

**Moina Gold Pty Ltd  
Annual Report on Exploration in  
RL3/2005 – “Narrawa”  
May 2016 to April 2017**

## **ABSTRACT**

Work on the tenement for the reporting period between May 2016 and April 2017 consisted detailed planning for the upcoming drill programme.

Isosurfaces of 3D IP resistivity and chargeability were imported into SURPAC and these and existing 3D geological models were sliced with a series of 300m spaced sections generated (as well as intermediate section 850mW showing the relationship between the geophysics and the Higgs orebody).

Resistivity lows equate to conductivity highs and correspond directly with the Higgs/West Higgs base metal+gold orebodies.

Chargeability highs may represent intrusive related disseminated gold deposits.

Conceptual drillholes have been proposed to test these geophysical anomalies on each section. These drillholes may require optimisation by moving them along strike to target the higher tenor parts of the geophysical anomalies.

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## **1.0 Introduction**

### **1.1 Exploration Rationale**

Moina Gold Pty Ltd. is aware of the polymetallic potential of the Moina area, largely a product of the highly fertile Devonian aged Dolcoath Granite, and is exploring for any and all commodities.

In particular the area has proven potential for Au, Ag, Cu, Pb, Zn, Sn, W, Bi, Mo, F and Fe. Conceptually the area may have potential for Y, Nb and rare earths (La, Ce, Nd, Pr and Sm).

Specifically work in the 2015-2016 period consisted of the modelling of recent drill intersections into the central part of the Higgs gold+silver+copper+lead+zinc resource to better define potential high grade zones. That work is ongoing but is summarised herein.

### **1.2 Geology**

Cambrian quartz+feldspar+biotite porphyry of the Mt. Read Volcanics, Ordovician siliciclastic sediments of the Denison Group and the Devonian Dolcoath Granite form the basement geology to the licence area and are the host and/or source of all potential (hard-rock) mineralisation. A thin veneer of Tertiary basalt covers this basement geology in the far north-western corner of the licence.

Cambrian rocks only outcrop along the southern margin of the licence area where they are a quartz+feldspar+biotite porphyry.

These volcanics are unconformably(?) overlain by the lowermost unit of the Ordovician sequence, the Roland Conglomerate, a siliciclastic quartz pebble conglomerate of 10-20m thickness. The Roland conglomerate is conformably overlain by the quartzose Moina Sandstone which is up to 250m thick. The uppermost (approximately 40m thick) part of the Moina Sandstone is a sequence of interbedded calcareous siltstones with lesser calcareous sandstones and limestone and is known informally as the "Transition Beds". These two units constitute the upper units of the Denison Group. The "Transition Beds" are conformably overlain by the Gordon Limestone which is approximately 400m thick regionally though it is believed that this unit does not occur within the licence area.

The Cambrian-Ordovician sequence has been intruded by the Middle-Devonian Dolcoath I-type Granite with formation of a number of discrete skarn type ore bodies within the "Transition Beds". The granite outcrops in the south-eastern corner of the licence. Subsurface the granite is known to extend as a spine extending westerly from the area of outcrop.

The Cambrian-Ordovician sequence within the licence area lies on the southern limb of a broad (~10km wavelength) open east-west trending F1 syncline. This folding occurred early in the Middle Devonian Tabberraberran Orogeny. Superimposed on this F1 fold are west-northwest trending shorter wavelength F2 folds with wavelengths. These folds formed later in the orogeny and are associated with southwest verging thrust faulting. The folded sequence is faulted by a number of known faults also of Middle Devonian age. The recent 3D IP has also suggested the presence of further brittle faults. Late in the orogeny the Dolcoath Granite intruded into this faulted and folded terrain.

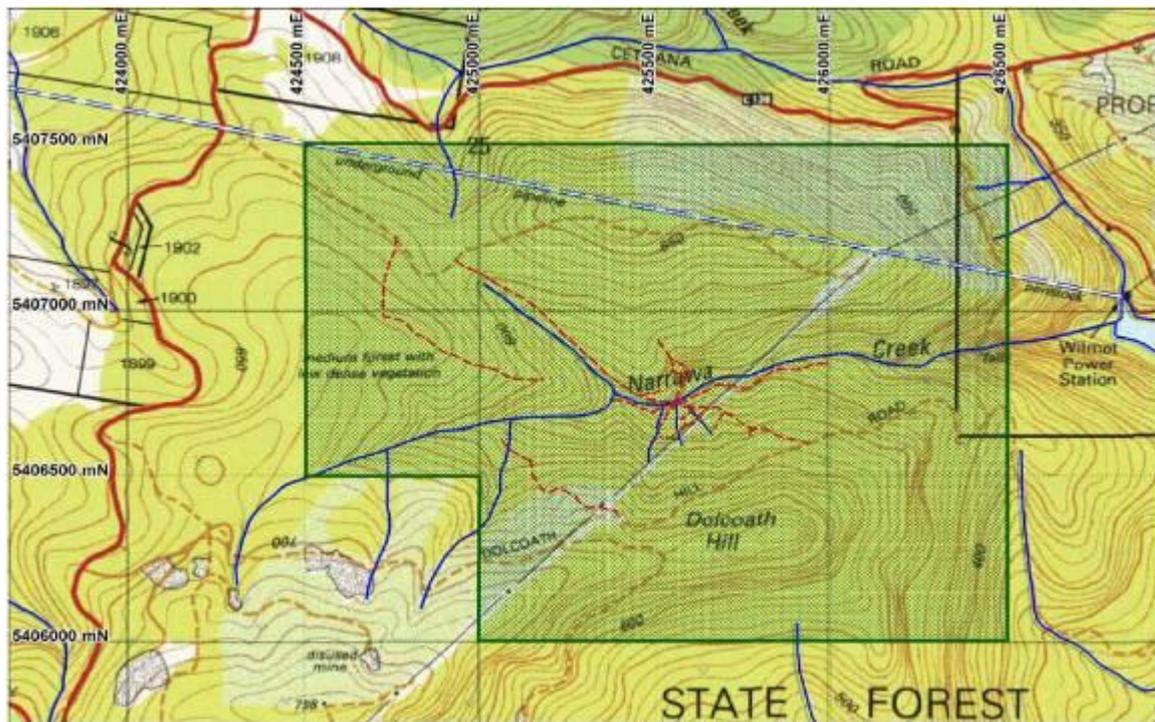
Mineralisation in the district occurs in a range of forms and settings with the Higgs workings chasing disseminated to semi-massive Au+Ag+Pb+Zn with commonly a pyrrhotite gangue in biotite hornfelsed sediments and/or gold+pyrite in sandstone. The Round Hill workings targeted Au+Ag+Pb mineralisation reportedly in anticlinal fold hinges. On Tin Spur mining of surface concentrations of Sn and Au occurred at a small scale. Discrete quartz+/-W+/-Mo+/-Bi+/-Sn northwest to west-northwest striking veins have been exploited in old workings (e.g. All Nations, Shepard and Murphy) and have potential in both the discrete form or as a zone of smaller veinlets. Elsewhere in the district the Transition Beds have been shown to host skarns with concentrations of F (Shepard and Murphy), Au+Bi (Stormont, Fletchers Adit) and Au+Zn+Sn (Hugo Skarn).

### 1.3 Location and access

RL 3/2005 "Narrawa" lies in Tasmania's central north and is accessed by the bitumen Cradle Mountain Road which passes through the western edge of the licence.

The licence occupies the valley of the east flowing Narrawa Creek which drains into the Lake Cethana hydro impoundment and the ridgelines north and south (see figure 1.1).

Access within the licence is by a rough 4WD track which runs from the Cradle Mountain Road to the gravel 2WD Dolcoath Hill Road.



**Figure 1.1:** RL 3/2005 Narrawa licence outline topography, drainage and access. Map datum is AGD66 zone 55.

### 1.4 Land status and usage

The area is completely state forest and is covered by dry sclerophyll forest, commonly with a low dense bauera/tea-tree understory making foot access somewhat difficult. The area has been previously logged.

### 1.5 Tenure

RL 3/2005 was first granted to Frontier Resources on 13<sup>th</sup> May, 2005. The License was transferred to Torque Mining Ltd on 4<sup>th</sup> May 2012. On 13<sup>th</sup> May 2013 the licence was renewed for a further two year period finishing on 13<sup>th</sup> May 2015. In early 2016 the licence was sold and transferred to Moina Gold Pty Ltd.

## **2.0 Review of Previous Work**

### **2.1 Prior to current tenement**

A brief summary of previous exploration is outlined below.

Old workings in the district date from the late 19<sup>th</sup> century into the 1930's with some production into the 1960's.

Pre-1965 the area of RL 3/2005 "Narrawa Creek" was included in much larger tenements with much more regional focus. In 1965 the Mt. Lyell Mining and Railway Co. included the area in EL 8/65. Apart from gridding and soil sampling over the Sayers and Blacks area just east of RL 3/2005 their work was more regional in focus. The licence was relinquished around 1972/73.

During the rest of the 1970's and into the early 1980's the border between Asarco's EL 7/73, soon to be JV'd with CRAE, and Comalco's EL 7/74 ran north-south through the area of RL 3/2005 dividing it in two. The major body of work carried out in the area was in 1981/82 when CRAE gridded, sampled (soil and rock) and geophysically surveyed the Narrawa Creek valley on their newly cut grid. This work resulted in the drilling of DD82DG1, 2 and 3.

Following the relinquishment of these two licences the Narrawa Creek area was pegged in 1985 as EL 45/1985 by Mr C.H. Whitehead who almost immediately JV'd the tenement with Goldfields Exploration Ltd who explored the area for gold, resampling the CRAE grid and drilling ND1, 2 and 3.

In the early 1990's the area was included in EL 20/92, a JV between Goldstream Mining N.L. and Titan Resources N.L. who drilled NC1 to NC12

Following compulsory relinquishment of half of EL 20/92 which saw the Narrawa Creek area dropped, Jervois Mining N.L. pegged the area under EL 30/97. Jervois drilled NC13 to NC17.

In 2003 Tasgold (a previous incarnation of Frontier) pegged the old EL 30/97 and remaining EL 20/92 (just relinquished) ground as EL 29/2003. Holes NC18 to NC28 were drilled into the Higgs resource.

In 2005 Frontier were required to relinquish most of EL 29/2003 retaining the Stormont prospect area under RL 4/2005 and the Narrawa Creek area under RL 3/2005.

### **2.2 During current tenement RL 3/2005**

#### **2.2.1 Higgs Resource Modelling and Estimation**

From 2005 to 2008 Tasgold (then Frontier) drilled a further 25 holes, NC29 to NC53, largely into the Higgs resource.

In 2008 Frontier calculated a resource for the Higgs (referred to as "Narrawa" in their work) with a total (Indicated and Inferred) resource of;

209,330 tonnes at 2.10 g/t gold, 19.5 g/t silver, 1.32% lead and 1.12% zinc including an Indicated component of 162,755 tonnes at 2.11 g/t gold, 20.5 g/t silver, 1.42% lead and 1.2% zinc).

#### **2.2.2 Regional soils and magnetics enhancement**

After a hiatus due to the effects of the GFC exploration recommenced in the Moina area in late 2010 with the processing and enhancement of existing high resolution geophysics and the collection of 214 soil samples as part of a regional 1271 sample 100m x 50m soil sampling programme.

This work defined a 1.3km long Au soil anomaly with the 220m long Narrawa resource only occupying part of strike. Coincident structures and/or magnetics characterize parts of this zone. Significantly and extensively anomalous W, Mo and Bi characterize the margins of the granite.

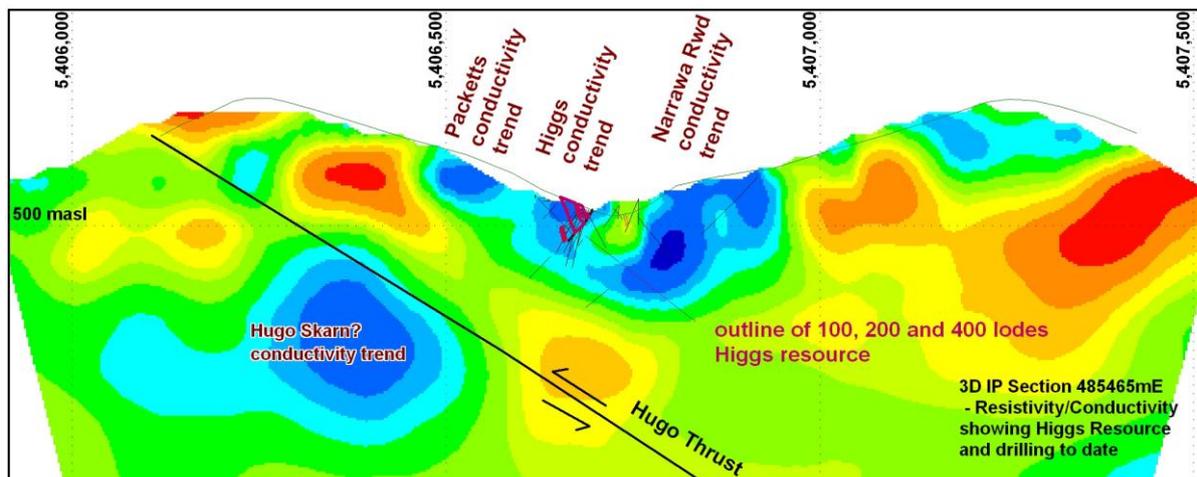
### 2.2.3 3D IP

In 2011 RL 3/2005 was included in a large scale 3D IP survey conducted over ~24 square kilometres of Frontier's Moina Project, extending from Round Mountain east of Lake Cethana to Stormont, west of Lake Gairdner.

