ZINIFEX
ROSEBERY MINE

DUNDAS (WILLIAMSFORD) EL 11/2002

TECHNICAL REPORT
FOR THE PERIOD ENDING 31ST JULY 2005

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1. SUMMARY

This report details exploration work undertaken on EL 11/2002 Dundas (Williamsford) during the period 23rd July 2003 to 31st July 2005, the second and third years of the tenement. Work completed during the reporting period comprised:

- Diamond drilling (CP353; 905.5m) at the Chamberlain Prospect. The hole did not intersect the interpreted EM conductor, but DHEM surveys in CP353 and CP348 have defined a target worthy of follow-up by additional drilling.
- Cutting, and re-opening of 17.2 line km of grid lines.
- Collection and analysis of 830 (including duplicates and standards) B horizon partial leach soil samples from the D11, D15, C1 and White Spur prospect areas.
- Geological mapping at the White Spur and D15 anomalies and rock chip sampling at the D13 and D15 anomalies
- A four loop, 15.4 line km ground EM survey at the White Spur prospect, with one anomaly identified for further follow-up.
- Continued acquisition and review of previous exploration data (mostly from the D7 anomaly area).

Further work planned for the fourth year of the tenement includes following up the White Spur EM anomaly, further drill testing of the Chamberlain anomaly, mapping of the C1 and D15 anomaly grids, and further work in the northern White Spur area ("West Hercules" soil anomaly).

2. INTRODUCTION

This report details exploration work undertaken on Dundas (Williamsford) EL 11/2002 during the period 23 July 2003 to 31 July 2005, the second and third years of this tenement.

Zinifex's main targets on EL 11/2002 are Cambrian Rosebery or Hellyer type, Zn-Pb-Cu-Au-rich VHMS mineralisation hosted by the Mount Read Volcanics (MRV) and Devonian Pb-Zn vein style mineralisation of the type found at for example, the South Comet Mine.

Zinifex plan to systematically explore the EL using a combination of reviewing previous exploration data, geological mapping and partial leach soil geochemistry, followed-up by ground time-domain EM, then drilling of areas of interest.

The Dundas licence covers a mountainous and heavily forested area extending from the north slopes of Mount Dundas (1143m ASL) to near the township of Rosebery (155m ASL); Figure 1. Access to the area is via the sealed Zeehan and Murchison highways to the north and west, and the Williamsford Road and 4WD tracks extending along White Spur, south of the Hercules Mine, to the east. The central part of the tenement has poor access – largely from the old NE Dundas tramway formation with old pack tracks and some rough 4WD tracks heading to the north and south.

2.1 Attribution

The following personnel were responsible for the work carried out by Zinifex Rosebery Mine on the EL 11/2002 Dundas (Williamsford) licence area during the reporting period:

Senior Geologist:	Andrew McNeill – Zinifex Rosebery Mine
Contract Geologist	Mick Skirka – Mick Skirka Geological Services
Contract Geophysicist	Jovan Silic – Jovan Silic and Associates

3. LAND TENURE

EL 11/2002 Dundas (35 sq km) was granted to Pasminco on 23 August 2002 for a period of 5 years as a result of a competitive tender for ETA 562. The location of the tenement is shown on Figure 1. EL 11/2002 covers ground that fell vacant on the relinquishment of EL 21/96 (Pasminco) in October 2001. On 5th April 2004, a refloat of some assets, including the Rosebery Mine and Exploration Licences, of the failed Pasminco was completed and the assets are now owned by of Zinifex Australia Limited.

EL 11/2002 excludes approximately 600 ha of Mining Leases including 19M/1994, 21M/1994, 16M/2000 and 12M/2001 and parts of 25M/2000 and 28M/93 (the Rosebery Mine Lease).

Other land tenures within the tenement area include State/Multiple Use Forest, Un-allocated Crown Land, part of the Mount Dundas Regional Reserve and some private property all of which are available for exploration under the Mineral Resources Development Act 1995.

4. GEOLOGY

The geology of EL 11/2002 is summarised on Figure 2 and below, taken, with modifications, from Crossing & Halley (1990):

Oonah Formation:

- Proterozoic.
- Poorly sorted, carbonate-rich, matrix supported conglomerate, overlain by micaceous quartzite, grey to black graphitic siltstones & shales, often intensely sheared (≡ Concert Schist).

Crimson Creek Formation:

- Cambrian.
- Turbiditic volcaniclastic lithicwackes, derived from the erosion of mafic volcaniclastics, massive siltstones, mudstones and basaltic lava flows. Numerous gabbros intrude this sequence near Renison Bell and occasional impure dolomite horizons have been recorded.

Dundas Group:

- Cambrian.
- Mixed epiclastic and minor volcaniclastic sediments including the White Spur Formation (WSF) in the east of the tenement and the Curtin Davis Volcanics in the centre of the tenement. The group is dominantly comprised of turbiditic to shallow water sediments with immature conglomerates, monotonous siltstones and shales containing some sandstone and grit interbeds. Towards the top of the sequence felsic to intermediate tuffs, related volcaniclastic sediments and minor lava flows (or intrusions) occur. These volcanic units generally show marked variations in facies and thickness over short distances and often appear to interfinger with one another making correlations very difficult.

Ultramafic Complexes:

- Cambrian.

- These outcrop at a number of locations throughout the licence area and have been intersected by drilling at depth. They typically show strong serpentinite alteration and exhibit a high degree of internal deformation. The only exception to this is in the Serpentinite Hill area where pockets of un-serpentinised dunite and pyroxenite have been intruded by gabbro dykes.

