

**Torque Mining Ltd
Combined Annual Reports on Exploration
RL3/2005 – “Narrawa”
May 2012 to April 2013 and
May 2013 to April 2014**

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ABSTRACT

Exploration for the two year period between May 2012 and April 2014 is detailed in this single report with Mineral Resources Tasmania's approval.

Work

Exploration work over this period consisted of;

- completion of a deeper DDH NC63 for 228.5m at the Three Sisters prospect,
- the compilation of historical underground sampling and descriptive work by government and mine geologists for the Higgs mine,
- drilling and assaying 8 holes i.e. NC64 to NC71 for 290.9 metres into the Higgs Au+Pb+Zn+Ag resource,
- drilling and (part) assaying 2 holes for 122.2 metres i.e. NC72 and NC73 into the West Higgs prospect,
- Pb isotope dating of Higgs mineralisation as part of a small CSIRO study of a total of 4 prospects in the overall Moina area.

Work was also conducted towards generating a new resource estimate for the Higgs resource.

Results

- DDH NC63 intersected visible WO_3 and Mo mineralisation in greisen veins within variably K-feldspar altered granite.
- The compilation of historical underground sampling in the now largely inaccessible Higgs mine revealed that the main (#3) lode mined in the workings had widths and grades including;
 - 2.43m @ 30.5g/t Au, 56.0g/t Ag, 3.5% Pb & 1.4% Zn,
 - 3.57m @ 17.9g/t Au, 41.5g/t Ag, 3.81% Pb & 1.92% Zn
 - 4.13m @ 6.47g/t Au, 28.9g/t Ag, 2.28% Pb & 1.77% Zn,
 - 3.5m @ 15.4g/t Au, 30.8g/t Ag, 2.12% Pb & 2.29% Zn, and
 - 5.0m @ 2.6g/t Au, 41.4g/t Ag, 3.11% Pb & 2.0% Zn.
- 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 (or 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 lode upper and lower. Better results were;
 - 0.75m @ 5.37g/t Au, 67g/t Ag, 5.7% Pb & 11.3% Zn (#1 lode) - NC65
 - 7.6m @ 0.72g/t Au, 41g/t Ag, 4.16% Pb & 4.01% Zn (main lode – upper and lower combined) - NC66
 - 3.1m @ 10.05g/t Au, 33.3g/t Ag, 3.25% Pb & 5.03% Zn (main lode – upper) - NC68
 - 7.2m @ 0.75g/t Au, 77.5g/t Ag, 7.16% Pb & 11.3% Zn (main lode - upper and lower combined) – NC70
 - 6m @ 0.56g/t Au, 62.7g/t Ag, 5.93% Pb & 9.44% Zn (main lode - lower and lower combined) - NC71
- At West Higgs Pb+Zn+Au+Ag mineralisation of Higgs style was intersected corresponding with the conductivity anomaly, confirming the interpretation that other sub-parallel conductivity anomalies in the area may also be due to economic sulphide mineralisation. Better results were;

- 2.65m @ 0.25g/t Au, 8.96g/t Ag, 0.63% Pb & 0.68% Zn – NC72
- 2.3m @ 2.09g/t Au, 29g/t Ag, 2.27% Pb & 1.8% Zn - NC73
- 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.

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Drill hole assays - Au	RL032005_201405_11_AppendixC_Au assays.xls
Drill hole assays - XRF	RL032005_201405_12_AppendixC_XRF assays.xls
QAQC – ALS	RL032005_201405_13_AppendixC_QAQC.xls
drillcore photos	RL032005_201405_14_AppendixC_drillcore photos.jpeg
drillcore photo index	RL032005_201405_15_AppendixC_drillcore photo index.xls

1.0 Introduction

1.1 Exploration Rationale

Torque Mining 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 2012-2014 period:

- Initially tested the margin of the Dolcoath Granite with its coincident anomalous magnetics, 3D IP conductivity and Au, W, Mo and Bi in soils with drill targets essentially open ended.
- Drilling then shifted to the Higgs Au+Pb+Zn+Ag prospect to obtain infill grade and width information and metallurgical samples between existing sampling and deeper drilling.
- Finally coincident anomalous Au in soils and 3D IP conductivity were drill tested at the West Higgs prospect looking for Higgs style mineralisation along strike across a fault.

Torque holds two small but Indicated Status resources in the district, one being the Narrawa (Higgs) Au+Zn+Pb+Ag resource centred on the old Higgs workings, the other being the Stormont Au+Bi resource on EL 42/2010 which has just been mined out by a BCD Resources/Torque Mining Ltd. JV..

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 Tabberrabberan 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.

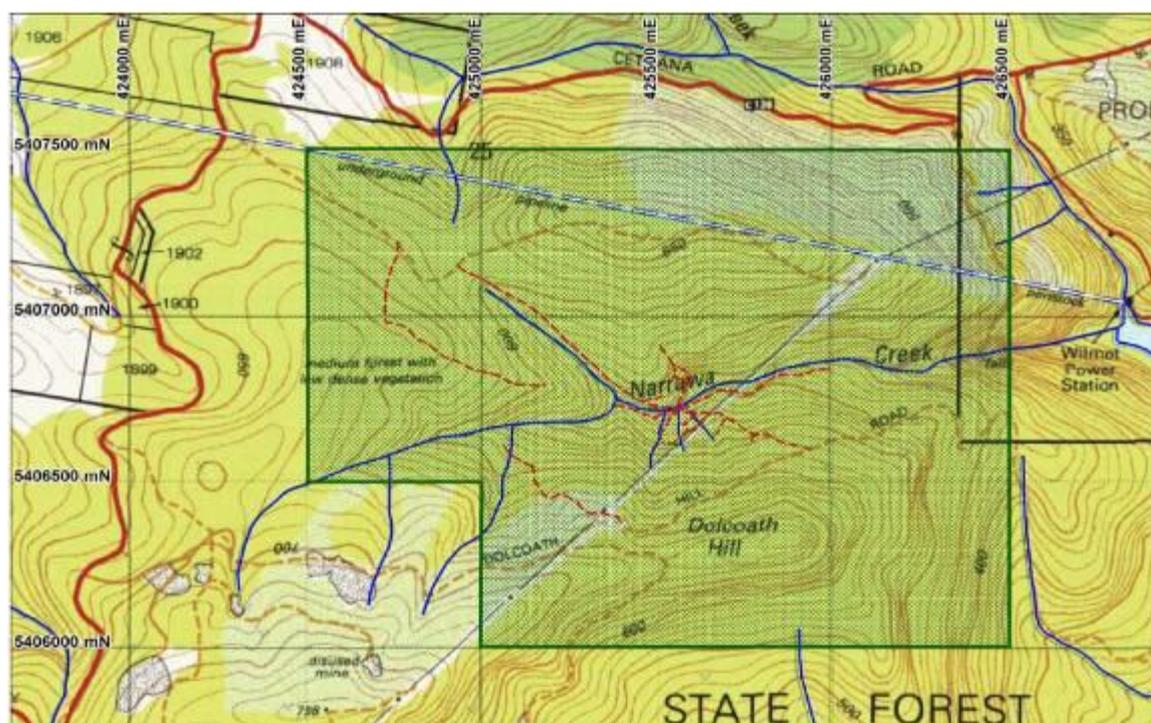


Figure 1.1: RL 3/2005 Narrawa licence outline topography, drainage and access. Map datum is AGD66 zone 55.

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 13th May, 2005. The License was transferred to Torque Mining Ltd on 4th May 2012. On 13th May 2013 the licence was renewed for a further two year period finishing on 13th May 2015.

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 19th 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

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).

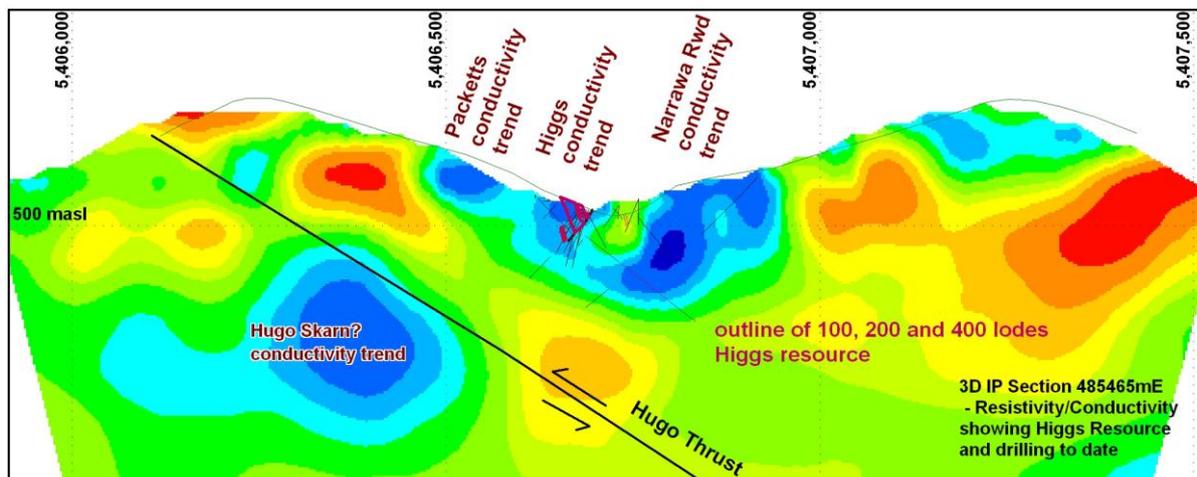


Figure 2.1: Large scale cross-section looking true west showing correspondence of Higgs resource (maroon outline in upper central figure) and resistivity low blue (= conductivity high). Note also Packetts and Narrawa Reward conductivity trends near surface and the Hugo Skarn conductivity anomaly (anomaly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

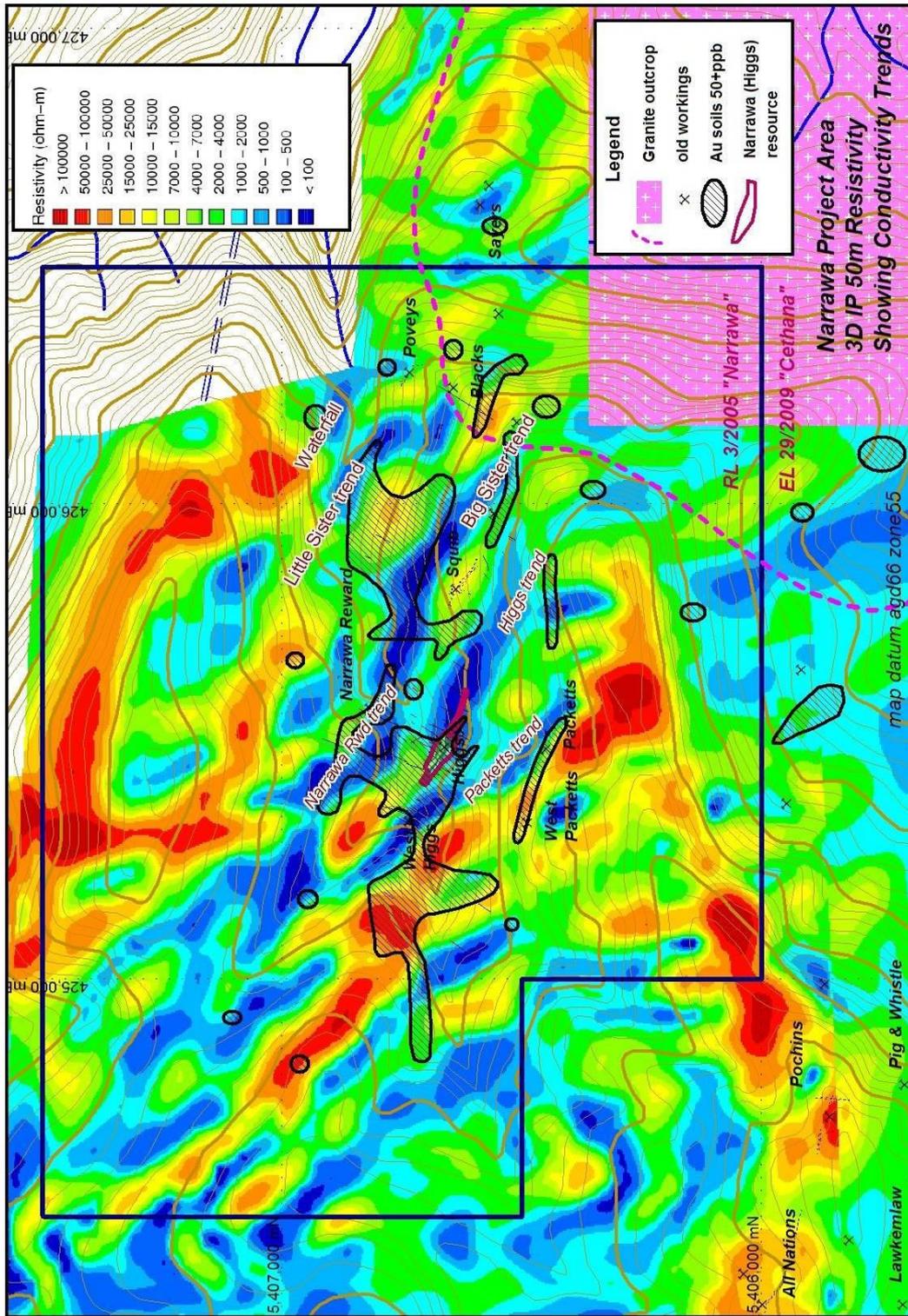


Figure 2.2: RL 3/2005 "Narrawa Creek" area showing 3D IP survey conductivity trends as defined by resistivity at 50m depth (closer spaced Narrawa Creek grid data). The Higgs anomaly swings north-northwesterly through the West Higgs workings (and then heads towards the Bell Mount alluvial goldfield). 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.

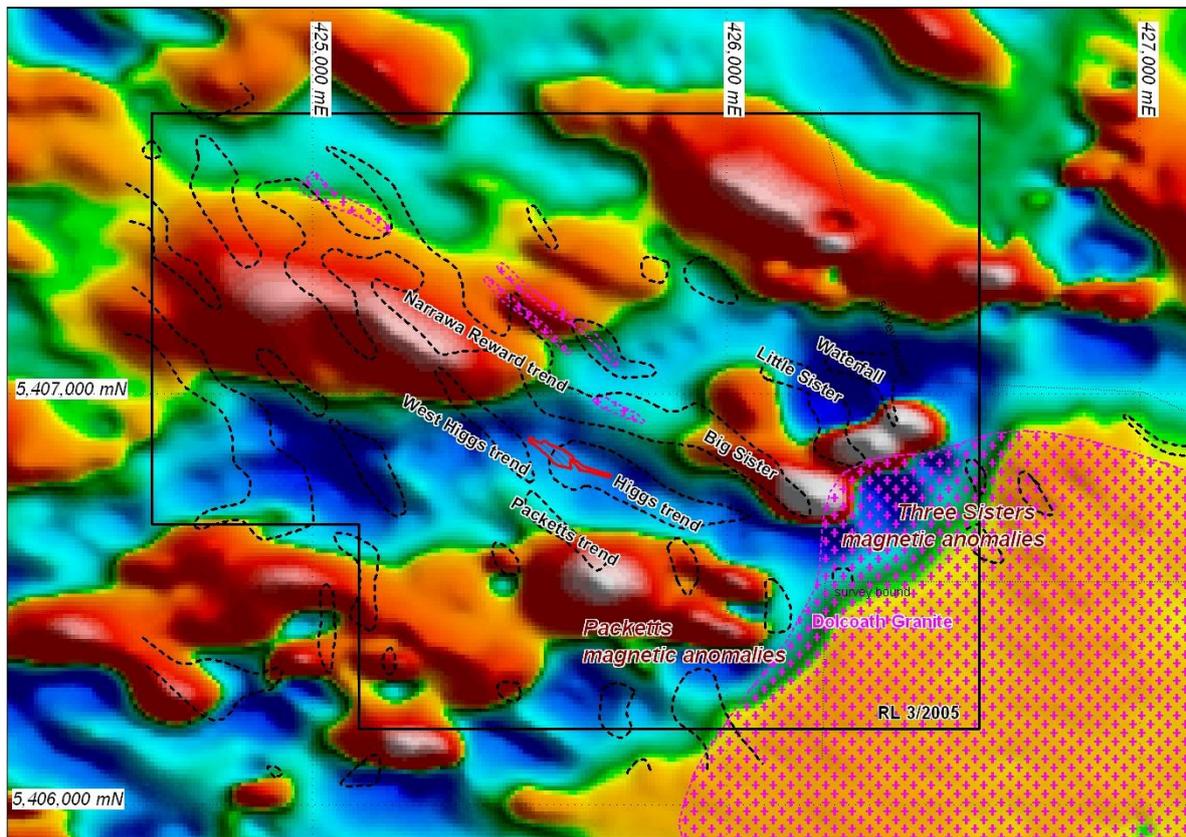


Figure 2.3: RL 3/2005 “Narrawa Creek” area showing 3D IP survey conductivity trends (black dashed lines with black names) as defined by resistivity at 50m depth (closer spaced Narrawa Creek grid data) superimposed on Jervis helimagnetics 2VD RTP colour image showing the Three Sisters magnetic anomalies 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 Resource infill

Four holes 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.

NC54, NC55 and NC56 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.

NC56 was drilled by the Poltock rig beneath the old open stoping in an area of relative low drill intercept density. Core recovery was excellent throughout. The hole intersected the 100 lode and 200 lode with the 400 lode also represented. Significant intervals included:

- 6.37m to 7.25m, 0.88m @ 3.17g/t Au, 1.79% Pb, 1.57% Zn and 18.1g/t Ag
- 18.0m to 21.0m, 3.0m @ 6.4g/t Au, 2.72% Pb, 2.51% Zn and 21.8g/t Ag
- 23.75m to 27.5m, 3.75m @ 0.13g/t Au, 2.03% Pb, 2.28% Zn and 19.9g/t Ag
- 32.4m to 32.9m, 0.5m @ 0.04g/t Au, 1.03% Pb, 1.38% Zn and 10.1g/t Ag
- 44.0m to 47.9m, 3.9m @ 0.03g/t Au, 0.72% Pb, 0.95% Zn and 8.9g/t Ag

NC57 was drilled to test the 300 lode. The hole intersected;

- 21.6m to 25.5m, 3.9m @ 0.11g/t Au, 1.37% Pb, 3.08% Zn and 62.0g/t Ag
 - inc.; 21.6m to 23.6m, 2.0m @ 0.19g/t Au, 2.26% Pb, 5.33% Zn and 105.5g/t Ag
- 53.0m to 54.4m, 1.4m @ 0.02g/t Au, 0.88% Pb, 0.98% Zn and 12.7g/t Ag
- 64.5m to 65.0m, 0.5m @ 0.5g/t Au, 0.84% Pb, 0.89% Zn and 15.4g/t Ag

Two vertical holes, NC58 and NC59 were drilled to further test a shallowly north dipping pyrrhotite and gold lens, previously called the “666” lode and now renamed the 500 lode.

NC58 was targeted to test this zone 20m west of NC37. Best results were 1.7m to 4.7m, 3.0m @ 0.96g/t Au. NC59 was targeted to test this lens 30m east of NC37. Results were all low.

2.2.5 Three Sisters

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 magnetics 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

2.2.6 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.

At Packetts and West Packetts workings consist of shallow trenches and open-cutting. The workings were pursuing disseminated gold in weathered Moina Sandstone.

29 samples for 53.8m were collected in 9 continuous channel samples named PCH1 to PCH9.

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 35 channel samples for 72.3m 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%.

Other results were also disappointing with Mo to 449, 278 and 271ppm, Bi to 402, 361 and 302ppm, Sn to 125, 82 and 80ppm.

In addition 2 x 2m channel samples were collected separately.

These assayed <0.01 and 0.02g/t Au, 77.2 and 34.4ppm Mo, 311 and 203ppm Sn, 290 and 313ppm Bi and 301 and 206ppm W

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

Bi to 313, 305 and 290ppm, Mo to 11.7, 10.6 and 7.5ppm, Sn 457, 311 and 293ppm and 25, 23 and 19ppm W. Significantly As is also anomalous throughout the channels with 2724, 2235, 2066, 1520 and 1381ppm As.

3.0 Exploration completed during the report period

3.1 Introduction

Exploration for the two year period between May 2012 and April 2014 is detailed in this single report with Mineral Resources Tasmania's approval.

Exploration work over this period consisted of

- Compilation of historical underground sampling and descriptive work by government and mine geologists for the Higgs prospect.
- Completion of a deeper DDH NC63 for 228.5m into the Three Sisters prospect. Assay results from the lower part of NC62 are also reported herein.
- Drilling and assaying 8 holes i.e. NC64 to NC71 for 290.9 metres into the Higgs Au+Pb+Zn+Ag resource.
- Drilling and (part) assaying 2 holes for 122.2 metres i.e. NC72 and NC73 into the West Higgs prospect along strike from Higgs.
- Pb isotope dating of Higgs mineralisation as part of a small CSIRO study of a total of 4 prospects in the overall Moina area.
- Work was also conducted towards generating a new resource estimate for the Higgs resource - as yet incomplete.

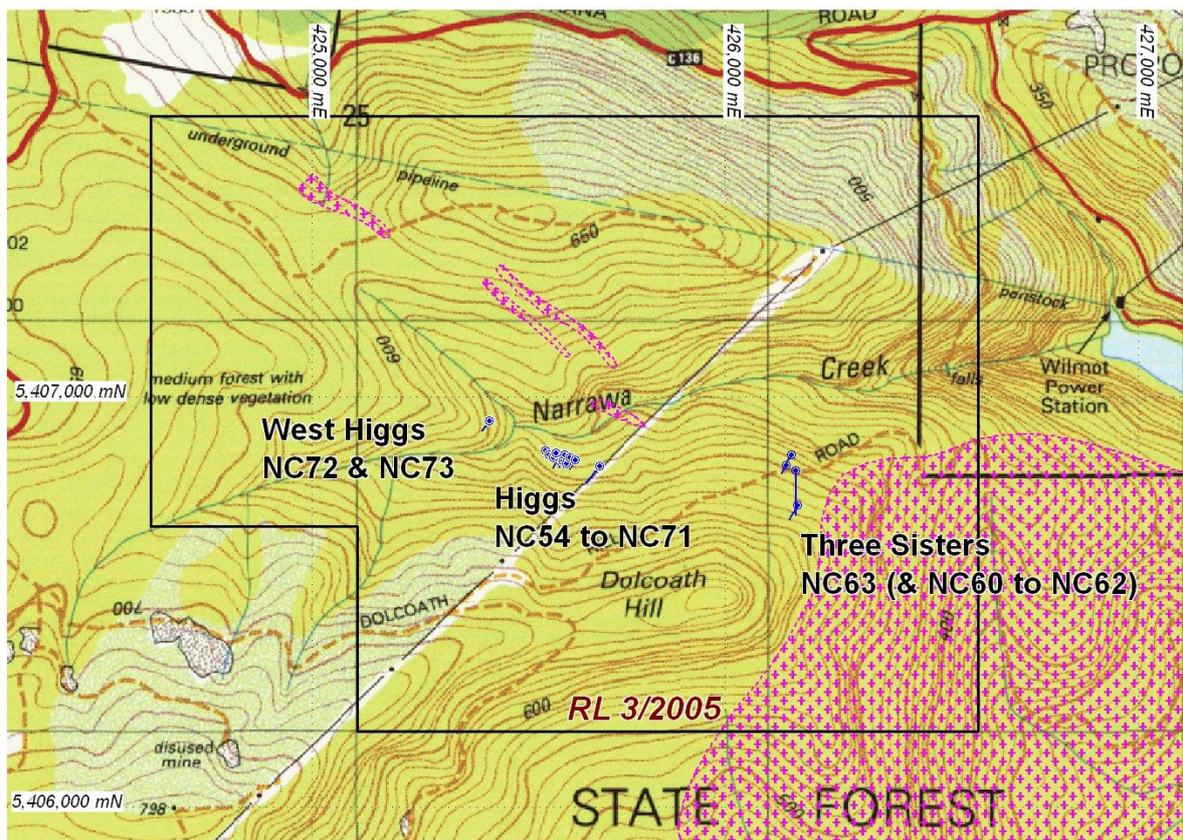


Figure 3.1: Summary of work done 2012-14. Drilling at Higgs, West Higgs and Three Sisters, Pb isotopes from Higgs.

