Melba Siding RL 5/2009

ANNUAL REPORT
FOR THE PERIOD ENDING 28th OCTOBER 2015

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1. SUMMARY

During the reporting period, a research project was completed which characterised the Melba Flats Ni sulphide deposit and compared the Avebury and Melba Flats deposits.

2. INTRODUCTION

The Melba Siding retention license area RL5/2009 is an approximately 3 km^2 block within the Melba Flats Exploration Licence EL43/1993 located to the west of the Murchison Highway immediately to the south of the Renison Bell tin mine, between the towns of Rosebery to the north and Zeehan to the south (Figure 1).

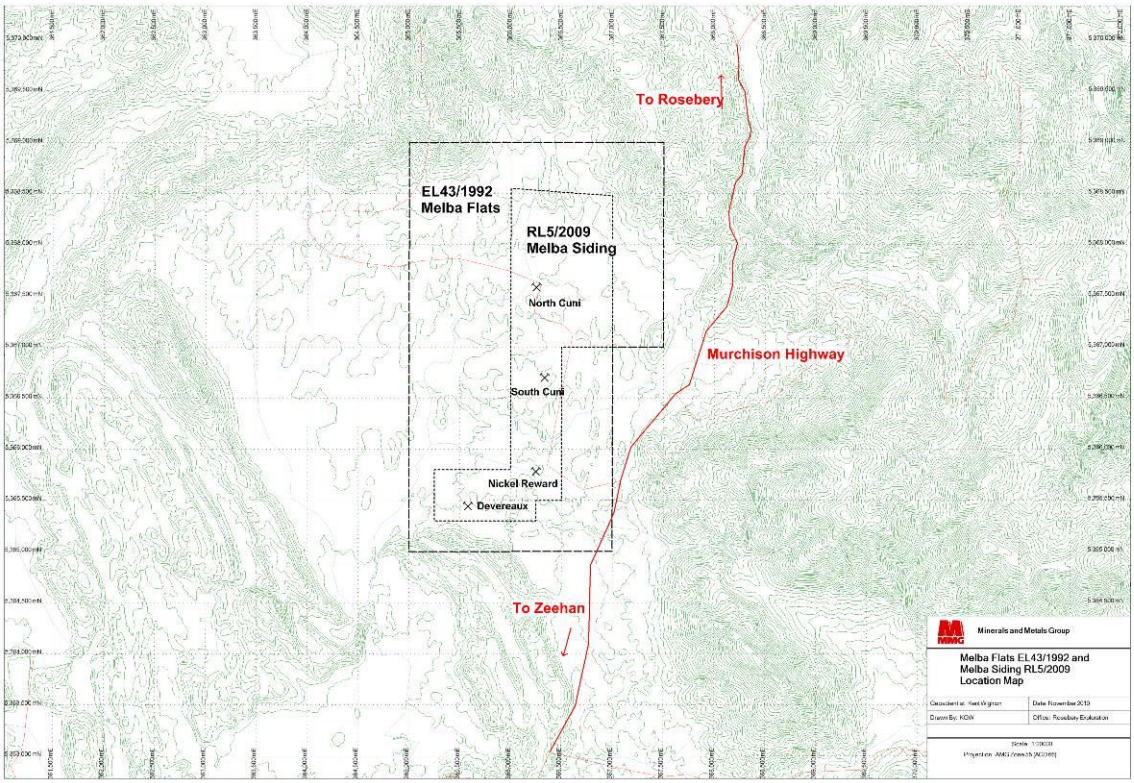

Figure 1: Location RL5/2009 Melba Siding

The Melba Flats area has had a long exploration history as indicated by numerous small scale historical workings and adits. It is thought that copper and nickel mineralization was first discovered in the Melba Creek Area as early as 1893. Recent exploration efforts by Allegiance Mining and later Oz Minerals resulted in the delineation of small scale, high grade nickel resources.