Pine Hill Granite:

- Devonian.
- The south eastern 'tail' of this intrusion occurs on the mid-western side of the Dundas licence. The intrusion is described as a porphyritic adamellite and is thought to consist of a series of intrusions. Locally it exhibits early silica and sericite alteration of the both the granite and country rocks, followed by later boron metasomatism.

Glacial

- Quaternary
- Glacial gravels occupy a N-S zone in the NE quadrant of the EL.

The Dundas licence area is one of structural complexity, making the determination of age relationships between the various stratigraphic units difficult, with most of the geological units appearing to be faulted against each other. Shearing and faulting is often preferentially taken up by the more mafic and shale dominated units, thereby complicating stratigraphic relationships. The main folds generated during the Devonian include the Huskisson Syncline north west of the Dundas licence. The Renison Anticline lies to the west of the Dundas licence, and the Dundas Anticline is located to the northwest of Mount Dundas where it folds the Oonah Formation.

Faulting appears to be closely associated with most of the mineralised systems. Generally there are two prominent groups of faults, a NNW trending steeply dipping set with limited dip slip to oblique slip movement and a steeply dipping NE trending set with more significant displacement. A true estimate of the amount of displacement along these NE trending structures is difficult to quantify mainly due to a lack of recognisable marker beds. The NE faults often occur along margins of the mafic-ultramafic complexes, whereas the NNW faults are more generally confined. These faults and the Cambrian thrusts (including the Rosebery Fault) also acted as zones of structural weakness during the Devonian, which resulted in a secondary period of mineralisation and partial remobilisation of Cambrian ore.

5. PREVIOUS EXPLORATION

The area of EL 11/2002 has a prolonged exploration history for base metals, tin and more recently gold. It is estimated that well over 100 surface drill holes have been collared on the EL at a variety of geological, geochemical and/or geophysical targets. Modern exploration commenced in the 1930s and Ellis (1983), Crossing and Halley (1990) and Weber & Murphy (1997) provide comprehensive summaries of previous exploration on the tenement area. Table 1 gives an overview of work until 1996, Table 2 details work conducted between 1996 and 2001 and Table 3 outlines work completed during the life of the current tenement. Detailed reviews of previous work on those prospects currently being explored are presented in section 6.

There are numerous historical workings dating back to the turn of last century, and many more prospects developed since, in the Dundas mineral field. Mineralisation styles range from Devonian Pb-Zn-Ag veins (Comet, Kosminsky), Devonian Sn-Cu-As veins (Greens, Frazer), Late Devonian replacement zones of Sn-Cu-As-W (Clifton, Colebrook Hill Skarn) to Quaternary placer Au-Sn (Laffer's Workings, Cornish Workings).

The principal mineralising event in the Dundas area was associated with the hydrothermal fluids that accompanied the Devonian granite intrusions. Mineralisation in the Dundas field is patchy and low grade. The occasional ore shoots are erratically distributed within the controlling structural features, are small and alternate with low grade or barren sections. Despite intensive exploration since the 1930s, only small resources have been located. The largest of these were the Kosminsky – South Comet mines which contained up to 60,000t @ 8.4% Pb, 7.4% Zn and 248 g/t Ag. The mineralisation at South Comet comprises a series of lenses within a well-defined shear zone, with true widths ranging from 0.75 – 2.5m thickness.

TABLE 1: Previous work on the area of EL 11/2002 Dundas (after Crossing & Halley 1990)

COMPANY	PERIOD	PROSPECT/ COMMODITY	METHODS	RESULTS
BHP	1959/60	Razorback Grand Prize (Sn)	Turam, SP and Magnetics	Inconclusive except over known mineralisation.
PLACER	1964/66	Razorback Grand Prize (Sn)	Underground Drilling & Mining	No new orebodies found. The prospects are not connected.
NCGF	1966/71	N Dundas (Montezuma) (Sn)	Magnetics, VHEM, Mapping, Geochem	Coincident Magnetic and Tin-in-Soil anomaly on Montezuma Fault. Not considered worth drilling
GEOPHOTO	1968/74	Dundas (Pb Zn Ag)	IP, REM, SP, Mag, Mapping, Geochem & 79 Drill Holes	Intensive drilling located Pb Zn Ag in several thin fissure veins separated by barren host rocks. Didn't meet corporate objectives.
COMSTAFF	1970/85	E Renison Godkin (Sn)	IP, Input, Mag, Mapping & 58 Drill Holes	Intensive drilling defined: Fenton's Sn Vein; 0.43Mt @ 1% Sn, 0.2% Cu; Salmon Vein; 0.83Mt @ 3% Pb, 2% Zn; Godkin; 0.3Mt @ 0.9% Sn

