metallurgical drilling)									
NBR12A	310513	5442192	81.2	50	-50	22.7	9800	28/04/2011	29/04/2011
NBR13A	310462	5442292	82.3	50	-50	28.9	9900	18/04/2011	21/04/2011
NBR14A	310425	5442389	81.4	50	-50	21.3	1000 0	26/04/2011	27/04/2011
Sub Total						**72.9**			
Total						**1567.9**			

Figure 2: Nelson Bay River Iron Project drillhole location plan



RC drilling

A total of 1495 m (1259 m along 23 holes for resource delineation and 236 m for ground water studies along 6 holes) along 29 holes was drilled (Table 1 and Figure2).

Resource delineation drilling

The resource delineation-drilling program using Reverse Circulation (RC) drilling commenced on 7th March and completed on 7th April 2011. Approximately 80 to 100 m of RC drilling per day was a common outcome.

Drilling aimed to complete 3 holes on each section through the DSO resource area. This mostly comprised 20 m step out collars on sections spaced at 50 m over the initial half of the resource, then extending to 100 m spaced for the SE half of the DSO Resource area. Holes varied from 27 to 82 m depth.

Drilling was initially carried out on 50 m spaced sections (9650 to 9500 mN, local grid) aimed to upgrade the resource category, with further sections at 100 m spacing extending from 9400 to 9200 mN. Beyond cropping out mineralisation on 9200 mN cross section, exploration stepped out drilling on

200 m spaced sections to 8800 mN. Later on section infill was planned to be conducted towards the end of the field program, on an as required basis.

Initial planning was for -45^0 inclined holes providing 20 m intersection spacing. The -45º angled holes proved harder to drill than steeper holes due to rod handling difficulties (a potential safety issue). Subsequent to drilling on 9650 mN section (NBR001 to 003); the drillhole inclination was changed to -55^0.

Swampy depressed areas located immediately adjacent to the iron mineralisation (gossanous outcrop) were identified as presenting a bogging risk for the drill rig and auxiliary compressor. Discussion between the Drilling Company (Spaulding Drilling), Mineral Resources Tasmania (MRT), Jim Hersey (plant operator), and Shree site supervisor identified the need to surface these zones with material dragged from the adjacent slopes to cover flattened tea trees growing on drill sections (9300 and 9400 mN).

Drilling in the resource area was commonly ordered from closest / shortest to furthest / deepest. The drilling order was reversed on sections 9300 and 9200 mN in an attempt to maintain pressure/circulation in the hole and try avoid excessive water on surface, which appears to channel through the shallower drill holes on section when drilling.

Ground water drilling

A total of 7 bores for *ground water monitoring* was planned. Bore locations were suggested by consultant Pitt and Sherry. However, due to access problem only 6 bores were drilled (Figure 2); planned bore GW2 located downstream of the proposed tailings dam could not be drilled. Drilling GW6 was problematic with the initial hole collapsing (GW6A) and subsequently being redrilled ~40 m NE of the original location.

Ground water drillhole logs are presented in *NBR Drilling Compilation.xls.* Logging was cursory; covering the initial near surface intervals on a metre basis and thereon commonly logging 3 to 5m intervals, but varying according to lithology changes observed through sample colour change.

GW1 in particular contained significant pyrite and silica alteration. This and intervals from several other holes were sampled as composites for potential later analysis.

Observations during RC drilling

- NRC05 - The mineralised intersection in this hole was notably limonitic.
- NRC10 -Significant water was encountered in this hole. Rods were at risk of bogging towards the 79m EOH. No surveys were taken as rods continued to bog when pulling the rod string out.
- NRC11 - Very hard slow drilling at end of hole; corresponds with skarn in footwall. This appears to be a common occurrence along strike in the footwall.
- NRC12 - Abundant water returned from the hole during drilling.

- NRC13 stopped in mineralisation, which extended from 58 to 64m, with the rods becoming bogged at the bottom of hole. They were recovered with a damaged hammer. The driller advised of potential loss of the rod string and the hole was abandoned.
- NRC23 – this hole made significant water from surface, in part, as it was collared in a swampy flat / creek area. The intensity of silica-magnetite mineralisation was weak.
- GW6A – was abandoned due to hole collapse

Diamond **Drilling**

Three PQ size diamond holes (NBR12A, NBR13A, and NBR14A) totalling 79 m were drilled for metallurgical studies. Core was logged with magnetic susceptibility and recoveries recorded prior to sending whole core to the Laboratory. Drill Logs for NBR12A, 13A and 14A are appended as Appendix-1 (*NBR Drilling Compilation 280711.xlsx)*.

Magnetic susceptibility readings were taken as an average of 4 to 5 readings over 50 cm. Some intervals were dictated by zones of core loss, regardless reading intervals of approx 10 cm were adhered to.

Drill site clearance

Upon completion of drilling, all rubbish from the drill sites was removed and the site was cleared to MRT satisfaction. All 1m plastic sample bag were dumped on site near the collar in drilled order. All rubbish plastic and un-analysed/duplicate calico bagged samples were removed from site and stored at Marrawah.

RC sampling

RC samples were collected at 1m intervals from the outlet of a cyclone. About ~ 3 kg, sample material was collected in a calico sample bag and remaining sample was collected in a large plastic bag. For bulk density determination, all drilled intervals were weighed for the first 3 drill holes. Subsequently only the oxidised intervals and a few metres extending into the footwall and hanging-wall were weighed.

The cyclone was cleaned between holes, immediately before or upon entry to the ore zone, at the end of wet sample runs and otherwise when required. Clayey blockage was evident in the cyclone feeder hose and the cyclone itself periodically.

Wet or damp samples were taken to Burnie Research Laboratories, where the samples were dried prior to re-splitting; consequently, calico sample weights are not reported for these. Mineralised samples were split a second time to produce a reference sample for possible further work (re-analysis). A number of sulphide bearing intervals, often with visible chalcopyrite, were identified. These intervals were kept for analysing for base metals, silver, and gold later.

Three sample batches covering holes NRC01 to 22 were submitted for whole rock XRF analysis. Analysis was undertaken on all goethite-hematite intersections with each sample run typically included additional sample(s) at the start and end of the apparent intersection to define ore waste boundaries. Drillhole NRC23 was not sampled, given that visual inspection and magnetic susceptibility measurements revealed weak magnetite within silicification.

Logging

Drill cuttings were geologically (lithology) and geophysically (magnetic susceptibility of logged intervals) logged and recorded.

