

EL43/1992
Melba Flats

2022-2023 Annual Report

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EXECUTIVE SUMMARY

In 2022 Mallee Resources acquired Allegiance Mining Pty Ltd and all its tenements, including EL43/1992. During the tenement year, high resolution aerial imagery was captured over all Avebury leases at Melba Flats. With the mine restart and subsequent shipment of ore, in late 2022, Avebury Operating hired an exploration geologist and two field assistants to work across their newly acquired tenements, including EL43/1992. Initial works included detailed examination of historic works, and prospectivity analysis with new target generation. Highlights of this include the discovery of the true location of McKimmies mine, and successful reconnaissance with the use of pXRF for accurate, instant broad scale in field sampling. Work for the following tenement year will include a high-resolution gravity survey (across all Avebury's Melba Tenements), detailed infill soil and rock chip sampling over known anomalies, and further target development across the lease, with the goal of extending known mineralization.

Total expenditure on EL43/1992 for the year was \$57,825.

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DIGITAL APPENDICES

Appendix A. Prospectivity Analysis Presentation

Appendix B. MF112 – MF115 assays

Appendix C. Locations of preliminary rock and soil samples taken for analysis

Appendix D. Khumsup DHEM Logistics Report

FILE LISTING

Exploration Work Type	Filename	File format
Report (<i>this file</i>)	EL431992_202304_01_Report.pdf	pdf
Desk Studies	EL431992_202304_02_Report.pdf	pdf
Drilling	EL431992_202204_03_SG_1.xls	xls
Drilling QAQC	EL431992_202304_QAQC.xls	xls
Surface sampling	EL431992_202204_04_SL_1.xls	xls
Geophysics	EL431992_202204_05_Khumsup.xls	pdf
File Verification Listing	EL431992_202204_FileListing.xls	xls

1 INTRODUCTION

1.1 EXPLORATION RATIONALE

The primary objective of Mallee Resources (as primary operant of Avebury (Operating) Pty Ltd.'s tenements) is to add to their nickel inventories at the Avebury Nickel Mine. The area is prospective for narrow, but in some cases extremely high-grade Ni-Cu-Au-PGE mineralization hosted in and around gabbro dykes and sills. It is theorised that there may be a deeper, undiscovered source of the gabbro and extensive mineralization at depth.

1.2 LOCATION AND ACCESS

EL 43/1992 covers 6 square kilometres and is located approximately 6km to the northeast of Zeehan. The license area can be accessed by the Murchison Highway immediately to the east, and by a series of gravel roads and forestry tracks within the tenement. (See figure 1.)

1.3 LAND STATUS AND USAGE

Land usage within the tenement area is classified as Permanent Timber Production Land Zone managed by Sustainable Timber Tasmania.

1.4 TENURE

EL43/1992 is a category 1 exploration licence, held by Allegiance Mining Pty Ltd, which since the previous reporting period has been acquired by Mallee Resources, owner of the Avebury Nickel Mine.

The tenement was originally granted to CRA Exploration in 1992 and was acquired by Allegiance Mining Pty Ltd in 1997. In 2008, Zinifex Ltd acquired the tenement through the take-over of Allegiance, and later that year merged with Oxiana to become OZ Minerals, who in turn sold the tenement to MMG Limited in 2009. Dundas Mining Pty Ltd acquired the tenement in 2018, with receivers and managers appointed in 2022. In 2022, Mallee Resources acquired the Avebury Nickel Mine and all associated tenements. After successfully restarting the mine in September 2022, with the first shipment of concentrate in December, Avebury has taken on a dedicated exploration geologist and two field assistants and continues to build their exploration team.

Under the new ownership and management, the company plans to both further develop the existing prospects and explore new areas on the lease.