TABLE 1: Previous work on the area of EL 11/2002 Dundas cont…

COMPANY	PERIOD	PROSPECT/ COMMODITY	METHODS	RESULTS
CSR	1976/87	Nevada Razorback Montezuma Carbine Hill (Sn Cu Pb Zn Au)	Em, Mag, IP, Dighem, Input, Mapping, Stream Geochem, Soil Geochem & 7 Drill holes	Several geochem anomalies identified and followed up but more were drilled. Airborne geophysical anomalies were followed up by 7 unsuccessful holes.
EZ/GETTY EZ/CSR	1978/86	Colebrook Hill Ring River Mt Dundas Montezuma (Sn Cu)	Input, Dighem, Turam, IP, Mapping, Geochem & 28 Drill holes	Several encouraging Sn and/or Cu intersections as Colebrook Hill (23 holes). Only minor Sn, Pb intersections on Montezuma Fault (5 holes). Deep hole proposed - not completed.
MINOPS P/L	1979/84	Godkin Prospect (Sn)	Gridding, soil geochem, geophysics, drilling	Comstaff and Paringa JV into Godkin area outlined inferred resource 300,000t @ 0.9% Sn.
RENISON LTD	1971/87	Grand Prize (Fault), North Dundas Grid, Commonwealth Hill, Razorback Grid, Kapi, Carbine Hill, Serpentine Hill, (Sn Cu Asbestos, PGM)	Gridding, mapping, Airborne EM, drilling. Soil/rock geochem. IP, Dighem.	Extremely deep diamond drilling on the Kapi Fault returned in S 652, 313.4-313.9m 0.5m @ 2.14% Cu. Grand Prize Fault: S 947A @ 534.8m tourmaline alteration zone. S 969: 406.8-409.8 - 3m @ 5.21% Sn, 0.23% Cu, 13 g/t Ag 408.4-409.8 - 1.4m @ 10.93% Sn
ROGER POLTOCK GEOLOGIC AL P/L	1986/88	Colebrook Hill (Au Cu W)	Stream Sediments	Concluded Colebrook Hill was a thin skarn alteration system.
RGC EXPL. P/L	1987/95 1988/95 (Dundas & Moores Pimple)	Montezuma Grid Ring River Wallace Prospect Greens Prospect (Sn Au)	Gridding, prospect mapping, rock chip sampling, IP	MZ 004 182.1-183.7 1.6m @ 19.25% As, 725ppm Sb and 0.54 g/t Au.

TABLE 2: Previous Exploration by Pasminco on the area of EL 11/2002 Dundas

PERIOD	METHODS	RESULTS
1996-1997 Weber and Murphy (1997)	Reconnaissance mapping and a review with subsequent compilation of historical data (GIS format).	
1997-1998 Murphy (1998)	Reconnaissance work and mapping by Dave Selley (PhD thesis).	Work identified that the nature of the boundaries with the Precambrian need to be considered for their potential as growth faults and potential mineralising structures. This geometry impacts on modelling fluid flow regimes associated with mineralisation.
1998-1999 Parfrey and Simpson (1999)	Identification of priority prospect areas through the completion of an airborne EM Survey.	A suite of anomalous conductive responses were delineated in the EM data, however most of these were interpreted as being directly related to shallow glacial cover. Several more discrete anomalous responses were also identified - these are worthy of further investigation.

TABLE 2: Previous Exploration by Pasminco on the area of EL 11/2002 Dundas cont..

PERIOD	METHODS	RESULTS
1999-2000 McNeill and Simpson (2000)	Drill testing the Chamberlain EM Anomaly DDH CP348. Interpretation of the 1999 Airborne EM survey.	DDH CP348 (506.2m) intersected White Spur Fmn shale-siltstone-greywacke successions. The current interpretation is that the anomaly is very deep, and may be a lithological conductor rather than mineralisation.
2000-2001 Briggs and McNeill (2001)	Soil sampling at White Spur and C1 anomaly. Detailed interpretation of 1999 Airborne EM survey	Sampling confirmed location of C1 anomaly and indicates a Cambrian Pb Isotopic signature. No significant anomalies at White Spur. Five anomalies warranted further follow-up. However, there was no indication of a Pasminco sized (10 mt @20% Pb+Zn) deposit in Dundas area. Tenement can be relinquished.

TABLE 3: Previous Exploration on EL 11/2002 Dundas.

PERIOD	METHODS	RESULTS
2002-2003 McNeill (2003)	Compilation of previous exploration data Soil sampling at White Spur and D13 AEM anomaly. Gridding commenced at D11 AEM anomaly.	Results from D13 indicated that the AEM anomaly is related to the Oonah Formation-Dundas Group contact and no further follow-up is required. At White Spur, sampling located a coherent multi-element (Cu, Pb and Zn) anomaly that may be worthy of follow-up. Gridding of the D11 anomaly was in progress.

6. WORK COMPLETED 2003-2005 REPORTING PERIOD

6.1 Data Compilation

Compilation of previous exploration data, continued during the reporting period. Soil data from the Godkin gird (ML 62M/1975) and the RGC Carbine grid (EL 42/1971) and Geophoto/Texins drill hole data from the Ainslie prospect (EL 7/1968) were compiled. All data collected and digitised is included as Appendix 1 (digital copy only). Note that collar coordinates given in the MRT drill hole database for the drill holes at Ainslie are incorrect and all collars were re-located and surveyed with DGPS.

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6.2 White Spur Area

Work programmes in the White Spur area have focussed on testing the highly VHMS prospective White Spur Formation/CVC contact, between the South Hercules prospect and the White Spur Canal. This program has involved work on four tenements: ELs 11/2002 (previously 21/1996), 5/1996, 7/2001 and ML 28M/93. Results from work on the other tenements (7/2001, 5/1996 and ML 28M/93) have been reported elsewhere. On EL 11/2001 during the current reporting period, 3 km of new grid line were cut and pegged, 1 km of loop line was cut, 800m of old logging track re-opened and 2.8 line km of old gird lines were re-opened. The line cutting was completed to allow continuation of partial leach soil sampling (133 samples, including standards and duplicates, submitted for analysis) and geological mapping programmes and completion of a four-loop ground EM survey.

6.2.1 *Partial leach soil sampling*

Randomised sample numbers were used in partial leach sampling to reduce the effect of analytical variations. The partial leach soil samples were generally collected at 25m intervals, at or near a grid peg, and involved digging a hole with a pick, removing the organic rich A-horizon and collecting approximately 500g of sample from the nominal B horizon. The samples were then placed in ziplock plastic bags and, once returned to the field office, the bags were stored open to prevent anaerobic reactions. When a batch of 300 samples was collected, the sample bags were sealed and the samples despatched to Amdel in South Australia for analysis by partial leach technique DL42. Elements determined were Ag, As, Au, Ba, Bi, Cd, Cu, Co, Mo, Ni, Pb, Y, Zn, and the rare earth elements Ce, Eu, Gd, La and Sm. The pH of the leachate, after digestion, was also determined. Results are included as Appendices 2 and 3 and sample locations are shown on Figure 3.

