Beaconsfield Gold NL

ELs 30/1997, 12/1999, 7/2000 & 27/2000
Cobblestone Creek & North Pease Creek Projects

Annual Exploration Report to 19 Sept 2004

Ken Morrison & Philip Muir
15 September 2004

LIST OF CONTENTS

	Page
SUMMARY	1
INTRODUCTION AND TENEMENT INFORMATION	1
EXPLORATION AIMS AND PHILOSOPHY	4
SUMMARY OF PREVIOUS EXPLORATION	4
EXPLORATION RESULTS: YEAR TO 19 SEPTEMBER 2004	5
• Interpretation of Airborne Geophysics	5
• Soil Geochemistry Survey	6
• Seismic Surveys	8
• Drilling	12
EXPENDITURE	12
WORK PROGRAM: YEAR TO 19 SEPTEMBER 2005	13
REFERENCES	13

Figure 1 Location Map
Figure 2 Geology Map
Figure 3 Structure and Soil Geochemistry Summary Map
Figure 4 East Beaconsfield Prospect Area
Figure 5 East Middle Arm Gorge Prospect Area
Figure 6 North Pease Creek Prospect Area

Appendix A Linear Structures Maps
Appendix B Soil Assay Data
Appendix C Seismic Survey Reports
Appendix D Drill Log

SUMMARY

BGNL recommenced regional exploration on the Cobblestone Creek and North Pease Creek projects in 2004, after coming out of a three year period in receivership. In the part year ending 19 September 2004, a re-interpretation of earlier geophysical surveys and new field soil and seismic surveys were completed. Drilling commenced and is continuing.

Several linear trends identified by re-processing the 1988 Austirex fixed wing magnetic/radiometric survey are interpreted as probable faults. Four of these trends within the Cobblestone Creek Thrust slice were traversed with trial lines of Mobile Metal Ion soil geochemistry, producing encouraging gold, base metal and arsenic results on three major NE-SW trends. These three features will be drilled in the next year.

Seismic refraction was trialled at East Beaconsfield and Pease Creek in an attempt to map the thickness of cover rocks and sediments overlying the target Cambro-Ordovician units. At East Beaconsfield, the seismic velocity of Permian mudstone could not be distinguished from the underlying rocks but at Pease Creek the base Tertiary/top Mine Sequence contact and the Salisbury Hill Formation/Eaglehawk Gully Formation contact were successfully detected. A combination of seismic and ground magnetics will be conducted over the North Pease Creek prospect prior to further drilling.

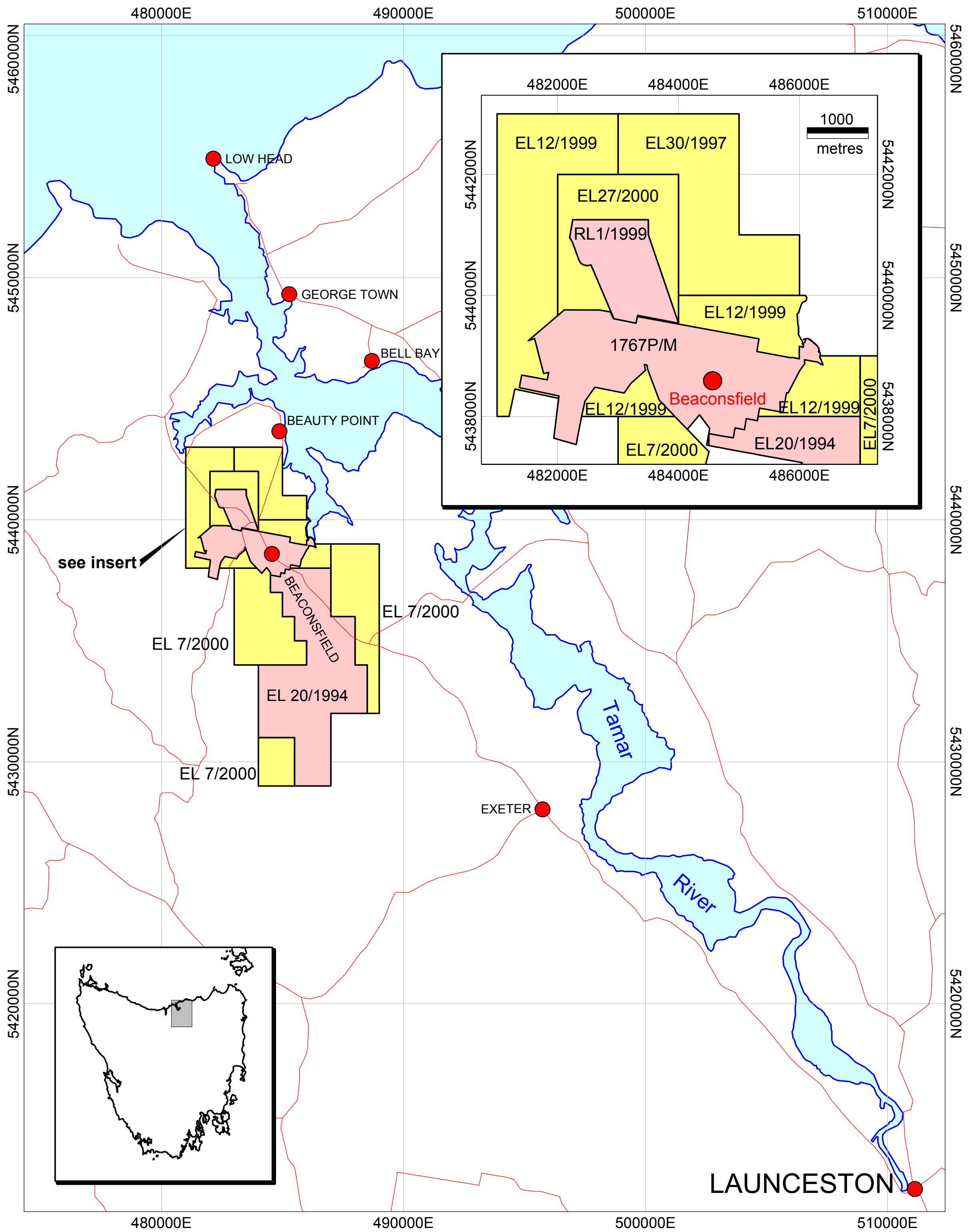
The first North Pease Creek drill hole is in progress. At the time of reporting NPC-1 had penetrated the base of the Tertiary cover sediments at 73 metres and was drilling ahead in correlates of the Ordovician Beaconsfield Mine Sequence sandstones.

Exploration during the next year will comprise refining drill site locations by a combination of ground geophysics and soil geochemistry on both projects, in tandem with continuous drilling.

INTRODUCTION AND TENEMENT INFORMATION

Beaconsfield Gold NL came out of receivership on 12 March 2004 and the company has re-established the regional exploration program which was underway when the Receiver and Manager were appointed almost three years earlier. The program involves all four of the exploration licences held by BGNL in the Beaconsfield region (Figure 1). ELs 30/1997, 12/1999, 7/2000 and 27/2000 total 34 km^2 and cover much of the Cobblestone Creek Thrust block and the northern strike extension of the Beaconsfield mine sequence rocks, as predicted below the Permian and Cainozoic cover sediments shown on Figure 2, and these are the target areas for the two exploration projects currently underway.

Land tenure consists of freehold pasture and light forest, Crown Reserves under light forest and low density residential and agricultural infrastructure. All year round access exists to the entire area via a combination of vehicular roads and tracks and short distance walking.



Beaconsfield Gold NL (100%)

Beaconsfield Mine JV

2500 0 2500 5000 7500

metres

AGD66 / Australian Map Grid zone 55

BEACONSFIELD GOLD NL

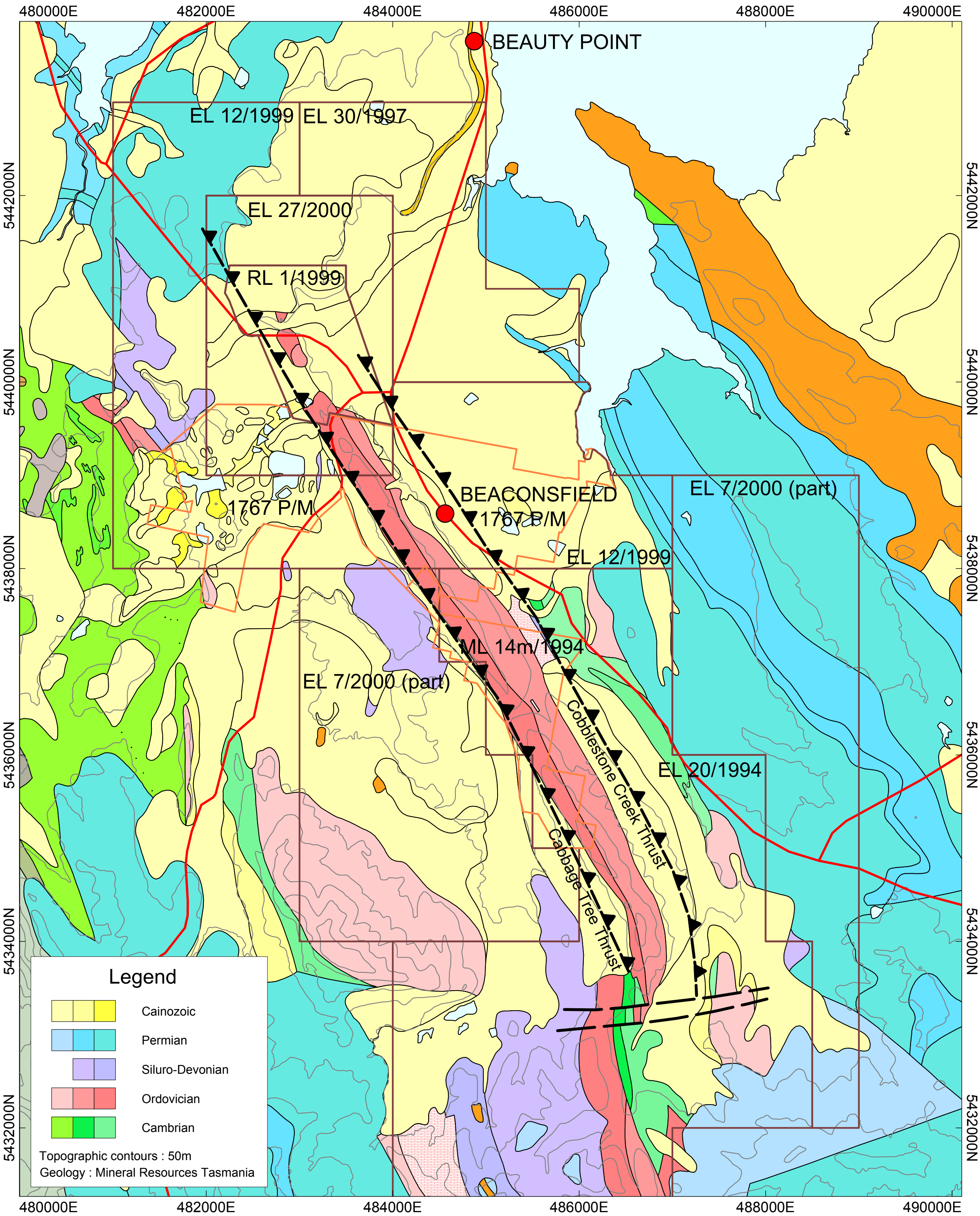
ELs 30/1997, 12/1999, 7/2000, 27/2000

Figure 1 - Location Map

Exploration & Mining Tenements

(MRT tenements current at 22/6/2004)

Author: P.Muir / K.Morrison	Date: Sept 2004



Scale 1 : 62,500

1000 0 1000 2000

metres

AGD66 / Australian Map Grid zone 55

BEACONSFIELD GOLD NL

ELs 30/1997, 12/1999, 7/2000, 27/2000

Figure 2 - Geology Map

Author: P.Muir / K.Morrison

Date: Sept 2004

A joint annual reporting facility for ELs covering the Cobblestone Creek project was authorized by Mineral Resources Tasmania on 11 January 2000, with an anniversary date of 19 September, and that system will be continued. This report covers work conducted between January and September 2004. Most of the work occurred within the Cobblestone Creek project area but due to wet ground conditions drilling on that project has been re-scheduled, and drilling commenced at North Pease Creek instead.

EXPLORATION AIMS AND PHILOSOPHY

The primary aim is to find another gold ore deposit, in rocks which remain unexplored by both the early prospectors and modern companies because they are masked by younger cover.

The Cobblestone Creek fault block is in thrust contact with Ordovician shales located in the hanging wall of the Mine Sequence (Hills, 1998) only 250 metres NE of the Beaconsfield Mine and the large majority of the pre Permian rocks in the Cobblestone Creek block do not outcrop. Similarly, the northern strike extension of the mineralised Ordovician Mine Sequence rocks at Pease Creek (MacDonald, 1998, Hills and MacDonald, 1999) is overlain by unknown thicknesses of Cainozoic sediments and possibly Permian rocks. New exploration targets in these two areas will be entirely covered with flat lying Permian sedimentary rocks and/or Cainozoic sediments (Figure 2).

Progress in underground mapping at the Beaconsfield Mine (MacDonald, 2004) shows that the Devonian thrust emplacement of the Cabbage Tree and Cobblestone Creek blocks occurred prior to reef mineralisation, and so fault structures identical to those hosting the Tasmania and Pease Creek Reefs may exist in brittle lithologies across thrust boundaries, or along strike and under cover within the Cabbage Tree Thrust block. In the eastern part of the Tasmania Reef there is evidence of dextral strike slip displacement so the most prospective area for a replica of the Tasmania Reef in a Cabbage Tree Hill-Salisbury Hill trend may be east of the Cobblestone Creek Thrust, beneath Permian cover of unknown thickness (Figure 2).

A major aspect of the exploration program is to test geophysical and geochemical methods for their ability to detect structural or chemical anomalies through the cover rocks and generate drill targets.

SUMMARY OF PREVIOUS EXPLORATION

The project commenced in 2000, with an east-west fence of seven drill holes completed on the East Beaconsfield prospect, a target based on the predicted sub-surface intersection of an interpreted NE striking magnetic linear from a 1998 helimagnetic survey, and a NNW striking belt of Denison Group rocks (Morrison, 2000).

The geology encountered by the seven holes was interpreted as a folded right way up sequence of Blyths Creek Formation sandstone overlying limestone, overlying black slate. A zone of pervasive silica-pyrite ± carbonate alteration overprints part of the sandstone unit at the correct location to correspond to the interpreted magnetic linear. No gold and no significant arsenic enrichment were detected in the alteration.

No exploration was conducted during the period from 2001 to 2004 when the company was in receivership.

EXPLORATION RESULTS FOR THE YEAR TO 19 SEPTEMBER 2004

Interpretation of Airborne Geophysics

Data from two previous airborne surveys were reprocessed and reviewed with the aim to highlight linear structure with potential to define fault locations. A third survey is available but was not used. The 1999 North Tasmania AGSO Project P699 is the most recent, however the survey is less detailed having a flightline separation of 200m and flying height of 126m.

The more recent of the surveys interpreted was an ultra-detail helicopter magnetic survey flown in June 1998 by UTS Geophysics (job A268). Survey specifications include flying height 40m, flightline separation 50m, flightline direction 060 degrees AMG.

The earlier survey was a fixed-wing magnetic and radiometric survey flown in February-March 1988 by Austirex (job 2066). Survey specifications include flying height 112m, flightline separation 150m, flightline direction 090 degrees AMG.

Data were processed using Geosoft Oasis Montaj™ software. A strong magnetic response related to the Andersons Creek Ultramafic Complex is present to the west of the project area and this response adversely interferes with magnetic data processing when attempting to enhance much more subtle features further to the east. Consequently only a subset of magnetic data east of about 483000E was processed.

Various techniques were applied in an initial phase of processing to assess the usefulness of each. These included various convolution filters and Fast Fourier Transform (FFT) filters, producing output such as sun-angle, directional derivatives, analytic signal, and automatic gain (AGC) enhancement. From these the best techniques were selected and used in final data processing and presentation.

A thorough interpretation of the helicopter magnetic survey is available in an earlier report (White, 1998). The current reprocessing of these data reaffirms a significant drawback of that survey, as noted by White; "Unfortunately this flying direction [060 degrees] is parallel to the structures carrying mineralisation. This makes it difficult to be certain if features seen in the data are due to structures or small pulls in the data". There are indeed some ENE-trending features in the reprocessed data that at first seem interesting. However each is generally confined to a segment of only one flightline. Some attempts were made to see if these trends correlate with responses in the fixed-wing data. While corresponding features in the latter survey would be weaker and less well defined, nonetheless it could be expected that, given suitable flightline locations, there would be some supporting evidence. This was not the case and thus the uncertainty surrounding these 060 degree trends is strengthened. It was therefore considered that nothing new concerning likely mineralised structures could be gained with any degree of certainty from the helicopter magnetic survey.

The magnetic data from the fixed-wing survey are included in Appendix A. This shows an FFT first vertical derivative with sun-illumination from the east. First vertical derivative processing enhances and sharpens short wavelength (generally shallower) responses. In the southeast is a narrow blobby anomaly, trending in an ENE direction, that is caused by a power transmission line. A distinct area of relatively strong response in the northeast is due to basalts. Responses trending NNW through the centre of the image relate to the sediments and thrust faults that pass through or near the main Beaconsfield Mine area. There does not appear to be much potentially useful structural information evident in these data.

Radiometric data were also collected in the fixed-wing survey. Historically, radiometric data of this vintage (1988) were often given a cursory inspection and then put aside in favour of using magnetics for interpretation. A greyscale image of the radiometrics is included in Appendix A. The image shows the total count data with sun illumination coming from due north at 30 degrees elevation. This sun direction biases the resultant image in favour of features with an east-west strike component, hence responses correlated with the dominant topographical direction (NW), the geological strike (NW), and orthogonal structural features (NE) will be favoured.