Geological logging

All RC drill holes were lithologically logged on a metre-by-metre basis, with characterisation according to drill logging codes covering primary and secondary lithologies, as well as primary, secondary, and tertiary alteration styles (see NBR_Drilling_Compilation280711.xlsx). The portion of chips of diameter >6 mm and maximum chip diameter were recorded for each drilled metre. Fragment shape (angular to round) was also noted. The magnetic susceptibility was recorded for each drilled interval. Individual drill logs have not been compiled; the entire data set being contained in the appended Excel spreadsheet.

Each geological description usually initially cites the colour of the large 1m bagged sample, then follows with wet sieved lithology colour and description. Brackets after principal lithology or alteration components list the portion of chips in the sieved sample, followed by the relative intensity of alteration. E.g. Skarn (70, m/s) represents 70% chips are skarn of moderate to strong intensity. RC chip logging attempted to differentiate between milky and semi-translucent quartz veins form.

Logging uses the code “OX” for oxidation where significant iron oxide is present but not in typical goethite-hematite form (“GOSSAN”), or as limonite (“LIM”) associated with these zones (see codes lookup in NBR_Drilling_Compilation280711.xlsx appended). This covers weathered oxidised sediments, zones of iron fragment selvages (/ relict veins?) and uncommon occurrences of brown pervasive silica-iron alteration. The code “OX” also covered a limited number of limonite occurrences associated with the massive goethite-hematite.

Geophysical logging (Magnetic Susceptibility)

Magnetic susceptibilities were obtained from all RC goethite–hematite sample intervals and commonly outside these zones. Readings were taken as an average of 4 to 5 readings spread around the 1m sample bag.

For diamond drilling magnetic susceptibility readings were taken as an average of 4 to 5 readings over 50 cm. Some intervals were dictated by zones of core loss, regardless reading intervals of approx 10 cm were adhered to.

Data is appended in Appendix-1(*NBR Drilling Compilation280711.xlsx).*

Analytical results

A total of 280 samples from the mineralised intersections was collected and analysed. Analytical details are given in Appendix 1 and Significant iron ore intersections are given below (Table 2)

Table 2: Significant iron ore assay intersections at NBR

Location (N)	Hole ID	From	To	Interval(m)	CaFe %	Fe%	SiO2%	Al2O3%	P%	S%	LOI%
9600	NRC04	29	45	16	58.65	54.98	14.18	0.59	0.05	0.05	6.17
9550	NRC06	7	24	17	62.53	59.06	7.18	2.31	0.06	0.03	5.62
9550	NRC07	30	46	16	64.39	59.71	6.03	0.52	0.16	0.02	7.26
9550	NRC08	56	66	10	57.38	54.53	15.99	0.50	0.08	0.12	4.98
9500	NRC09	20	33	13	63.73	59.80	6.86	0.99	0.07	0.02	6.19
9500	NRC10	66	75	9	64.78	60.59	5.95	0.58	0.11	0.01	6.45
9400	NRC11	7	15	8	55.05	51.68	12.03	7.15	0.04	0.04	6.33
9400	NRC 12	33	46	13	63.39	58.73	6.22	1.63	0.10	0.02	7.30
9400	NRC 13	58	64	6	66.31	62.39	3.91	0.39	0.11	0.01	5.93
9300	NRC 15	7	27	20	63.25	58.05	4.47	1.41	0.06	0.03	8.24
9200	NRC 17	46	48	2	63.80	60.53	5.92	1.78	0.07	0.03	5.13
9200	NRC 18	12	24	12	63.38	58.19	5.91	1.84	0.14	0.03	8.18
8800	NRC 21	23	28	5	60.11	57.81	10.52	1.96	0.05	0.05	3.85
Note 1:	Missing samples withion the significant intervals have been applied averages of the whole interval . This is relevant										
	for 2 missing samples in NRC 12 & 1 sample in NRC 18										
Note 2 :	CaFe is calculated as "Fe/(100-LOI)X 100" and is commonly referred to as calcined iron.										

Discussion

The Geology of the DSO area is outlined below and further elucidated in the appended study on acid generation potential of waste rock. This includes sections displaying geology and iron grade.

RC drilling in the northern section, within the DSO Resource area (9650 mN), returned relatively thin goethite–hematite mineralisation (~8 m true width as compared to ~11.5 m on 9700 mN). The goethite-hematite body on 9600 mN fattens considerably to 17 m, further thickening to ~20m true thickness at depth in NBR05. The mineralisation evidently pinches and swells along strike. Further approximate true intersection widths for goethite– hematite mineralisation are 18m on 9550 mN and likely 16 m on 9550 mN.

A hangingwall fault is evident along strike of the planned DSO pit. This is commonly represented by quartz veining with variable pyrite development, commonly from 0.5 to 5%. Both the quartz veining and pyrite development are erratic, as evidenced by minimal quartz veining seen in drill hole NBR022, but being common on the adjacent section in NRC12.

The ore body typically comprised of massive goethite–hematite with minor limonite and, locally, remnant magnetite. Fresh magnetite was infrequently evident. An interesting occurrence is in NRC15 from 9 to 16 m, which is comparatively shallow considering that goethitic-hematite is common to >40 mRL below surface elsewhere.

The goethitic-hematite drill chips were often sub-angular to sub-rounded in form within the main body, with the sub-rounded form showing numerous hematite grains forming an aggregate after primary magnetite crystals. The sub-rounded granular clasts commonly display an irregular knobbly and pitted surface, with lesser iron, examples comprising a porphyritic hematite texture within relict amphibole. Platy fragments are often evident at the margins, which appears to reflect the development of fault related foliation. Very fined grained to massive goethite–hematite of angular and flinty form is more commonly near quartz vein structures.

Faulting is commonly coincident with quartz veining and limonite development. In some instances a diversity of lithology/clast types, suggest polymict fault breccia. Wet samples apparently equating to (recent fault?) aquifers. Drill hole NRC03 intersected a ~7 m sulphidic quartz vein intersection. This zone was shown to extend along the hangingwall strike extent of the DSO Resource.

Siltstone is typically dark grey and cream laminated bedded and is commonly inter-bedded with fine-grained quartz sandstone. Variable development of semi-pervasive to pervasive silica +/- pyrite alteration is apparent, particularly within the later and coarser grained sandstones. Where laminar-bedded form is identified, the lithology is classified as siltstone; the various sandstone grain size subdivisions being reserved for apparently more massive lithology. Skarn appears to favour development within sandstone units and appears to zone to pervasive silica–skarn form.