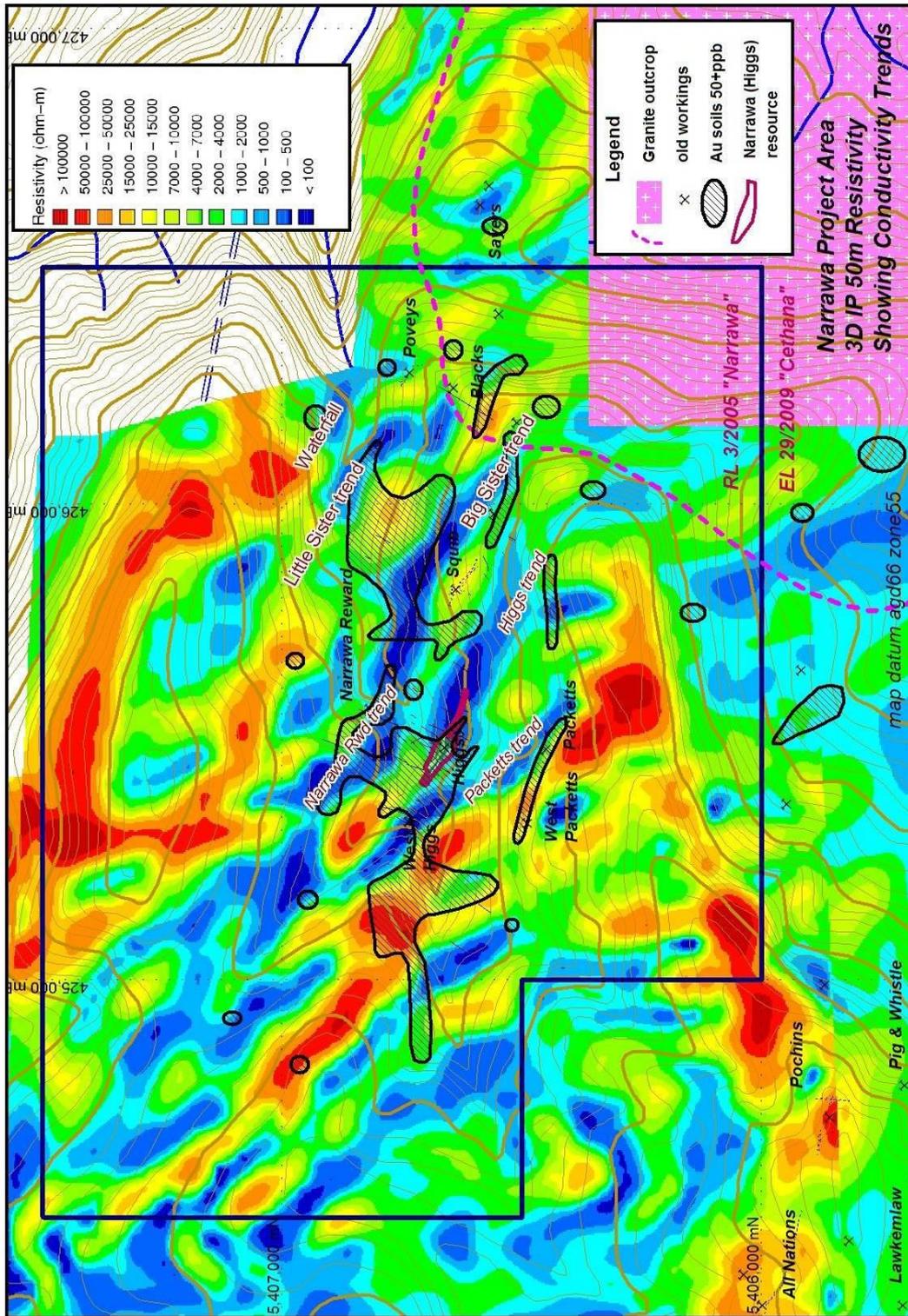
The survey was broken in part into a series of grids. RL 3/2005 was surveyed by the 100m - 125m spaced Narrawa grid as well as the deeper seeing more regional 250m spaced East Moina grid.

The 3D IP was highly successful in defining a number of anomalies which warrant further follow-up. In particular the survey revealed;

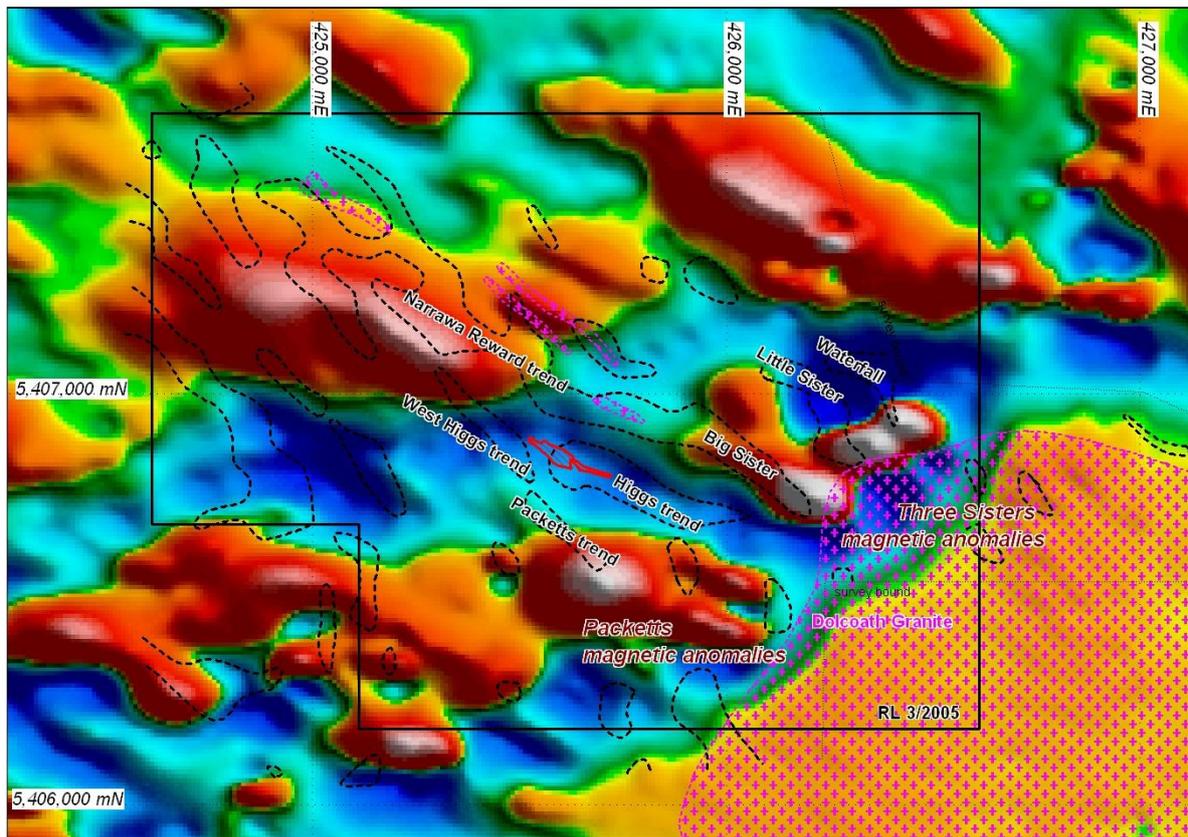
- A correspondence between Higgs mineralisation and a west-northwest linear resistivity low i.e. conductivity high (Higgs conductivity anomaly) (see figure 2.1).
- Further clear potential for further Higgs style gold+base metal skarn along the west-northwest striking conductivity trends (see figure 2.2).
- Around the granite margin there is an apparent spatial correspondence between a series of three helimagnetic anomalies referred to here as the Three Sisters and 3D IP conductivity anomalies, in areas of anomalous Au, W, Bi, and Mo in soils (see figure 2.3).



**Figure 2.1: Large scale cross-section looking true west showing correspondence of Higgs resource (maroon outline in upper central figure) and resistivity low blue (= conductivity high). Note also Packetts and Narrawa Reward conductivity trends near surface and the Hugo Skarn conductivity anomaly (anomaly lies along strike from TNT Mines Hugo Skarn deposit) beneath the Hugo Thrust Fault.**



**Figure 2.2: RL 3/2005 "Narrawa Creek" area showing 3D IP survey conductivity trends as defined by resistivity at 50m depth (closer spaced Narrawa Creek grid data). The Higgs anomaly swings north-northwesterly through the West Higgs workings (and then heads towards the Bell Mount alluvial goldfield). The Narrawa reward anomaly is coincident with the gold and base metal Narrawa Reward workings. Other anomalies remain untested. Gold soil anomalism shown as black hatched area.**



**Figure 2.3: RL 3/2005 “Narrawa Creek” area showing 3D IP survey conductivity trends (black dashed lines with black names) as defined by resistivity at 50m depth (closer spaced Narrawa Creek grid data) superimposed on Jervis helimagnetics 2VD RTP colour image showing the Three Sisters magnetics anomalies and the Packetts anomaly. Dolcoath Granite as pink crosses with dashed pink outline, also granitic dykes shown. Higgs resource as maroon outline shown as reference.**

#### **2.2.4 Higgs Historical Underground and Surface Channel Sampling**

The Higgs Mine had been reported on by government geologists on three occasions by F. Blake in 1937, K.G.W. Keid in 1947 and by R. Jack in 1961. Both Keid and Jack detail sampling undertaken by both the government geologists themselves during their visit and sampling undertaken by the proprietor.

That data had not been included in the previous resource estimate and so was compiled in preparation for a new resource estimate..

Goldfields also undertook extensive channel sampling in 1987 (Roberts, 1987).

Better results from all channel sampling work are shown in figure 2.4.

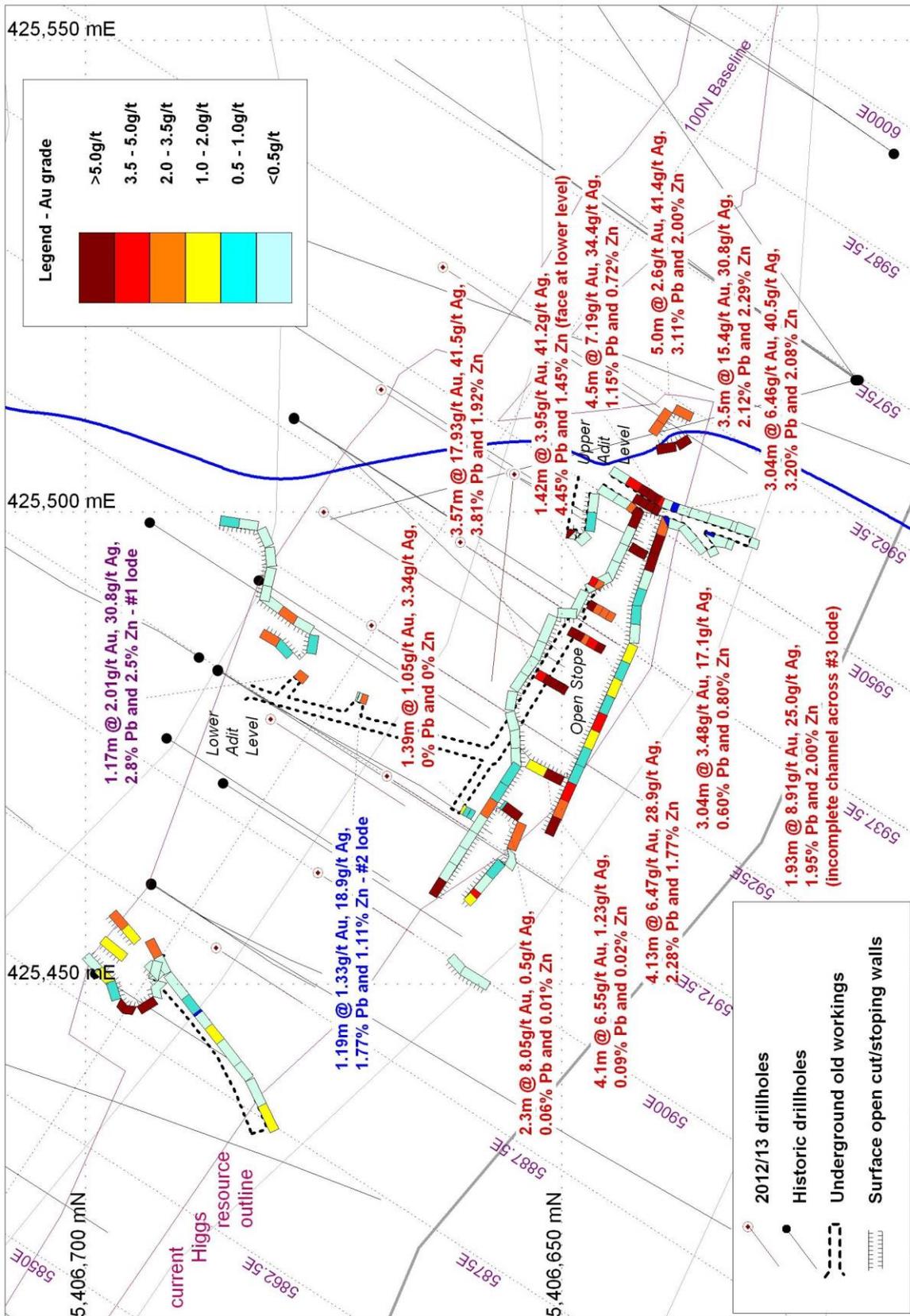


Figure 2.4: Higgs historical channel samples – significant results. Colours of text refer to historical lode number (defined earlier in text). Legend in figure 2.5. Datum is AGD66.

