RESOURCE ESTIMATE UPDATE OF THE WONAWINTA SILVER PROJECT, NSW, AUSTRALIA

*Photo taken by Airpix HD

Prepared by Mining Associates Pty Ltd

For

Manuka Resources Ltd

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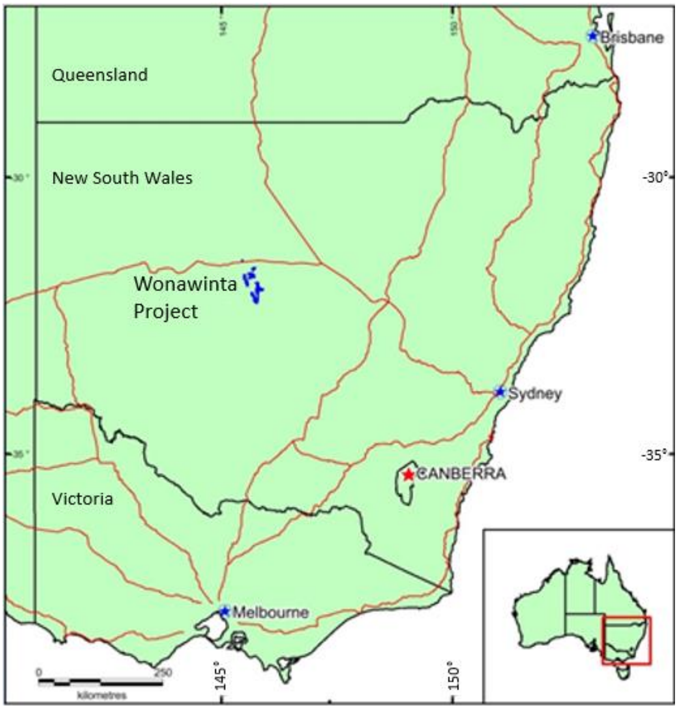
1 SUMMARY

This report is a Mineral Resource Estimate of the Wonawinta silver-lead-zinc Property ('The Property') in central New South Wales, Australia. Title to the Property comprises one Mining Lease, six Exploration Licences and one application for an Exploration Licence that are held 100% by Manuka Resources Ltd ("Manuka").



Mining Associates ("MA") was commissioned by Manuka Resources Limited ('Manuka") to provide an Mineral Resource Update for the Wonawinta Silver-Lead deposit in NSW Australia in accordance with the Australian Code for reporting of Exploration Results.

1.1 GEOLOGY

Silver-lead-zinc mineralisation in the Property was first recognised during follow-up of reconnaissance stream sediment sampling in the early 1990s. Various companies explored the area, mostly targeting "Cobar Style" high-grade lead-zinc sulphide mineralisation, but without success.

The Property is located along the western margin of the Devonian-aged Cobar Superbasin. Host rocks to silver-lead-zinc mineralisation are Lower Devonian aged coarse-grained reefal limestone and calcareous shale of the Booth Limestone and overlying Transitional Unit of the Winduck Group. The Lower Devonian Winduck Group is interpreted as a shallow water reef/lagoon unit deposited on a basement high at the margin of the Cobar Basin. Winduck Group sediments were deposited directly on basement of Silurian-age Thule granite, which subcrops in the Property area.

Dominant structural features in the Property area are NNW-trending reverse faults and associated hanging wall anticline/footwall syncline fold pairs. Anticlines are asymmetric, with gently dipping western limbs and steeper eastern limbs.

Silver-lead (plus some zinc) mineralisation within the Property occurs along some 6km of strike, sub-parallel to the Wonawinta Anticline hinge zone, mostly within the western limb. Mineralisation occurs in both oxidised and fresh rocks straddling the contact between Booth Limestone and Transitional Unit rocks. Deep weathering has created a succession of variably leached clays and limestone saprock that host oxide mineralisation. Fresh sulphide mineralisation is mostly hosted by limestone/dolostone, but also occurs in claystone and black calcareous/carbonaceous sediments. Ore mineralogy is dominated by silver-bearing goethite, cerussite and anglesite in oxide, and silver-bearing galena, sphalerite and pyrite/marcasite in sulphide. Only minor amounts of discrete silver minerals have been found.

Carbonate hosted silver-lead-zinc mineralisation in The Property has previously been interpreted as an oxidised (supergene-enriched) Mississippi-Valley Type (MVT) deposit. The regional geological setting, host rocks and geometry of mineralisation largely fit this model, although the high silver grades with associated gangue minerals observed at Wonawinta may be more typical of Irish Style deposits.

1.2 MANUKA RESOURCE DRILLING

MKR commenced infill drilling within the inferred oxide resource at Wonawinta in August 2020, with the aim of upgrading the JORC category to Indicated. The oxide infill drilling program comprises 380 RC drill holes for 15,768 m focussing on the Bimble and Belah areas. Oxide drilling to date has also covered step-outs in the northern areas and at the Pothole and Manuka-Boundary (Tweens) areas.

Samples from all the RC drill holes were geologically logged while drilling was underway. Sub-sampling during drilling was routinely undertaken using a rig-mounted splitter that produced a 1-3kg sample that was representative of any given interval, for independent assay analysis.

All drilled RC samples were scanned with a portable XRF analyser (pXRF). The pXRF showed that it could reliably indicate the presence of silver, allowing the company to subsequently despatch only those samples that the pXRF determined were mineralised.

At least one duplicate sample was routinely collected from each RC hole (more than one from holes deeper than 30 metres). The duplicate samples were despatched and assayed with the regular sequence of samples and the resultant assays compared to their primary samples as a QAQC test of the assay procedure.

A “reference standard” sample was routinely inserted throughout the program as every 25th sample. The standard samples were despatched within the regular sequence of samples and the variability of their assays compared to other samples of the same standard as a QAQC test of the assay procedure.

The company initially used proprietary certified standards that remained on site from previous operators but determined that these small standards were not being put through the routine sample preparation process (crush and pulverise) prior to assay. Once the initial assays were returned and found to be reliable, inhouse standards were produced that comprised homogenised material from numerous mineralised intervals. The inhouse standards were then prepared as 3 kg samples inserted into the sampling process and compared for variability as previously.

All samples were sent to an external laboratory (ALS in Orange) for preparation and analysis. Samples were dried, crushed and pulverised to get 85% passing a 75um sieve to provide a 0.5g sample for aqua regia digestion with an ICP-AES finish. Each samples was analysed for a multiple element suite.

1.3 PAST PRODUCTION

Previous Project holders had produced approximately 2.9 Moz of silver between May 2012 and Nov 2015. The Property has been on care and maintenance since that time MKR purchased the property.

1.4 MINERAL RESOURCE ESTIAMTE

The JORC categorised Mineral Resources estimate for the Wonawinta Project now updated in this report has been classified as Measured, Indicated and Inferred confidence categories. The total resource reported, above a 20 g/t Ag cut off, is 38.3 million tonnes at 41.3 g/t Ag and 0.54 % Pb providing 50.94 million ounces of silver and 207.2 thousand tonnes of lead. Stockpiled material is estimated to total 515,700 tonnes grading 70.0 g/t Ag for 1.16 million ounces of silver. Lead grades in stockpiles were not able to be estimated with confidence.