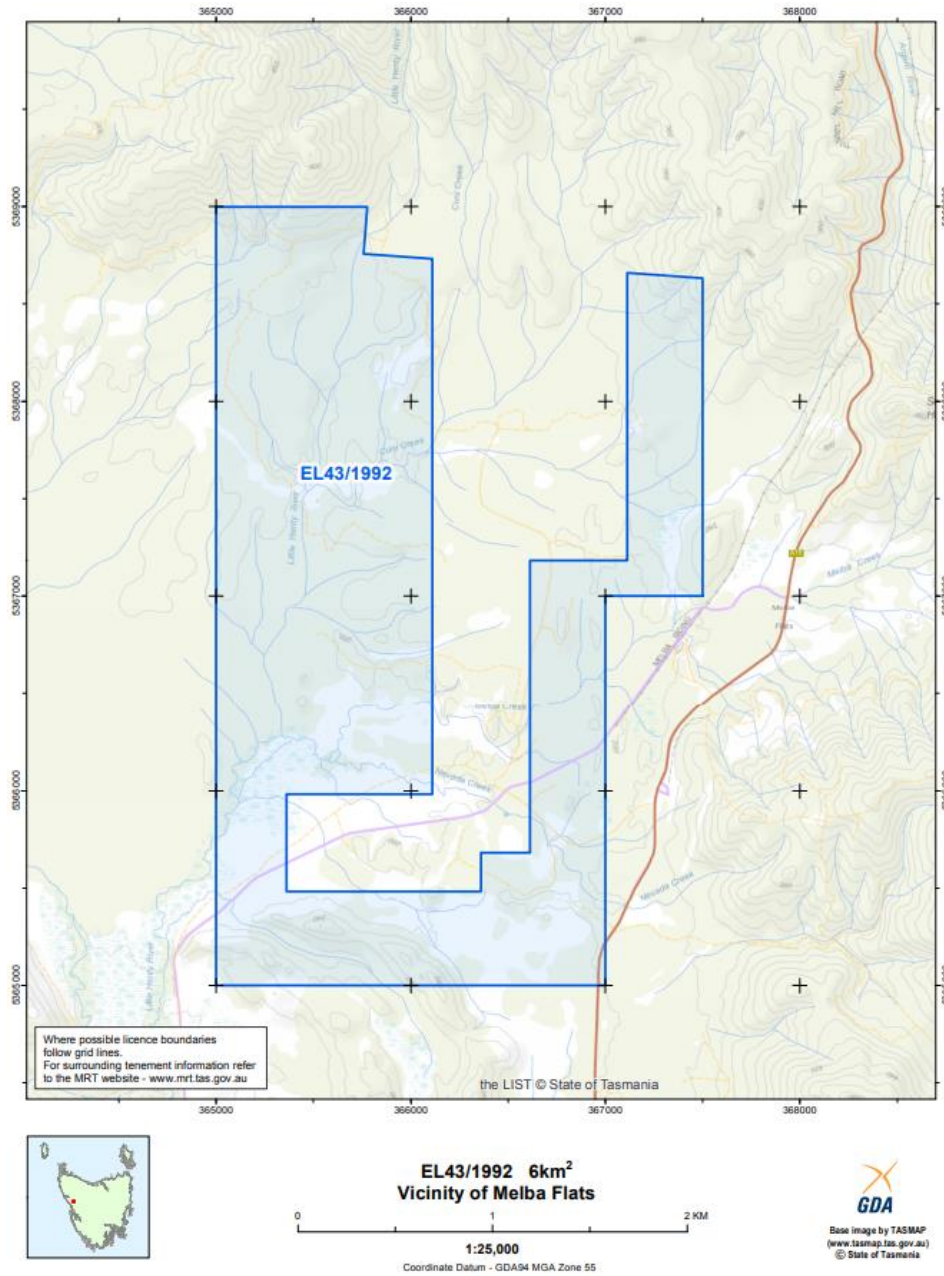


Figure 1. Location of EL43/1992

2 PREVIOUS WORKS

Complete examinations and summaries of the extensive historic work carried out on the tenement area have been outlined in previous reports. In January – February 2023 a comprehensive prospectivity analysis and target ranking was undertaken for the tenement, which included examination of historic prospects. Highlights of these findings are included in Section 3, below.

3 EXPLORATION WORKS COMPLETED DURING THE REPORTING PERIOD

Aerial Photography

In late 2022, after highly successful aerial photogrammetry being conducted at Avebury mine for surface stockpile surveys, Veris was engaged to fly high resolution aerial imagery over Melba Flats in a light aircraft. The aerial imagery produced a 5cm resolution and is being used to aid in the identification of remote workings and outcropping geological features across EL43/1992.

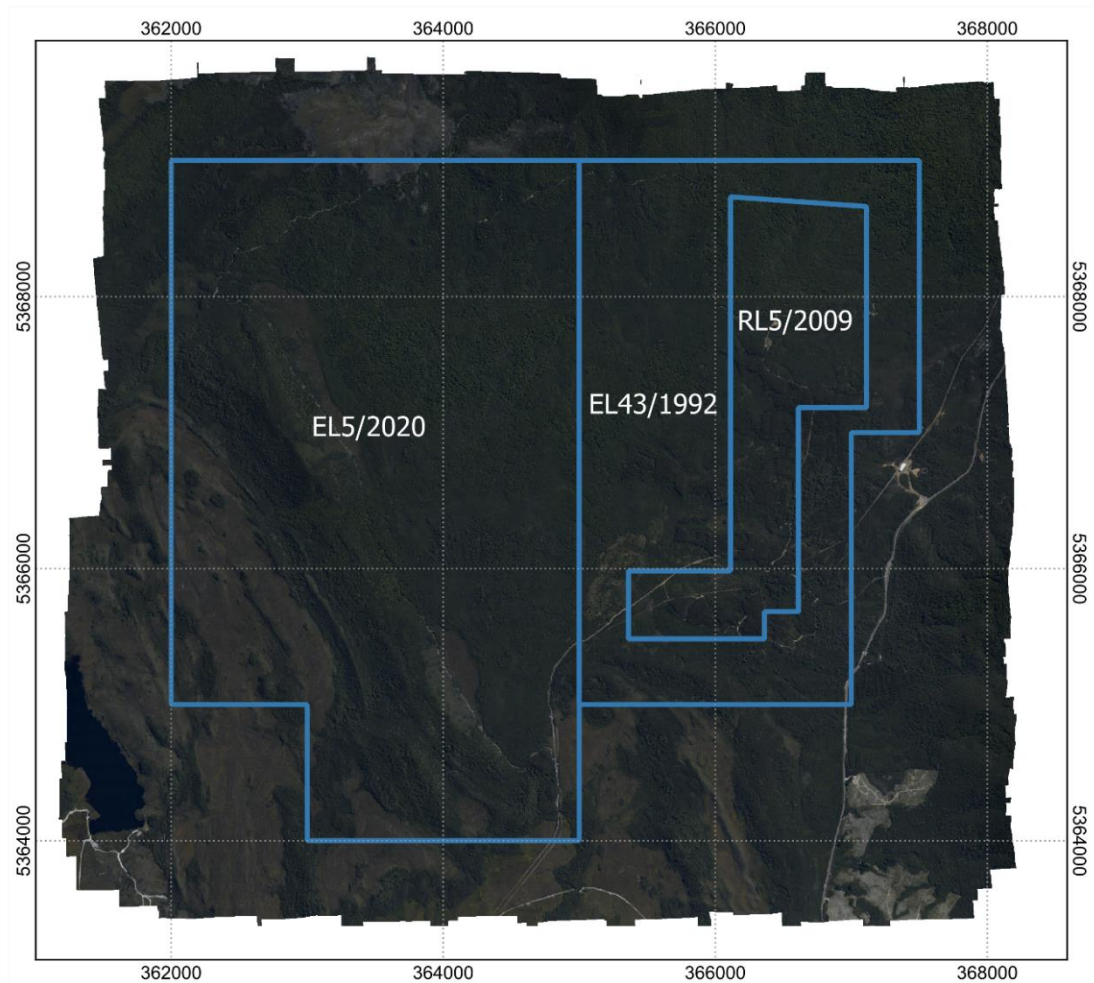


Figure 2. Melba Flats Orthophotography with Avebury Exploration Leases shown.

Desk Studies

In between November 2022 and January 2023 Avebury employed an Exploration Geologist and two field assistants to further works on their Exploration Tenements, including EL43/1992.

