EL 6/2005 “Cuprona”
Annual Report on Exploration
September 2016 to September 2017
- Lottah Mining Pty Ltd

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Abstract

Work in the 2016/17 reporting year has consisted of:

(1) Submission of an application for a mining lease.

The mine lease application requires compensation agreements with affected private landholders. Those compensations are currently being negotiated. A preliminary mine plan has been developed. Blasting testwork to determine whether the deposit can be mined within the EPA's blasting constraints is proposed.

(2) Re-estimation of Cuprona hematite resource in light of new geological and geochemical data.

The original resource estimated for the Cuprona hematite deposit noted potential errors in drill hole location and drill hole assays. Those errors have been resolved and a new resource estimation completed.

The total resource stands at 4,506,180t at 41.13% Fe (and 34.15% SiO_2).

The resource is not likely to be viable beyond moderate depths at current metal prices. The 30m pit option chosen contains a total resource is 947,248t at 47.72% Fe (and 27.12% SiO_2).

The resource is classified as Inferred on the basis of

1. the use of historical data from four sources with inherent potential positional inaccuracies in sample location, and
2. non-existent or inadequate QA/QC.
3. mixed data (four) sets with no field duplication.
4. use of dummy assay data

(3) Planning for drilling at Natone.

A drill plan to test both the hematite and magnetite potential has been developed.

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A Northern Quarries (788) Iron Deposit, Cuprona-Natone Iron Trend.
North West Tasmania - Resource Estimate – remodelling June 2017

1.0 Introduction

1.1 Exploration Rationale

Lottah Mining Pty Ltd (Lottah) holds tenements covering 439 square kilometres centred on the Housetop Granite and spatially associated iron deposits in Tasmania's northwest. Lottah is actively exploring these tenements for all potentially economic mineralisation.

Lottah has been developing the Rogetta magnetite deposit into a mining operation with a DP%EMP submitted to the EPA and a development application nearing final approval.

Lottah is also keen to develop the historically known hematite deposits including that at Cuprona.

1.2 Geology

Regionally the geology of the Rogetta Project area is dominated by a basement of Proterozoic metasediments (and minor mafic volcanics) of the Oonah/Burnie Formations unconformably overlain by a sequence of Cambro-Ordovician sediments, both intruded by the Devonian Housetop Granite, all obscured by a veneer of Tertiary basalt.

The basal unit of the Cambro-Ordovician sequence in the licence is the Owen Group sediments. Cambrian Mt Read Volcanics do not outcrop and have not been intersected in drilling.

The basal member of the Owen Group is a quartz pebble conglomerate, the Duncan Conglomerate, which contains local additions of volcaniclastic detritus. The conglomerates are overlain by the Moina Sandstone which has a gradational contact with the overlying Gordon Group Limestone, becoming more calcareous towards the contact.

These basement rocks were deformed in the Middle Tabberrabberran Orogeny under a largely east-west compressive stress regime. This resulted in the development of north to north-northeast striking F2 folds superimposed on a much broader east-west F2 fold.

Late in the orogeny the I-type Housetop Granite was emplaced passively and underlies most of the Rogetta Project tenements.

Skarn mineralisation was introduced into calcareous rocks by fluids derived from this granite with rarer vein style mineralisation also associated with this intrusive. Whilst previously considered to be a single body more recent work (McKeown, 1994) suggests that the granite consists of a number of phases often intruding as dykes as opposed to a single large rounded batholith geometry.

Skarn mineralisation has formed in the carbonate bearing rocks of the Gordon Limestone and upper Moina Sandstone and in calcareous units in the Proterozoic Oonah Formation. Elsewhere regionally has also been skarn development in the Cambrian Tyndall Group rocks. Bedded hematite bodies, of which Cuprona is an example, lie near to the base of the Ordovician sequence but remain enigmatic in their genesis.

In the Tertiary topographic lows were filled by basal sediments followed by thick Tertiary basalt flows which spilled over onto more undulating topography as a thin veneer.

1.3 Location and access

Exploration Licence 06/2005 (EL 06/2005) covers 22 square kilometres and is located 30 kilometres south-east of Burnie, close to the townships of Natone and Cuprona in North West Tasmania.

The primary access routes to EL 06/2005 is either Natone Road or Cuprona Road to the east. Smaller roads (including forestry) intersect the tenement. Access throughout the tenement is good.

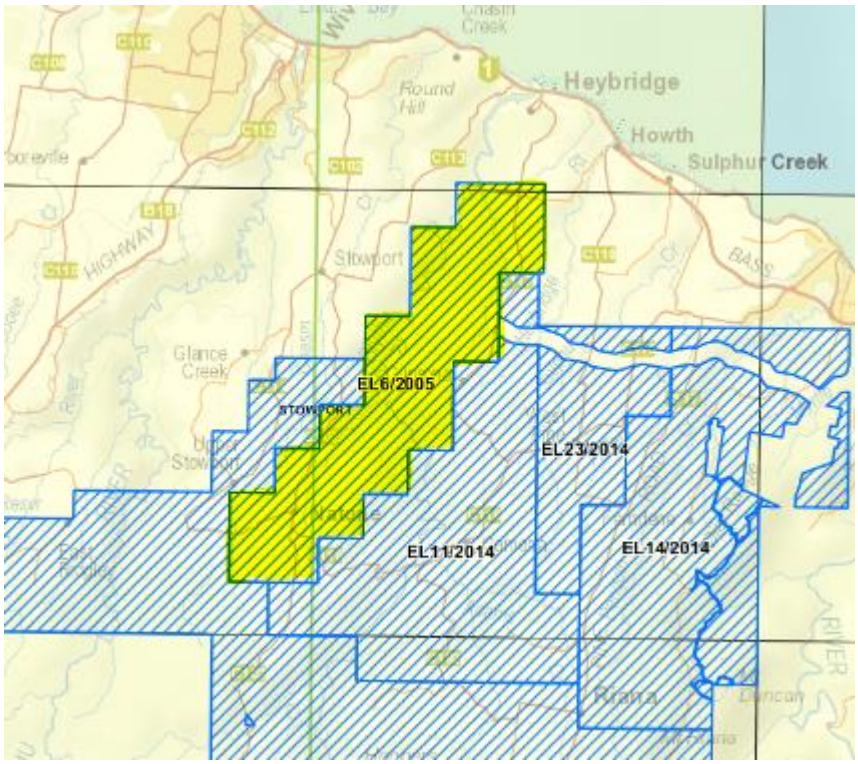

Figure 2.1: Location of EL 6/2005

1.4 Land status and usage

Land use in the licence is predominantly agriculture with cropping and grazing both common. The exception is the Blyth River Reserve which is a state reserve.

1.5 Tenure

Tenement EL 06/2005 was granted to Lottah Mining Pty Ltd/Forward Mining Pty Ltd on the 8 September 2005 and applies to all Category 1 minerals. The licence is currently renewed until September, 2018.

2.0 Summary of Previous Work

2.1 Prior to Current Tenement

The Cuprona-Natone area has long been associated with prospecting and mining, with the first mining lease being granted in the area in 1891.

At Cuprona the Blythe River and Cuprona Hematite Iron deposits were discovered during the 1890's by private explorers. Their leases were eventually transferred to Blythe River Iron Mines Limited in around 1900, and an extensive sampling program including surface trenching and aditing was carried out with a 1,000 tons bulk sample quarried for metallurgical testing. A 6.5 mile (10.5 km) spur line was also surveyed to meet the main government railway at the mouth of the Blythe River to carry the ore to Burnie for shipment to proposed smelters NSW but it was never built.

In 1919 the project was offered to the Commonwealth Government who had an independent investigation carried out by Boyd, Gibson and Young to determine the viability of the deposits. These investigators reported that the deposits contained "9 million tons of iron bearing material…" however "…..the bulk of the deposit is far too siliceous to be considered as an iron ore at the present day and the quantity of good ore is too small to be considered of any economic importance".

Another geological and economic study of the deposits was carried out by Nye in 1937 on behalf of J. D. Patterson, the new owner of the leases, as part of a submission to the Tasmanian government for assistance to construct the rail spur up the Blythe River valley. This report effectively confirmed the Boyd, Gibson and Young conclusions.

In 1940-1941, the Australian Commonwealth Carbide Company quarried 2,555 tons from the Northern Quarries area for use in ferro-silicon manufacture.

As part of a general appraisal of iron ore deposits in Tasmania Blake in 1957 mapped and reported on the Blythe River and Cuprona iron deposits. No new resource estimates were calculated although he stated that it was "proved" that only 12,000 tons of high grade iron ore was located at Purple Crag.

In 1958 Atkinson reported for CRA that the Blythe River iron deposit had a potential for 10 million tons of siliceous iron ore with good potential for extensions below the Tertiary basalts to both the north and south. No grades were quoted.

In 1962 beneficiation tests on two 9 cwt. (approx. 450kg) bulk samples collected from the Blythe River deposits were carried out by the Tasmanian Mines Department to determine if beneficiation of the siliceous hematite could produce a +60% Fe concentrate suitable for export.

Further Tasmanian government mapping was carried out by Gee in the early 1960's that culminated in a three hole diamond drilling program at Northern Quarries reported by Noldart in 1966. The drilling was described as confirming the theory put forward by Gee that the iron deposits are localised in an interformational breccia located on the unconformity between the Precambrian quartzites and the overlying Ordovician sediments.

The iron ore intersected was of variable grade having a true width of approximately 80 feet (24m) for 45.3% Fe and 36.6% SiO_2 in BR1 from a depth of 124.25 feet (38m) (see Figure 3), 65 feet (20m) in BR2 from 79.8 feet (24m) and 88 feet (27m) for 26.6% Fe and 57.6% SiO_2 in BR3 from 57 feet (17m). Drill hole BR2 was not sampled and assayed due to poor core recovery. Noldart recommended that any further exploration should be concentrated to the south of BR1 up to and below the Tertiary basalt cover.

The hematitic ironstone ironstone at Natone was first mined by the owner of the property Mr T Rutherford on or about 1919. Workings consisted of two shallow shafts.

In 1938, J. Linell Cook (Holdings Pty. Ltd.) reportedly further prospected the area by shaft sinking and trenching and contracted the Department of Mines to drill two diamond drill holes (Bore 1 and Bore 2).

Thomas and Henderson (1943) describe extensive work then recently completed and ongoing by a company Ferrico Proprietary Limited who had sunk 4 shallow shafts (3 with cross-cut drives at their base) and cut numerous trenches. Intriguingly their mining work stopped when ore was reached as they were unable to successfully break the very hard siliceous hematitic ore.

During the late 1960's through to the mid 1990's most exploration regionally switched from iron ore to base metal skarns that may have formed within the Oonah Formation where potentially mineralised fluids generated by the emplacement of the Housetop Granite were deposited in favourable lithologies. The majority of exploration appears to be focussed on tin (Sn), tungsten (WO) and/or copper (Cu) mineralisation.

Minops investigated the Natone area from 1968 to 1972 following on from the BMR regional magnetics survey which had defined a major aeromagnetic anomaly in the area. Their work included magnetics, IP, auger drilling and the drilling of 3 diamond drill holes (Natone 1, 2 and 3) by the Department of Mines drill rig totalling 506m.

Hole 1 targeted the main magnetic anomaly to the west as did hole 3 intersecting weathered sediments grading into quartzite hornfels with minor tremolite/actinolite rock and calc-silicate skarn with pyrrhotite likely responsible for the magnetic anomaly.

Hole 2 (Natone 2) targeted the easterly weaker magnetic anomaly and intersected a 125' (horizontal width assuming vertical dip) zone of 53% Fe in massive hematite (Jack, 1969).

During 1969-1974, within EL 1/69, the Tasminex/ANZECO J/V investigated the Natone ironstone and Rutherford's copper prospect, to the north, with soil and rock geochemistry, mapping, magnetics and costeaning and the drilling of 5 shallow percussion totalling 106m at Rutherfords copper prospect.

During 1977-1985, EL 8/77 was investigated by the Comalco-Shell-CRA J/V. Extensive exploration focussed on the skarned rocks towards the discovery of tin-tungsten deposits included mapping, stream, rock and soil geochemistry: aeromagnetic and INPUT EM surveys, SP, IP max-min EM, SIROTEM, gravity and the drilling of three diamond drill holes NT1, NT2 and NT3. Drill hole NT3 encountered significant magnetite mineralisation intermixed with pyrrhotite.

No holes have intersected significant levels of W, Sn, M or Bi.

During 1986-1989, within EL30/86, CW Davis undertook stream geochemistry, mapping, rock chip sampling and at the Cuprona ironstone drilled 28 airtrack holes totalling 252m.

Throughout the 1993-1995 period, within EL 9/92, Pasminco reviewed the regional geological setting, flew airborne magnetics/radiometrics, and collected and analysed rock chip samples.

In 2005, Red River Resources (RRR) pegged the current EL 6/2005. Work carried out during the first year included: literature review, field investigations of the hematite/quartz outcrops, modelling of potential magnetic targets and a review of aeromagnetic data.

Red River Resources (RRR) also initiated a detailed gravity and soil geochemical sampling survey over the Natone prospect. Access was limited due to an uncooperative land owner, and thus data was somewhat limited. Upon reviewing this data, (RRR) commenced a drilling programme on the Kiwi prospect and Natone Skarn (permit year 2006-2007).

In 2006 RedRiver Resources drilled 5 holes (RRN1 to RRN5) for 721.7m. Their first hole RRN1 attempted to twin Shell hole NT3's magnetite intersection. The other 4 holes targeted soil (copper mainly but also gold, silver, palladium) +/- gravity anomalies. Holes were assayed for Cu, Pb, Zn, Ag,

Au and Sn but not Fe. Hole RRN5 intersected bands of hematite in clay from 0 to 48.2m. The other holes intersected sediments with some calc-silicate skarn development.

Upon joint venturing into the project Iron Mountain Mining Limited drilled 5 RC holes (KWRC1 to KWRC5) for 254m (anon. 2008) into Rutherfords workings. These holes all intersected varying quantities of hematite+/-minor magnetite mineralisation with better results 8m @ 57.6% Fe and 3m @ 55.5% Fe.

In 2013 Tasmania Mines Ltd drilled three diamond drill holes R001, R002 and R003 into the Rutherfords prospect. All holes were angled to the southwest and all intersected hematite mineralisation with R001 intersecting 66m @ 45.5% Fe including 13m @ 58.5%.

2.2 During Current Tenement

In 2015 LMPL conducted two phases of drilling at Cuprona. A total of 16 drillholes were drilled (11 RC holes and 5 diamond drill holes) in and around the more accessible deposits at the northern and southern ends of the trend. A summary of the drill holes is below;

- Diamond drill holes 15CUN005DD, 15CUN006DD, 15CUN008DD and 15CUN010DD, and RC holes, 15CUN004 RC, 15CUN007 RC and 15CUN009RC were drilled into the Northern Quarries (788) deposit.
- RC holes (15CUN00RC1 and 15CUN00RC2) targeted a magnetic anomaly just east of the hematite mineralised trend. This anomaly had been tested by Shell with drill hole CUPD1.
- RC hole 15CUN00300RC was drilled just west of the main body testing for parallel mineralisation based on a mistaken belief on the location of historic holes BR1 to BR3.

South of the river diamond drill hole 15CUS009DD tested the Purple Crag deposit, RC hole 15CUS003RC tested the Eastern Crag deposit and RC holes 15CUS001RC and 15CUS002RC tested south along the main trend with 15CUS004RC and 15CUS005RC off to the east of this main trend.