Resource Category	Material (Mt)	Ag (g/t)	Pb (%)	Ag Moz	Pb kt
Measured	1.1	47.3	0.69	1.65	7.5
Indicated	12.3	45.5	0.83	18.04	102.8
Inferred	24.9	39.0	0.39	31.25	96.9
Total	38.3	41.3	0.54	50.94	207.2
Stockpiles (Indicated)	0.52	70.0	-	1.16	-

All resources have been stated above a 20g/t Ag cut-off, the cut off grade is based on past mining costs.

Resource classification is based on data quality, drill density, number of informing samples, kriging efficiency, conditional bias slope, average distance to informing samples and deposit consistency (geological continuity. Resources have been classified according to the JORC 2012 code as Measured, Indicated and Inferred. Areas of tight grade control style drill patterns where grade and geological continuity are confirmed are classified as measured. Areas of sufficient drilling to assume geological and grade continuity are classified as Indicated. In areas broadly drilled and sampled where geological and grade continuity can only be inferred are classified as Inferred resources. It is expected that most of the Inferred Mineral Resources would upgrade to Indicated Mineral Resources with continued exploration. However, due to the uncertainty of Inferred Mineral Resources, it should not be assumed that such upgrading will always occur. Distal portions of the model with sparce drilling indicating mineralisation exists, but too sparce to assume geological continuity remain as exploration potential.

Most resource definition drill holes (over 95%) are shallow (less than 50 m depth), vertical reverse circulation (RC) holes. Many holes were terminated at the base of weathering, still within mineralisation. This mineralisation open at depth represents a large potential resource and reserve upside at The Property and a logical priority drill target within the current mine footprint.

Signed

Ian Taylor BSc (Hons) Grad.Cert.Geostats. MAusIMM(CP)

Brisbane, Australia

30 March 2021

2 INTRODUCTION

2.1 ISSUER

This resource report is an update of the current mineral resource estimates for the Manuka Resources Property (“The Property”) near Cobar in New South Wales, Australia. Mining Associates Pty Ltd (“MA”) was commissioned in February 20201 to prepare an update of the mineral resource on the Property.

2.2 INFORMATION USED

This report is based on technical data provided by Manuka to MA. Manuka provided open access to all the records necessary, in the opinion of MA, to enable a proper assessment of the project and provide a mineral resource estimate. Manuka has warranted in writing to MA that full disclosure has been made of all material information and that, to the best of the Manuka’s knowledge and understanding, such information is complete, accurate and true. Readers of this report must appreciate that there is an inherent risk of error in the acquisition, processing and interpretation of geological and geophysical data, and MA takes no responsibility for such errors.

Additional relevant material was acquired independently by MA from a variety of sources. The list of references at the end of this report lists the sources consulted. This material was used to expand on the information provided by Manuka and, where appropriate, confirm or provide alternative assumptions to those made by Manuka.

A period of five weeks was spent on data collection and analysis and preparation of this report.

2.3 SITE VISIT BY QUALIFIED PERSONS

Mr Ian Taylor visited the Wonawinta Project site on 16th March 2016, 4th August 2020 and spent two days on site for this resource update on the 3rd and 4th of December 2020. Mr Taylor viewed lithologies; structures and alteration halos exposed in inactive open pits, held discussions with site geologists, viewed drilling activities, inspected sampling and logging procedures, and visited the core storage facility. Past production records confirm the extent and grade of known mineralisation and it was not deemed necessary to collect independent samples.

Mr Taylor has sufficient experience which is relevant to the Mississippi-Valley style of mineralisation and deposits under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the ‘Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves’ (Australia). He is a Certified Professional by the Australasian Institute of Mining and Metallurgy. Mr Taylor is employed by Mining Associates Limited in Australia.

3 PROPERTY DESCRIPTION AND LOCATION

The Property is located in the central part of New South Wales at latitude 32.2° South and longitude 145.75° East (Figure 1). The nearest population centres include Cobar, approximately 85 km north and Nymagee, approximately 55 km east.

Figure 1. Property location.

3.1 PROPERTY TENURE

Manuka holds title to one Mining Lease (ML) and seven granted Exploration Licences (EL) detailed in Table 1.

Table 1. Manuka property tenement details.

Lease	Grant Date	Expiry Date	Area Units	Area km2	Mineral Groups	Note
EL6155	17/11/2003	17/11/2021	5	11	Group 1	
EL6302	23/09/2004	23/09/2021	96	280	Group 1	
EL6482	18/11/2005	18/11/2021	92	268	Group 1	
EL6623	31/08/2006	31/08/2023	9	26	Group 1	
EL7345	25/05/2009	25/05/2022	59	169	Group 1	
EL7515	7/04/2010	7/04/2022	5	15	Group 1	
EL8498	10/01/2017	10/01/2020	48	140	Group 1	renewal lodged
ML1659	23/11/2011	23/11/2032		923.8 Ha	Cu, Au, Pb, Ag, Zn	

MA has not undertaken any title search other than viewing on-line government tenement map databases or due diligence on the tenement titles or tenement conditions and the tenement's status has not been independently verified by MA.

3.2 PROPERTY OWNERSHIP, RIGHTS AND OBLIGATIONS

Title to the Property is held 100% by Manuka Resources Ltd.

3.3 ROYALTIES, AGREEMENTS AND ENCUMBRANCES

To the extent known by MA, there are no option agreements, joint venture terms or compensation agreements in place for the Property.

Royalties on produced metals are payable to the New South Wales government annually at the following rates.

- Silver: 4% ex-mine value (value less allowable deductions)
- Lead: 4% ex-mine value (value less allowable deductions)
- Zinc: 4% ex-mine value (value less allowable deductions)

"Allowable deductions" are confined to direct costs incurred in upgrading the mineral, after the first stockpile, and bringing it to market.

3.4 ENVIRONMENTAL LIABILITIES

To the extent known by MA, there are no known environmental liabilities on the Property.

4 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

4.1 ACCESS

Access to the Property from Cobar is by the sealed Kidman Way highway and a network of dry weather gravel roads.

4.2 CLIMATE

The Property area has a semi-arid climate with hot summers and cool winters. Average minimum temperatures range from 5°C to 20° and average maximum temperatures from 16°C to 34°C. It has a median annual rainfall of 390 mm. Rainfall is extremely variable, particularly in late summer and early spring. Average monthly climate statistics for Cobar are shown in Figure 2.