3.2 Historical research – Higgs prospect

The Higgs Mine (also known as the Sunbeam Mine) has been visited and 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 Blake and Keid visited the mine whilst in operation and provide details of its underground workings, workings now largely inaccessible. Keid also details systematic underground channel and grab sampling undertaken by both he and the mine manager.

These channel samples were not considered in the 2009 resource estimation work yet potentially add significantly to the knowledge of the structure and grade of the deposit, particularly in the usable form they are presented in.

Further channel sampling also not included in the resource estimate was undertaken in 1986/87 by GFEL (Roberts, 1987).

These four reports have been studied, relevant results extracted and included in the current database ready for inclusion in a new resource estimate yet to be completed. An end to this work was to see if there is a higher grade zone within Higgs which might be amenable to smaller scale underground mining, perhaps on tribute.

A separate report was essentially completed but is included herein in its entirety in section 4.1. These results are also shown on sections in figures 4.20 to 4.24.

3.3 Drilling

3.3.1 Introduction

Drilling was carried out at three prospects, Three Sisters, Higgs and West Higgs, with a total of 11 holes for 629.1m. Details of holes are listed in table 3.1.

Assaying for gold was done by ALS, Burnie, whilst all other elements were assayed by Torque Mining Ltd.'s desktop XRF. This is detailed in 3.3.5 below.

Table 3.1: 2012-14 drill hole details

Hole_id	AGD66 east	AGD66 north	RL	Depth (m)	Prospect	Azimuth (true)	Dip
NC62	426064	5406550	577.384	60.7	Three Sisters	213	-50
NC63	426060	5406635	575	216	Three Sisters	180	-60
NC64	425496.8	5406660.7	532.4	34.75	Higgs	213	-55
NC65	425504.1	5406655.3	530.5	27.5	Higgs	208	-55
NC66	425504	5406655	530.4	44.25	Higgs	276	-60
NC67	425472.05	5406668.4	531	29.6	Higgs	213	-65
NC68	425478.06	5406680.6	524	33.9	Higgs	213	-60
NC69	425500	5406675	526	42.75	Higgs	213	-45
NC70	425513	5406669	527	38.15	Higgs	213	-47
NC71	425525.94	5406662.5	526	40	Higgs	213	-47
NC72	425317.61	5406757.4	551	47.15	West Higgs	217	-50
NC73	425317.61	5406757.4	551	75.05	West Higgs	217	-82.5

3.3.2 Three Sisters

At Three Sisters a single DDH, NC63, was drilled to a depth of 228.5m due south (true north) using the skid mounted "RB37" rig to test the source of the bigger of the three magnetic anomalies referred to as the Three Sisters, in an area of anomalous Au, Bi, Mo and W. Core was assayed for Au

by fire assay by ALS, Burnie, and assayed for a range of other elements including, Pb and Zn by Torque's own in-house XRF (see assaying section below).

Assays for the lower half of NC62, also drilled at the Three Sisters prospect, and reported in the 2011-12 annual report were received and have been included in this report.

3.3.3 Higgs

The previous Higgs resource (Muller, 2009) was based on a number of diamond drillholes collared largely from the base of the hill near the creek, and a significantly lesser number of surface channel samples taken from those old workings which are accessible, with a consistent vertical gap in sampling of 60m RL on each section.

The drilling undertaken into the Higgs resource was intended to address this deficiency with holes planned for each 12.5m spaced section between 5887.5mE and 5962.5mE (Higgs drilling grid).

All holes were drilled with the Poltock man-portable diamond drill rig with core size TT56 throughout except for the collars of the holes which is BQ until solid rock is met, usually less than 1 metre.

Three holes, NC54 (section 5887.5mE), NC55 (5900mE) and NC56 (5925mE), were completed in early 2012 (with only NC56 assayed at the time, MacDonald, 2012) before drilling was reprioritised elsewhere in the district.

NC54 and NC55 core recovery was not considered to be good enough to warrant sampling and inclusion in any resource modelling.

Drilling (8 holes for 290.9m) at Higgs recommenced 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.

Drill section lines are 030° - 210° (true north) oriented i.e. perpendicular to the strike of the Higgs lode.

The drilling grid is represented on the ground by the 100mN baseline which was surveyed by Len McKenzie (of Burnie), a certified surveyor, using differential GPS.

Hole collar positions were tape and compass surveyed from the baseline pegs.

All holes were drilled nominally to 210° (true north). Hole collar azimuths post drilling were surveyed using a Suunto handheld compass. No downhole surveying was carried out as the Poltock rig does not have wireline capacity to allow use of the BQ tool easily. Given the short length of the holes and unlikelihood of any significant swing or lift/drop this is considered reasonable.

Drilling feed pressure is applied by hand by means of a chain block apparatus and the TT56 rods turn with low rotation speed, ideal drilling for straight holes.

Holes were drilled on sections

- 5912.5mE – NC67 and NC68 (figure 4.20)
- 5937.5mE - NC64 and NC69 (figure 4.22)
- 5950mE - NC65 and NC70 (figure 4.23)
- 5962.5mE - NC71 (figure 4.24).

Core was diamond saw cut on lithological boundaries to an ideal nominal sample length of 1m. Samples were assayed for Au by ALS, Burnie, using fire assay 30g charge. One standard per 25 samples was also submitted. All remaining assaying was carried out in-house using Torque Ming Ltd.'s own desktop XRF.

3.3.4 West Higgs

Two holes, NC72 and 73, for 122.2m's were drilled at the West Higgs prospect again utilising the Poltock man-portable rig. Holes were targeted below GFEL (Roberts, 1987) surface channel samples including 16.8m @ 8.5g/t Au and 18.7m @ 6.3g/t Au and extended at depth to intercept a conductivity anomaly defined by the 3D IP survey.

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

3.3.5 Assaying

Core was not assayed ongoing with drilling as a capital raising was in the offing and results would have required rewriting the prospectus.

Some months after completion of drilling significantly visually mineralised sections were assayed for Au by ALS, Burnie, and by Torque's own desktop XRF analyser for a range of other elements.

The accuracy of the in-house XRF results requires some qualification with the methodology as follows.

Samples were split using diamond saw. Half-core samples were sent to ALS in Burnie for crushing and pulverising to generate a pulp. One split of the pulp was analysed for Au (gold) by ALS in Burnie using fire assay with a 30g charge. The other split was returned to Torque who analysed the pulp using Torque Mining Ltd.'s own desktop XRF analyser.

Samples were analysed through the brown paper bag in which they were returned. This generates a raw assay for the sample; however, this raw value is not absolute and requires a form of calibration to determine a relatively accurate value.

This is achieved by analysing a part of the total sample population for the relevant elements using more classical methods e.g. ICP-MS/OES (by commercial laboratory) and comparing these analyses with the XRF generated numbers.

Graphing one method's analyses against the other's i.e. as an xy graph, hopefully generating a linear equation with a high R2 (correlation coefficient) value.

These calibration parameters can then be applied to all other raw XRF assays to generate an adjusted assay value.

Torque did not assay any drillcore samples separately through a commercial laboratory. Torque had already generated calibration parameters for Pb and Zn when assaying the regional soil survey, and for Ag when assaying Stormont drillcore.

Calibration parameters used are listed in Table 3.2.

Table 3.2 Calibration parameters used in Pb, Zn and Ag analysis.

Narrawa XRF adjusted values			
Element	Equation used	R2	Source of equation
Pb	$y = 1.2693x - 0.0732$	0.7983	Moina soils
Zn	$y = 1.6397x + 4.7816$	0.9452	Moina soils
Ag	$y = 1.1884x + 2.4521$	0.7444	Stormont core

3.4 Lead isotope age dating

Six samples of galena bearing core or rock, or sample pulps with elevated lead 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. Further samples were collected from Round Hill in EL 29/2009, the Stormont resource in EL 42/2010, and just south of EL 29/2009 at Olivers Hill. Samples are listed in table 3.3.

Table 3.3 Lead Isotope sample locations/descriptions		
Sample No.	Prospect	Description
NC69 23.25m - 23.45m	Higgs	visible galena in drillcore
NC70 22.8m - 22.9m	Higgs	visible galena in drillcore
OH3 9.5m	Olivers Hill (sth. of Tin Spur)	visible galena in drillcore
Round Mtn.	Round Mountain	outcropping galena
Stormont 9393	Stormont	Pb elevated pulps 2529ppm
Stormont 9408	Stormont	Pb elevated pulps 3376ppm

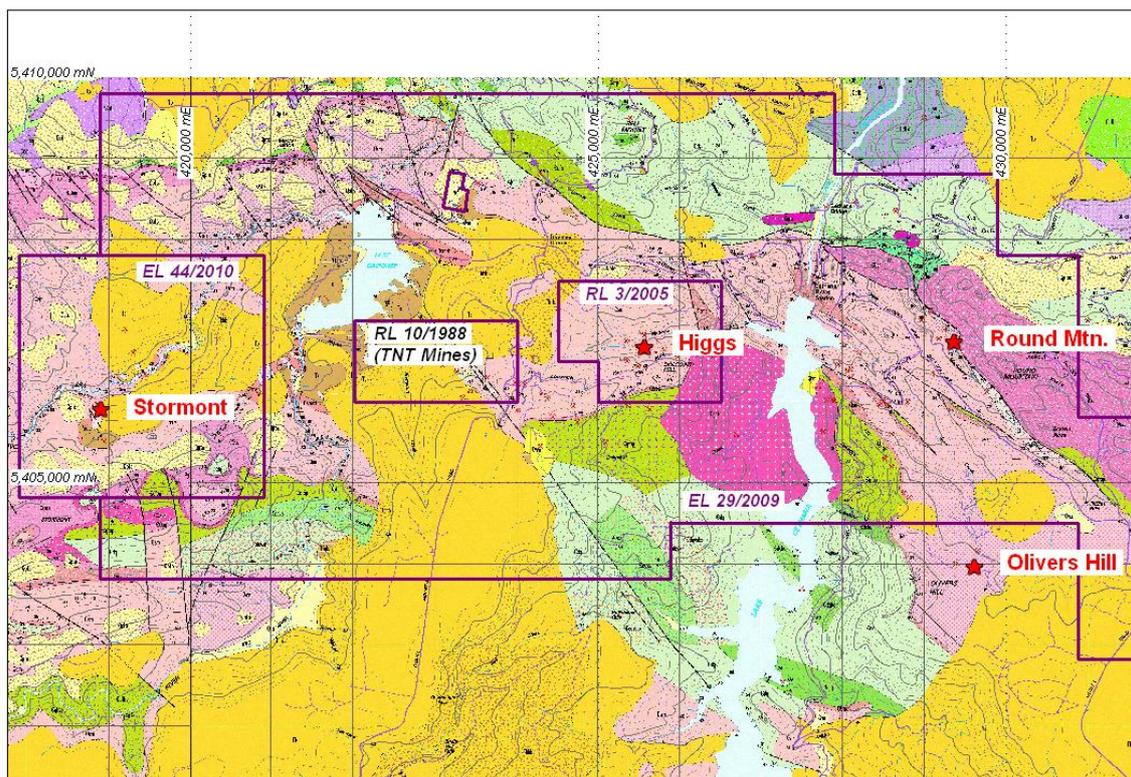


Figure 3.2: Location of prospects from which lead isotope samples have been collected.

4.0 Discussion of Results

4.1 Historical research and compilation

4.1.1 Mining history

The Higgs Mine has 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. The following is taken from Jack (1961):

"Gold was first discovered in the area by T. Bessell and C. L. Stewart in 1893 (Jack, 1961). The Higgs Mine was discovered in 1934 by A.H. Higgs.

A. H. Higgs commenced mining in 1934 and production was continued intermittently until 1947. Since then the mine has been idle. The area has been known as "Higgs' Mine" and "The Sunrise Mine" and has been reported on by Blake (1937) and Keid (1947) ...

(and) ... it is estimated that 1000 ozs. of gold have been recovered since then both by underground mining and surface sluicing methods" (Jack, 1961).

The Higgs mine may also have been known previously as the Squib Gold mine and the area was the location of the mill of the Squib W-Mo mine (upslope to the southeast). Some minor surface workings were conducted in 1960-61 at the western of the current resource (Jack, 1961) but at the time of Jack's visit in 1961 the underground workings had mainly collapsed (Jack, 1961).

Blake (1937) says that gold was first discovered in the area by the Narrawa Prospecting Assn. who discovered the Narrawa Reward prospect

"In 1934, A.H. Higgs, while sluicing detrital material for gold on the south banks of Narrawa Creek, some ten chains upstream from Narrawa Reward workings, found that gold was contained in certain oxidised quartzite beds and subsequently a miniature battery was erected to test the deposit."

"The Ore Bodies:

At least three ore bodies have distinguished on the property but only one has been developed to any extent. The primary lodes consist of impregnations and partial replacement of quartzite beds with sulphidic minerals in a fine state of division.

Galena is the chief component but pyrite, arsenopyrite and chalcopyrite also occur in order of decreasing abundance.

Small quartz veinlets are minor occurrences in association with the lode channels and where present trend with the bedding planes of the strata.

The ore is auriferous and in the worked portion of the main lode (chiefly oxidised) ranges from 1 to 9 dwt. of gold per ton, and averages between three and four dwt. of gold per ton of ore.

An irregular zone of oxidation extends from surface to a known maximum depth of 60 feet, in which fine particles of free gold are visible in places through quartzites stained by iron oxides."

"Development:

The workings consist of a lower adit crosscut, bearing 182 degrees for 126 feet (*Nb: this length is not consistent with either Keid in text and Blake, Keid and Jack on plan where the length is more like 85'*), from which drives extend 22 feet northwesterly and 36 feet to the southeast along the course of main lode.

For the first 28 feet of the latter stoping has been carried upwards 60 feet to surface.

Disseminated galena, pyrite etc. extends over a width of 10 feet of quartzites across the southeastern face and is also present with a width of 6 feet in the floor at the northeastern end of drive. Over the remainder of the drive and stopes the orebody is represented by oxidised quartzites.

Two minor lodes of similar character to the main orebody, cross the adit at 12 feet and 35 feet respectively from the portal. These have widths of approximately 3 feet in either instance and carry finely disseminated galena and pyrite with small amounts of gold. They again appear to be exposed in two small cuts, half a chain apart, on the west side of a small creek 1¼ chains further to the south-east and below the mouth of the upper adit."

"Milling:

The mill in operation at present contains a five head stamp batter with 200 lb. heads falling at the rate of 100 drops per minute. The plant is driven by hydro-electric power generated on the property - 4 to 5 horse power being produced from a 60 feet head pressure of water. In dry periods when insufficient water is available the plant is operated by means of a 6 to 7 horse power diesel engine. The battery crushes about half a ton of ore per hour and has handled approximately 1118 tons to date for a recovery of 188t oz. of gold."

"Production and Ore Reserves:

Gold production commenced about November 1934 and up till June 1935 approximately 43 oz. of fine gold was obtained by sluicing detrital material.

Milling was started on a miniature scale with a small hand constructed battery on 28th August, 1935, and continued until 16th September, 1936, when the present battery was put into operation.

The total recorded production from all stopes up to the end of June, 1937, is ... 371 .73oz."

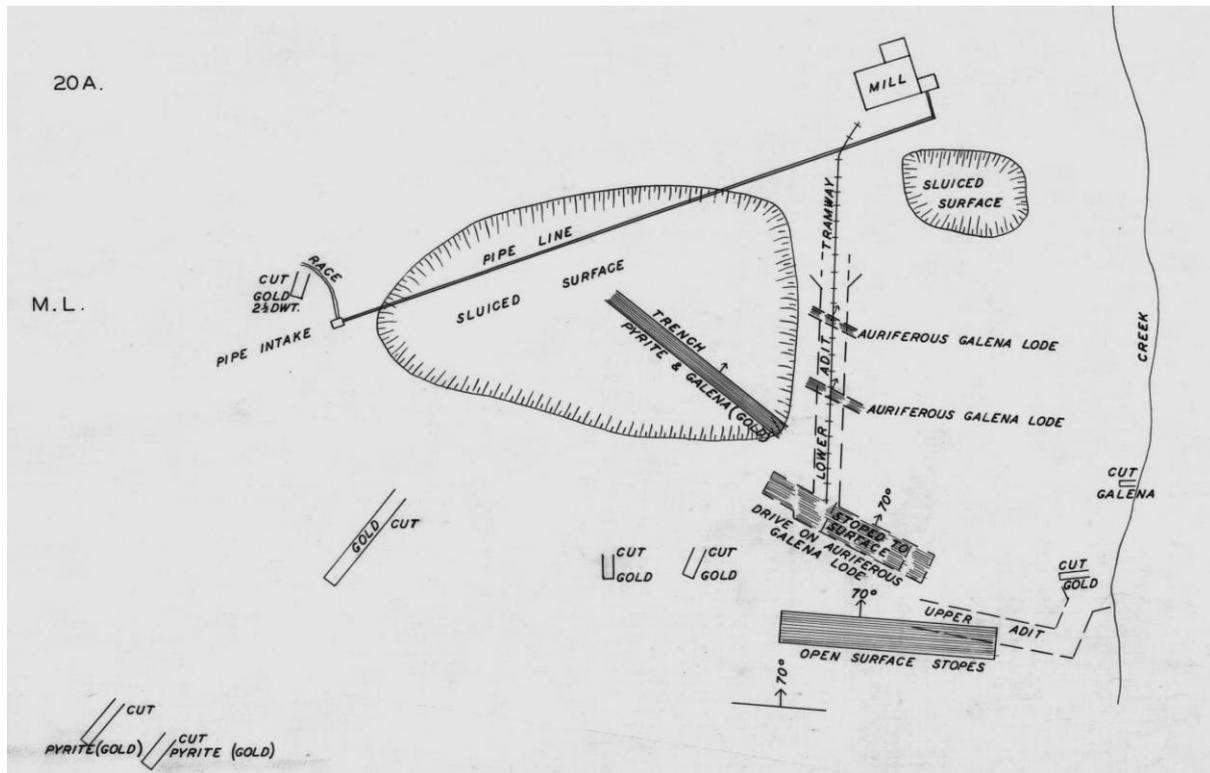


Figure 4.2: Close-up of part of plan 714 (Blake, 1937) showing Higgs mine workings

Keid (1947) visited the mine on behalf of the then mine owner who was seeking assistance developing the mine and reported the following:

"During the ten years of operation, the mine was developed to its present state. The workings consist of a crosscut adit driven south to cut the lode at approximately 190 feet (*Nb: again this length is not consistent with other lengths in text or on plans*) from the portal. Two small veins 13 feet and 37 feet from the portal were cut in driving the adit and these have been opened in an easterly direction for 10 feet and 7 feet respectively. In the main workings a level has been driven towards the east for a distance of 70 feet and a section of the lode has been stoped to surface with stopes lengthening to about 150 feet as the surface is approached. In the main workings the lode varies to 12 feet with fairly well developed hanging and foot walls. To the east of the main adit and at a slightly higher level a second adit connects with the eastern end of the stopes.

In September 1937, the mine was the subject of a report by Mr. F. Blake, Acting Government Geologist. In that report it is quoted that production commenced in November, 1934 by ground sluicing and by June, 1935, 43 oz. gold had been won. Mill treatment commenced in August, 1935, and continued to September, 1936, when a new battery was installed. Blake quotes in 1937 a production of 188.5 oz. gold from the treatment of 1,118 tons of ore. A recovery of 3.46 dwt. per ton (= 5.38g/t Au) was, therefore, made."

Keid then lists quarterly gold production for the period March 1935 to March 1941 with a range from nil (in the latter years) to 61.43 ounces and a total production over the period of 668.792 ounces gold.

Keid continues to say:

"The mine has lain idle from 1941 until March 1946 when Mr. J.P. Godwin applied for two leases each of 20 acres to cover the area of the mine property. In June 1947, these leases were covered by a further application for a lease of 80 acres to include outside prospects."

Jack (1961) visited the prospect on behalf of the then lessees who were seeking assistance in developing the surface material at the western end of the resource.

Jack (1961) also describes the orebody though if the workings were collapsed he is largely describing that which he has seen on surface:

"The old workings, which are mainly collapsed, consisted of two interconnected adit levels driven N.W.-S.E. in the main orebody. Stopping was started on the lower adit level and worked through the upper adit level to the surface. Three separate ore bodies are known, two of which are narrow, with poor gold values and have not been worked. The major orebody is the most southerly one. This varies in width to ten feet and has been stoped over a length of 50 feet on the lower level increasing to a length of 150 feet at surface. This increase in stope length, together with higher assay values, Keid (1947) in the upper levels indicates a very shallow zone of surface enrichment. The ore occurs in an extensively crushed zone between two well-marked shears. These shears have formed channels for the migration of the mineralizing fluids and the porous crushed metaquartzite between the shears has been the favourable site of deposition of the sulphide mineralisation. The most abundant sulphide present is pyrite and minor amounts of galena, arsenopyrite and chalcopyrite also occur.

The surface rocks along the sheared zone are heavily stained by hematite, and bands of hematite up to one inch wide occur along the shears which form the hangingwall and footwall of the orebody. The unweathered ore rock is a pale pinkish metaquartzite containing abundant fine pyrite. No free gold could be seen and the gold is apparently contained in the pyrite. Some later white quartz veining occurs through the crushed ore zone, but no gold was found in this later quartz. The shearing trends W.N.W-E.S.E. and is parallel to the bedding. Both the shearing and the bedding dip at 70° to the northeast. Many small trenches have been dug in the hillside to find continuations of the ore bodies but where they have been encountered the grade has been too low to be economical. The present lessees have extended some of this old trenching along a hematitic metaquartzite zone about 70 feet west of the entrance to the lower adit. The trenching is probably an extension of the second ore body encountered from the entrance of the lower adit. This ore body is reported as being three feet wide in the adit but in the trenching it is only one and a half to two feet wide. Washing of the excavated material produced a little very fine gold, and samples were taken across the hematitic zone to determine the gold values at surface. Any gold values found are expected to decrease rapidly with depth, as was shown in the main mine workings."