Geological Mapping

Geology of new track and pad exposures was captured, but data has not been completely entered or analysed at this stage. Of particular interest was the extent of Canga (remobilised / eroded and re-sedimented Iron Stone) which varies up to 1m+ in thickness in exposures. Canga has formed on the SW slopes of the weak ridge, which partially defines the Oxide / gossan outcrop in the 9500 to 9000 mN (local grid) area. This includes a semi-consolidated patch located immediately NE of NBR022 during drill pads construction. Thickness assessment was made where possible but unfortunately, an accurate assessment often couldn’t be made from the first few metres of RC drilling, as this zone was lost during the collaring process.

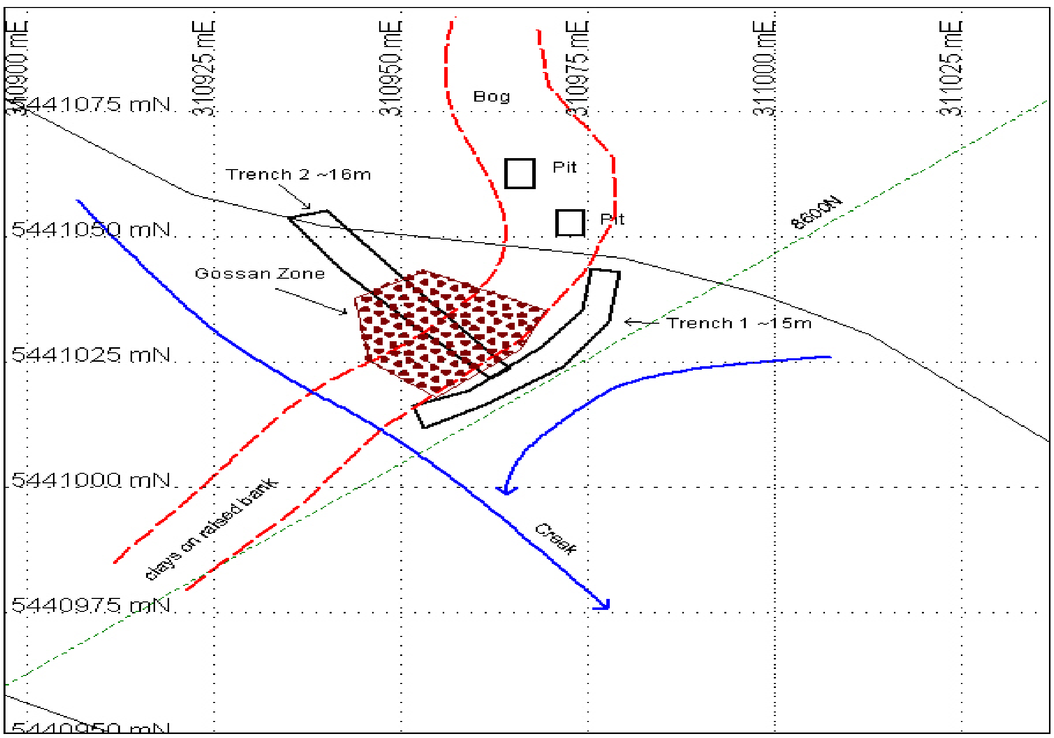
Gossan outcrop - 8600 mN

A gossanous zone was located during excavator track construction on line 8600 mN. The zone bears hematite-goethite-limonite gossanous boulders to ~1m in diameter.
There appeared to be outcrop at surface of approximately 9m width, but subsequent trenching has revealed this to be large boulders within brown soil and clay of ~50cm thickness, over olive and tan to grey clays representing weathered laminar bedded siltstone beneath (Plates 1-3).

An excavator was utilised to dig two trenches and 2 pits the track margin across the gossanous zone. Trench 1 of ~15m length and 1 to 1.2m depth failed to locate the gossan. Subsequently Trench 2 crossed directly through the gossan at surface perpendicular to Trench1; again failing to locate a bedrock source. Both trenches were filled in immediately following the investigation. Grey laminar-bedded siltstone (S0 strike 130/-35E dip) was located in the base of all excavations.

The gossanous boulder size suggests a proximal source. If shed from the 200m distant known line of load then possibly the enclosing clays could represent weathered siltstone alluvium. Further, the gossanous zone occurs at a creek junction, which could have acted as a trap for alluvium and a site for Fe re-sedimentation (Figure 3).

Figure 3: Plan showing location of gossanous material



[*Note: 8600 mN Gossanous zone approximately to scale (GDA94)]*

Plate 1: Photo of the gossanous zone

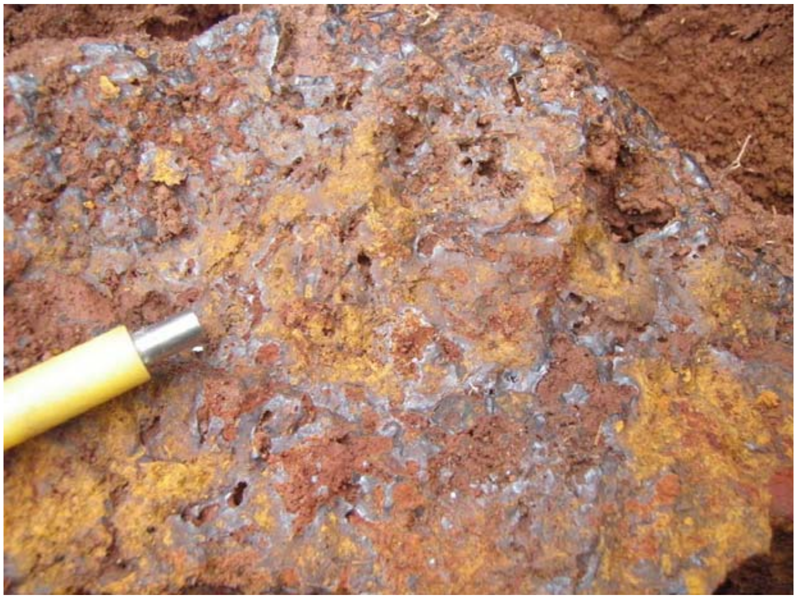


Plate 2: Photo of the gossanous zone across the creek

Plate 3: Photo of siltstone bedrock and gossan mid way along Trench 2

Earth Works

Track upgrade

The Company understands that maintaining stable all weather access is important for environmentally responsible exploration at the Nelson Bay River Iron Prospect. The current track extending NE from the baseline was gravelled surfaced over ~300m across a significant swampy zone prior to the 2010 drill program. The track extended from here to the staging area (Figure 1-A1attached) requires some upgrade / infill, for ~325 m of the track to be investigated. During 2011, about 600 m track work in the middle of the baseline was untaken. The main area requiring track upgrade was through a swampy flat zone.

Wherever possible, gravel/fill for new track upgrades was gathered from onsite borrow pits. A hillcrest track crossing on the access track, ~300m NE of the base line, was a significant source of gravel. Further material was extracted from existing rock based track sections, including drill access tracks and scraped margins / sides of these.