## 2.2.5 Higgs Resource infill drilling

In 2012 four holes (NC54, NC55, NC56 and NC57) were drilled in and around the existing Higgs resource as part of a programme to add to the knowledge of the existing resource and potentially upgrade some of the Inferred resource to Indicated status, and in part to test the newly acquired Poltock man-portable rig. After 4 holes were completed the programme was deferred with drilling moving to other untested targets.

The first 3 holes were drilled with the Poltock rig. Hole NC57 was drilled with Frontier's own skid mounted rig (capable of drilling NQ to 400m).

Holes NC54 and NC55 were problematic with significant core loss and rubble falling into the hole. These two holes acted as "learners" for Frontier's drillers and were not sampled. No significant mineralisation aside from some disseminated pyrite in siltstone was intersected though it is possible that significant sections of core loss represent better mineralised zones.

Drilling (8 holes for 290.9m) at Higgs recommenced in 2013 with NC64, NC65 and NC67 to NC71 drilled on 12.5m sections on the Higgs drilling grid. NC66 was drilled obliquely across the mineralised lodes in order to maximise recovery of material for metallurgical testwork.

Drilling focussed on targeting the main lode between the previous deeper intersections and surface/near surface channel samples. Mineralised intersections confirmed the presence of the #1, #2 and #3 (= Main) lodes (biotite+sulphide altered beds) with the #3/Main lode zone at depth actually consisting of 2 separate lodes hereby categorised as the Main HW lode and Main FW lode.

Better results are listed in Table 2.1. Holes are shown in plan view on figure 2.6.

**Table 2.1: 2012-14 Higgs drilling better intersections**

Hole_ID	from (m)	to (m)	interval (m)	Au g/t	Ag g/t	Pb %	Zn %
NC64	3.35	3.7	0.35	2.95	65	3.61	3.51
NC64	14.65	18	3.35	1.74	10.8	0.98	1
NC65	6.65	7.4	0.75	5.37	67	5.7	11.3
NC65	11.85	15.65	3.8	2.72	16.8	2.44	3
NC66	2.3	3.1	0.8	13.7	81	3.79	1.42
NC66	11.9	12.45	0.55	6.8	94	9.3	14.7
NC66	19.4	26	6.6	0.21	17.5	1.61	1.83
NC66	29.6	37.2	7.6	0.72	41	4.16	4.01
NC68	3.4	4.05	0.65	1.65	23.7	3.66	5.08
NC68	9.4	9.95	0.55	6.02	30.7	3.85	3.74
NC68	14.6	17.7	3.1	10.05	33.3	3.25	5.03
NC68	21.55	25.3	3.75	2.66	25.7	3.03	4.63
NC69	18.3	18.95	0.65	2.04	21.9	2.22	3.05
NC69	21.65	35.3	13.65	0.66	38.2	3.14	3.23
NC70	17	18.1	1.1	0.24	36	3.75	4.79
NC70	20.4	24	3.6	0.34	36	4.12	5.02
NC70	26.6	33.8	7.2	0.75	77.5	7.16	11.3
NC71	10.3	12.1	1.8	0.1	18.7	1.13	1.41
NC71	16.4	17.5	1.1	0.2	27.4	2.94	4.18
NC71	20.5	22.55	2.05	0.25	42.3	4.52	7.1
NC71	27.1	33.1	6	0.56	62.7	5.93	9.44

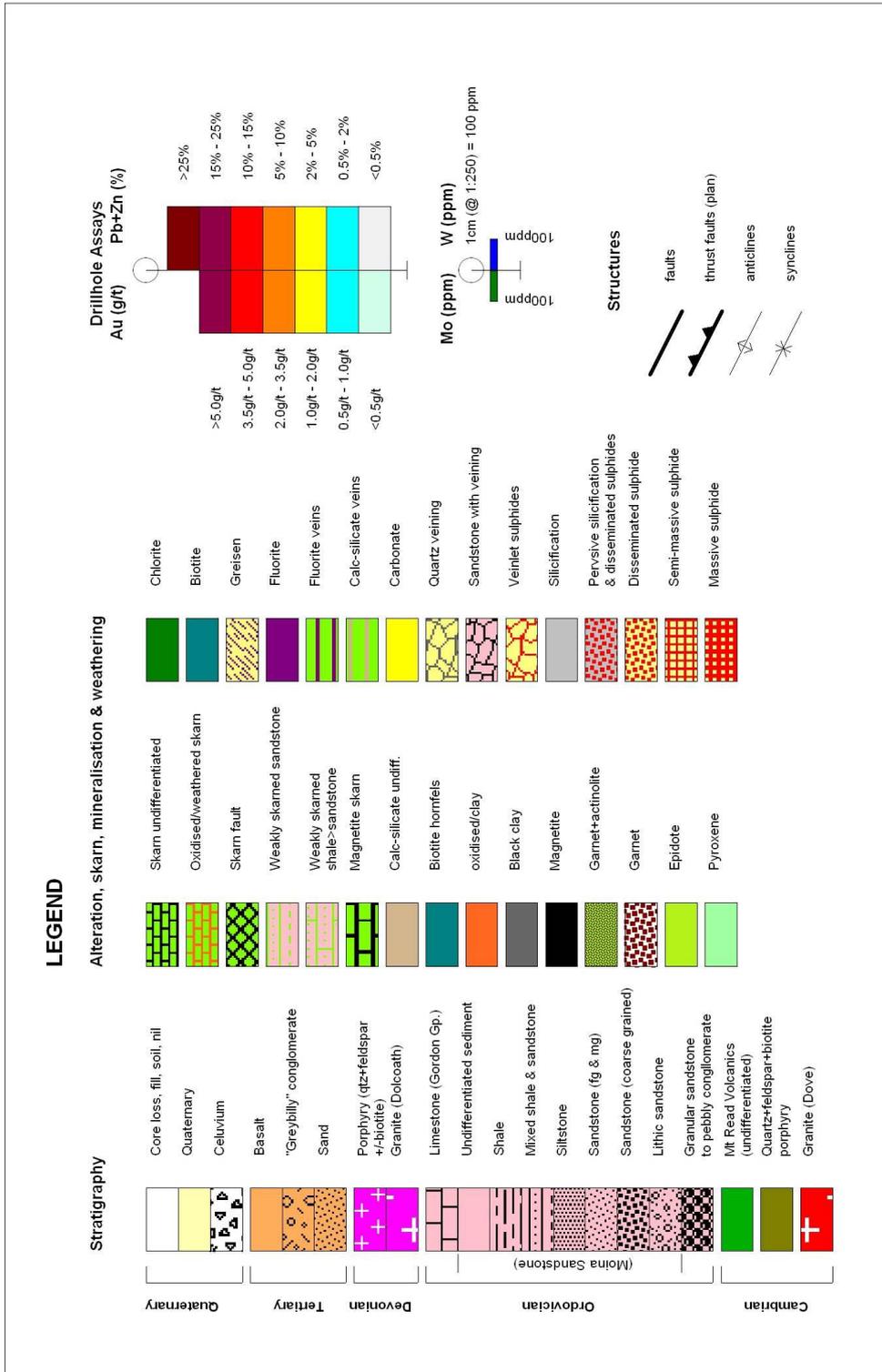
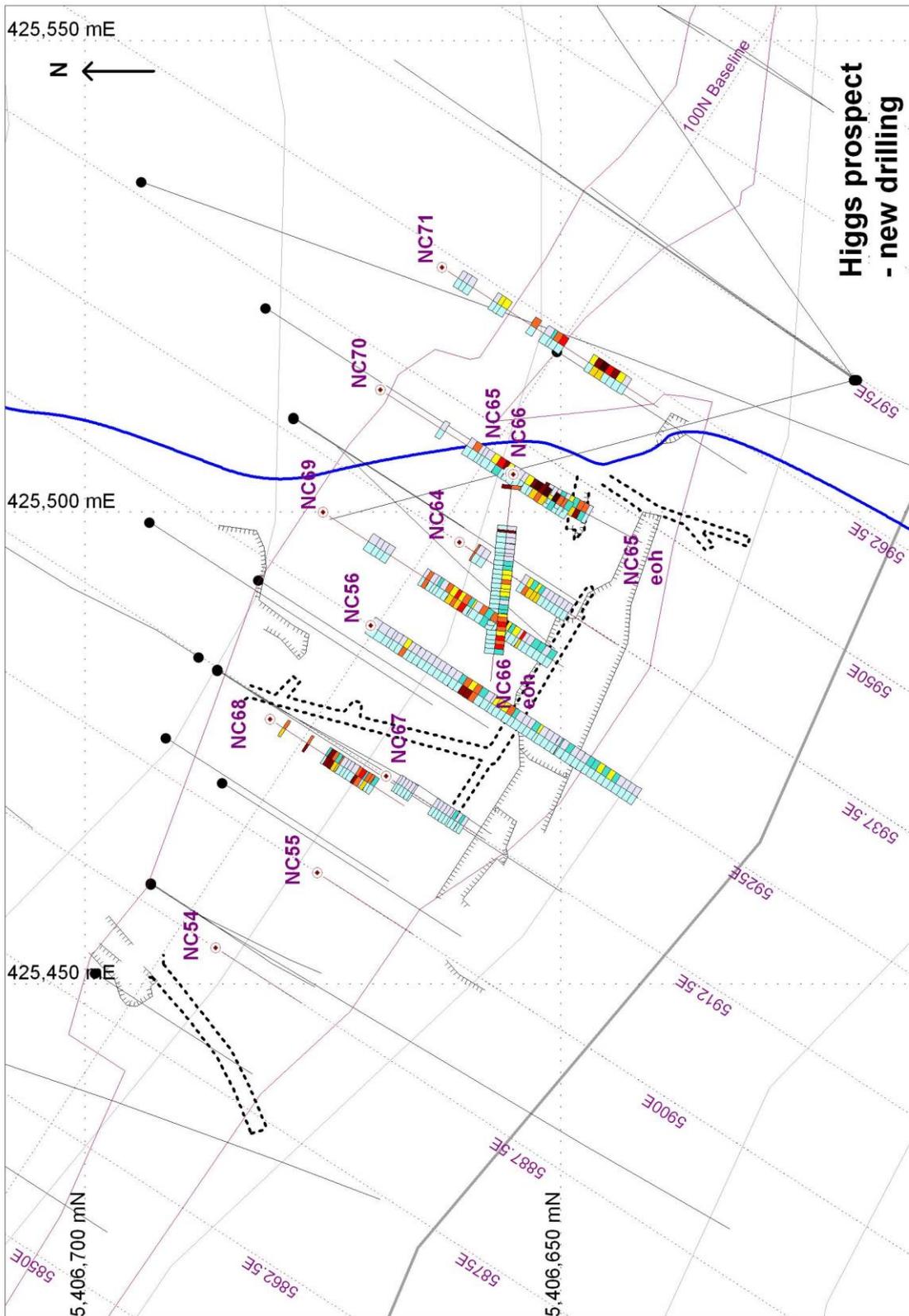


Figure 2.5: Legend for sections and plans



**Figure 2.6: Plan view Higgs prospect showing new DDH's NC54 to NC71, Higgs resource outline (red), old workings and channel samples with both drill holes and channel samples showing Au on LHS of drill trace and Pb + Zn on the RHS of drill trace. Legend in figure 2.5.**

## 2.2.6 West Higgs drilling

The West Higgs prospect lies on steep slopes on the western side of a moderately incised gully, interpreted to represent a cross-fault, with Higgs workings lying on the east. Two small adits and some surface scratchings did not discover anything of great significance but channel sampling by GFEL in the 1980's revealed 16.8m @ 8.5g/t Au and 18.7m @ 6.34g/t Au though these were of surface ferruginous material (and thus probably surface enriched) and taken largely along strike.

Two holes were drilled at West Higgs (see figure 2.7). The first hole NC72 was angled beneath the anomalous channel samples. This hole was drilled at -50° (using TT56) for the full length but began to struggle with drag on the rods and was stopped at 47.15m.