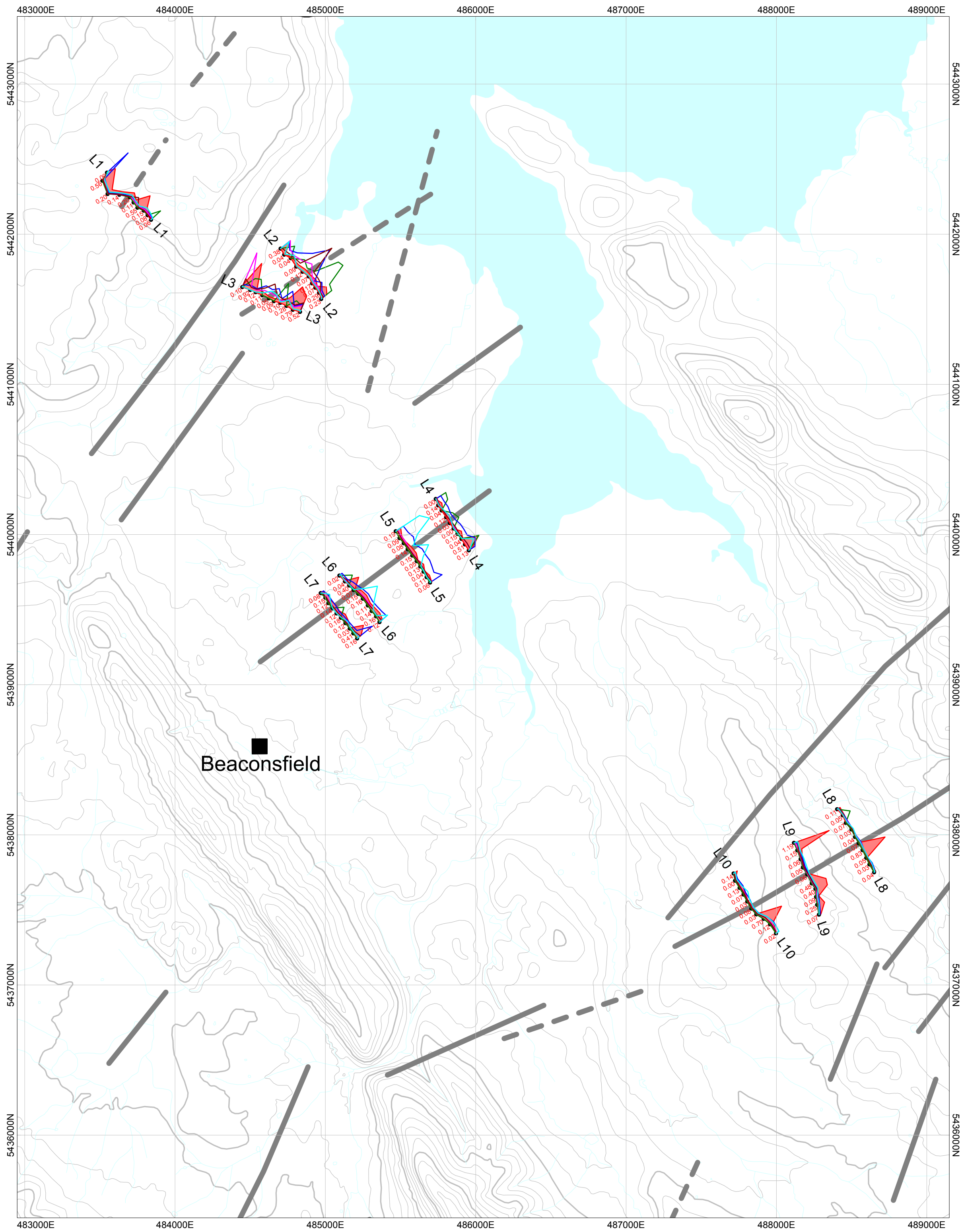
The processed radiometric data reveals numerous ENE to NNE trends that could well be consistent with real crosscutting structural features. These trends provide targets or rating criteria for use in further exploration in the Beaconsfield area.

While the results of the radiometric processing are intriguing and potentially quite useful, the limitations of this data should be kept in mind. First, with a flightline spacing of 150m the lateral accuracy of any interpreted structural feature is unlikely to be better than about ±100m. Second, there is more noise in the data than would be expected from modern surveys and this results in poorer definition of trends (the trends that are visible are better appreciated by standing back and viewing the image from a greater distance). Third, the assertion that there may be evidence in the radiometric data for structural features in host rocks beneath a thickness of cover rocks is purely empirical. Unlike magnetic sources, radiometric sources are easily masked by even a thin cover of overlying material. Therefore if the observed trends are truly related to structures in buried host rocks then there must be an as-yet unexplained physical mechanism for how these structures can have a radiometric expression at the ground surface.

Trends through the centres of the most convincing magnetic and radiometric linear zones likely to represent major stratigraphy-cutting faults are shown on the set of maps in Appendix A and summarised on Figure 3.

Soil Geochemistry Survey

An trial soil survey using the A-horizon Mobile Metal Ion partial digest method was tested on two strong magnetic linears and two strong radiometric linears, all four of which have locations and orientations compatible with their interpretation as northeasterly strike extensions of mineralised structures within the Cabbage Tree



Scale 1 : 40,000

250 0 250 500 750

metres

AGD66 / Australian Map Grid zone 55

As
Zn
Pb
Cu
Ag
Au

radiometric structures
magnetic structures

BEACONSFIELD GOLD NL

ELs 30/1997, 12/1999, 7/2000, 27/2000

Figure 3 - Summary Map

Structure and Soil Geochemistry

Author: P.Muir / K.Morrison

Date: Sept 2004

Thrust block (Figure 3). The four structures were tested with 10 x 10 sample lines, with GPS-controlled sample spacing of approximately 50 metres and lines orientated approximately normal (the L3 orientation was restricted by a residential property boundary) to the interpreted structures. Results are attached in Appendix B and summarised on Figure 3.

Line 1 is entirely in light forest and scrub on Tertiary sediments, exposed over at least 10 metres thickness in the adjacent Stornoway sand pits. Lines 4 to 10 are in lower quality pasture developed on Permian mudstone and Lines 2 to3 are in mixed orchard/better quality pasture, developed on probable Permian rocks overlain by patchy Cainozoic sediments of unknown thickness. With no prior usage of the method in the Beaconsfield area, and as yet no coverage of ground between the interpreted structures, the approach to interpreting the soil data must be one of pattern recognition supported by follow-up work on any empirically assigned anomalies.

The highest gold value of 1.19 ppb is on Line 9 from sample 21, which also shows elevated zinc. Elevated gold from soils on Permian mudstone is more likely to be from genuine structure-sourced anomalies than is the case for the Tertiary sediments, which are known regionally to carry detrital gold in irregular and nuggety concentrations. The East Middle Arm Gorge prospect (Figure 5) is based on the consistent relative elevation of gold peaks on Lines 8 to 10, across a topographic ridge of Permian subcrop. This feature will be drilled in the next year.

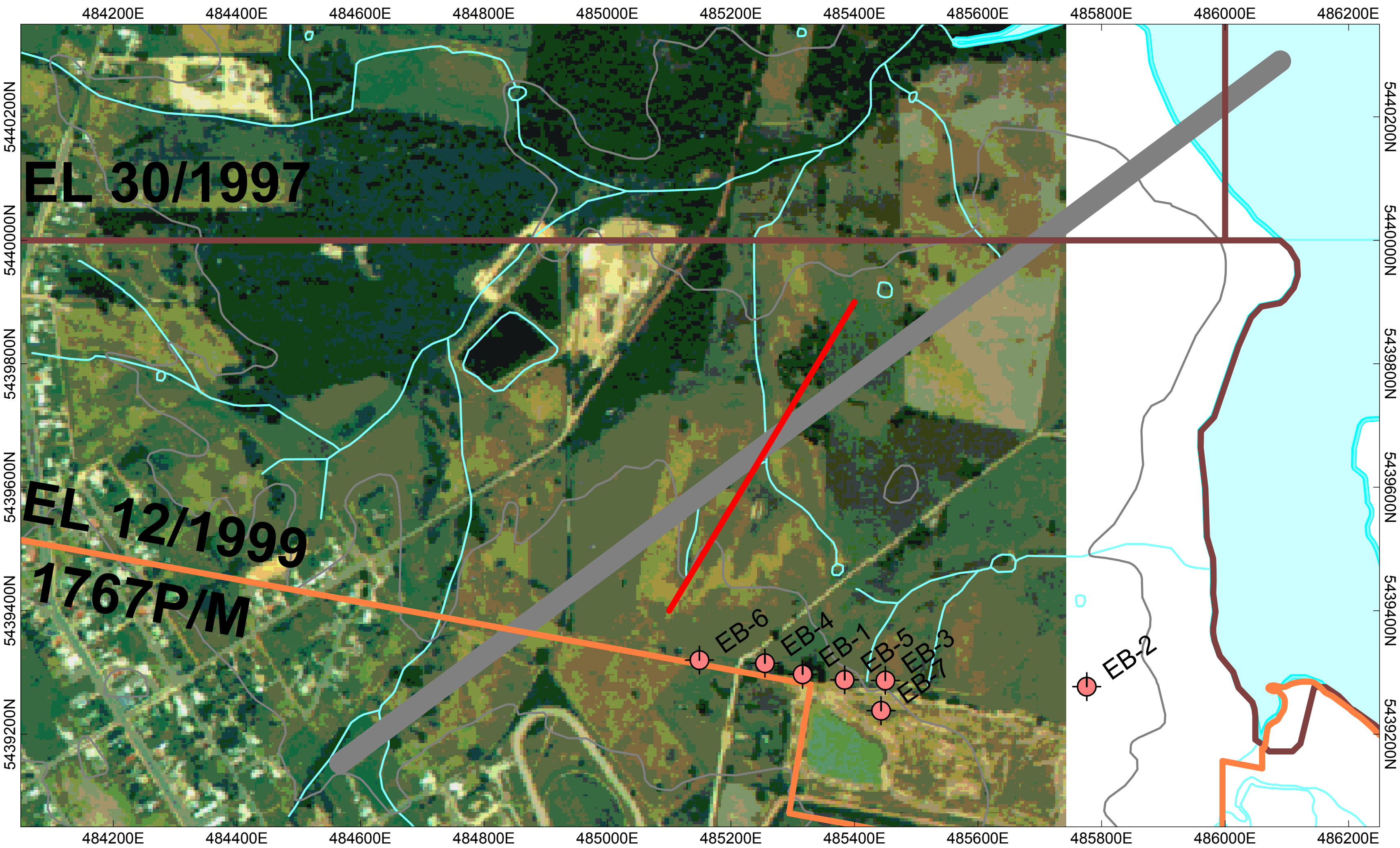
Zones of arsenic elevation occur on Lines 5 and 6, across a radiometric linear which potentially represents a strike extension of the Tasmania Reef host structure. This position is about 300 metres NNW of drill hole EB-7 (Figure 4), which tested an interpreted structural trend from the 1998 helimag survey, now considered less reliable than at the time of drilling (see section above). EB-7 encountered an interval of silica-pyrite-carbonate altered sandstone with no gold–arsenic mineralisation (Morrison, 2000) so if the current Line 5-6 arsenic anomaly is on structure, it represents a high priority drill target despite the lack of gold support in the soil geochemistry.

Lines 2 and 3 show broad multi element elevation, particularly for silver, lead and zinc, and with strong gold support on Line 3 and copper on Line 2. The subcrop lithologies hosting the magnetic linear tested by these lines is less well known than for the other lines, however the soil data alone require drill testing.

No antimony was detected in the survey.

Seismic Surveys

Two small seismic refraction surveys were conducted by Hydro Tasmania at East Beaconsfield and Pease Creek (Figures 4 and 6). The aim was to test the capability of seismic to map cover thickness, and ideally to also detect faults in the pre Permian target rocks. Stratigraphic control exists at the two sites chosen due to previous drilling. At East Beaconsfield the target rocks are overlain by between 70 and 140 metres of flat lying Permian pebbly mudstones, under typically only about one metre of surficial sediments. In contrast, at Pease Creek Cainozoic gravels and sands sit directly on fresh Mine Sequence rocks, with no Permian rocks present. Reports on the