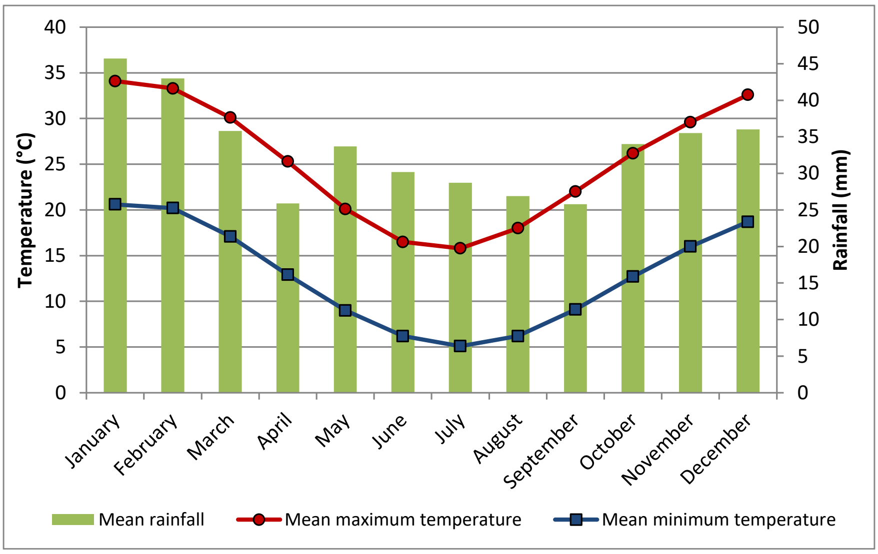


Figure 2. Monthly average climate statistics for Cobar, NSW.

Data source: Australian Bureau of Meteorology

4.3 LOCAL RESOURCES

The nearest main centre is Cobar, with a population of approximately 3,800 people. Cobar serves as a centre for the local pastoral and mining industries.

4.4 INFRASTRUCTURE

The site was a mining operation until May 2015, and MKR has used the infrastructure to process the Mt Boppy Ore since June 2020.

A Mining Lease is granted over the main project area, power and water are available. Onsite infrastructure includes a processing plant and operational camp site, a tailings storage facility (TSF), and waste rock disposal areas.

4.5 PHYSIOGRAPHY

The land is undulating and used primarily for grazing with minor cereal cropping. Topography is defined by low ranges of hills and broad valleys that trend north-northwest, following the regional strike of the Devonian aged rocks. Elevation varies between approximately 220 m AMSL to 335 m AMSL.

5 HISTORY

5.1 PREVIOUS OWNERSHIP

Previous owners of the Property licences include Geopeko, CRAE, Burdekin Resources, Savage Resources, Pasminco, Triako Resources, Cobar Consolidated Resources Ltd and Black Oak Minerals.

5.2 HISTORIC RESOURCE AND RESERVE ESTIMATES

All mineral resources reported in this section are provided for informational purposes only and are superseded by the current Mineral Resource estimate contained in Section 9 of this report.

A number of historical mineral resource estimates were reported for Wonawinta Project by previous operators over the period 2006 to 2015.

A resource estimate was announced by CCR on 10 October, 2006 for the De Nardi prospect on EL 6302. An Inferred resource of 1.8 Mt grading 47.1 g/t Ag for 2.7 Moz contained silver was estimated, reported using a cut-off grade of 10 g/t Ag. MA notes that this resource was not included in any further announcements or resource inventories released by CCR after 2008 and is not included in the current mineral resource estimate.

Several resource estimates for mineralisation in the southern part of the Property (called Wonawinta in CCR reports) have been publicly released since 2008. All were reported according to guidelines of the relevant JORC Code (JORC 2004 for pre-2013 resources and JORC 2012 thereafter).

The maiden resource estimate for Wonawinta was released by CCR on 22 July 2008 (Table 2) comprising 6.5 Mt grading 97 g/t Ag, 1.3% Pb for 20.3 Moz silver and 87,000 t lead. The estimate used a mineralisation cut-off for modelling purposes of 15 g/t silver, or 1% lead. 86% of the resources were oxide material, and all resources were classified as Inferred.

Resources were reported using a $/t 'cut-off factor' based on the value of recovered silver and lead assuming recoveries of 85% and 39% and prices of A$18.70/oz and A$1,800/t respectively. Assumed 'realisation costs' were included, but it is not clear from the ASX announcement how these were derived. MA notes that under JORC (2012) guidelines resources could not be reported in this manner because the use of a $/t cut-off factor implies that an in-situ value was estimated without detailed mining studies. Using the formula provided in CCR in their announcement the cut-off factor of $27/t is equivalent to a silver grade of 68 g/t with no lead credits.

Table 2. CCR 22 July 2008 mineral resource estimate (all inferred).

Cut-off factor	Tonnes	Grade		Contained Metal	
		Ag	Pb	Ag	Pb
$/t	Mt	g/t	%	Moz	kt
10	18.1	54	0.9	31.4	165
15	13.6	65	1.0	28.5	140
20	9.3	81	1.2	24.2	107
25	7.1	93	1.3	21.2	92
27	6.5	97	1.3	20.3	87
30	5.4	107	1.4	18.4	73

CCR released a further four mineral resource updates between 19 August 2009 and 25 March 2010 as shown in Table 3 to Table 6.

A cut-off grade of 15 g/t silver was used in the August 2009 estimate (Table 3) and a lead resource was not reported. The inferred resource increased largely due to additional drilling south of 6,431,000mN.

Table 3. CCR 19 August 2009 mineral resource estimate (all inferred, 15 g/t Ag cut-off).

Tonnes	Ag	Ag
Mt	g/t	Moz
28.7	48	44.3

Indicated resources were reported for the first time in October 2009 (Table 4). This was as a result of RC resource definition infill drilling in the Boundary pit area.

Table 4. CCR 12 October 2009 mineral resource estimate (15 g/t Ag cut-off).

Classification	Tonnes	Grade		Contained Metal	
		Ag	Pb	Ag	Pb
	Mt	g/t	%	Moz	kt
Indicated	16	58	1.1	30	182
Inferred	14	46	0.6	20	84
Total	30	52	0.9	50	266

Total resources increased slightly in December 2009 (Table 5) as a result of infill drilling in the Manuka and Boundary pit areas.

Table 5. CCR 14 December 2009 mineral resource estimate (15 g/t Ag cut-off).

Classification	Tonnes	Grade		Contained Metal	
		Ag	Pb	Ag	Pb
	Mt	g/t	%	Moz	kt
Indicated	16.7	60	0.94	32.2	157
Inferred	16.7	46	0.58	24.9	97
Total	33.5	53	0.76	57.1	254

Resources estimated in December 2009 were re-stated in March 2010 at higher cut-off grade of 22 g/t Ag (Table 6), which was determined to be potentially economic following preliminary mining studies.

Table 6. CCR 25 March 2010 mineral resource estimate (22 g/t Ag cut-off).

Classification	Tonnes	Grade		Contained Metal	
		Ag	Pb	Ag	Pb
	Mt	g/t	%	Moz	k
Indicated	10.5	78	1.10	26.4	116
Inferred	10.2	63.1	0.75	20.7	77
Total	20.7	70.6	0.93	47.1	193

Resources were next reported on 30 April 2010 and included a maiden ore reserve estimate (Table 7). Resources were reported at a cut-off of 22 g/t Ag and were inclusive of ore reserves. Reserves were reported at a cut-off of 32 g/t silver equivalent, using a silver price of A$14.67/oz and a lead price of A$1,323/t.

Table 7. CCR 30 April 2010 mineral resource and ore reserve estimate.

Classification	Tonnes	Grade		Contained Metal	
		Ag	Pb	Ag	Pb
	Mt	g/t	%	Moz	kt
Indicated Resources	11.3	78.7	1.14	28.6	129
Inferred Resources	10.6	64.6	0.78	22.0	83
Total	21.9	71.8	0.97	50.6	212
Probable Reserves	4.6	97	1.4	14.3	64

Resources were updated in November 2011 (Table 8) following grade control RC drilling in the Manuka and Boundary pit areas. A cut-off of 22 g/t Ag was used for reporting.