Three duplicate and two standard samples were collected per 100 samples. The field duplicates were also analysed in duplicate to allow assessment of both the sample and laboratory variance. Additionally at each sample site a small amount of soil was collected and stored in a chip tray for reference and to allow soil colour to be recorded. Soil colour was assigned from a Munsell Colour chart with 19 colours and was then assigned to one of six colour groups.

The 133 samples (including duplicates and standards) collected were analysed as part of a single batch (SDS 4547).

No samples are obviously contaminated, however, 4 samples, 3% of the data set, have a low (pH<8.0) post-digest pH. At these 'low' pHs the speciation of reagents in DL42 may change and the resulting assays may be unreliable. Many of the low-pH samples had high Pb and Zn results that could be important in the interpretation of the dataset. These 4 samples would previously not have been considered in the analysis of the data set. However, test work at Amdel indicated that decreasing the sample:liquid from 10:1 (method DL42) to 5:1 (method DL43) could buffer the solution to a higher, acceptable, final pH (for samples with a post-digest pH of >7.2) and not significantly affect the precision of the analysis. Accordingly all 4 samples, with low post-digest pH, were re-assayed with the new protocol with the result that all had post-digest pHs of >7.8. In the interpretation discussed below the low pH samples from the original dataset have had their assay results replaced by the re-assayed data.

Images of the gridded raw data, from all sampling (429 samples) on the White Spur Prospect of EL 11/2002, are presented as Figures 4-11. It can be seen that, as noted previously (Briggs and McNeill, 2001), there are two main anomalous zones:

- A northern zone, anomalous in all elements that may be the southern extension of the West Hercules soil anomaly that has been ascribed to Hydromorphic dispersion by Russell (1976). Note that the northern zone extends further east, than shown on Figure 4-11, onto the Rosebery Mine Lease ML 28M/1993(Edwards, et al., 2001).

  The northern zone overlaps RGC's Ring River Grid (Cartwright, 1989; Crossing and Halley, 1990). A combined wacker (deep bedrock auger) and rock-chip sampling program on the Ring River Grid returned high Pb, Zn, Bi, Sb+/-As and Ag values at the eastern end of the grid – partially overlapping with the northern zone, suggesting that the anomaly results from a bedrock, rather than hydromorphic source. The anomalous Pb-Zn in wacker/rock-chip samples was ascribed to "minor base-metal bearing carbonate veins which are ubiquitous throughout the area" by Crossing and Halley (1990).

  Although covered by the 1999 Pasminco HEM survey, an IP survey (Cartwright, 1989) and partially, at its eastern end, by the 1991 UTM survey (on ML 28M/1993; Penney, et al., 1991), the northern zone has not been covered by modern deep penetrating electrical geophysics.

  This anomaly requires further follow-up by mapping, rock chip sampling and electrical geophysics.

- A central anomaly, interpreted by Briggs and McNeill (2001), extending as a linear feature from 5363400mN to 5362200mN and anomalous in Cu-Pb-Zn-Bi-As-Au. This anomaly is not as obvious in the new infill data set, as in the original wider spaced data and given that the area has now been covered by fixed-loop ground EM with negative results (section 6.2.3) downgrades its prospectivity.

6.2.2 *Geological Mapping*

All new cut lines and several old logging tracks were geologically mapped during the reporting period. Results are presented as an outcrop geology plan (Plan 1) and an updated geological interpretation on Plan 2. No significant alteration mineralisation were located, but, the mapping has helped confirm the stratigraphy of the area.

6.2.3 *Geophysics*

A review of previous exploration indicated that the White Spur area of EL 11/2002 had not previously been covered by modern electrical geophysics. A four loop fixed loop ground EM program was completed by Zonge Engineering in March 2005, with a total of 15.4 line km of 50m spaced data collected in both in- and out of loop modes. Data, a logistics report and a brief initial interpretation are presented as Appendix 5. A bedrock anomaly was located off the western ends of lines 3000-3400N and requires further follow-up. There were no significant anomalies in the main area of the survey.

6.3 AEM anomaly D13

Dauth (in McNeill and Simpson, 2001) described anomaly D13 as being a 1.4 km long feature with sharp edges, suggesting a possible lithological source, which straddles the northern margin of the Pre-Cambrian – Dundas Group contact. Exploration over this area, prior to the granting of EL 11/2002, was summarised by McNeill (2003). During the first year of EL 11/2002 the D13 area was gridded, partial leach soil sampled and geologically mapped and it was concluded that the Airborne-EM anomaly is related to the Oonah Formation-Dundas Group contact and that no further follow-up was required.

Results for rock-chip samples from old workings and gossans located during the mapping program were received during the current reporting period. Results and sample locations are included in Appendix 4**.**

6.4 AEM anomaly D11

This suite of anomalies, coincident with a small portion of the Montezuma Fault, and at an inferred triple junction in the regional geology, was recommended for follow-up by Briggs and McNeill (2001). During the first year of EL 11/2002 all previous exploration data was reviewed and exploration results captured digitally (McNeill, 2003). In the previous reporting period work commenced on cutting a 9.1 km grid over the anomaly, but, this was not completed for budgetary reasons (McNeill, 2003). During the current reporting period the grid was completed, surveyed with GPS and partial leach soil sampled. Standard sampling and analytical procedures were followed (see section 6.2.1 above) and 321 samples (including duplicates and standards) were been analysed as part of four batches (SDS 4539, 4544, 4545 and 4550). Sample locations are shown on Figure 12 and results are presented in Appendices 2 and 3 and on Figures 13-20. In this dataset 26 samples with post-digest pH of <8.0 have been redigested and analysed by method DL43 and these DL43 results have been used or the interpretation (see section 6.2.1 above).