Table 2.1 Summary of Lottah's drilling at Cuprona

Hole or channel ID	Easting (MGA94)	Northing (MGA94)	RL (m.a.s.l.)	Length (m)	Azimuth (true)	Dip	Sample type	Company
15CUN001RC	412429.692	5445236.894	264.717	205	360	-90	RC	Lottah Mining Pty Ltd
15CUN002RC	412442.553	5445404.769	274.014	192	360	-90	RC	Lottah Mining Pty Ltd
15CUN003RC	412248.577	5445689.84	198.388	156	140	-60	RC	Lottah Mining Pty Ltd
15CUN004RC	412579.391	5445709.783	224.314	103	320	-60	diamond	Lottah Mining Pty Ltd
15CUN005DD	412376.7	5445579.715	232.671	170.1	140	-55	diamond	Lottah Mining Pty Ltd
15CUN006DD	412449.618	5445672.958	227.011	143.7	130	-85	diamond	Lottah Mining Pty Ltd
15CUN007RC	412533.154	5445674.023	230.45	100	320	-60	RC	Lottah Mining Pty Ltd
15CUN008DD	412622.968	5445792.373	212.175	32.8	320	-55	diamond	Lottah Mining Pty Ltd
15CUN009RC	412418	5445644	230.026	124	140	-60	RC	Lottah Mining Pty Ltd
15CUN010DD	412622.164	5445791.534	212.175	59.8	147	-70	diamond	Lottah Mining Pty Ltd
15CUS001RC	411572.711	5444116.412	226.992	171	320	-55	RC	Lottah Mining Pty Ltd
15CUS002RC	411545.21	5444427.4	164.541	129	305	-55	RC	Lottah Mining Pty Ltd
15CUS003RC	411749.947	5444449.042	184.813	61	320	-55	RC	Lottah Mining Pty Ltd
15CUS004RC	411917.882	5444300.366	195.218	40	60	-55	RC	Lottah Mining Pty Ltd
15CUS005RC	411917.345	5444299.24	194.961	140	320	-55	RC	Lottah Mining Pty Ltd
15CUS009DD	411817.625	5444781.464	59.3	150.5	130	-55	diamond	Lottah Mining Pty Ltd

3.0 Exploration completed during the report period

3.1 Introduction

Work in the 2016/17 reporting year has consisted of:

(1) Submission of an application for a mining lease,

(2) Re-estimation of Cuprona hematite resource in light of new geological and geochemical data, and

(3) Planning for drilling at Natone.

3.2 Mine lease application

An application for a mine lease has been made over the area shown in figure 3.1.

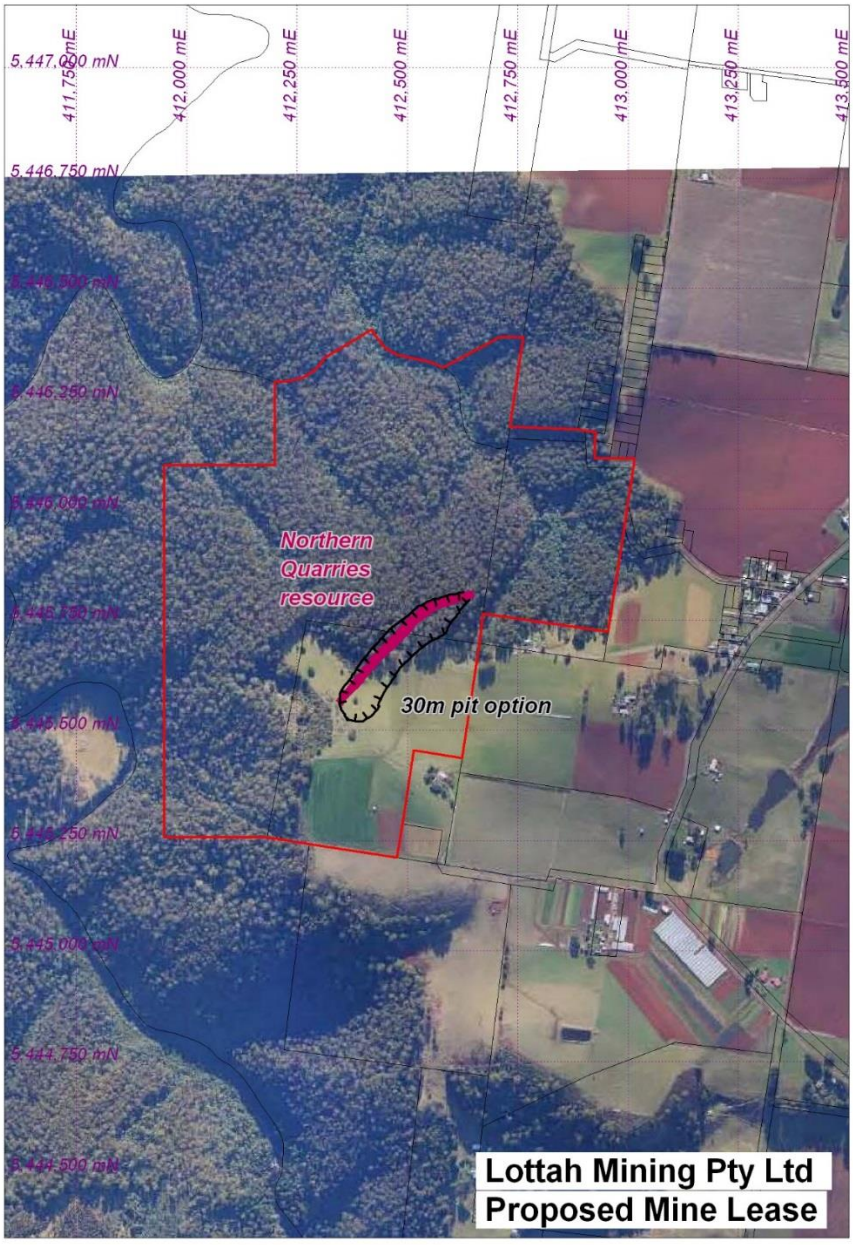

Figure 3.1: Northern Quarries resource, 30m pit option, and area

3.3 Cuprona resource re-estimation

3.3.1 Introduction

3.3.2 Resource

An Inferred Resource has been re-estimated for the Northern Quarries (788) hematite deposit at Cuprona in northwest Tasmania utilising recent drill and historical drill and channel sample data and adding new structural data.

The total resource stands at **4,506,180t at 41.13% Fe** (and 34.15% SiO_2).

The resource is not likely to be viable beyond moderate depths at current metal prices. The 30m pit option chosen contains a total resource is **947,248t at 47.72% Fe** (and 27.12% SiO_2).

The resource is classified as Inferred on the basis of

1. the use of historical data from four sources with inherent potential positional inaccuracies in sample location, and
2. non-existent or inadequate QA/QC.
3. mixed data (four) sets with no field duplication.
4. use of dummy assay data

3.3.3 Geology and Assay Data

The Northern Quarries (788) hematite deposit is a northeast striking, approximately 45°-70° southeast dipping, body of stratabound massive hematite+/-silica hosted in a sequence of Cambrian sediments. The deposit lies at the northeastern end of the Cuprona – Natone Iron Trend.

As modelled the deposit has a strike length of 430m (open ended along strike), vertical extent of 120m (open ended down dip) and a thickness that ranges from 10m to 30m.

The deposit was apparently discovered in ~1891 and prospected in the 1890's with some limited production (some small parcels of ore were also mined during the Second World War), and has been described by a number of government and industry geologists.

In 1919 the Commonwealth Government carried out systematic sampling with a view to purchasing the deposit (Boyd *et. al.*, 1919). They sampled the deposit in six surface trenches and the Upper Tunnel in the Northern Quarries (788) area, as well as the outcrop and workings on either side of the Blythe River, with their sampling considered of sufficient quality for inclusion in this estimation.

In the mid 1960's the Mines Department drilled three drill holes beneath the deposit with two considered worthy of sampling (BR1 and BR3).

In 1988/89 CW Davis carried out a 28 hole (for 252m) airtrack percussion drilling programme in the central portion of the deposit.

In 2015 Lottah Mining drilled four diamond and three reverse circulation drill holes into the deposit.

These four data sources constitute the assay sample data used in the estimation.

In this estimation dummy assay grades were assigned to 22 samples from Lottah drillholes 15CUN005DD and 15CUN008DD which were incompletely sampled. 7% Fe was utilised as it was determined to be adequately low enough.

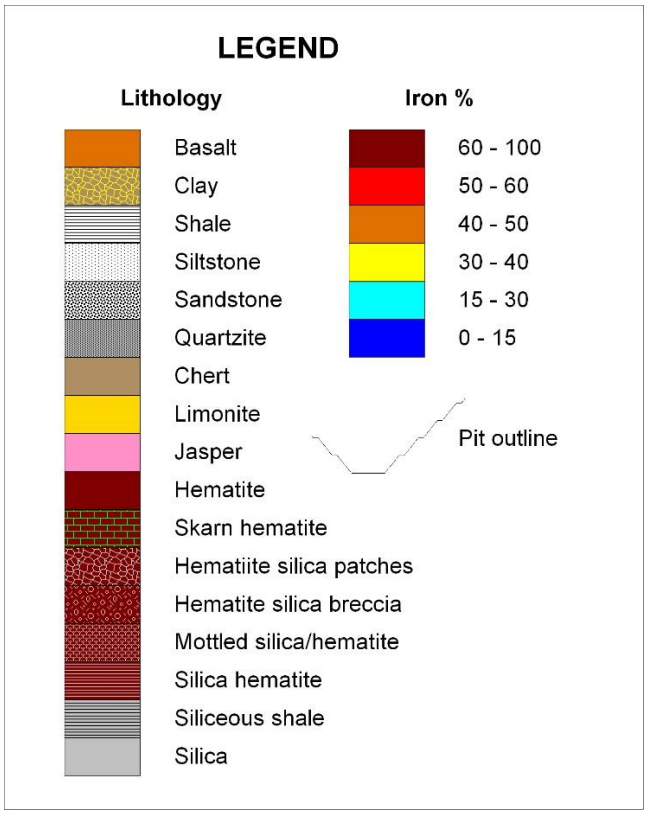

Figure 3.2: Legend Fe % for all sections and plans

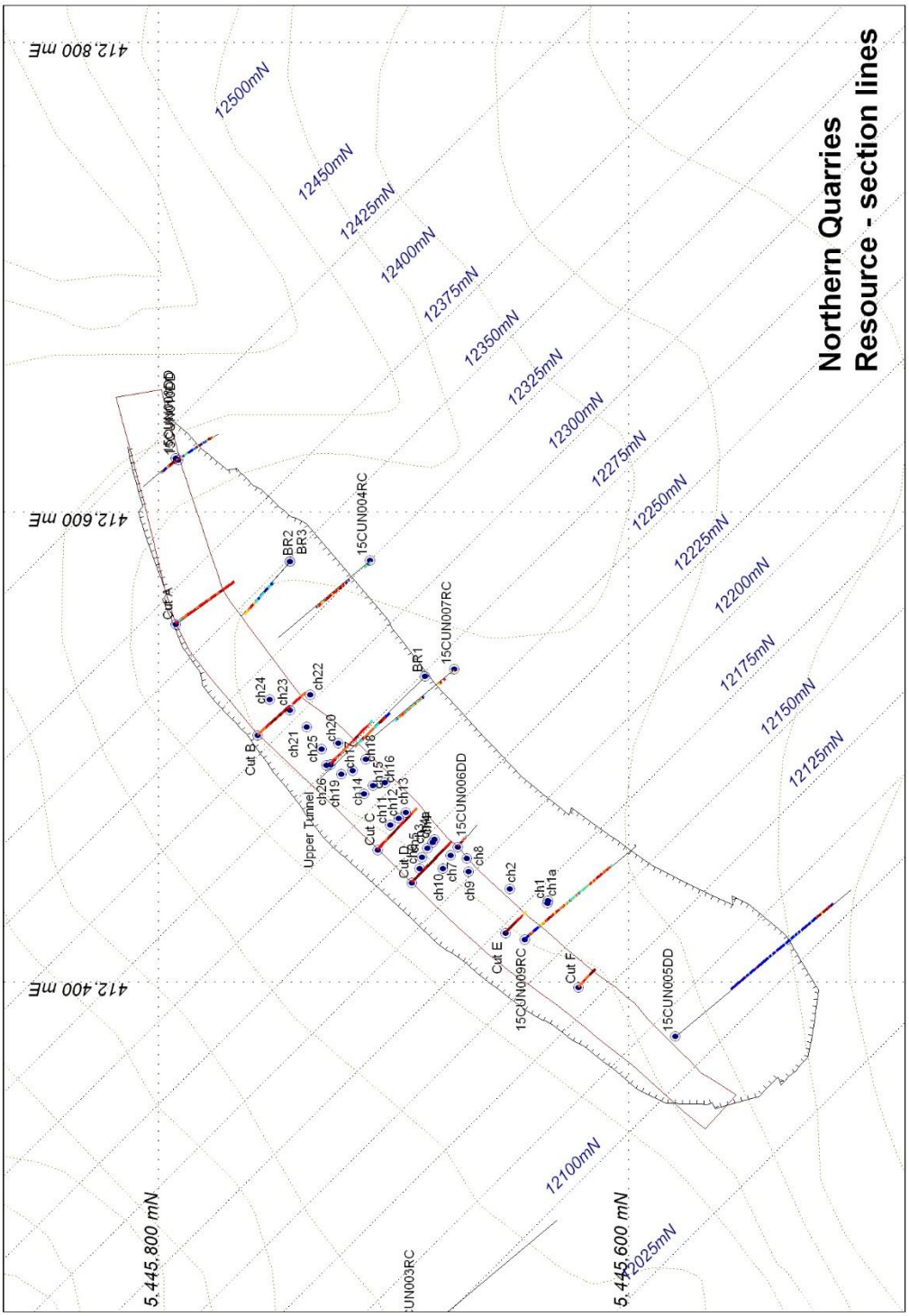

Figure 3.3: Northern Quarries (788) resource showing drillhole collars, 30m pit option bounds and Fe % (legend in figure 3.2).

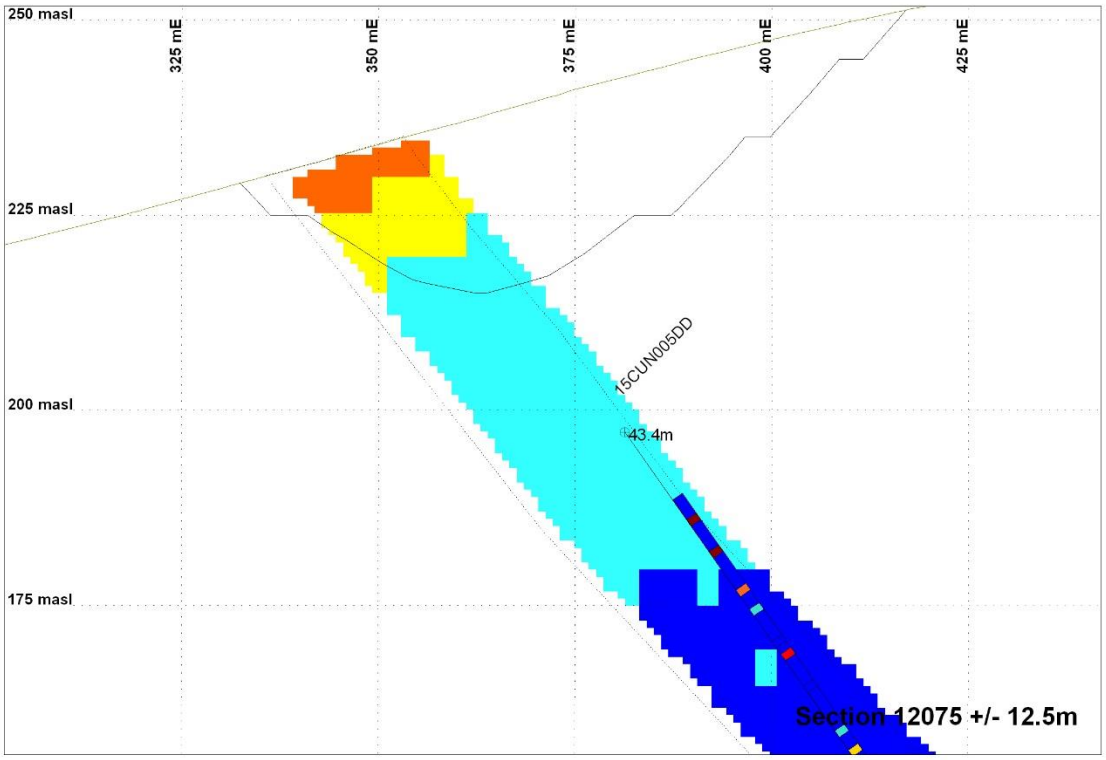

Figure 3.4: Section 12075m, Northern Quarries resource, legend in figure 3.2.