All weather gravel track surface was completed for ~700m along the baseline to near the southeastern end of the proposed DSO pit. The baseline track alongside the proposed DSO pit area was wet and muddy at completion of drilling and requires upgrade before further drilling is undertaken. The baseline north of local grid 9600mN to near 10000mN was scraped back to near bedrock with drainage constructed to control run off. The switchback turn area of the access track requires surfacing, to improve access around the clay-surfaced corner.

Testing of the southernmost extension of the magnetic anomaly and drilling groundwater monitoring hole GW1 required excavator opening of the baseline for RC drill rig access. This opened and extended the baseline with two grid wing lines totalling ~800m of track access work. Approximately 600m of access track was created to access the GW2 site, extending grid line 8600mN.

Excavator track clearing (~450m) of the old Temma Track, from the 10000mE base line to the west, allowed access to drill ground water monitoring bores in the western portion of the proposed ML area. Track work stopped on the western side of the creek at the start of the button grass plains. The creek was bridged and gravel surfaced with several large logs placed in and parallel to the creek to maintain flow. The drill sites beyond here were accessed via the existing Temma Track and a National Parks maintained fire break, with a single return pass of the drilling rig and compressor across button grass to each site as required. Excavator drill pad construction was only required for the sloping ground at GW5.

Drill site access

The RC drilling program was undertaken with the minimum of earth works required for the large RC drill rig and compressor. These each weigh in the order of 30 tonnes and a ~15 by 10 m work area is required. Notably the slopes in the DSO drilling area are mild and little excavator side cutting was required to form the drill pad access tracks in most cases. Greatest topography, bush, and subsequently track clearing difficulty were encountered in the south of the grid. Approximately 650m of drill access track and pad area was created. A number of these are short extensions/ diversions or upgrades of existing tracks. In several instances drill pads over swampy ground immediately NW of a mineralisation coincident rise in the DSO area were covered by gravel scraped off the adjacent rise to create a more stable rig base. In other swampy instances, tea trees were flattened and left on the ground to support rig access. This created an unfavourable trip hazard environment for drillers.

Drill site access tracks were created initially for all obvious priority sections and holes, with later track and pad extension timing determined by evolving priorities to keep well ahead of the drilling. Drill pads were initially created to allow three holes to be drilled on each section.

Acid Rock Drainage Investigation

Nelson Bay River Acid Potential Sampling

Summary

- A poorly constrained "pre-resource" 4.5 Mt @ 0.88% Pyrite was inferred for (>0.5% Pyrite) PAF rock in the Magnetite Pit, with a comparatively small ~40kt @ 3.21% Pyrite modelled for the DSO Pit.
- The majority of the significant PAF rock is shown to be in the northern half of the Magnetite Pit on sections 10000 and 10100mN. Pervasive silica, primarily located within more porous sandstone appears to encapsulate elevated pyrite concentrations, resulting in some NAF classifications for this material, whereas the disseminated pyrite within the less altered siltstones is more often classified as PAF.
- PAF distribution and character is uncertain, partly since most drilling is sub-parallel to hole dip and therefore more work is required to better define this.
- Pyrite is mostly erratically distributed within hangingwall quartz veins in the DSO Pit area, but should readily be visually identified during planned mining.

NB: Further introductory comment generated for and included in the EIS by Pitt and Sherry is not included here.

Table3: **Acid Rock Drainage sample list - NBR**

Hole_ID	From (m)	To (m)	Sample Number	Description	Py (%)	Classification
NBR007	21.63	22.13	520901	thin bedded grey slst	0	UC
NBR007	85.5	86	520902	lam bedded slst & fg q-sst	0	NAF
NBR003	22	22.5	520903	weakly weathered grey / cream irregular lam bedded slst, ch(w, flecks), dss py (0.5%)	0.5	PAF
NBR003	58.5	59	520904	grey lam bdd slst with oxidised bn flecks after chlorite / sulphide?, minor straight sil veinlets on fractures with perv sil(vw)	0	PAF
NBR003	79.5	80	520905	lam bedded slst, very weak FeOxidised exterior	0	PAF
NBR003	110.1	110.6	520906	grey lam bdd slst, py(1% overall)-ch blebs / flecks (w, ~1% overall), perv sil(w/m)	1	PAF
NBR021	7.6	8.1	520907	cream perv sil(m/s) - dss fg py(0.5%) sandstone	0.5	PAF Low Capacity
NBR021	27.7	28.2	520908	cream strongly leached and pitted likely after pyrite, perv sil(m/s) relict sst	1	PAF

NBR021	45.2	45.7	520909	cream perv sil(m/s) - dss fg py(0.5%), sparse ch flecks(vw) sandstone; sil-vnlets(w) on straight fractures	0.5	PAF Low Capacity
NBR021	63	63.5	520910	grey lam bdd slst with py dss(0.5%) within ch(vw) patches/flecks, with sil-py-ch veining on straight fracs(w, <0.5%)	0.5	PAF
NBR021	84.95	85.45	520911	grey lam bedded fg sst and slst, dss py(1%) with ch(vw) flecks on silicified crm fg sst interbeds. Perv sil(w)	1	PAF
NBR021	105.2	105.7	520912	grey lam bdd fg sst and slst	0	NAF
NBR021	181.9	182.4	520913	grey mottled sil(w/m) - ch(w) pervassive alteration within thin bdd fg/mg sst.	0	NAF
NBR005	35.5	36	520914	grey lam bdd fg sst & slst	0	PAF Low Capacity
NBR005	95.9	96.4	520915	grey lam bdd slst & fg sst	0	PAF
NBR005	137.9	138.4	520916	grey perv sil(w/m) - ch(vw) altered fg sst with slst interbeds	0	NAF
NBR005	53.9	54.4	520917	grey lam bdd slst & fg sst, py(0.5%) dss within ch(vw) flecks	0.5	PAF
NBR002	14.9	15.4	520918	grey lam bdd slst and fg sst, weathered(w)	0	NAF
NBR002	50.3	50.8	520919	grey lam bdd slst and fg sst, weathered(w)	0	UC
NBR002	77	77.5	520920	crm / grey perv sil(w/m) over fg q-sst with minor laminar beds bearing weak slst.	0	NAF
NBR002	93.6	94.1	520921	grey lam bdd fg sst and minor slst, perv sil(w/m), ch (w) flecks, dss Py?	0.1	PAF
NBR002	124.5	125	520922	grey lam bdd fg sst and minor slst; ox dss py?(0.5%)	0.5	NAF
NBR002	169.5	170	520923	lht bn lam bdd fg sst and minor slst, perv sil(m), brown FeOxidised surface(w)	0	NAF
NBR002	180.8	181.3	520924	grey mostly fg q-sst with sparse slst lam interbeds, perv sil(w/m)	0	PAF
NBR009	31.8	32.3	520925	grey thin bdd slst and fg q-sst, sparse pits after py?(0.5%)	0.5	NAF
NBR016	35	35.5	520926	crm / grey perv sil(w/m) over fg/mg q-sst	0	NAF
NBR022	46.2	46.7	520927	pale green perv sil(m) with speckled chlorite(w/m) overprinting fg/mg q-sst, sparse relict surface pits after py?	0.1	PAF Low Capacity
NBR001	41	41.5	520928	grey and pgn lam bdd slst and minor fg q-sst. Weak pgn FeO stained exterior. Sparse ch flecks(vw) and relict cubic Py pits(0.5%)	0.5	PAF
NBR001	115.5	116	520929	grey lam bdd slst and minor fg q-sst. Dss py(1%) mostly in fg sst interbeds and locally weakly framboidal / rounded appearing. Perv sil(vw), Fresh no oxidn	1	PAF Low Capacity
NBR001	161	161.5	520930	grey lam bdd slst and minor fg q-sst. Dss py(<1%), perv sil(w) Fresh no oxidn	0.75	UC