One obvious feature in the data is a batch effect for Au (SDS4550 appears to be high), which makes interpretation of the Au data difficult. A lesser batch effect is apparent in the regionally levelled Ag data (but, not particularly obvious in the raw data). Overall, metal levels appear to be lower than those from the D15 or D13 grids, but three anomalous zones are apparent:

- A coherent Ag+Pb+As anomaly overlying the Curtin Davis Consols workings and the eastern AEM conductor, in the NE of the grid
- Two patchy Bi+Cu+/-Ba anomalies to the west, partly coincident with the western AEM conductor and over the Evenden and Lower Ramsdale Adit.

Both these anomalies require further follow-up by geological mapping and rock chip sampling.

6.5 AEM anomaly D15

The D15 anomaly was initially described as an ovoid feature, not associated with a magnetic structure or anomaly, that warranted further follow-up (Briggs and McNeill, 2001).

The anomaly overlies a block of Oonah Formation, bounded to the south by a fault along South Comet Creek (shown on Blissett and Guilline [1962] and in mapping by Geophoto and CSR) and is underlain by three areas of historical workings; two (Ainslie and Banner Cross) are hosted by Oonah Formation correlates, and one (King Dundas) is in Crimson Creek Formation correlates immediately south of the South Comet Creek Fault. There is some confusion as to the location of the first two workings.

The Ainslie mine comprised three adits on a vein located by W. Ainslie. Reid (1925) visited the prospect and considered it worthy of further attention. Turner (1971) relocated some workings and describes the vein as having a NNW strike and a galena-sphalerite-jamesonite mineralogy (Note that Reid did not record the presence of jamesonite – describing it only from Banner Cross).

Reid (1925) describes Banner Cross as being immediately west of Ainslie, having a galena-sphalerite-pyrite-siderite–jamesonite mineralogy. The vein was described as being 0.3-1.0m wide and of considerable length, but, adits driven beneath the outcropping lode did not intersect any significant mineralisation.

The King Dundas prospect (not mentioned by Reid, 1925) was located by Turner (1971) who described it as being Pb-Zn mineralisation, without Jamesonite. Herrmann and White (1989) located a trench and rock face in the King Dundas area and collected one sample of silica-pyrite-galena-sphalerite, which assayed 23.6% Pb, 0.85% Zn and 40 g/t Ag.

Texins/Geophoto commenced modern exploration in the area in 1970-71 as part of a major exploration effort in the Dundas area. AEM anomaly 15 occurs on two grids; the Kosminsky Hill East section of the Comet-Kosminsky grid and the Ainslie grid. Previous exploration completed over the area of interest is summarized in Table 4.

Table 4. Previous exploration over the area of Anomaly D15 ('Kosminsky Hill Grid')

PERIOD	RESULTS
1969 EL 7/1968 Ratigan and Paterson (1969); Discala (1974)	Regional scale photogeological interpretation of tenement with production of 1:25,000 interpretative plans. Kosminsky Hill East - gridding, geological mapping, sampling of gossans, SP and ground magnetic surveys and a single line of VLF-EM.
1971 EL 7/1968 Turner (1971); Richardson (1971); Discala (1974)	Ainslie Grid – gridding (24.1 line km), mapping, rock chip sampling (36 samples) and soil sampling over VLF-EM anomalies and outcropping gossans (615 samples). Recommend further work including drilling. Kosminsky Hill East – rock chip sampling, soil sampling (lines 20&26S) and orientation soil sampling project by Simon Gatehouse. Regional – fly aerial photography and complete VLF-EM on existing grids.
1972 EL 7/1968 Thigpen (1972); Discala (1974)	Bulldozing of 1.9km of access tracks and drilling of 8 Holes at Kosminsky Hill East and Ainslie prospects (for 1,213m) to test geochemical and VLF-EM anomalies. Only minor mineralisation was intersected and two further holes proposed for the Ainslie area (Juilland, 1971) were not drilled.
1973 EL 7/1968 Howland-Rose (1973); Anon (1973)	Completion of a Turair airborne electromagnetic and magnetic survey over parts of EL 7/1968. No "primary targets" were located in the area of interest. Completion of a photogrammetric survey of the entire Dundas tenement and production of topographic map sheets.
1974 EL 7/1968 Discala (1974)	Compilation of all exploration on EL 7/1968 completed. Recommend that no further work be completed in the Kosminsky Hill East and Ainslie areas as results of drilling had not been encouraging and there was a "lack of sound geological and geophysical evidence" for strongly mineralised zones.
1976-1978 EL 15/1976 Macnamara (1978)	Regional drainage sampling (panned concentrate, -80#, -20# and rock-chip samples). Delineated Area 5, anomalous Pb-Zn draining leases held by other parties, in area of interest.
1982 EL 15/1976 Ellis and Macnamara (1983)-	Further drainage sampling completed after recognition of "unreliability" of some previous sampling. No mention of results from Area 5. DIGHEM survey completed – anomaly 31CX over area of interest but no work recommended.
1982-1983 EL 15/76 Macnamara (1984)	Further detailed stream sediment sampling (-20# and panned concentrate) – report anomalous Pb-Zn from area of interest, but CSR programme largely directed at Au and Sn; no follow-up of Pb-Zn anomalies recommended.
1989 EL 101/1987 Hermann and White (1989)	Located the King Dundas prospect but failed to relocate the Ainslie and Banner Cross mines as part of a survey of known mineralisation in the Dundas Mineral Field. No further work completed.