Scale 1 : 10,000

100 0 100 200 300

metres

AGD66 / Australian Map Grid zone 55

seismic traverse

radiometric structure

existing drilling

BEACONSFIELD GOLD NL

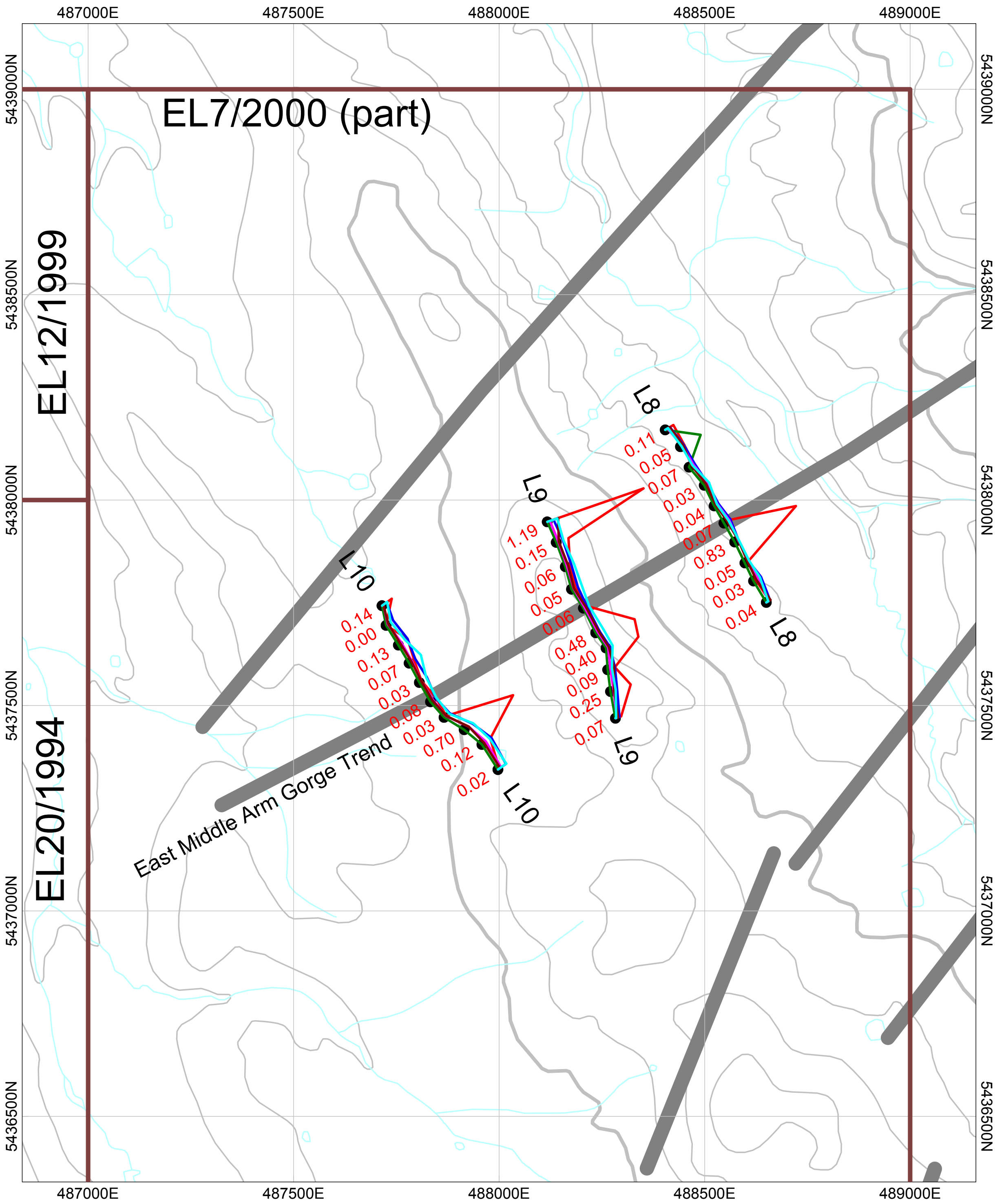
ELs 30/1997, 12/1999, 7/2000, 27/2000

Figure 4 - East Beaconsfield Prospect

Radiometric Structure,

Seismic Traverse and Drilling

Author: P.Muir / K.Morrison | Date: Sept 2004



As
Zn
Pb
Cu
Ag
Au

radiometric structures

Scale 1 : 15,000

250 0 250

metres

AGD66 / Australian Map Grid zone 55

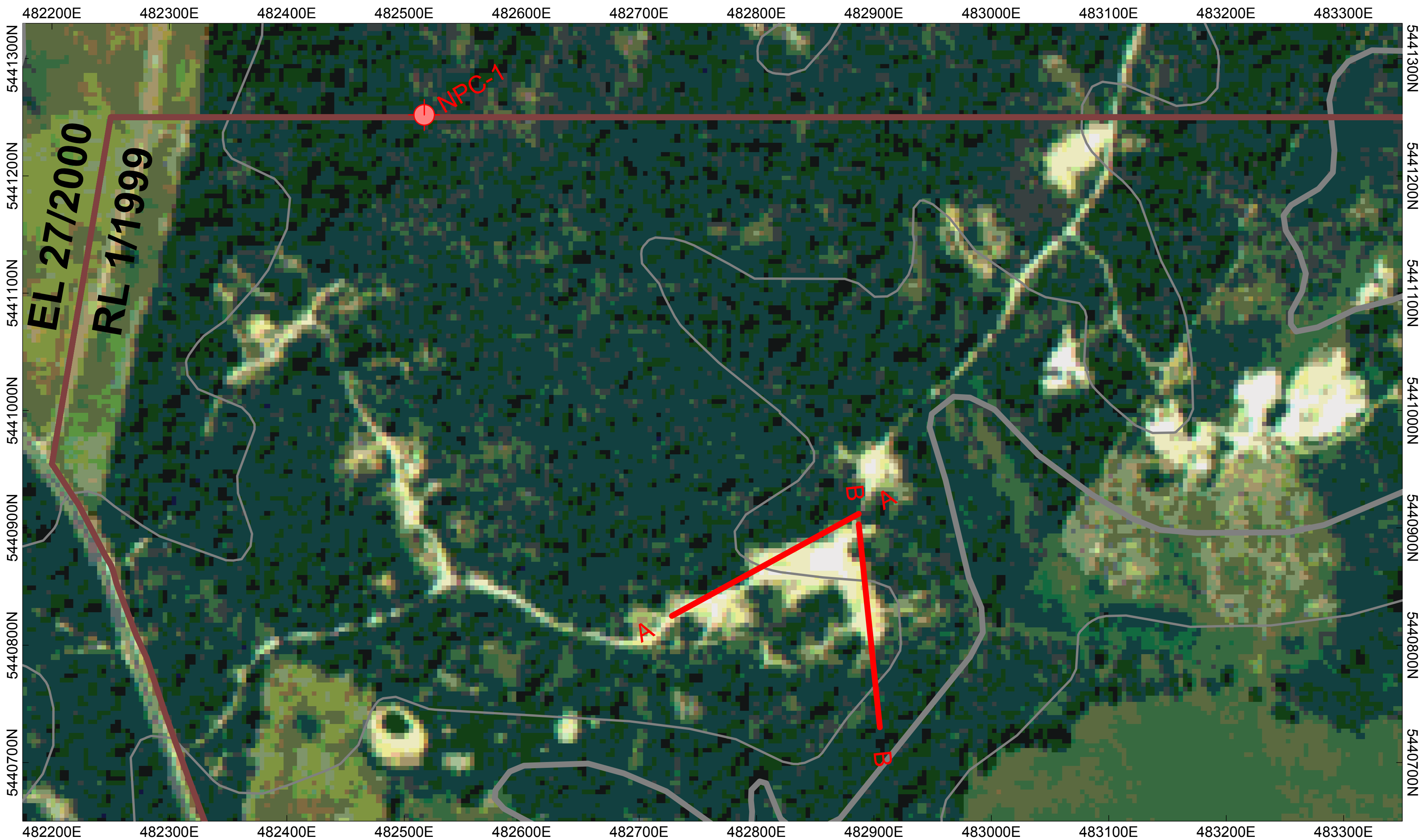
BEACONSFIELD GOLD NL

ELs 30/1997, 12/1999, 7/2000, 27/2000

Figure 5 - East Middle Arm Prospect

Radiometric Structures and Geochemistry

Author: P.Muir / K.Morrison	Date: Sept 2004



Scale 1 : 5000

50 0 50 100 150

metres

AGD66 / Australian Map Grid zone 55

seismic traverses

existing drilling

BEACONSFIELD GOLD NL

ELs 30/1997, 12/1999, 7/2000, 27/2000

Figure 6 - North Pease Creek Prospect

Seismic Traverse and Drilling Location

Author: P.Muir / K.Morrison | Date: Sept 2004 surveys are attached in Appendix C.

The East Beaconsfield survey was unsuccessful in picking the base Permian refractor as both the fresh Permian mudstone and the underlying Cambro-Ordovician rocks recorded velocities in the range 3300 to 3800 m/s, with no detectable contact and consequently no capacity to resolve structure in the deeper unit. The prominent refractor detected (Appendix C) undulates at depths from 6.5 to 23 metres and by comparison with drill holes EB-1 to EB-7 (Figure 4), is likely to be the base of weathering within the Permian unit.

The Pease Creek survey (Figure 6) produced a three layer velocity stratigraphy which correlates well with drill holes in the survey area. Although absolute velocities vary considerable with the survey orientation, the depths to the unit contacts along both lines correspond well to the Tertiary sediment/Eaglehawk Gully Formation and the Eaglehawk Gully Formation/Salisbury Hill Formation contacts (Appendix C). A conclusion was that the set-up used for this survey would limit unit boundary detection to a maximum depth of about 70 metres and that reflection techniques may better resolve stratigraphy and structure in the sub Tertiary rocks, especially at depth.

Drilling

Drill sites have been identified on interpreted linear structures along strike to the ENE from Pease Creek, Beaconsfield and Middle Arm Gorge. All sites are on private farm land and the wet conditions prevailing through the 2004 winter have caused a delay in commencing to drill without damaging the paddocks. In the meantime drilling has commenced at North Pease Creek within EL 27/2000, to determine if Mine Sequence rocks occur beneath the Cainozoic sediments and if so, is there potential to extend or repeat the Pease Creek prospect further north of its currently known position. At the time of writing vertical hole NPC-1 (Figure 6) was at 73 metres, at the contact between Cainozoic sediments and fresh coarse blue-grey Mine Sequence sandstones, probably from the upper Salisbury Hill Formation. The hole collared in unconsolidated to partly consolidated Cainozoic gravels, sands and clays and an abrupt redox contact and heavy ground water flow were encountered at 22 and 23.5 metres respectively. Water continued to flush sediment into the hammer, causing frequent blockages and the eventual switch to HQ3 core drilling at 34 metres. A log for the upper part of the hole is attached in Appendix D and the complete drill log will be included in the next annual report. Further drilling will occur on the prospect during the next year.

EXPENDITURE

A total of $39,528 was spent on the project between 1 January and 16 July 2004, in the following categories.

Geology	16,369
Geochemistry	7,466
Geophysics	13,743
Administration/Tenement Costs	1,950
Total	**$39,528**

WORK PROGRAM: YEAR TO 19 SEPTEMBER 2005

Work is continuing on both the North Pease Creek and Cobblestone Creek projects. At North Pease Creek location of step-out drill sites will be assisted by ground magnetics and seismic, utilising reflection mode if appropriate instrumentation can be accessed. Use of ground magnetics and soil geochemistry will be expanded at Cobblestone Creek, after the next round of drilling on existing targets.

Minimum expenditure of $350,000 is anticipated for the next year, with drilling being the major category.

REFERENCES

Hills, P.B., 1998. Tasmania gold deposit, Beaconsfield *in Geology of Australian and Papua New Guinean Mineral Deposits*, (Eds. D.A. Berkman and D.H. MacKenzie), pp 467-472, The Australasian Institute of Mining and Metallurgy: Melbourne.

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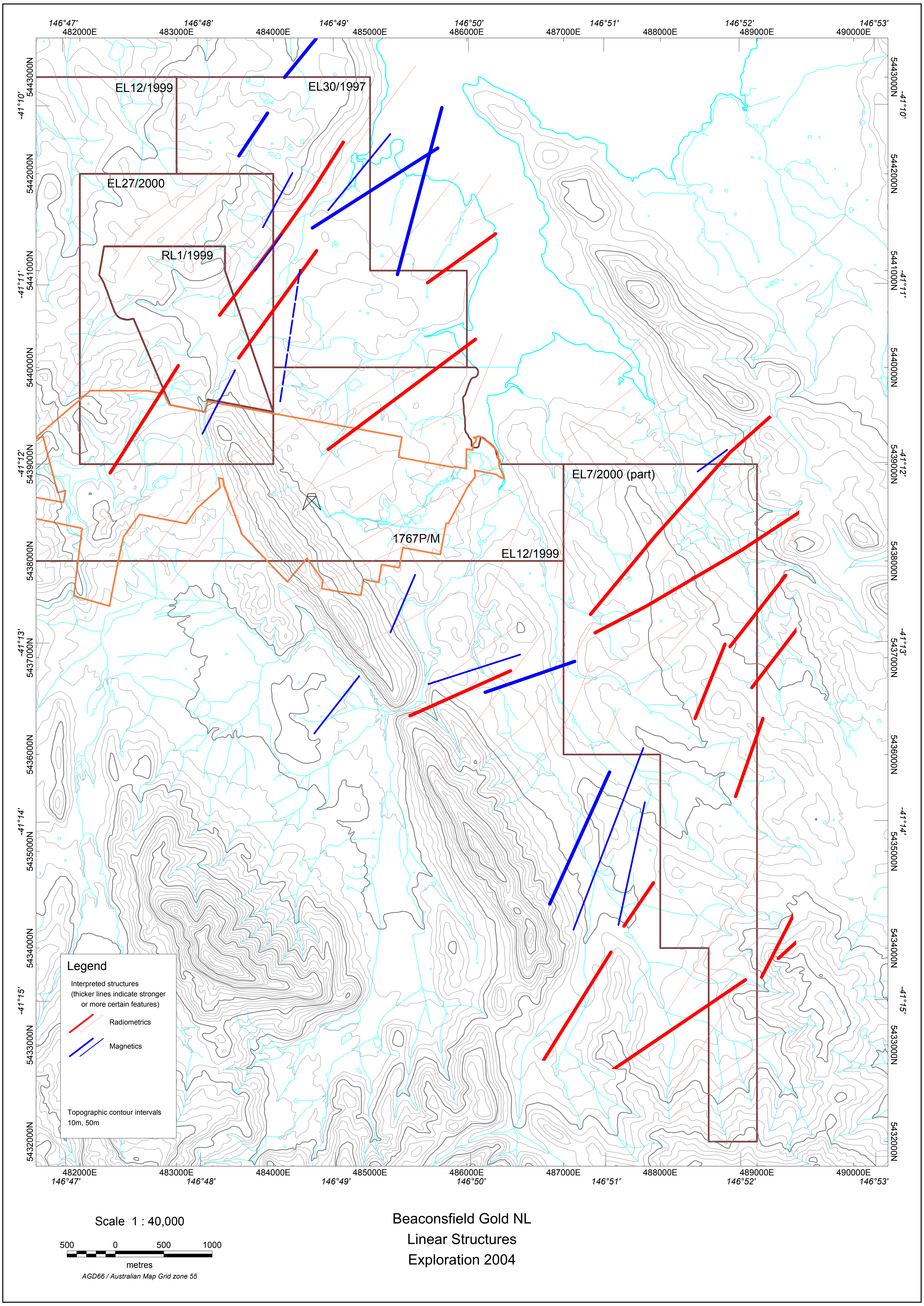
White, R.M.S, 1998. Interpretation of a Helicopter Magnetic Survey Near Beaconsfield Mine Tasmania, Tooronga Resources Pty Ltd Report.