Table 8. CCR 8 November 2011 mineral resource estimate.

Classification	Tonnes	Grade		Contained Metal	
		Ag	Pb	Ag	Pb
	Mt	g/t	%	Moz	k
Indicated	16.6	66.3	0.9	35.3	145
Inferred	9.1	57.6	0.7	16.8	61
Total	25.7	63.2	0.8	52.2	207

An updated ore reserve estimate (Table 9) was reported on 23 January 2012, based on the Indicated Resources reported in November 2011. A cut-off grade of 32 g/t silver equivalent was used for reserve reporting based on a silver price of A$14.67/oz and a lead price of A$1,323/t

Table 9. CCR 23 January 2012 ore reserve estimate.

Classification	Tonnes	Grade		Contained Metal	
		Ag	Pb	Ag	Pb
	Mt	g/t	%	Moz	kt
Probable Reserves	10.1	80	1.1	25.9	107

Mining of ore commenced in the Boundary pit on 2 April 2012, with the first silver pour on 28 May 2012. Resources and reserves were next updated in February 2014 (Table 10), with resources stated at a 22 g/t silver cut-off grade as before. Previous models had used ordinary kriging (OK) to estimate silver grades, but due to the generally patchy distribution of mineralisation encountered when mining, multiple indicator kriging (MIK) was used to try and reconcile resources with mining. At 22 g/t Ag cut-off, tonnage increased, but grade decreased compared with the November 2011 estimate (although the impact of the removal of mined material on tonnes and grade was not stated). Inferred resources saw the highest increase in tonnes, mainly due to extending the model further than in 2011. Ore reserves also decreased, due to silver price assumptions changing from A$30/oz to A$22/oz (54% decrease in ounces), mining depletion (16% decrease in ounces) and change to MIK estimation (30% decrease in ounces).

Table 10. CCR 21 February 2014 mineral resource and ore reserve estimate.

Classification	Tonnes	Grade		Contained Metal	
		Ag	Pb	Ag	Pb
	Mt	g/t	%	Moz	kt
Measured Resources	4.2	58	0.8	7.9	33
Indicated Resources	5.9	54	0.8	10.1	46
Inferred Resources	31.4	42	0.4	41.9	135
Total	41.5	45	0.5	59.9	214
Proven Reserves	1.8	81	1.0	4.6	18
Probable Reserves	1.7	72	1.7	3.9	16
Total	3.4	76	0.9	8.5	34

After purchasing the Property in September 2014, BOK undertook shallow infill RC grade control drilling in Manuka pit (which was the only ore source they intended to mine) and released a statement on updated resource and reserve estimates in July 2015. As in February 2014 MIK was used to estimate resources, but estimates were reported at a cut-off grade of 50 g/t Ag, which was considered to be a more realistic figure considering the silver price and associated processing costs at the time. Lead was not included in resource-reserve reporting.

Table 11. BOK July 2015 mineral resource and ore reserve estimate.

Classification	Tonnes	Grade		Contained Metal	
		Ag	Pb	Ag	Pb
	Mt	g/t	%	Moz	k t
Indicated Resources	1.1	81		2.9	
Inferred Resources	1.5	75		3.5	
Total	2.6	78		6.4	
Proven Reserves	-	-	-	-	
Probable Reserves	0.4	84		1.0	
Total	0.4	84		1.0	

In 2016 Manuka Resources stated a Mineral Resource Estimate above a 20 g/t Ag cut off, as 38.8 million tonnes at 42.0 g/t Ag and 0.61 % Pb providing 52.4 million ounces of silver and 236.5 thousand tonnes of lead. Stockpiled material is estimated to total 515,700 tonnes grading 70.0 g/t Ag for 1.16 million ounces of silver. Lead grades in stockpiles were not able to be estimated with confidence.

Resource Category	Material (Mt)	Ag (g/t)	Pb (%)	Ag Moz	Pb kt
Measured	0.9	45.0	0.70	1.3	6.2
Indicated	8.5	48.5	0.79	13.2	67.5
Inferred	29.4	40.0	0.55	37.9	162.9
Total	38.8	42.0	0.61	52.4	236.6
Stockpiles (Indicated)	0.52	70.01	-	1.16	-

5.3 HISTORIC PRODUCTION

5.3.1 Mining and Processing Operations - Wonawinta

First ore was mined in April 2012 from shallow open pits. Treatment was by conventional Carbon-in-Pulp (CIP) methods but without any primary grinding. First silver was poured in July 2012. The project produced a total of 2.1 million ounces of silver up until it was placed in voluntary administration in March 2014 following production issues and high unit costs. Two pits (Manuka and Boundary) were in production when mining was halted early in 2014. A total of some 390,000 tonnes of ore was stockpiled on or close to the ROM pad, with a grade of approximately 88 g/t Ag .

BOK acquired the Wonawinta Silver Project in September. Mining at Manuka was completed in May 2015 (614,000 tonnes of ore mined at 84g/t Ag). Approximately 350,000 t of the 614,000 t mined silver ore was processed prior to the transition in September 2015 to gold production from Mt Boppy ore. Silver ore not blended into mill feed during the Mt Boppy gold production campaign was planned to be processed once gold production had concluded. At the end of September 2015 approximately 263,400 tonnes of silver-bearing rock was added to the existing stockpiles on the Manuka ROM pad for potential processing following completion of gold processing of Mount Boppy ore.

Total silver production since operations commenced in March 2015 to September 2015 was 753,634 ounces (Table 12).

Table 12. BOK mining and silver production, March 2015 to September 2015.

	Units	Project to date (March 2015 to 30 Sept 2015)
Total material mined	t	1,637,901
Silver ore mined	t	613,719
Mined grade	g/t Ag	83.8
Ore milled	t	350,312
Milled grade	g/t Ag	96.1
Recovery	%	69.6
Silver produced	oz Ag	753,634
Silver poured	oz Ag	740,134
Silver sold	oz Ag	730,141
Silver revenue	A$M	15.5
C1 Cash Costs	A$/oz	15.92
Dore contained Ag	oz	0
Ag stock in circuit	oz	13,501
Ore for immediate milling	t	263,407

6 GEOLOGICAL SETTING AND MINERALISATION

6.1 PROJECT GEOLOGY

The following description of project area geology focusses on the Wonawinta silver deposits.

Figure 3 shows outcrop geology from NSW Geological Survey 1:100 000 scale mapping overlain with major structures and the location of the Wonawinta silver deposits (Manuka and Boundary pits). Outcrop in the Project area is variable. Sandstones and siltstones of the upper part of the Winduck Group and lower Mulga Downs Group form hills and ridges, whereas lower Winduck Group calcareous sediments are generally recessive and covered by a thin veneer of alluvial and colluvial sediments.

The Wonawinta silver project area lies mostly on the western, gently dipping (<30°) limb of the Wonawinta Anticline. Inliers of Silurian-age Thule granite are exposed in the core of the anticline, which developed due to reverse movement on the Wonawinta Fault.