During the reporting period previous exploration data was collected (see section 6.1), a 5.25 km grid, including 0.25km of access lines, was cut and surveyed with GPS and 5 km of partial leach soil sampling completed. The area was also geologically mapped and rock-chip sampling of old workings and gossans completed.

6.5.1 *Partial leach soil sampling*

A total of 214 samples were collected (including standards and duplicates) and analysed as part of three batches (SDS 4544, 4545 and 4546) using the sampling protocols and methods as described in section 6.2.1; results are included as Appendices 2 and 3 and sample locations are shown on Plan 3.

No samples are obviously contaminated, however, 15 samples, 7% of the data set, have a low (pH<8.0) post-digest pH. The samples with low post-digest pH, were re-assayed by method DL43 with the result that all but three had post-digest pHs of >8.0. In the interpretation discussed below the low pH DL42 samples from the original dataset have had their assay results replaced by the re-assayed data.

Images of the gridded raw data are presented as Figures 21-28. It can be seen that there are no obvious coherent multi-line anomalies but, rather spotty highs concentrated in the northern part of the grid, for Cu, Pb and Zn, and in the southern part of the grid, for Bi and Ag, whereas Au and As highs seem to be randomly distributed across the grid. Based on this initial interpretation no further follow-up can be recommended, although a more detailed analysis of the data will be completed in the next reporting period.

6.5.2 *Geological Mapping*

The new grid and existing access tracks were geologically mapped during the reporting period. Stratigraphically the area can be divided into two main units, the Oonah Formation sediments in the central part of the grid in faulted contact with ?Cambrian sediments to the west and south/southeast. The Oonah formation comprises two main facies:

- Interbedded grey micaceous sandstone/quartzite and dark grey to black shales. These are the dominant lithologies in the mapped area.
- Dolomitic units ranging from impure dolomitic siltstones to medium to coarse grained dolomites, with rare breccia units. Two E-W trending dolomite units have been defined in the northern part of the grid and are associated with float of gossanous material.

The 'Cambrian' lithologies comprise interbedded green-grey-purple shales, sandstones and lithicwackes, that may be correlates of the Dundas Group (Corbett, 1986; Corbett and McNeill, 1988), the Stitt Quartzite (Corbett, 2002) or the Crimson Creek Formation (Blissett and Guilline, 1962; Turner, 1971). Unfortunately the maps of Brown (1986) and from D. Selley's PhD thesis do not extend far enough south to shed light on this problem, however, on the basis of the lithologies observed in the current mapping programme a correlation with the Crimson Creek Formation is favoured.

All the significant mineralisation (Ainslie, Banner Cross and King Dundas) is interpreted to occur in the Oonah Formation or at the contact of the Oonah and Crimson Creek (note that the start of the King Dundas is in Crimson Creek, but Mineralised samples from the mullock heap appear to be in black shales of the Oonah).

6.5.3 *Rock Chip sampling*

In the process of geological mapping samples of outcropping gossan, mineralised and altered rocks (mostly dolomites), and mineralised dump samples from old workings were collected and 34 samples (including a standard) were submitted for assay. Sample locations are plotted on Plan 3. At the time of writing assay results had not been received. These results will be included in the next annual report.

6.6 AEM anomaly D7

Anomaly D7 is a N-S to NE striking anomaly with a strike length of 2.5 km lying parallel to a prominent fault, on the eastern side of a high amplitude magnetic lineament with the same strike orientation. The EM anomaly has no real associated magnetic anomaly and the magnetic lineament is interpreted to be buried ultramafics (intersected by drilling). The strike length of the anomaly suggests a lithological source, however, a detailed assessment of all historical work in the area surrounding the D7 anomaly was recommended by Briggs and McNeill (2001).

Previous drilling has largely intersected broad graphitic shears caused by the faulting of a sequence of carbonaceous and variably calcareous siltstones & shales. The area of the anomaly is predominantly underlain by turbiditic sediments. Historical workings and prospects in the area (including Frazer's, Greens, Montezuma & Godkin) have uncovered Devonian vein systems of variable metal association (varying from Sn to Ag-Cu-Pb-Zn to Fe).

A summary of all previous exploration, compiled during the current reporting period is presented as Table 5. A detailed review of this historical data is continuing and may lead to the commencement of an exploration programme next reporting period.

Table 5. Previous exploration over the area of Anomaly D7

PERIOD	RESULTS
1966-1967 Elders (1967)	Construction of access roads, Commenced gridding 92,000 ft cut, geological mapping of grid. Completed western area and only "approaching the more interesting Godkin Ridge".
1967-1968 Forsythe (1968)	No further gridding; geological mapping, commenced soil and rock-chip sampling completed, Described old workings, ground magnetics. Recommended extending the grid, further mapping, soils and geophysics.
1968-1969 Forsythe (1969)	First generation Montezuma Grid, from Severn Creek in east to Wallace's Tram in west, completed. Gridding of 50,580 ft; 20,400 ft cleared along major creeks; 64,800 ft of old foot tracks cleared. Located, geologically mapped and described old prospects and workings. Soil sampling completed over majority of grid (original data not presented, only contoured plans). Ground magnetic survey of grid. Concluded that soil results do not provide encouragement to follow-up Pb-Zn anomalies, but, concentrate on Sn anomalies where more follow-up was recommended.
1971-1974 Clarke (1972)	Re-pegged area of SPL20. Followed up NCGFA's anomaly A by costeaning, mapping and sampling. Some further follow-up recommended.