NBR001	189.3	190	520931	brown oxidised (m) silicified(m) dgn skarn; half core sample,	0	UC

Glossary used

- Acid rock drainage - ARD
- Potentially acid forming - PAF
- Non acid forming - NAF
- Unclassified - UC
- Acid consuming material - ACM
- Acid neutralizing capacity - ANC
- Maximum potential acidity - MPA
- Net acid production - NAP
- Net acid generation - NAG

Samples were classified by Pitt and Sherry as NAF, PAF, PAF Low Capacity, and UC (see Glossary). Comparison of this classification to the logged pyrite portions shows a consistent relationship between pyrite presence (>=0.5%) and PAF classification. There was minor overlap between pyrite bearing and NAF classified samples. ARD classification from the 2010 and 2011 sampling is plotted on sections. Strong silicification with 0.5% disseminated pyrite (NBR021), interestingly returned a PAF Low capacity classification (Table 3). This result is low regardless of sulphide content presumably because the stronger pervasive silicification protects the pyrite from oxidation. Whereas on balance it seems that, more siltstone dominated pyrite bearing samples are PAF classified when compared to sandstone and pervasive silica altered samples. This may simply be a relic of lesser availability of sandstone samples, related to drill hole distribution. It seems that pyrite within siltstone is more readily oxidisable by comparison to that of often higher concentrations encapsulated within pervasive silicification; a result seemingly at odds intuitively. This relationship appears to hold in the central 10000 mN to 10100 mN area, whereas both principal lithologies are variably classified outside this zone; particularly on 9800 mN.

Magnetite Pit

Pyrite distribution was modelled on a sectional basis, generating shells to define polygons for >0.5% pyrite. This was undertaken with reference to PAF classified rocks and to lesser extent the distribution of lithology and pervasive silica alteration. The latter is a key control on disseminated pyrite distribution, which is commonly better developed within more porous coarser grained sandstone beds and interbeds within siltstone.

Bedding is known to have a consistent strike of approximately 130 true north (TN) - 45º to 55ºE dip within outcrop and orientated core, particularly in the north of the prospect area. This orientation is notably sub-parallel to drill hole dip in many cases, making interpretation of pyrite distribution controlled by strata bound pervasive silicification difficult. In the proposed pit area, sectional interpretation shows dip of strata to be a little shallower; e.g. on section 10000 mN, an apparent dip of -35 degrees is indicated (Figure 6).

An approximate outline and contours for the final planned pit was generated from mine plans, with a pit DTM subsequently created allowing approximate pit profiles to be overlain on the sections, enabling clearer interpretation. This rough representation does not display / account for open cut benches.

A consistent geological interpretation across all sections extending from 9800 to 10100 mN was generated considering downhole lithologies, long core axis angles and surface mapping (Figures 4 - 7). The existing drilling pattern does not allow for accurate interpretation of the role of pervasive silicification with respect to permeability of lithologies, since all drill holes are orientated roughly parallel to strike. Further drill holes perpendicular to strike are desirable to better understand the distribution of this and PAF rock.

ARD rock classification was displayed in conjunction with visually estimated pyrite (%) to aid sectional interpretation with >0.5% pyrite (/PAF) zones extended to the pit boundary and stopped at the approximately 12 to 15m base of oxidation. The boundaries for PAF rock are considered approximate.

The PAF outlines are partly based upon the premise that pervasive silica – disseminated pyrite alteration emanates from the mineralisation hosting fault zone and pervades along permeable zones in the enclosing sediments. This it seems is primarily within the siltstone-dominated units with possibly somewhat less acid generation potential from the coarser more silicified sandstone beds.

Interpretation on 9800N could be significantly improved, since drill hole NBR002 is inadequately logged in the current digital data. Consequently, the pyrite concentration for this PAF zone is an estimate considering results of a recent summary log, indicating that only narrow intervals bear minor pyrite; 23 – 30m @ trace, 40-47m @ trace, 92-96m @ 0.5% Py.

A basic sectional “pre–resource” was calculated using a two dimensional inverse distance weighted interpolator (power 2) for PAF rock (>0.5% pyrite). This was based upon 100m spaced sections (+/-50m section envelope), assuming an average specific gravity of 2.7g/cm3 from 21 drill core determinations (Table 4). The volume and tonnes of PAF within each section are tabulated below (Table 5). These figures should be considered as “Pre-resource” in nature since there is insufficient data to base the interpretation on with any degree of certainty. Pyrite concentrations are only indicative given that sparse data was stretched via a 100 m search radius. The majority of the significant PAF rock is shown to be in the northern half of the pit on sections 10000 and 10100mN.

Twenty five percent of the tonnage calculated for 10100mN was removed as an approximation to account for what will not be mined from the 100m wide modelled zone that intersects the NE pit wall. The same consideration was not applied to 9800mN, at the southeastern pit end, since expansion of the inferred PAF zone toward 9900mN will approximately accommodate tonnes not planned for mining.