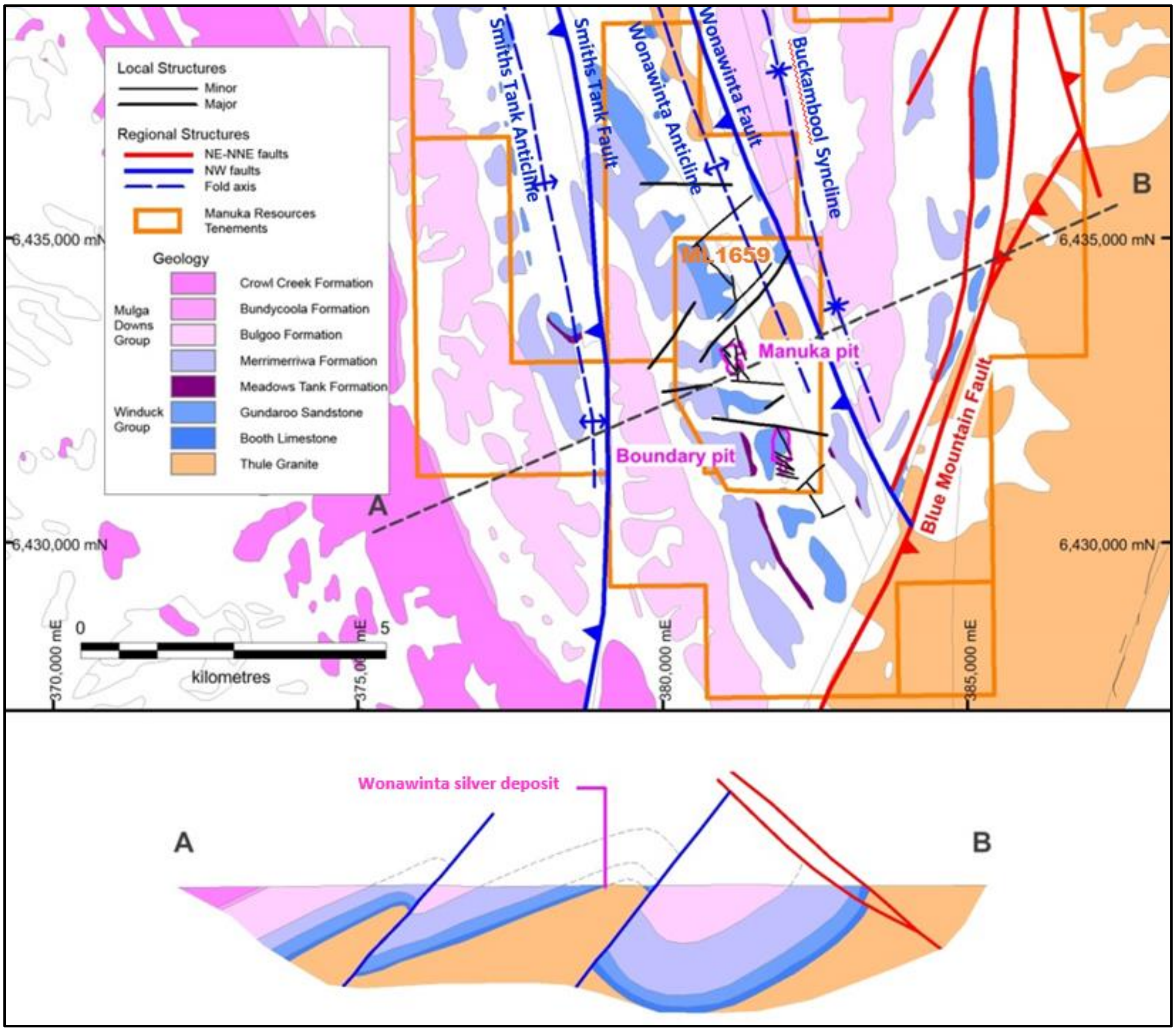


Figure 3. Local geology in vicinity of Manuka silver deposits.

6.1.1 Stratigraphy

The Wonawinta silver deposit area is underlain by lower Winduck Group sedimentary rocks and basement of Silurian-aged Thule granite. Local stratigraphy is summarised in Figure 4 and the unit descriptions below are taken from (David, 2005).

6.1.1.1 Thule Granite

The unfractionated S-type Thule Granite subcrops in the hinge of the Wonawinta Anticline at the northern end of the deposit area. It also occurs as an up-faulted elongate basement high east of the Blue Mountain Fault. It is a coarse-grained biotite-muscovite granite with large tourmaline inclusions.

6.1.1.2 Arkose

Basal arkoses disconformably overlie the Thule Granite and grade upwards into Booth Limestone. Arkoses are massive grainstones (0.5-2 mm average grain size) comprising granite-derived quartz and feldspar, lithic fragments and occasional large fossil fragments.

6.1.1.3 Booth Limestone

Booth Limestone was deposited on an open carbonate shelf with coral reefs. It is poorly exposed in the deposit area but crops out to the north around Beulah Tank. It is divided into two lithofacies:

- A lower part comprising thinly-bedded micro-recrystallised biomicrite with fossil fragments and fine quartz detritus.
- An upper part comprising coarse calcareous sandstones and fossiliferous limestone (stromatoporoids, corals, hydrozoans and bryozoans) with a black organic-rich calcareous matrix. The limestone is variably recrystallised and dolomitised. Dolomitisation probably occurred in a sabkha environment and preceded mineralisation.

6.1.1.4 Transitional Unit

The transitional unit between the Booth Limestone and the Gundaroo Sandstone was deposited in a protected back-reef or lagoonal environment subject to periodic influxes of terrestrial sediments. It comprises calcareous organic-rich shale and quartz-lithic calc-arenite. The arenite is poorly sorted and contains quartz, fossil and micrite intraclasts, volcanic and metasediment lithic clasts, and detrital minerals including syngenetic pyrite. The transitional unit grades upwards to a medium-grained quartz-lithic greywacke locally interbedded with fossil-rich beds.

6.1.1.5 Gundaroo Sandstone

The Gundaroo sandstone is a quartz-lithic medium-grained arenite interpreted as a littoral deposit that crops out as low linear ridges on the slopes of the Wonawinta valley. Beds are typically 30-50 cm thick with minor shelly macrofossils, well-preserved cross-bedding, soft sediment deformation and bioturbation.

6.1.2 Regolith units

The Cobar district is characterised by deep weathering and the base of oxidation can reach depths exceeding 70 m in the deposit area, particularly in the mineralised zone above the Booth Limestone (Figure 8). Regolith units identified in resource drilling are summarised below.

6.1.2.1 Soils

Ferruginous brown clayey soils and subsoils generally less than 50 cm thick are best developed over the Booth Limestone and Transitional units.

6.1.2.2 Calcrete & Silcrete

Calcrete and silcrete are sporadically developed and generally less than 2 m thick in the resource area with calcrete occurring over the Booth Limestone and silcrete over the Gundaroo Sandstone and Mulga Downs Group.

6.1.2.3 Pale Clays

Pale clays with low variable goethite and hematite contents make up the bulk of the overburden in the mineralised areas. The clays range in colour from white to pale brown to grey with depth and are composed of quartz-kaolinite-illite-muscovite. They may be interbedded with fine grained siltstone and may contain abundant clay, siltstone and lithic clasts to 15 mm.