Appendix A

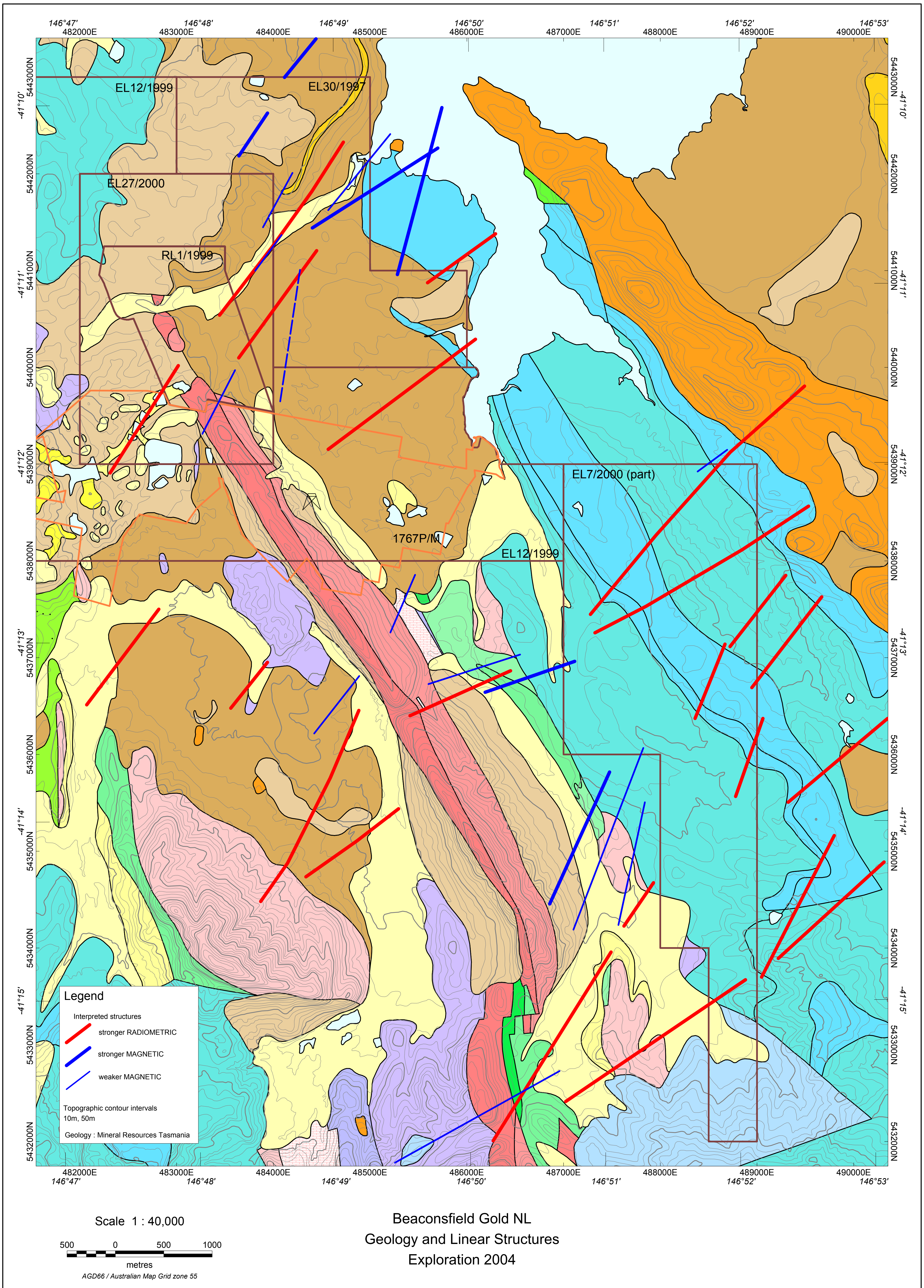
Linear Structures Maps



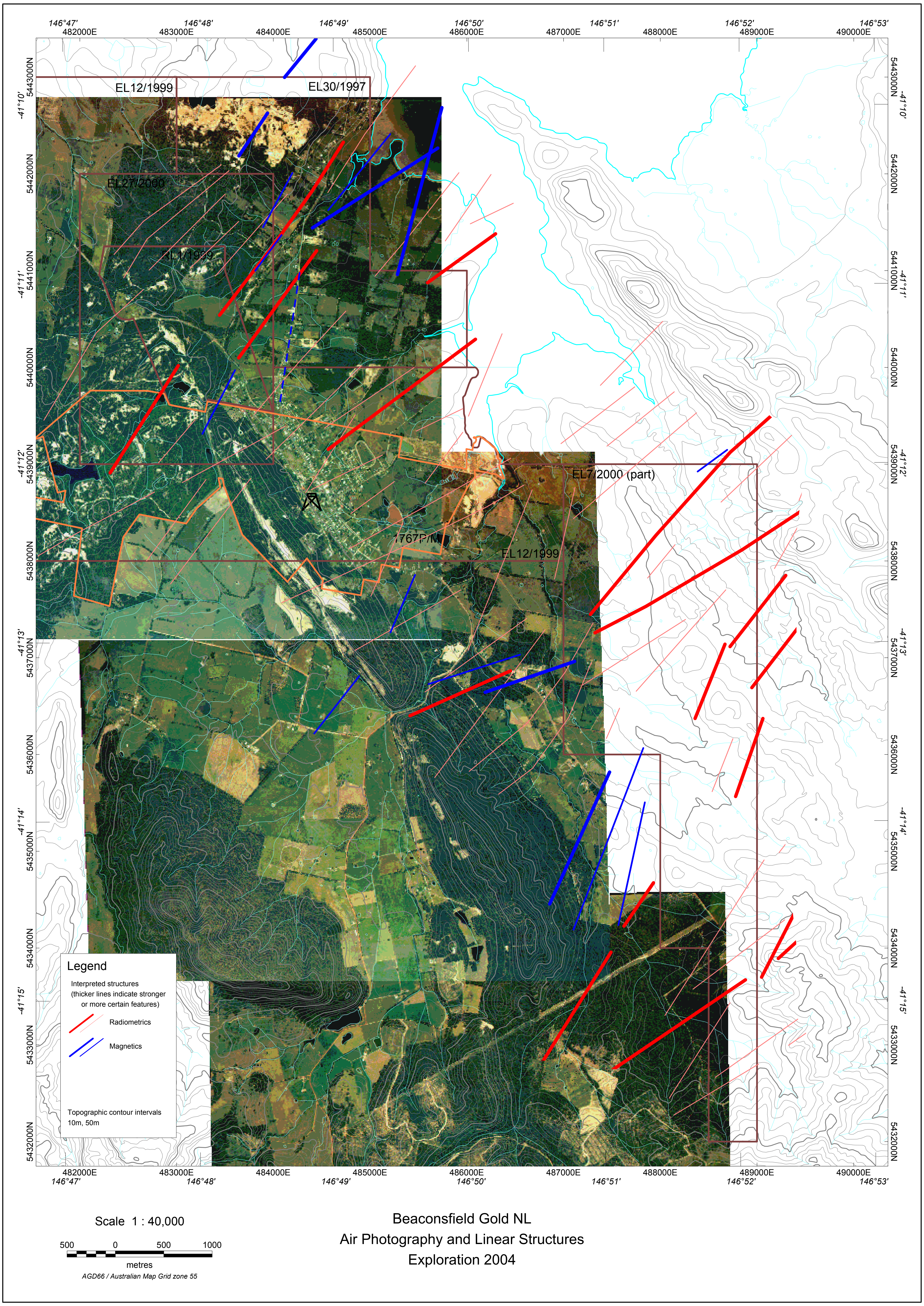
Beaconsfield Gold NL

Linear Structures

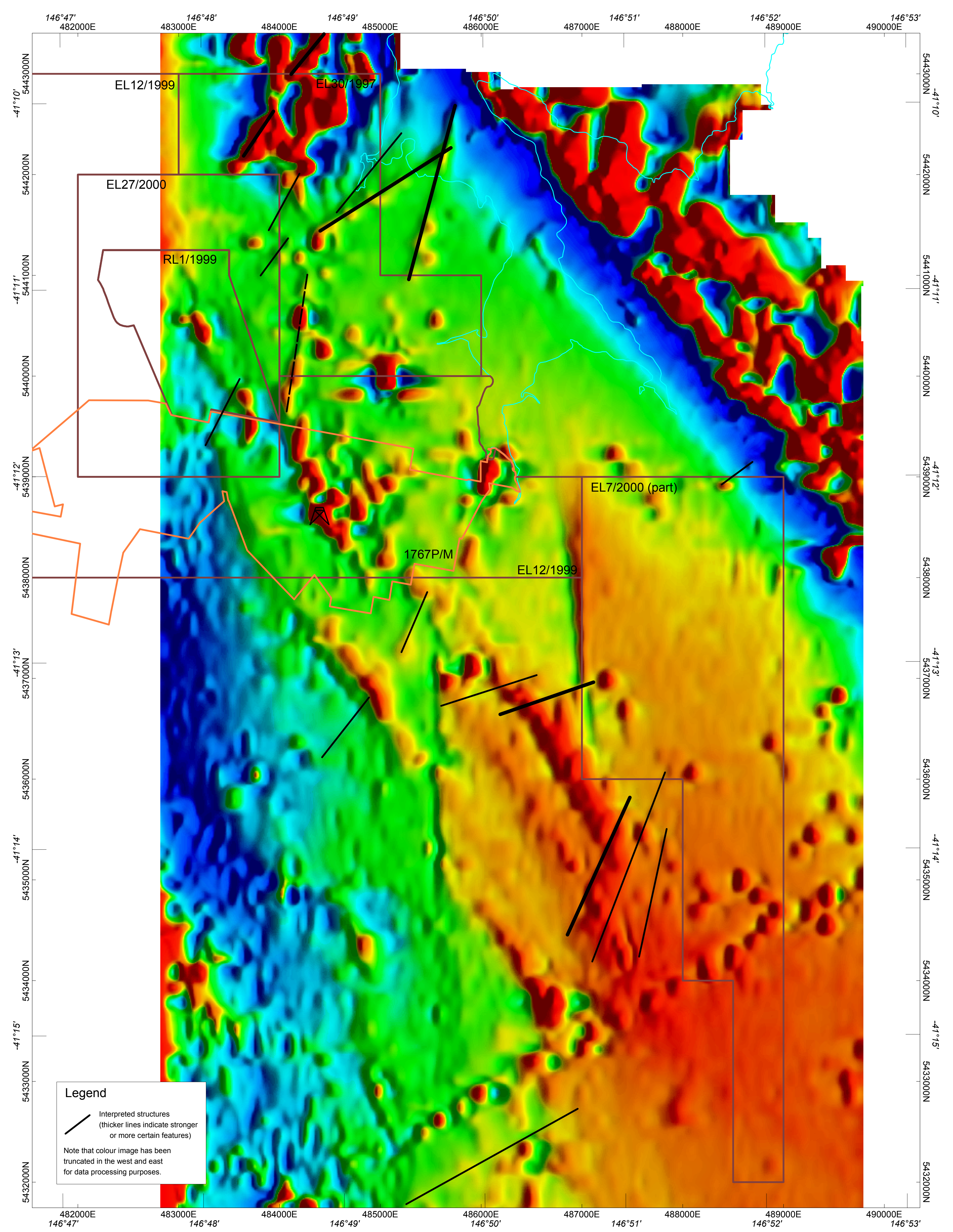
Exploration 2004



Beaconsfield Gold NL
Geology and Linear Structures
Exploration 2004



Beaconsfield Gold NL
Air Photography and Linear Structures
Exploration 2004



Scale 1 : 40,000

500 0 500 1000

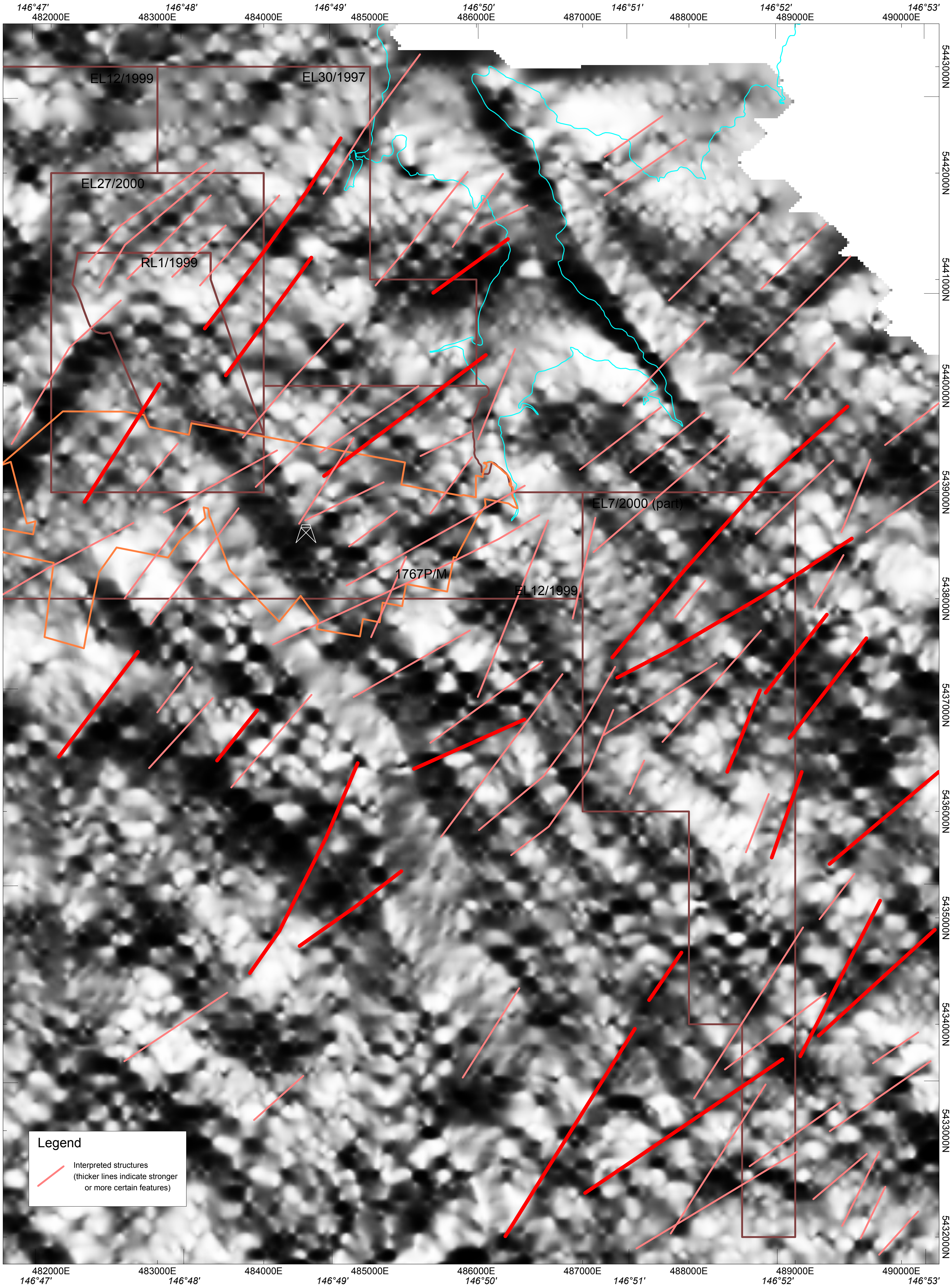
metres

AGD66 / Australian Map Grid zone 55

Beaconsfield Gold NL

Magnetics - First Vertical Derivative - 1988 fixed wing survey

Exploration 2004



Scale 1 : 40,000

500 0 500 1000

metres

AGD66 / Australian Map Grid zone 55

Beaconsfield Gold NL

Radiometrics - Total Count - 1988 fixed wing survey

Exploration 2004

sun from north

Appendix B

Soil Assay Data

Register of Soil Assay Data

*AGD66/Zone55 AMG - by GPS

		BU019738	100	82						
			Drop Off 25.2.04 25	Au	Ag	Cu	Pb	Zn	As	Sb
			METHOD	G143	I143	I143	I143	I143	I143	I143
			LDETECTION	0.01	10	5	50	5	50	0.5
			UDETECTION	0	0	0	0	0	0	0
Sample ID	**Easting***	**Northing***		**ppb**	**ppb**	**ppb**	**ppb**	**ppb**	**ppb**	**ppm**
CCS001	483547	5442410	CCS001-L1	0.09	<	15333	3257	5428	904	<
CCS002	483517	5442410	CCS002-L1	0.56	<	1610	2705	3135	1027	<
CCS003	483551	5442268	CCS003-L1	0.2	<	1029	807	2273	1112	<
CCS004	483629	5442263	CCS004-L1	0.14	<	413	491	1078	1112	<
CCS005	483699	5442247	CCS005-L1	0.2	<	1485	1939	2649	1099	<
CCS006	483724	5442212	CCS006-L1	0.11	<	703	3401	23696	1097	<
CCS007	483750	5442177	CCS007-L1	0.55	<	1129	3664	2563	977	<
CCS008	483792	5442157	CCS008-L1	0.15	<	1018	3445	1640	1670	<
CCS009	483817	5442127	CCS009-L1	0.08	<	1063	3501	1524	1470	<
CCS010	483840	5442096	CCS010-L1	0.06	24	1254	2596	2843	971	<
CCS011	487715	5437743	CCS011-L10	0.14	<	1157	1366	2140	932	<
CCS012	487725	5437695	CCS012-L10	<	<	1693	1588	3230	812	<
CCS013	487755	5437647	CCS013-L10	0.13	<	2162	2932	3213	1241	<
CCS014	487781	5437603	CCS014-L10	0.07	<	1468	2747	3631	2091	<
CCS015	487806	5437556	CCS015-L10	0.03	<	1780	1852	3011	1233	<
CCS016	487833	5437509	CCS016-L10	0.08	<	1263	2438	3028	1041	<
CCS017	487866	5437471	CCS017-L10	0.03	<	1373	1815	3358	908	<
CCS018	487915	5437441	CCS018-L10	0.7	<	1998	4228	6970	1621	<
CCS019	487958	5437405	CCS019-L10	0.12	<	2276	3869	3617	1425	<
CCS020	487997	5437344	CCS020-L10	0.02	<	1898	3038	3363	1488	<
CCS021	488117	5437947	CCS021-L9	1.19	<	1301	2264	14618	1547	<
CCS022	488139	5437897	CCS022-L9	0.15	<	1341	1729	3331	1105	<
CCS023	488161	5437838	CCS023-L9	0.06	<	1234	1405	3881	1334	<

CCS024	488176	5437783	CCS024-L9	0.05	<	1319	1767	3237	1571	<
CCS025	488205	5437737	CCS025-L9	0.06	<	766	1140	3600	892	<
CCS026	488235	5437677	CCS026-L9	0.48	<	804	1731	4314	1259	<
CCS027	488260	5437640	CCS027-L9	0.4	<	793	1694	3861	1027	<
CCS028	488264	5437587	CCS028-L9	0.09	<	1493	2271	8706	664	<
CCS029	488271	5437534	CCS029-L9	0.25	<	1355	2470	4620	803	<
CCS030	488283	5437469	CCS030-L9	0.07	<	841	1159	3727	112	<
CCS031	488404	5438171	CCS031-L8	0.11	<	1050	1953	6310	486	<
CCS032	488441	5438130	CCS032-L8	0.05	16	728	1805	3768	170	<
CCS033	488462	5438080	CCS033-L8	0.07	<	1286	3891	3731	584	<
CCS034	488499	5438036	CCS034-L8	0.03	<	745	3470	2866	816	<
CCS035	488523	5437986	CCS035-L8	0.04	<	937	2855	2549	484	<
CCS036	488547	5437944	CCS036-L8	0.07	<	1451	4670	4658	764	<
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CCS038	488598	5437847	CCS038-L8	0.05	<	783	3151	3768	699	<
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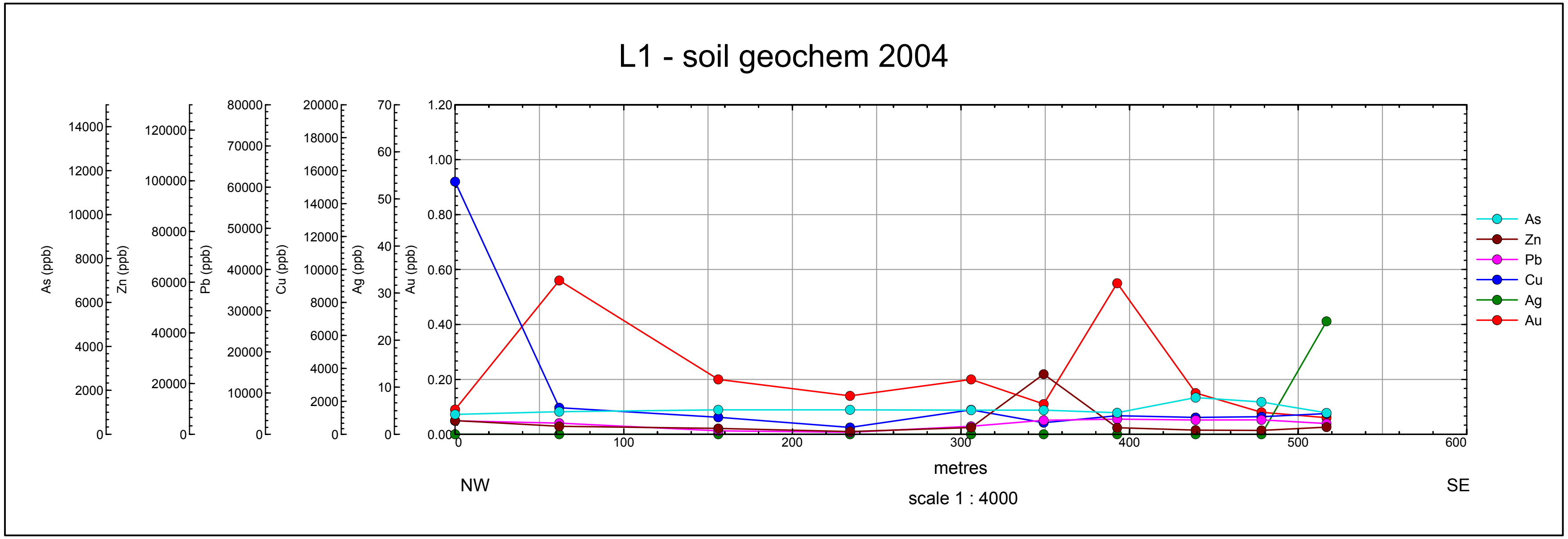

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Pb
Cu
Ag
Au

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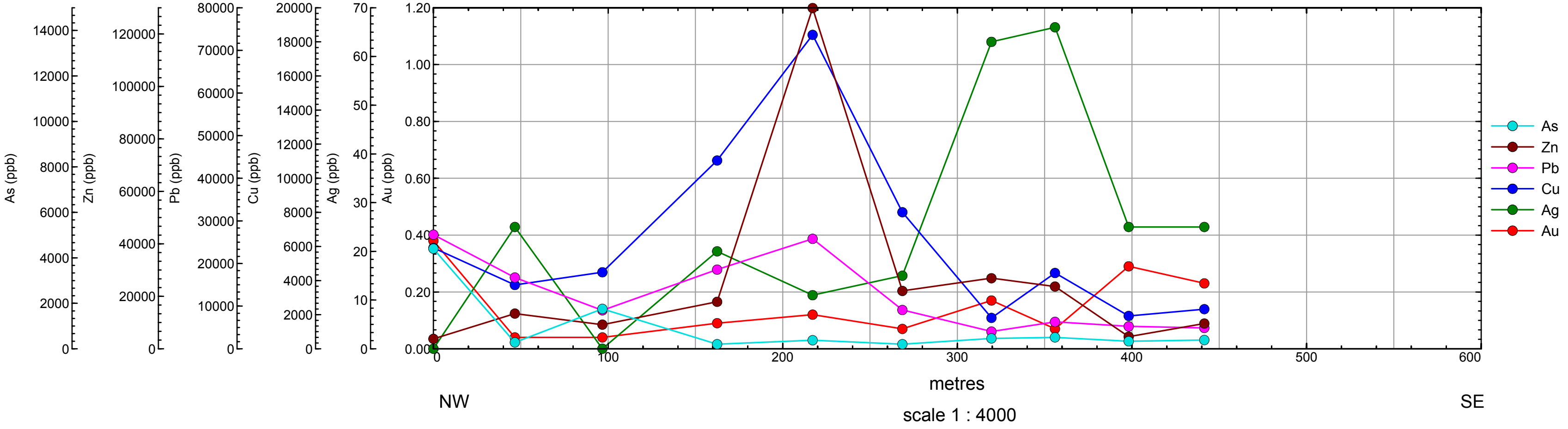

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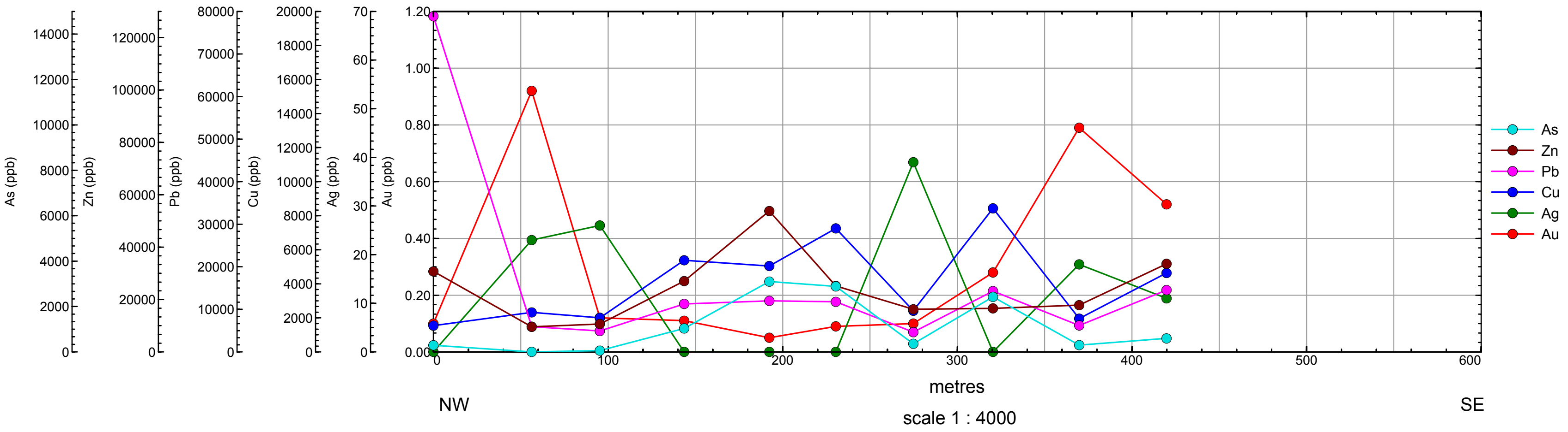