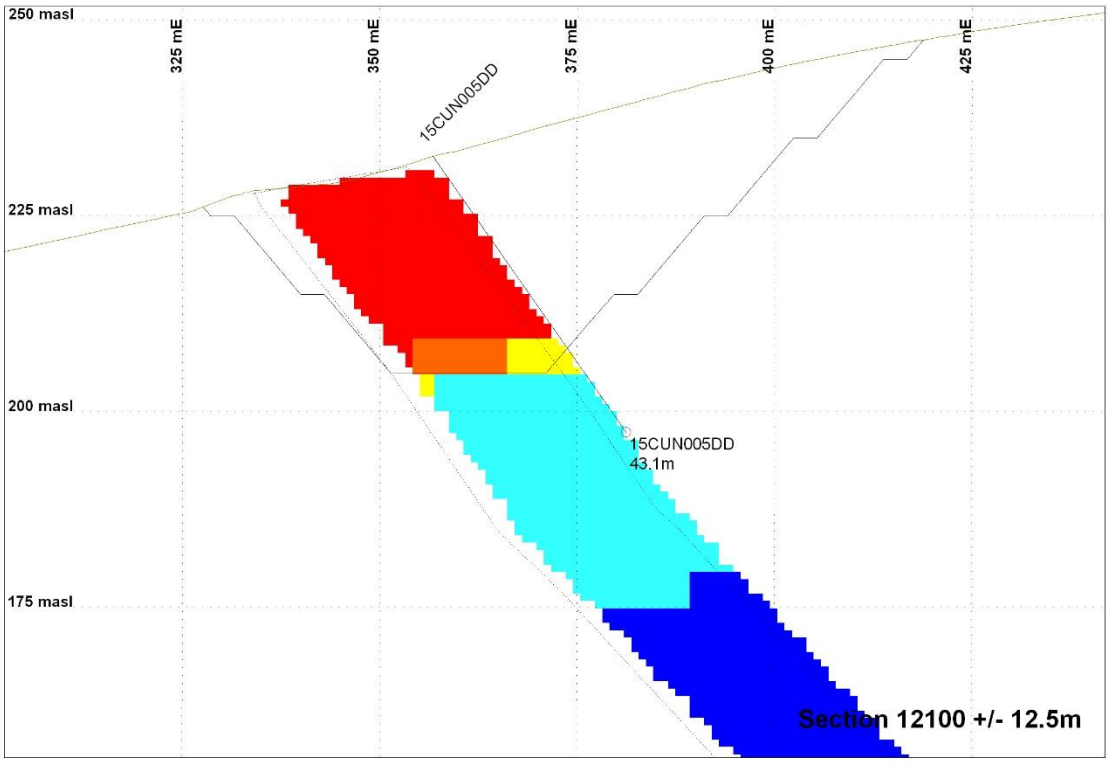

Figure 3.5: Section 12100mN, Northern Quarries resource, legend in figure 3.2.

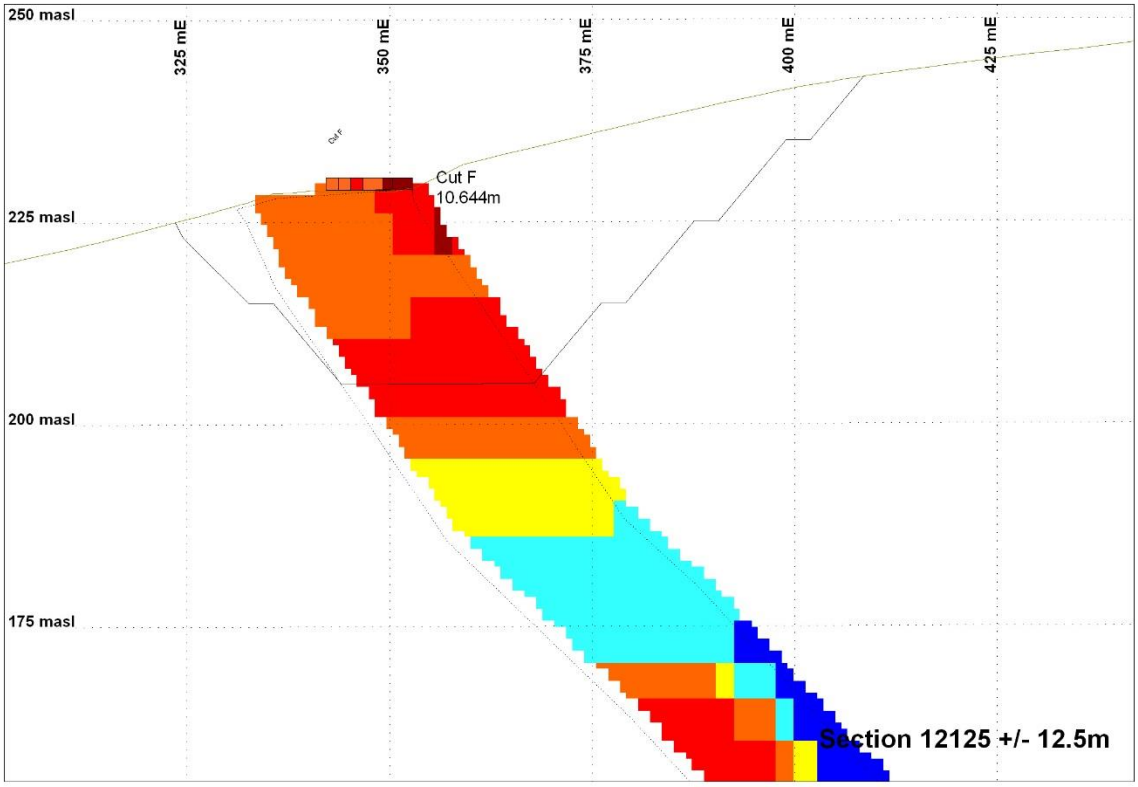

Figure 3.6: Section 12125mN, Northern Quarries resource, legend in figure 3.2.

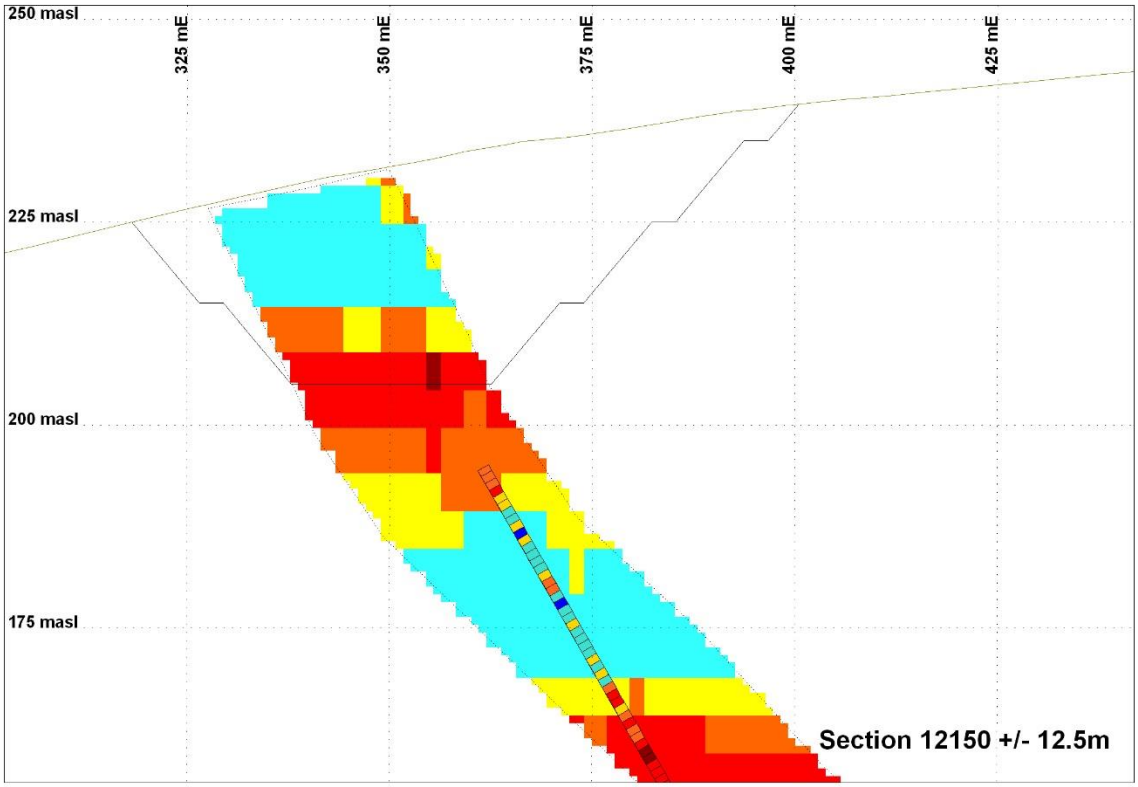

Figure 3.7: Section 12150mN, Northern Quarries resource, legend in figure 3.2.

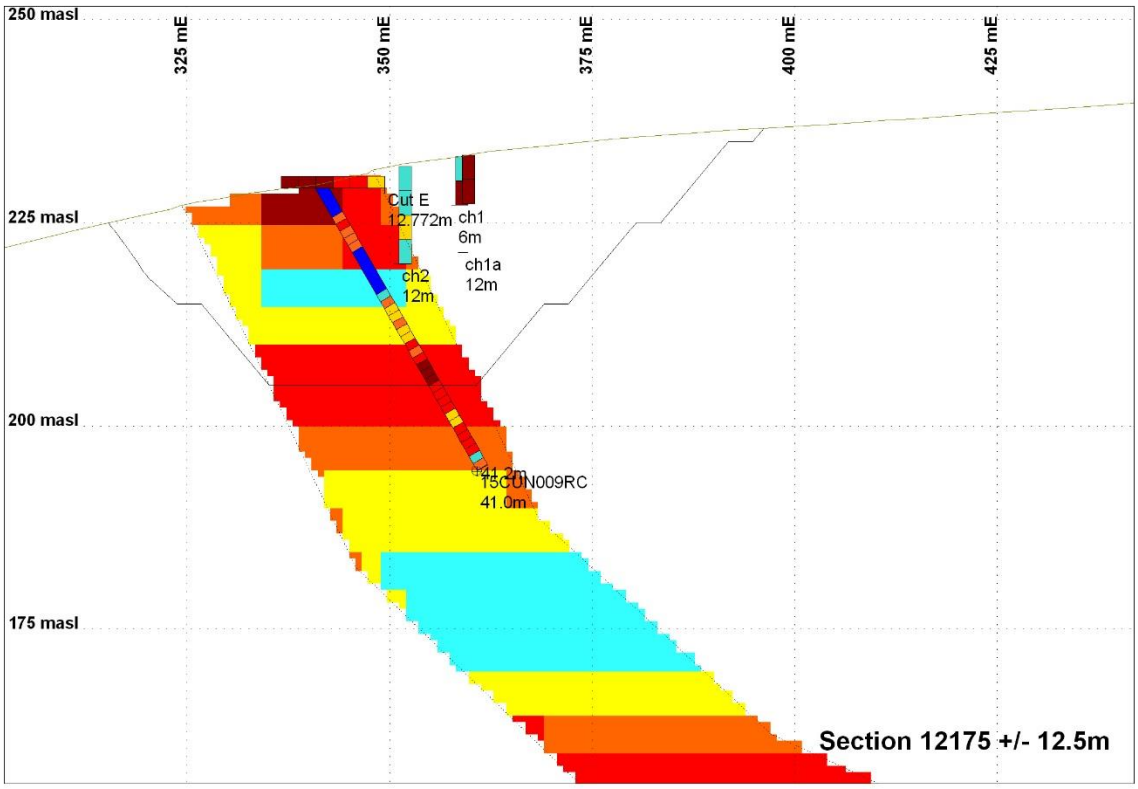

Figure 3.8: Section 12175mN, Northern Quarries resource, legend in figure 3.2.

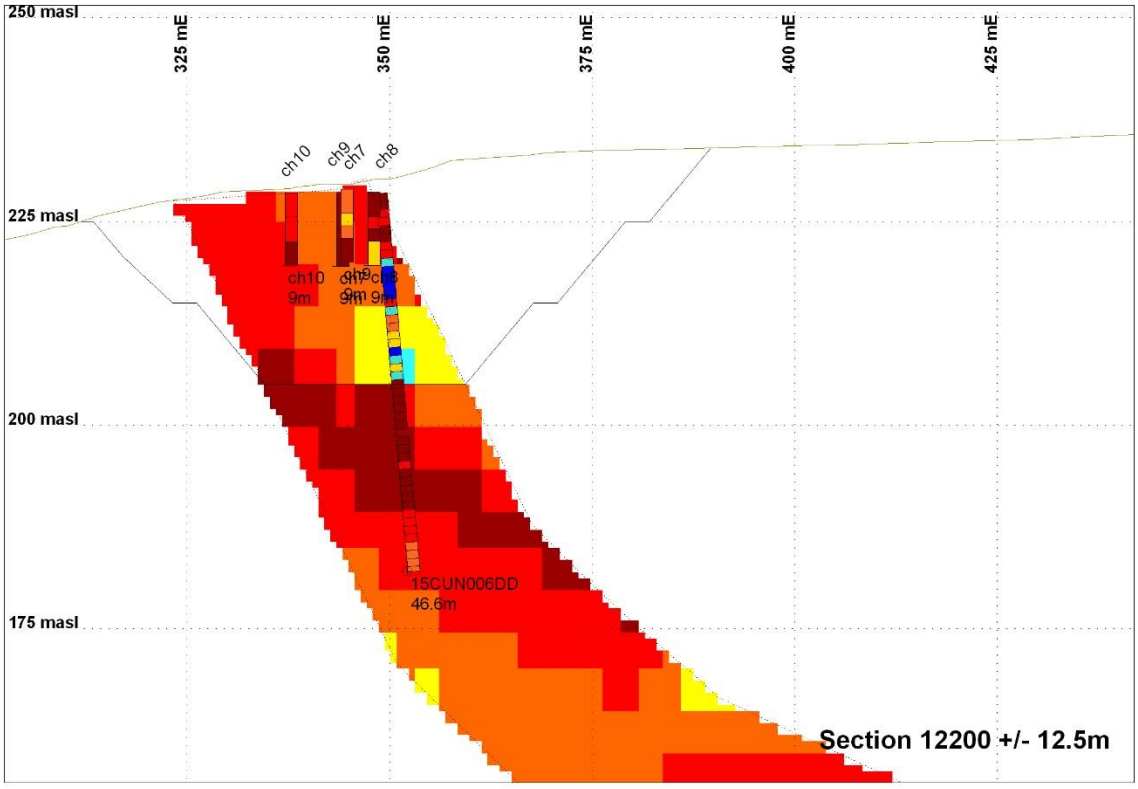

Figure 3.9: Section 12200mN, Northern Quarries resource, legend in figure 3.2.

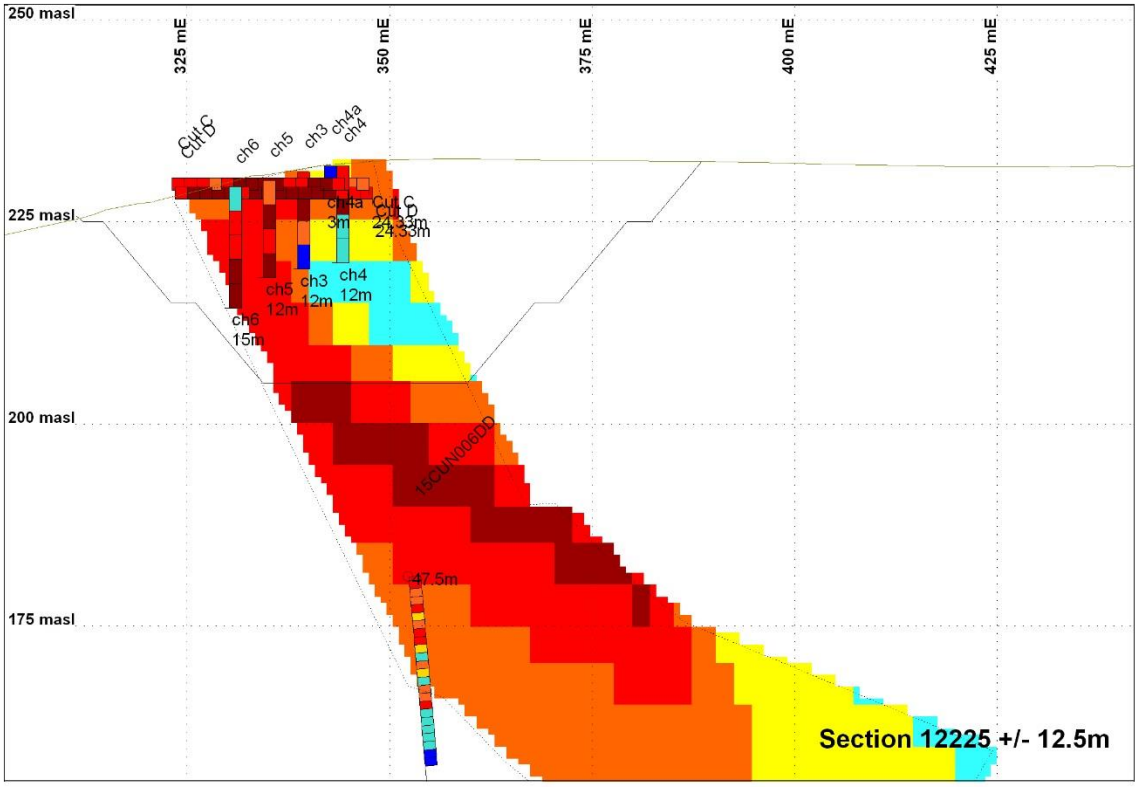

Figure 3.10: Section 12225mN, Northern Quarries resource, legend in figure 3.2.