1972-1974 Layden (1974)	Followed up Anomaly A at north end of NCGFA Montezuma grid by geological mapping, costeaning, EIP and diamond drilling (136.5m in 2 holes): targeting Sn near the Godkin Mine. One hole (SS1) intersected anomalous Sn.
1982-1983 Komyshan and Roberts (1983)	Established Carbine Hill Grid on EL 42/1971, immediately west of area of interest to cover gaps in geological, geochemical and geophysical coverage.
1979-1980 Orr and Thynne (1980)	Geological mapping, soil and rock chip sampling (some from old workings), and ground Pulse EM defined two targets recommended for follow-up by drilling. Minor petrology.
1981-1982 Various	5 hole Diamond drilling program (GDK3-GDK8) that intersected Sn-mineralisation (see; Wilding et al., 1982; Yardley and Crimeen, 1982; and Pigott, 1983).
1983 Thynne and Shaw (1983)	Reviewed previous drilling, geology, geophysics and geochemistry from the Godkin Prospect on ML 62M/1975. A resource was estimated and further drilling recommended. There is no evidence that this drilling was completed.
1983-1984 Komyshan and Roberts (1984)	Completion of soil geochemistry, geological mapping, ground magnetics and VLF-EM on Carbine Hill Grid (EL 42/1971). Outlined two areas of interest; Great Northern Mine area and South Confidence Saddle. Recommended infilling gird and completing ground EM surveys.
1984-1985 Komyshan (1985)	EM-37 surveys completed on EL 42/1971. These located an approx. 1.2 km long zone of anomalies corresponding with a magnetic anomaly. Follow-up by diamond drilling was recommended.
1985-1986 Cartwright (1986)	Diamond drilling, 469m, failed to intersect the EM anomaly, due to excessive flattening, however, the results of a DHEM survey were interpreted to indicate the source was a buried ultramafic and not mineralisation. No further work was recommended.
1988-89 Cartwright (1989)	Assessment and compilation of previous exploration data over ELs 101/1987 and 13/1988. 32 km of gridding (Montezuma Grid); geological mapping, mapping and sampling of old workings (Frazer and Green's), C Horizon soil sampling and ground magnetics. Entire licence flown with Heliborne magnetics, review of work at Godkin prospect. Results encouraged follow-up work in the Green's Prospect-Frazer Mine area for Sn mineralisation.
1989-1990 Crossing and Halley (1990)	Existing access tracks upgraded and repaired; Detailed mapping and wacker sampling; rock-chip sampling on the Montezuma Grid. Three lines of IP completed to follow-up EZ DIGHEM anomaly. Four diamond drill holes, for 1094m, at Green's Prospect. Work identified a major NE trending structure that warranted further follow-up.
1990-1991 Crossing (1991)	Regional gravity survey; no further field work on Montezuma grid area; conclude that NW structures have potential for Sn mineralisation and recommend some follow-up of the NE structure.

6.7 Chamberlain EM anomaly

A review of TDEM data on the Rosebery Mine Lease (Silic in Edwards et al., 2000) indicated that there was a deep 1200m long conductor in the footwall of the Rosebery Fault near the Chamberlain prospect. This anomaly was the last remaining untested significant EM feature on the Rosebery Mine Lease. A follow-up survey (Edwards et al., 2000) more closely defined this anomaly at a depth of 375-460m, indicated a time constant consistent with VHMS deposits in Western Tasmania and suggested the anomaly was shallowest outside the Mine Lease on the adjacent EL 21/1996.

As the anomaly was close to areas of strong cultural contamination (Hercules aerial ropeway and the TME smelter site) and partial leach sampling was not considered a viable technique for confirming the presence of mineralisation. An initial Drill hole CP348 (McNeill and Simpson, 2000) designed to test the anomaly on EL 21/1996 failed to intersect the conductor but DHEM surveys were used to refine the location of the conductor (Dauth in McNeill and Simpson, 2000). A single 800m diamond drill hole was therefore proposed to test the anomaly at approximately 600m below surface, and 50-100m below the top of the modelled anomaly.

6.7.1 *Diamond Drilling*

DDH CP353 was collared at 377633mE, 5371332mN (coordinates in AGD66, zone 55) on 17/3/2004 and was completed at 905.5m, the effective depth capacity of the Boart Longyear UDR650 drill rig used, on 29/4/2004. A detailed log and downhole survey details are included as Appendix 5 and assay results are included as Appendix 6. A summary log is as follows:

From	To	Lithology
0.0m	27.0m	Glacially transported overburden
27.0m	360.0m	Interbedded siltstone and fine-grained sandstone
360.0m	440.0m	Volcaniclastic mass flow deposits
440.0m	505.0m	Fine grained sandstone
505.0m	667.5m	Volcaniclastic crystal-rich sandstone and mass flow deposits
667.5m	700.0m	Interbedded siltstone and volcaniclastic sandstone/mass flows
700.0m	905.5m	Intervals of carbonaceous schist, quartz-sericite schist and calcareous schist

6.7.2 *Down hole Geophysics*

DDH CP353 failed to intersect an obvious source for the conductor so a series of Down Hole EM (DHEM) surveys were completed by Zonge Engineering and Research between October 2004 and May 2005. Logistics reports, loop locations and survey results are included as Appendix 7 (note: the logistics report for the March 2005 survey is included in Appendix 4).

In October 2004, both CP353 and CP348 were read using loop C1, the original surface EM loop which first detected the anomaly. Interpretation indicated there were sill unresolved complexities in the inversion of the existing dataset so further data was collected both CP348 and CP353, using an enlarged loop C3, in March 2005. There were still interpretation problems so further data was collected from both holes using a single large surface loop (C4) in May 2005. The results of inversion of data, by consultant J. Silic, from these and previous DHEM (McNeill and Simpson, 2000) and surface EM surveys (Edwards, et al., 2000) is presented in Appendix 8. The favoured interpretation is that the anomaly results from a "three sheet conductor" forming a possible folded structure that has been recommended for drill testing.