Extensive desk studies for EL43/1992 were undertaken as a priority, with particular focus on the compilation of historic data. It was recognised that while the original internal area of EL43/1992 that was excised for as a mining lease in 2007 and is now RL5/2009 as been heavily explored and drilled (and modelled), little work has been done on the current EL43/1992 in the 30 years since the tenement was granted. Annual reports dating back to 1982 were reviewed and many data was compiled into usable formatted, including the digitisation of historic soil samples. Gaps in data were identified, with plans to rectify these discussed Sections 4 and 8 of this report. Finally, numerous targets were identified, and ranked based on target commodity, accessibility as well as prospectivity. The completed prospectivity analysis and target ranking presentation is attached to this report as appendix A.

Geophysics

During the prospectivity analysis and target ranking process, major shortcomings were identified in the available data for the Melba area. Firstly, the only gravity data for the area is at a regional (statewide) level, and the resolution is inadequate for targeting.

Planning of Detailed Gravity

As part of round table discussions and preliminary resource range analysis, the new Avebury exploration team identified the need for more detailed gravity for the area as an immediate exploration priority. The team decided to engage Xcalibur Multiphysics to conduct airborne gravity survey using HeliFalcon®. The survey, covering all Avebury tenements will be flown over east – west over Melba flats at a 50m line spacing, with 135 line-kilometres over EL43/1992. In early April, a Mallee Resources Geology presentation highlighting exploration goals and rationale gained support from investors and the board for this program, and the survey is planned for summer 2023 – 2024.

Compilation of Magnetic Data

At least eight separate detailed aeromagnetic surveys of areas now part of EL43/1992 were identified from historic reports and searches of the TIGER database. Mitre geophysics was engaged to rank, compile, stitch and interpret these data for Avebury Metals. The results were not available at time of publishing this report.

Down Hole Electromagnetics

DHEM was conducted for drillhole MF116 on RL5/2009, near the boundary of EL43/1992. A 300m X 300m loop was designed across the two tenements by Mitre Geophysics and tracks cut by Avebury field staff. The survey was conducted by Khumsup Geophysics between the 24th and 25th March 2023, and the data is currently being interpreted by Mitre Geophysics. The processed data will be used to further define targets on both EL43/1922 and RL5/2009 and will be included in the report for RL5/2009. Figures 3 and 4 (below) show the location of the loop.

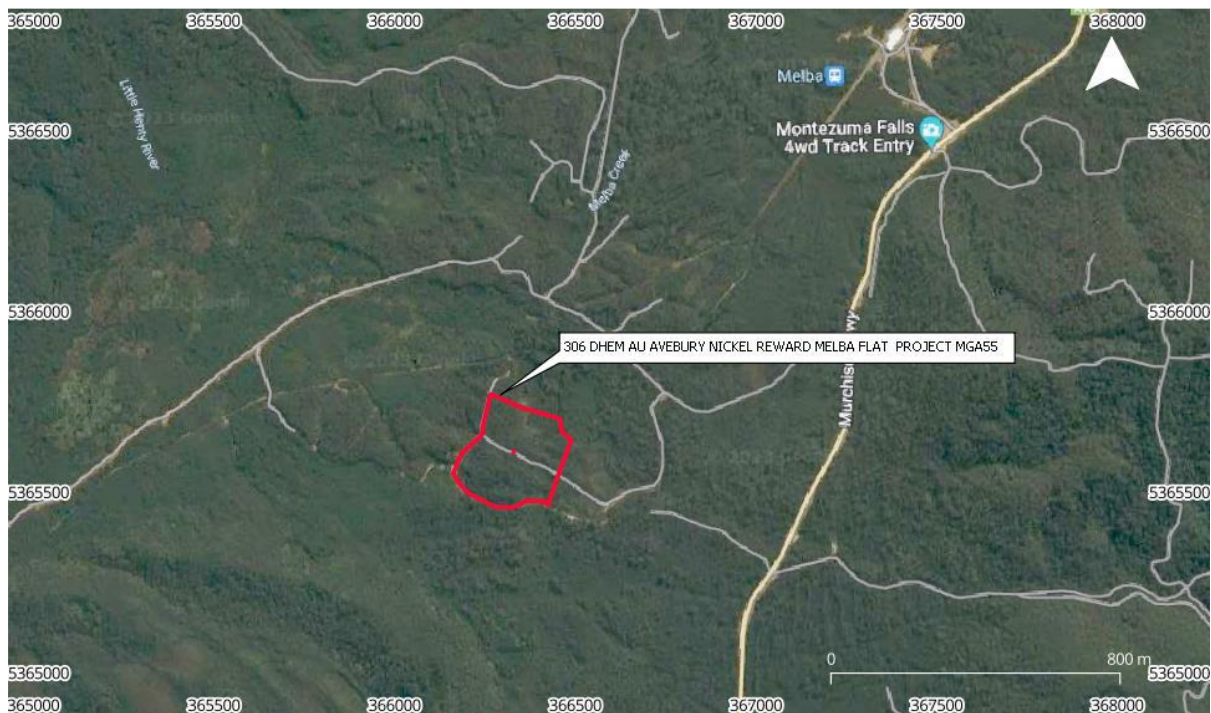


Figure 3. Design and location of DHEM loop for MF116. From Khumsup DHEM survey report, March 2023.