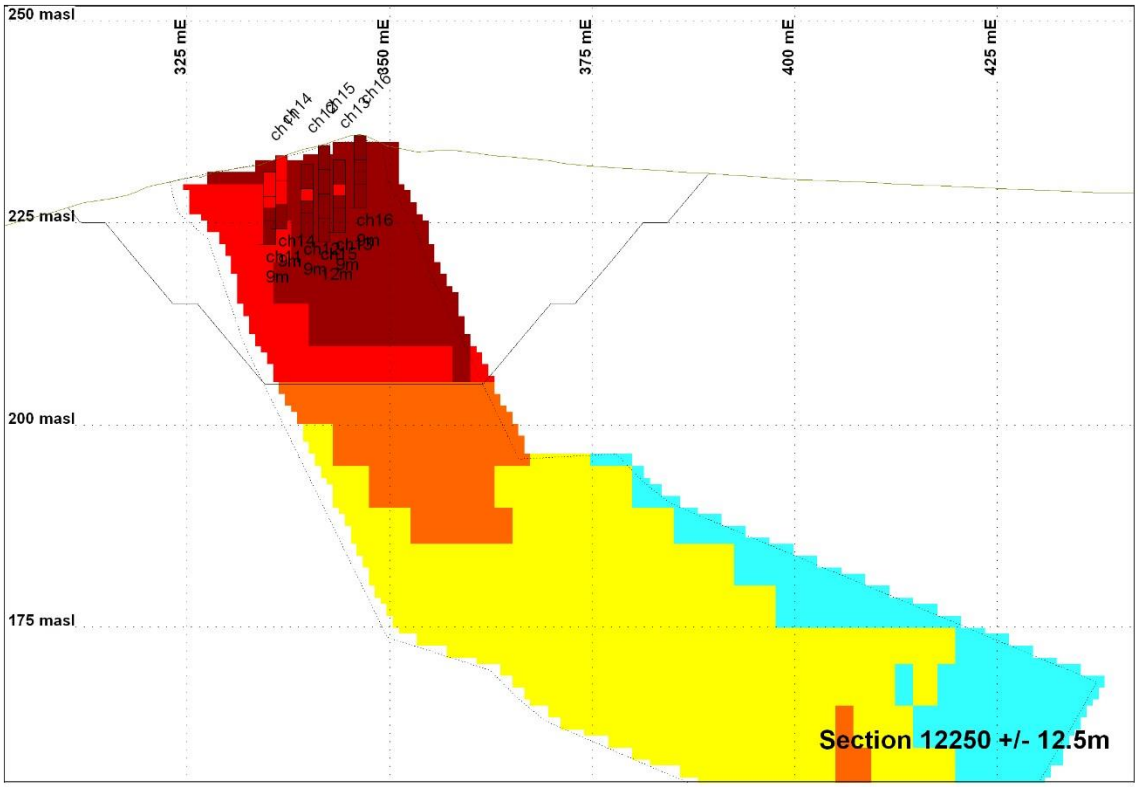

Figure 3.11: Section 12250mN, Northern Quarries resource, legend in figure 3.2.

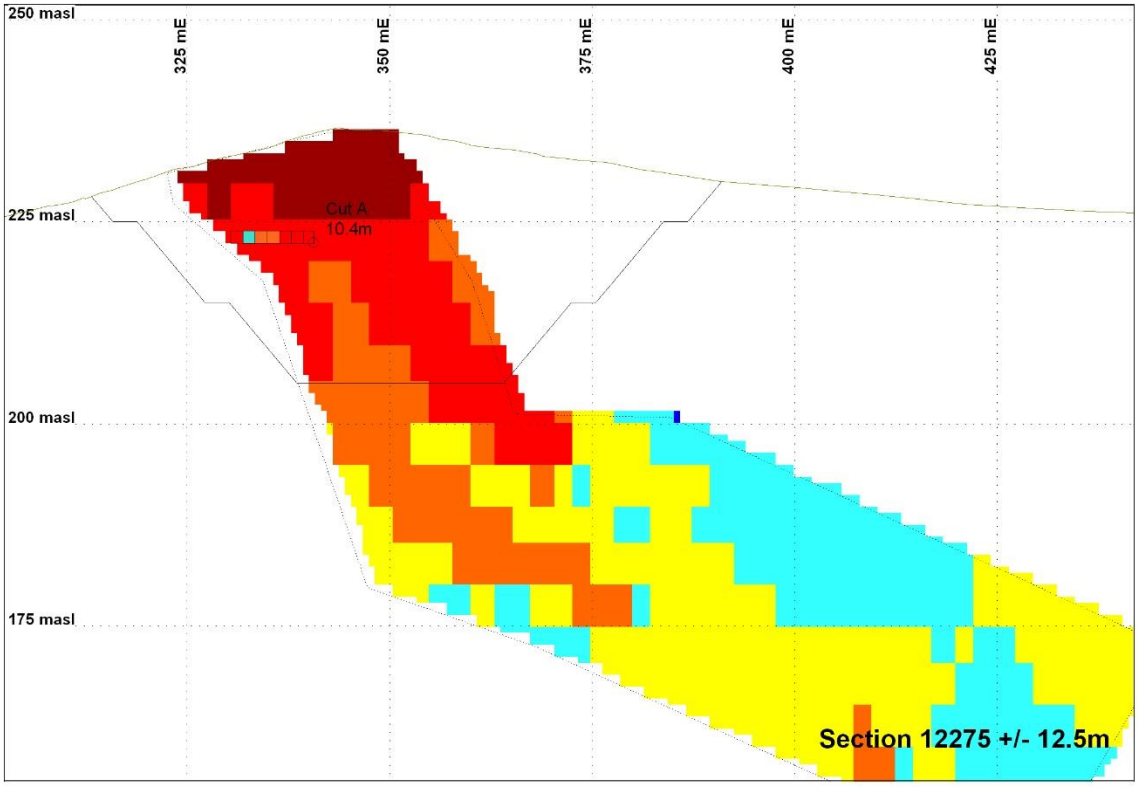

Figure 3.12: Section 12275mN, Northern Quarries resource, legend in figure 3.2.

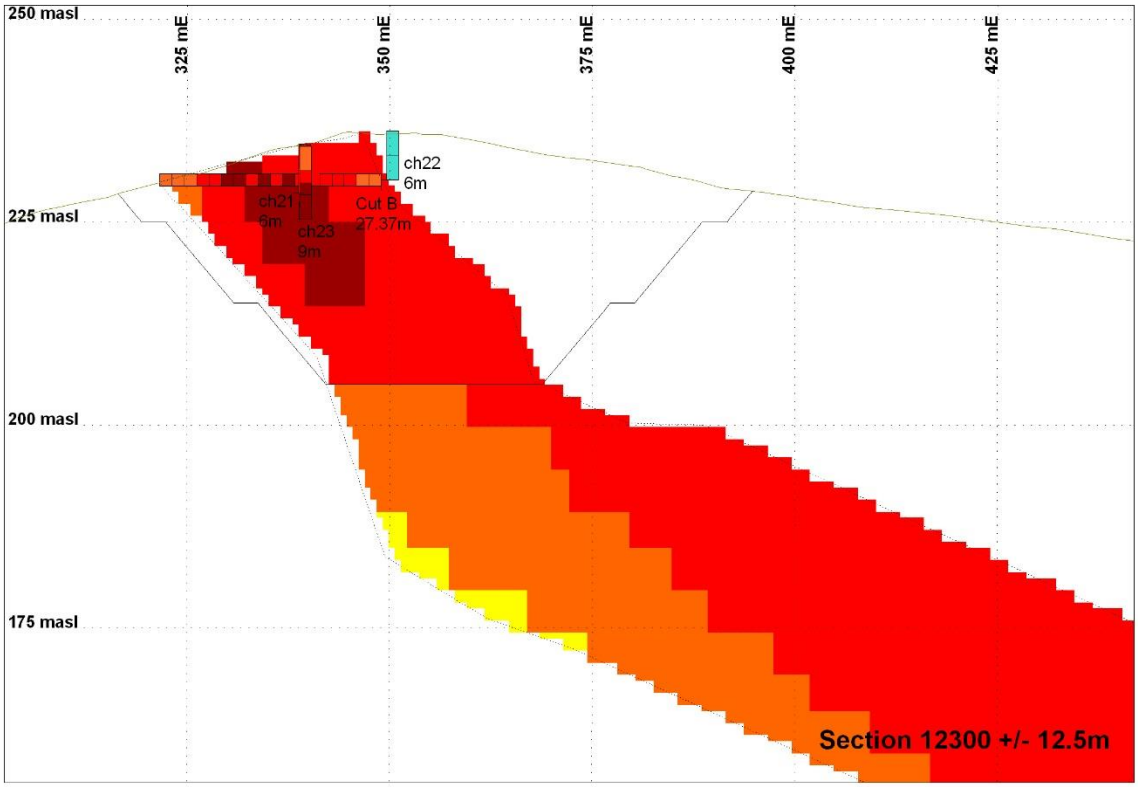

Figure 3.13: Section 12300mN, Northern Quarries resource, legend in figure 3.2.

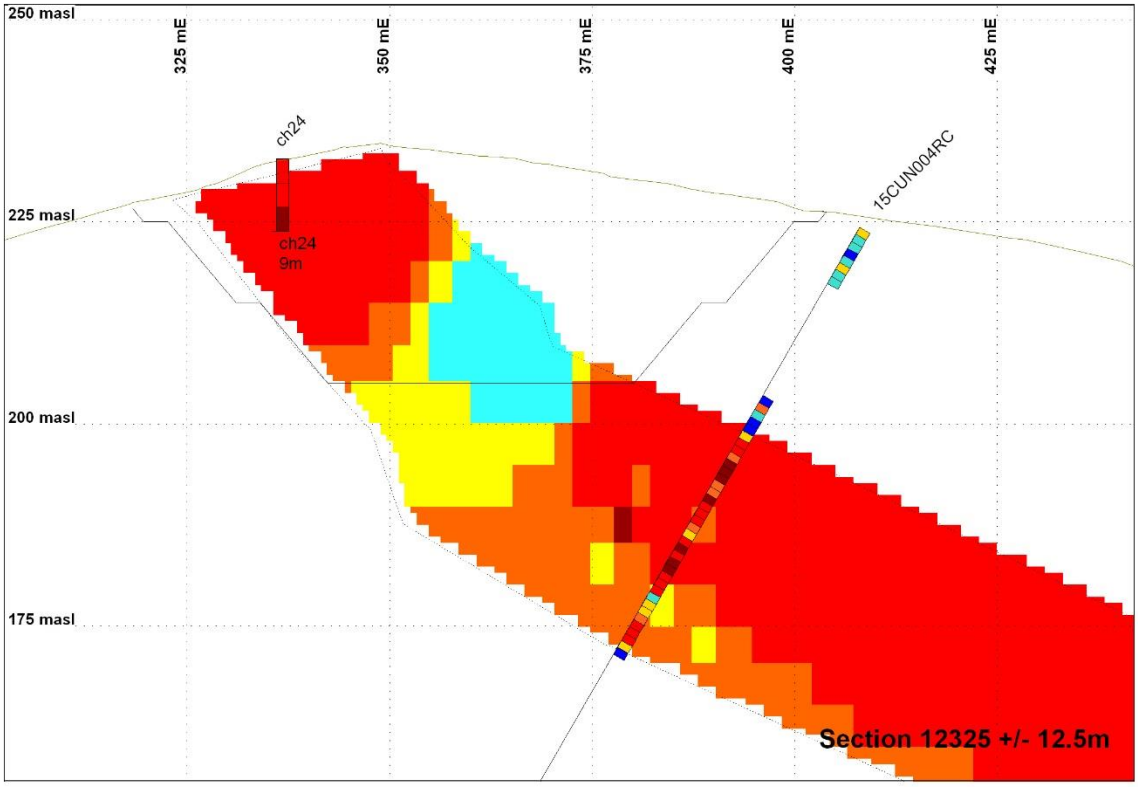

Figure 3.14: Section 12325mN, Northern Quarries resource, legend in figure 3.2.

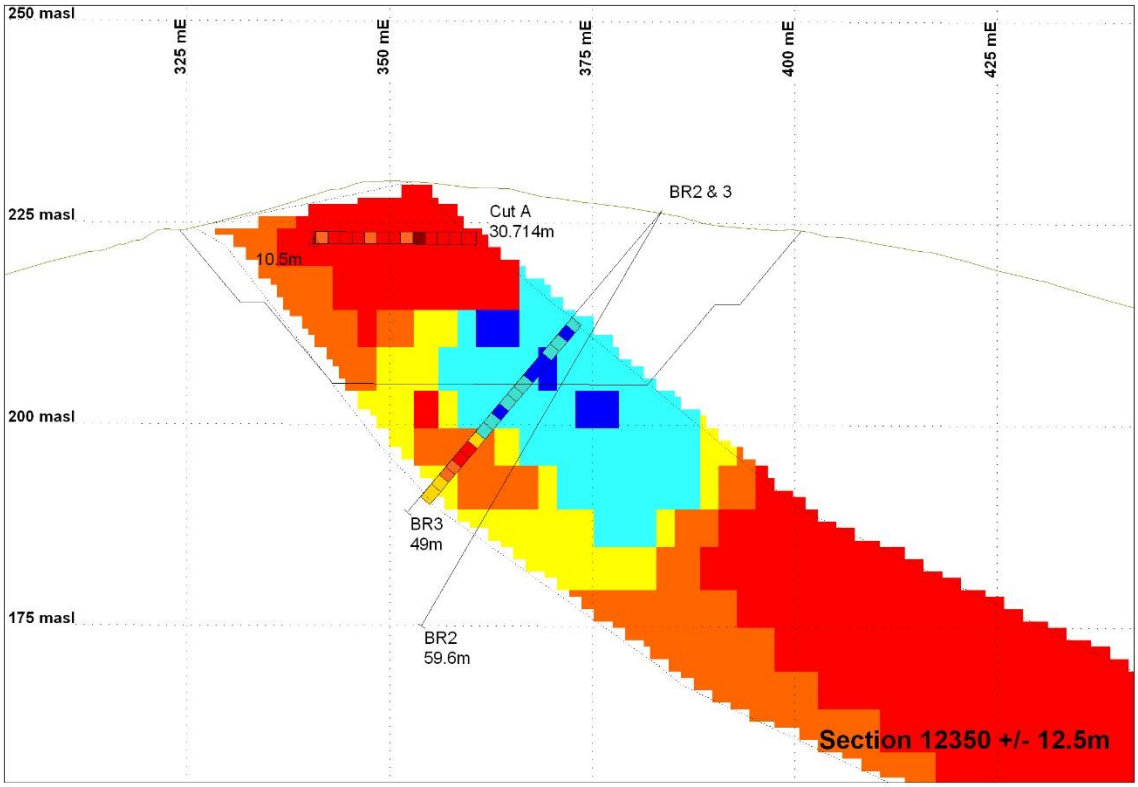

Figure 3.15: Section 12350mN, Northern Quarries resource, legend in figure 3.2.