6.8 C1 Anomaly

During a review of the HEM anomalies on EL 21/1996 a coherent Pb-Zn-Cu soil anomaly (centred on 374,855mE, 5,367,010mN) was identified in historical data by Briggs and McNeill (2001). The anomaly has a strike length of 900 metres, and at its widest point is 400 metres across and is located on the eastern edge of a circular magnetic high. Maximum values within this coherent anomaly include 1200ppm Zn, 810ppm Pb & 460ppm Cu. A small EM response is located with a similar orientation to the geochemical anomalism, but slightly offset to the south. There do not appear to be any historical workings associated with the anomaly, and the only previous drilling targeted the magnetic high (which remained unexplained). The anomaly was referred to as C1 by Briggs and McNeill (2001).

Pasminco completed a single line of soil sampling was conducted over the C1 area to confirm the historical anomaly, to locate any coincident partial leach anomaly, and to collect high lead samples for Pb-Isotope analysis. This work confirmed the anomalism and the Pb Isotope signature of one of the anomalous samples was similar to Cambrian Elliott Bay mineralisation, suggesting some input of Cambrian Pb into what is generally considered a Devonian mineral field.

Based on these results more work was proposed, and in the current reporting period 3.7 line km of gridding was completed over the northern part of the anomaly and this new grid was Partial leach soil sampled using the sampling protocols and methods as described in section 6.2.1. A total of 156 samples (including duplicates and standards) were submitted for analysis as part of two batches (SDS 4550 & 4551). Sample locations are shown on figure 29 and assay results are presented in Appendices 2 and 3.

No samples are obviously contaminated, however, 6 samples, 4% of the data set, have a low ($pH<8.0$) post-digest pH. The samples with low post-digest pH, were re-assayed by method DL43 with the result that all had post-digest pHs of >8.0. In the interpretation discussed below the low pH DL42 samples from the original dataset have had their assay results replaced by the re-assayed data.

Images of the gridded raw data are presented as Figures 30-39. It can be seen that overall metal levels, with the exception of Zn and Cu are in general lower than the regional average, however, within the grid there appear to be three anomalous zones:

- In the west, a Ag-Cu-Pb-Bi-As anomaly apparently associated with the NE Dundas tramway and Ring River (although the anomaly does not appear to extend downstream of this area and is not present in the Ring River on the northern two lines).
- A central anomaly, that is Pb-Zn-Cu anomalous to the north (on the main ridge) and Pb-Zn-Cu-As-Bi+/-Au anomalous to the south (closer to the Ring River).
- A northeastern anomaly on at least one line that is anomalous in Ag-As-Au-Pb and Bi and is at least partially coincident with the Ring River.

Additionally there is a broad Ba anomaly on the ridge SE of the NE Dundas tramway. Mapping and further soil/rock chip sampling is required to fully explain these anomalies.

7. CONCLUSIONS & RECOMMENDATIONS

During the second and third year of tenure fieldwork continued in five areas; anomalies C1, D11, and D15 and the Chamberlain White Spur prospects, and comprised:

- Diamond drilling (CP353; 905.5m) at the Chamberlain Prospect. The hole did not intersect the interpreted EM conductor, but DHEM surveys in CP353 and CP348 have defined a target worthy of follow-up by additional drilling.
- Cutting and re-opening of 17.2 line km of grid lines.
- Collection and analysis of 830 (including duplicates and standards) B horizon partial leach soil samples from the D11, D15, C1 and White Spur prospect areas.
- Geological mapping at the White Spur and D15 anomalies and rock chip sampling at the D13 and D15 anomalies
- A four loop, 15.4 line km ground EM survey at the White Spur prospect, with one anomaly identified for further follow-up.
- Continued acquisition and review of previous exploration data (mostly from the D7 anomaly area).

As a result of this work the following have been recommended for the fourth year of the tenement:

- Compilation of previous exploration data at the D7 anomaly be completed and on-ground exploration, if warranted, commenced
- Geological mapping and rock-chip sampling of the D11 and C1 anomalies. Further follow-up will depend on the results of this work.
- The Northern Partial leach soil anomalies at White Spur (the West Hercules area) be followed-up and interpretation of the area completed in conjunction with work on the adjacent ML 28M/93.

- The white Spur EM anomaly be followed up by extending existing lines to the east and collection of additional data from EM Loop 3.
- The Chamberlain EM anomaly is tested with a further 700-800m DDH and DHEM survey.

8. EXPENDITURE

Expenditure by Zinifex Rosebery Mine on EL 11/2002 during the 24 month period ending 31st July 2005 was **$360,118**. A detailed breakdown of this expenditure is presented below.

Personnel	$21,222
Travel & Accommodation	$607
Consultants & Contractors	$101,132
Geological Consultants	$6,272
Geochemical Consultants & Assays	$20,613
Geophysical Surveys & Contractors	$44,354
Drilling	$110,072
Stores & Supplies	$9,548
Vehicles Plant & Equipment	$4,292
Land	$2,257
Computing	$6,951
Office	$798
Administration Fee	$32,000
Total Tenement Expenditure	**$360,118**

9. KEYWORDS & LOCALITY

Keywords

Geology, geochemistry–soil, geochemistry–Partial leach, previous exploration, Dundas, White Spur, Carbine Hill, geophysics–EM, geophysics – DHEM, track cutting, Montezuma Grid, Kosminsky Hill, diamond drilling, geological mapping.

Locality

1:250,000 QUEENSTOWN SK 55-5

1:100,000 PIEMAN 7914, SOPHIA 8014

1:25,000 DUNDAS 3636, ROSEBERY 3637

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