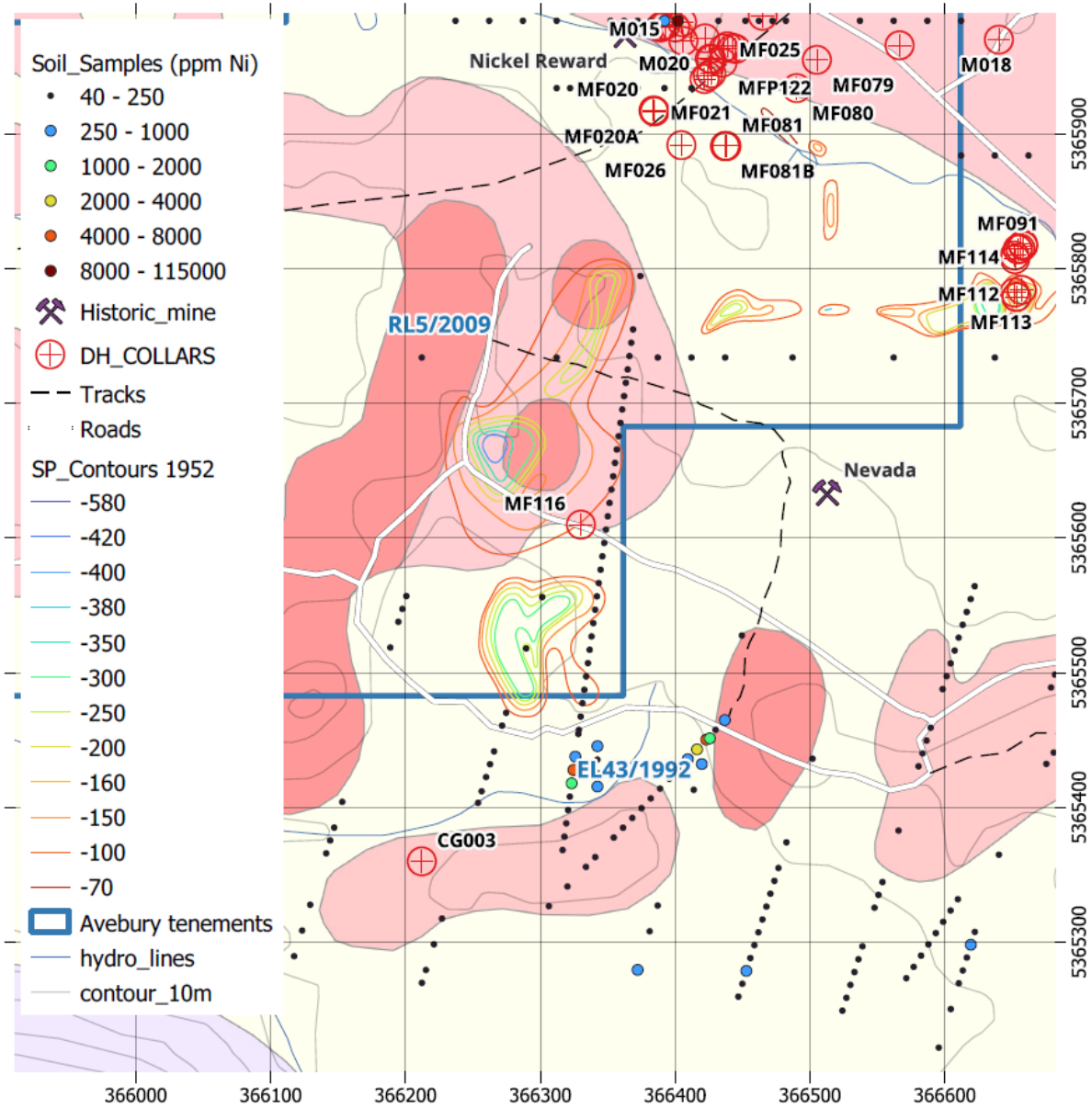


Figure 4. Location of DHEM loop (road and tracks surrounding MF116) on interpreted geology, showing surrounding geophysics, geochemistry and drill hole locations.

Prospecting and Identification of Historic Workings

In February – March 2023, Ron Gregory Prospecting was engaged to provide expertise on the area, exploration history and historic workings. Mr Gregory accompanied the new exploration team on four field expeditions in the Melba area, ground-truthing historical workings and providing advice on follow up field programs. During these expeditions, the historically significant Lead Blocks workings were visited, and McKimmie Mine was located (figures 4 to 6).

McKimmie Mine

A possible site for the previously unlocated McKimmie Mine was identified using the Topography grey layer of MRT map (figure 4). Ron Gregory Prospecting, having previously been unsuccessful in locating the mine at the location listed in TIGER, was engaged to ground-truth this potential location. The waste rock dump was found (see figure 4), and rock chip (float) samples collected from the surrounding plantation windrows for analysis (figure 5). McKimmie Mine area, with its historic high grade massive sulphides open at depth, located in open plantation and being a short distance from existing 4WD tracks, is considered one of Avebury’s primary target areas on the tenement.