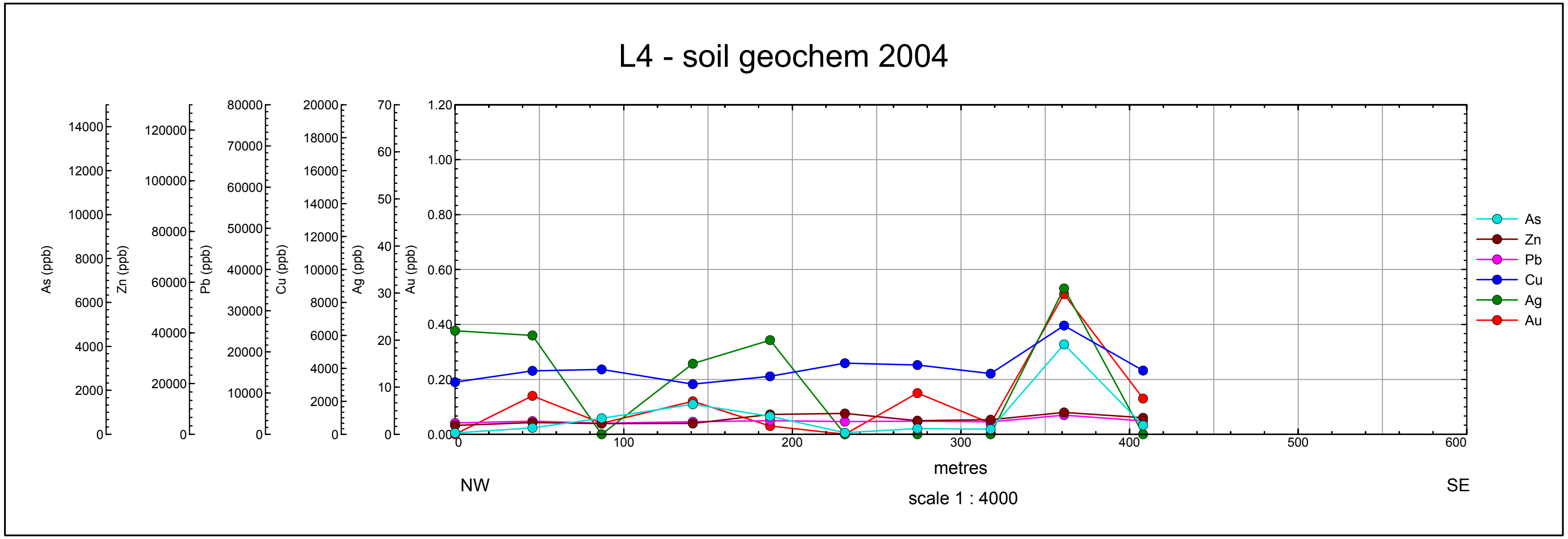

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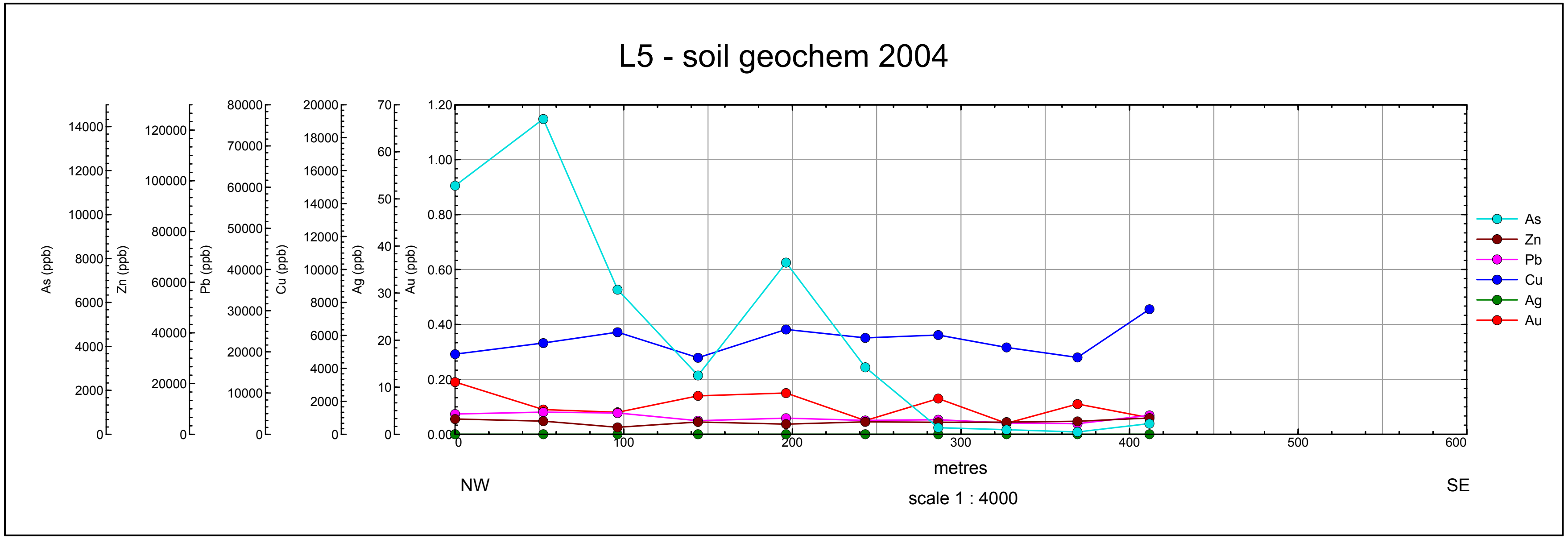

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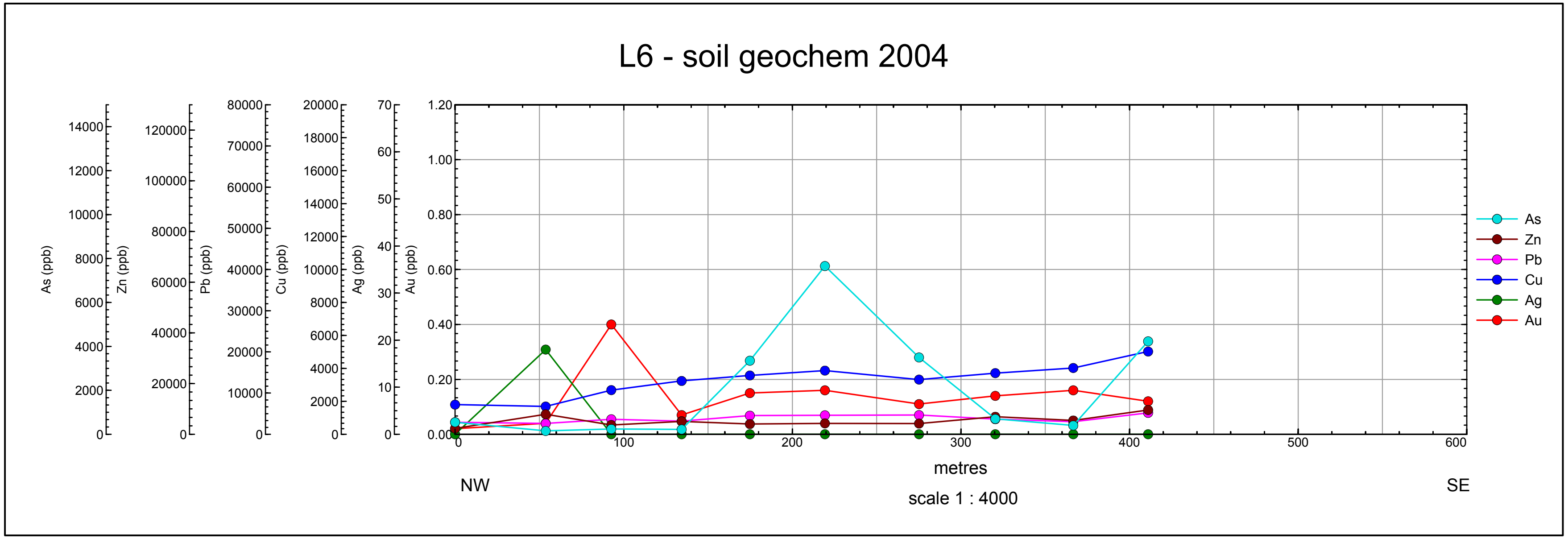
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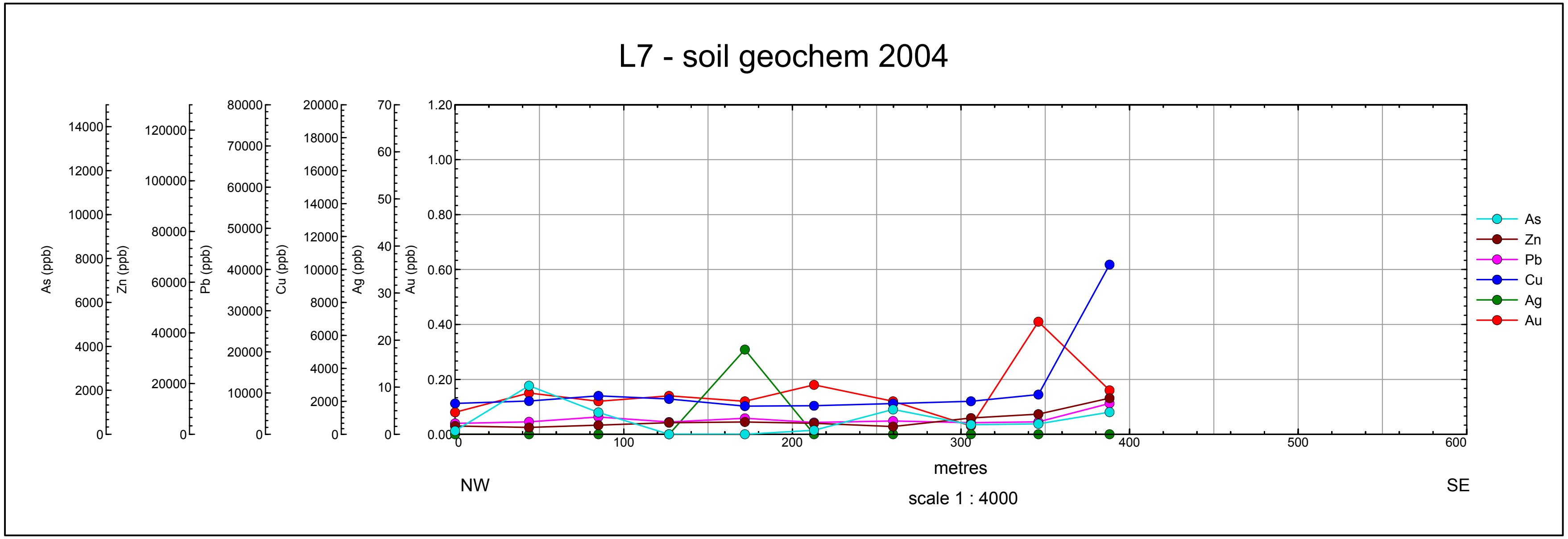

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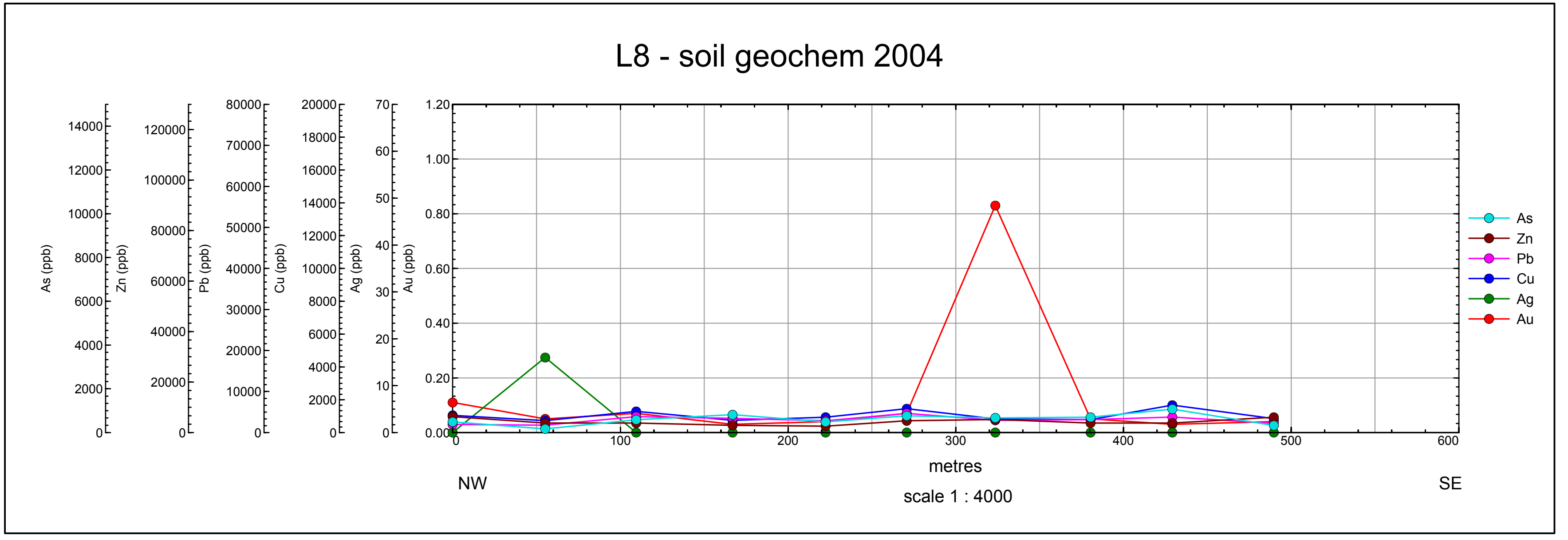
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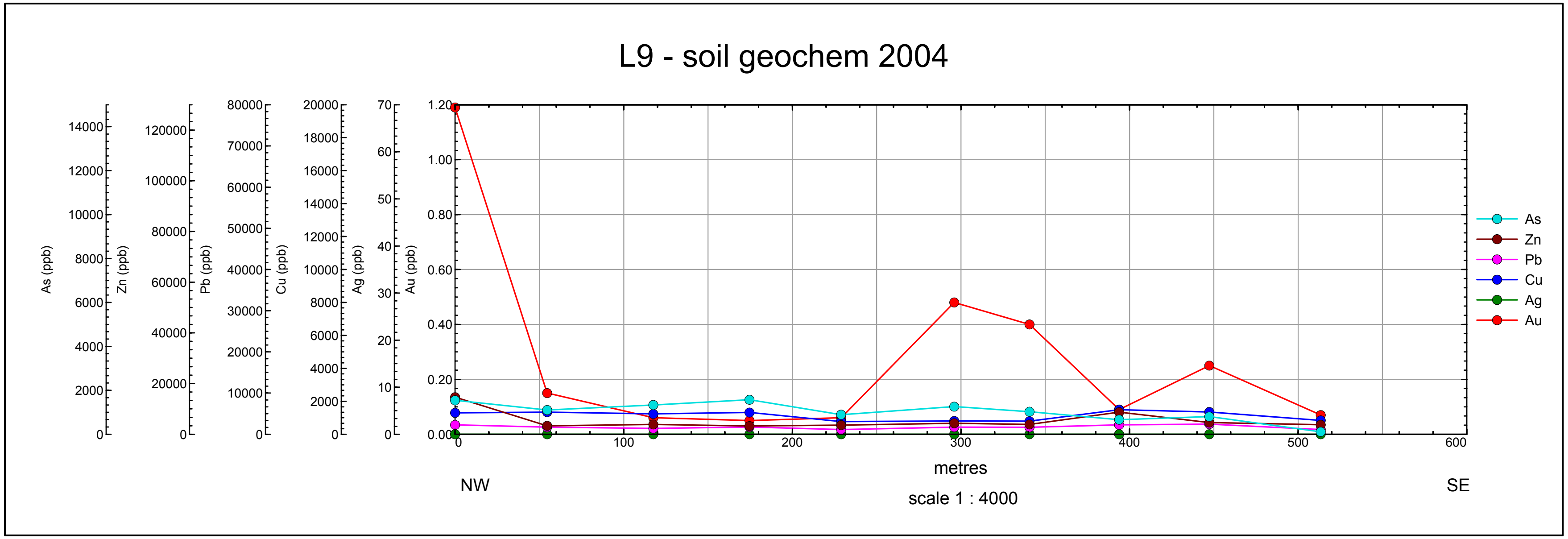