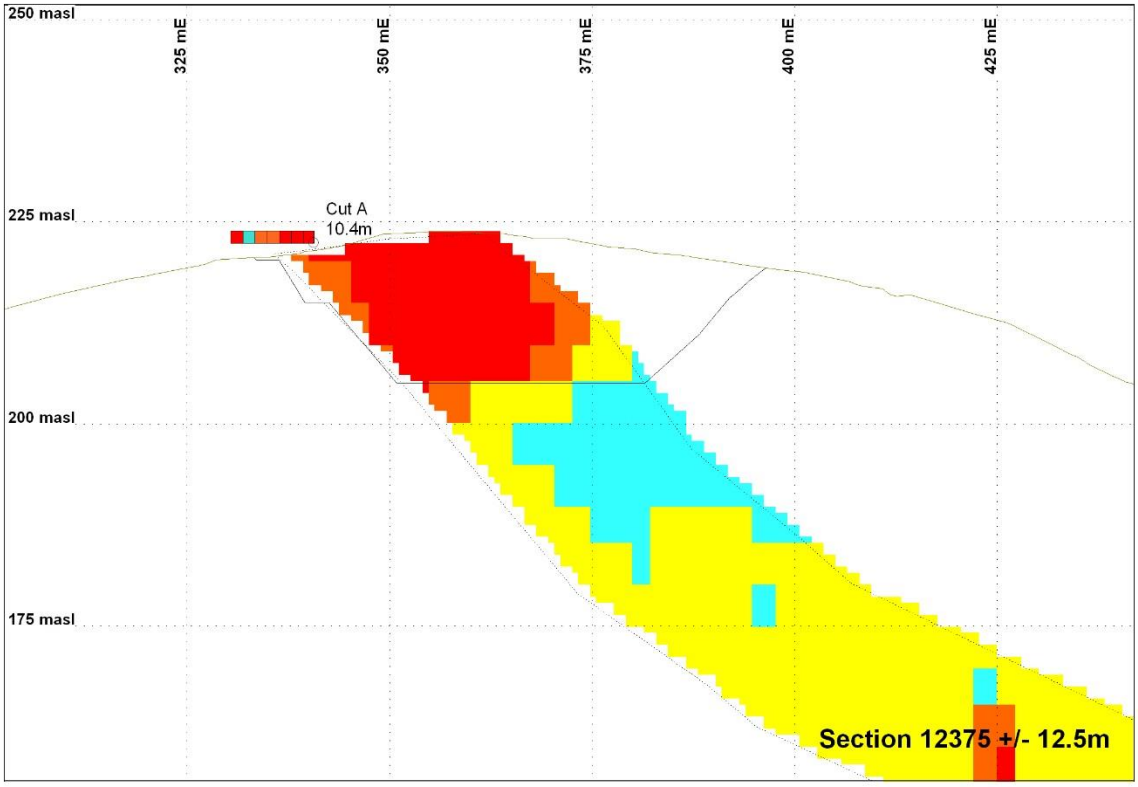

Figure 3.16: Section 12375mN, Northern Quarries resource, legend in figure 3.2.

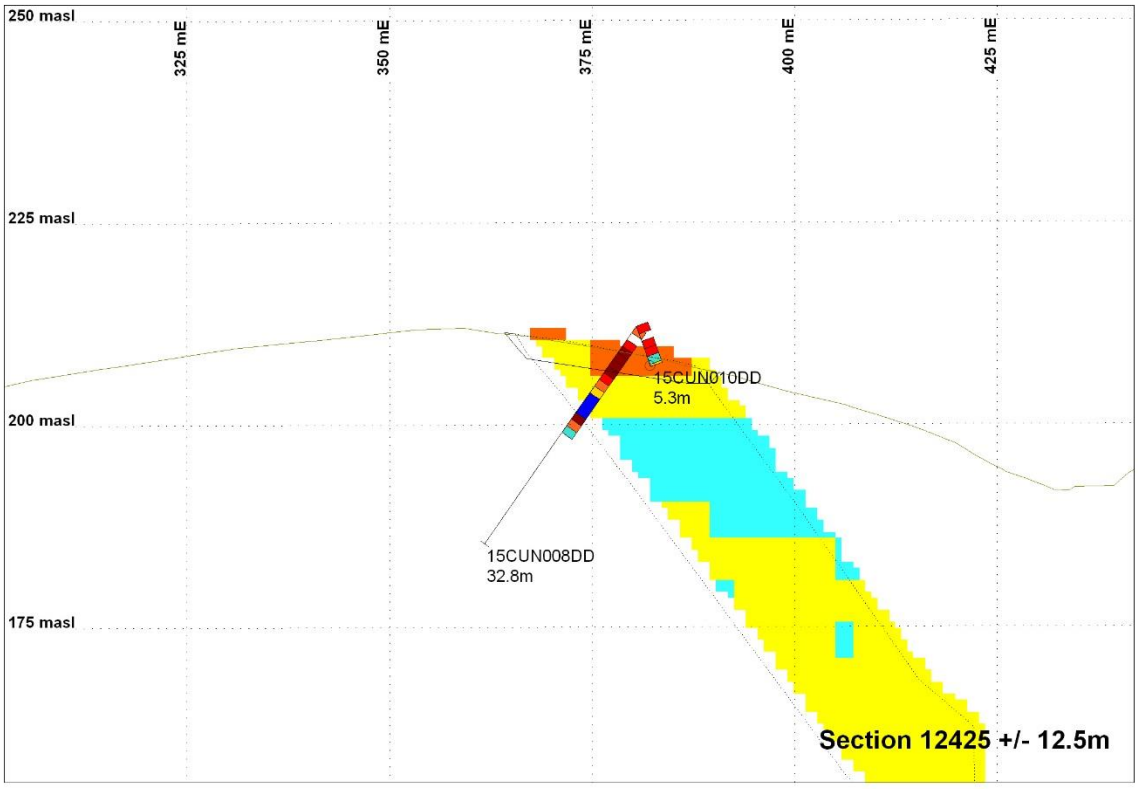

Figure 3.17: Section 12425mN, Northern Quarries resource, legend in figure 3.2.

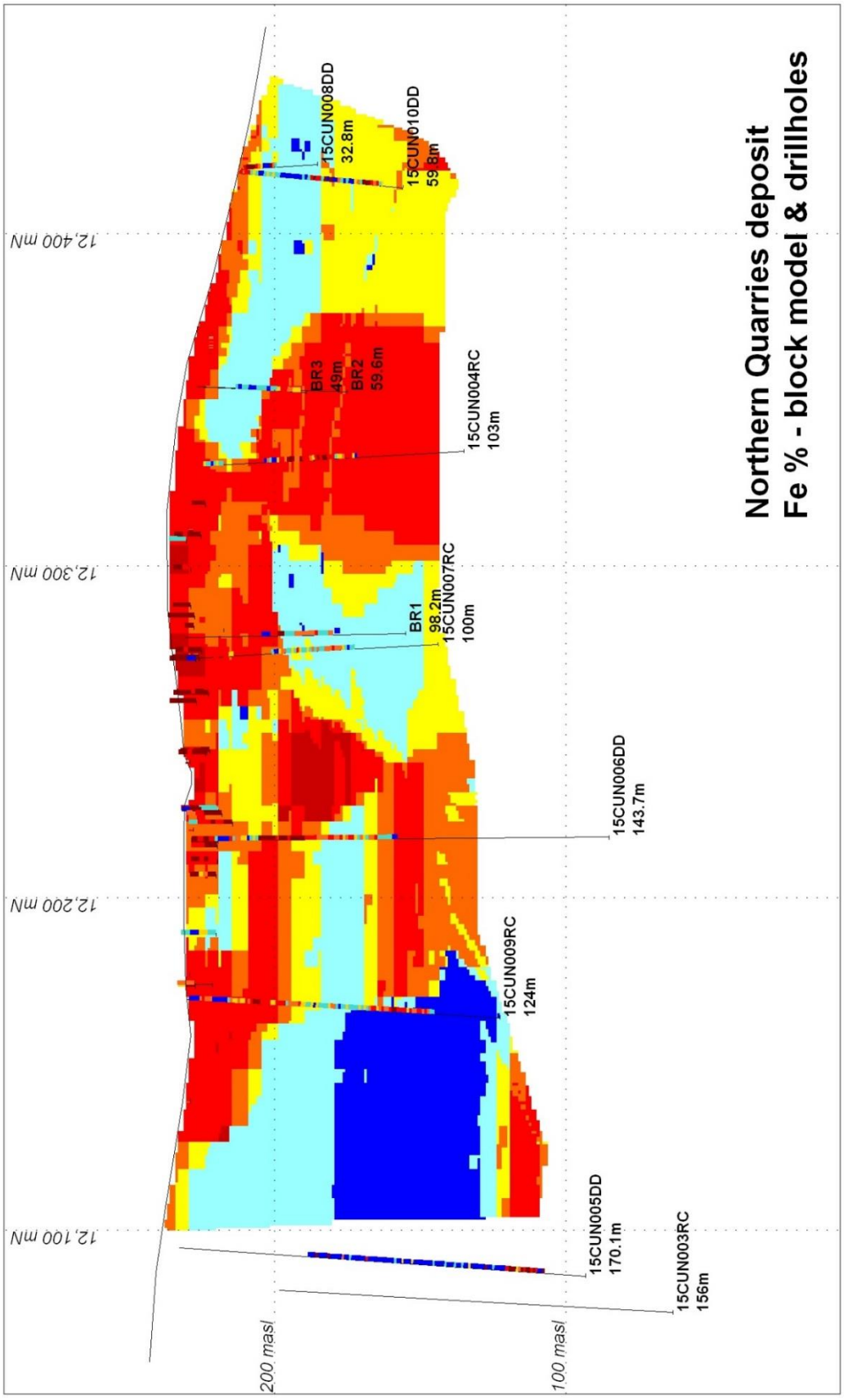

Figure 3.18: Long section looking northwest, Northern Quarries resource, legend in figure 3.2.

3.3.4 Data Quality

The data used in the estimation is limited and of variable quality hence the Inferred status.

Early sampling by Boyd *et. al.* (1919) and Noldart (1966) has no laboratory QA/QC reported but appears to be of acceptable quality and has been used with caution. Lottah Mining Pty Ltd's sampling is of current industry standard.

However, the low positional accuracy of the trenches sampled by Boyd *et. al.* (1919) and similarly collar locations for government drill holes BR1 and BR3 and CW Davis airtrack holes means the orebody wireframe has a lower confidence level.

Further work to address this deficiency is detailed below but includes locating and surveying collars to BR1 and BR3, further assaying and field duplicating some of Boyd *et. al.'s* (1919) channel sampling and the CW Davis (Whitehead, 1989) drilling.

3.3.5 Estimation and Block Model

Modelling was done in SURPAC. A 045° oriented model with 10mY x 5mX x 10mZ blocks and sub-blocking to 2.5mY x 1.25mX x 2.5mZ was generated.

Due to recognised deficiencies in the data set estimation was by Inverse Distance Squared. Three passes were made with a 045° striking, -45° southeast dipping ellipse utilised with major/semi-major axis ratio of 2:1, major/minor axis ratio of 1:1, minimum 3 samples and maximum 15. Three passes were made, 100m x 50m x 50m, 50m x 25m x 25m and 20 x 10m x 10m.

Specific gravity used was determined by assuming the ore is a variable mix of silica or hematite alone and then using the estimated Fe block grade (and thus Fe2O3) and SiO2 content to calculate a specific gravity for each block in the block model.

Discrete higher grade zones are recognisable in drill hole intersections and may be selectable in the mining process. Due to insufficient data and positional inaccuracies hard sub-domaining of these high grade zones was not attempted.

At various cut-off grades the block model reports the following tons and grades for the total resource.

Table 3.1: Northern Quarries resource, Cuprona, Tons & Grade

Cut Off Grade Fe %	Tons	Fe %	SiO2 %
0	4506180	41.13	34.15
15	4261362	42.81	33.1
30	3589741	46.51	30.09
40	2664424	50.39	25.51
50	1564495	54	20.72
60	106075	61.68	9.11

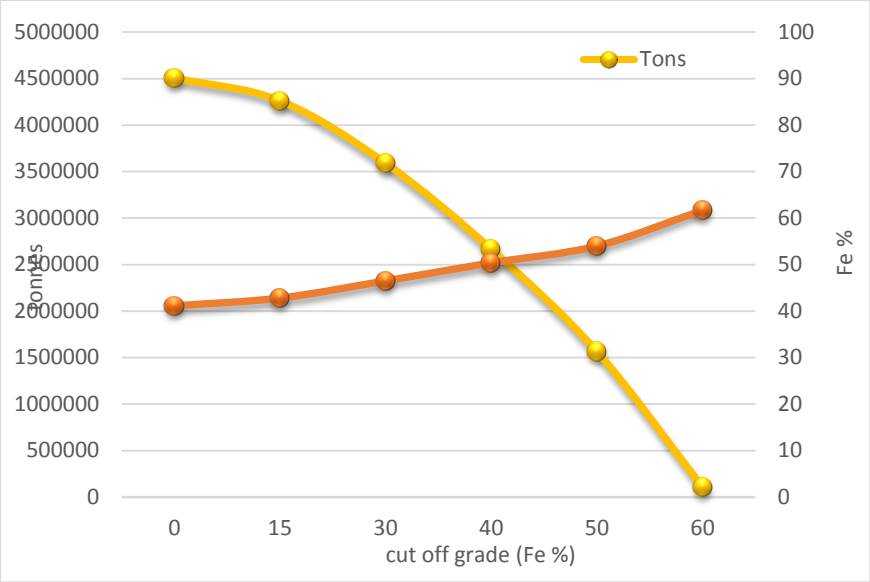

Figure 3.19: Total resource tons and grade chart

The expectation with current metal prices is that the resource will not be viable to the full depth as modelled. It is much more likely that only the shallower parts of the resource are viable. A 30m deep pit option has been modelled and queried and will form the basis for initial mine planning.

Table 3.2: Northern Quarries resource, Cuprona, Tons & Grade, 30m pit

Cut Off Grade Fe % 30m pit option	Tons	Fe %	SiO2 %
0	947248	47.72	27.18
15	945172	47.8	27.02
30	854549	50.49	24.45
40	764913	52.18	22.99
50	564920	54.42	20.52
60	31607	61.25	9.89

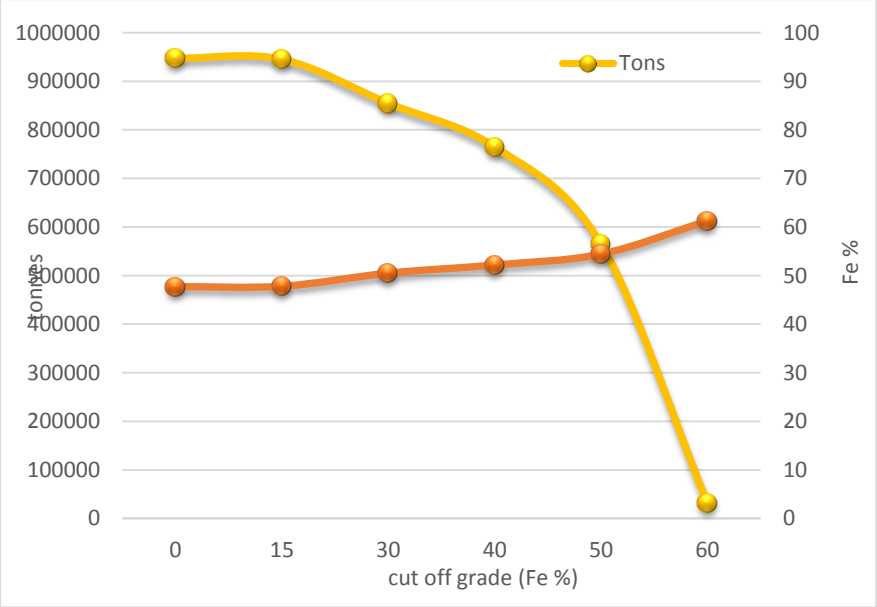

Figure 3.20: Tons and grade – 30m pit option.

3.4 Natone drill planning

3.4.1 Introduction

The Natone prospect has outcropping hematite and drill intersections of skarn magnetite and pyrrhotite.

Time has been spent resolving the geological, and particularly structural, setting of mineralisation.

Initially a plan was developed to define the hematite resource to JORC status. Subsequent work added the potential to add magnetite resources to Lottah's overall magnetite inventory in the area as part of the Rogetta Project.

The following works programme is designed to

1. define the extent and grade of the hematite occurrence at Natone sufficient to define a JORC compliant resource (to at least Inferred status).
2. test for ore grade magnetite and if successful continue with drilling to define a JORC compliant resource to Inferred status
3. consider and address the potential for other skarn style mineralisation i.e. W, Sn, Cu, Au, Mo and Bi etc.

3.4.2 Previous work

Previous work on the Natone prospect is detailed in section 2.2.