These clays are best developed over the upper portions of the Booth Limestone and attain thicknesses up to 70 m in deeply incised strike-parallel embayments within the Limestone contact. Grey clays in the basal parts of these embayments commonly grade downwards into dark grey to black unoxidised clays of high plasticity, with up to 25% silver-bearing marcasite.

The origin of the clays and the embayment structures is uncertain. The most likely explanation is that the clays represent thick sequences of the Transitional Unit deposited in karst structures. Palynology undertaken on black clay samples by Dr Helene Martin of University of NSW did not identify any pollen.

6.1.2.4 Ferruginous Clays

Chocolate-brown quartz-dolomite-clay-goethite-pyrolusite clays up to 5 m thick are commonly developed above the Booth Limestone contact but are not present in the embayment structures. These clays are strongly ferruginous and manganiferous, and contain rare bands of hard, pyrolusite-spotted ironstone. The presence of calcium and magnesium in these clays indicates they are derived from the dolomitic limestone.

6.1.2.5 Limestone Saprock

Limestone saprock (dolomite-quartz-goethite) is highly variable in thickness and degree of oxidation. Thicknesses up to 40 m may occur where abundant ferruginous clay horizons are present within the limestone sequence. Intervals of fresh limestone are also common above the base of complete oxidation.

6.1.2.6 Granite Saprolite

Thule Granite subcrops in the northern part of the Property. Feldspars may be totally kaolinised to a depth of 20 m, resulting in RC samples comprised of white clay and quartz. Washed samples of the granite saprolite have previously been misinterpreted as Tertiary sands.

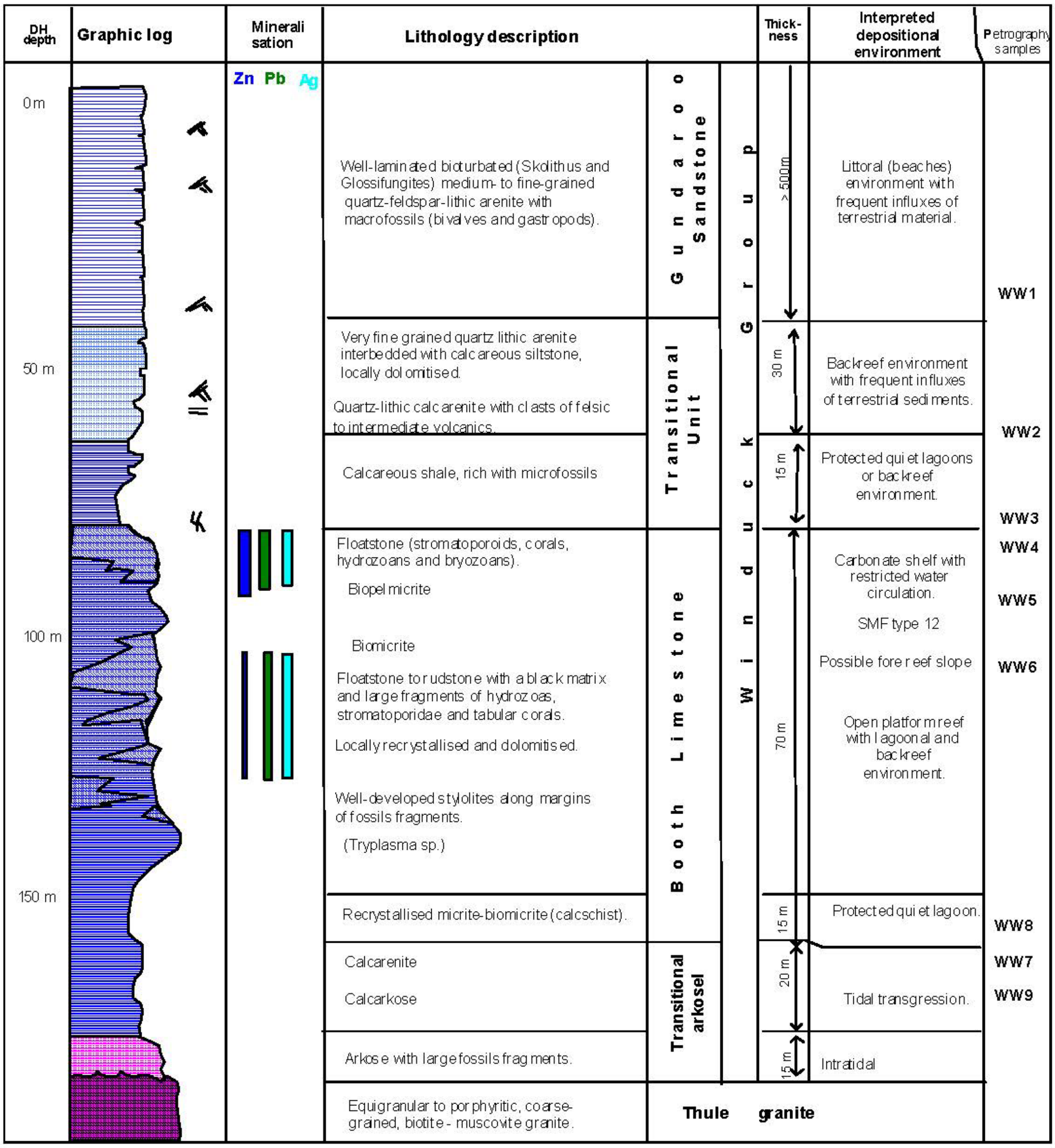


Figure 4. Stratigraphic column for Wonawinta Anticline area.

6.1.3 Structure

Several versions of the structural interpretation at the Property scale exist in previous reports. Due to the generally poor outcrop of lower Winduck Group sediments, geological interpretation relies heavily on the amount of drilling, and to some extent, geophysical data available. MA notes that no pit maps have yet been located, but photographs and visual inspections do show what appear to be faults in some pit walls.

In 2016 MA undertook 3D modelling of the main geological contacts in the Manuka mine area from drill intersections, then combined this information with available geophysics (VTEM and magnetics) to gain an understanding of local geological controls on mineralisation.

Fault structures can be interpreted from sudden offsets (marked by change in RL) of stratigraphic contacts (top and base of limestone), and to a lesser extent by apparent vertical offsets of mineralisation. Modelling of the base of limestone contact also highlights the main Wonawinta Anticline, with exposed Thule Granite basement in its core immediately east of Manuka pit.

The most clearly defined structure on a local scale is a NE-trending fault system to the north of Manuka pit that offsets base and top of limestone contacts with an apparent north side-down movement sense. The fault is interpreted to continue to the east limb of the Wonawinta Anticline, although the offset appears to be reduced.

Another fault offsetting base of limestone/top of granite strikes almost east-west at approximately 6432800 m northing. This structure may be related to one with a similar strike that marks the southern boundary of Manuka pit.

Within the Manuka pit area itself, several sudden changes in mineralisation position potentially mark syn-to post- mineralisation faults. The main structures strike north-south and appear to truncate earlier northwest-trending faults.