Both holes were collared from the same location with NC72 at -50° and NC73 at -82.5°.

NC72 intersected pyritic sandstone and lesser biotite hornfelsed sandstone to 44.5m then biotite hornfels +/- galena+sphalerite below 44.5m to 47.15m. It was tentatively planned to return to hole with TT46 after NC73 (did not happen).

NC73 was drilled vertically from the same collar position.

It was recognised that bedding is dipping to the north at around 70° and that this would place the favourable sequence in correspondence with the West Higgs conductivity anomaly at ~50m+ depth below this position.

The hole intersected the biotite hornfelsed unit at 49.5m to almost the end of the hole. Coarser grained base metal sulphide zones were intersected in a number of positions within this zone.

**Table 2.2 West Higgs drilling better intersections**

Hole_ID	from (m)	to (m)	interval (m)	Au g/t	Ag g/t	Pb %	Zn %
NC72	44.5	47.15	2.65	0.245	8.96	0.63	0.68
NC73	50.3	50.55	0.25	0.09	16	1.11	1.07
NC73	56.95	57.95	1	2.19	0	0.01	0.01
NC73	65.35	67.65	2.3	2.09	29	2.27	1.8

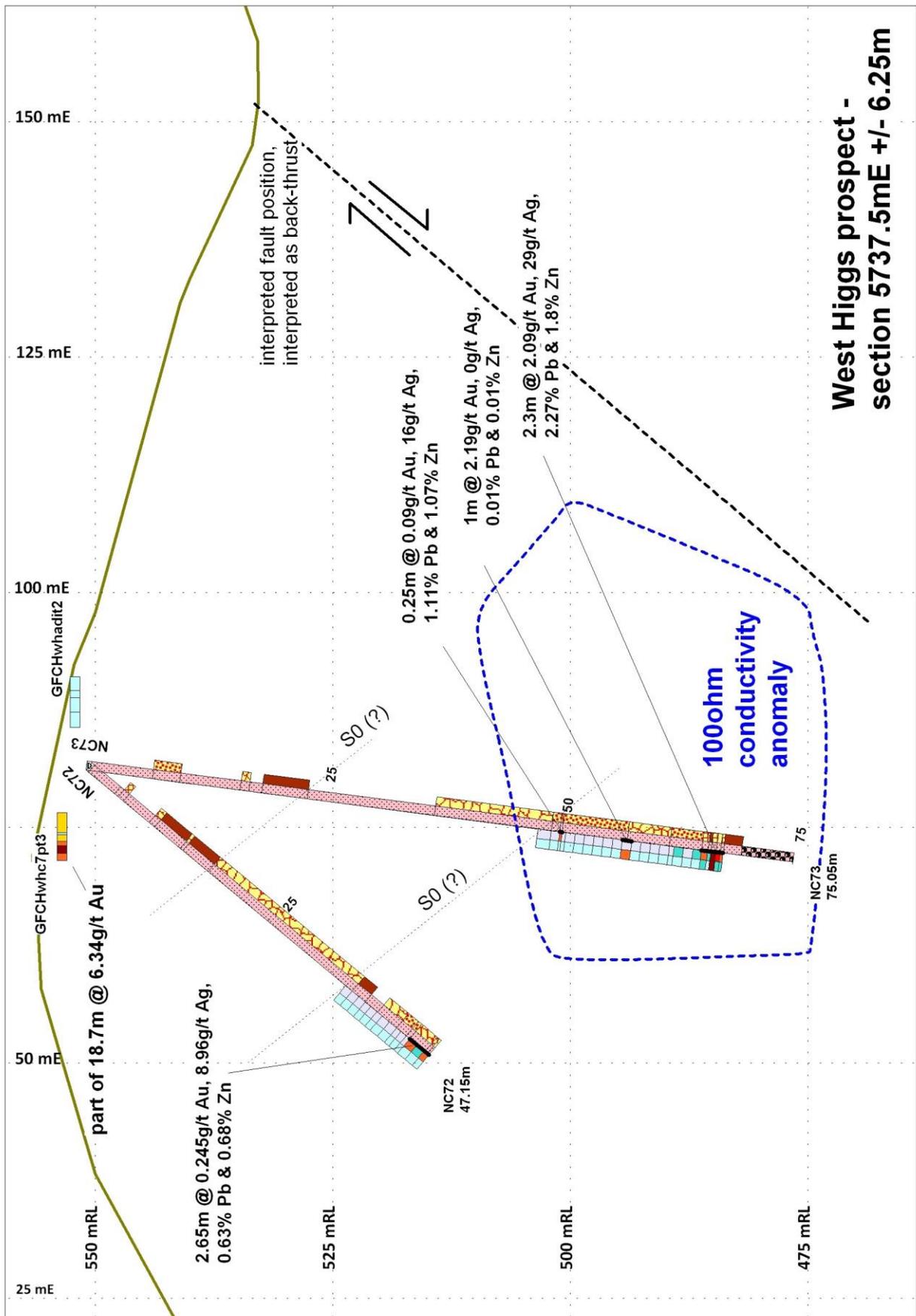


Figure 2.7: West Higgs section 5737.5mE +/- 6.25m showing drillholes gold and lead+zinc assays. Also shows West Higgs conductivity anomaly and surface channel samples. Legend in figure 2.5.

### 2.2.7 Three Sisters drilling

The Three Sisters prospect is defined by the three discrete magnetic anomalies on the northwestern margin of the Dolcoath Granite outcrop (best seen in figure 2.3). It should perhaps also extend to the south to include the Packetts anomalies which are of similar style and position with respect to the granite.

Aside from the anomalous magnetism the granite margin here is characterised by coherent anomalous W, Mo, Bi and Au in soils, old workings on lode style quartz +/- W +/- Mo +/- Bi veins running almost east-west to west-northwest such as Blacks, Sayers and the Squib workings, and surface trench samples and drill intersections up to

- 80.2m @ 0.06% W inc. 6.0m @ 0.153% W (DD82DG3); also
- 0.6m @ 0.55% Bi and 0.5m @ 0.29% Bi (DD82DG3)
- 6.6m @ 0.317% W inc. 0.65m @ 1.04% W (NC53)
- 0.3m @ 9.22% Mo (NC61)
- 1.0m @ 0.6% W and 0.5m @ 0.828% W (NC62)
- 4.0m @ 0.12% W (Squib channels)

Previous drillholes at the Three Sisters had intersected hornfelsed Moina Sandstone, granite dykes and variably geisenised and/or k-feldspar altered granite along the contact between the Moina Sandstone and Dolcoath Granite.

Three TT56 diamond drill holes NC60, NC61 and NC62, were drilled with the Poltock rig at the Three Sisters prospect with coincident Au, W, Sn, Bi and Mo soil anomalism and magnetism and conductivity anomalies.

Gold results were generally low with 3.85m (from surface) @ 0.59g/t Au and 0.4m @ 2.15g/t Au (from 30.6m) in NC60. Apart from these results the best Au were 0.18 and 0.12g/t Au in NC61 and 0.13g/t Au in NC62.

Apart from a 0.3m wide quartz+molybdenite vein intersected in NC61 which assayed 0.3m @ 9.2% Mo and 632ppm Bi (W was below detection limit) all W, Mo and Bi assays were low with best results

- NC60: W to 166 and 45ppm, Mo to 147 and 126ppm and Bi to 143 and 84ppm
- NC61: W to 119 and 122ppm, Mo to 135ppm and Bi to 47ppm
- NC62: W to 885 and 338ppm, Mo to 491 and 121ppm and Bi to 251 and 204ppm

NC63 targeted the zone at depth where the magnetic source would extend into the granite. The drillhole intersected hornfelsed Moina Sandstone with occasional porphyry or granite dykes to 65.75m then variably generally weakly k-feldspar altered or greisenised granite with occasional visible wolframite, molybdenite and/or bismuthinite along the greisen selvages. Unfortunately best results were separate 1m intervals of 719ppm W and 624ppm Bi.

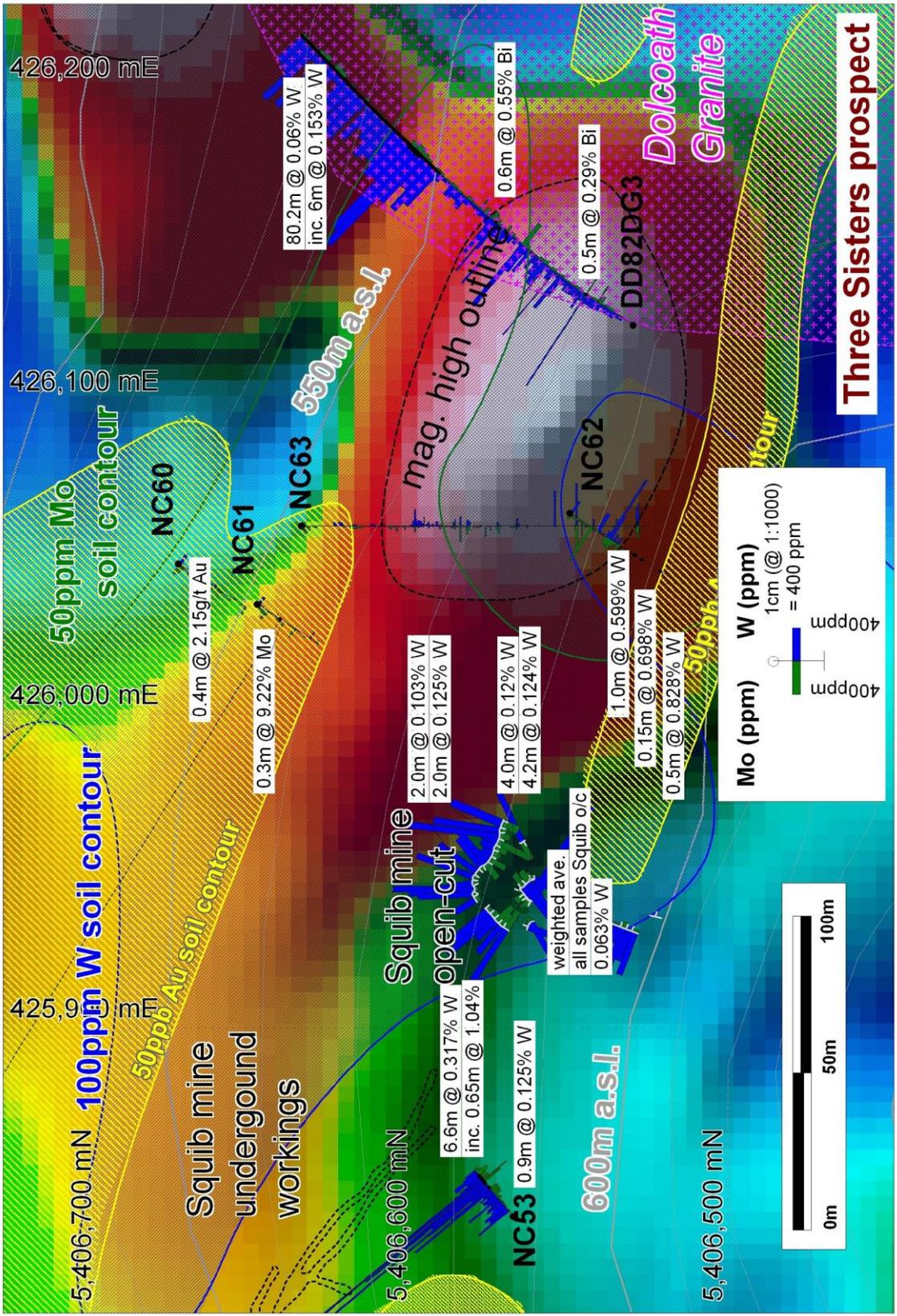


Figure 2.8: Three Sisters prospect showing drilling with W and Mo assays on drill trace as histograms, previous anomalous W and Mo intersections, old workings, W, Mo and Au soil anomalies, superimposed on colour enhanced, RTP 2VD heli-magnetics image. Legend in figure 2.5.

### **2.2.8 Channel sampling – Packetts, West Packetts, Squib open cut and NC4 prospects**

Channel sampling was conducted at three prospects, Packetts and West Packetts, Squib open cut, and along the road-cut near the collar of NC4. Samples were collected at nominal 2m intervals by geology pick.

Results were generally low with best intervals

- PCH1; 0.0m to 9.0m, 9.0m @ 0.06g/t Au and 0.18% Pb
- PCH2; 0.0m to 2.0m, 2.0m @ 0.7g/t Au and 0.26% Pb
- PCH5; 3.0m to 5.0m, 2.0m @ 0.77g/t Au

At the Squib open cut 39 channel samples for 76.3m in 8 continuous channel samples were collected along exposed faces of the old open cut.

Au assays were elevated but only weakly with best result 0.29g/t Au (repeating at 0.33) with next best values 0.08g/t Au. W values were elevated but not sufficiently with best 1434, 1354 and 1253ppm with an overall mean of 622ppm, i.e. 0.06%.