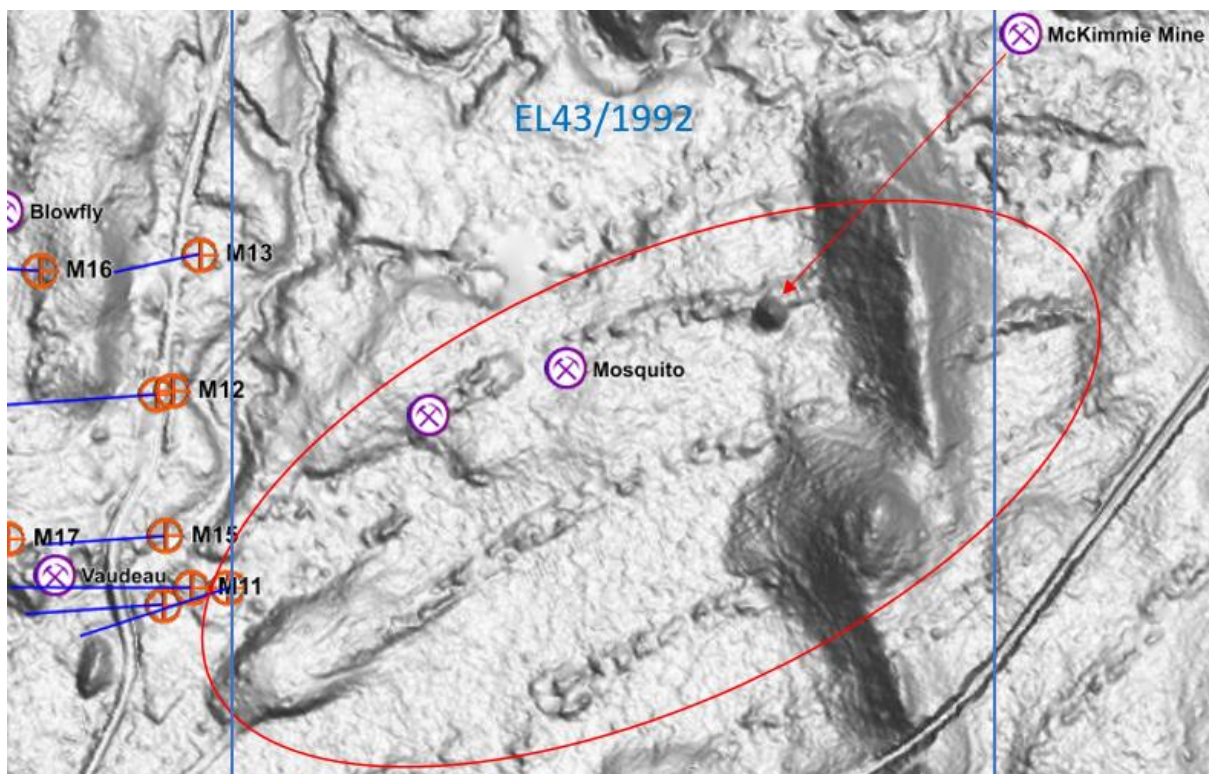


Figure 5. Topographic grey was used to identify the McKimmie mine waste dump, the shaft is presumed to be buried beneath plantation timber windrows. The topography also shows three possible dykes. This area is now a target for follow up exploration.



Figure 6. McKimmie Mine waste dump, waste rock, and left over galena ore. The conical waste dump is approximately 10m high and 10m wide but is difficult to distinguish in photos due to scrappy regrowth. Waste rocks are visible among leaf litter in the foreground.



Figure 7. View from the top of the McKimmies waste rock dump. Ron Gregory for scale.

Lead Blocks

As part of their Melba Flats reconnaissance and increasing their understanding of the area, the exploration team visited the Lead Blocks mine and workings. It is noted that this area is of significant historic value, being one of the best intact examples of early mining in Tasmania and one of few well preserved silver-lead mines in existence (Kostoglou, 1998) and should not be disturbed by significant works. Future visits to the old workings, buildings, and finger dumps (mullock heaps) will be limited to educational purposes.



Figure 8. Top: Lead Blocks waste finger dumps (mullock heaps), bottom: old shaft and buildings (Ron Gregory for scale).

Scout Camp Drilling

During the tenement year, outstanding assay results for the 2021 – 2023 drilling program of the Scout Camp SP anomalies (MF112 – MF115) were submitted and received, and a structural interpretation was completed (see discussion). Locations of the drillholes are shown in figure 9. Assay results are included in appendix B.

No gabbros or nickel mineralisation were intersected in the holes, so select sections of mineralisation in the sediments was completed. Samples were sent for assay by XRF at SGS Renison and assays are included in appendix B. (Note the drillhole data aside from the assays was submitted to MRT at the end of the 2022 tenement year.) No sample returned a nickel assay of above 0.1% Ni, however a small amount of Pb-Zn mineralisation was encountered in hole MF114. The other elements obtained via XRF were of little value for litho-geochemistry and are therefore not discussed.

All holes were dominated by strongly deformed, laminated pyritic-pyrrhotitic-graphitic black shales, and occasionally graded greywackes. Veining mainly consisted of pyrrhotite-pyrite in the black shales, and quartz-carbonate with minor sphalerite and galena in the greywackes.

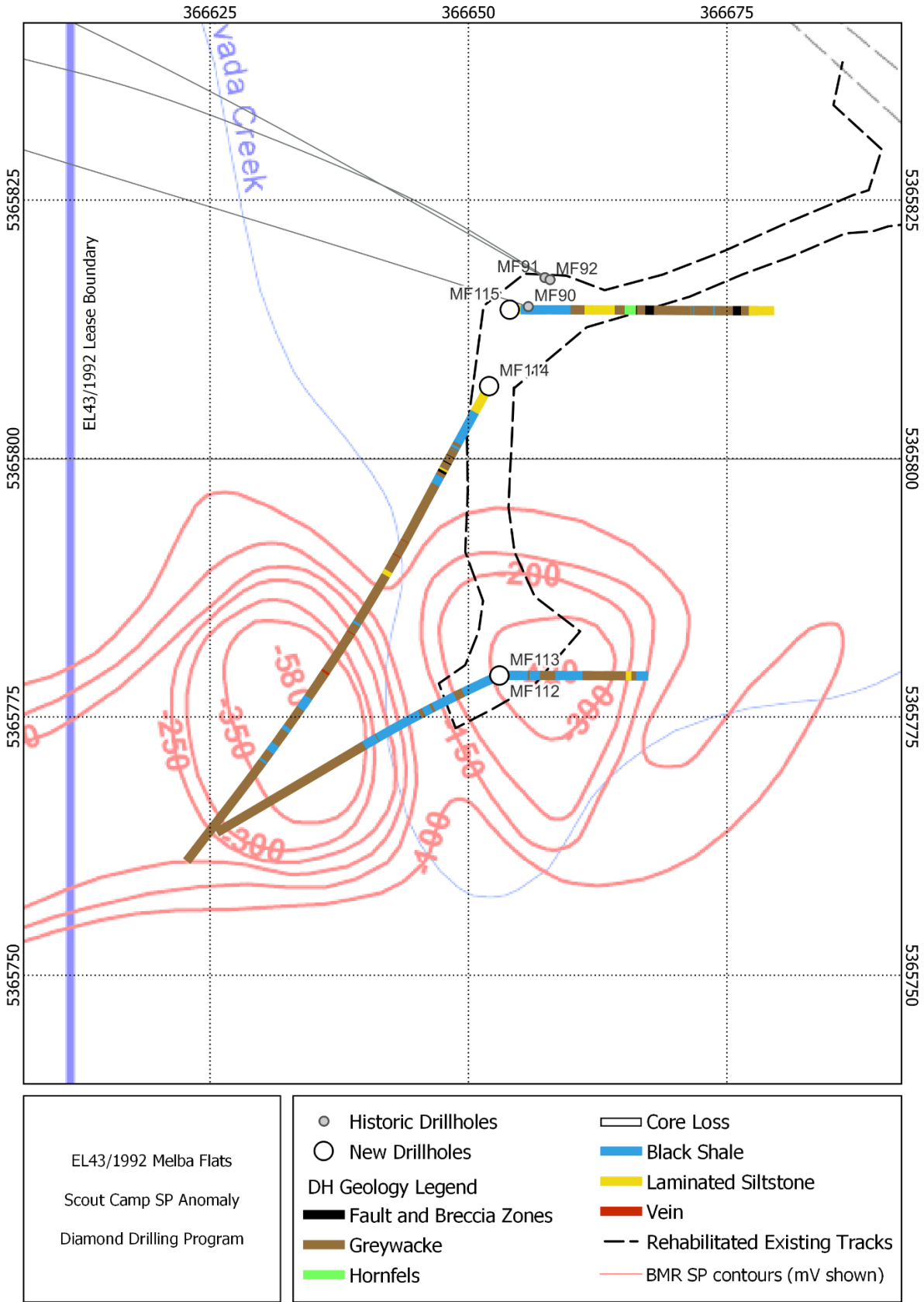


Figure 9. Scout Camp diamond drillholes coloured by lithology, with outline of the drill site and location in relation to 1957 SP anomalies.