The Melba Flats area is underlain by Cambrian sediments intruded by a number of Cambrian gabbro dikes, genetically associated with the Serpentine Hill and Razorback Ultramafic bodies east of the tenements. The sediments dip to the east and generally strike north-south. Variations in these trends are caused by district folding and common small-scale faulting. The gabbro dikes are intrusive, often with chilled and brecciated margins, and are both concordant and discordant with the enclosing sediments. The dikes, sediments and ultramafics are pervasively altered. Carbonate and carbonate-talc alteration of the gabbro dikes is typically accompanied by late stage carbonate veining. Nickel-copper mineralisation is widespread in the altered gabbros and accumulates in small high grade pods on the footwall of one (?) of these dikes. The mineralisation is accompanied by Au, Pt, Pd, Co mineralisation in broad correlation with the Ni-Cu contents. The late-stage carbonate alteration and veining is also accompanied by significant coarse galena-sphalerite-chalcopyrite. Exploration to date by Allegiance has shown the Ni-Cu mineralisation to be more widespread and persistent to greater depths than previously thought. Drilling by

Allegiance, complemented by surface exposure and former mine workings has identified modest shallow resources at Nickel Reward and North Cuni-Genets. The district is regarded as highly prospective for extensions of these resources and for more substantial bodies at depth associated with larger gabbro and ultramafic intrusives.

The overall strategy of Allegiance and later OZ Minerals at Melba Siding was to commence production from several small pits and to access deeper resources by way of appropriately-sized declines from within these pits. The resources to be extracted from the Melba Flats area were planned to complement and be processed with the ore from Avebury at the Avebury Mine Site.

Exploration activities were disrupted and hindered by economic conditions and subsequent major corporate activities. Prior to its takeover by Zinifex in 2008 (and the subsequent merger etc to create MMG) Allegiance Mining had been exploring and evaluating the Melba area since 1997 with expenditure in excess of $2,500,000. This work culminated in the identification of modest shallow resources within the Melba Flats area at Nickel Reward and North Cuni-Genets.

3. LAND TENURE

In October 2007 a 10 year mining lease 2M/2007 was granted. Subsequently, OZ Minerals applied for and was granted the conversion of Mining Lease 2M/2007 to a Retention Licence RL5/2009 under the provisions of Section 53(2) of the Mineral Resources Development Act, 1995. The application was made on the grounds of economic reasons not to mine the small scale resources. The same economic conditions resulted in the Avebury nickel mine being placed on care and maintenance.

RL5/2009 was granted on 30/11/2009 for a four year period to the 1/12/2013. The tenement was extended in 2013 for a further period of 12 months and again in 2014 to now expire on 1st December 2015.

4. ENVIRONMENTAL

No ground disturbing activities were undertaken and no rehabilitation work was completed during the period.

5. WORK COMPLETED 2015

In a limited study of 22 samples from 5 different gabbroic sills at Melba Flats, Tasmania, Crawford and Keays (2010) made a number of observations that suggested the formation of significant amounts of Ni-Cu-PGE sulphide mineralization at Melba Flats, viz:

- The sills had formed from high MgO magmas with 12-13% MgO
- All major Ni-Cu-PGE deposits (with the exception of the Sudbury ores, which are the product of meteorite impact) were formed from high MgO magmas
- These magmas had undergone a significant amount of crustal contamination
- The contaminant had been well homogenized with the magma indicating that the magma was dynamic and high energy
- The PGE contents of the sulphides indicate that they are magmatic in origin

• Some of the sulphides have high (=crustal) S/Se ratios; this is also encouraging because external (=crustal) S is a crucial requirement for major Ni-Cu-PGE deposits.

Subsequent to the Crawford and Keays (2010) study, Keays et al. (2012) argued that the Ni in the Avebury Ni sulphide deposit was hydrothermal in origin and had been sourced from magmatic Ni-Cu-PGE sulphides at depth. As Avebury and Melba Flats are only around10 km apart, it was suggested that the two Ni systems might be linked in some way. Further, if Keays et al. (2012) are correct, the Ni in the Avebury deposit may be sourced from disseminated sulphides, which would be more reactive in a hydrothermal fluid than massive sulphides. This suggests that more massive sulphides, may have been left at depth.

Crawford and Keays (2010) tentatively concluded that the Ni-Cu-PGE sulphides at Melba Flats formed at depth and may represent a very part of a much larger Ni-Cu-PGE sulphide system.