Table 4: Rock density determination - NBR

Rock Type	SG (g/cm3)
Hornfels	2.82
Fine Grained Sandstone	2.63
Sandstone undifferentiated	2.72
Siltstone	2.70
Average (20 samples)	2.71

Table 5: Potential PAF volume and tonnes for the proposed magnetite pit at NBR

Section (mN)	Volume (m3)	PAF (Tonnes)	Pyrite (%)
10100	407,500	1,100,250	1.00
10000	812,600	2,194,000	1.27
incl. Zone 1	*750,741*	*2,027,000*	*1.37*
incl. Zone 2	*61,852*	*167,000*	*0.08*
9900	321,850	869,000	0.05
9800	120,000	324,000	? (<0.05)
Total PAF	1,661,950	4,487,250	0.88

Figure 4: Cross section 9800 mN - NBR

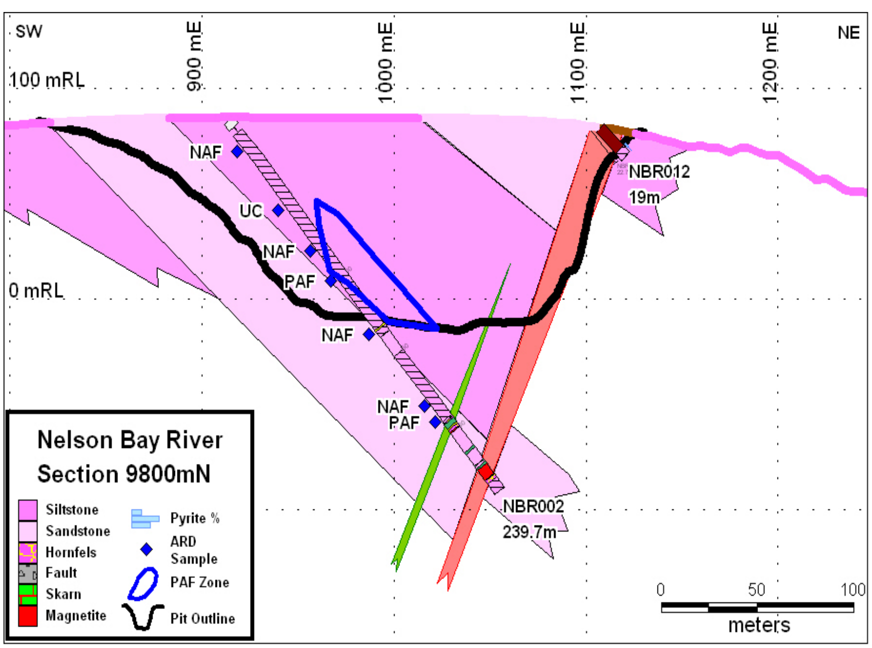


Figure 5: Cross section 9900 mN - NBR

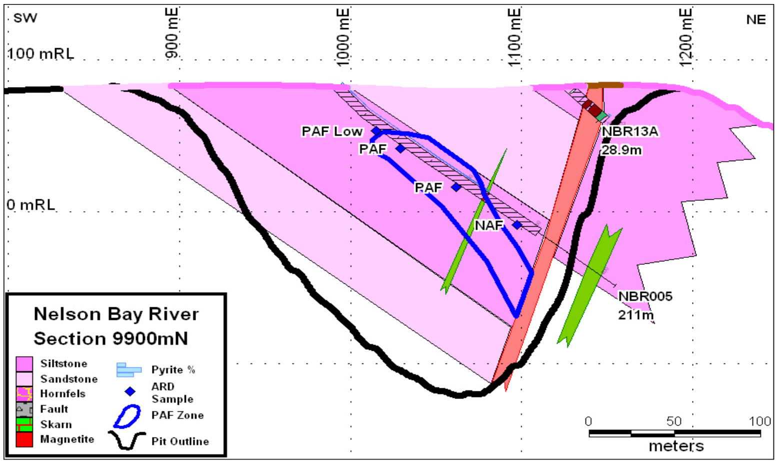


Figure 6: Cross section 10 000 mN - NBR

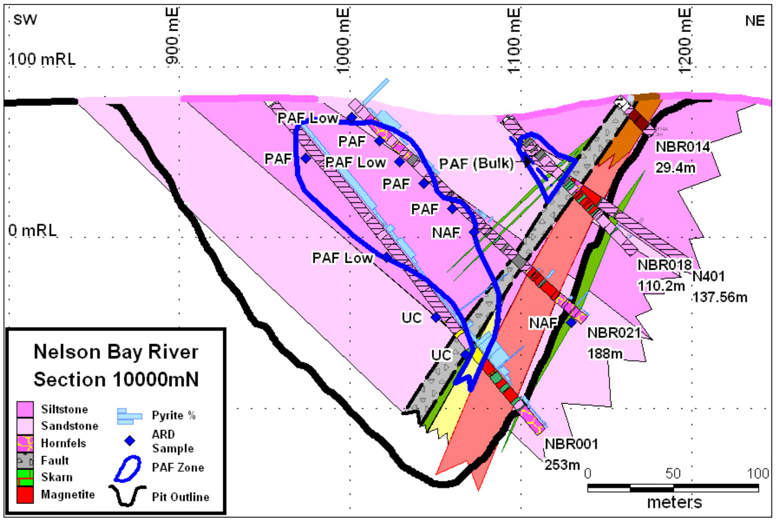
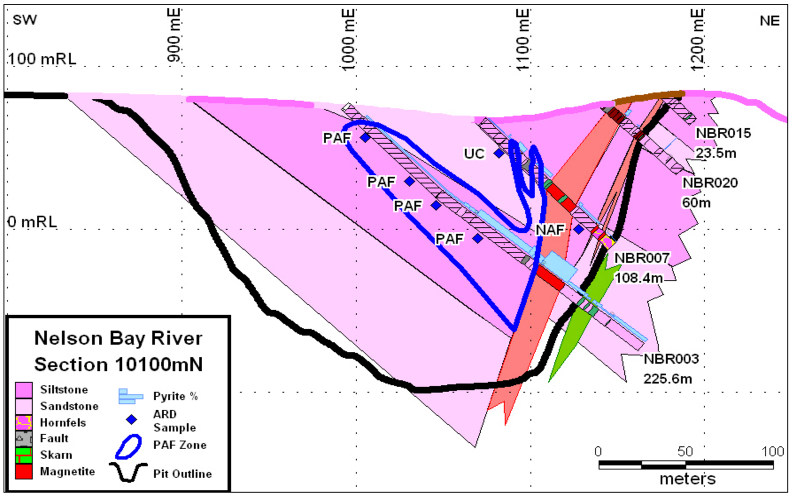


Figure 7: Cross section 10 000 mN - NBR



DSO Pit

The acid rock drainage potential of the proposed DSO pit area was investigated through 3 samples from diamond drill holes NBR009, 022 and 016. Silicified sandstone from the hangingwall in NBR009 and NBR016 were NAF classified, whilst siltstone in the footwall in NBR022 returned PAF Low Capacity. Considering, that these holes are relatively short / near surface, a large proportion of the upper part of the holes was oxidised and weathered and therefore not appropriate for sampling. This is generally in line with the observed zonation of PAF to NAF classified samples extending from the core PAF classified Main Magnetite Pit to the south west.