4 DISCUSSION

Scout Camp Drilling

The Scout Camp drillholes were designed to test a small, but strong SP anomaly adjacent to Nevada Creek at Melba Flats identified by BMR in 1957 (figure 9). All holes intersected strongly deformed black shales and siltstones at the top, followed by turbiditic (?) greywackes (figure 13). All holes were oriented, allowing structural measurements of the bedding planes. Although the structural data is sparse and does not cluster well, the average dip/dip direction was 47/345 (figure 12). Due to the highly deformed nature of the sediments bedding orientation and stratigraphic correlation was used to generate a cross section (figure 14). Figures 10 and 11 show the typical rock types encountered in the holes.



Figure 10. Typical pyritic-pyrrhotitic-graphitic black shales intersected at Scout Camp.



Figure 11. Typical quartz-carbonate veined greywacke intersected at Scout Camp.

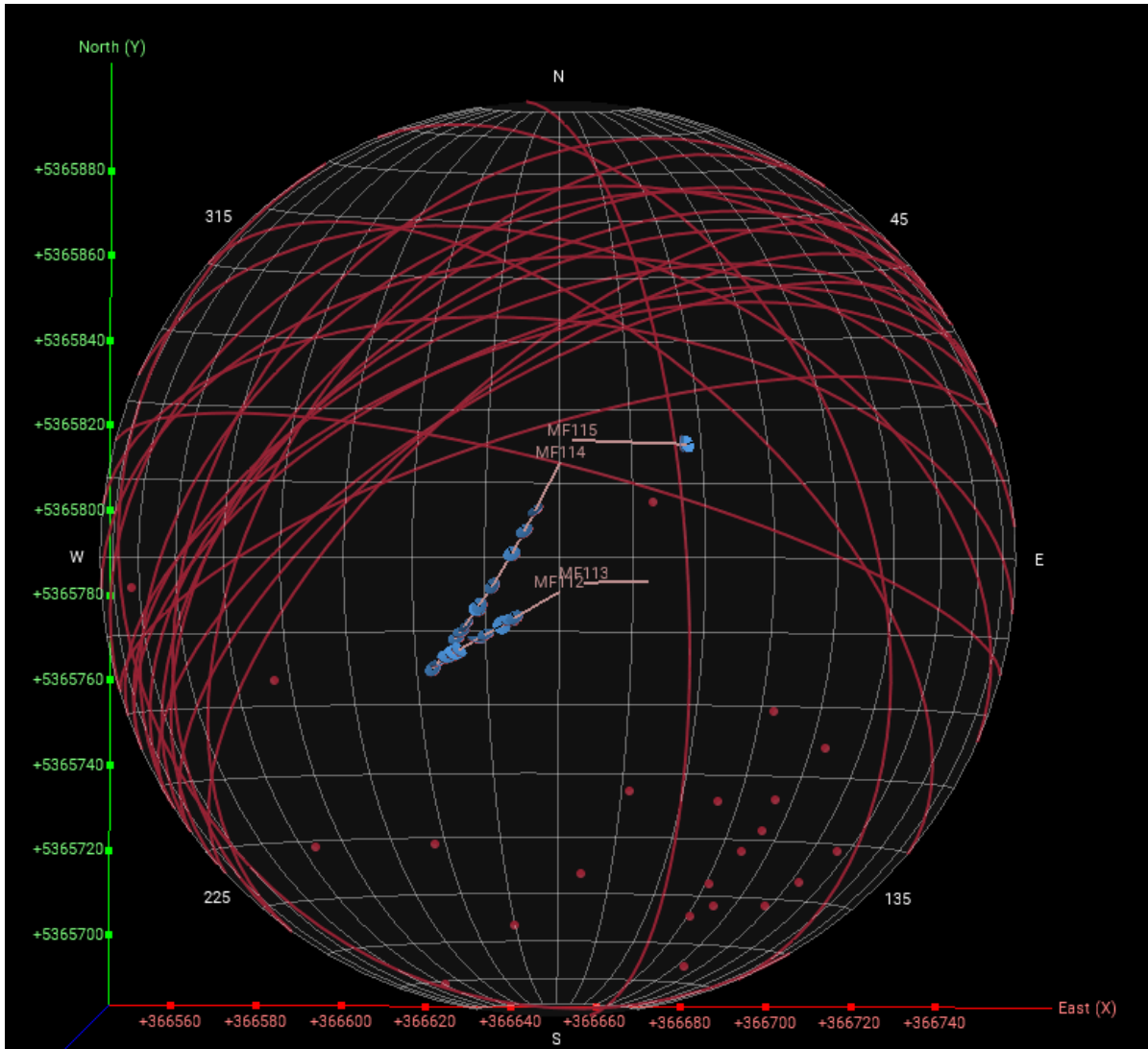


Figure 12. Stereonet plotted underneath MF112-MF115 showing great circles and poles to bedding, with downhole structure plates plotted on the drillhole traces (Leapfrog).