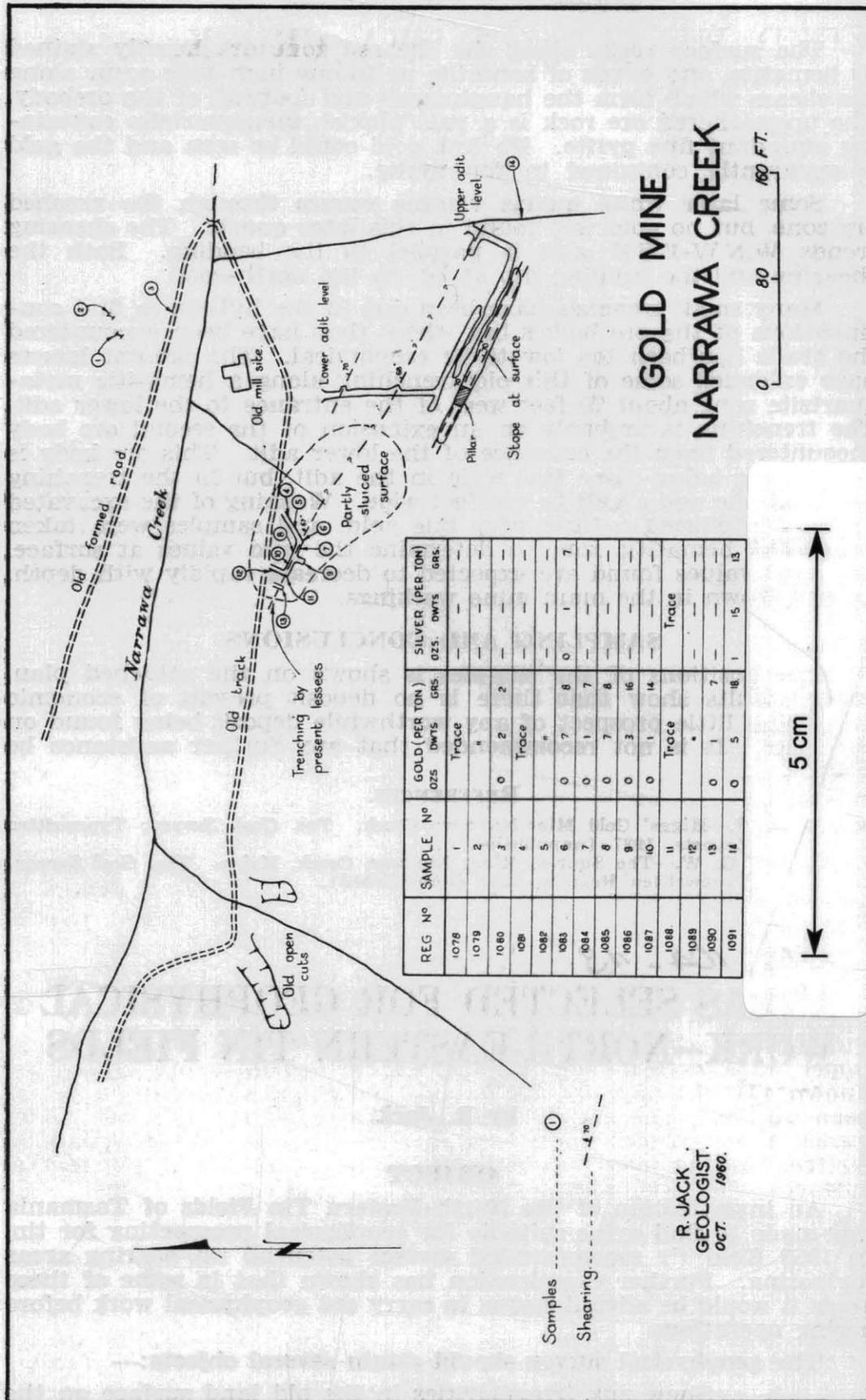


FIGURE 22.

Figure 4.3: Figure in Jack (1961) showing Higgs mine workings

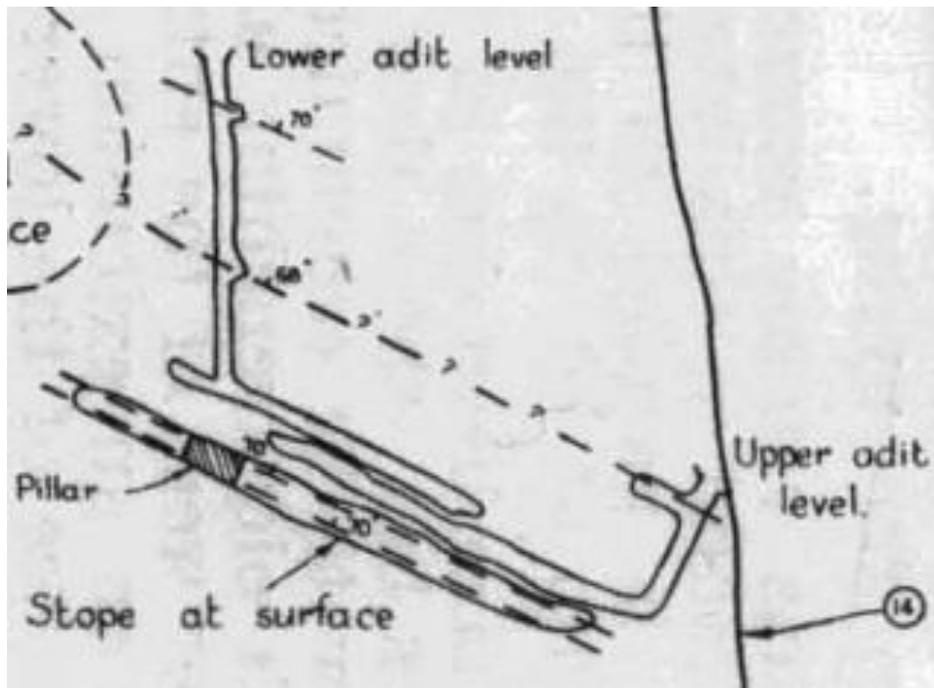


Figure 4.4: Close-up of part of figure in Jack (1961) showing Higgs mine workings in detail

Of considerable significance is the description of mineralisation as occurring in 3 ore bodies, two of which are described as “minor” (Blake, 1937) or “narrow, with poor gold values, and have not been worked” (Jack, 1961). The three ore bodies are described by Keid (1947) as the #1, #2 and #3 lodes with the #3 lode that which has been developed on and stoped to the surface.

Whilst a number of historic holes show discrete mineralised zones corresponding with these lodes, other holes show gold mineralisation to be more extensive. For this reason the solids modelled for the 100, 200 and 300 lodes are much wider than the widths described in these reports. The resource calculated is of a relatively low grade leaving open the possibility that the resource is better modelled and mined as a smaller but higher grade deposit. Grades described in section 4.1.2 below support this argument.

4.1.2 Historical Underground Sampling

Both Keid and Jack detail sampling undertaken by both the government geologists themselves during their visit and sampling undertaken by the proprietor.

In some instances the positions of these samples is shown on an attached plan or can be determined from the in text description. Where these samples can be shown or confidently interpreted as complete, contiguous channels samples across one of the 3 lodes (#1, #2 and #3) they have been ascribed a “hole_id” and included in the database. In such examples the composited channel results are shown as bold colour with **light blue for lode #1**, **purple for lode #2**, and **red for lode #3** with the “holes_id” in parentheses following.

Keid refers to his visit in 1943 when he collected two samples “from the lowest bench of the stopes. These samples on being assayed returned 17 dwt. 5 grs. gold, 3 dwt. 1 grs. silver (i.e. 26.8g/t Au and 4.73g/t Ag) and 3 dwt. 6 grs. gold, and 6 dwt. 1 gr. silver per ton (i.e. 5.05g/t Au and 9.40g/t Ag) from widths of 3 feet 9 inches (= 1.14m) on each of the footwall and hanging wall sides of the lode. The midsection of the lode was then not sampled”.

1.14m @ 26.8g/t Au and 4.73g/t Ag

1.14m @ 5.05g/t Au and 9.40g/t Ag

In 1946 the inspector of mines collected some samples detailed in the following table.

Table 4.1: Mines Inspector sampling (Keid, 1947)

Sample#	Location	Width (m)	Au_dwt	Au_ppm	Ag_dwt	Ag_ppm	Pb_%	Zn_%
10	Dump	nr	0	0.0	0	0.0	0	0
11	4' centre of lode	1.22	4	6.2	22	34.2	3.6	0.7
12	4' outside Sect.	1.22	3	4.7	18	28.0	4	0.9
13	8' in Stopes	2.43	19.6	30.5	36	56.0	3.5	1.4
14	3' in Stopes	0.91	5.2	8.1	20	31.1	3.4	1.7
15	3'6" in Stopes	1.06	1.2	1.9	20	31.1	2.9	3.9

Of the above samples it appears that sample 13 and probably 14 and 15 are taken across the lode though the thinner widths in 14 and 15 are not consistent with 10' widths described elsewhere.

13 **2.43m @ 30.5g/t Au, 56g/t Ag, 3.5% Pb and 1.4% Zn**

14 0.91m @ 8.1g/t Au, 31.1g/t Ag, 3.4% Pb and 1.7% Zn

15 1.06m @ 1.9g/t Au, 31.1g/t Ag, 2.9% Pb and 3.9% Zn

Sometime soon after the proprietor Mr J.P Godwin collected some more samples from the stopes (samples 1 to 4) and from surface exposures. These are detailed in the following table. As Keid (1947) states "the following table shows the assay results obtained from the samples supplied. For purposes of comparison, the weighted average grade is also shown of samples taken during the present examination from positions more or less identical with the positions selected by Mr. J.P. Godwin" i.e. acting as a rough field duplicate.

Table 4.2: Mine owner sampling (Keid, 1947)

#	Location	Width_m	Au_g/t	Au_Keid_g/t	Ag_g/t	Ag_Keid_g/t	Pb_%	Pb_Keid_%
1	No 1 stope No3 lode above tunnel	2.4	14.1	3.5	39.3	9.3	2.8	0.6
2	No 2 stope No3 lode above tunnel	3.0	3.1	5.1	3.4	25.1	0	0
3	No 3 stope No3 lode above tunnel	3.0	12.4	17.4	46.7	40.6	4	3.7
4	Face of drive No3 lode tunnel level	1.8	12.4	4.0	50.3	41.1	3.8	4.45
5	Sface 60' E from end drive No3 lode 30' above tunnel	0.0	74.6		67.3		1.4	
6	Sface 60' E from end drive No2 lode 30' above tunnel	0.0	3.1		61.0		1.3	
7	No2 lode tunnel level	5.5	3.1	2.0	59.6	29.7	5.8	2.8
8	300' west of tunnel, toe of spur? No5 lode	1.8	0.3		12.7		0.3	
9	60' from toe of spur	3.0	9.8		1.9		0	

Here samples 1-4 appear to be taken across the full width of the lode (#3) (locations are still insufficiently clear for inclusion in database).

1 **2.4m @ 14.1g/t Au, 39.3g/t Ag and 2.8% Pb**

2 **3.0m @ 3.1g/t Au, 3.4g/t Ag and 0% Pb**

3 **3.0m @ 12.4g/t Au, 46.7g/t Ag and 4.0% Pb**

4 **1.8m @ 12.4g/t Au, 50.3g/t Ag and 3.8% Pb**

Keid then details the locations and assays results for 62 samples he collected from the underground workings as well as West Higgs.

The samples can be composited and given weighted grades for Au, Ag, Pb and Zn.

Sample 1 may or may not be a true width channel sample across #1 lode

1 **1.17m @ 2.01g/t Au, 30.8g/t Ag, 2.8% Pb and 2.5% Zn (KDCH1)**

Samples 2 to 4 define a contiguous channel sample across #2 lode.

2-4 **1.19m @ 1.33g/t Au, 18.9g/t Ag, 1.77% Pb and 1.11% Zn (KDCH2)**

Samples 31 and 32 appear to define a contiguous channel across the #3 lode on the main adit level at its eastern end.

31-32 **1.42m @ 3.95g/t Au, 41.2g/t Ag, 4.45% Pb and 1.45% Zn (KDCH3)**

Samples 33 to 39 are discrete samples along walls and in cuddies and appear to represent remnant and/or associated mineralisation in the walls to #3 lode. These results are included in table 4.3 below.

Samples 41 to 43 are a contiguous channel sample across "brown band" (assumed to be the #3 lode) at the northwestern end of the adit level drive on the #3 lode.

41-43 **1.39m @ 1.05g/t Au, 3.34g/t Ag, 0% Pb and 0% Zn (KDCH4)**

Samples 43 to 47, 48 to 52, 53 to 56 and 59 to 62 define 4 separate contiguous channel samples across the #3 lode from hangingwall to footwall.

43-47 **3.57m @ 17.93g/t Au, 41.5g/t Ag, 3.81% Pb and 1.92% Zn (KDCH5)**

48-49 **4.13m @ 6.47g/t Au, 28.9g/t Ag, 2.28% Pb and 1.77% Zn (KDCH6)**

53-56 **3.04m @ 3.48g/t Au, 17.1g/t Ag, 0.60% Pb and 0.80% Zn (KDCH7)**

59-62 **3.04m @ 6.46g/t Au, 40.5g/t Ag, 3.20% Pb and 2.08% Zn (KDCH9)**

Samples 57 and 58 appear to define a contiguous channel sample across part of the #3 lode.

1.93m @ 8.91g/t Au, 25.0g/t Ag, 1.95% Pb and 2.00% Zn (KDCH8)

1014

19

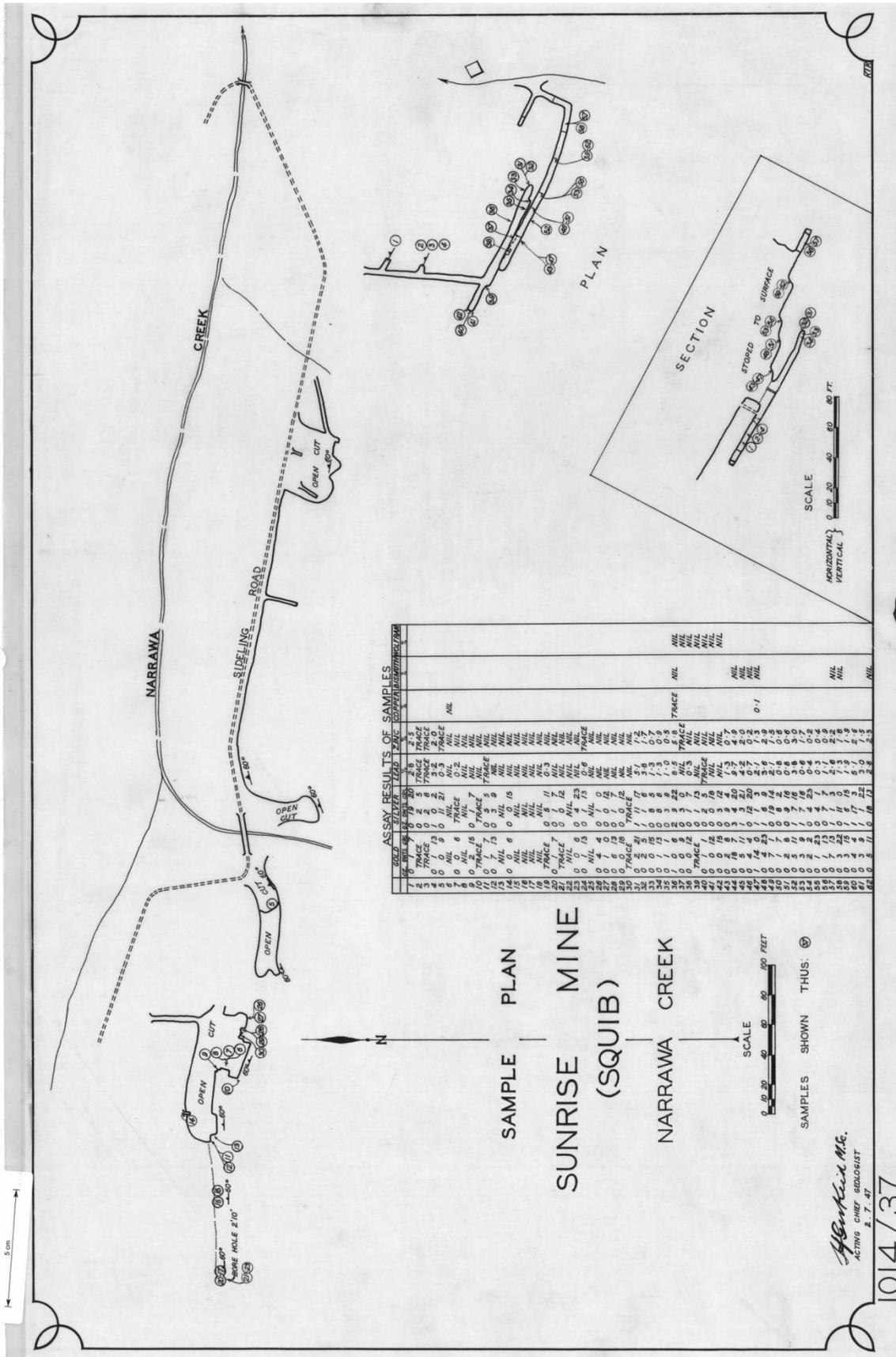


Figure 4.5: Plan 1014 – part of Keid (1937)

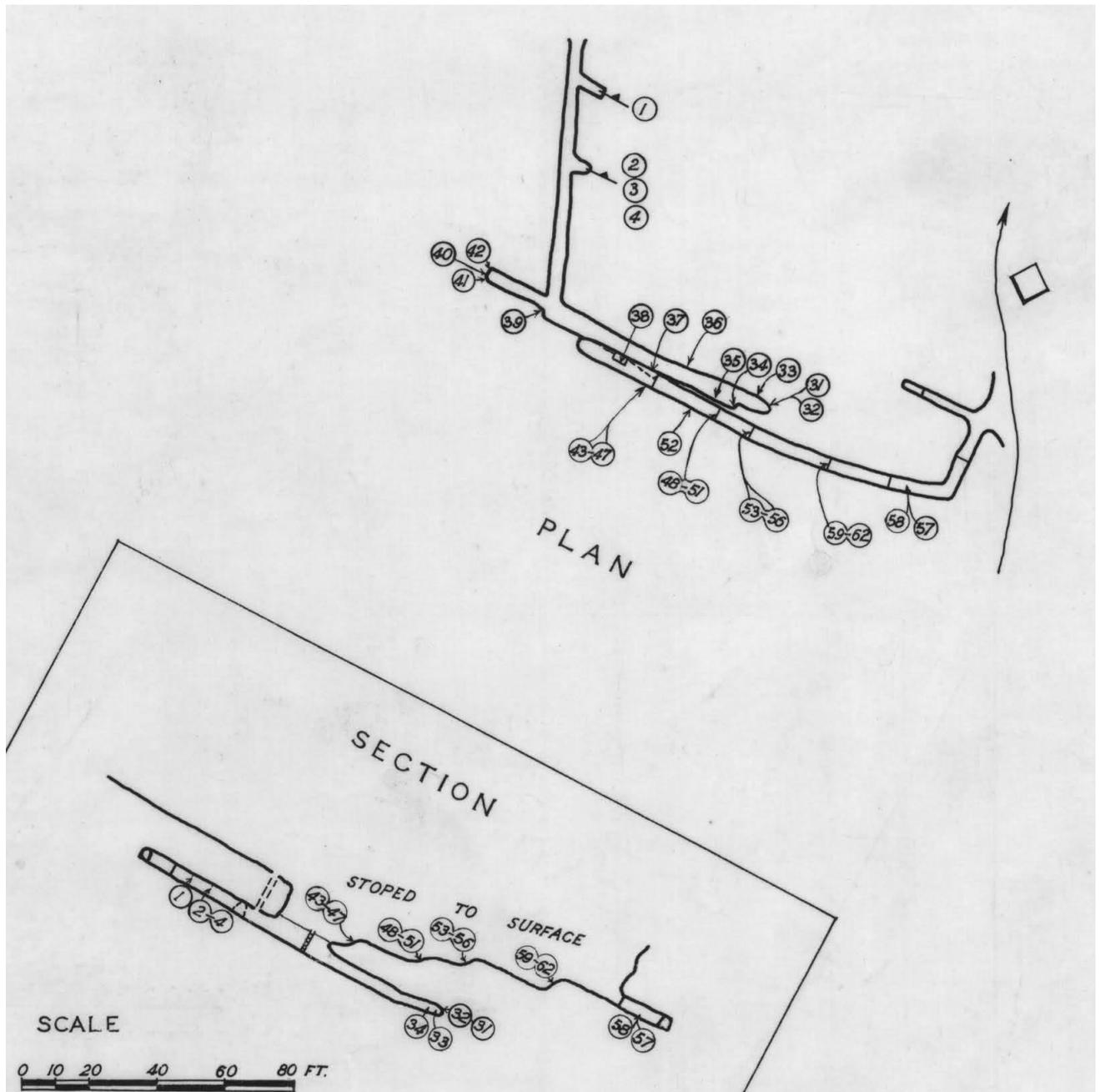


Figure 4.6: Close-up of part of plan 1014 (Keid, 1947) showing Higgs mine workings and sampling

Table 4.3: Keid sampling (Keid, 1947) – all Higgs sampling shown

Sample#	Location	Width_inches	Width_m	Au_ppm	Ag_ppm	Pb_%	Zn_%	Width_m	Au g/t	Ag g/t	Pb %	Zn %
1	Face 1st x-cut, E. lower adit	46	1.17	2.0	30.8	2.8	2.5	1.17	2.01	30.84	2.80	2.50
2	Face 2nd x-cut, E. lower adit. Northern section	8	0.20	tr	3.4	tr	tr					
3	Face 2nd x-cut, E. lower adit. Mid section	13	0.33	tr	3.6	tr	tr					
4	Face 2nd x-cut, E. lower adit. Southern section	26	0.66	2.4	31.2	3.2	2	1.19	1.33	18.87	1.77	1.11

31	Face E. and level No. 3 lode, N. section	28	0.71	4.5	49.3	5.1	1.2						
32	Face E. end level No. 3 lode, S. and adj. No. 31	28	0.71	3.4	33.0	3.8	1.7	1.42	3.95	41.18	4.45	1.45	
33	3'6" from face level No. 3 lode on N.W.	9	0.23	1.0	12.8	1.3	0.7						
34	Cuddy 10' from face No. 3 lode, S. side of level	21	0.53	2.4	13.0	1.3	0.9						
35	Along wall of level 5' from 34	58	1.47	1.6	5.2	1	0.5						
36	H.W. side No. 3 level opp. No 35	30	0.76	31.5	77.6	8.5	5.8						
37	Mineralised slates S. side level immed. E. of timber	58	1.47	0.6	4.7	0	tr						
38	Cuddy immed. E. ladder	34	0.86	0.8	2.0	0.3	0						
39	At bend of level No. 3 lode	48	1.22	tr	2.4	0	0						
40	Brown band W. face of level	13	0.33	1.6	3.4	tr	0						
41	Sth. and adj. No 40	21	0.53	0.8	1.2	0	0						
42	Nth. and adj. No. 40	21	0.53	1.0	5.4	0	0	1.39	1.05	3.34	0.00	0.00	
43	Leading stope edge of bench H.W. side	36	0.91	3.6	14.3	1.3	0.7						
44	Sth. and adj. 43	31	0.79	28.4	99.7	9.7	4.9						
45	Sth. and adj. 44	31	0.79	8.5	37.1	4.2	2						
46	Sth. and adj. 45	22	0.56	6.5	18.8	0.7	0.2						
47	Sth. and adj. 46 to F.W.	21	0.53	52.9	32.9	2.1	1.3	3.57	17.93	41.54	3.81	1.92	
48	H.W. edge 2nd bench up about 16' E.44	38	0.96	7.7	41.0	3.6	2.9						
49	Sth. and adj. 48	25	0.63	11.0	30.5	2.1	1.5						
50	Sth. and adj. 49	25	0.63	2.0	12.6	0.8	0.6						
51	Sth. and adj. 50	41	1.04	3.6	15.0	0.8	0.6						
52	Along F.W. of stope of 37	34	0.86	8.5	43.0	3.8	3	4.13	6.47	28.92	2.28	1.77	
53	H.W. edge 3rd bench up	30	0.76	5.2	43.0	0.6	1.7						
54	Sth. and adj. 53	30	0.76	3.2	7.7	0.4	0.2						
55	Sth. and adj. 54	30	0.76	3.0	6.3	0.3	0.4						
56	Sth. and adj. 56 to F.W.	30	0.76	2.4	11.3	1.1	0.9	3.04	3.48	17.09	0.60	0.80	
57	Floor top level adit	38	0.96	11.7	32.9	2.6	2.2						
58	W. of and adj. 57	38	0.96	6.1	17.1	1.3	1.8	1.93	8.91	24.98	1.95	2.00	
59	Top bench H.W. side	30	0.76	5.6	41.4	1.9	1.9						
60	Sth and adj. 59	30	0.76	6.5	57.7	5.1	2.6						
61	Sth and adj. 60	30	0.76	5.2	34.1	3	1.5						
62	Sth and adj. 61 to F.W.	30	0.76	8.5	28.8	2.8	2.3	3.04	6.46	40.52	3.20	2.08	

4.1.3 Channel Samples – GFEL (Roberts, 1987)

Aside from the drillhole samples the Higgs resource is defined by channel samples along exposed rock faces in accessible workings and small open cuts.