6.2 MINERALISATION

The main zone of Ag-Pb-Zn mineralisation in the Property occurs along 6 km of strike south of 6435000 mN and parallel with the Wonawinta Anticline hinge. Mineralisation is stratabound within the Booth Limestone Member. Most mineralisation occurs on the western limb of the Wonawinta Anticline close to the fold hinge, but to the north it also occurs on the eastern limb.

Two main mineralisation styles are developed: secondary oxide mineralisation and primary sulphide mineralisation (Figure 5).

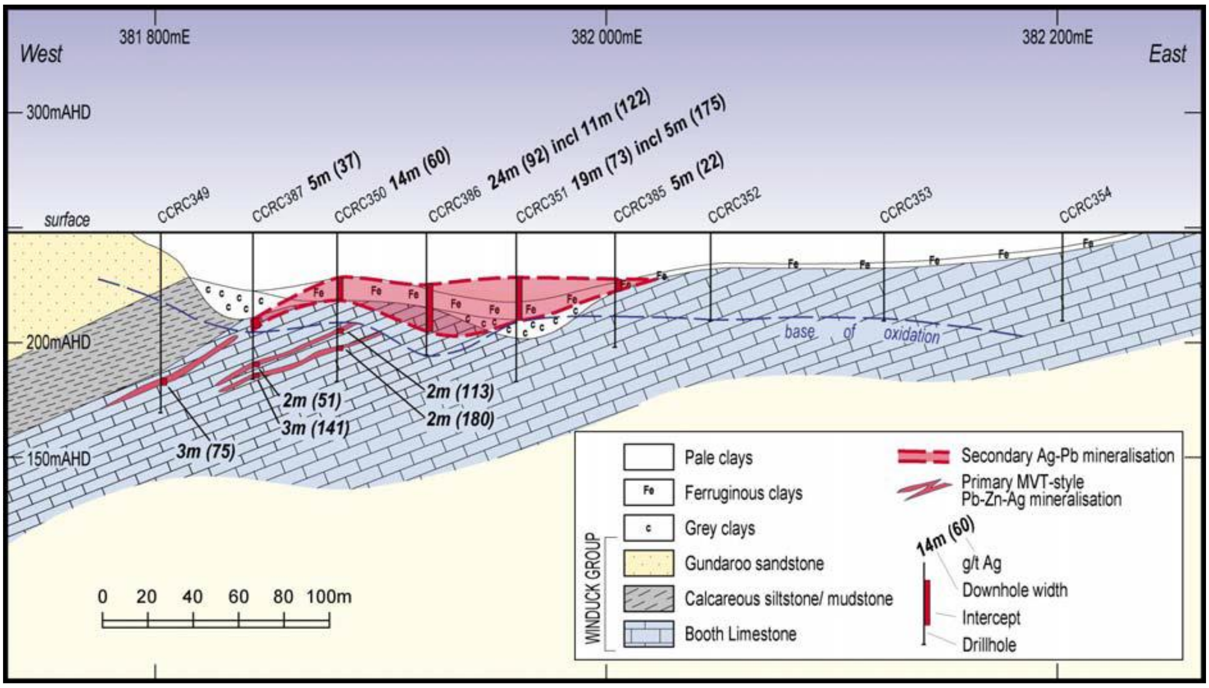


Figure 5. Typical cross section through mineralisation, 6431560 mN.

6.2.1 Oxide Mineralisation

Oxide Ag-Pb-Zn mineralisation is developed as a supergene blanket up to 160 m wide and 30 m thick on and around the contact between the Booth Limestone and overlying clays (Figure 5). Mineralisation can occur in any of three lithological units:

- In pale clays associated with anglesite ($PbSO_4$), plumbojarosite (Pb-Fe sulphate), and minor dolomite, goethite and cerussite ($PbCO_3$).

- In brown Fe-Mn clays associated with cerussite, smithsonite ($ZnCO_3$), pyrolusite, goethite and minor jarosite, coronadite (Pb-Mn oxide) and marcasite.
- In limestone saprock associated with cerussite, smithsonite, marcasite (FeS_2) and goethite.

Quantitative XRD mineral analysis indicates that silver is largely contained within the following minerals:

- Goethite (73%)
- Cerussite/anglesite (17%)
- Pyrite (9%)
- Galena (1%)

Typical resource grades for oxide mineralisation are around 100 g/t Ag, 1.1% Pb and 0.5% Zn.

Multi-element geochemical analyses of a total of 10 oxide and sulphide ore samples show that Ag-Pb-Zn mineralisation is associated with elevated As (average 0.17%), Hg (average 18 ppm, but up to 100's ppm in some samples) and Sb (average 118 ppm). Silver mineralisation displays a clear Pb-Zn-As-Sb-Hg geochemical association.

6.2.2 Sulphide Mineralisation

Sulphide mineralisation was not specifically targeted by MKR in their resource drill out, with the majority of drill holes terminating when fresh rock was reached. The extent of this sulphide mineralisation open at depth represents a large potential resource and reserve upside at The Property and is a logical priority drill target within the current mine footprint.

Two main styles of sulphide mineralisation are present:

- Disseminated sulphide mineralisation in black clays (and their black calcareous shale equivalents regionally) immediately overlying limestone. Mineralisation comprises syngenetic pyrite, sphalerite and minor galena (David, 2005). Massive microporous marcasitic pyrite containing fine inclusions of quartz, galena, sphalerite and pyrite can comprise up to 30% of panned concentrates of the black clays in the Manuka area (Pontifex, 2009).

  This mineralisation is discontinuously developed along the resource zone, as the black clay host occurs in lenses spatially restricted to deeper embayments in the limestone contact.

  Geochemical and spatial relationships suggest the pale clay-hosted mineralisation is the oxidised equivalent of black marcasitic clay mineralisation.

- Sulphide mineralisation hosted by dolomitic fossiliferous limestone at the top of the Booth Limestone Member. Mineralisation occurs as veins and blobs in recrystallised limestone with black matrix breccias. Ore mineralogy comprises low-iron sphalerite, galena and pyrite intergrown with calcite. Open space filling and replacement textures are present (David, 2005).

7 DEPOSIT TYPES

7.1 GEOLOGICAL MODELS

The Manuka Property, and the western Cobar Basin in general, host the following main types of mineralisation:

- Carbonate-hosted silver-lead-zinc in Booth Limestone Member carbonates, may be primary or secondary enrichment – e.g. Manuka.
- 'Cobar Style' carbonate-siltstone hosted polymetallic (Zn-Pb-Ag-Cu-Au) - e.g. Elura, Peak, CSA.
- Low sulphidation epithermal gold – e.g. McKinnons.

7.1.1 Carbonate-hosted Ag-Pb-Zn

Silver-lead-zinc mineralisation at Wonawinta has been interpreted as an oxidised (supergene-enriched) Mississippi-Valley Type (MVT) deposit. The overall regional geological setting, host rocks and geometry of mineralisation fit this model. There is evidence in fresh samples for low-temperature marcasite and colloform cavity-fill textures in sphalerite typical of MVT mineralisation. S isotope values indicate a basinal brine sulphur source, with some syn-diagenetic sedimentary pyrite.