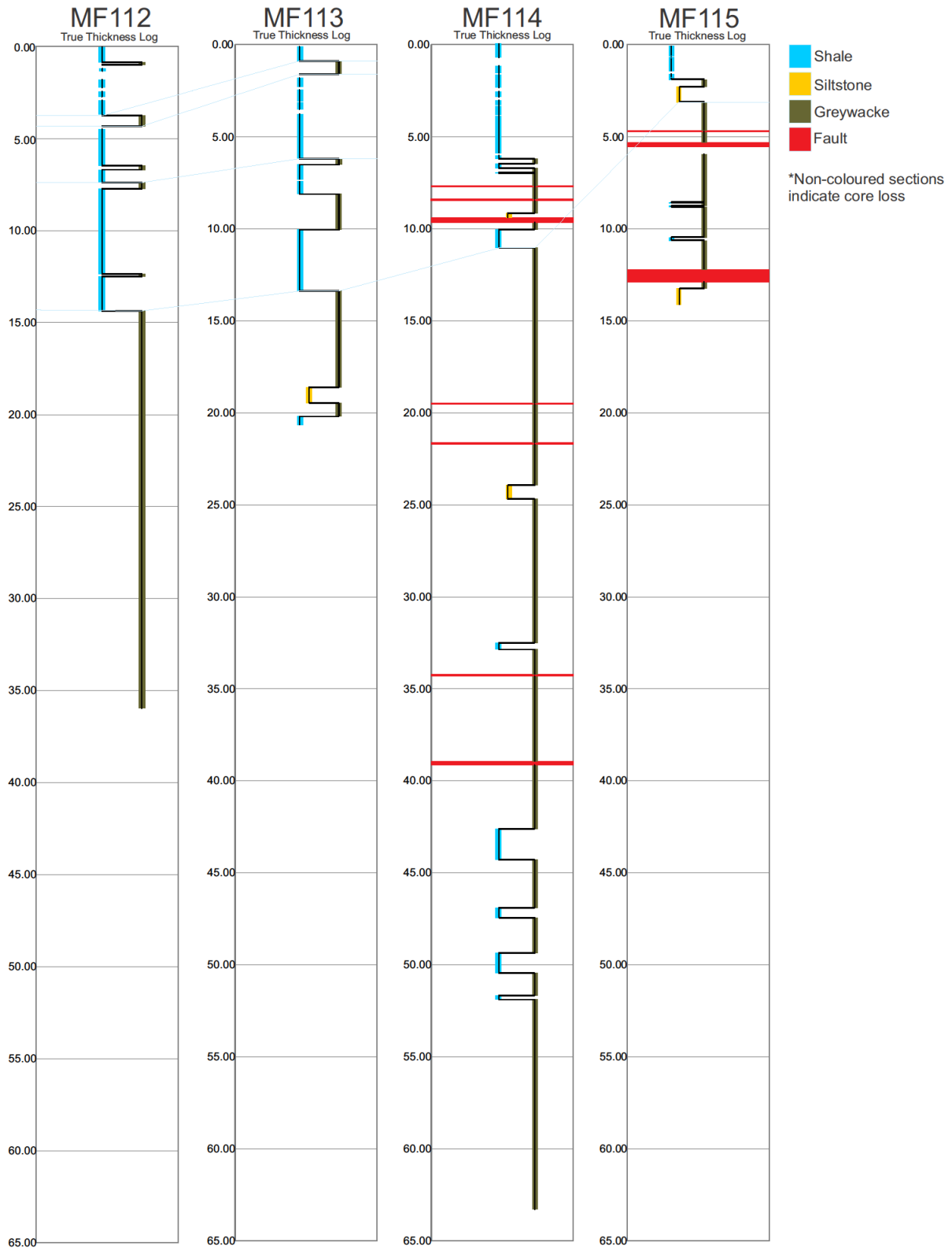


Figure 13. True thickness plots for MF112-MF116.