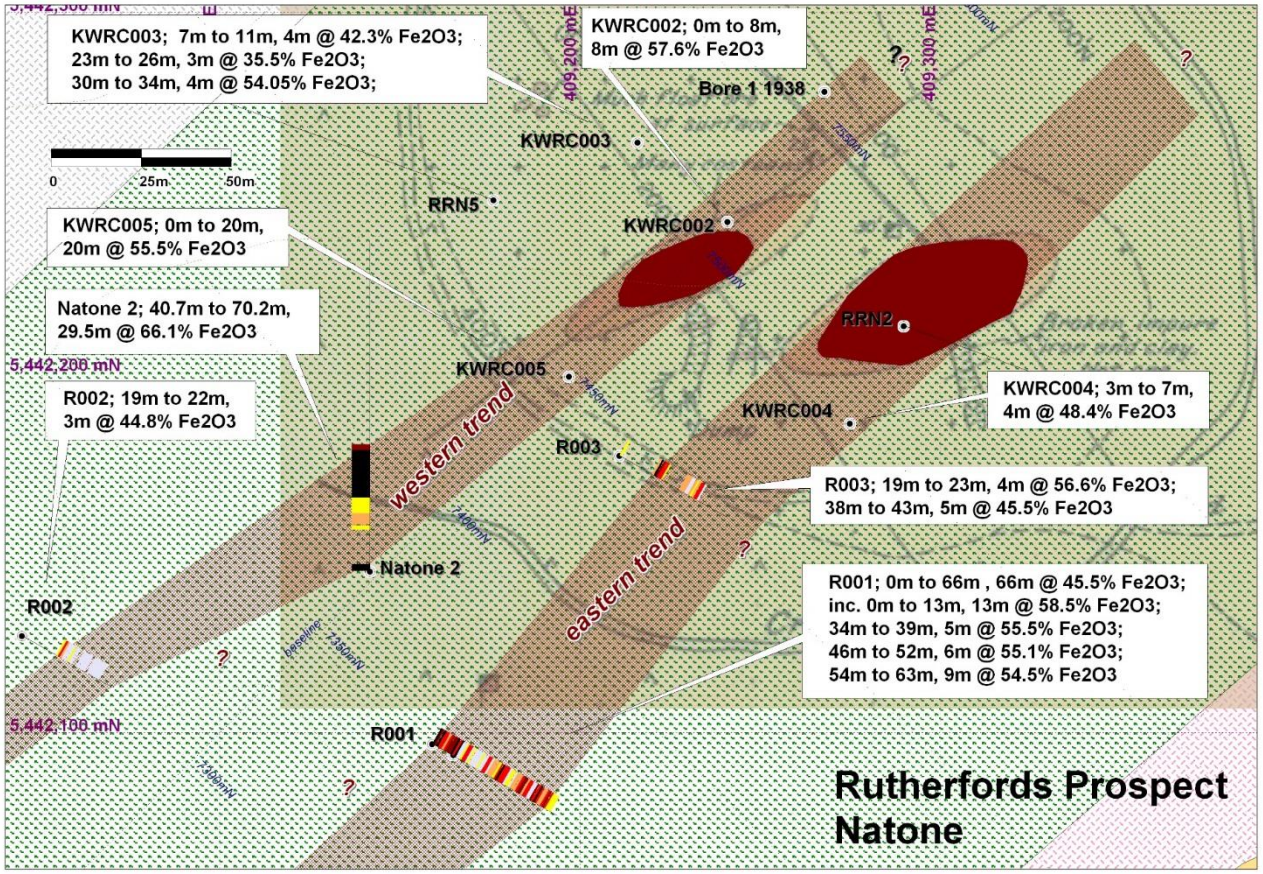

Figure 3.21: Rutherfords (Kiwis) prospect – hematite zone, Natone.

3.4.3 Geology

The basement geology of the Natone area is somewhat complex and largely obscured by Tertiary basalt and/or farm development.

The geological setting of iron mineralisation is also enigmatic with iron occurring in two forms, hematite (+/- minor magnetite) and magnetite+/-pyyrhotite, with the two not necessarily related to one another.

The Natone area lies at the northeastern margin of the Devonian Housetop Granite which has intruded a Proterozoic sequence of sediments overlain unconformably by Cambro-Ordovician sediments.

Structurally the hematite bearing rocks lie on the northwestern limb of the Middle Devonian Camena syncline whose southeastern limb contains the Penguin deposits.

The Proterozoic rocks have generally been described as belonging to either the Burnie or Oonah Formations, considered to be regional correlates but occupying separate inliers (northwestern and western Tasmania respectively). However, the Burnie Formation, which can be seen in extensive coastal outcrops, consists solely of a quartzwacke turbidite association, whilst the Oonah Formation consists of a lower quartzwacke turbidite association conformably overlain by a sequence of pelites, carbonates, mafic volcanics and conglomerates.

The Proterozoic rocks at Natone lie within the Burnie Formation inlier and based on projections of rocks exposed in the Blythe River should consist of sandstones, siltstones and shales, however, drilling has intersected significant thicknesses of variably skarned dolomitic carbonates and shales (pelites).

Ruxton (1982) considers the carbonate/pelite sequence to be Oonah Formation rocks with the underlying turbiditic rocks Burnie Formation i.e. sharing the northwestern Tasmanian inlier.

Either the Burnie Formation rocks here at Natone are a more direct correlate of the Oonah Formation i.e. also with an upper carbonate/pelite sequence, or the Oonah Formation overlaps the Burnie Formation. An alternative is that the carbonate/pelite rocks are Success Creek Group rocks?

Either way the skarned magnetite+/-pyrrhotite sequence underlies, i.e. is older than, the hematite bearing rocks at Natone and the two forms of iron do not appear to be related to one another genetically.

There is significance to this regional correlation conundrum as the stratigraphic host to hematitic iron mineralisation as described also appears to vary between localities.

At Cuprona hematite bodies are interpreted to be hosted near to the base of the Cambro-Ordovician sequence with clasts of hematite found in the overlying Duncan Conglomerate of Cambro-Ordovician age also.

At Penguin similar hematite bodies to that at Cuprona and Natone are assigned to the uppermost part of the Proterozoic sequence with boulders of hematite reported from the basal conglomerate of the Cambro-Ordovician sequence.

The suggestion that hematite iron deposits occur around the Proterozoic Cambrian unconformable boundary is intriguing but doesn't resolve the occurrence of hematite clasts in conglomerate units which requires a syn-sedimentary or early diagenetic origin. This suggests the potential for a mis-assignment of geologic units as an explanation.

The geology of the Natone prospect is largely understood from drilling with outcrop, other than hematite outcropping on the hill at Rutherfords Farm, limited to non-existent.

All previous drill logs were converted into lith_codes and plotted as a series of sections. Structural data recorded from diamond drill core was also plotted on sections (this data is all bedding to core axis data with the exception of some oriented readings).

Future drilling should include oriented diamond drill core to clarify the structural setting of mineralisation.

The other piece of valuable information came from the mapping and notes by Thomas and Henderson (1943) who describe the geology of Rutherfords prospect and in particular the stratigraphy and structure as revealed in a number of shallow trenches and shafts.

Hematite (minor magnetite)

Hematite (with reportedly minor magnetite) mineralisation at Rutherfords (Kiwis) is reportedly (Thomas and Henderson, 1943) in two parallel zones, striking ~045°, which outcrop on a small hill.

The larger eastern zone's outcrop was described as being 90' (27.5m) wide and exposed along strike for 210' (64m). The eastern zone has been drilled to its south over a strike length of 150m in four holes;

- RRN2, not assayed for Fe
- KWRC004, 4m @ 48.4% Fe
- R003, 4m @ 56.6% Fe and 5m @ 45.5% Fe
- R001, 66m @ 45.5% Fe including 13m @ 58.5% Fe

The smaller eastern zone's outcrop was described as having exposed dimensions of 60' (18.3m) wide and 130' (39.7m) long. The western zone has been drilled over a strike length of 200m with four holes;

- KWRC002, 8m @ 57.6% Fe
- KWRC005, 20m @ 55.5% Fe
- Natone 2, 29.5m @ 66.1% Fe
- R002, 3m @ 44.8% Fe

The two parallel zones are separated by about 30m of low grade material exposed in trenches on the hill though there are suggestions from Thomas and Henderson (1943) of thin high grade zones within this.

Internal vertical zonation within the orebodies is apparent in drillholes e.g. R001 with three high grade zones, and R003 with two high grade zones.

Structural information from Thomas and Henderson (1943) shows that the host rock to the hematite mineralisation is underlain by a sequence of mudstones or shales. Structurally then hematite bearing sequence is sub-horizontal to moderately southeast dipping and appears to thicken to the southwest and there does not appear to be any constraints to the extent of the hematite mineralisation to the southwest until the Housetop Granite margin.

The southeastern margin of the hematite sequence is also open though magnetics suggest a sharp, possibly faulted boundary.

It is not clear as to what constrains the hematite laterally within the mineralised zone with the interpretation of two parallel zones from Thomas and Henderson (1943) hard to reconcile with a flat dip unless it is not syngenetic and is structurally controlled though this itself is difficult to see. Hematite mineralisation at Cuprona "comes and goes" along strike so this may explain the lateral discontinuity described by Thomas and Henderson (1943).

Magnetite/Pyrrhotite

The Natone prospect appears as a significant aeromagnetic high on the margins of the Housetop Granite in a region where aeromagnetic highs are usually due to magnetite skarn.

What sets Natone apart in the region is that

1. the host rocks are Proterozoic and not Ordovician as is the case at Kara and Rogetta North.
2. the magnetic anomaly is at least in part due to pyrrhotite

The host rocks here are dolomitic limestones and possible stratigraphic correlates, and certainly similar, to the host rocks to tin mineralisation at Renison Bell where pyrrhotite is the principal gangue.

A number of historic holes have targeted magnetic highs and intersected magnetite+pyrrhotite i.e. NT3. NT3 intersected two zones of magnetite mineralisation

Other Skarn Mineralisation

Skarns formed in carbonate bearing rocks around intrusives host a range of mineralisation. The Housetop Granite and correlates are associated with Sn, Bi, Mo, W, F, Ni, Au mineralisation elsewhere in Tasmania and Fe as magnetite in the immediate region. Other possibilities include wollastonite.

3.4.4 Work Proposed

In order to facilitate modelling and estimating a resource, drill holes and surface trenches should be designed to complete continuous fences across each of the two zones on 50m spaced sections (with some fences extending across the low grade centre). This will allow definition of orebody bounds and provide sufficient assay data for the generation of an Inferred resource at least.

Both mineralised zones remain open to the south west and north east. Extending the resource will require similar fences of drilling and trenching on 100m spaced sections initially closing in to 50m sections. The intersection in R001 argues for prioritisation of step out drilling to the south west/east on this the eastern zone.

A combined RC and diamond drilling programme is proposed with a dual focus.

Hematite Targeted Drillholes

Initially work should focus on extending the hematite resource towards the south (more specifically to the southeast, south and southwest) of R001.

Drilling should step away from this intersection on 50m x 50m centres ideally (alternatively 100m x 50m).

Holes will need to drill through to the underlying mudstone and will end up being around 80m deep.

Whilst some later holes could be RC the early holes should be oriented diamond core to enable a greater certainty in the structural interpretation.

A first round of proposed drillholes is shown on figure 3 and 4 and on section in figures 7 to 11.

A total of 21 holes have been designed (21 x 80m = 1680m) which would allow for the definition of a resource over an area of 400m x 150-200m but not all will be drilled depending on results.

Magnetite Targeted Drillholes

As can be seen on figure 4 the proposed holes targeting hematite extend into the main magnetic anomaly. Further information regarding the source of the magnetics anomaly will be gained from drilling the hematite targeted holes first.

Two holes are proposed to test the central parts of the main magnetics anomaly (see figures 12 and 13). These holes will need to be around 200-250m deep (400 – 500m) to extend through the skarned sequence. Should the magnetism be shown to be due to sufficient quantities of magnetite a second round of drilling will be required.

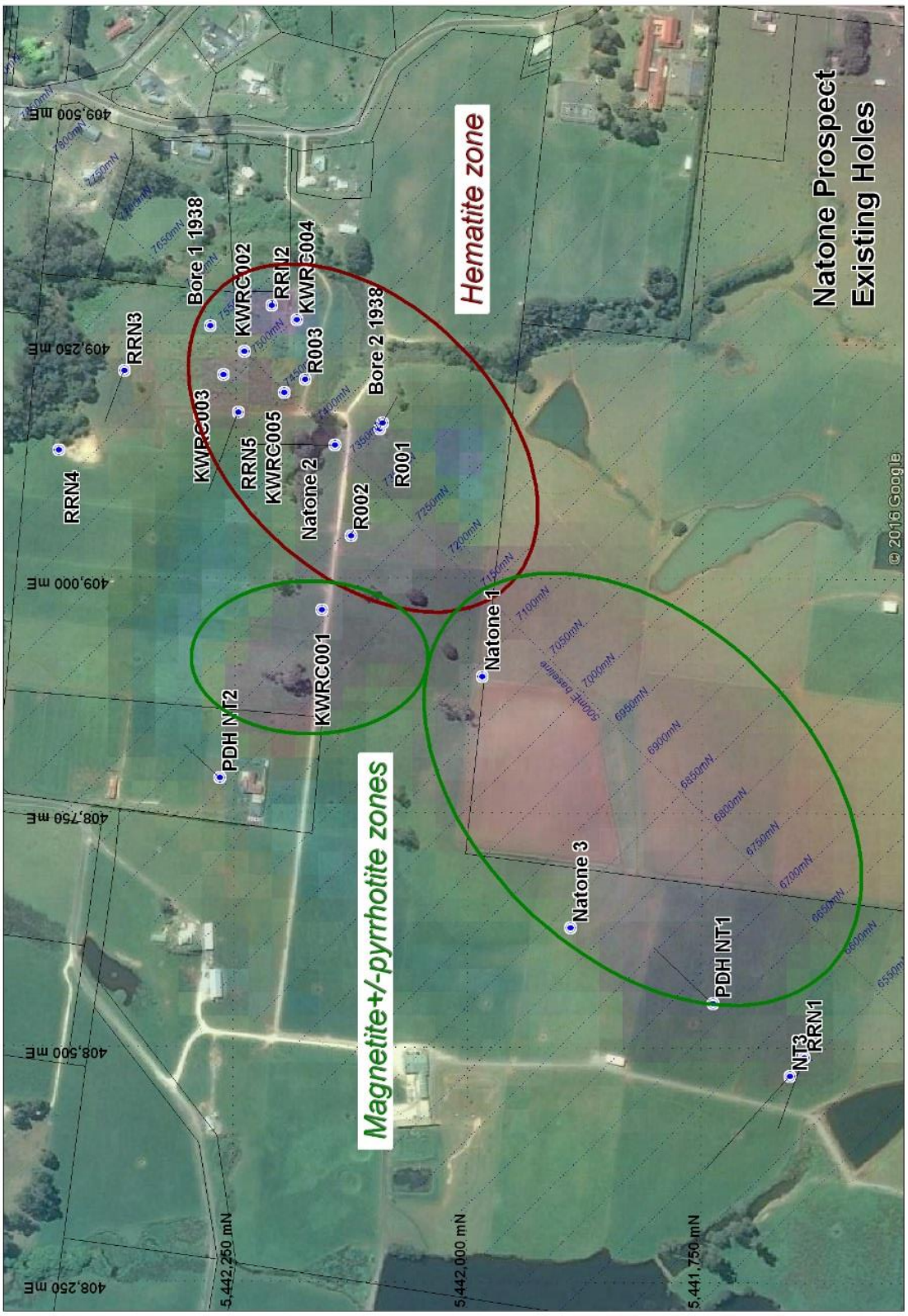

Figure 3.22: Existing holes and mineralised zones. Image is airphoto overlain by 50% transparent total magnetic intensity.