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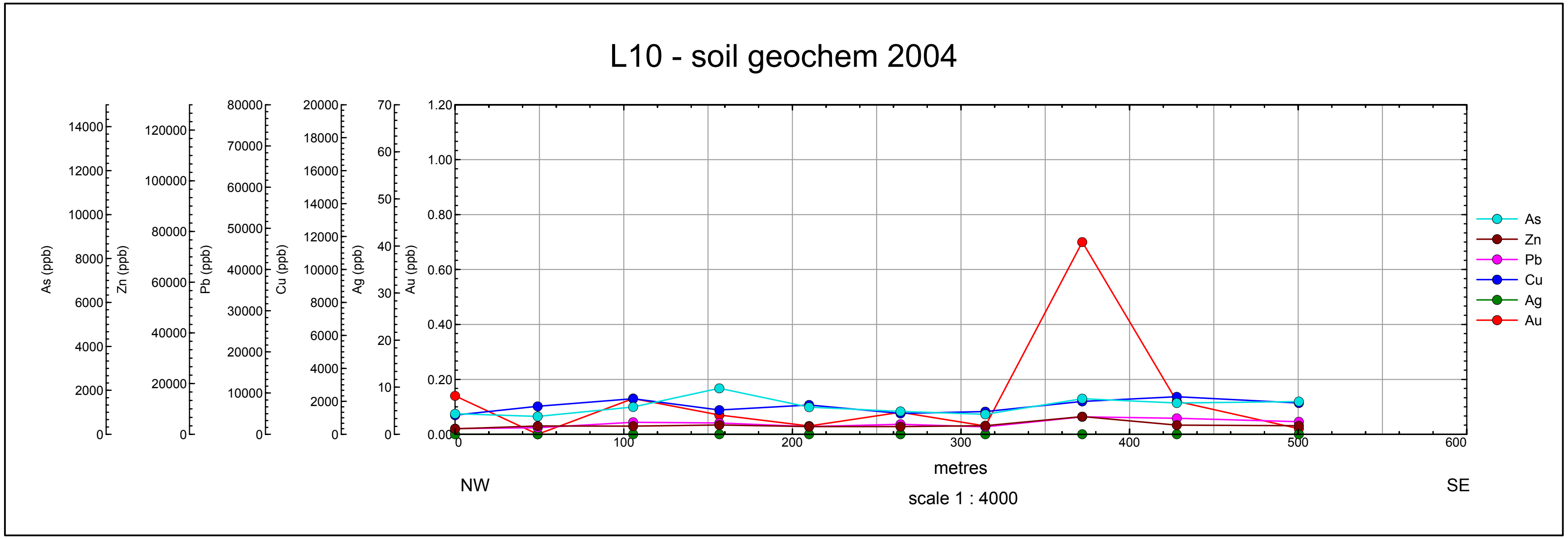
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Pb
Cu
Ag
Au
metres
NW
SE
scale 1 : 4000

Appendix C

Seismic Survey Reports

BEACONSFIELD GOLD NL
SEISMIC SURVEY FEBRUARY 2004

Hydro Tasmania
the renewable energy business

Prepared By:
HYDRO ELECTRIC CORPORATION
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4 Elizabeth Street, Hobart
Tasmania, Australia

Report No:117833-Report No 1
Rev. Original
Date Issued: 23 March 2004

DOCUMENT INFORMATION

JOB/PROJECT TITLE:

Beaconsfield Gold NL
Seismic Survey February 2004

TITLE:

Beaconsfield Gold NL
Seismic Survey February 2004

CLIENT ORGANISATION:

Beaconsfield Gold NL

CLIENT CONTACT:

Mr Ken Morrison

DOCUMENT ID NUMBER: 117833-Report-1

DATE: 23 March 2004

REV/DRAFT NO: Original (Rev 0)

JOB/PROJECT MANAGER: Rowenna Gilbertson

JOB/PROJECT NUMBER: 117833

REVISION/DRAFT HISTORY:

REV	DATE	DESCRIPTION	PREPARED	REVIEWED	APPROVED
0	23/03/04	Original	David Wilson Tom Bowling	Rowenna Gilbertson	T Morse

BEACONSFIELD GOLD NL

SEISMIC SURVEY FEBRUARY 2004

Introduction

At the request of Mr Ken Morrison, Manager, Exploration Geology for Beaconsfield Gold NL, a seismic survey has been carried out over a total traverse length of 540m at a location north east of the town of Beaconsfield. The location of the traverse was nominated by the Client to have end point coordinates of E485100, N5439400 and E485400, N5439900. The traverse length trended at a bearing of about 30 degrees, see attached annotated photo map.

The aim of the seismic survey was to see if this method could be used to locate the Permian/Ordovician-Cambrian contact which has been located by drill-holes at a depth of about 100m and to locate any other features in the area, particularly a steeply dipping regional fault (see photo map).

Field Work

Field work for the seismic survey was carried out between the 11th and 13th February. A spread of 12 geophones spaced at 15m intervals was used to cover the total traverse length in three sections. For each section six shots were fired with the shot located at different points along the traverse line for each section. The shot charges were placed at a depth of about 1m.

Interpretation of Results

In the interpretation of the seismograph plots it has been assumed that the ground surface topography is flat and at a nominal elevation of 100m. The area where the seismic traverse has been carried out is quite flat and about 15m above sea level. The interpretation from the three spreads revealed two seismic refractors as shown in the attached vertical profile sketch. Three layer velocities were identified as follows:

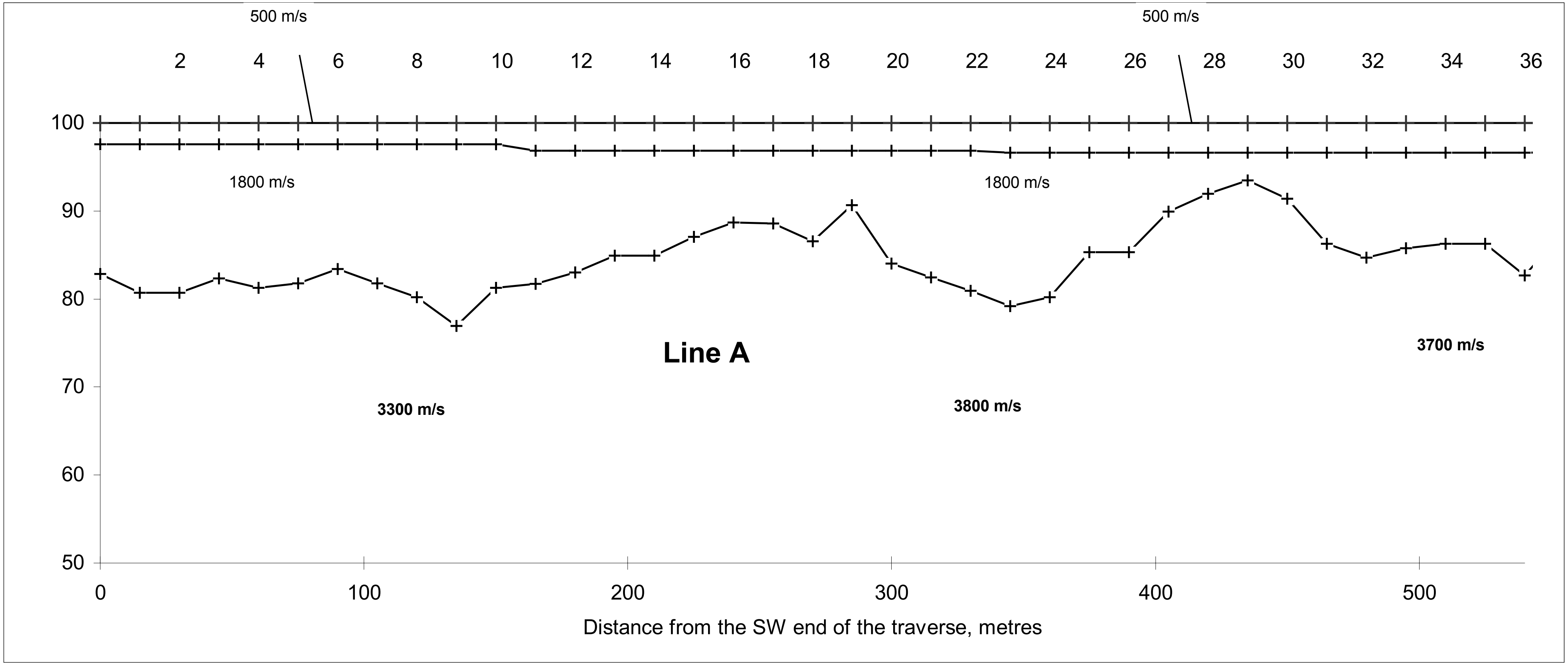
1. Approximately 500m/s representing the surface soil and completely weathered rock
2. Material averaging 1800m/s probably representing insitu weathered rock
3. Unweathered rock with velocities between 3300 and 3800m/s.

The depth to the main seismic refractor (unweathered rock) varies from 6.5 to 23m, see the attached profile sketch.

It was not possible to detect a deeper and higher velocity refractor, which might represent the upper surface of the Ordovician-Cambrian formation, despite the offset distances of shots and the geophone spacing having been sufficient to detect higher velocity refractors at depths of about 100m if they had been present. It seems likely that the velocity contrast between possible deeper refractors and the overlying 3300-3800m/s layer is insufficient for the contact to be detected. Examination of the seismic traces and the time/distance plots give no evidence of a separate higher velocity refractor. Similarly there is no evidence in the results that might indicate the presence of faulted ground.

Conclusion

It is concluded that the seismic method used in the above described survey is not suitable for detecting geological contacts at depths of about 100m in this area. It is most probable that this is because there is insufficient velocity contrast between the deeper rock and the overlying Permian rock.



500 m/s
500 m/s
2
4
6
8
10
12
14
16
18
20
22
24
26
28
30
32
34
36
100
90
80
70
60
50
1800 m/s
1800 m/s
Line A
3300 m/s
3800 m/s
3700 m/s
0
100
200
300
400
500
Distance from the SW end of the traverse, metres

BEACONSFIELD GOLD NL

BEACONSFIELD REFRACTION SEISMIC SURVEY SEPTEMBER 2004

Prepared By:
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Report No:
Rev. Status 0:
Date Issued: 16 September 2004

JOB/PROJECT TITLE:

BEACONSFIELD GOLD NL

BEACONSFIELD REFRACTION SEISMIC SURVEY SEPTEMBER 2004

TITLE:

BEACONSFIELD GOLD NL

BEACONSFIELD REFRACTION SEISMIC SURVEY SEPTEMBER 2004

CLIENT ORGANISATION:

Beaconsfield Gold NL

CLIENT CONTACT:

Mr Ken Morrison

DOCUMENT ID NUMBER: 120360 –PR -01

DATE: 14 September 2004

REV/DRAFT NO: Revision 0 – Draft

JOB/PROJECT MANAGER: Sam Ditchfield

JOB/PROJECT NUMBER: 120360

EVISION/DRAFT HISTORY:

REV	DATE	DESCRIPTION	PREPARED	REVIEWED	APPROVED
0	14/09/2004	Original	Hugh Tassell	Sam Ditchfield	Frazer White

TABLE OF CONTENTS

INTRODUCTION 2
FIELD WORK 2
PROCESSING 2
INTERPRETATION 5
RECOMMENDATIONS 6
CONCLUSION 6

INTRODUCTION

At the request of Mr Ken Morrison, Manager Exploration Geology for Beaconsfield Gold NL, a seismic survey has been carried out over a total traverse length of 330 m. The location is approximately 2 km north west of the township of Beaconsfield located in north Tasmania. The survey comprised two 165 m traverses, their location nominated by the client to have endpoint coordinates of 482887E 5440912N - 482728E 5440825N (Line A) and 482887E 5440912N - 482905E 5440730N (Line B). The survey is presented on plan in Figure 1.

The aim of the seismic survey was to see if this method could be used to locate the underlying base rock contact underneath the Quaternary – Tertiary sediments.

FIELD WORK

Field work for the seismic survey was carried out on the 30th and 31st of August 2004. A spread of 12 geophones spaced at 15 m intervals was used giving a spread length of 165 m. Field acquisition was completed by Hydro Tasmania using a Geometrics EG&G ES-1225 12 channel seismograph. Shot records were 500ms in length and recorded at a 250μs sampling interval.

Shots were fired at six locations along each of the two spreads. This survey geometry afforded a maximum 345 m source-receiver offset from the 180 m off-end shot. Figure 2 displays the schematic layout for the two spreads. Table 1 shows the location of the shots on each of the spreads (Line A and Line B), and the depth and size of explosive charge used for each shot.

Table 1: Shot characteristics for Lines A & B (Receiver spread extends from 0-180m)

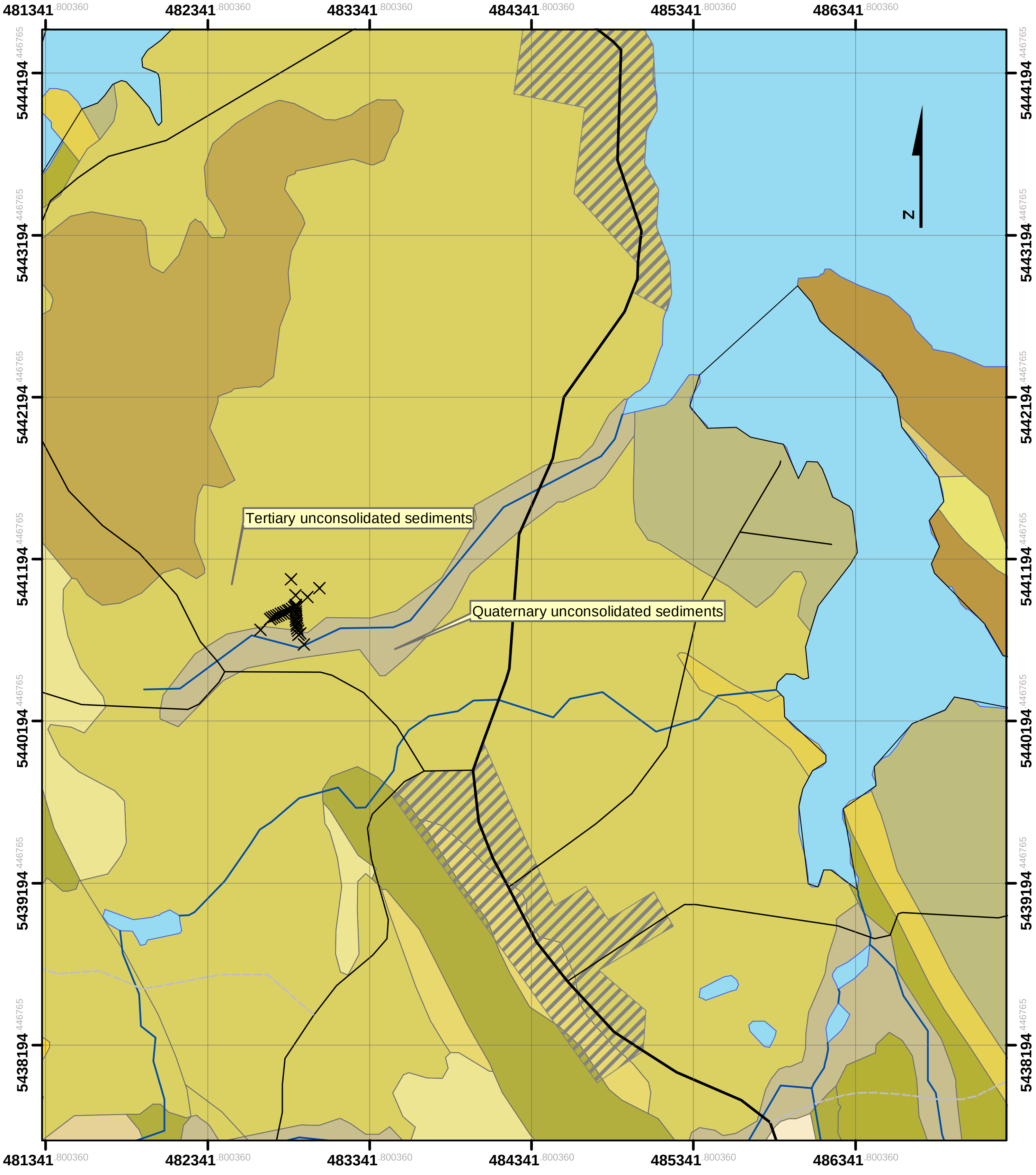
Shot	-180 m		-90 m		0 m		75m		180 m		270 m	
Line A	0.3 (m)	8 stick 4 booster	0.5 (m)	6 stick 3 booster	0.3 (m)	1 stick 2 booster	0.3 (m)	1 stick	0.3 (m)	2 stick 1 booster	0.5 (m)	4 stick 2 booster
Line B	0.3 (m)	8 stick 4 booster	0.4 (m)	6 stick 2 booster	03 (m)	2 stick 1 booster	0.3 (m)	1 stick 2 booster	0.3 (m)	3 stick 2 booster	0.3 (m)	6 stick 2 booster

Raw data quality from the survey was variable due to intermittent channel failure of the ES-1225 seismograph. Shot records collected early in the survey display clean high amplitude first breaks for all twelve channels with limited noise at far offset. However, channel failure affected later shot records with up to six channels in some shots displaying a null or oscillatory response. The reduction in data quality resulted in increased uncertainty in processing and interpretation.

PROCESSING

All processing was conducted using Seisimager Plotrefa v2.68 from OYO Corporation. First breaks were picked from the raw shot records at ±0.5ms by Hydro Tasmania. The geometry of the shots, and the traveltime data were then transposed into the Plotrefa file format. Two inversion techniques were used to generate geological interpretations, the time-term method, and tomographic inversion.

Regional Setting for Pease Creek Seismic Refraction Survey 2004



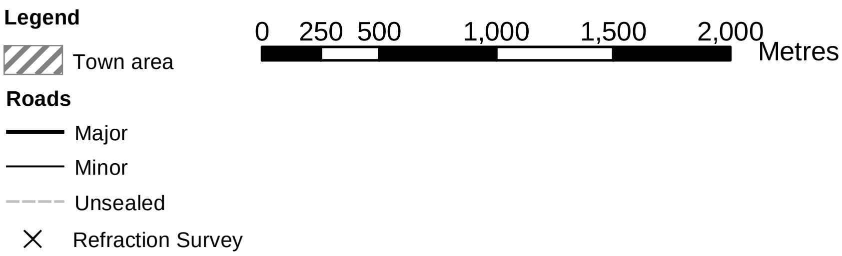


Figure 1: Regional setting for the Pease Creek seismic refraction survey.