Based on their geochemistry, Crawford and Keays (2010) concluded that the gabbroic sills were a part of the Crimson Creek suite of magmatic rocks. However, it is possible that they are co-magmatic with the igneous rocks of the Cleveland-Waratah Formation. If they contain suitable accessory minerals such as zircon or baddelyite, it will be possible to establish the age of the gabbroic sills via Laser Ablation-ICP-MS dating methods.

Working Hypothesis

Two types of sulphides appear to be present at Melba Flats (Figure 2). Those with high Pd contents were formed from a S-undersaturated magma while those with low Pd contents were formed from a S-saturated magma variably depleted in the PGE. These two types of sulphides also appear to have distinctly different S/Se vs Cu relationships (Figure 3). In the low Cu group, S/Se ratios decrease with increasing Cu, but with the high Cu (>1000 ppm Cu) group, S/Se ratios appear to be roughly constant with increasing Cu contents.

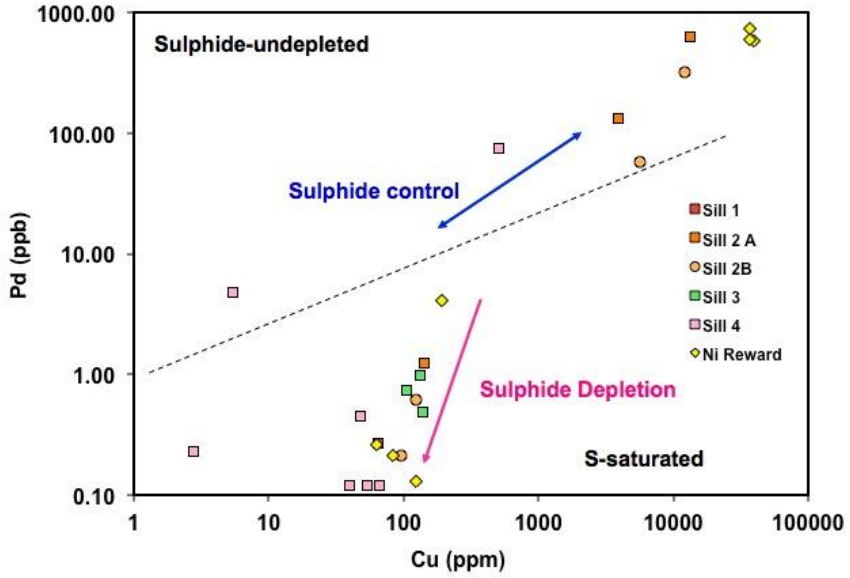

Figure 2. Two types of sulphides present at Melba Flats. Those with high Pd formed from S-undersaturated magmas while those with low Pd formed from magmas that were S-saturated and depleted in the PGE and other chalcophile metals (Vogel and Keays, 1997).

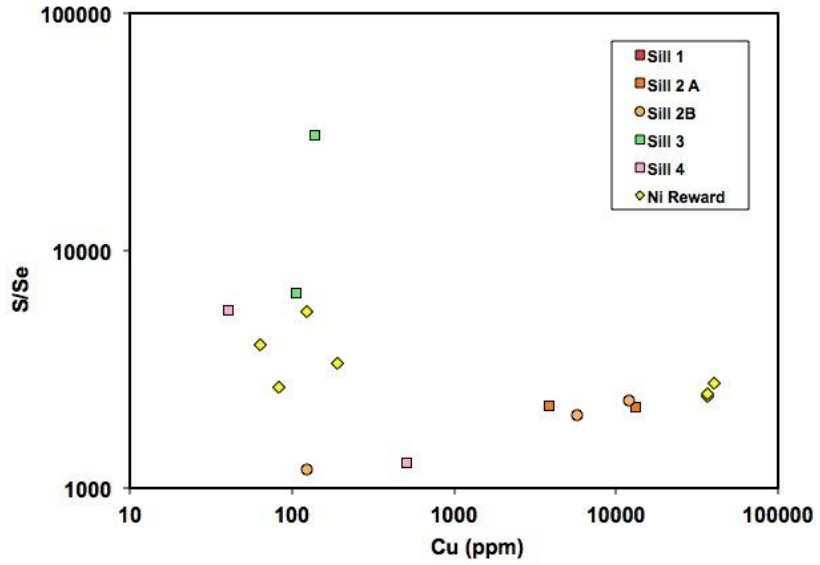

Figure 3. A scattergram of S/Se vs Cu also indicates that there are two different sulphide populations. For samples with Cu >1000 ppm, S/Se values remain constant with increasing Cu contents. However, for samples with Cu < 1000 ppm, S/Se ratios decrease with increasing Cu; the latter pattern is suggestive of resorption of sulphides during transport.