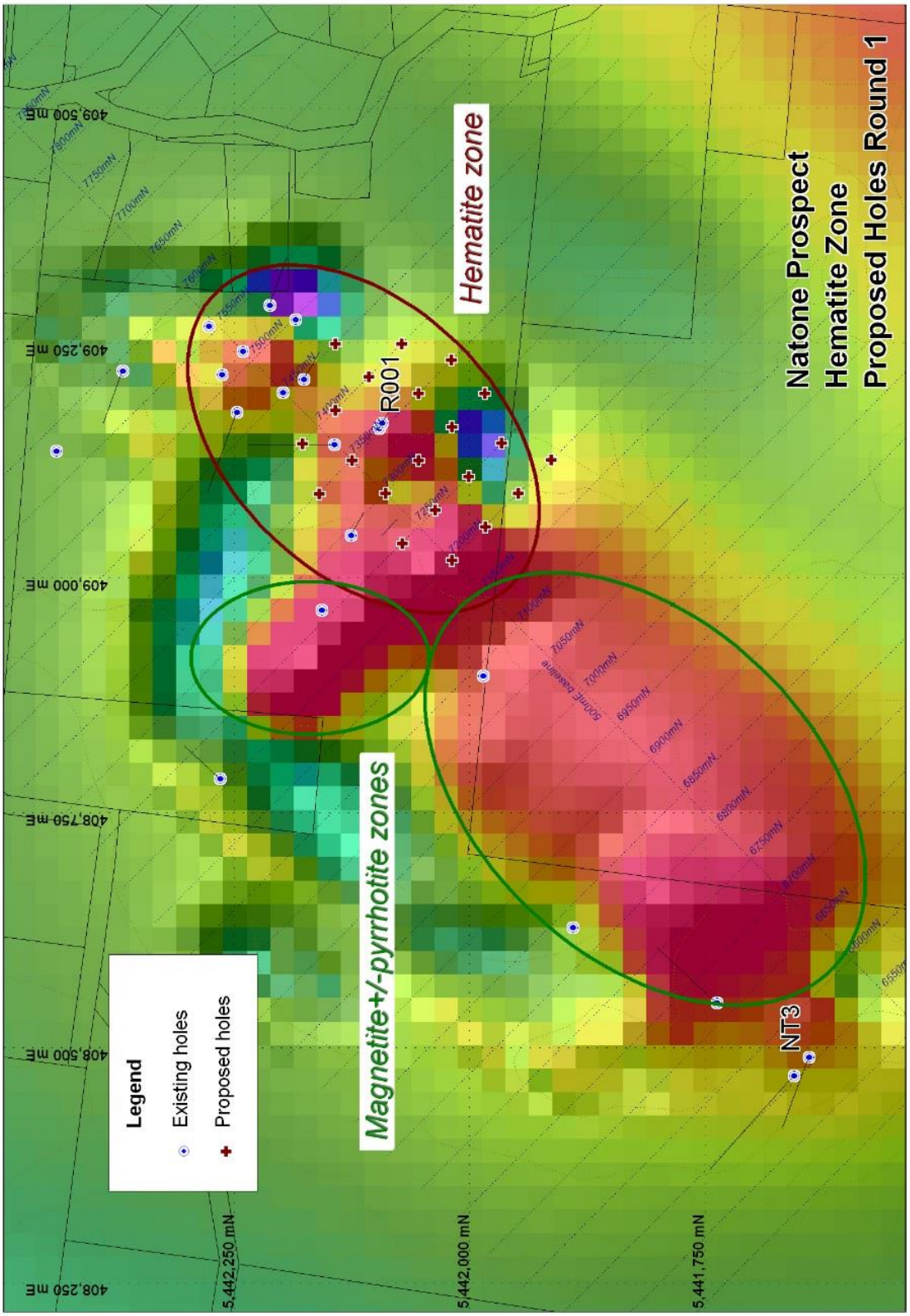

Figure 3.23: Proposed holes targeting hematite zone (on RTP TMI magnetics image) – round 1