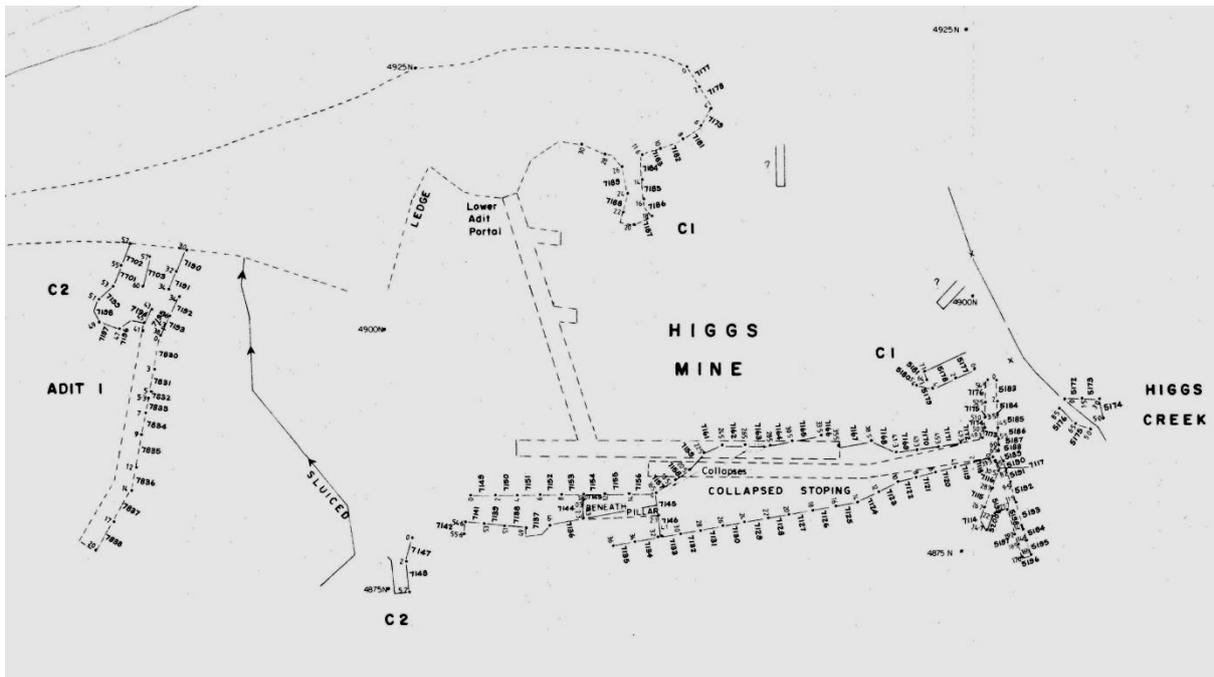


Figure 4.8: Close-up of channel sample location plans (Roberts, 1987)

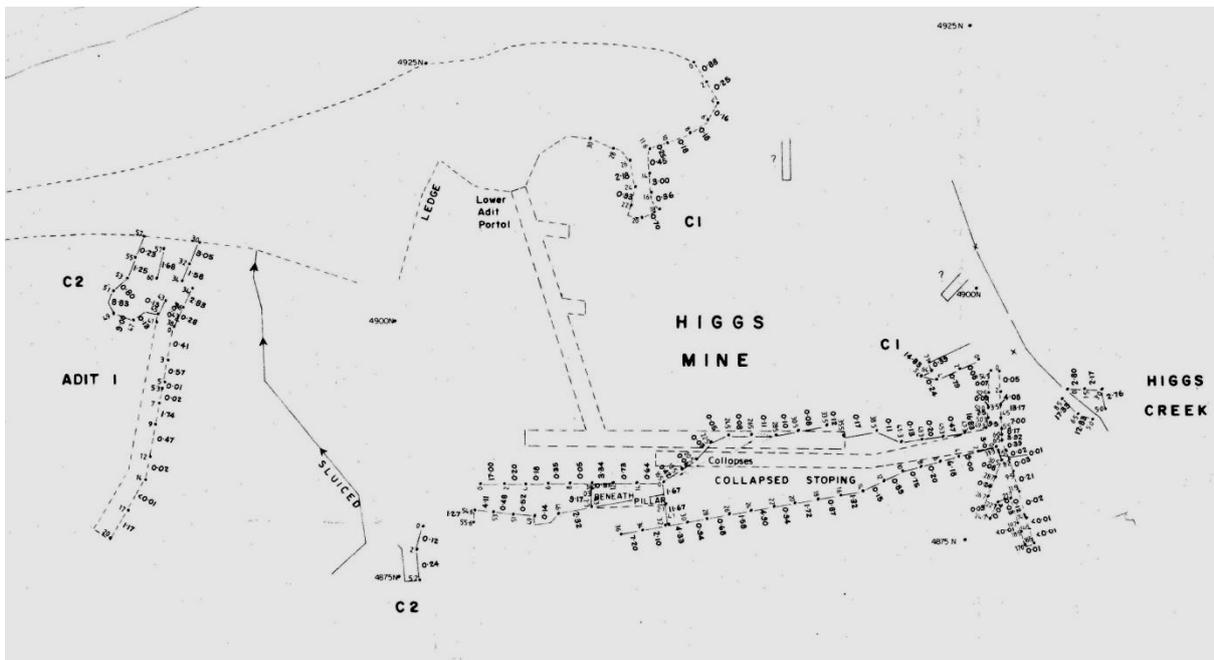


Figure 4.9: Close-up of gold results from channel sampling (Roberts, 1987)

Samples were assayed for Au (fire assay), Ag, As, Cu, Pb, Zn, Sn, W and Mo.

GFEL's sampling was thorough with all exposed bedrock faces and accessible adits sampled. Samples were collected from north of Narrawa Creek, the West Higgs workings and the exposed faces to the western end of the resource. Within the resource area many samples were collected along the walls of the collapsed open stopes. Only a limited number of samples were taken across the lode giving a weighted grade.

Samples 7143 and 7144 were taken across the #3 lode at surface on the western end of the pillar left at the western end of the collapsed open stopes. Samples 7145 and 7146 were taken across the #3 lode on the eastern side of this pillar.

7143-7144 **2.3m @ 8.05g/t Au, 0.5g/t Ag, 0.06% Pb and 0.01% Zn (GFCHmpilw)**

7145-7146 **4.1m @ 6.55g/t Au, 1.23g/t Ag, 0.09% Pb and 0.02% Zn (GFCHmpile)**

The upper adit at the eastern end of the collapsed open stopes was sampled along its (continuous) eastern wall and (interrupted by cross-cut on #3 lode) western wall.

Samples 5184 to 5188 define a continuous channel sample across the #3 lode on the adit's eastern wall.

5184-5188 **4.5m @ 7.19g/t Au, 34.4g/t Ag, 1.15% Pb and 0.72% Zn (part of GFCHupadite)**

Samples 7173 and 7174 are taken across the strike of the #3 lode on the hangingwall side of the lode. It is not clear whether this is part of the lode itself or hangingwall mineralisation though the elevated Pb values and width of the cross-cut on the lode support it being the hangingwall part of the #3 lode itself.

7173-7174 1.7m @ 6.62g/t Au, 33.1g/t Ag, 1.74% Pb and 1.14% Zn

Samples were taken on both sides of Higgs Creek just east of the adit and across the strike of the #3 lode (assuming the NC5 Fault cuts east of the creek. Samples 5175 to 5176 were taken on the west side of the creek, samples 5172 to 5174 were taken on the eastern side.

5175-5176 **3.5m @ 15.4g/t Au, 30.8g/t Ag, 2.12% Pb and 2.29% Zn (GFCHhw)**

5172-5174 **5.0m @ 2.595g/t Au, 41.4g/t Ag, 3.108% Pb and 2.00% Zn (GFCHhe)**

At the western end of the resource the No.1 Adit (at same elevation as the Lower Adit into the Higgs workings but further west) and the box-cut and benching around its mouth (GFEL's C2; Roberts, 1987) were also sampled. Some samples were collected at low angles to the strike of the #3 and #2 lodes.

In the adit three discrete samples (#7831, 2.0m @ 0.57g/t Au; #7834, 2.0m @ 1.74g/t Au; #7838, 3.0m @ 1.17g/t Au) have elevated gold but without significant Pb. Samples 7831 to 7834 have been previously interpreted as part of the #3 lode.

Samples from the box-cut and benching 7701 to 7703 and 7190 to 7199 collectively define a series of samples taken in and across what is interpreted as the #2 lode.

These samples are shown on the following figures and listed in table 4.4 below.

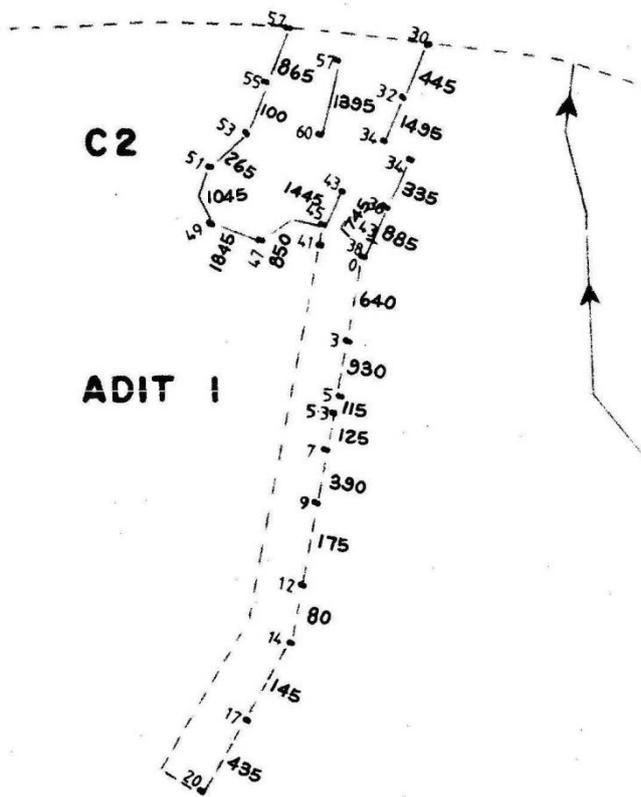


Figure 4.12: Lead grades ppm from GFEL sampling Adit 1 and C2 benching

Samples 7185 and 7189 taken from the open workings just east of the portal to the Lower Adit may be across the #1 lode.

7185 2.0m @ 3.0g/t Au, 4.5g/t Ag and 0.1545% Pb

7189 2.0m @ 2.18g/t Au, 16g/t Ag and 0.1345% Pb

Table 4.4: GFEL channel samples – significant results (excluding West Higgs and north of Narrawa Creek)

Sample#	Sample length	Au g/t	Ag g/t	Pb %	Zn %	Weighted assay
5172	1.5	2.8	20.5	0.875	0.29	
5173	1.5	2.17	43.5	2.15	1.65	
5174	2	2.76	55.5	5.5	3.55	5.0m @ 2.595g/t Au, 41.4g/t Ag, 3.108% Pb and 2.00% Zn
5175	1.5	12.83	40.5	3.15	1.8	
5176	2	17.33	23.5	1.35	2.55	3.5m @ 15.4g/t Au, 30.8g/t Ag, 2.12% Pb and 2.29% Zn
5184	1.5	4.08	9.5	0.305	0.14	
5185	1	13.17	67.5	1.25	0.49	
5186	1	7	41	1.7	1.25	
5187	0.5	8.17	47	2.75	1.2	
5188	0.5	3.92	17	0.785	1.35	4.5m @ 7.19g/t Au, 34.4g/t Ag, 1.15% Pb and 0.72% Zn
7143	0.3	0.567	0.5	0.32	0.006	
7144	2	9.17	0.5	0.0265	0.0075	2.3m @ 8.05g/t Au, 0.5g/t Ag, 0.06% Pb and 0.01% Zn
7145	2.1	1.67	0.5	0.125	0.0135	
7146	2	11.67	2	0.053	0.02	4.1m @ 6.55g/t Au, 1.23g/t Ag, 0.09% Pb and 0.02% Zn
7173	1	9.5	51	2.4	1.85	
7174	0.7	2.5	7.5	0.795	0.13	1.7m @ 6.62g/t Au, 33.1g/t Ag, 1.74% Pb and 1.14% Zn
7185	2	3	4.5	0.1545	0.0095	
7189	2	2.18	16	0.1345	0.017	
7830	3	0.41	1	0.064	0.008	
7831	2	0.57	<0.5	0.093	0.0035	
7832	0.3	0.01	<0.5	0.0115	0.0095	
7833	1.7	0.02	<0.5	0.0125	0.004	
7834	2	1.74	1	0.039	0.0045	
7835	3	0.47	<0.5	0.0175	0.0035	
7836	2	0.02	<0.5	0.008	0.0045	
7837	3	<0.008	<0.5	0.0145	0.006	
7838	3	1.17	<0.5	0.0435	0.0095	
7701	2	1.25	<0.5	0.01	0.0015	
7702	2	0.225	1	0.0865	0.011	
7703	3	1.68	18	0.1395	0.0245	
7190	2	3.05	2	0.0445	0.009	
7191	2	1.58	5	0.1495	0.0565	
7192	2	2.83	5.5	0.0335	0.0105	
7193	2	0.283	1.5	0.0885	0.007	
7194	2	0.125	2	0.1445	0.007	
7195	2	0.04	8.5	0.1745	0.008	
7196	2	0.129	6	0.085	0.0085	
7197	2	9	6	0.1845	0.007	
7198	2	8.83	3	0.1045	0.0055	
7199	2	0.8	0.5	0.0265	0.008	

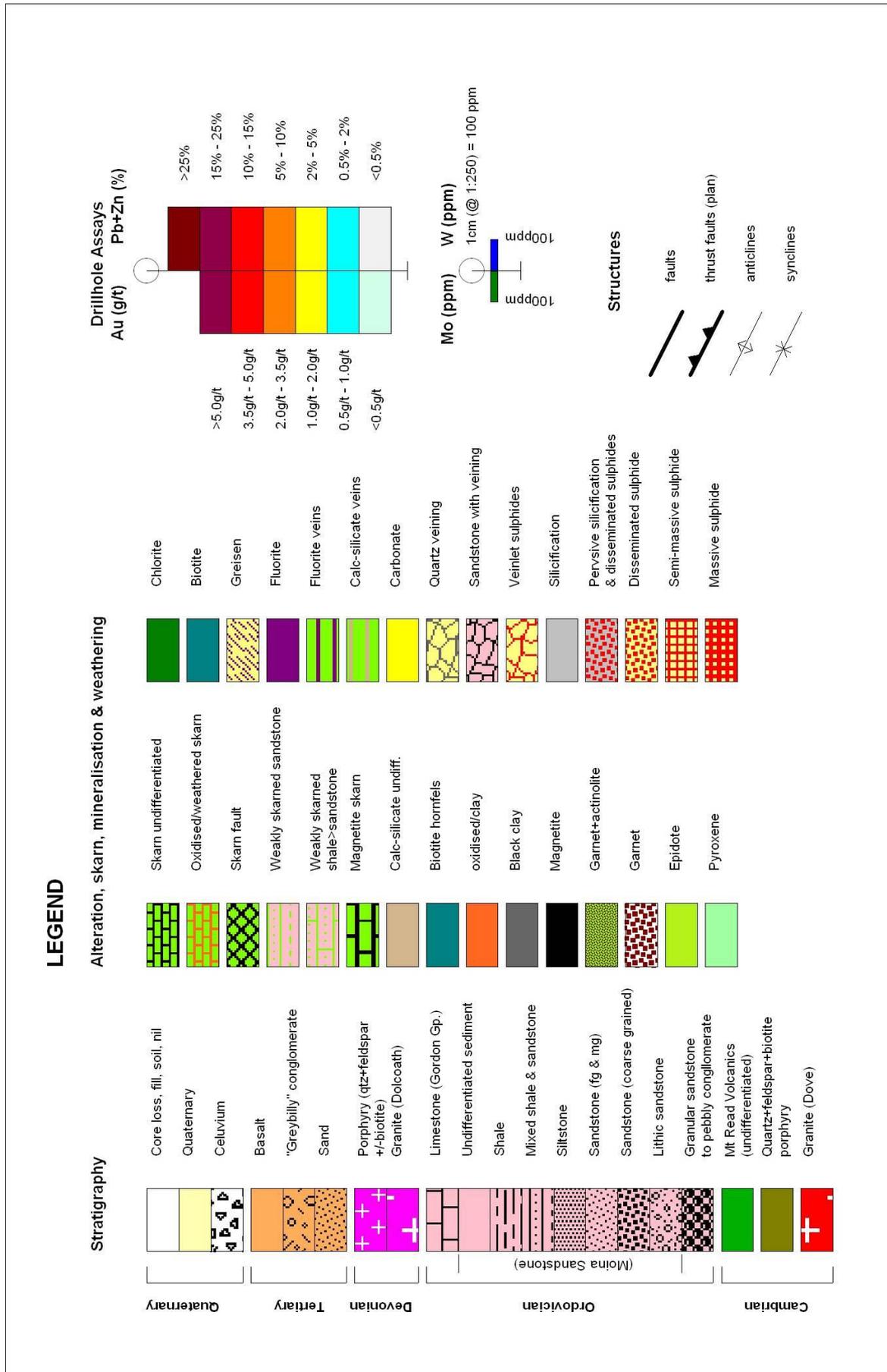


Figure 4.13: Legend for following drill sections and plans

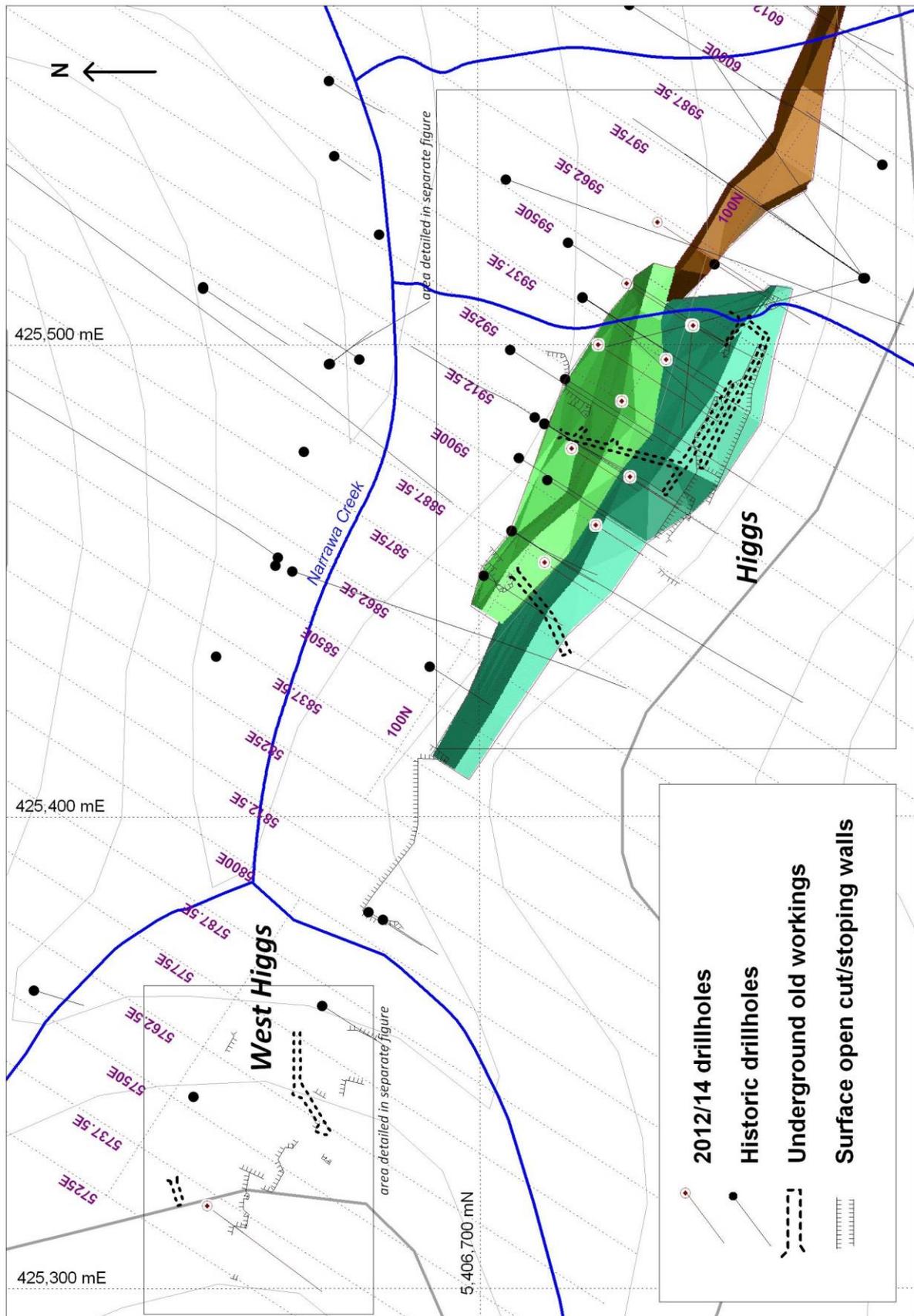


Figure 4.14: Location Higgs and West Higgs prospects showing historical and 2012/14 drillhole collars on 2009 Higgs resource wireframes.

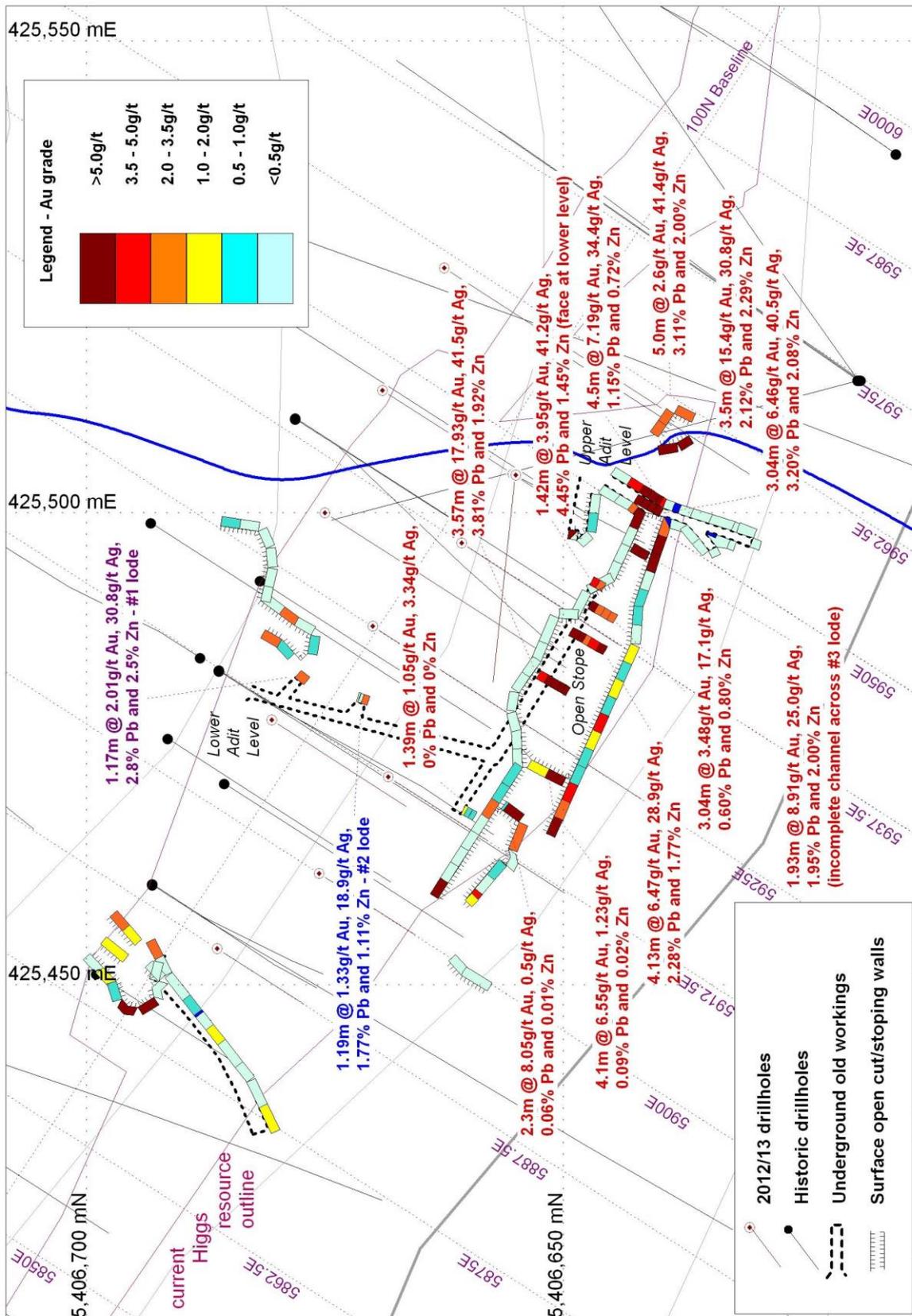


Figure 4.16: Higgs historical channel samples – significant results. Colours of text refer to historical lode number (defined earlier in text). Legend in figure 4.13. Datum is AGD66.