Pease Creek Seismic Refraction Survey Layout - 2004

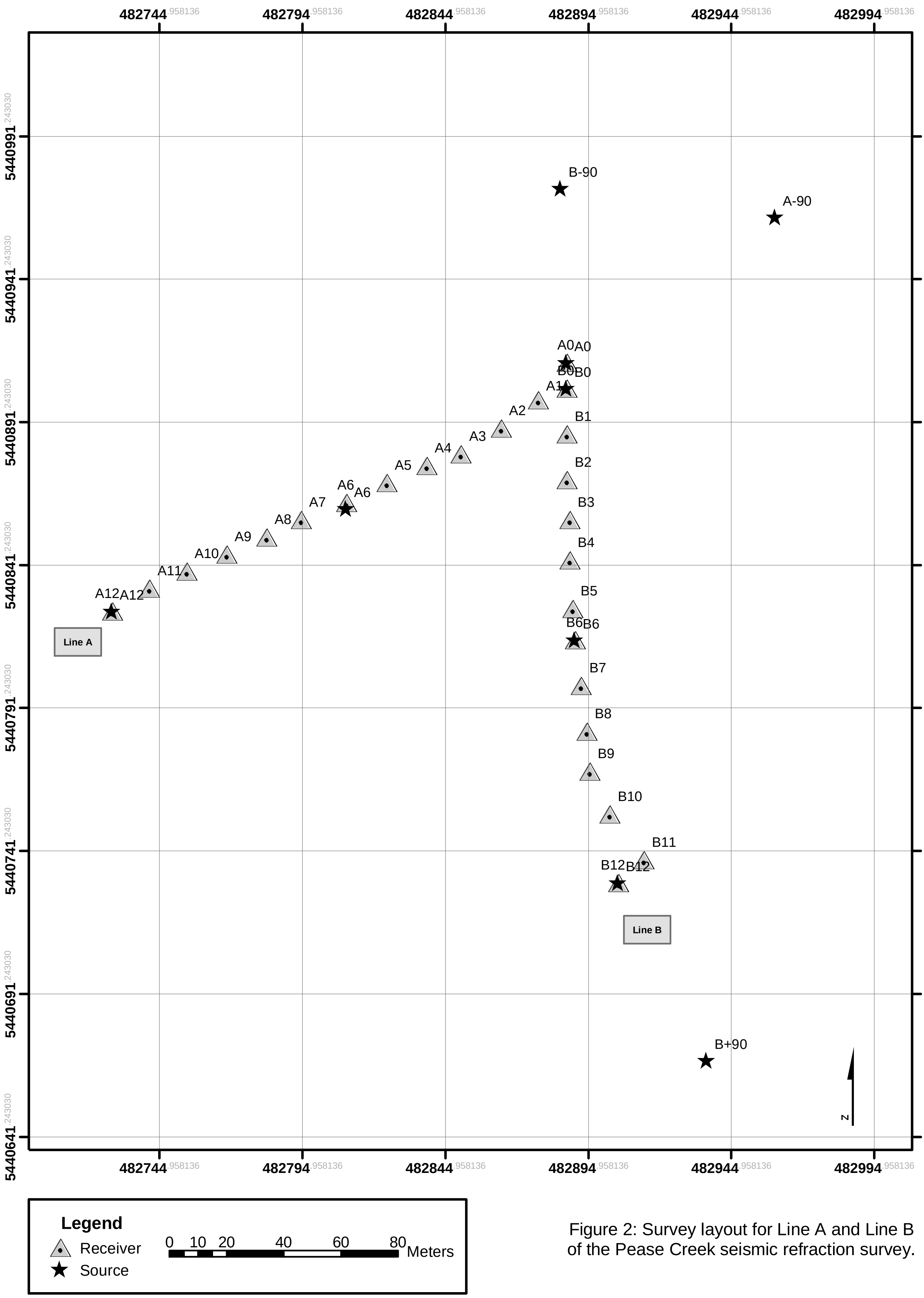


Figure 2: Survey layout for Line A and Line B of the Pease Creek seismic refraction survey.

Time-term inversion:

The time-term technique employs a combination of linear least squares and delay time analysis to invert the first-arrivals for a velocity section. It is a good approach for simple geological settings, in which refractor detail is of lesser importance than gross velocities and depths. This method is suited to 12 channel surveys with low data redundancy.

For both Line A and Line B of the refraction survey, two layered interpretations were initially applied. Matrix inversions using a two layered model yielded RMS errors of >7ms. Three layered interpretations were then applied. Figures 3 and 4 display the assignment of layers to the travel time curves. The RMS errors in matrix inversion based upon a three-layer model were 1.268ms and 1.613ms for Line A and Line B respectively. This reduction in inversion error indicates that a three-layered interpretation of the travel time data, with an additional layer at depth is more appropriate. The Plotrefa manual for time-term inversion suggests that RMS inversion errors of 1.5ms or less are acceptable.

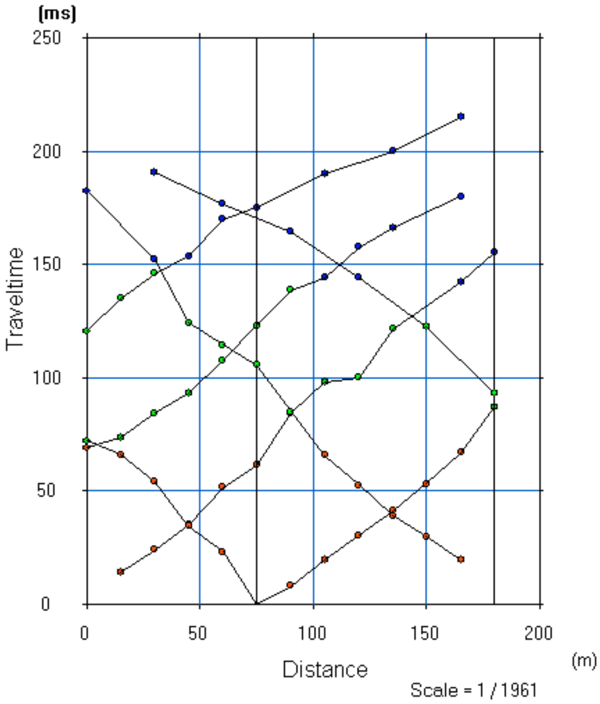


Figure 3: Three-layer assignment for Line A. Time-term inversion based upon this assignment yielded a RMS error of 1.268ms

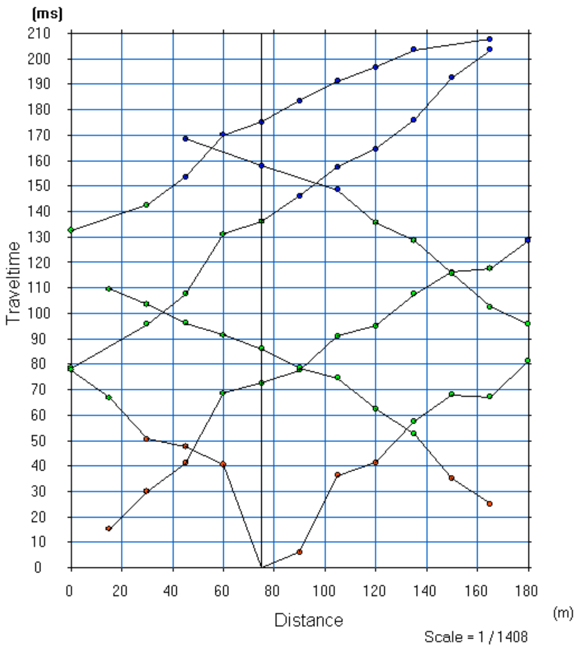


Figure 4: Three-layer assignment for Line B. Time-term inversion based upon this assignment yielded a RMS error of 1.268ms

Tomographic inversion:

Tomographic inversion starts with an initial velocity model and iteratively traces rays through the model with the goal of minimizing the RMS error between the observed and calculated travel times. Tomographic inversion is a powerful technique for solving more complex refraction problems. It works best when velocity contrasts are known to be more gradational than discrete.

Figures 5 and 6 display the observed and calculated travel times for the Tomographic inversions of Line A and Line B respectively. Obvious discrepancies exist between observed and calculated travel times, particularly at late time. RMS inversion errors for Line A and Line B are 8.71ms and 9.51ms respectively. These errors can be attributed to poor data density, particularly at late times from channel failure of the ES-1225 seismograph.

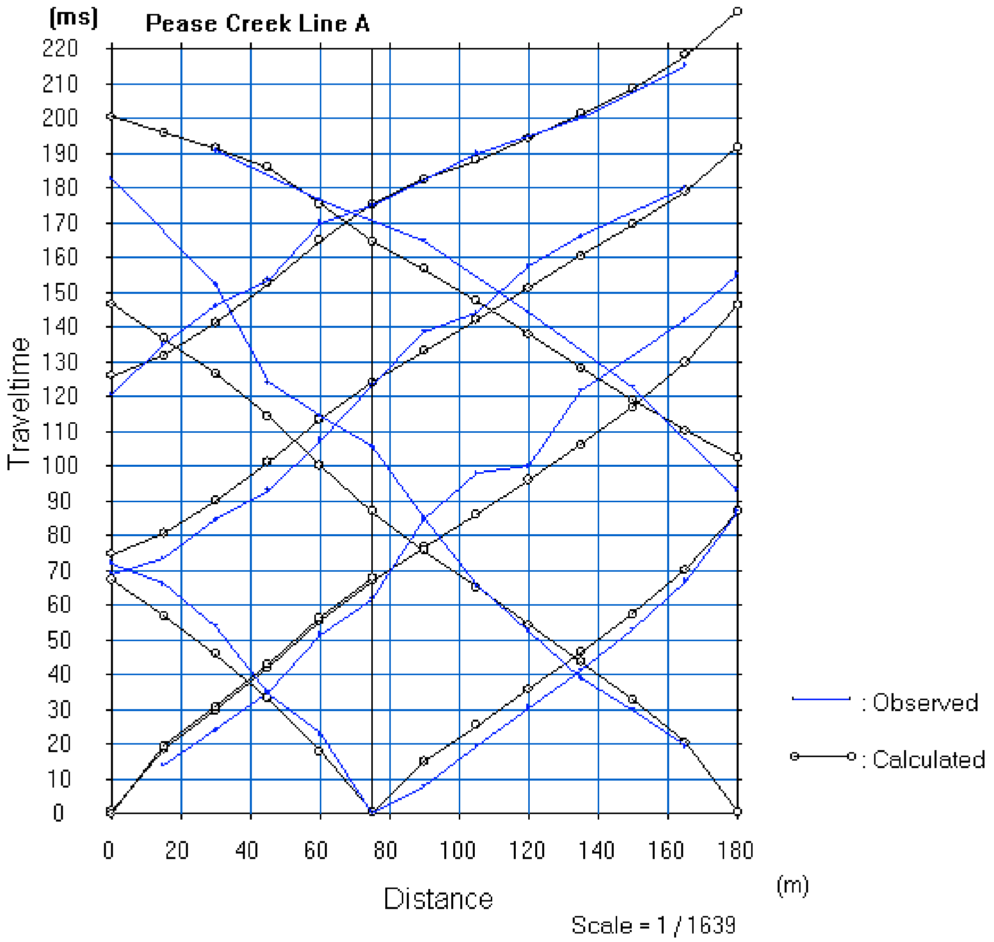


Figure 5: Observed and calculated travel times from tomographic inversion of Line A. RMS inversion error is 8.71ms.

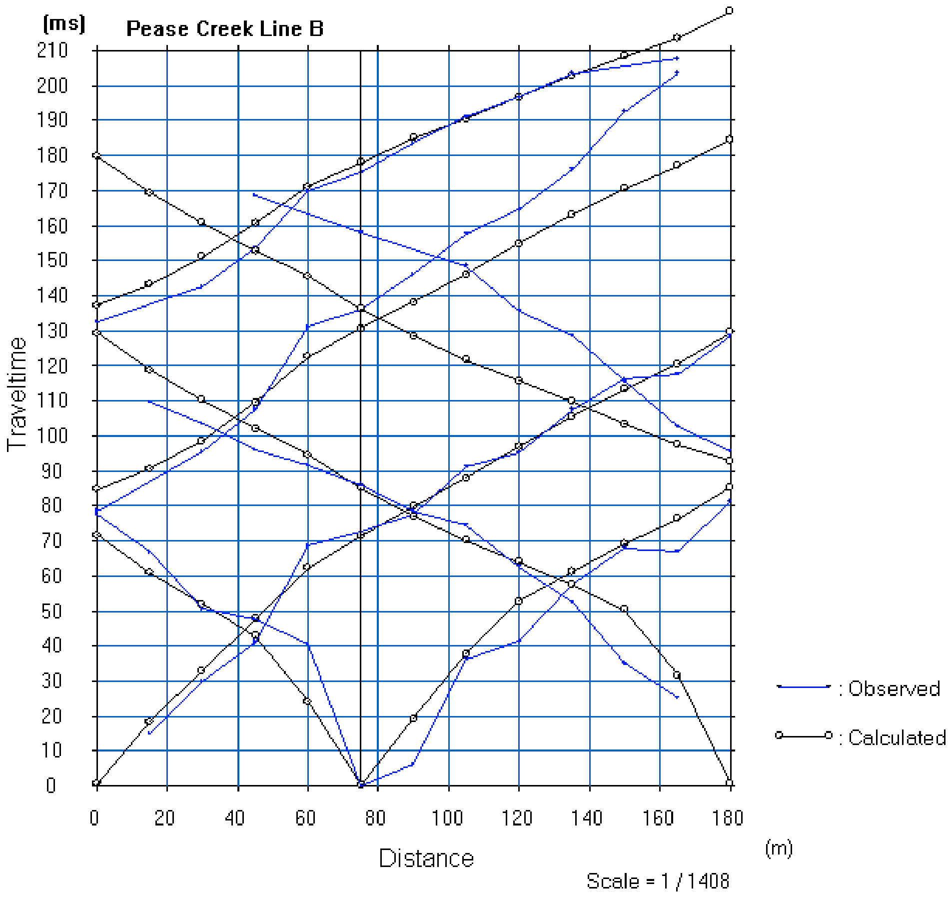


Figure 6: Observed and calculated travel times from tomographic inversion of Line B. RMS inversion error is 9.51ms.

INTERPRETATION

Figure 1 displays the regional setting of the two surveys, situated in an old quarry site on Tertiary and Quaternary unconsolidated sediments overlying the base rock contact. Time-term inversion of the two spreads revealed two seismic refractors, shown in figures 7 and 8. Tomographic inversion of the spreads indicates only one distinct refractor in figures 9 and 10. Results from time-term and tomographic inversion of the refraction data indicates the following:

1. A low velocity surface layer (average 1185m/s) in Line A varying in thickness from 0 m to 10 m with an average thickness of 5m. A similar low velocity surface layer (988m/s) was present in Line B, varying in thickness from 14 m to 25 m with an average thickness of 15 m. It is likely that this low velocity layer represents soil and highly weathered Tertiary and Quaternary sediments.

2. A second layer averaging 1221m/s in Line A and 1757m/s in Line B. Interval thickness in Line A varies from 50 m to 60 m, averaging 55 m. Line B has an interval thickness varying from 14 m to 46 m, averaging 25 m. Depth to the base this layer varies from 46 m to 68 m in Line A, and 38 m to 58 m in Line B. Designated Unit 1.

3. Time-term inversion indicates a third higher velocity layer with average velocities of 1825m/s and 2183m/s for Line A and Line B respectively. Designated Unit 2.

4. The interfaces between layers in Line A and Line B are all flat lying or shallowly dipping. An exception is the interface between the Unit 1 and Unit 2 in Line B where an anticline-syncline feature with an amplitude of 20 m is evident. It is difficult to determine whether this is reflecting real geological structure such as faulted or folded ground, or whether it is an artifact from poor data quality.

Comparison of matrix inversion errors for two and three-layered time-term inversion models indicate that a third layer at depth honors the traveltime data better than a simple two-layer interpretation. Because velocity contrasts between Unit 1 and Unit 2 are small, it is possible that the upper layer represents an insitu weathered equivalent of the unweathered layer beneath rather than two different lithologies. High RMS errors and poor data quality mean a high degree of uncertainty remains in their interpretation.

The velocity of the deepest layer (Unit 2) is much lower than would be expected for the Ordovician/Cambrian unit. No evidence of a deeper higher velocity refractor, possibly indicative of the upper surface of the Ordovician-Cambrian sequence was found. Raytracing from tomographic inversion indicates that off-end shots from this refraction survey allowed ray paths to penetrate to depths of up to 70m. Hence if the Permian/Ordovician-Cambrian contact was situated beneath this depth, the refraction survey would not be able to detect its presence.

RECOMMENDATIONS

1. In order to better resolve deeper subsurface structure, a higher density reciprocal survey with multiple split-spread shots and multiple spreads using a minimum of 12 receivers would be desirable.

2. Increased source-receiver offset, or alternatively, seismic reflection techniques may be required to detect lithological interfaces at depths of greater than 70 m.

CONCLUSION

The refraction survey has successfully detected the thickness of the surface soil and unconsolidated Tertiary and Quaternary sediments. Results also indicate the presence of two deeper layers. It is possible that the upper of these layers represents an insitu weathered equivalent of the unweathered layer beneath rather than two layers of different lithology. Raytracing indicates that the acquisition methodology adopted for this survey will only detect refractors up to a depth of 70 m.