Pyrite distribution in the DSO pit vicinity was investigated, finding that much of the pyrite in the upper ~15m has evidently been oxidised. Pyrite is infrequently identified in the footwall and hangingwall sediments of the planned DSO pit and is apparently comparatively very weak when compared to the Magnetite Pit. Pyrite occurs sporadically in skarn and as coarse-grained disseminations in pervasively silicified sediments. The principal occurrence of elevated pyrite in the DSO pit area is within hangingwall quartz veins, which form a zone of ~5 to 7m in thickness, but locally reaches 13m on 9400N. Pyrite distribution in the quartz veins is not un-expectantly sporadic and unpredictable. Quartz veining is often pyrite barren, but also commonly bears variable pyrite of up to 5% tenor, but reaching 60% in one example. The sulphidic portions of quartz veining should readily be visually selected for encapsulation.

It should be noted that the process of logging RC drill chips is subject to considerable bias with hard mineral like quartz being readily retained in a sieved chip sample, as compared to more powdered softer enclosing rock being retained less. And, coarse grained pyrite potentially fractures and fragments readily, potentially preserving it when drilled from the soft matrix of a fault.

The DSO pit area was modelled to encompass >55% iron material, with the pit outline being based upon -65 to -70^0 north eastern and -45 to -50^0 (bedding parallel) south western pit walls planned for the magnetite pit. Consequently, some elevated pyrite zones did not require evaluation since they were found to lie outside the pit margins. Some examples follow. Immediately north of the proposed pit, section 9650N bears significant coarse grained aggregated pyrite in quartz veining to 60% over 1m, within a zone of 4m @ ~20% pyrite in NRC03. Similarly, on 9600 mN, some potentially pyrite bearing quartz veins lies outside the potential pit boundary and extends to surface within the oxidised – pyrite depleted zone.

Comparatively small sulphidic zones of potential importance with regard to ARD potential were identified on sections 9550, 9400 and 9200 mN (Figures 8 to 14). Pyrite "resources" contained within these zones are shown in Table 6. Sectional envelopes were defined as +/- 12.5m on 50m (9550mN) and +/-50m on 100m (9200 & 9300mN) spaced sections, which likely provides a generous tonnage assessment given the observed erratic pyrite distribution in quartz veins. An SG of 2.7g/cm3, similar to the sediments, was considered valid (quartz = 2.65g/cm3).

Table 6: Potential PAF volume and tonnes for the proposed DSO pit at NBR

Section (mN)	Volume (m3)	PAF (Tonnes)	Pyrite (%)
9550	2724	7,355	2.97
incl. Zone 1	1005	2,713	6.00
incl. Zone 2	1719	4,642	1.20
9400	10299	27,807	3.47
9300	1074	2,900	0.60
9200	2356	6360	2.06
Total PAF	13729	37067	3.59