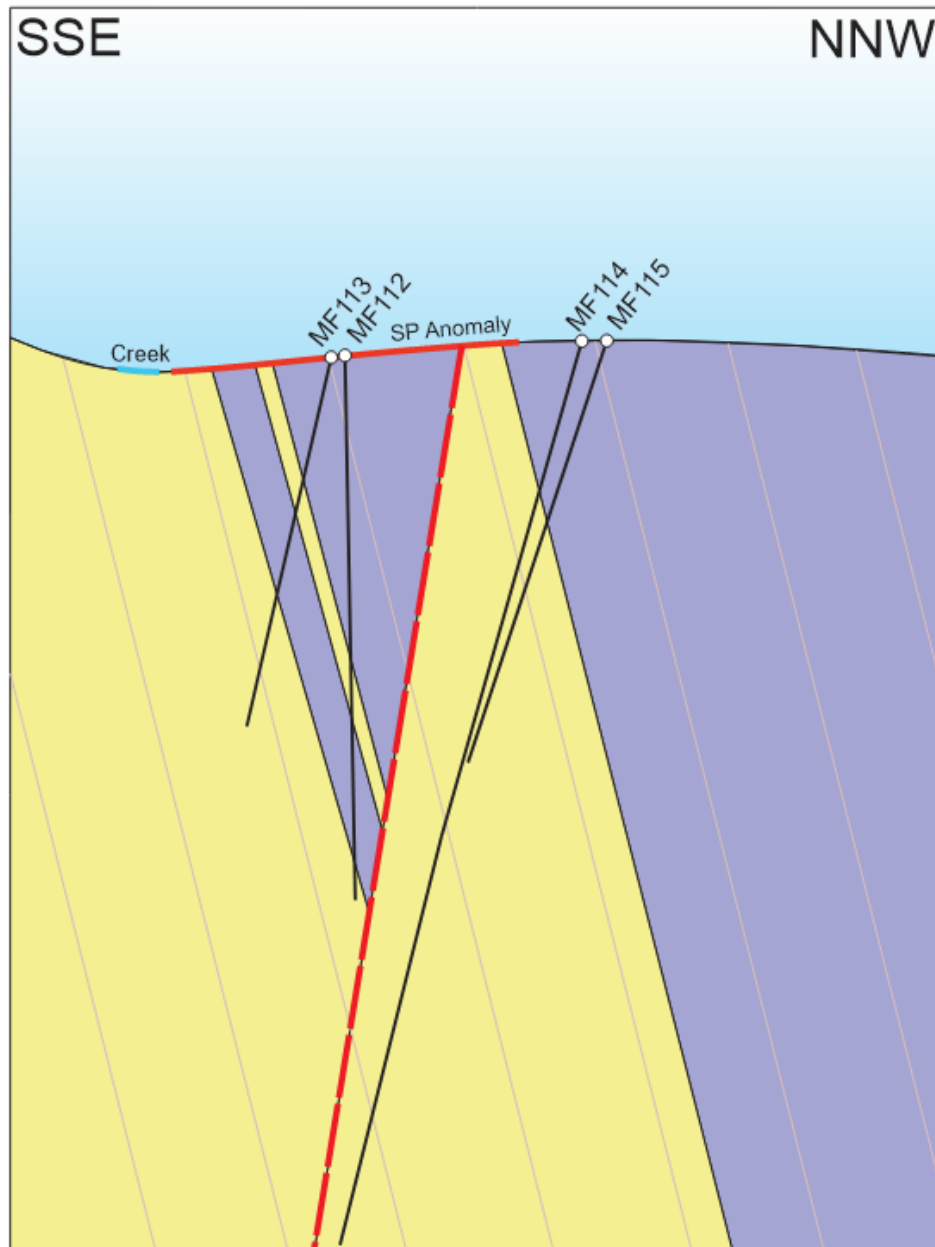


Figure 14. Generalised cross section of the Scout Camp prospect.

Due to the variable thickness of the shale unit, and assuming the average dip and dip direction to be that measured from the core, the stratigraphy must be faulted by an east-west trending reverse fault. This aligns with previous workers interpretations of east-west faults at Nickel Reward to the west. A fault in this area would explain the sometimes-extreme deformation in the shales, and it may have acted as a fluid pathway for the deposition of additional sulfides in the shales, and strong zones of veining in the greywackes. An east west fault generating fluid flow and therefore increased sulfide content in the already conductive black shales could then explain the strong, east-west trending SP anomaly in the area.

5 ENVIRONMENT

Weed Removal and monitoring

Drill sites on EL43/1992 were visited periodically and monitored for weeds. Gorse was found at two locations on the tenement and removed. These sites were flagged for further monitoring. Figure 15 shows the Scout Camp drill pads (MF112 to MF115) before rehabilitation, and one year on.



Figure 15. Comparison photo of MF112/113 just before rehabilitation (top), and one year after rehabilitation (bottom).

6 EXPENDITURE

A total of \$57,825 was spent on EL43/1992 during the tenement year. In addition to this figure, a large amount of capital expenditure was spent by Avebury Operating (Mallee Resources) on restart and upscale items (such as a new core shed, Minalyser, Exploration vehicles, portable XRF, and training and software for new exploration staff). Going forward, this capital expenditure will contribute to exploration activities on EL43/1992. However, these costs are above and beyond the 10% Administration for the tenement, and have not been recorded as expenditure.

Table 1. Expenditure for the EL43/1992 2021-22 tenement year.

EL43/1992 2022 - 2023 Expenditure	
Geology	
Review and interpretation of historic data (desk studies)	\$6,094
Ground-truthing historic data and mineral occurrence locations, prospecting and mapping, 7 petrological descriptions	\$10,240
Prospectivity analysis and target ranking	\$2,000
Cross section generation and structural interpretation	\$3,000
Geophysics	
downhole electromagnetic survey (preliminary portion)	\$6,400
stitching and interpretation of historic magnetic data	\$8,000
Geochemistry	
digitising and QA/QC of historic soil samples	\$2,000
assay of 138 drill core samples	\$5,018
Remote Sensing	
Orthophotography	\$1212
Rehabilitation	
Weed removal, gorse spraying and monitoring	\$850
Other	
purchase of pXRF soil foot and holster	\$950
Track works and gravel	\$5,100
Rental fees	\$1,297
Administration	
	\$5,664
Total (Ex. GST)	\$57,825

7 CONCLUSION

Assay results for the 2021 – 2022 250.4m diamond drilling program that was completed to test two SP anomalies southeast of the old Scout Camp at Melba Flats, originally identified by BMR in the 1950s were received. All holes intersected shales, siltstones, and greywackes of the Crimson Creek Formation, but no gabbro or nickel mineralisation was intersected. Graphitic and pyritic shales are considered the source of the SP anomalies, and no further drilling of the SP anomalies will be undertaken without further preliminary data. Instead, geochemical (soil and rock chip sampling) and geophysical (interpretation of aeromagnetic and acquisition of detailed airborne gravity) will be used for further define targets on EL43/1992, as well as identify new targets across the Melba area.

High resolution aerial photography, publicly available topographic imagery, investigative research, and boots on the ground techniques have been used to recommence serious exploration on EL43/1992. Collaboration of addition human resources have identified potential targets, the need for quality, detailed, cohesive geophysical data.

The total expenditure for the year was \$57,825.

8 RECOMMENDATIONS FOR THE FOLLOWING TENEMENT YEAR

- Interpretation of recent DHEM between Nickel Reward and Nevada prospects
- Interpretation of recently reprocessed and stitched detailed and regional aeromagnetic data
- Soil and rock chip sampling of Nevada, McKimmies and South Devaeraux prospects
- Reconnaissance mapping, rock chip sampling and soil sampling on the western side of the lease, towards EL5/2020
- Aerial gravity survey using Falcon Heli

An expenditure of \$75,000 is proposed for the following tenement year.

9 REFERENCES

Adams, K and Dawes, S., 2021, *Exploration Annual Report EL 43/1992 – Melba Flats April 2020 to April 2021* Dundas Mining Pty Ltd.

Denholm, J., and Chisnall, A., 2022, *EL43/1992 Melba Flats Annual Report 2022*, Allegiance Mining Pty Ltd, Operated by Dundas Mining Pty Ltd (Receivers and Managers Appointed)

Horvath and O'Connors, 1958. *Geophysical Investigation (1956-1957), Copper -Nickel Deposits, North Dundas Field, Tasmania*. Commonwealth of Australia, Department of National Development, Bureau of Mineral Resources (BMR), Geology and Geophysics, 1958, No. 15.

Kostoglou, P., 1998, *An archaeological survey of the Five Mile (Cuni) copper-nickel mines*. Mineral Resources Tasmania, Archaeological Survey Report 1998/01, ASR1998_01.