4.2 Drilling

4.2.1 Three Sisters

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 (summarised in figures 4.17 and 4.18), 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.

The grain of the country is defined by the orientation of granite dykes/porphyries and quartz +/- Mo, Bi, W veins commonly around 0.1m to 0.4m thick which trend west-northwesterly and also apparently parallel bedding. This grain is expressed in the trends of elevated conductivity e.g. the Higgs conductivity.

There appears to be a spatial correspondence of some type between conductivity anomalies in the Moina Sandstone and magnetic highs in the Dolcoath Granite. Modelling the magnetic sources (Phil Muir of Southern Geophysics) and 3D IP anomalies suggests that the conductivity anomalies lie in the Moina Sandstone immediately overlying the granite contact with the magnetic source in the upper part of the granite.

DDH's NC60 and 61 were drilled at the gold soil anomalies uphill edge largely to test this soil anomaly (on reflection NC61 has in part explained the magnetics anomaly – see discussion below).

DDH NC62 was targeted at the region where the conductivity highs and magnetic highs are juxtaposed but was unable to get deep enough to test the anomaly at depth. Anomalous pyrrhotite and lesser magnetite in the sandstone updip from the anomaly appear to explain the magnetics anomaly.

NC63 targets 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.

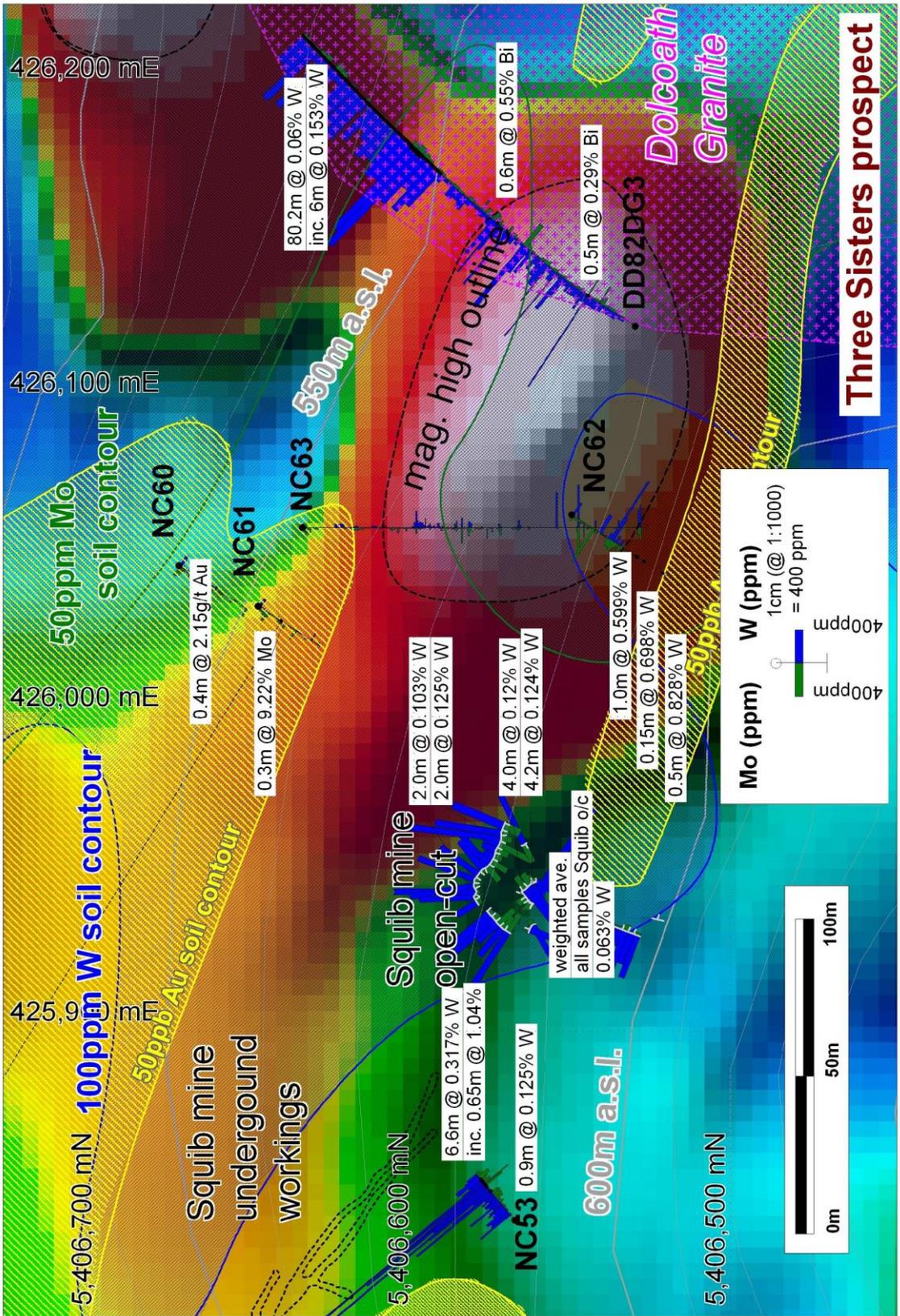


Figure 4.17: Three Sisters prospect showing drilling with W and Mo assays on drill trace as histogramms, previous anomalous W and Mo intersections, old workings, W, Mo and Au soil anomalies, superimposed on colour enhanced, RTP 2VD helimagnetics image. Legend in figure 4.13.

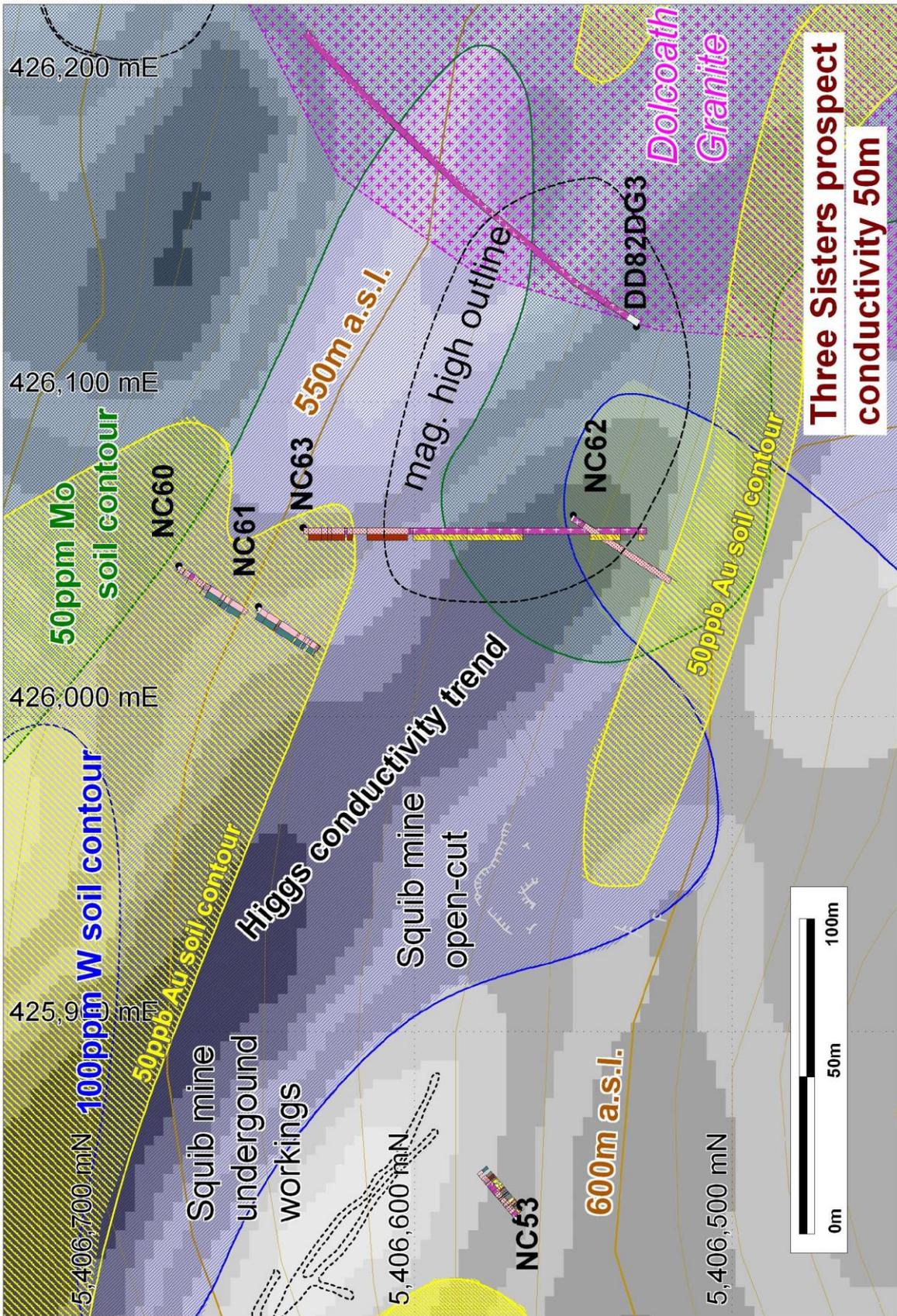


Figure 4.18: Three Sisters prospect showing drilling with lithology and alteration on drill traces (left hand side and right hand side respectively), old workings, W, Mo and Au soil anomalies, superimposed on greyscale 3D IP resistivity image at 50m depth. Legend in figure 4.13.

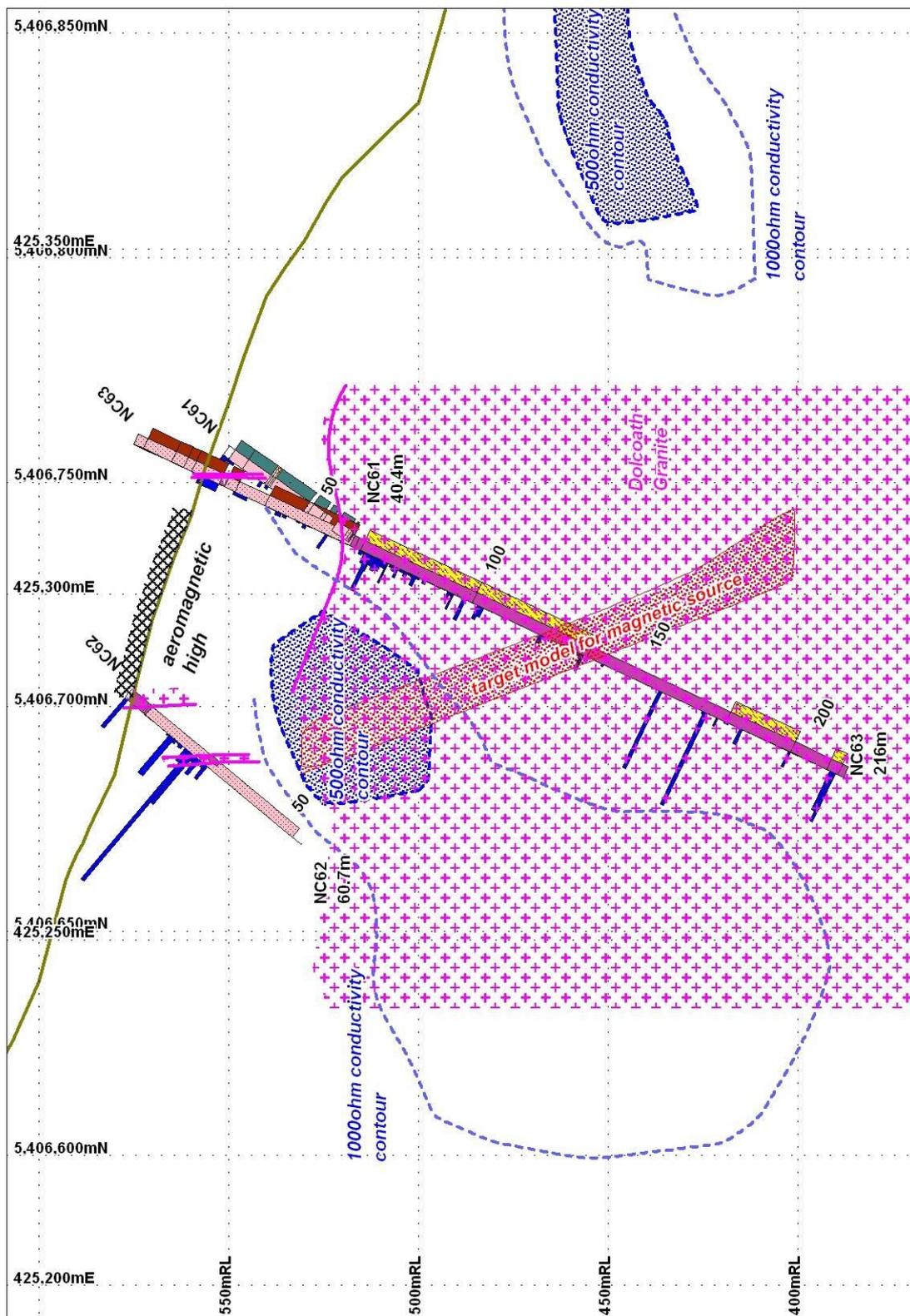


Figure 4.19: Three Sisters prospect oblique section showing drilling with W assays histogram and lithology and alteration on drill traces, 3D conductivity anomalies, aeromagnetics anomaly and modelled source of magnetics anomaly. Legend in figure 4.13.

Summary logs are as follows with more detailed logs in appendix A.

NC62

<u>From</u>	<u>To</u>	<u>Summary Log</u>
0	1.1	Sandy soil
1.1	6.0	Weathered Quartz+Feldspar porphyry
6.0	6.4	Sandstone
6.4	7.15	Weathered Quartz+Feldspar porphyry
7.1	57.6	Sandstone
7.6	8.8	Weathered Quartz+Feldspar porphyry
8.8	10.7	Quartz+Feldspar porphyry
10.7		Fault
10.7	13.35	Sandstone
13.35		Fault
13.35	21.0	Sandstone, calc-silicates
21.0	21.5	Quartz porphyry
21.5	21.85	Calc-silicate, biotite hornfels
21.85	26.9	Quartz porphyry
26.9	37.0	Biotite hornfels, sandstone
37.0		Fault
37.0	43.6	Biotite hornfels, sandstone
43.6	44.5	Biotite+K Feldspar altered granite
44.5	60.7	Granite, minor greisen
60.7	EOH	

NC63

<u>From</u>	<u>To</u>	<u>Summary Log</u>
0	2.9	Oxidised Sandstone
2.9	11.5	Biotite hornfelsed Sandstone, oxidised
11.5	15.1	Biotite hornfelsed Sandstone
15.1	15.2	Granite dyke, quartz, feldspar, biotite porphyry
15.2	17.6	Biotite hornfelsed Sandstone
17.6	25.9	Calc-silicate altered sandstone/biotite hornfelsed sandstone, weakly to moderately magnetic in parts with pyrrhotite, dissem and along fine veins
25.9	27.7	Granite dyke, quartz, feldspar, biotite porphyry
27.7	30.9	Biotite hornfelsed Sandstone with minor calc-silicate, skarn like with pyrrhotite and minor magnetite
30.9	40	Quartzite
40	65.75	Biotite hornfelsed Sandstone/calc-silicate altered Sandstone. Skarn like, mod to strongly magnetic in parts due to dissem and fine veins of pyrrhotite as well as minor blebs of magnetite
65.75	67.2	Granite, quartz, feldspar, biotite porphyry
67.2	69	Granite, quartz, feldspar, minor biotite porphyry
69	216	Granite with alternating greisen zones. Last 2 zones with tungsten Mineralisation
216	EOH	

4.2.2 Higgs

Introduction

Drillhole locations are shown in plan view in figure 4.20 with holes shown on 12.5m spaced sections in figures 4.21 to 4.25.

Summary logs are as below with more detailed logs in appendix A.

Best intervals are listed in table 4.5.

Table 4.5: Narrawa Creek drilling better results

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
NC72	44.5	47.15	2.65	0.245	8.96	0.63	0.68

Stratigraphic sequence

The host rocks to the Higgs resource, the Moina Sandstone “Transition Beds”, lie on the truncated southern limb of a synclinal fold with bedding dipping moderately to steeply to the north-northeast and shallowing at depth where it is apparently truncated by a south dipping basal thrust fault (see discussion below)..

Perhaps unsurprisingly with all holes drilled in close proximity there was a similarity in the sequence intersected, though there were also some significant variations.

Broadly a series of separate alteration/mineralisation based facies may be defined with facies changing into the hill, i.e. essentially down-stratigraphic sequence, and down-dip.

A typical hole intersected most or all of the following facies –

- **Weathered leached sandstone** at surface.
- **Semi-massive pyrite** with a siliceous gangue i.e. = #1 lode of old timers and = upper part of 200 lode in previous Frontier calculated resource.
- Light grey to light yellow-green sericite altered **quartzite hornfels** +/- disseminated pyrite – transitional with

- **Dendritic pyrite in quartzite** – fine irregular pyrite veinlets commonly dendritic also small (<2mm) blebby.
- **Dark green sandstone (pyroxene skarn) with pyrrhotite+pyrite**
- **Semi-massive base metal sulphide** = galena+sphalerite disseminated in biotite hornfels commonly hosted in coarser grained sandstone.
- **Base metal sulphide veins**, coarse galena+sphalerite veins to 50mm in **biotite hornfelsed sandstone**.
- **Biotite hornfelsed sandstone**
- **Pink and green banded skarn** was intersected in NC67 and NC68

All facies are the product of metamorphism or hydrothermal alteration/mineralisation of skarn or contact metamorphic style. Not all are coeval and their paragenetic relationships are discussed below.

Drilling has shown to varying degree these facies are continuous across strike and down-dip apparently mirroring bedding.

Mineralisation

The semi-base metal sulphide facies consists of disseminated galena and sphalerite in a biotite gangue surrounding coarse sub-angular quartz grains to 1mm or so. The evenly distributed interlocking nature of the galena, sphalerite and biotite suggests coevality between the sulphides and the biotite alteration with a strong suggestion that mineralisation is the product of replacement or infill between grains in the more porous (carbonate? other reactive gangue?) sediments.

There is a strong correspondence between disseminated base metal sulphide mineralisation and these coarser grained sediments.

It is this “semi-massive base metal sulphide” facies which has been the principal target style for the recent drilling as previous gold grades in particular have exceeded 10g/t and over widths to around 4m’s. The old timers mined this style of mineralisation as their #3 lode. It constitutes part of the 100 lode as defined in the previous resource (Muller, 2009)..

Base metals also occur as veins up to 100mm thick of coarse bladed galena and sphalerite, commonly within disseminated base metal zones, but discordant with the foliation.

The semi-massive pyrite facies is also apparently stratiform and has some continuity along strike.

The tight correspondence of Pb isotopes with argentiferous galena mineralisation hosted in more structural settings at Round Mountain (Hill) and Olivers Hill confirm an epigenetic and Devonian age.

Bedding

Bedding in this instance is defined by the occasional coarser grained sandstone/grit beds which can be traced along strike and up and down dip to varying degrees. On a number of sections (e.g. 5912.5mE) close spaced drilling allows a reasonably confident interpretation of bedding even given the potentially higher energy nature of these sediments. These show bedding to clearly dip ~-60° up-dip nearer surface. At depth there is a little ambiguity. Here most cross-hole correlations indicate a shallowing of dip (as shown on the cross-sections) as the synclinal hinge and/or thrust fault are approached. There are some correlations which suggest a steepening of bedding with depth but these at most must indicate some variation in the fold geometry of the synclinal fold nearer its hinge or perhaps a primary sedimentary control.

Mineralised lodes

Mineralisation largely reflects this variation in bedding geometry. In particular the western end of the resource, i.e. sections west of 5912.5mE, has one coarse grained sandstone/base metal sulphide lens which is the continuation of the lens mined in the old workings as the #3 lode.

On sections east of 5925mE the picture is complicated by the existence of a second parallel (to converging) coarse grained sandstone/base metal mineralised lense.

The second lens lies deeper, i.e. into the footwall, than the #3 lode. This second base metal sulphide lens does not persist as far east and up-dip as the upper adit which should have intersected it. It is untested below this position.

The two lodes have been separately named the main upper and main lower lodes, the main upper corresponding with the #3 lode of the mine.

It is clear by the numerous dual intersections and the lack of faulting between these intersections that they are not the product of fault replication but indeed two separate lodes at depth with the deeper lens either weakening up-dip and becoming uneconomic or verging with the upper lens.

Most cross-hole correlations indicate that the 2nd lens runs parallel before weakening up-dip, however, again there is some possible ambiguity with some suggestion of convergence. At depth towards the thrust mineralisation becomes almost contiguous between the two (e.g. NC12 and NC45).

The interpretations shown on figures 4.21 to 4.25 rely on core logging by a number of geologists. Before any final mining resource is calculated all core should be relogged and reinterpreted by a single geologist.

Higher in the sequence thinner base metal and pyrite+base metal lodes are intersected which are apparently continuous along strike and down-dip. These are the #1 and #2 lodes of the old timers.

Gold and base metal correspondence

Previous workers have noted the poor correlation between gold and base metals (Purvis, 2000). This is not strictly true. There is quite a strong correlation between the presence of elevated gold and elevated base metals, i.e. the gold mineralisation also largely follows the base metal mineralised/coarser grained sediments. However, within these units the variation between gold and base metal values is very low ($R^2 = \sim 0.1$ for Au:Pb and Au:Zn). There is a strong correlation throughout between Pb and Zn ($R^2 = \sim 0.78$) and Ag and both Pb and Zn ($R^2 = \sim 0.9$).

Gold mineralisation occurs more broadly in pyrite+/-pyrrhotite bearing quartzites with relatively low (though still elevated) lead and zinc. Lead and zinc rich mineralisation occurs in more discrete stratiform zones.

Basal thrust

Previous geological work has recognised the presence of a south dipping fault beneath the Higgs workings. Numerous drillholes beneath this fault have not been able to locate the continuation of the Higgs lodes leading to interpretations either that mineralisation has been significantly offset (i.e. mineralisation is pre-faulting), or alternatively (and favoured herein), that the fault has acted as a pathway and a bounding control on hydrothermal fluid movement/alteration (i.e. mineralisation is syn- or post-faulting).

Based both on its orientation in a south verging thrust-fold belt setting and the presence of analogous faults at Round Mountain along strike, the fault is interpreted as a thrust, or more specifically as a back thrust.

NC05 fault

At the eastern end of the drilling NC71 was drilled close to the projected position of the NC05 fault and refined its position to being between 5962.5mE and 5975mE. There does not appear to have

been significant offset on this fault as NC71's intersections on the east side of the fault lie along strike from both the #3 main and lower lodes. However, cross-hole correlations suggest a more vertical dip around NC71.