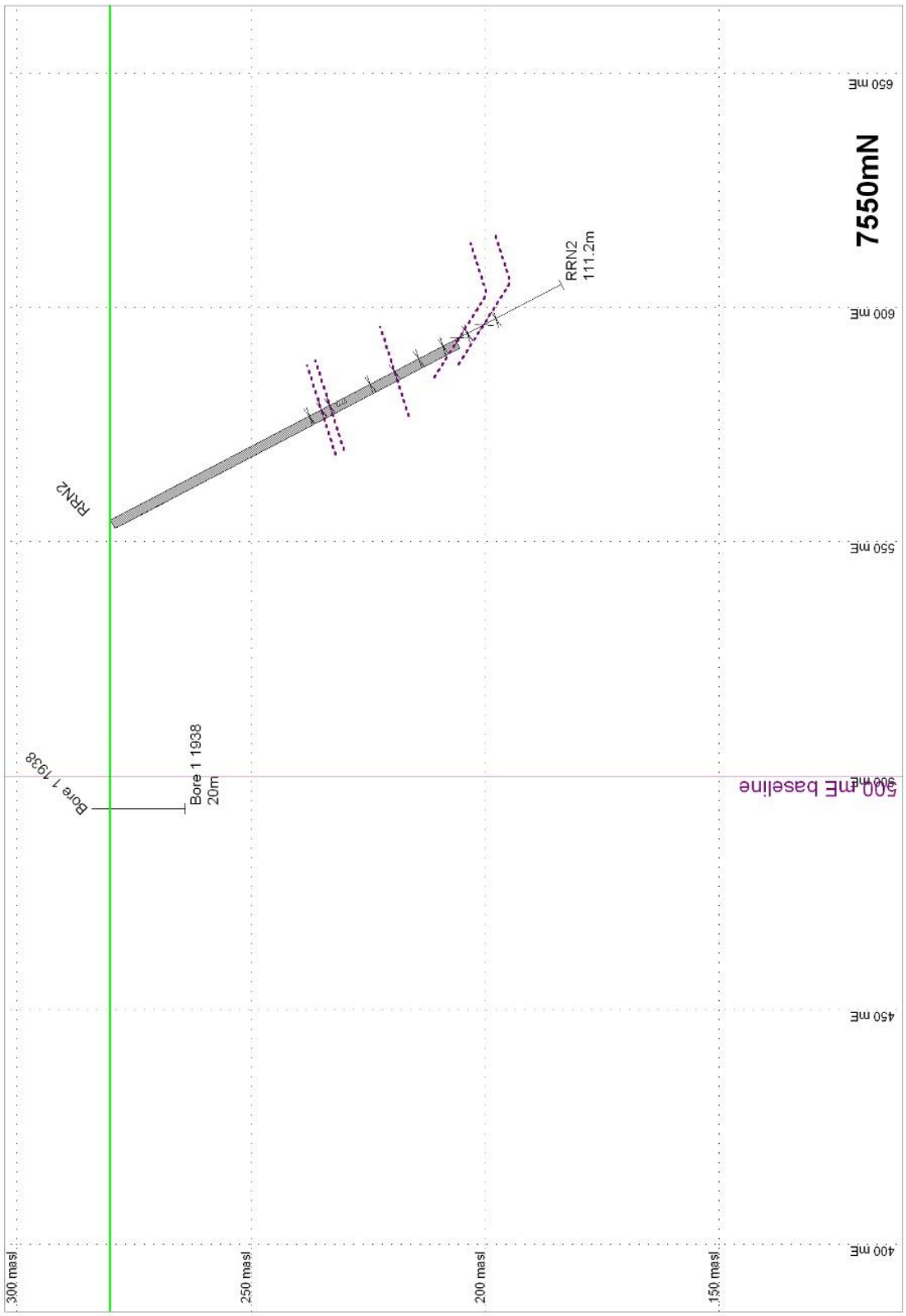

Figure 3.24: Natone hematite zone, Section 7550mE

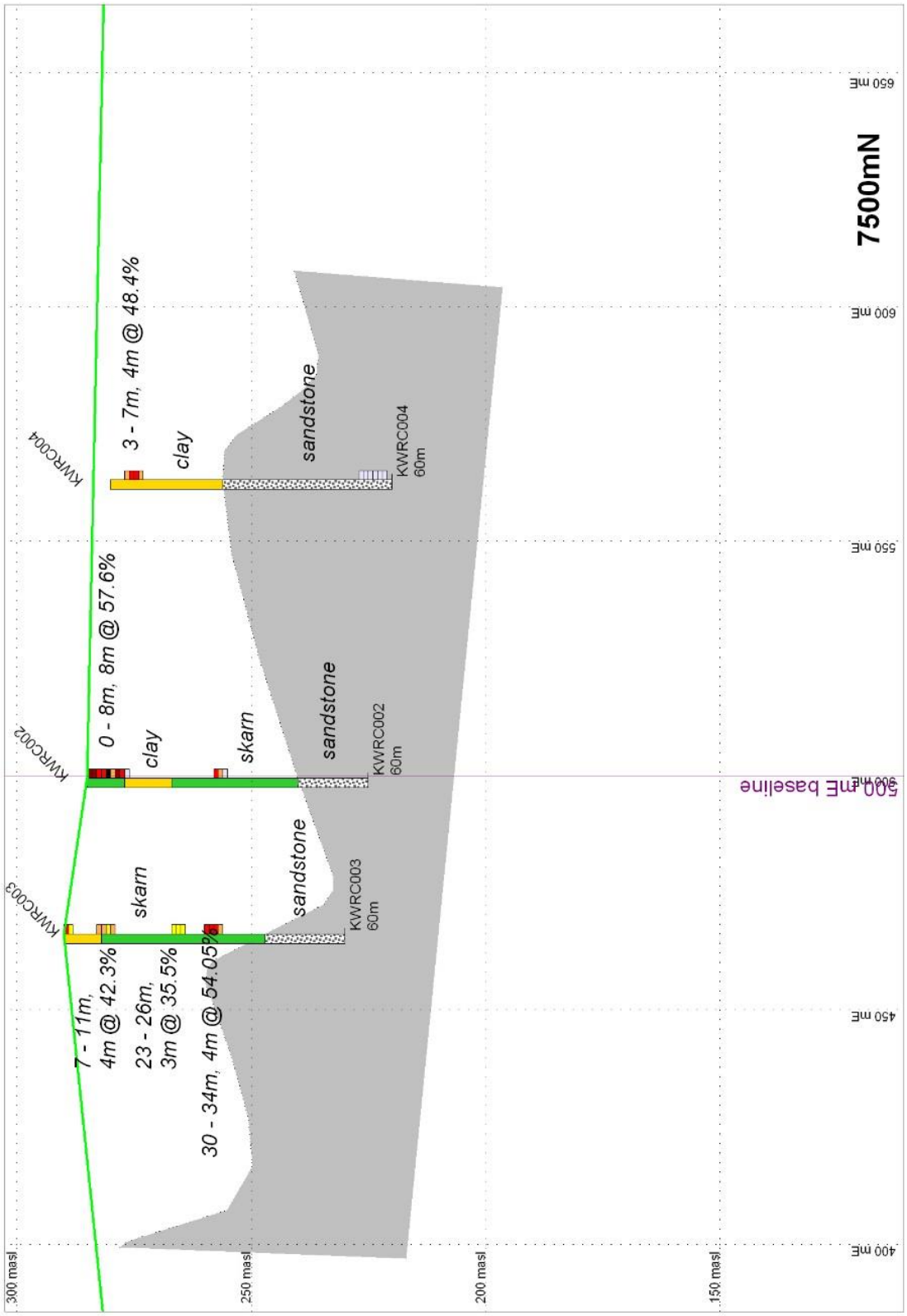

Figure 3.25: Natone hematite zone, Section 7500mE

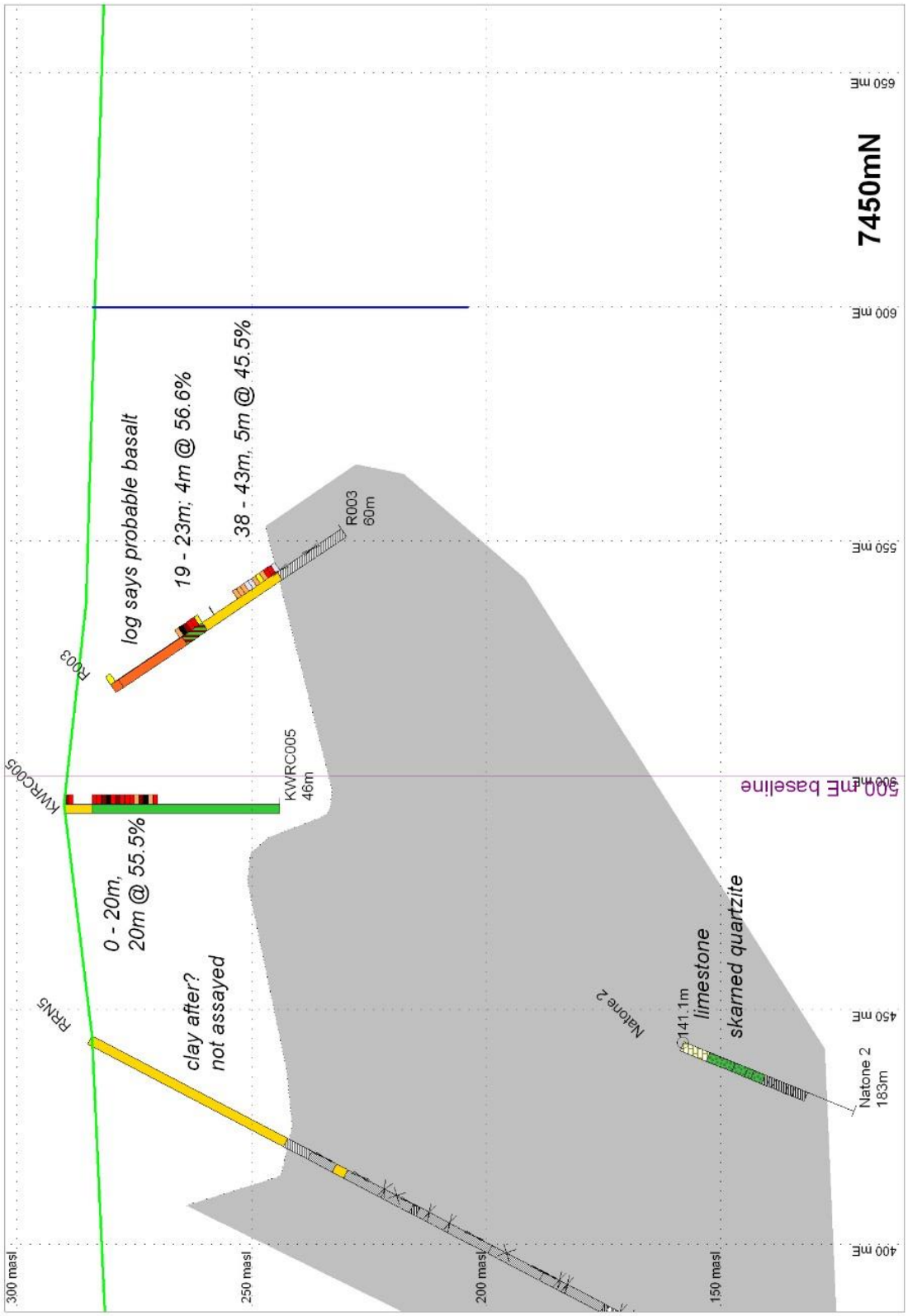

Figure 3.26: Natone hematite zone, Proposed holes – section 7450mE

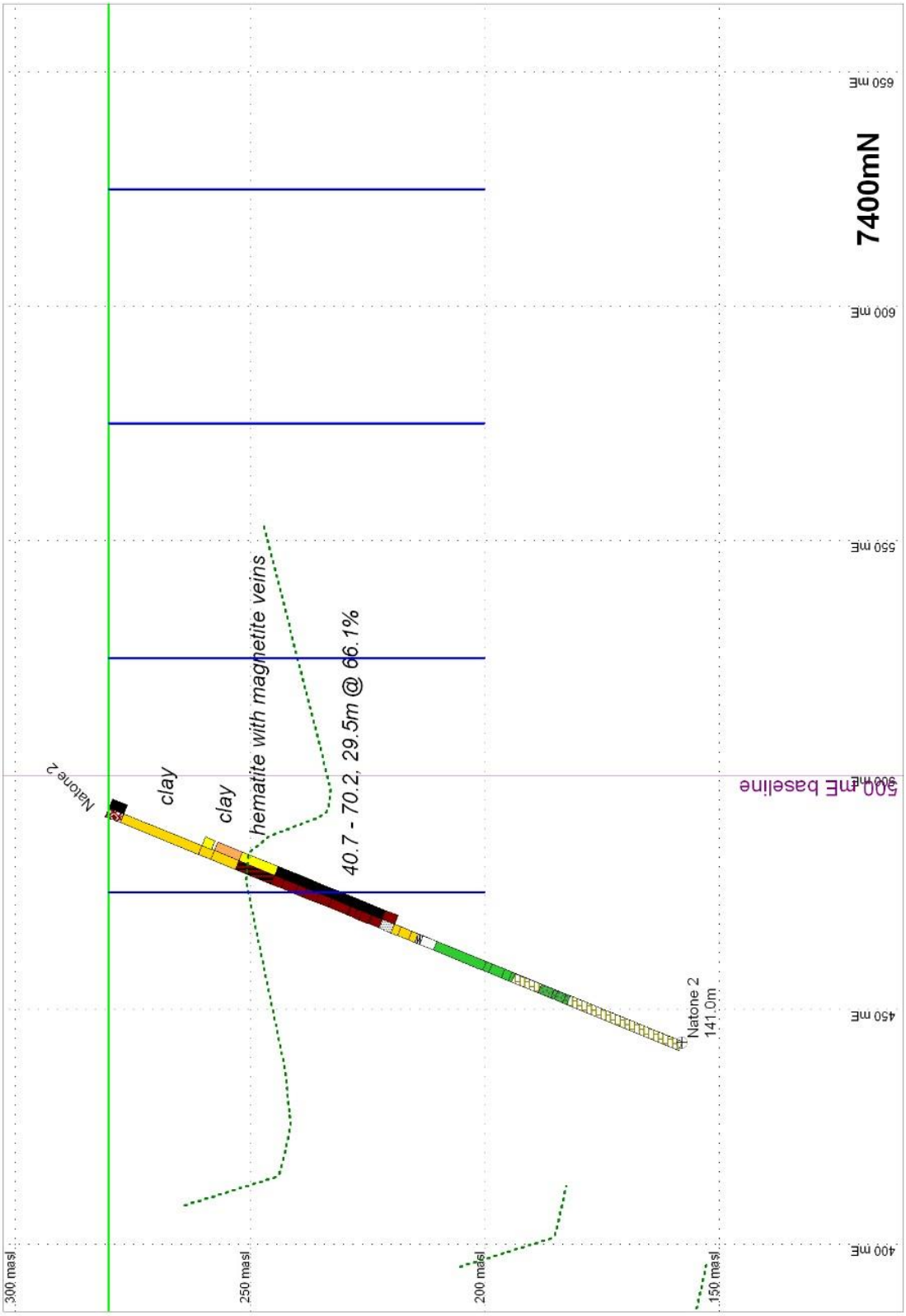

Figure 3.27: Natone hematite zone, Proposed holes – section 7400mE

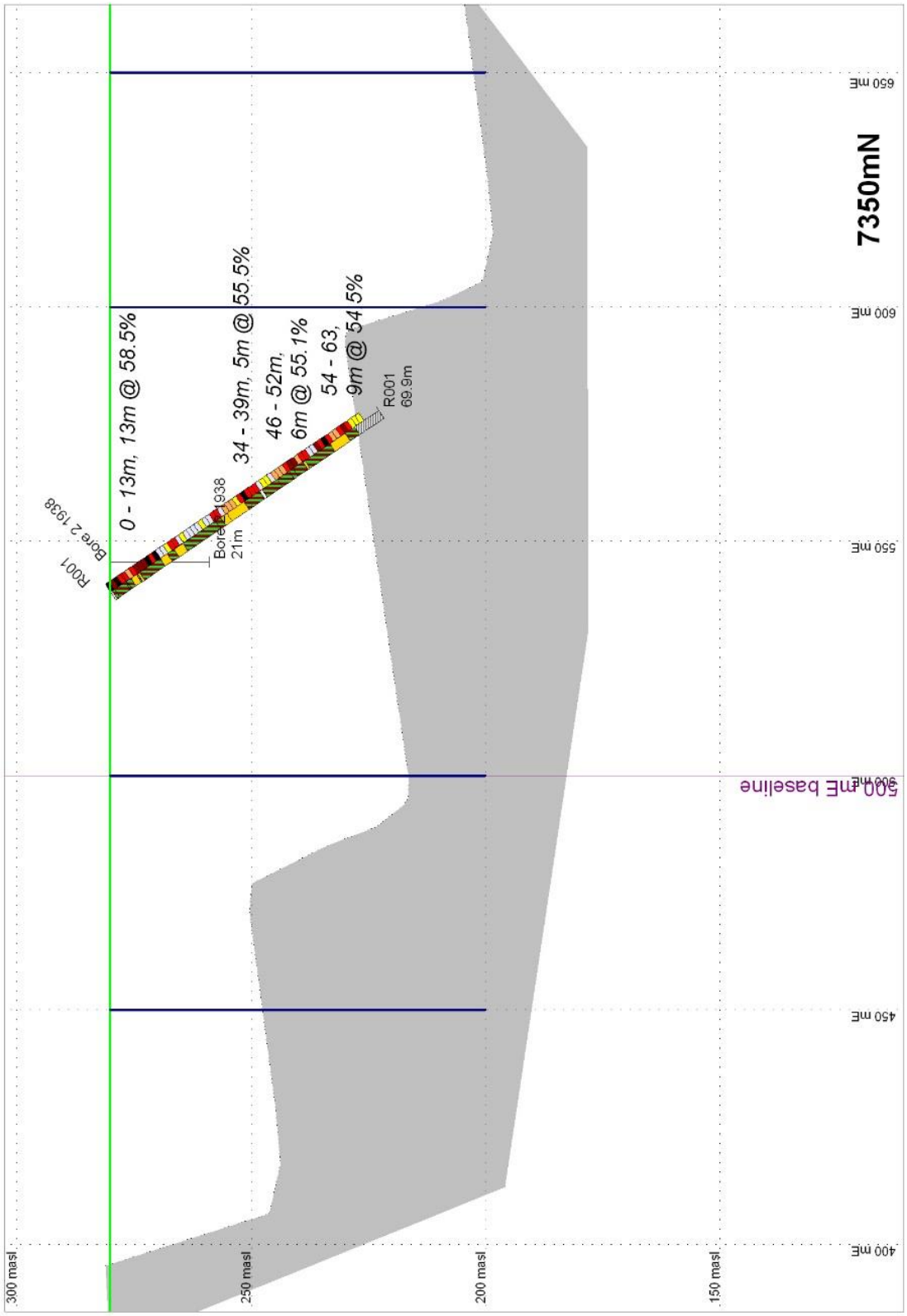

Figure 3.28: Natone hematite zone, Proposed holes – section 7350mE

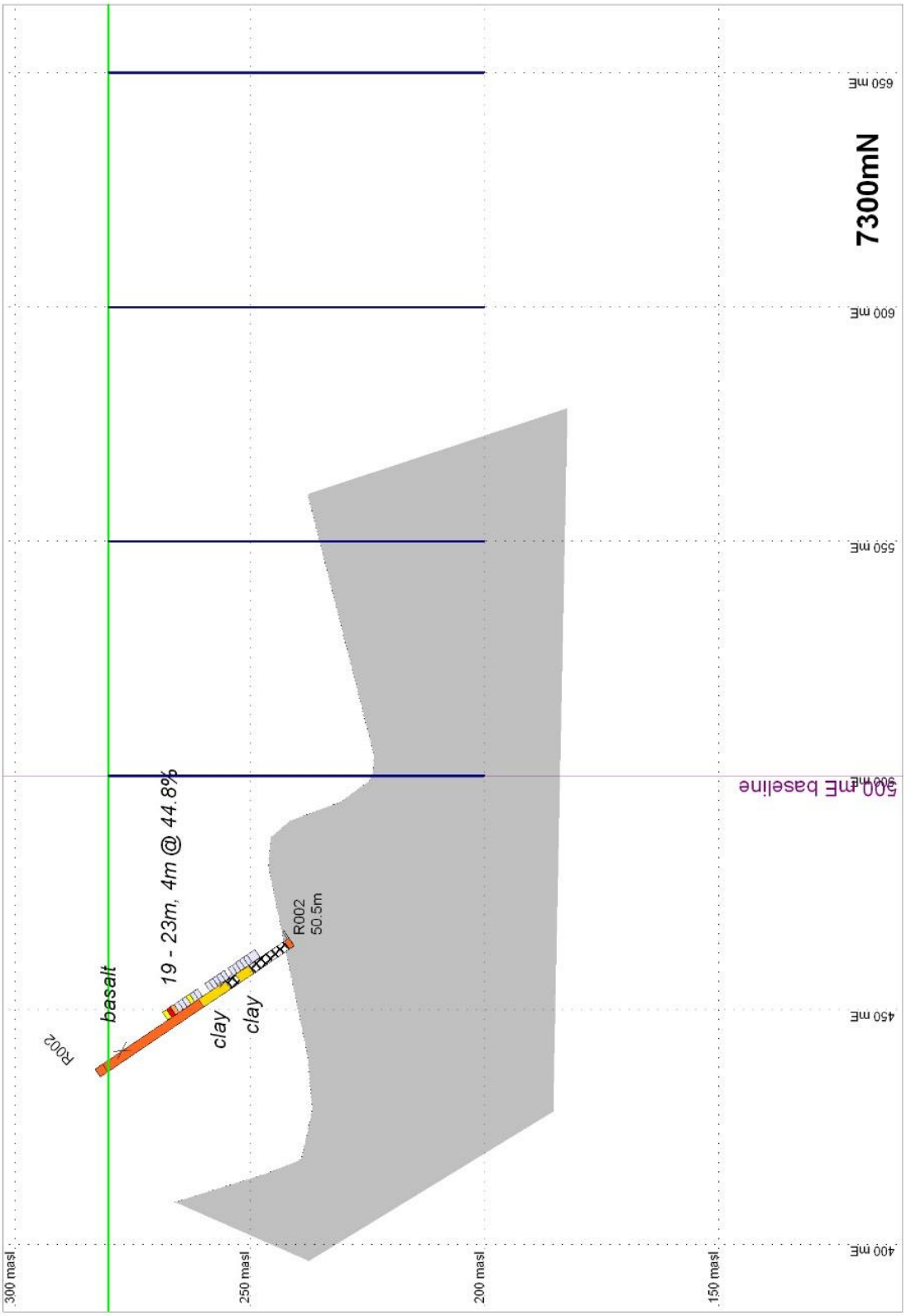

Figure 3.29: Natone hematite zone, Proposed holes – section 7300mE

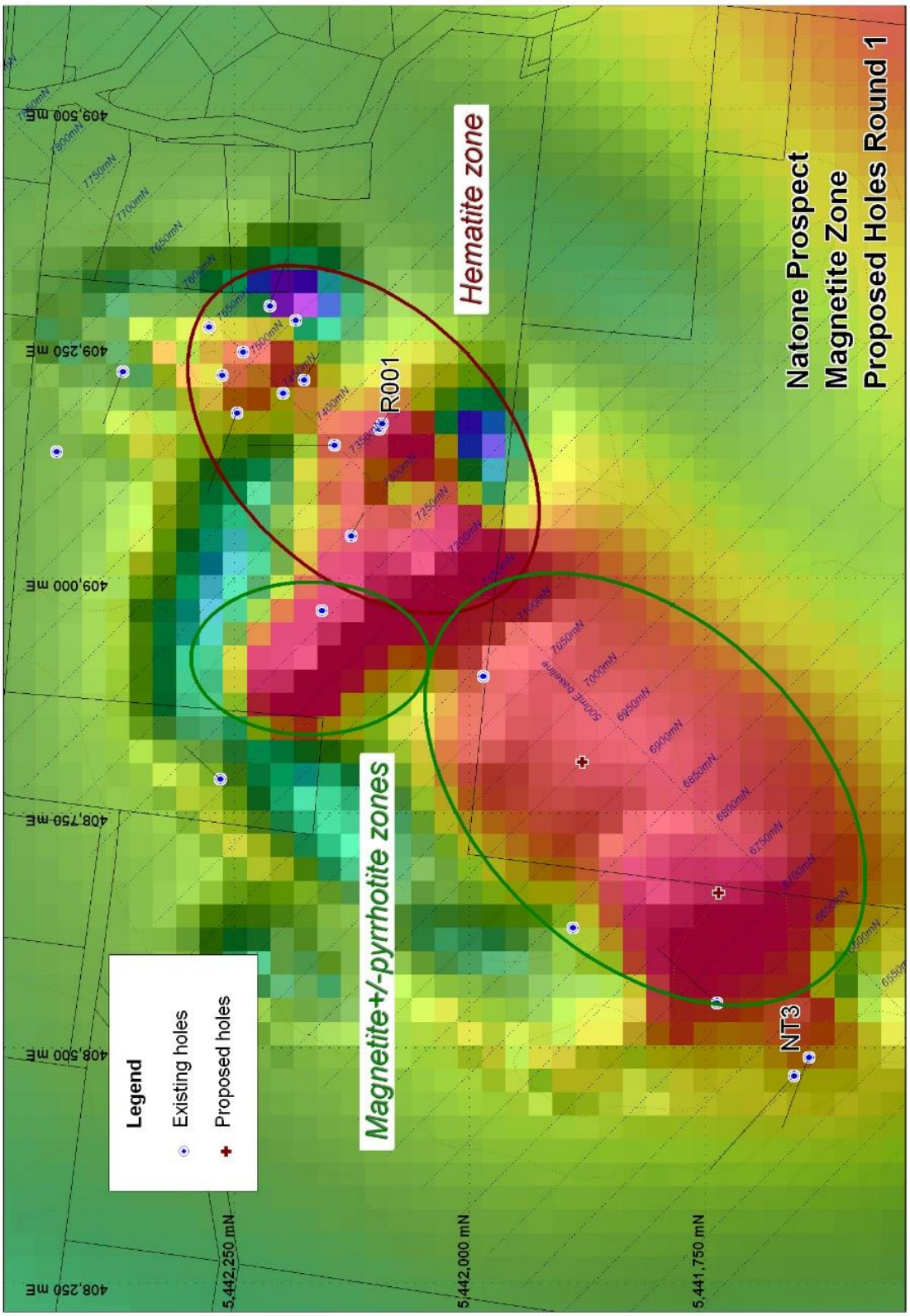

Figure 3.30: Proposed holes targeting magnetite (on RTP TMI magnetics image) – round 1

4.0 Conclusions and Recommendations

4.1 Mine Lease Application

Clearly the most significant aspect of the proposed mining operation at Cuprona is the proximity of the pit and its associated blasting to the habitated dwellings of the local farmers, as well as the overall Cuprona township, and has the potential to be a show stopper. In particular the Tunstall dwelling lies 160 metres from the nearest part of the proposed open pit, the Carbonari's dwelling is 200 m from the pit and the Vandenberg's 420m. The Vandenbergs also run livestock and will likely continue to do so in paddocks immediately adjacent to the pit.

However, advice has been received from Forze Explosive Services, a Tasmanian blasting company based in Margate that they believe that the mining operation and the necessary blasting can be achieved to safe standards. For this reason the project has been advanced though it is recognised that this needs to be established and continually proven for mining to be permitted.

Forze have carried out some preliminary desktop modelling as well as having recent practical experience with blasting associated with a new tailings dam at Rosebery's MMG minesite in close proximity to dwellings and other infrastructure such as bridges.

This preliminary work has indicated that the mining proposed at Cuprona is potentially feasible. Forze do indicate that on-site testwork will be required to establish this to the satisfaction of the relevant authorities and stakeholders and have submitted a proposal for a 12-24 seed hole test programme with monitoring at relevant locations including the three dwellings noted above.

4.2 Cuprona Resource Re-estimation

The re-estimated resource for the Northern Quarries hematite deposit is more robust with the geological reinterpretation now based on drill core structural data rather than a general strike and dip.

Inclusion of the CW Davis airtrack data has fleshed out the resource near surface improving confidence on the resource.

Further recommendations to upgrade the resource status include;

All future drill hole collars and other surface sampling should be DGPS or conventionally surveyed.

All holes should be down hole surveyed.

All holes should be collared to the northeast of the orebody and drilled to the southwest to provide accurate assessment of orebody shape.

The resource is reported at a range of cut-off grades. These higher grades will only be achievable with successful delineation of higher grade zones. Such delineation will require closer spaced drilling in the first instance and grade control pit mapping and sampling.

Work required to elevate the resource status from Inferred to Indicated will necessarily consist of

- Detailed survey drill hole collars, outcrops, trenches.
- Field duplication of early trench sampling with extra trenching where possible.
- Re-log drill core and re-map outcrop to generate modern geological map.
- Sample missing intervals.
- Infill and step out drilling on 50m x 25m pattern with all holes oriented to the southwest.

4.3 Natone Drilling

The Natone prospect suffers from the same problems of private land ownership and proximity to houses and farms etc. as the Northern Quarries resource at Cuprona.

Drilling has been proposed to test the extent of the outcropping hematite as well as he magnetic anomalies which are due in part to magnetite.

5.0 Environment

No fieldwork was undertaken during the reporting year and so there is no new environmental disturbance to report.

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