At the NC4 prospect 12 channel samples for 24m in 2 continuous channel samples named NC4CH1 and NC4CH2. All samples are anomalous with only one sample below 0.5g/t Au (i.e. 0.36g/t Au) such that intervals are;

- NC4CH1; 0.0m to 10.0m, 10.0m @ 0.96g/t Au and 0.13% As
- NC4CH2; 0.0m to 12.0m, 12.0m @ 1.99g/t Au and 0.087% As

### **2.2.9 Lead isotope age dating**

Six samples of galena bearing core or rock or sample pulps with elevated lead from the Moina project area were analysed for Pb isotopes by Dr Dave Huston of Geoscience Australia as part of his gradually accumulating database of Tasmanian deposits. Of these two samples were taken from RL 3/2004.

Pb isotopic dating of the Higgs mineralisation showed that it is Middle Devonian in age and coeval with similar Pb rich mineralisation at the Round Mountain/Hill and Oliver's Hill prospects, to the east of Lake Cethana, and slightly older than the Stormont Au+Bi skarn. The time correlation between Higgs and Round Mountain/Hill suggests a similar genesis and reinforces the prospectivity of the Higgs host sequence along strike.

The tenement was transferred to Moina Gold Pty Ltd midway through the reporting period.

Torque Mining Ltd has done no work on the tenement in the first half of the year.

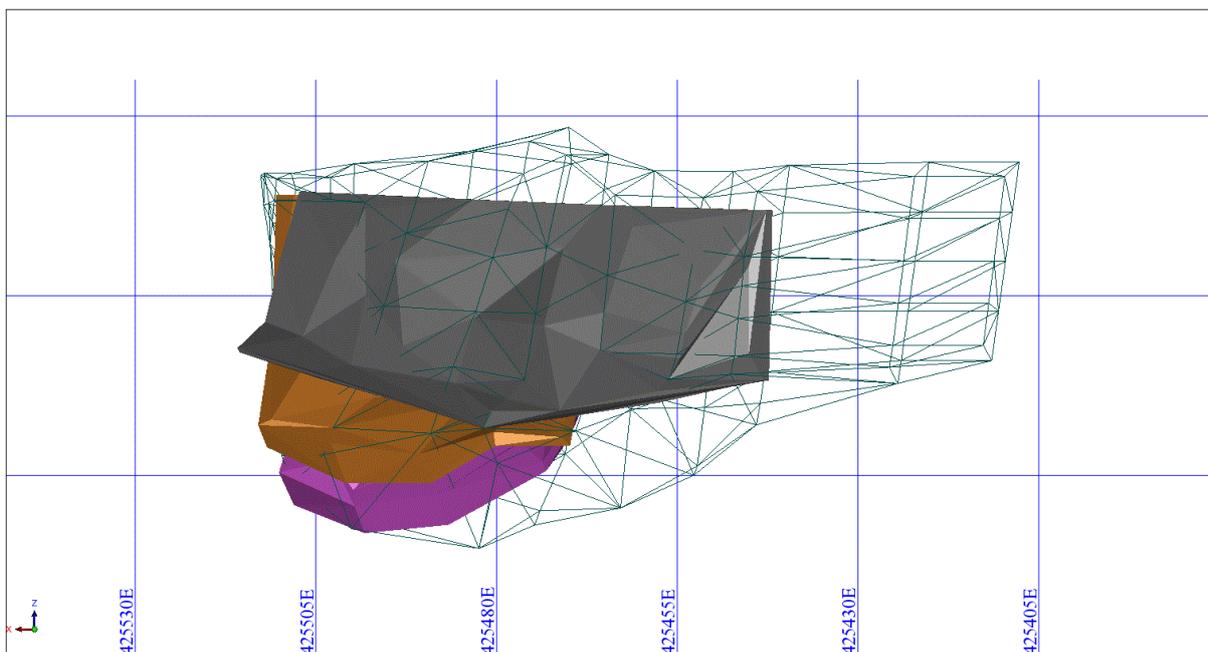
Since the transfer was completed Moina Gold Pty Ltd has been reassessing the Higgs resource potential for future development as a prospective mining operation.

This work has focused on the completion of a new resource estimate for the Higgs deposit including the results of Torque Mining Ltd's drilling in 2012/13 (detailed in section 2.2.5) and the historical run of mine sampling (detailed in section 2.2.4).

### 2.2.10 Resource Re-estimation

The more recent drilling by Torque focussed on the central part of the original Higgs resource. A number of relatively high grade intersections suggested the possibility of higher grade zones which might be amenable to underground mining. Further the discovery of historical run of mine, exploration and government sampling data, and the relevant old mine plans added to the sample database and improved understanding of the deposit.

The higher grade zone within the overall resource was re-estimated. Although not done to a reportable JORC standard with the level of rigor applied to the QA/QC and geostatistical work inadequate for such reporting, the results are unlikely to differ markedly from a more rigorous approach and updating to JORC standard would probably only require some additional detailing in the report.



**Figure 2.9: Higgs remodelling. No.2 Lode (grey), Main HW Lode (yellow) and Main FW lode (pink) within 100 lode wireframe from Mueller (2009). View looking south.**

A new block model was created. Due to drill spacing of 12.5m a block size of 5y x 2.5x x 5z was considered reasonable with sub-blocking to 1.25 x 0.626 x 1.25.

The estimation methodology utilised was Inverse Distance squared. A search ellipse oriented 330° and dipping -60° to 060° was used. Minimum 3 samples and maximum 18 samples used for estimation.

**Table 2.3 Resource tons and grade**

Zone	tons	gold g/t	silver g/t	copper %	lead %	zinc %	gold equivalent g/t (1/9/2016 metal prices)
Main_HW_lode	16873	3.1	30.2	0.064	2.62	2.42	3.31
Main_FW_lode	16390	1.1	59.9	0.069	4.78	4.82	5.74
No2_lode	7261	5.7	29.3	0.061	2.66	2.53	8.18
<b>Total</b>	<b>40524</b>	<b>2.8</b>	<b>42</b>	<b>0.065</b>	<b>3.5</b>	<b>3.41</b>	<b>6.13</b>

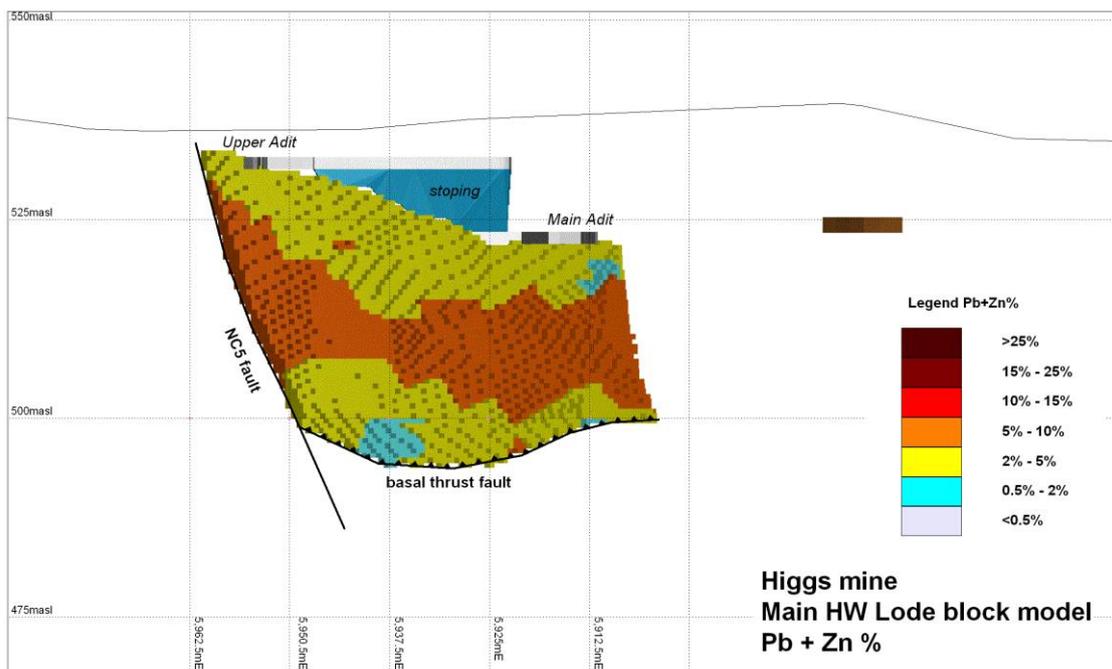
The tons and gold equivalent grade for the three lodes combined (remembering that different metal prices were used in calculating each so it is not a geostatistical comparison) is 40524t @ 6.13g/t Au which agrees well with the Mueller (2009) model where at the 5g/t gold equivalent cut-off 41024t on the tons grade curve equates to 6.087g/t gold equivalent.

The metal distribution within the three lodes differs.

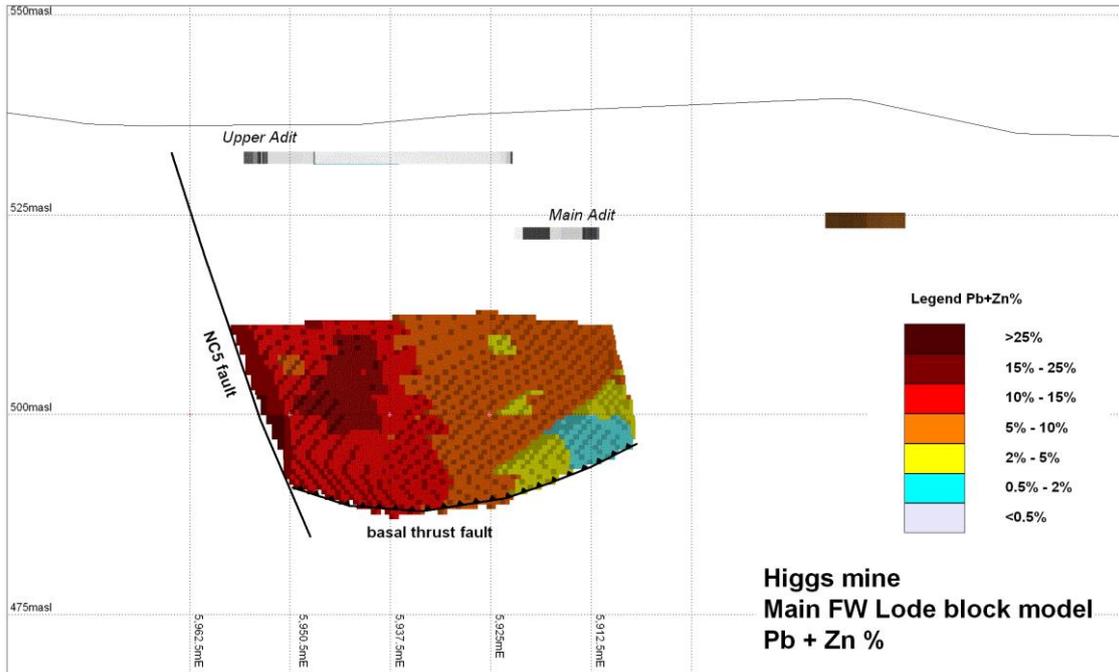
The upper No.2 lode has relatively high gold grades and low base metal grades.

The Main HW lode has moderate gold grades and high base metal grades whilst the FW lode has lower gold grades and high base metal grades.

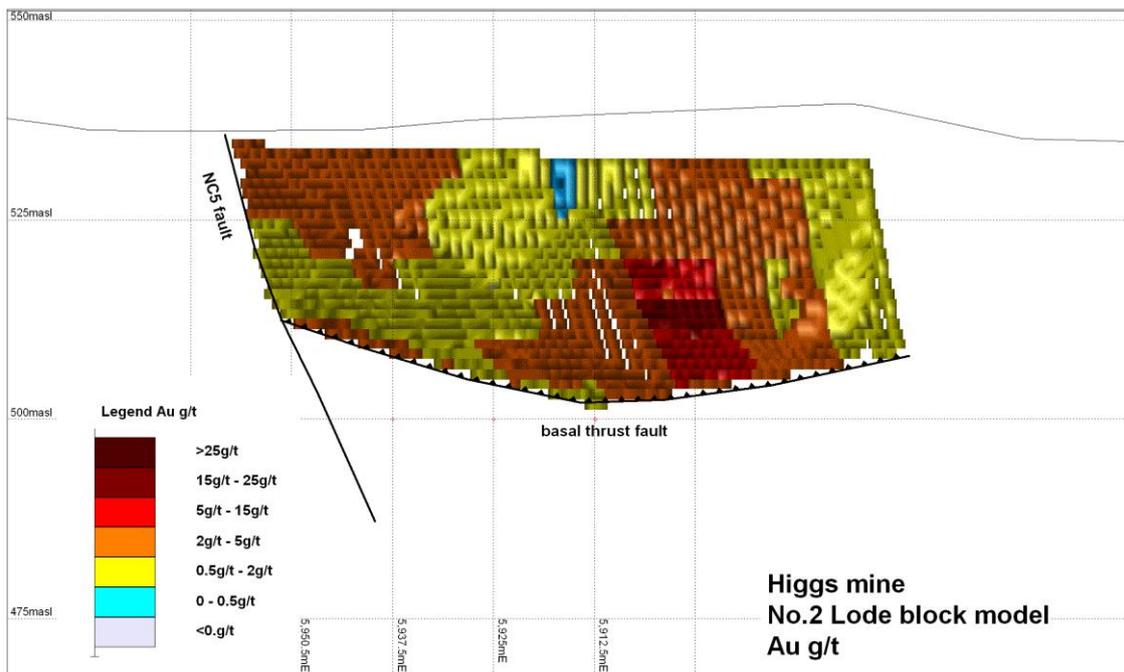
Metal distribution within each of the lodes varies also.