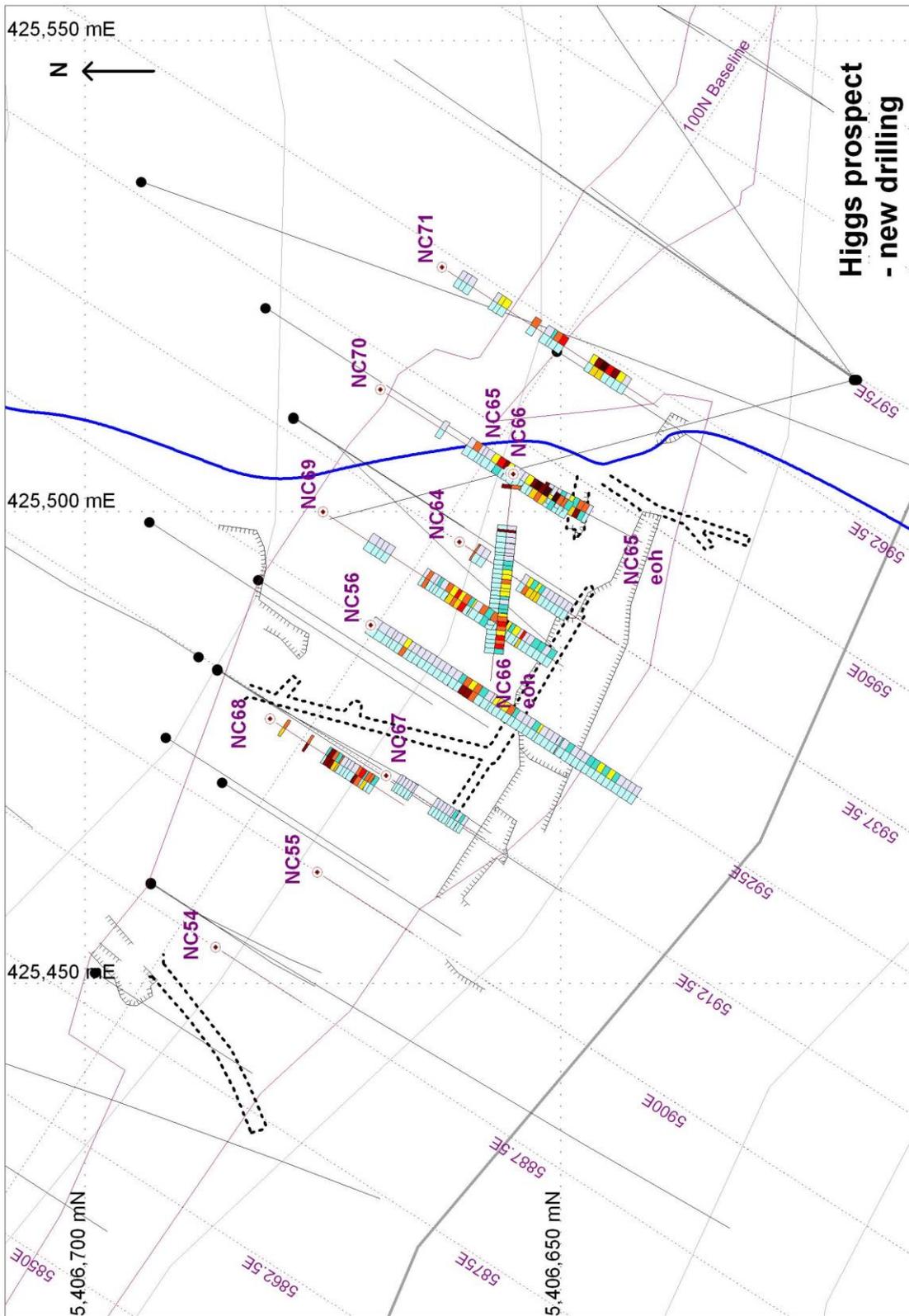


Figure 4.20: Plan view Higgs prospect showing new DDH's NC54 to NC71, Higgs resource outline (red), old workings and channel samples with both drillholes and channel samples showing Au on LHS of drill trace and Pb + Zn on the RHS of drill trace. Legend in figure 4.13.

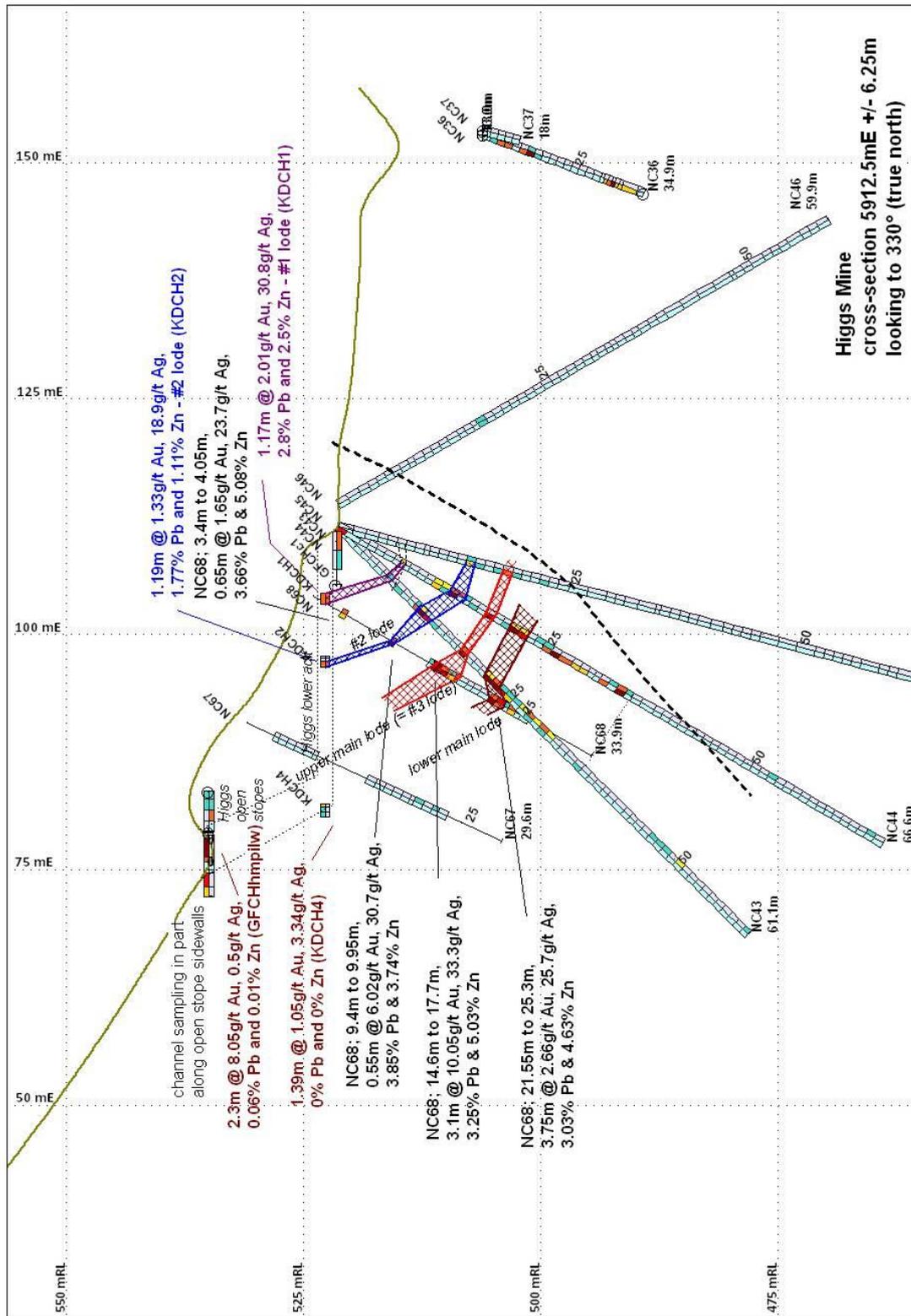


Figure 4.21: Section 5912.5mE. New DDHs NC67 and NC68. Legend in figure 4.13.

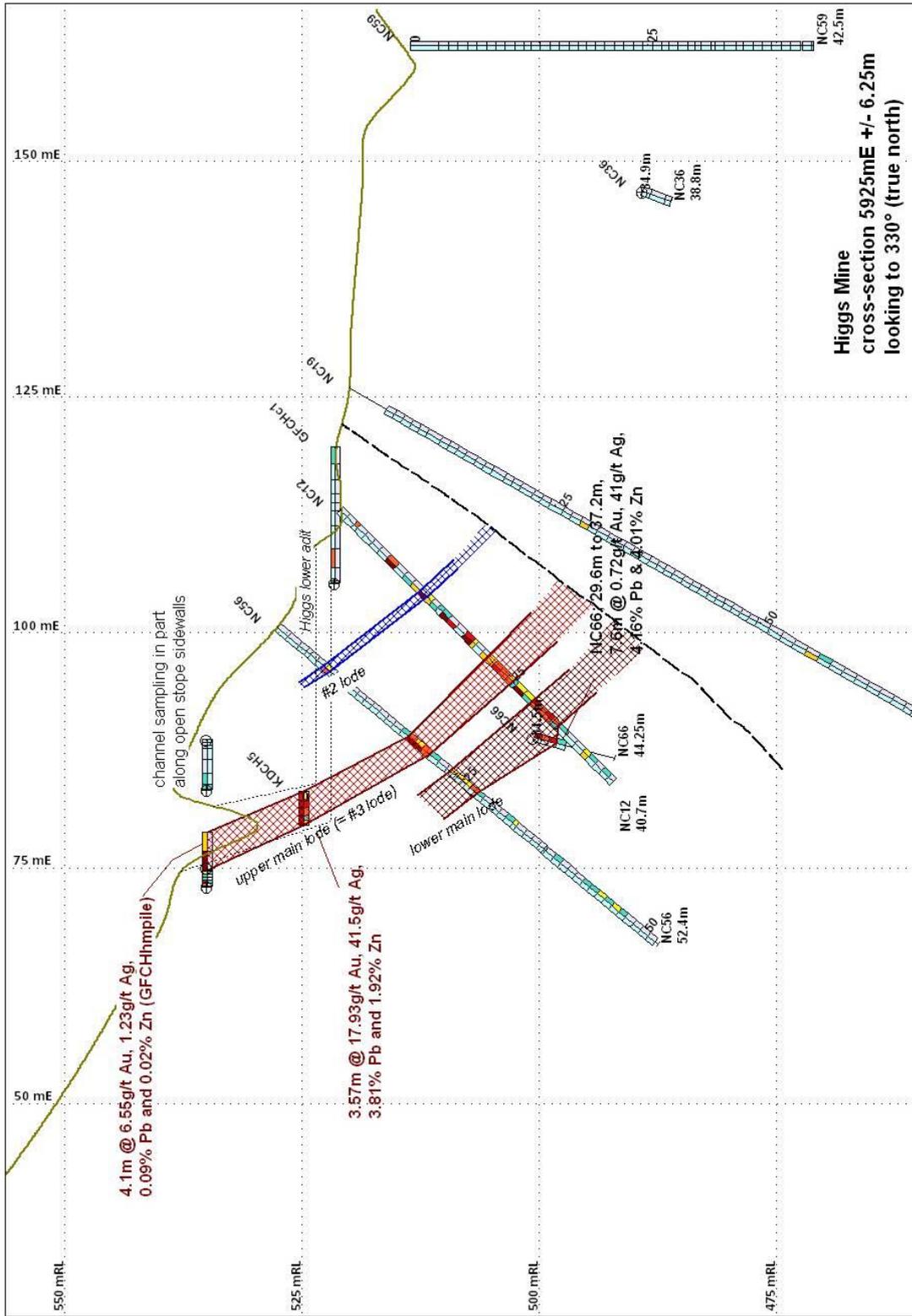


Figure 4.22: Section 5925mE. New DDH NC36. Legend in figure 4.13.

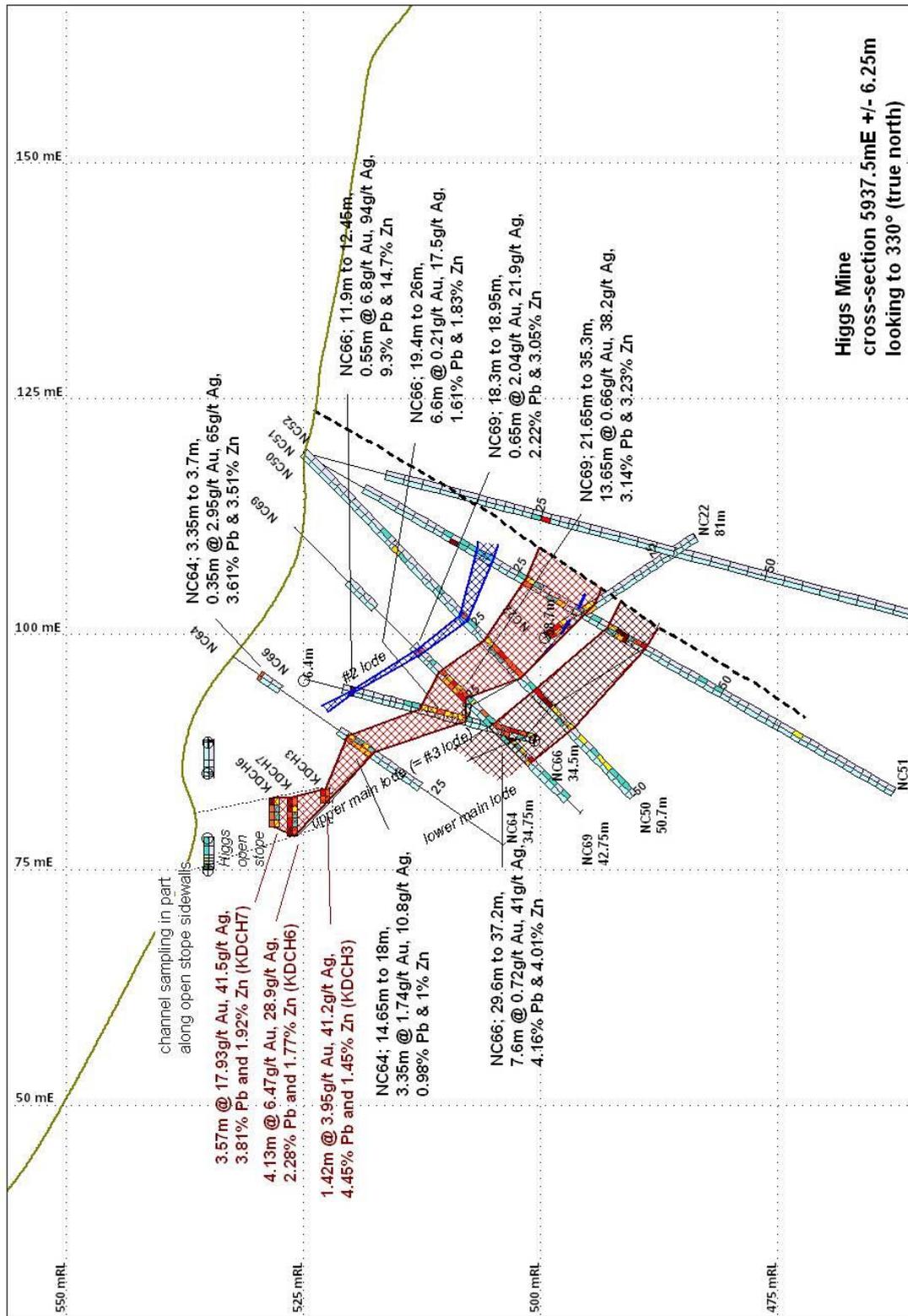


Figure 4.23: Section 5937.5mE. New DDH NC64 and NC69. Legend in figure 4.13.

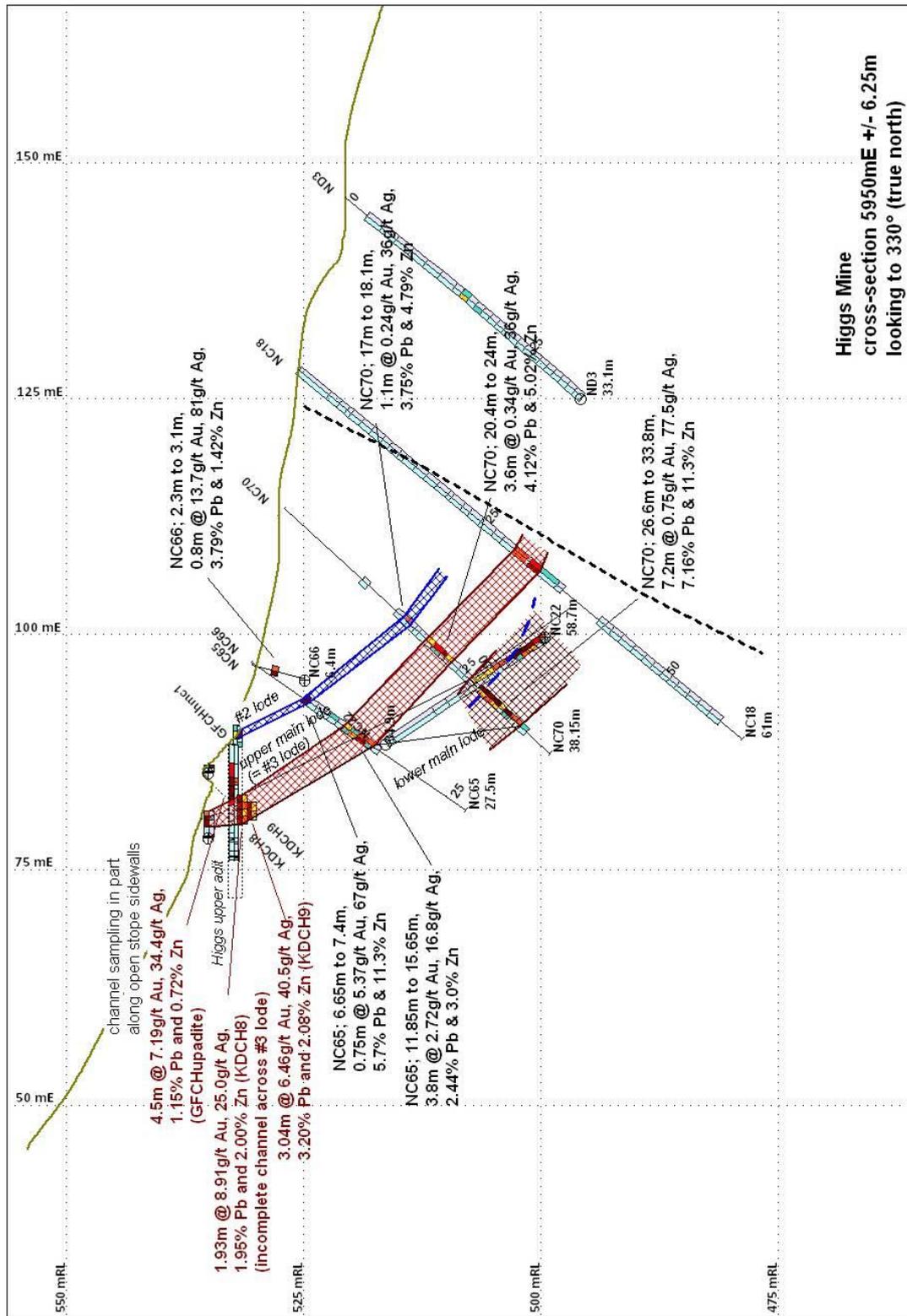


Figure 4.24: Section 5950mE. New DDH NC65, NC66 and NC70. Legend in figure 4.13.

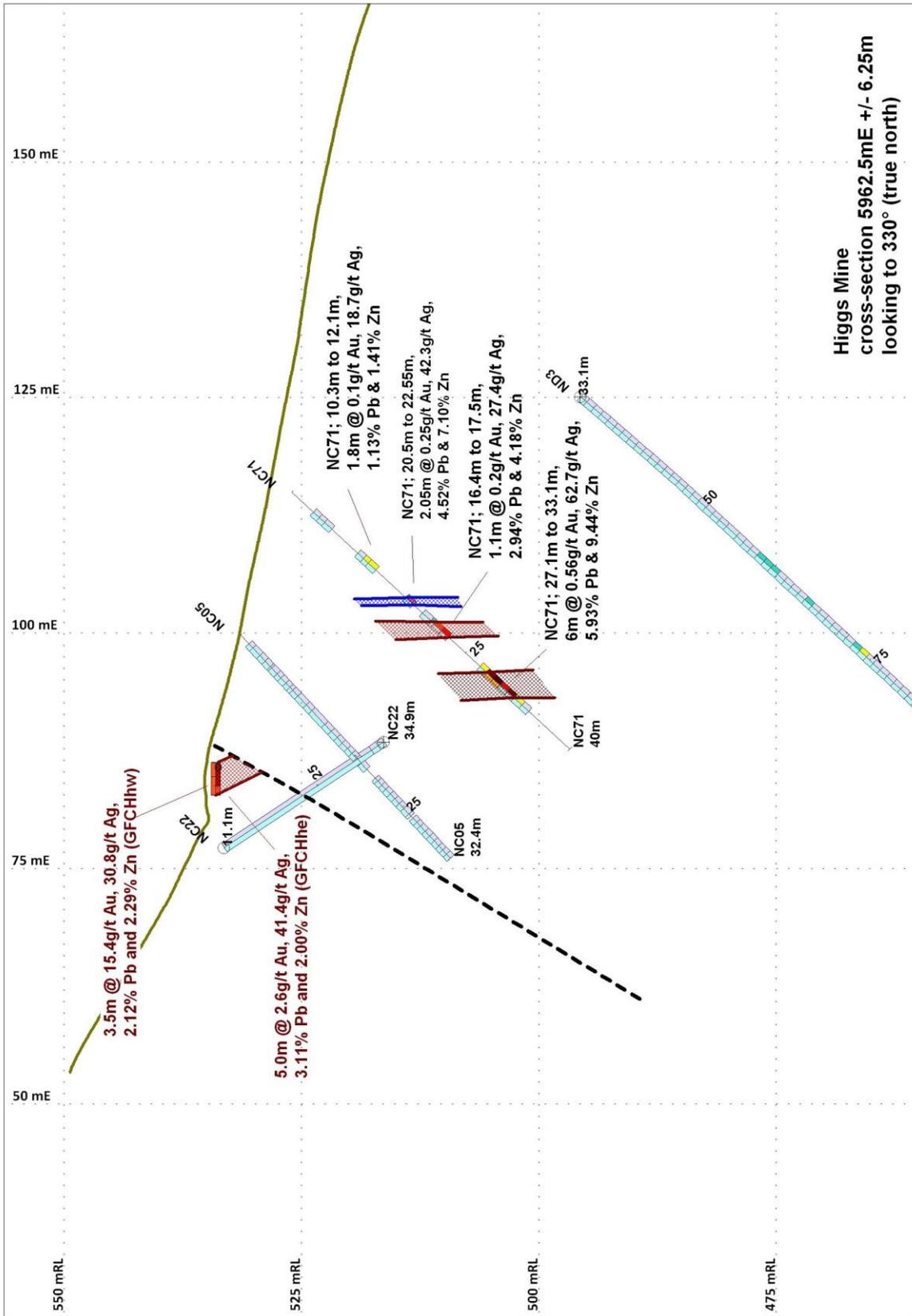


Figure 4.25: Section 5962.5mE. New DDH NC71. Legend in figure 4.13.