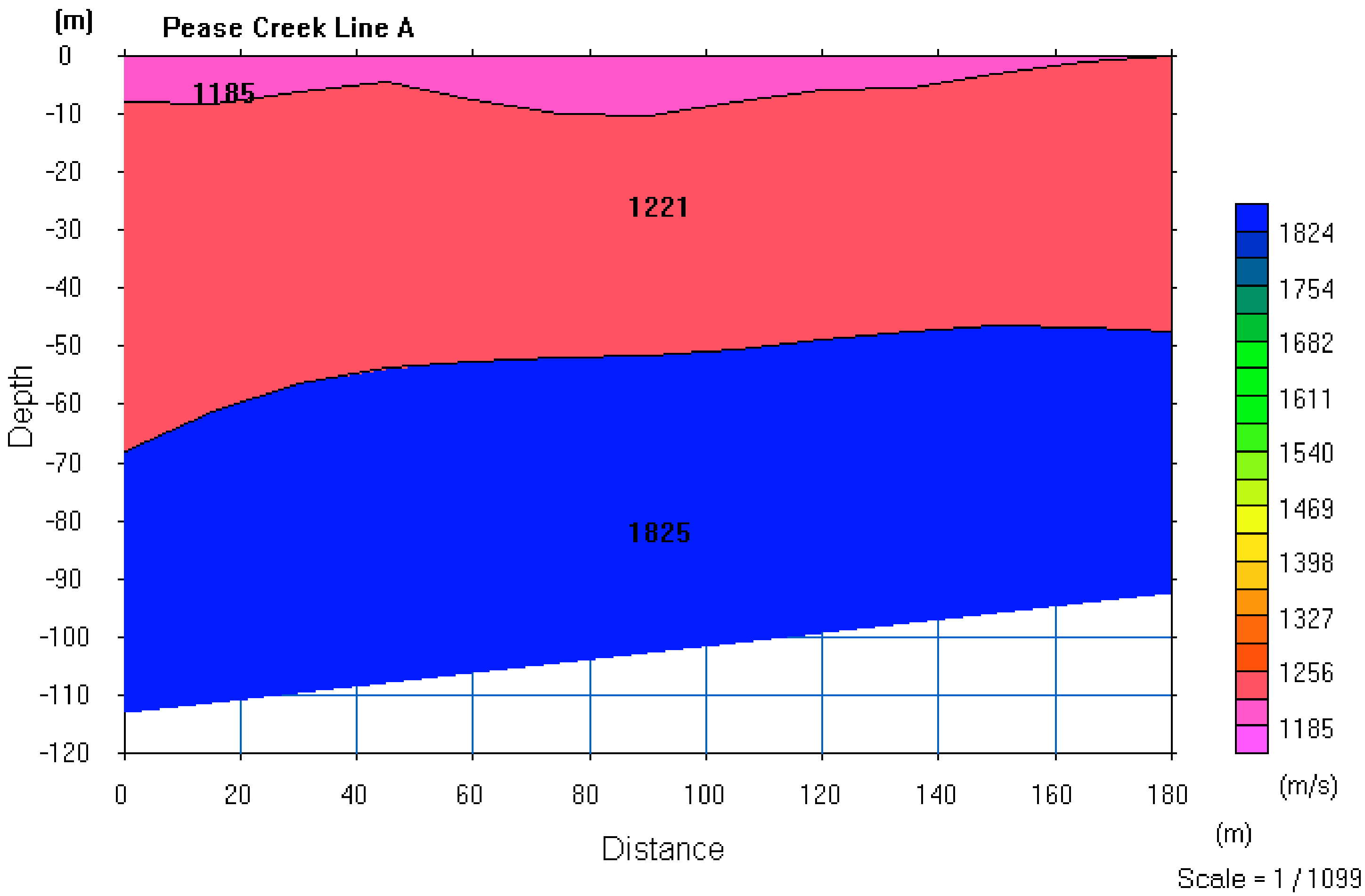


Figure 7: Three layered time-term inversion for Line A of the Pease Creek refraction survey.

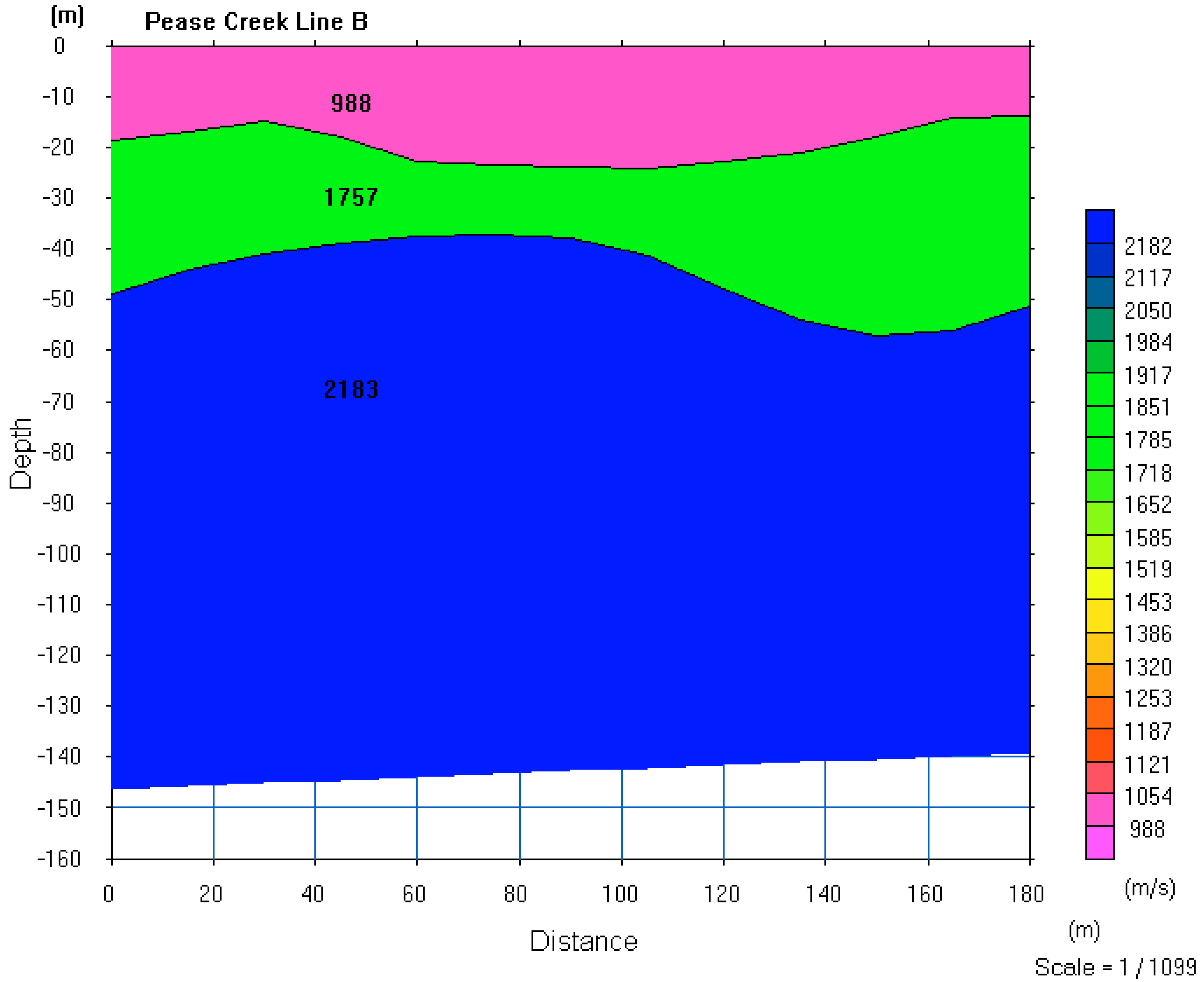
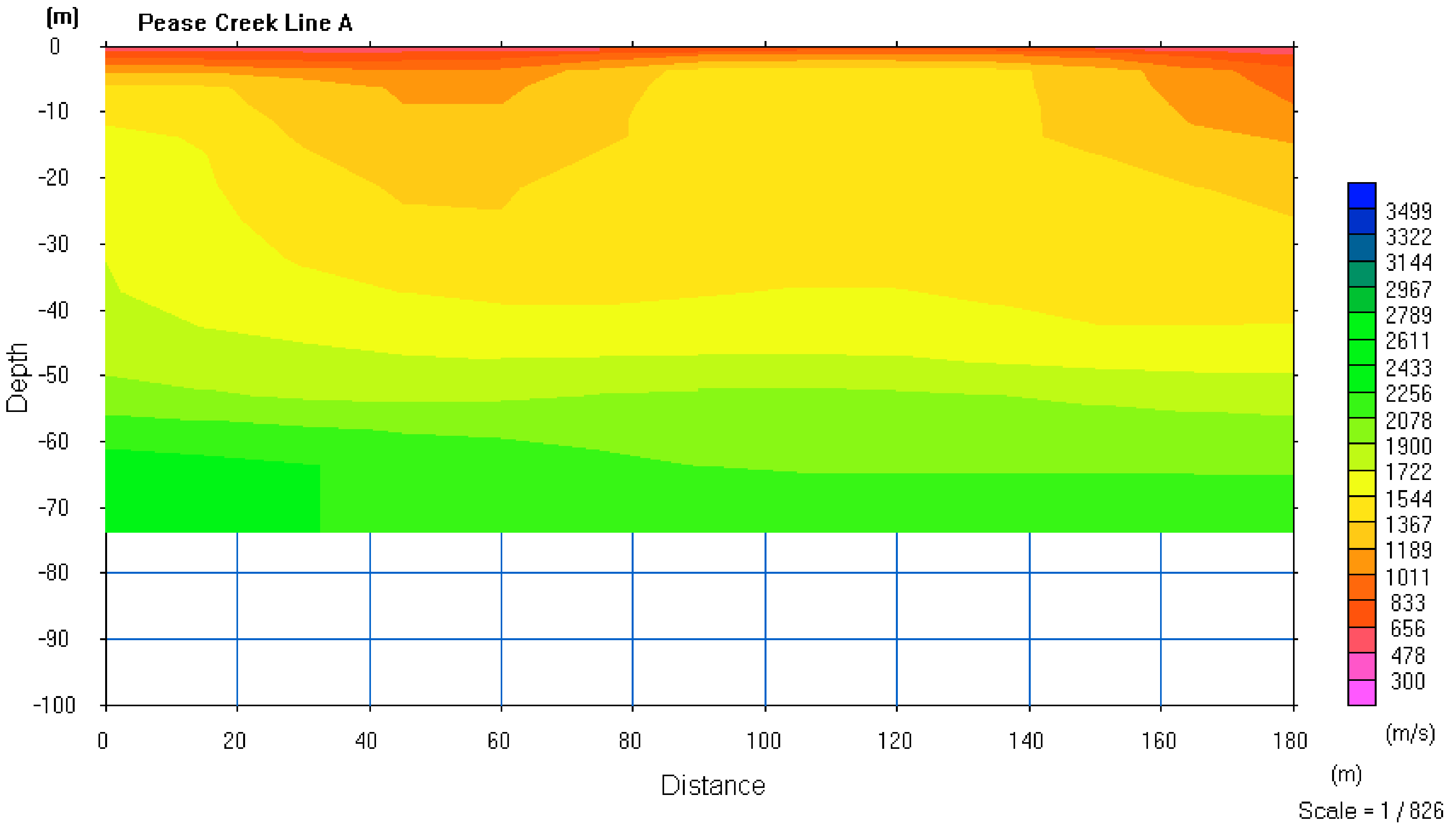


Figure 8: Three layered time-term inversion for Line B of the Pease Creek refraction survey.


Pease Creek Line A
(m)
Depth
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
0
20
40
60
80
100
120
140
160
180
Distance
(m)
3499
3322
3144
2967
2789
2611
2433
2256
2078
1900
1722
1544
1367
1189
1011
833
656
478
300
(m/s)
Scale = 1 / 826

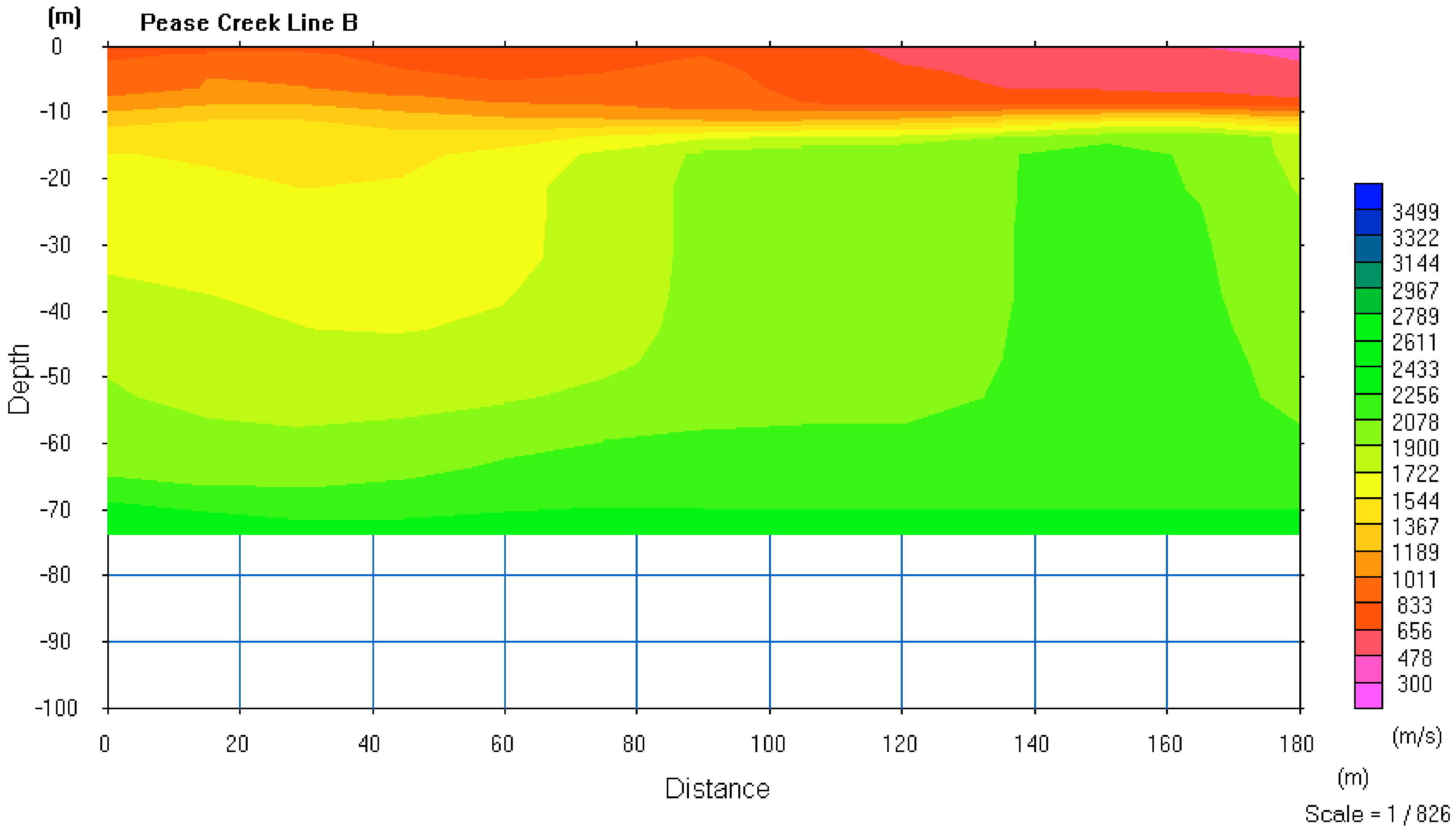


Figure 9: Tomographic inversion for Line B of the Pease Creek refraction survey.

Appendix D

Drill Log

BEACONSFIELD GOLD N L
RC PERCUSSION DRILL LOG SHEET

Tenement EL 27/2000	Survey Grid AGD66 / 55AMG – by GPS		Geologist K Morrison
Prospect North Pease Creek	Collar 482517E, 5441252N		Total Depth 34 m RC + DDH tail
Hole No NPC-1			Water Table 23.5 m
			Base of Oxidation 22 m
Drilled Date 17-19 Aug 2004	Azm. n/a	Declin -90.	Sample No's n/a
Drilled by Stacpoole-T Lodge	Hole Diam 4.5 inch		

Depth (m)	Lithology	Description	Qtz %	Pyr %	Au ppm
0-1	Sand, gravel	Yell brn clean dry qtz sand, gravel. Good sample return	n/a	n/a	n/a
1-2	Sand, gravel				
2-3	Sand, gravel				
3-4	Sand, gravel	Wht bleached sand, gravel a/a			
4-5	Sand, gravel				
5-6	Sand, gravel				
6-7	Sand, gravel	Mottled cream, red brn sand, gravel a/a			
7-8	Sand, gravel				
8-9	Sand, gravel				
9-10	Sand, gravel				
10-11	Sand, gravel				
11-12	Sand, gravel				
12-13	Sand, gravel				
13-14	Sand, gravel, clay	Yell brn slightly damp clayey sand, gravel a/a. Good sample return			
14-15	Sand, gravel, clay				
15-16	Sand, gravel, clay				
16-17	Sand, gravel, clay				
17-18	Sand, gravel, clay	Wht, pale grey qtz sand, gravel, silty clay a/a. Good sample return			

18-19	Sand, gravel, clay				
19-20	Sand, gravel, clay				
20-21	Sand, gravel, clay				
21-22	Sand, gravel, clay				
22-23	Clay, sand, gravel	Cream damp clayey sand, gravel, dark grey humic silty clay. Good sample return			
23-24	Clay, sand, gravel	A/a. Heavy water flow at 23.5m			
24-25	Clay, sand, gravel	Grey humic sandy clay, Quartzite rock frags, up hole contamination by oxid gravel, sand			
25-26	Clay, pebbles	A/a. Heavy water flow, frequent hammer blockage			
26-27	Clay, pebbles	A/a, minor fossil wood, lignite. Wet samples, difficult drilling, hammer blockages			
27-28	Clay, pebbles				
28-29	Clay, pebbles				
29-30	Clay, lignite, sand	Wet puggy humic sandy, silty clay, minor siliceous rock frags, woody lignite, pebbles			
30-31	Clay, lignite, sand	A/a, continuous hammer blockages due to pebbles flushed into ports.			
31-32	Clay, lignite, sand	A/a, moderate sample returns of wet puggy clay. Very slow rate of penetration.			
32-33	Clay, lignite, sand				
33-34	Clay, lignite, sand				
		Change to DDH @ 34 m			