**Figure 2.10: Higgs mine long section looking grid south (213° true). Main HW lode Pb + Zn grades (just blocks on northern side of block model visible)**



**Figure 2.11:** Higgs mine long section looking grid south (213° true). Main FW lode Pb + Zn grades (just blocks on northern side of block model visible)



**Figure 2.12:** Higgs mine long section looking grid south (213° true). No.2 lode Au grades (just blocks on northern side of block model visible)

### **3.0 Exploration completed during the reporting period**

No field work was carried out in the reporting year.

The focus of work was on drill planning with the intention to commence drilling in the 2017/18 and 2018/19 years.

To this end isosurfaces of the 3D IP geophysics data, i.e. resistivity and chargeability were imported into SURPAC, sliced on 300m spacings, and combined with slices of 3D geology to generate a series of composite sections to allow conceptual part of the drill planning. Those results are presented in figures 4.3 to 4.9.

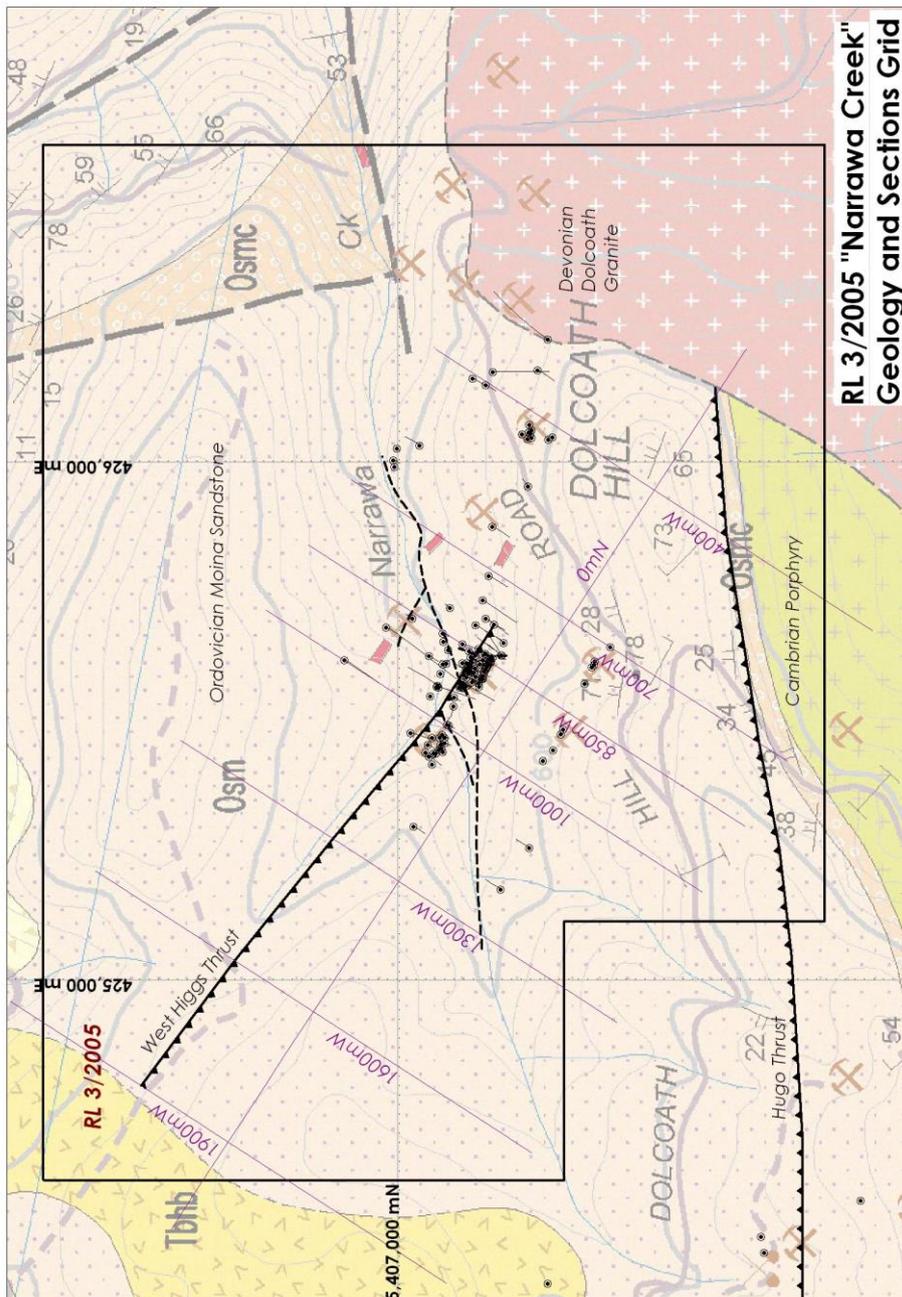
The resistivity lows equate to conductivity highs.

A number of proposed drillholes were designed for each section. These proposed drillholes are conceptual and illustrative. More optimal positions may, and do, occur along strike where resistivity and/or chargeability anomalies are stronger.

#### 4.0 Results

There are no new results to report other than the conceptual drill sections generated as part of the drill planning stage. These are displayed as figures 4.3 to 4.9.

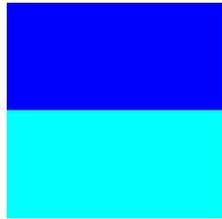
Resistivity lows equate to conductivity highs. On section 850mW (figure 4.5) the resistivity low corresponds with the Higgs gold+base metal orebody. Similar resistivity lows = conductivity anomalies have been defined previously and can be seen on this and other sections where they trend in a north-westerly direction and define the Higgs – Bell Mount corridor.



**Figure 4.1:** Plan showing MRT geology (Cethana 1:25,000 sheet), existing drillholes and locations of composite sections. Also shown is interpreted Hugo and West Higgs thrust faults.