NC64

<u>From</u>	<u>To</u>	<u>Summary Log</u>
0.00	0.35	Soil + lim stains
0.35	3.20	Hornfelsed sandstone + stringer veins
3.20	6.10	Sandstone hosting semi - massive pyrite (>10%) 3.35m to 3.7m, 0.35m @ 2.95g/t Au, 65g/t Ag, 3.61% Pb & 3.51% Zn
RE-DRILLED	RE-DRILLED	
1.40	3.40	Sandstone , leached & oxidized, > 2% pyrite + pyrrhotite
3.40	5.45	Sandstone hosting semi - massive pyrite (>10%)
5.45	14.40	Hornfelsed sandstone, 1-3% disseminated pyrite
14.40	17.60	Granular sandstone hosting semi-massive BMS 14.65m to 18m, 3.35m @ 1.74g/t Au, 10.8g/t Ag, 0.98% Pb & 1% Zn
17.60	34.75	Sandstone, 3-5 % pyrite + pyrrhotite + trace BMS
34.75	EOH	

NC65

<u>From</u>	<u>To</u>	<u>Summary Log</u>
0.00	1.50	Soil + shattered & oxidised rubble
1.50	2.00	Sandstone + calc silicate + oxidised zone
2.00	2.40	Quartz - sulfide oxidised vein
2.40	5.40	Sandstone ± 2-5 % dendritic pyrite
5.40	5.65	Quartz - sulfide oxidised vein + 2% pyrite infill
5.65	6.60	Sandstone + >5% dendritic pyrite
6.60	7.40	Semi - massive BMS 6.65m to 7.4m, 0.75m @ 5.37g/t Au, 67g/t Ag, 5.7% Pb & 11.3% Zn
7.40	15.70	Sandstone + 1 - 5% pyrite + pyrrhotite + 2% BMS 11.85m to 15.65m, 3.8m @ 2.72g/t Au, 16.8g/t Ag, 2.44% Pb & 3% Zn
15.70	27.50	Sandstone pyrite + 1-3% + pyrrhotite + trace BMS
27.50	EOH	

NC66

<u>From</u>	<u>To</u>	<u>Summary Log</u>
0.00	1.00	Soil + oxidised colluvium
1.00	2.30	Sandstone + sil-lim-goe-pyrite veinlets
2.30	3.10	Semi - massive pyrite 2.3m to 3.1m, 0.8m @ 13.7g/t Au, 81g/t Ag, 3.79% Pb & 1.42% Zn
3.10	11.90	Sandstone + 1-10% pyrite + trace BMS
11.90	12.55	Semi - massive BMS 11.9m to 12.45m, 0.55m @ 6.8g/t Au, 94g/t Ag, 9.3% Pb & 14.7% Zn
12.55	16.80	Sandstone + weak BMS + mod pyrite + pyrrhotite
16.80	26.70	Semi-massive BMS + pyrite + pyrrhotite 19.4m to 26m, 6.6m @ 0.21g/t Au, 17.5g/t Ag, 1.61% Pb & 1.83% Zn
26.70	44.25	Sandstone + trace BMS + 3 - 10 % pyrite + pyrrhotite 29.6m to 37.2m, 7.6m @ 0.72g/t Au, 41g/t Ag, 4.16% Pb & 4.01% Zn
44.25	EOH	

NC67

<u>From</u>	<u>To</u>	<u>Summary Log</u>
0	0.45	Scree
0.45	1.05	Sandstone
1.05	1.5	Sandstone with disseminated pyrite
1.5	3.25	Sandstone
3.25	3.8	Sandstone with disseminated pyrite
3.8	4.7	Sandstone
4.7	5.2	Fault?
5.2	8.1	Sandstone with disseminated pyrite
8.1	13.1	Oxidised sandstone
13.1	14.75	Pink and green banded skarn
14.75	18.2	Sandstone with disseminated pyrite
18.2	18.3	Fault
18.3	18.55	Sandstone with disseminated pyrite
18.55	19.1	Biotite hornfelsed sandstone
19.1	19.9	Sandstone with disseminated pyrite
19.9	20.2	BMS in sandstone
20.2	21.85	Sandstone with disseminated pyrite
21.85	29.6	variable sandstone and biotite hornfelsed sandstone
29.6	EOH	

NC68

<u>From</u>	<u>To</u>	<u>Summary Log</u>
0.00	0.80	Scree
0.80	3.40	Oxidised Sandstone
3.40	4.05	Biotite altered Sandstone with BMS 3.4m to 4.05m, 0.65m @ 1.65g/t Au, 23.7g/t Ag, 3.66% Pb & 5.08% Zn
4.05	9.40	Sandstone with dendritic pyrite
9.40	9.85	Sandstone with BMS 9.4m to 9.95m, 0.55m @ 6.02g/t Au, 30.7g/t Ag, 3.85% Pb & 3.74% Zn
9.85	14.60	Sandstone with dendritic pyrite
14.60	17.70	Sandstone with BMS 14.6m to 17.7m, 3.1m @ 10.05g/t Au, 33.3g/t Ag, 3.25% Pb & 5.03% Zn
17.70	18.70	Biotite altered Sandstone with BMS
18.70	21.55	Pink and Green banded Skarn
21.55	25.30	Biotite altered Sandstone with BMS 21.55m to 25.3m, 3.75m @ 2.66g/t Au, 25.7g/t Ag, 3.03% Pb & 4.63% Zn
25.30	28.60	Biotite altered Sandstone
28.60	29.10	Sandstone with dendritic pyrite
29.1	31.2	Biotite altered Sandstone
31.2	33.9	Sandstone with dendritic pyrite
33.9	EOH	

NC69

<u>From</u>	<u>To</u>	<u>Summary Log</u>
0.00	0.90	Oxidised soil + clay zone
0.90	1.25	Oxidised colluvium + fragmented sandstone

1.25	7.10	Sandstone + calc silicate
RE-DRILLED	RE-DRILLED	
3.70	12.85	Sandstone + 3 - 10% disseminated pyrite + biotised
12.85	20.75	Sandstone + 3 - 10% pyrite + pyrrhotite
		18.3m to 18.95m, 0.65m @ 2.04g/t Au, 21.9g/t Ag, 2.22% Pb & 3.05% Zn
20.75	26.30	Semi-massive BMS
		21.65m to 35.3m, 13.65m @ 0.66g/t Au, 38.2g/t Ag, 3.14% Pb & 3.23% Zn
26.30	29.60	Sandstone + calc silicate replacement
29.60	33.75	Semi-massive BMS
33.75	42.75	Sandstone + 3-10% + pyrrhotite + trace BMS
		34.85m to 35.3m, 0.45m @ 0.66g/t Au, 39.3 g/t Ag, 3.14% Pb, 3.23% Zn
42.75	EOH	

NC70

<u>From</u>	<u>To</u>	<u>Summary Log</u>
0.00	0.80	Colluvium + oxidised zone
0.80	7.00	Sandstone + leaching & bleaching effects
7.00	11.65	Sandstone + 3-5% dendritic pyrite + trace BMS
11.65	12.00	Semi-massive pyrite zone
12.00	17.00	Sandstone + 1-3% pyrite+ trace BMS
17.00	19.40	Semi-massive BMS zone
		17m to 18.1m, 1.1m @ 0.24g/t Au, 36g/t Ag, 3.75% Pb & 4.79% Zn
19.40	26.60	Sandstone + calc silicates
		20.4m to 24m, 3.6m @ 0.34g/t Au, 36g/t Ag, 4.12% Pb & 5.02% Zn
26.60	33.80	Semi-massive BMS zone
		26.6m to 33.8m, 7.2m @ 0.75g/t Au, 77.5g/t Ag, 7.16% Pb & 11.3% Zn
33.80	38.15	Sandstone + 1-3% pyrite veinlets + pyrrhotite +/- BMS
38.15	EOH	

NC71

<u>From</u>	<u>To</u>	<u>Summary Log</u>
0.00	0.60	Soil + dirt
0.60	1.50	Oxidised sandstone
1.50	5.75	Siltstone + > 10% disseminated pyrite
5.75	6.30	Fault
6.30	9.50	Biotised sandstone + trace sulphides
9.50	10.30	Semi-massive BMS
10.30	16.45	Sandstone + calc silicate replacement
16.45	17.50	Semi-massive BMS
		16.4m to 17.5m, 1.1m @ 0.2g/t Au, 27.4g/t Ag, 2.94% Pb & 4.18% Zn
17.50	28.00	Sandstone + tarnished biotite + bleaching
		20.5m to 22.55m, 2.05m @ 0.25g/t Au, 42.3g/t Ag, 4.52% Pb & 7.10% Zn
28.00	33.10	Semi-massive BMS
		27.1m to 33.1m, 6m @ 0.56g/t Au, 62.7g/t Ag, 5.93% Pb & 9.44% Zn
33.10	40.00	Sandstone + >5% pyrite + 5% pyrrhotite + trace BMS
40.00	EOH	

4.2.3 West Higgs

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 (see figure 4.26).

Primary mineralisation would appear to have been pyrite (+/-pyrrhotite?) veining/disseminations with perhaps sliceous gangue focused on the contact and upper margins of massive sandstone beds where overlain by further massive sandstone.

Previous holes on the western side of the gorge but a little down-slope, had failed to intersect anything of any significance, however, these holes both suffered from being drilled at less than optimal locations due to topography and access. The Poltock rig was able to drill directly beneath these anomalous channel samples in geologically optimal locations.

They also did not target the West Higgs conductivity anomaly.

Two holes were drilled at West Higgs. 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. The hole 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.

Summary logs are as below with more detailed logs in appendix A. Holes are shown in plan view in figure 4.26 and section in 4.27.

Not all core has been assayed with the significant section from surface to 35.7m and 48.0m in NC72 and NC73 respectively cut but not assayed. This section would contain the down-dip extension of the surface channel samples. The core was ready to be sent in a subsequent batch which was put on hold and remains so.

Table 4.6 Best intervals for NC73

Hole_ID	from (m)	to (m)	interval (m)	Au g/t	Ag g/t	Pb %	Zn %
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

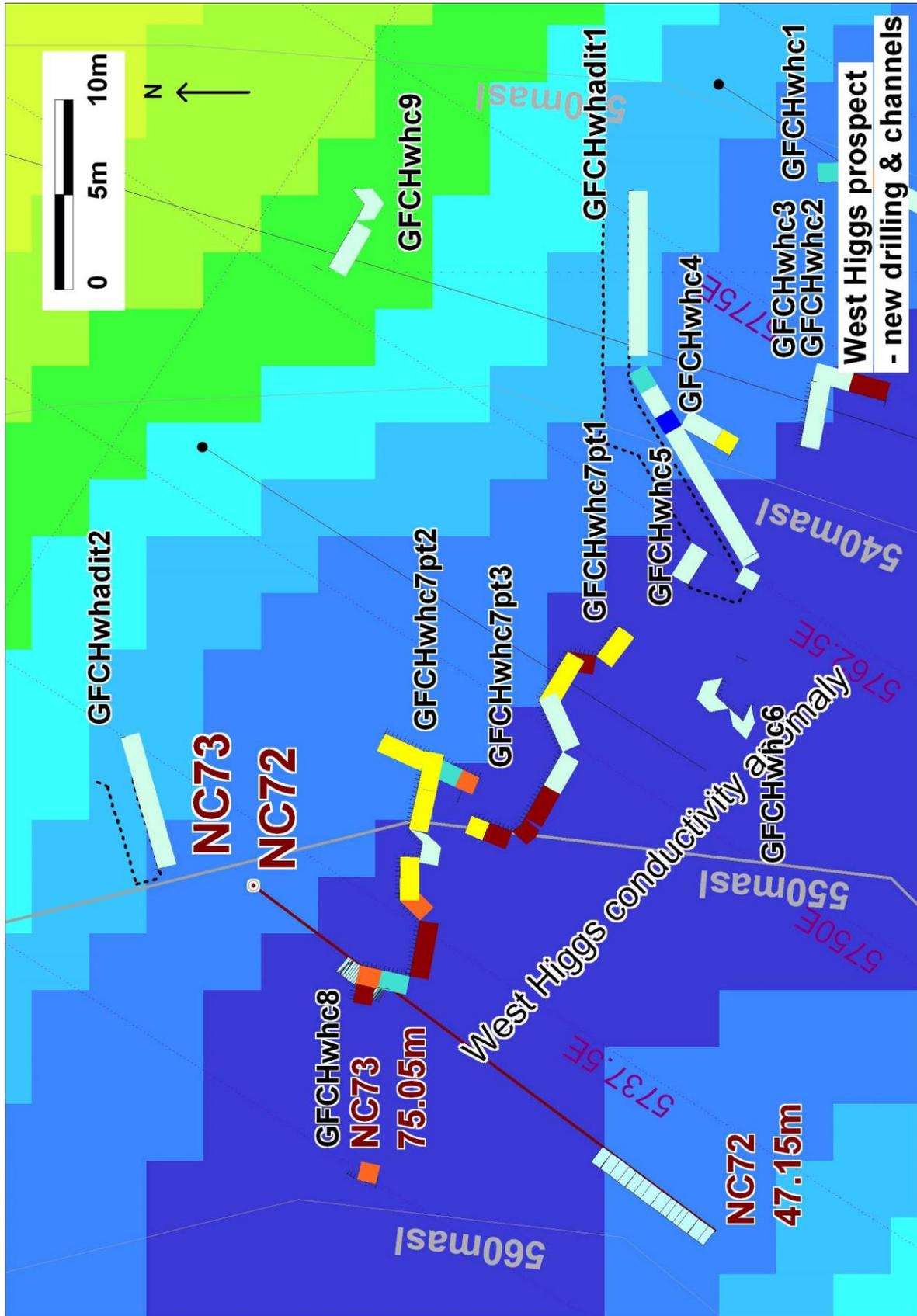


Figure 4.26: West Higgs plan showing location of drillholes NC72 and NC73 with respect to surface channel samples showing gold only. Legend as for gold in figure 4.13.

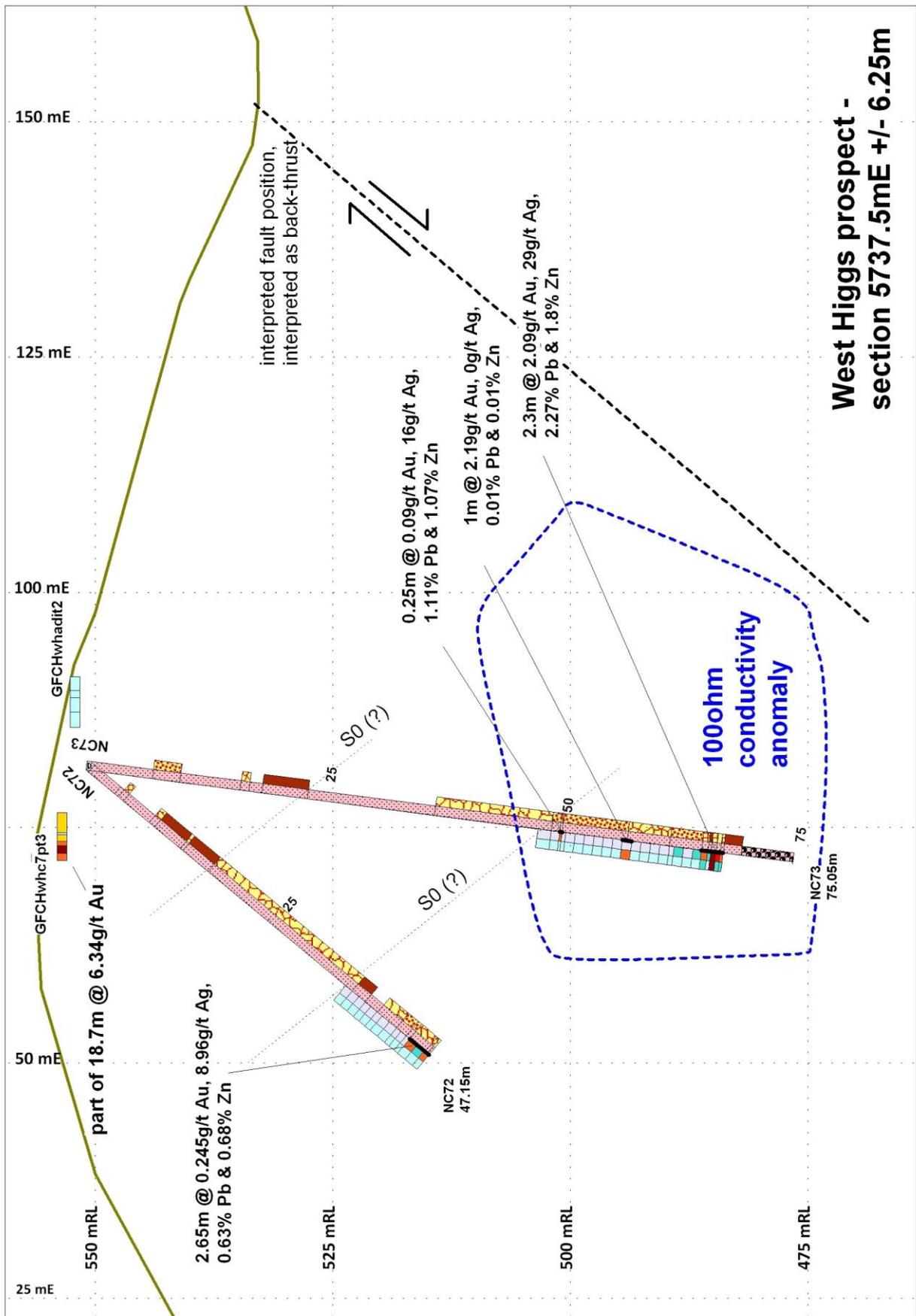


Figure 4.27: West Higgs section 5737.5mE +/- 6.25m showing drillholes gold and lead+zinc assays. Also shows West Higgs conductivity anomaly and surface channel samples. Legend in figure 4.13.

NC72

From	To	Summary Log
0	0.30	Scree
0.30	3.90	Sandstone
3.90	4.45	Quartzite with minor disseminated pyrite
4.45	5.15	Biotite altered Sandstone with BMS.
5.15	8.7	weakly biotite altered Sandstone with pyrite
8.7	9.45	Quartzite with dendritic pyrite
9.45	12.95	Biotite altered Sandstone with pyrite
12.95	13.3	Dendritic pyrite altered Sandstone
13.3	16.8	Biotite altered Sandstone
16.8	36.6	Pyritic Quartzite
36.6	38.4	Chlorite/biotite altered Sandstone
38.4	40.1	Clay altered sandstone with pyrite
40.1	42.7	Pyritic Quartzite
42.7	44	Clay altered sandstone with pyrite
44	44.5	Quartzite sandstone with pyrite
44.5	46.6	Biotite altered Sandstone with BMS
44.5m to 47.15m,	2.65m @ 0.245g/t Au, 8.96g/t Ag, 0.63% Pb & 0.68% Zn	
46.6	46.9	BMS in biotite hornfelsed sandstone
46.9	47.15	Biotite altered Sandstone with BMS
47.15	EOH	

NC73

From	To	Summary Log
0	0.45	Scree
0.45	7.05	Leached sandstone
7.05	9.95	Pyritic quartzite
9.95	16.35	Quartzite
16.35	17.3	Dendritic pyrite in quartzite
17.3	18.65	Quartzite
18.65	23.5	Biotite hornfelsed quartzite
23.5	37.0	Quartzite
37.0	49.4	Dendritic pyrite in quartzite
49.4	50.3	Biotite hornfelsed gritty sandstone with pyrite
	50.3m to 50.55m,	0.25m @ 0.09g/t Au, 16g/t Ag, 1.11% Pb & 1.07% Zn
50.3	50.55	Biotite hornfelsed gritty sandstone with BMS
50.55	57.45	Biotite hornfelsed gritty sandstone with pyrite
	56.95m to 57.95m,	1m @ 2.19g/t Au, 0g/t Ag, 0.01% Pb & 0.01% Zn
57.45	61.95	Dendritic pyrite in quartzite
61.95	65.35	Biotite hornfelsed gritty sandstone with pyrite
	65.35m to 67.65m,	2.3m @ 2.09g/t Au, 29g/t Ag, 2.27% Pb & 1.8% Zn
65.35	66.05	BMS in biotite hornfelsed sandstone
66.05	66.35	Biotite hornfelsed sandstone
66.35	66.9	BMS in biotite hornfelsed sandstone
66.9	67.35	Biotite altered sandstone with BMS veins
67.35	67.65	BMS in biotite hornfelsed sandstone
67.65	69.55	Biotite hornfelsed sandstone
69.55	75.05	Light green sandstone with coarse grained sandstone beds
75.05	EOH	

4.3 Lead Isotope Age Dating Results

4.3.1 Introduction

Results of age dating using the lead isotope method are listed in table 4.7 and are presented graphically in figure 4.28.

Prospect	Sample#	$^{206}\text{Pb}/^{204}\text{Pb}$	$^{207}\text{Pb}/^{204}\text{Pb}$	$^{206}\text{Pb}/^{204}\text{Pb}$	$^{208}\text{Pb}/^{204}\text{Pb}$	Pb (ppm)
Stormont	2013160098	18.485	15.628	18.485	38.388	2620
Stormont	2013160099	18.483	15.627	18.483	38.387	3110
Higgs	2013160100	18.406	15.626	18.406	38.323	
Higgs	2013160101	18.413	15.622	18.413	38.321	521000
Round Mountain	2013160102	18.387	15.619	18.387	38.301	
Olivers Hill	2013160103	18.43	15.624	18.43	38.343	7988

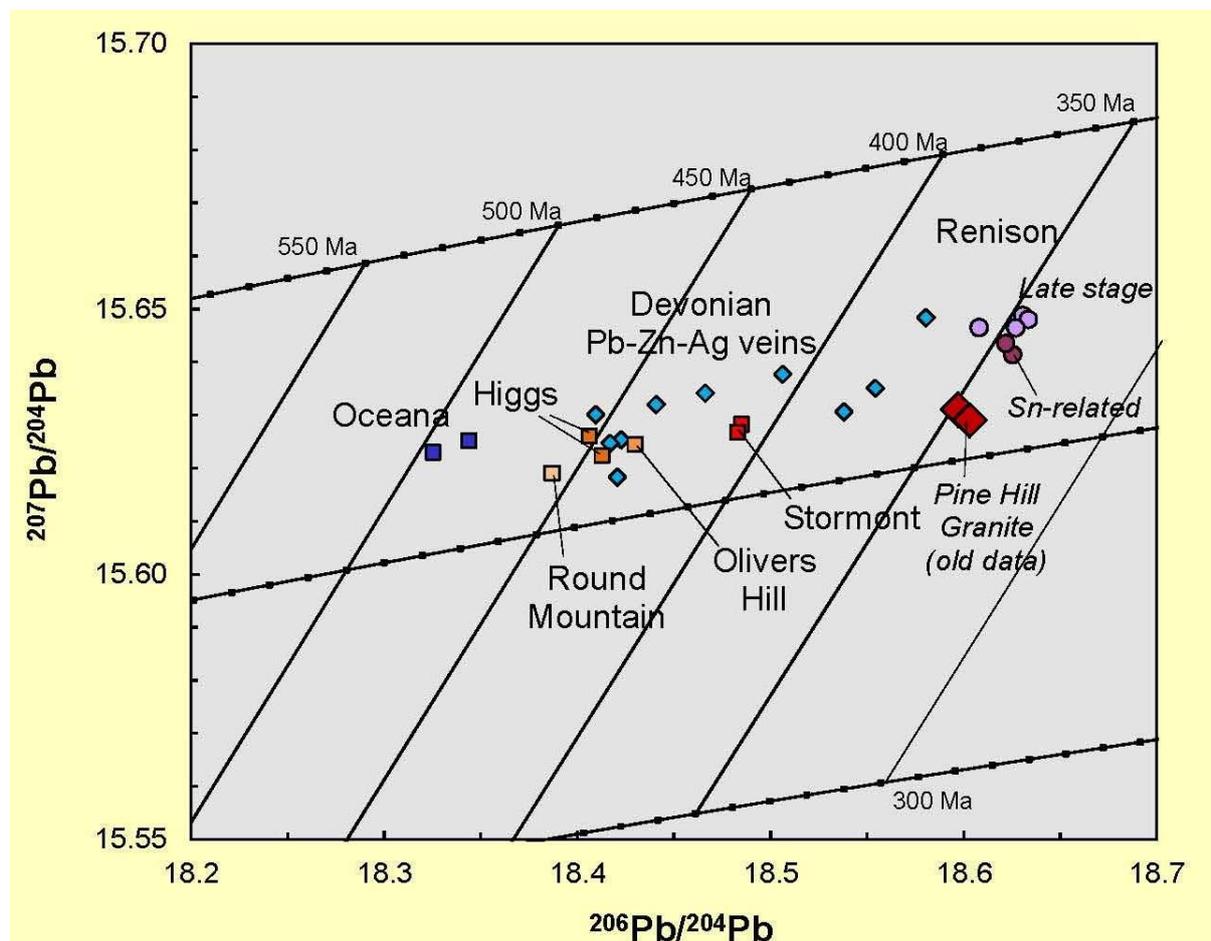


Figure 4.28: Age and lead isotope ratios for Moina project samples.