Figure 8: Cross section 9650 mN - NBR

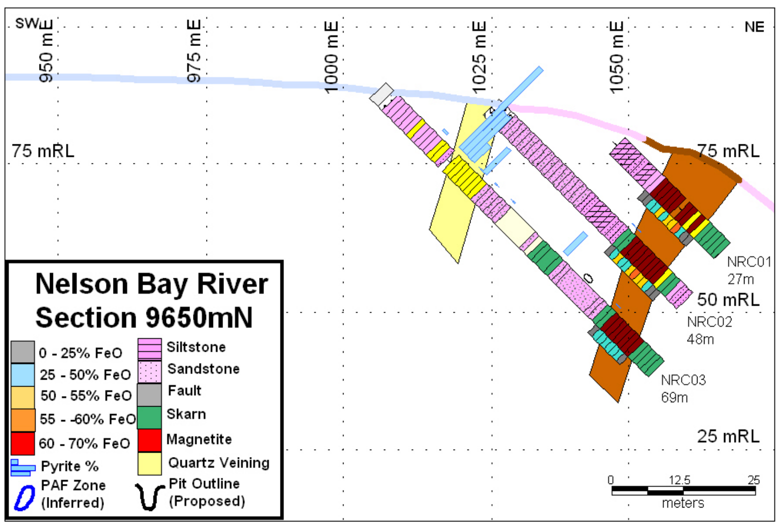


Figure 9: Cross section 9600 mN - NBR

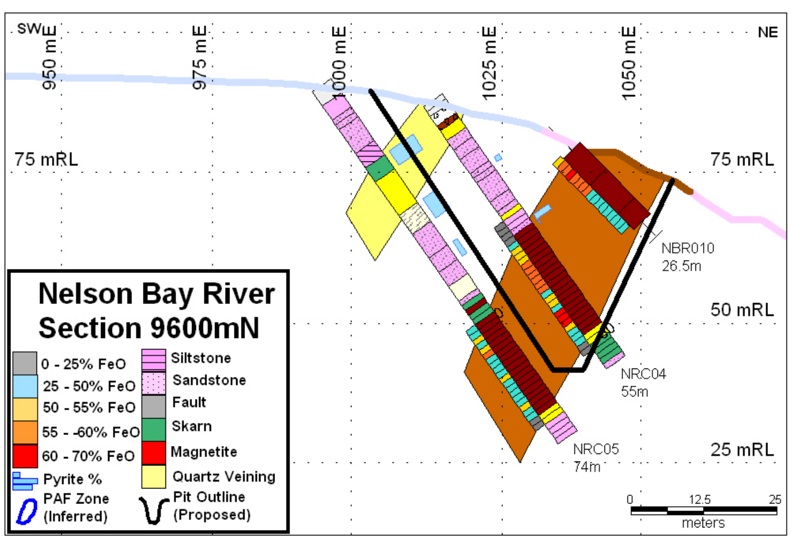


Figure 10: Cross section 9550 mN - NBR

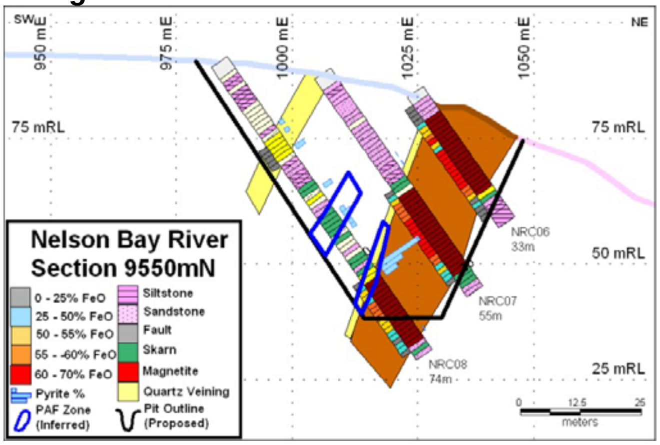


Figure 11: Cross section 9500 mN - NBR

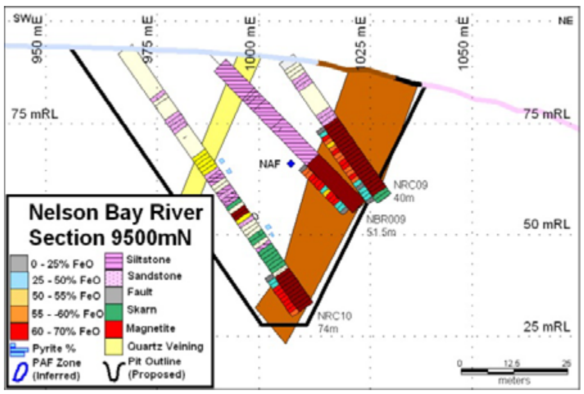


Figure 12: Cross section 9400 mN - NBR

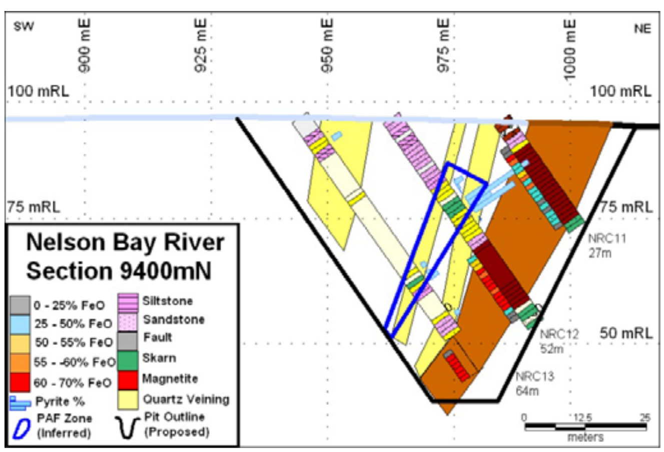


Figure 13: Cross section 9300 mN - NBR

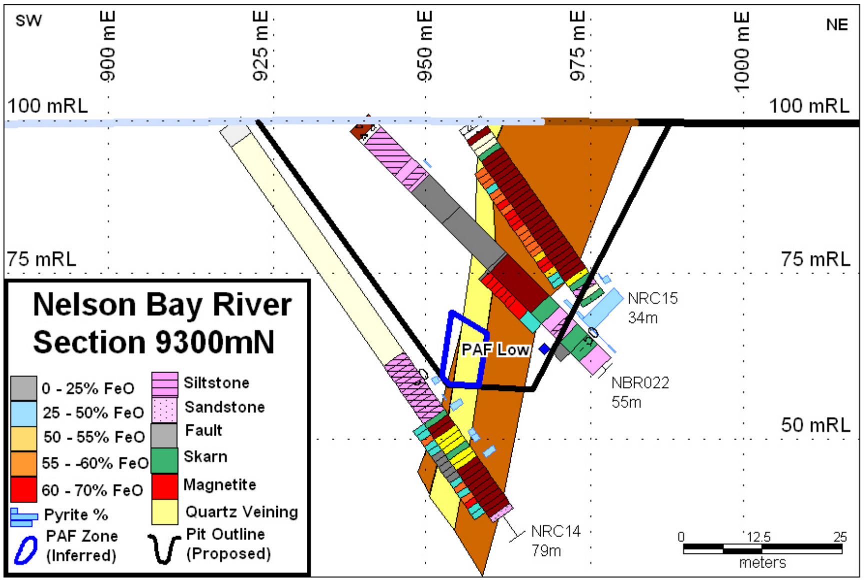
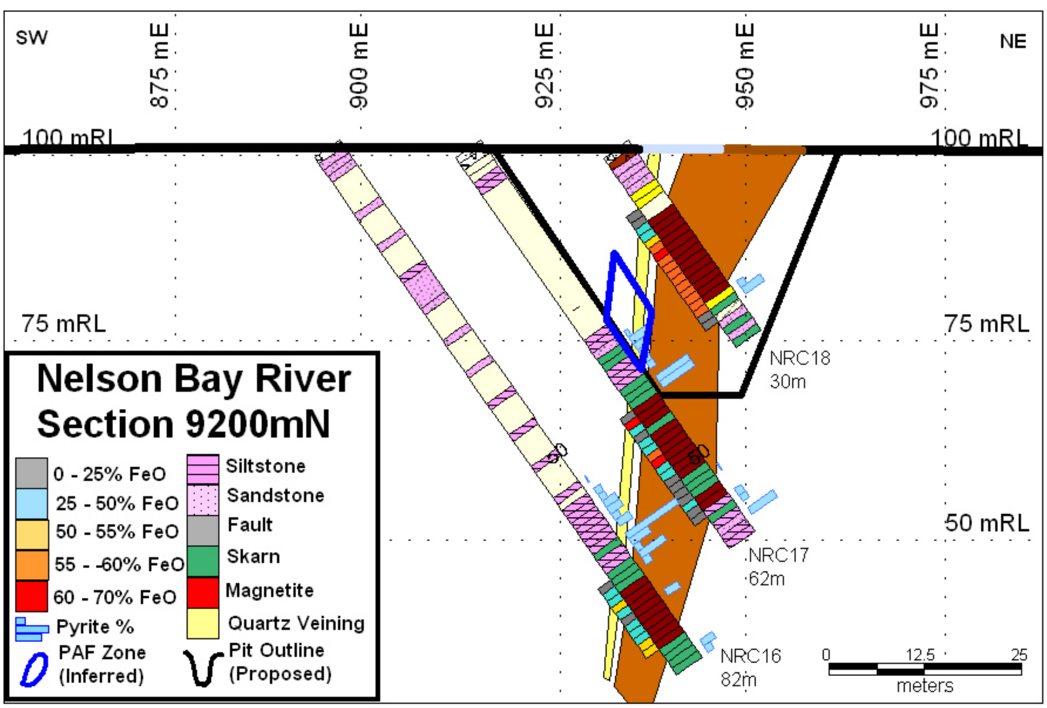


Figure 14: Cross section 9200 mN - NBR



APPENDIX - 1

Digital Data

- NBR_Drilling_Compilation280711.xlsx
- Original Analysis Files (BR11071207.csv, BR11062254.csv & BR11093604.csv)