Aims of the Project

• To confirm the hypothesis that the high Cu-PGE sulphides in the gabbroic sills at Melba Flats were formed at depth and may represent a very small fraction of a much larger body of magmatic Ni-Cu-PGE sulphides.

• To determine the age of the gabbroic sills that host the mineralization at Melba Flats.

Results of the Project

A Master's thesis was completed at Melbourne University by Marcus Phua and supervised by Professor Reid Keays. A copy of the thesis is provided electronically under separate cover. A summary of the thesis results is provided below:

Theme 1. Sediments

AIM	OUTCOME
Ascertain the sediment affiliation	Lithic greywacke with typical post Archean Australian sedimentary rock REE abundance
Determine the age of the sediments	Maximum deposition age = c. 576 Ma
Melba Flats Sediments = Avebury Sediments	Yes; Similar REE Patterns, Identical Detrital Zircon Age Distribution; Age Maximum; Age Modes; Cophenetic Correlation = 0.97

Theme 2. Mafic Intrusions

AIM	OUTCOME
Establish the magmatic affiliation	Gabbro formed by Primitive magma of High MgO Content with a sub-alkaline Tholeiitic affinity
Determine the age/tectonic setting of the mafic intrusions	Inferred emplacement age of c. 568 Ma tectonic setting analogous to a Passive Continental Margin
Melba Flats Mafic Intrusions = Avebury Mafic Intrusions?	NO; Flat LREE Patterns vs. Depleted LREE Patterns; Melba Flats = Gabbroic; Avebury = Boninitic; Not Co-magmatic
Melba Flats unmineralised intrusions = Melba Flats mineralised intrusions?	YES; Little differences in petrogenetic trace Patterns; Co-magmatic

Theme 3. Ni-Cu-PGE Sulphides

AIM	OUTCOME
Semi-massive to massive sulphides = Disseminated sulphides ?	Massive: Magmatic; Moderate R Factors; High Ni/Cu; High PGE Content Disseminated: Crustal; Low R Factors; Low Ni/ Cu; Low PGE Content
Origin of Ni-Cu-PGE Sulphides; in-situ or depth	Massive: Formed at depth; sulphides partially resorbed during transportation by high MgO magma; tenors ↑; S/Se ↓ Disseminated: Formed during transportation; magma interacted with S-bearing crust; tenors ↓; S/Se ↑

6. PROPOSED WORK 2016:

The Melba Flats tenements are part of the Avebury asset sale process. In July 2015, the private company Avebury Nickel Mines Limited (ANML), advised MMG that they were unable to complete the acquisition of Avebury as they were unable to satisfy the funding condition in the Share Sale Agreement by the cut-off date of 30 June 2015.

Since then, multiple parties have expressed interest in the assets and MMG hosted several visits to the Avebury site in late 2015. MMG is still in active discussion with several parties interested in acquiring the assets and is continuing to facilitate site visits and information sharing.

Estimated expenditure for 2016 is $20,000, however the Director of Mines has agreed to an exemption from the expenditure condition up to the period ending 30 June 2016 whilst the Avebury sale is being negotiated.

7. EXPENDITURE

		Melba Siding RL5/2009
TOTAL COSTS	**AUD**	**$6,876.00**
Research by Third Parties	AUD	$6,876.00

Table 1: Tenement expenditure. Note this does not include final research costs for the Melbourne University studies which will be reported in the next period.

8. REFERENCES:

Crawford, A. C. and Keays, 2010. Magmatic Ni-Cu sulphides in mafic sills at Melba Flats, Western Tasmania-a geochemical investigation. Unpubl. Report prepared for Allegiance Minerals, 34 pages.

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Vogel, D. C. and Keays, R. R., 1997. The Application of Platinum Group Geochemistry in Constraining the source of Basalt Magmas: Results from the Newer Volcanic Province, Victoria, Australia. Chem. Geol., v. 136., 181-204.