# Legend

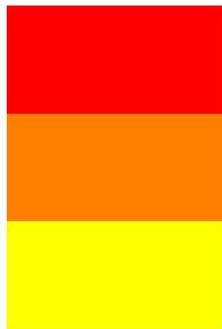
## Resistivity



<100 ohm m

100 - 500 ohm m

## Chargeability



0.02 SI

0.01 - 0.02 SI

0.001 - 0.01 SI

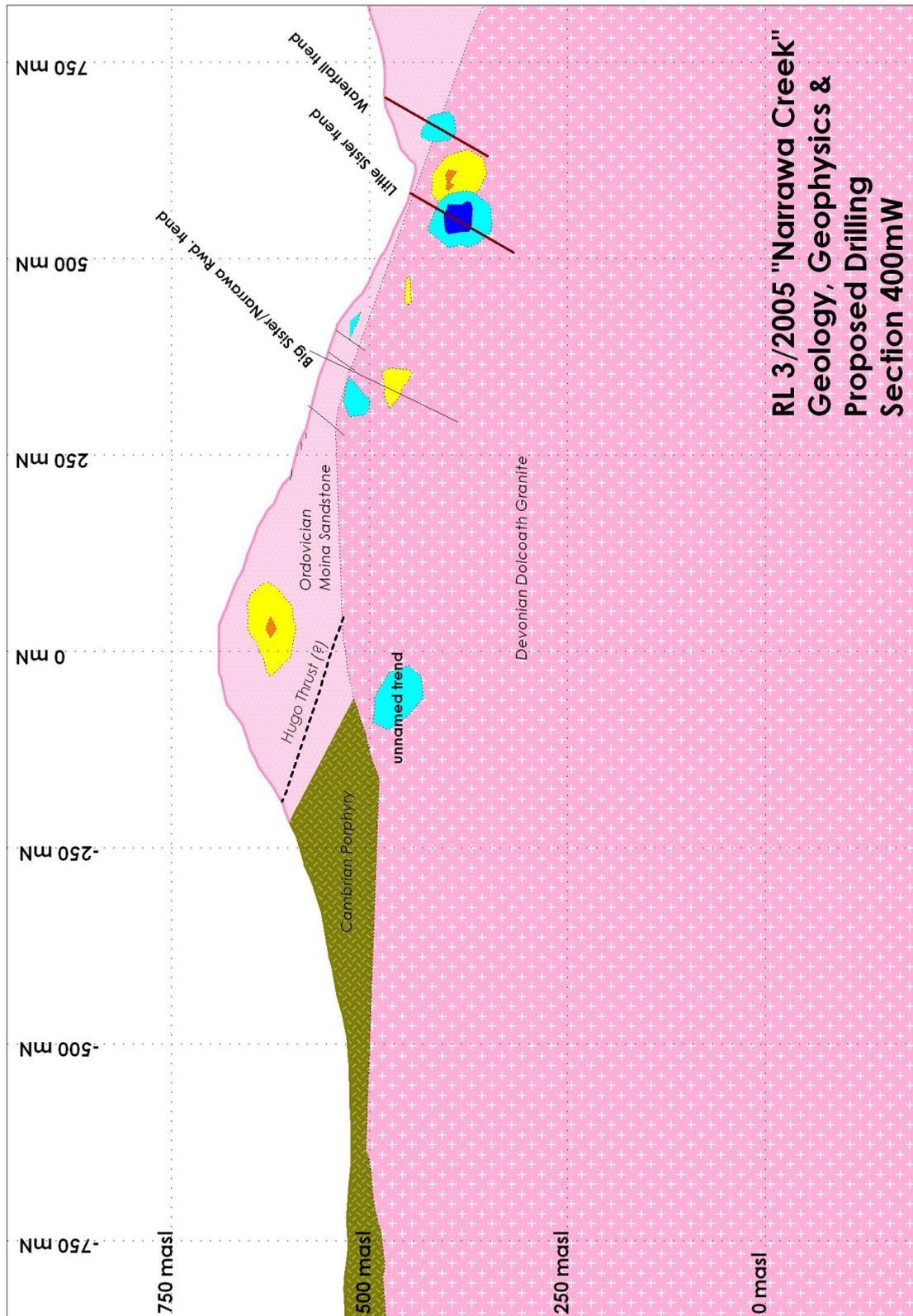


Higgs orebodies

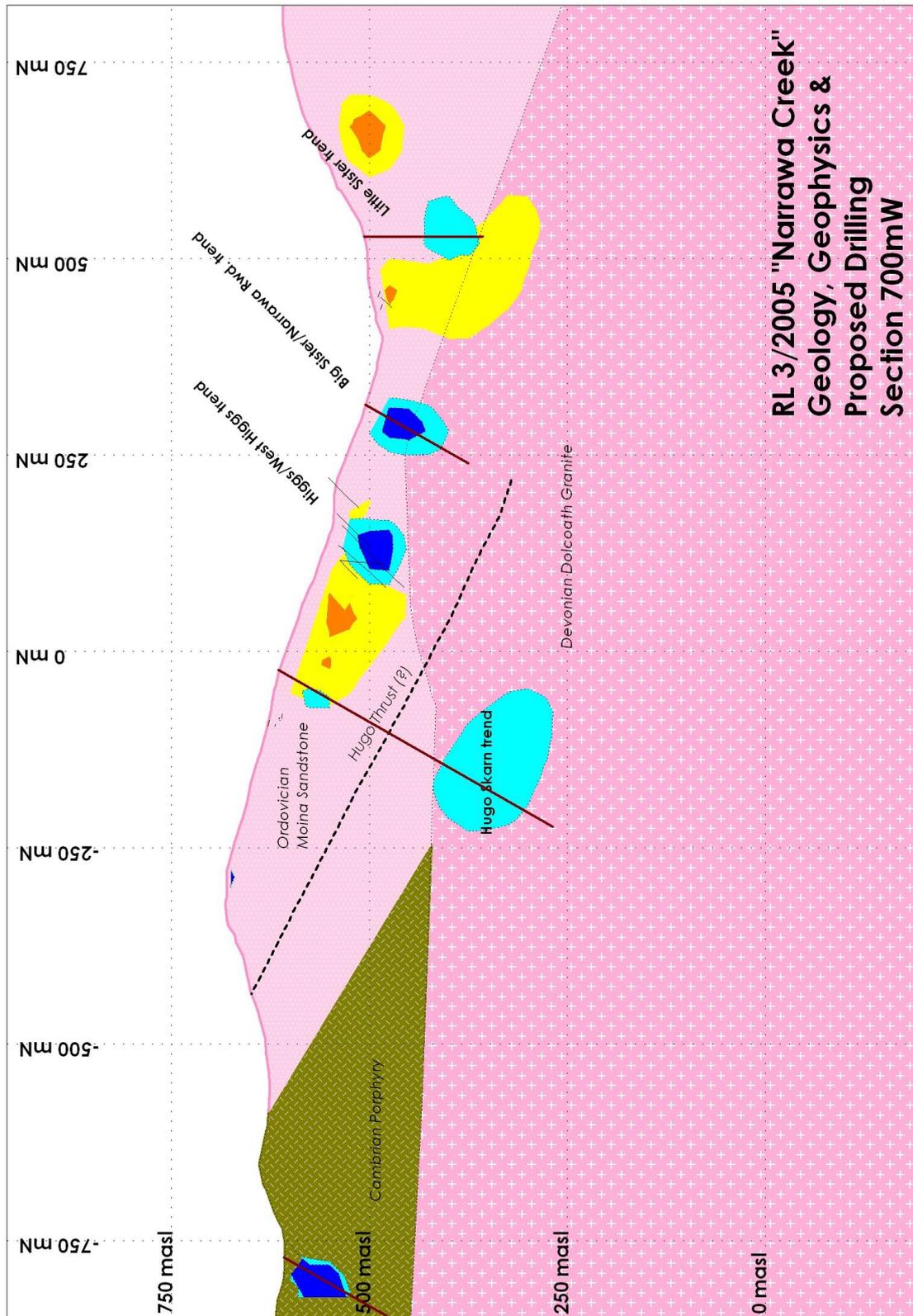
Existing drilling

Proposed drilling

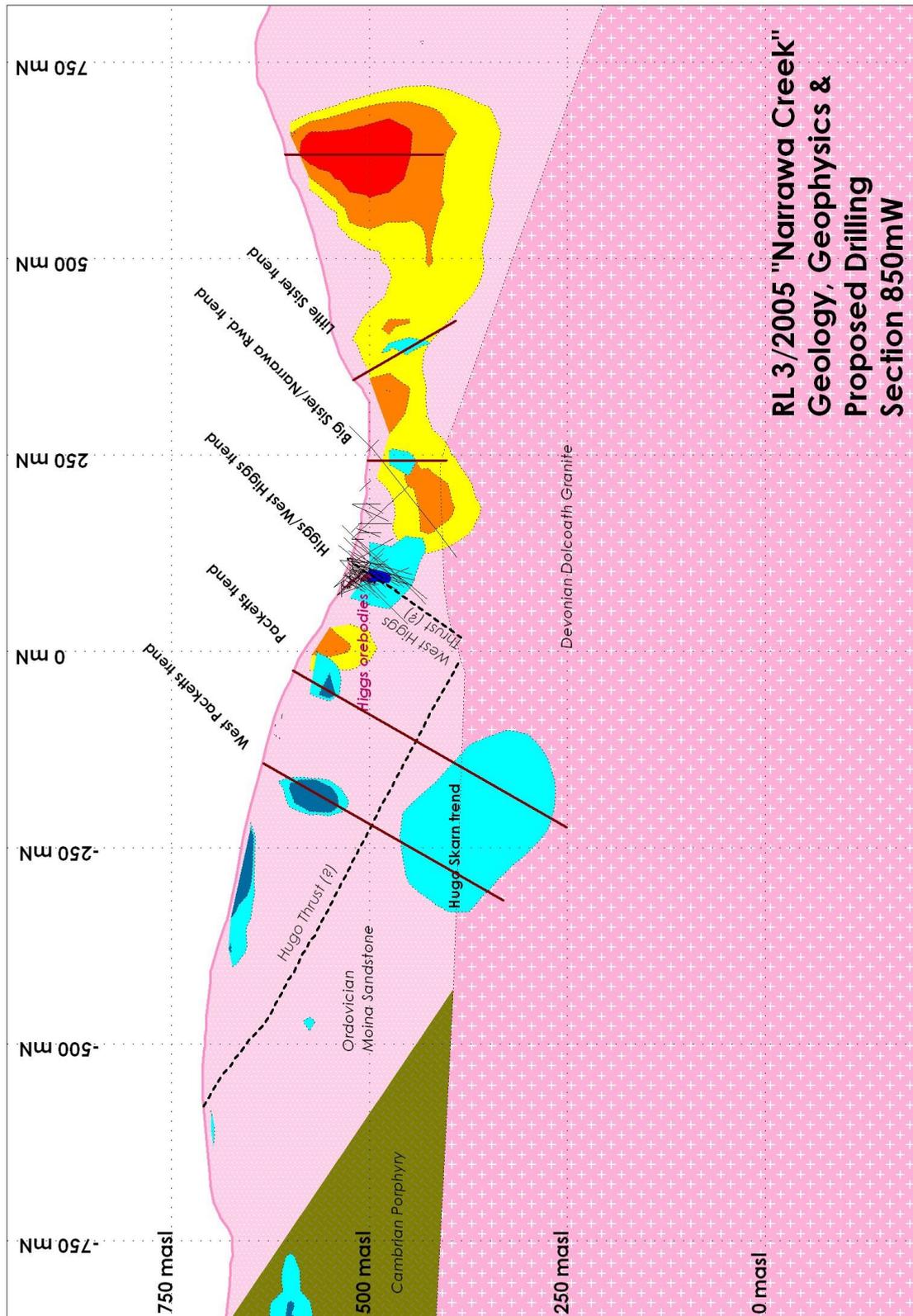
**Figure 4.2:** Legend for figures 4.3 to 4.9.



**Figure 4.3:** Section 400mW showing geology, geophysics (resistivity and chargeability), existing drill traces and proposed conceptual drillholes.

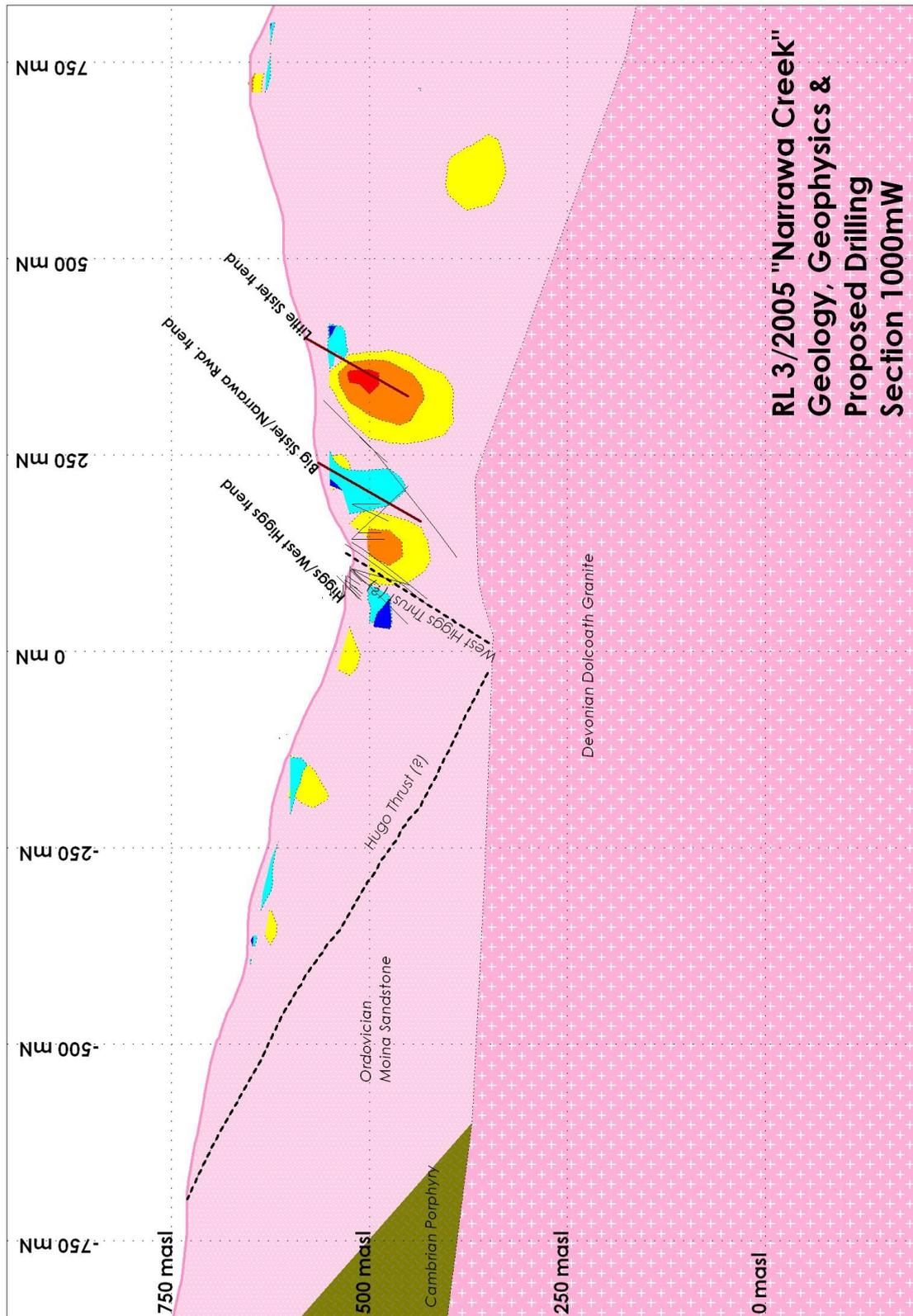


**Figure 4.4:** Section 700mW showing geology, geophysics (resistivity and chargeability), existing drill traces and proposed conceptual drillholes.