There are a number of features worth noting.

1. The absolute ages shown on figure 4.28 are unlikely to be correct (Dave Huston pers. comm.) with an absolute age for the Moina samples likely in the 350-375ma range. The point to the figure is to show relative ages.
2. The closeness of the Round Mtn., Oliver's Hill and Higgs ages.
3. The clear distinction between these three prospects and the relative youth of Stormont.

The close similarity in ages between the three lead +/-silver+/-zinc deposits is perhaps unsurprising but it does lend weight to the possibility of a similar genesis for the three deposits which is significant given that there are some differences in the current interpretations between the three.

4.3.2 Lead +/- silver +/- zinc prospects – Higgs, Round Hill and Oliver's Hill

Higgs

The Higgs deposit has been the focus of a considerable amount of drilling and geological interpretative work by Tasgold/Frontier and Torque geologists in the last decade leading to a stronger basis for any interpretation.

Lead and zinc mineralization (in equal proportions at Higgs as opposed to lead rich-zinc poor at Round Hill and Oliver's Hill) is generally associated with biotite hornfels and associated with pyrite+/-pyrrhotite.

Paragenetically the biotite sulphide phase predates silica+sericite alteration i.e. greisenisation. The biotite hornfels is considered to be a thermal product of the intruding Dolcoath Granite. The granite is considered to be intruding an already deformed terrane with the Higgs mineralization on the southern limb of a synclinal fold with mineralization truncated by a basal backthrust(?).

Whilst earlier descriptions stress the sheared contacts between the base metal +/- gold lodes as indicating a syn-deformation genesis, recent drilling has shown contacts to be most commonly coherent without shearing and whilst the base metal+biotite is aligned the foliation is interpreted to reflect original bedding.

The increase in lode widths at depth, stopping at the basal thrust fault, strongly suggests a spatial relationship at least between mineralization and this fault.

Mineralization is interpreted to be due to replacement of favourable beds adjacent to this feeder structure.

Round Hill

The Round Hill sample was taken from an outcropping bedding conformable vein in the base of Machinery Creek. The historic workings are inaccessible and so we must rely on descriptions by earlier geologists.

Jennings (1958) gives a very detailed description of the geology though drawn largely from Reid (1919). He describes the main style of mineralization as essentially stratiform and stratabound and occupying anticlinal fold hinges where less competent beds have deformed. Mineralisation occurs where such soft beds meet bedding plane thrust faults akin to Bendigo's saddle reef model. Jennings (1958) sees mineralization as syn-folding with fluids migrating and occupying dilational settings such as these.

The alternative, suggested by the similar age dating, is that mineralization pre-dated folding and was of a replacement style similar to Higgs with subsequent folding and perhaps some remobilisation.

Oliver's Hill

The Oliver's Hill prospect (Devonian Mine) sample was taken from drillcore from DDH OH3, drilled by the then Department of Mines, and stored at the Mornington core store from where the sample was collected.

Early descriptions were provided by Reid (1919) and Jennings (1958). The most recent discussion of the Oliver's Hill ferro-manganese deposits from which the galena samples were derived is from Askins (1980).

“Gossan, consisting of gritty very exotic looking goethite, outcrops in two main zones, which seem to be beds dipping SE (from the drill section data). Quartz feldspar porphyry dykes outcrop poorly. These are presumably Devonian and related to the Dolcoath Granite below. There is presumably a near vertical fractured zone or zones passing NW through the area, in the areas of the gossans and porphyry dykes. This fracture zone is interpreted to have been the plumbing system to bring fluids carrying Pb, Zn, Au, Ag etc. from some point below. These elements are possibly leached from the underlying Cambrian tuffs by meteoric waters heated by the granite. Superimposed(?) Sn mineralization, especially at the Tin Spur end, is possibly due to true metasomatic fluids derived from the granite. The host rock for mineralization was presumably originally pyrite rich sandstone beds which have received the Pb etc. by addition.” (Askins, 1980)

Here replacement of favourable beds adjacent to a feeder fault structure is again suggested.

4.3.3 Regional Significance (Wilmot/Washington mine)

Resistivity data from the 3D IP survey broadly maps out bedding (see figure 4.2), being either due to shales in the upper part of the Moina Sandstone (predominantly to the west of Lake Gairdner) or sulphidic zones in favourable strata (Higgs and possibly Round Hill).

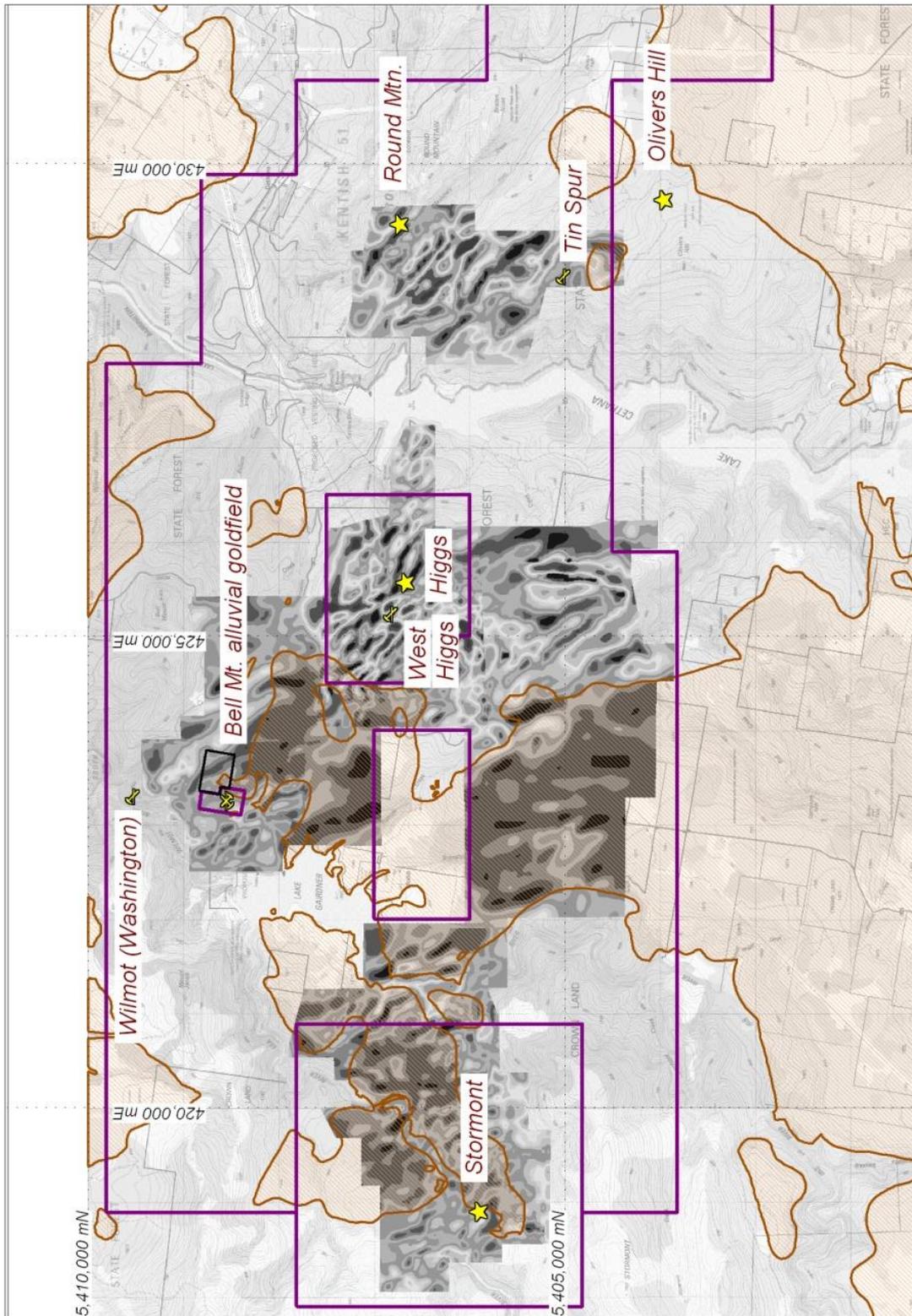


Figure 4.29: Resistivity at 75-100m below surface showing strong structural grain. Lead isotope age dating sample locations as gold stars.

The resistivity image shows the trend of bedding has a north-northwest to northwest trend except in the Higgs area where the trend is more west-northwesterly. This concurs with mapping and structural data.

Resistivity low trends continue from Higgs through West Higgs to the hills around the Bell Mount alluvial goldfield. Mapping suggests a relationship between these trends and the faults mapped verging with the Bismuth Creek Fault at the northwestern end but trending to Higgs at their southeastern ends.

Descriptions of the Wilmot (Washington) mine (now inaccessible) to the north of the Bell Mount alluvial field refer to impregnations of galena in quartzite, essentially akin to Higgs and West Higgs style.

Thus there is a strong suggestion that the dominantly lead system with +/- silver +/- zinc +/- gold extends from the Wilmot (Washington) mine in the northwest to Olivers Hill to the southwest of Tin Spur.

It appears that the mineralisation style may all be a product of replacement of favourable beds, probably necessarily adjacent to favourable faults, with only relatively minor subsequent remobilisation.

What is unclear is as to whether the mineralised beds from each locality are from the same stratigraphic position and this may be unlikely.

Higgs mineralisation is hosted in gritty units which are reportedly from the upper part of the Moina Sandstone unit. Round Hill mineralisation in contrast is reportedly hosted in shaley units though again from the upper part of the Moina Sandstone. Olivers Hill lead mineralisation must occur closer to the base of the Moina Sandstone unit.

The characteristics of these respective favourable beds are the subject of further study.

4.3.4 Stormont

The younger age for Stormont is perhaps consistent with the overall paragenetic sequence though this means that retrograde skarn formed some 30my to 40my after initial prograde mineralization.

5.0 Conclusions

5.1 Potential

Though small RL 3/2005 covers a significant part of the Moina mineralised province with significant occurrences of Au, Pb, Zn, Ag, W, Bi and Mo.

In particular the area is demonstrably prospective for an

- earlier phase of stratiform Pb+Zn+/-gold and/or (alternatively)gold alone in a pyrrhotite/pyrite association in beds of altered/mineralised favourably reactive/porous sediments of the Higgs/West Higgs style;
- later lode /greisen style W +/- Mo +/- Bi inside the margin of the granite (greisen) and extending in a north-northwesterly orientation in Moina Sandstone as veins, <0.5m thick, and (less commonly) associated with porphyry dykes.

Recent exploration has targeted both styles with drilling at both Higgs and West Higgs for the former, and at the Three Sisters prospect on the granite margin for the latter.

There is also potential for Intrusive Related Disseminated Gold as per Morrison, Reed and Turner (2003). Extensive Bi anomalism supports this target model as do occurrences of gold in sandstone e.g. at Packetts and West Higgs. This style is considered by Morrison, Reed and Turner (2003) to most likely be in similar favourable structural settings around the granite margin as the other styles.

5.2 Higgs/West Higgs style Pb + Zn +/- gold and/or gold alone in pyrrhotite/pyrite association

5.2.1 Higgs

Historical research on underground sampling has provided considerable confidence to the resource database in the area previously unrepresented. In particular they show a robust main lode 3-4m thick with reasonably consistent grades.

Drilling around the Higgs workings has both (1) better defined the Higgs resource and (2) provided sample material for metallurgical testwork. It has produced some excellent grades with up to 7.2m @ 0.75g/t Au, 77.5g/t Ag, 7.16% Pb & 11.3% Zn in NC70 (26.6m to 33.8m) and 3.1m @ 10.05g/t Au, 33.3g/t Ag, 3.25% Pb & 5.03% Zn in NC68 (14.6m to 17.7m).

It has shown continuity and grade of the upper of the two main lodes up-dip but has shown that the lower of the two dies out up-dip.

Reasonably extensive drilling to date below the thrust fault has not located any offset mineralisation and it is considered more likely that the basal thrust acted as a feeder structure rather than that the lodes are necessarily offset by it.

A new resource has not been calculated but a preliminary appraisal says that the new drilling results appear to have reduced the overall tonnage but increased grades, but by as yet indeterminate amounts.

As a mining proposition the mineralisation may be modelled as a bulk tonnage gold deposit with lead, zinc and silver credits or as a smaller, discrete, lead, zinc and silver resource with gold credits.

Drilling has shown the resource to be robust between sections 5912.5mE and 5962.5mE with some confidence. At the western end of the Higgs resource DDH's NC54 and NC55, drilled early in the piece with the newly acquired Poltock rig, did not have good enough core recovery for inclusion in any resource. Unfortunately the core which was recovered is poorly mineralised. It may be useful at some stage to redrill one of these holes but it does appear that significant mineralisation at Higgs does not extend to these holes.

5.2.2 West Higgs

DDH's NC72 and NC73 at West Higgs, to the west of the Higgs workings, have established that base metal +/- gold in biotite hornfels style mineralisation does continue along strike to the west-northwest from Higgs. This zone remains open ended to the northwest. It is interpreted that the gully along the northeastern side of West Higgs represents the same basal thrust fault which bounds Higgs. It is also recognised that the zone trends to the Bell Mount goldfield area.

5.2.3 East Higgs

At the eastern end it does appear that holes NC56 and NC16 were drilled off the Higgs trend as defined by both lithology and the Higgs conductivity trend and there is a zone here of ~500m of strike which has been inadequately drill tested.

5.2.4 Narrawa Reward

The Narrawa reward trend (seen in section in figure 2.1 and in plan in 2.2) remains largely un-drill tested. Channel samples along the old Narrawa reward adit walls assayed 32m @ 2g/t Au and DDH NC02 intersected 2.4m @ 2.53g/t Au, 60.6g/t Ag, 0.58% Pb and 1.03% Zn.

5.2.5 Hugo Skarn east conductivity anomaly

The Hugo Skarn east (?) conductivity anomaly (seen in section view in figure 2.1) remains un-drill tested. This anomaly lies at a depth of 200m to 400m and lies along strike from the Hugo Skarn resource on RL 10/88, summarised by Newnham (1997) as ~250kt @ 5-6% Zn and 1g/t Au.

The Hugo Skarn deposit is obscured by a north dipping thrust, the Hugo Thrust, which must continue eastwards into RL 3/2005 and appears to correspond with a zone of elevated magnetism which may be due to skarn at depth.

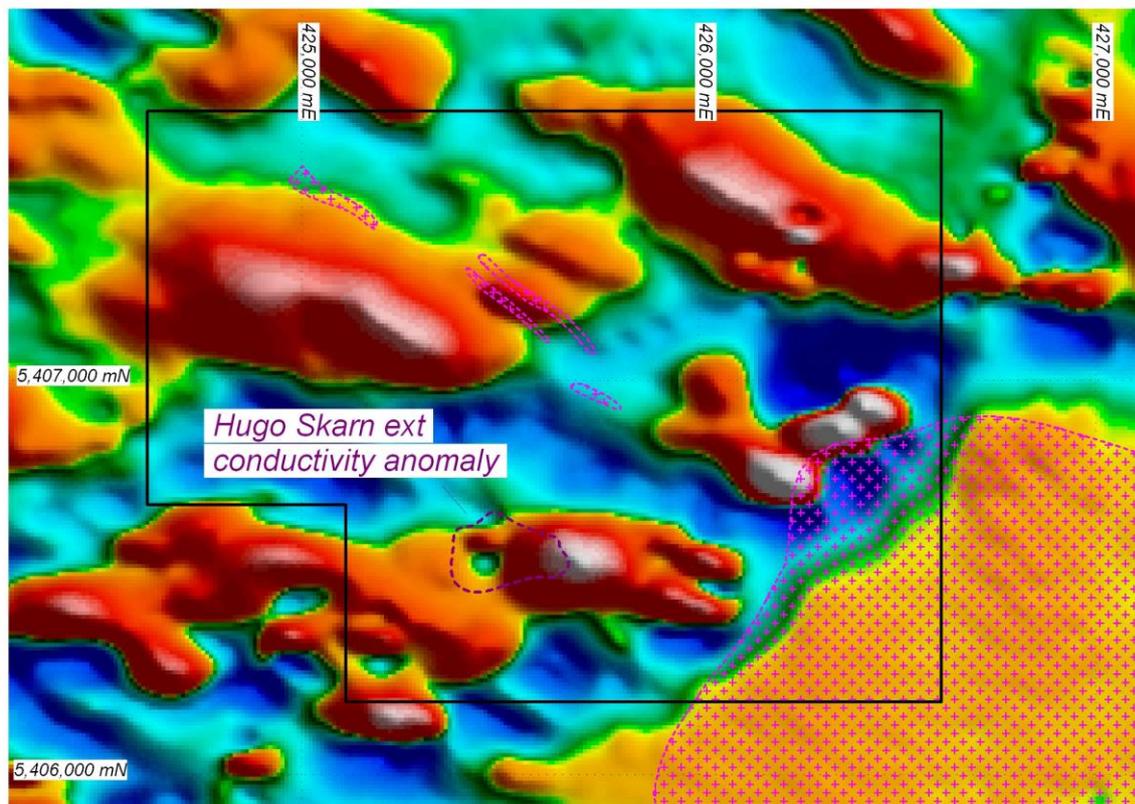


Figure 5.1: Hugo Skarn extended conductivity anomaly at 250m depth superimposed on 2VD magnetics. Granite and porphyry dykes in pink crosses.

5.3 Three Sisters lode/greisen style W +/- Mo +/- Bi

The drilling at the Three Sisters prospect to date has improved the understanding of the geology markedly and there still remains potential for a W, Mo and/or Bi resource in this area. Drilling should continue to target the magnetic low zones between magnetic highs and in particular test the country between the Three Sisters and Packetts anomalies.

5.4 Narrawa Creek chargeability anomaly

No work has addressed the source of the Narrawa Creek chargeability anomaly (see figure 5.2) nor any of the chargeability anomalies in the licence area where there is potential for a disseminated gold deposit. Whilst non-auriferous pyrite outcrops in a number of locations in the Moina district, in a number of locations this pyrite is associated with significant gold grades e.g. Higgs and West Higgs.

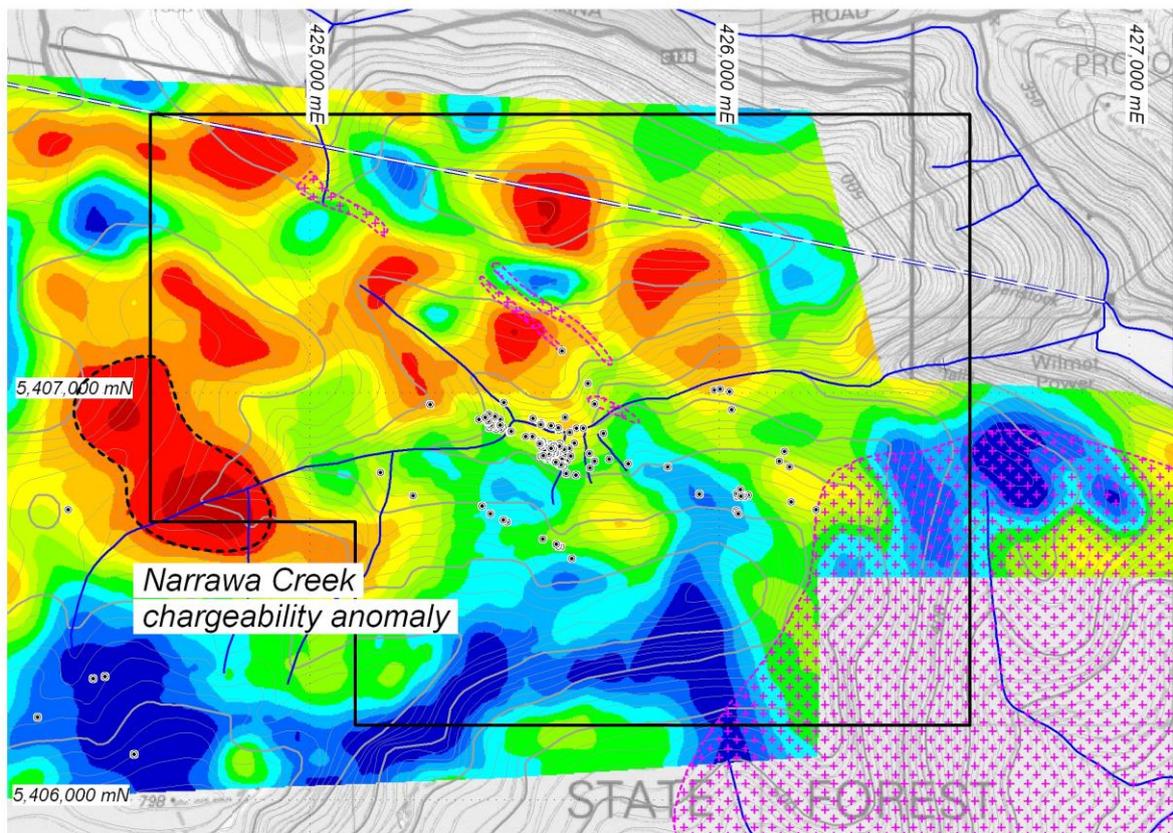


Figure 5.2: Narrawa Creek chargeability anomaly at 200m depth with drill collars to date. Granite and porphyry dykes in pink crosses.

6.0 Environment



Figure 6.1 NC63 Drill hole collar



Figure 6.2 NC63 Drill pad



Figure 6.3 NC64 Drill hole collar



Figure 6.4 NC64 Drill pad



Figure 6.5 NC65 Drill hole collar



Figure 6.6 NC65 Drill hole pad



Figure 6.7 NC66 Drill hole collar



Figure 6.8 NC66 Drill pad



Figure 6.9 NC67 Drill hole collar



Figure 6.10 NC67 Drill pad



Figure 6.11 NC68 Drill hole collar



Figure 6.12 NC68 Drill pad



Figure 6.13 NC69 Drill hole collar



Figure 6.14 NC69 Drill hole pad



Figure 6.15 NC70 Drill hole collar



Figure 6.17 NC70 Drill pad



Figure 6.16 NC71 Drill hole collar



Figure 6.18 NC71 Drill hole collar and pad



Figure 6.19 NC72 Drill hole collar



Figure 6.20 NC73 Drill hole collar



Figure 6.21 NC72 and NC73 Drill Pad

7.0 Expenditure

	2012/2013	2013/2014
Geology	\$117,971	\$42,841
Geophysics	\$964	
Geochemistry	\$12,347	\$4,191
Drilling	\$139,753	\$5,376
Other costs (incl. rental)	\$201	
Administration	\$5,900	\$2,755
Total	\$277,137	\$55,163
(Commitment	\$150,000	\$50,000)
<u>Total for 2012/2014</u>	<u>\$332,300</u>	

8.0 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.; Korsch, R. J.; Everard, J. L.; Foudoulis, C. (2005) Significance of Devonian–Carboniferous igneous activity in Tasmania as derived from U-Pb SHRIMP dating of zircon. *Australian 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)
- 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 Proprietary Ltd.; Jervois, Tasmanian Company Report (TCR00_4423).
- Reid, A. M. (1919) The mining fields of Moina, Mt Claude, and Lorinna; Geological Survey Bulletin 29 (GSB29)