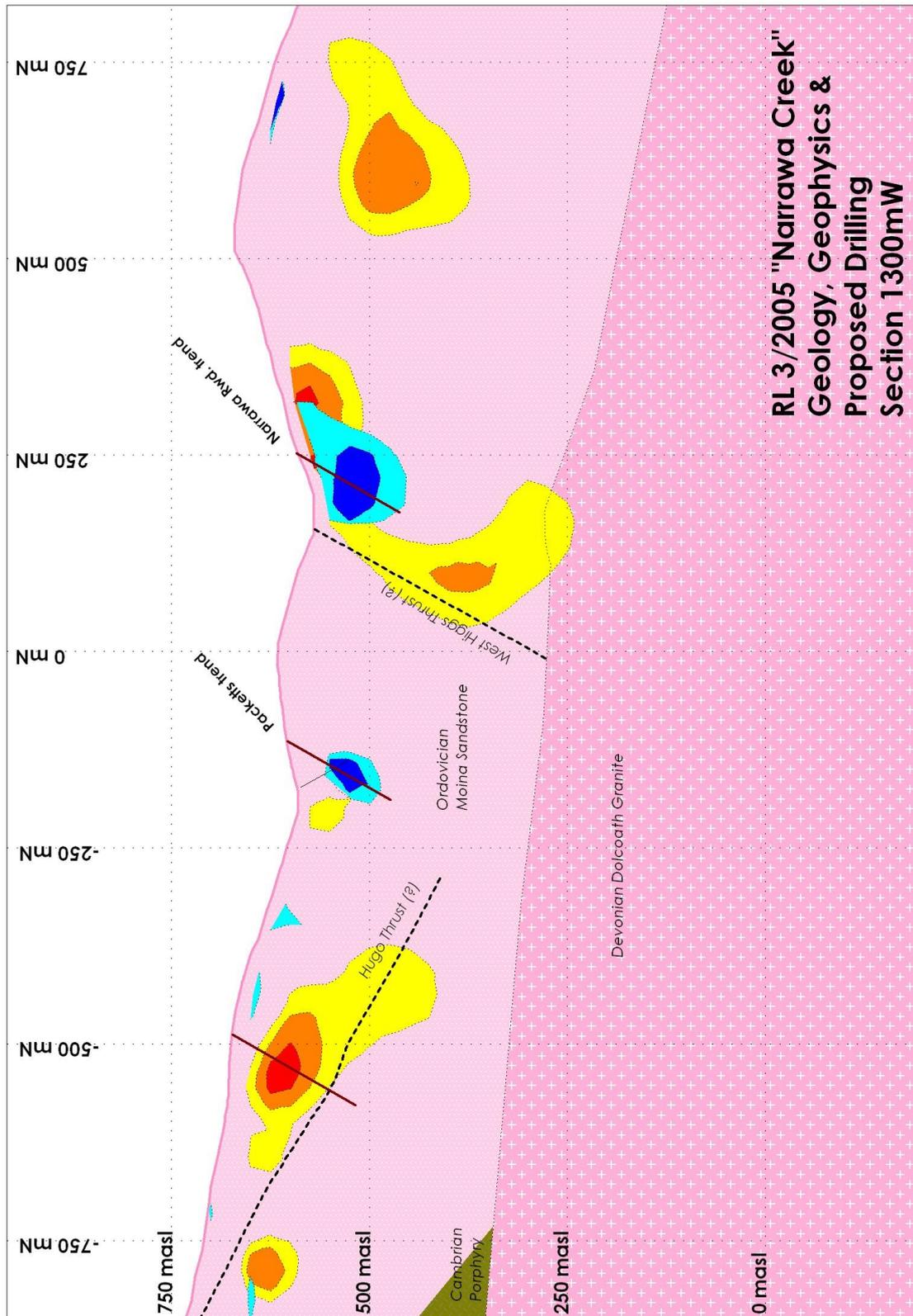


**RL 3/2005 "Narrawa Creek"  
Geology, Geophysics &  
Proposed Drilling  
Section 850mW**

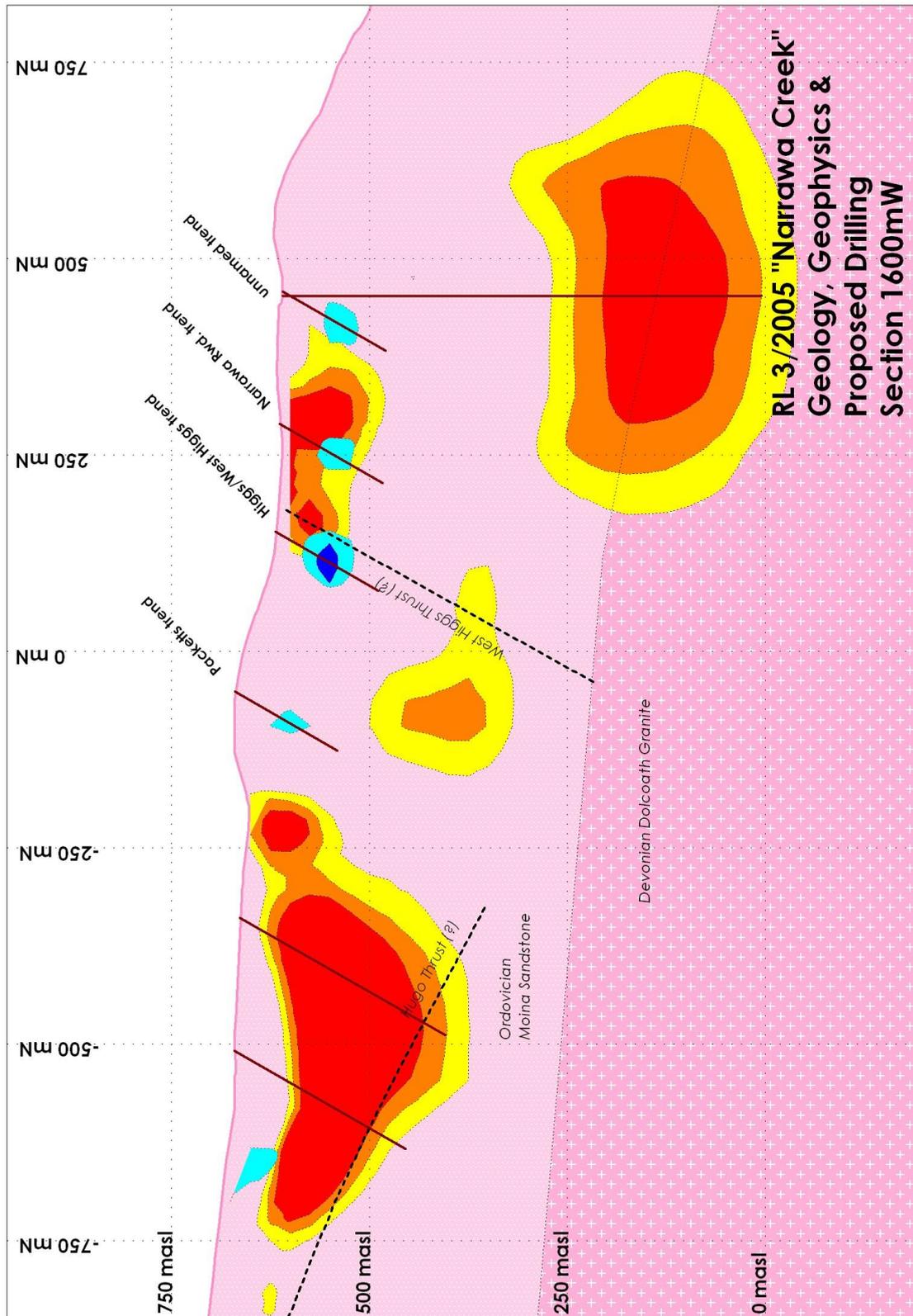
**Figure 4.5:** Section 850mW showing geology, geophysics (resistivity and chargeability), existing drill traces and proposed conceptual drillholes.



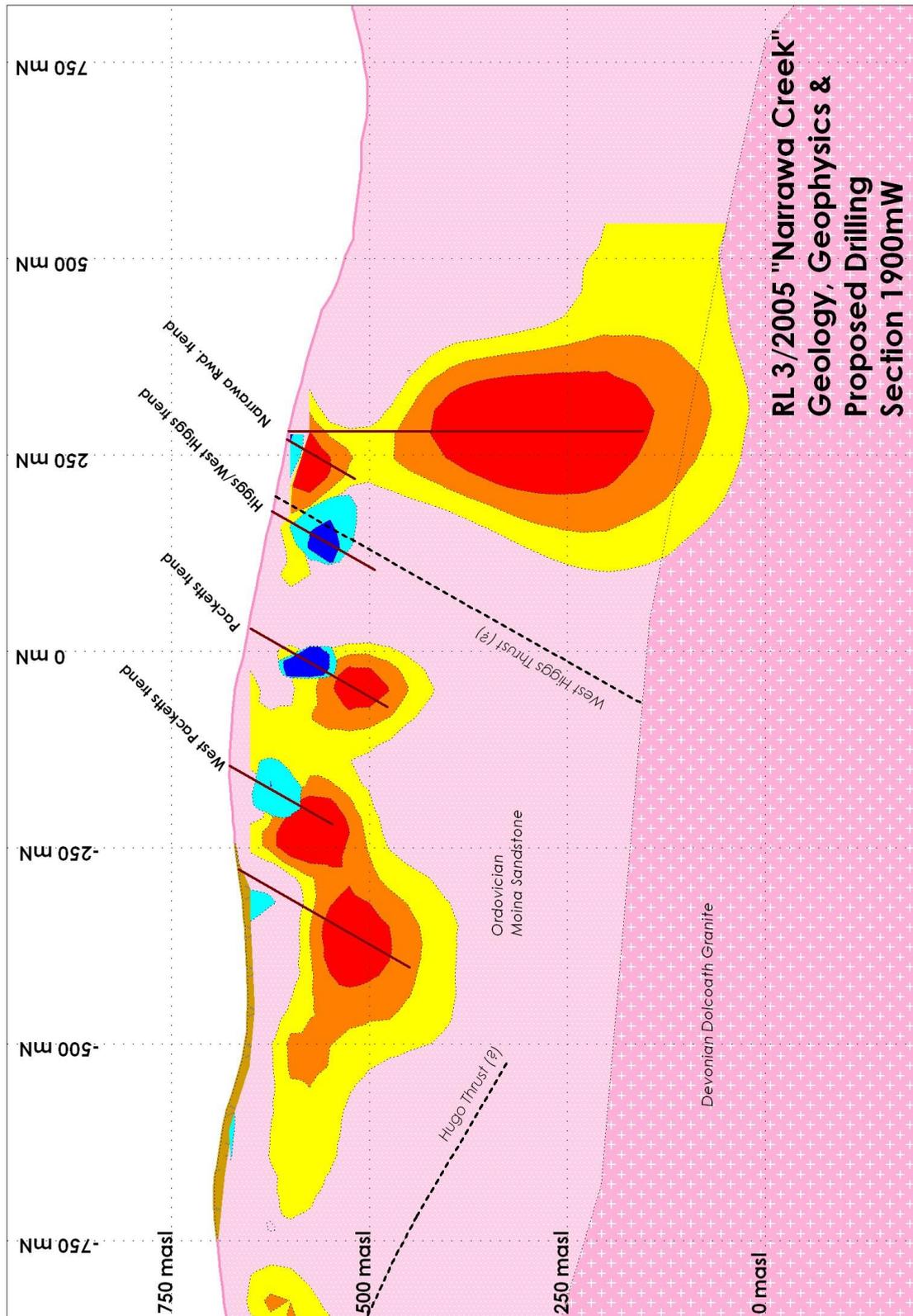
**Figure 4.6:** Section 1000mW showing geology, geophysics (resistivity and chargeability), existing drill traces and proposed conceptual drillholes.



**Figure 4.7:** Section 1300mW showing geology, geophysics (resistivity and chargeability), existing drill traces and proposed conceptual drillholes.



**Figure 4.8:** Section 1600mW showing geology, geophysics (resistivity and chargeability), existing drill traces and proposed conceptual drillholes.



**Figure 4.9:** Section 1900mW showing geology, geophysics (resistivity and chargeability), existing drill traces and proposed conceptual drillholes.

## 5.0 Conclusions

3D IP geophysics surveying by Torque Mining Pty Ltd over the Moina project has defined a number of highly prospective conductivity (= reverse of resistivity) anomalies in RL 3/2005 "Narrawa Creek" which trend in a northwesterly direction and define the Higgs – Bell Mt corridor.

These anomalies are considered to represent stratiform Pb+Zn+/-gold and/or (alternatively) gold alone in a pyrrhotite/pyrite association in beds of altered/mineralised favourably reactive/porous sediments. Drilling in the Higgs/West Higgs area has shown these to be at economic grades. There is excellent potential to extend the current Higgs resource by drilling these conductivity anomalies both along strike and parallel to the Higgs/West Higgs trend.

In addition the large chargeability anomalies may represent Intrusive Related Disseminated Gold deposits as per Morrison, Reed and Turner (2003). Occurrences of gold at up to economic grades in sandstone e.g. at Packetts and West Higgs support this model.

Conceptual drillholes are shown on the 300m spaced sections (and intermediate section 850mW). These proposed drillholes should be optimised where necessary by moving them along strike to target the central, higher tenor portions of the geophysical anomalies.

Drilling is warranted and proposed for the 2017/18 and 2018/19 years.

## **6.0 Environment**

No fieldwork was undertaken during the year. Natural regrowth of drill sites from previous drilling programmes continues satisfactorily.

## 7.0 References

- Askins, P. W. (1980) E.L. 7/74 Tasmania, Report on All Investigations, Tin Spur-Olivers Hill- Devonian Areas; Commonwealth Aluminium Corporation Ltd (TCR 80\_1430)
- Black, L. P.; McClenaghan, M. P.; Significance of Devonian–Carboniferous igneous activity in  
Korsch, R. Everard, J. L.; Tasmania as derived from U-Pb SHRIMP dating of zircon. Australian  
Foudoulis, C. (2005) Journal of Earth Sciences 52:807–829.
- Blake, F. (1937) Higgs Gold Mine, Narrawa Creek. Tas. Geol. Survey; Typewritten reports, 1937 (unpublished) UR1937\_088\_91
- Jack, R.H. (1961) Gold Mine, Narrawa Creek, Moina; Economic and General Geology TR5-102-104
- Jennings, I.B. (1958) The Round Mount District; Geological Survey Bulletin 45 (GSB45)
- Jennings, I. B. (1963) One Mile Geological Map Series.K/55-6-45. Middlesex. Explanatory Report Geological Survey Tasmania.
- Keid, H.G.W. (1947) The Sunrise Mine. Narrawa Creek, Moina, Tas. Geol. Survey; typewritten reports, 1947 (unpublished) (UR1947/125-135)
- MacDonald, G. Farrell, J. (2011). RL 3/2005 annual report on exploration activity. Unpub. Rep. for Frontier Resources Ltd.
- MacDonald, G. (2012) Annual Report on Exploration RL3/2005 – “Narrawa” April 2011 to April 2012. Unpublished report for Frontier Resources Ltd (RL032005\_201204)
- MacDonald, G. (2014) Combined annual reports for May 2012-April 2013 and May 2013 to April 2014. Unpublished report for Torque Mining Pty Ltd.
- MacDonald, G. (2015) Annual Report on Exploration RL3/2005 – “Narrawa” April 2014 to April 2015. Unpublished report for Torque Mining Pty Ltd. (RL032005\_201504)
- MacDonald, G. (2016) Annual Report on Exploration RL3/2005 – “Narrawa” April 2015 to April 2016. Unpublished report for Moina Gold Pty Ltd. (RL032005\_201604)
- Mueller, F. (2009) Narrawa Resource Estimate (in-house report, Geostats Pty Ltd)
- Morrison, K. C. Reed A. R. and Turner N. J. (2003) The Dolcoath Granite: A gold exploration target. Mineral Resources Tasmania Tasmanian Geological Survey Record 2003/16 (UR2003/16)
- Newnham, L. A. (1993) EL 20/1992 annual report on exploration activity. Unpub. Rep. for Goldstream NL. (TCR 93\_3484)
- Newnham, L. A. (1997) Summary Report Compiled upon Termination of Joint Venture Agreement - Moina Area (Hugo Skarn) - RL10/1988 Geotech

International Pty Ltd, Goldstream Mining NL, Newnham Exploration and Mining Services (TCR 04\_5043)

Purvis, J. G. (2000)

Second Progress Report – Dolcoath EL 37/97. J. G. Purvis and Associated Propriety Ltd.; Jervis, Tasmanian Company Report (TCR00\_4423).

Reid, A. M. (1919)

The mining fields of Moina, Mt Claude, and Lorinna; Geological Survey Bulletin 29 (GSB29)