However, high silver grades and presence of significant amounts of mercury, arsenic and antimony are unusual for an MVT deposit. This geochemical association is more similar to Irish-style carbonate hosted mineralisation.

Most MVT deposits occur in carbonate platforms on the margins of cratonic sedimentary basins. MVT mineral districts are commonly large, with individual deposits having a median size and grade of 7 Mt at 1.6% Pb, 6% Zn and 32.5 g/t Ag (Leach, Taylor, Fey, Diehl, & Saltus, 2010). Deposits were formed by migration of warm saline aqueous solutions, similar to oilfield brines, through aquifers within platform-carbonate successions towards the basin periphery. Most models relate mineralising fluid migration to compressional tectonics and basin inversion. Re-activated syn-sedimentary faults are involved in creating fluid pathways, although the deposits themselves are stratabound.

8 SUPPLIED DATA

8.1 DRILL HOLE DATABASE

The drill hole database integrity was reviewed for internal consistencies, duplicate sample numbers and assay reference numbers. Database tables were found to be internally consistent, with no duplicate down-hole records and no overlapping down-hole intervals.

The database has recent MKR collars to MRC370, Assays upto hole MRC 327 and logging upto MRC369. Results for the recent 16 hole diamond programe have not been received as yet.

During the process of geological modelling, MA noted MRC317 plotted 1 km of its actual collar position. Holes MRC265 and 269 had the same collar positions, collar MRC269 was moved its correct location 30 m south.

MRC231 was collared as a vertical hole then rapidly lifts to -58.3 at 54 m depth, this was confirmed by site geologists.

During validation of the extracted lithological surfaces it was noted several holes intersected shallow short intervals of granite, (holes 8B, and CCRC962) these intervals were recoded as Arkose.

8.1.1 Site Visit

Mr Ian Taylor visited the Wonawinta Project site on 16th March 2016, 4th August 2020 and spent two days on site for this resource update on the 3rd and 4th of December 2020. Mr Taylor viewed lithologies; structures and alteration halos exposed in inactive open pits, held discussions with site geologists, viewed drilling activities, inspected sampling and logging procedures, and visited the core storage facility. Past production records confirm the extent and grade of known mineralisation and it was not deemed necessary to collect independent samples.

8.1.2 Limitations

The quality of the data is suitable for resource estimates. Data used in the preparation of this report was provided in digital format retrieved from the previous lease holder's server, the data was validated and new MKR data added. Summary reports written by independent consultants for the previous lease holders were relied on in the preparation of this report. MA has not sighted physical hard copies or certified laboratory reports, no original density data is available, no original geological logging sheets or core/RC chips have been sighted for the historic database.

MA has sighted physical hard copies of logging and certified laboratory reports while on site. Drilling activities, sampling and logging were inspected during the personal site visit conducted in December 2020.

MKR have obtained 31 density samples from the northern end of the project to confirm the assumption that the CCR density data is representative of the entire project area.

8.2 VERIFICATION OPINION

Based on the data verification performed, it is MA's opinion that the data reviewed is adequate for the purposes used in this Mineral Resource Report. Any shortcomings in data quality are reflected in the classification of mineral resources.

9 MINERAL RESOURCE ESTIMATES

9.1 APPROACH

Mineralisation has been interpreted using deterministic modelling techniques of hanging wall and footwall contacts from sectional interpretations. Initial considerations focused on geological contacts of weathered clays, reduced clays (hydrothermal alteration), limestone contacts (top and bottom) and basement (consisting of arkose and granite). Specific wireframes of each contact were created along with the base of oxidation.

Global statistics encompassing RC and diamond core drill data were considered to determine a natural break in the distribution of silver and lead grades to be used in defining a mineralised domain. The dominant statistical break for determining mineralisation was 10 g/t silver. To determine the extent of mineralisation between footwall and hanging wall, lead and zinc could individually be above 1%. Lead mineralisation rarely extended higher or lower in the oxide profile than zinc or silver and these zones outside 10 g/t Ag were excluded. Zinc does not have complete assay coverage in the data supplied to MA.

Due to the flat, lenticular geometry and subsequent layering due to the limestone contact and weathering profile, it was decided that a traditional 3D kriged estimate would smear silver, lead and zinc grades in an unrealistic fashion and not honour the undulating contacts of mineralisation. MA decided a better approach was to unfold the undulations and perform the estimation in unfolded space. Details of the unfolding philosophy are described in Section 9.8.2. iron and sulphur were estimated in unfolded space considering the weathering profile. Calcium was estimated in 3D space using ordinary kriging and does not follow the silver-lead-zinc mineralisation, and are more affected by rock type than weathering. Calcium, iron and sulphur do not have complete assay coverage and are considered secondary elements for geo-metallurgical considerations.

Footwall and hanging wall mineralisation contacts were extracted from the drill hole database and gridded surfaces were created using inverse distance squared (ID^2) interpolation. Original data points were added back into the surfaces, ensuring they were “snapped” to the drill holes. Weathering profiles were used to assign oxidation state, and both lithology and oxidation state were used to assign bulk density.

Lithological contacts were extracted from the drill hole database and gridded in Mapinfo using minimum curvature interpolation. Points were imported and the surfaces were wireframed in Surpac 7.4.1.

All drilling including blast holes, RAB and Air core holes were used to inform the lithological contacts and only RC (including RC grade control) and DD were used to inform the grade estimate.

9.2 SUPPLIED DATA

MA had direct access to a database export supplied as an MS Access drill hole database named ww_dhdb_MA2103.accdb. Various queries were run updating and formatting the data to workable formats for use in Surpac. Update queries updated the oxidation code based on the weathering profile, lithology logging and colour. Queries were run to identifying if holes finished in either Limestone or mineralisation and creating a flag in the collar table. The final data base is stored as ww_dhdb_MA210314.accdb with the table structure as shown in Table 13.

Table 13. Database structure

Table Name	Data Type	Records
Limestone	MA created	2071
WON_Lithology	Logged lithology. MA used the oxide field to reflect the logged weathering, regolith code, lithology and colour	25965
assays	Summarised Drill Hole assay table Includes Ag, Ca, Fe, Hg, Mg, Mn, Pb, S,Zn and Ag equivalent (based on Ag, Pb and Zn)	95272
collar	Collar information associated with drill type and location	13789
styles	Surpac drill hole display table	164
survey	Down hole survey data	15102
zone_code	Identified mineralised interval	1936

Table 14 summarises drilling and sampling statistics grouped by drill hole type within the area of resource estimates.

Table 14. Summary of drilling in resource area by drill type.

Drill hole type	Number of holes	Metres Drilled	Number of Samples	Metres Sampled	Used in grade interpolation
AC	148	5715.1	1640	4444.8	No
BH	10472	57417.2	33998	55428.2	No
RAB	920	17706	3440	9924.95	No
RC	2163	93130.6	52035	61471.5	Yes
RCD	13	2820.4	1015	2543.8	Yes
DD	49	8865.8	2849	5470.89	Yes

9.3 TOPOGRAPHY

A detailed digital topographic surface was created by CCR of the original surface features pre-mining.

Detailed topography (topo_2010.dtm) covers 3.4 km east west and covers 6435000 mN to 6429500 mN north-south. The surface was projected 2 km to the north and 250 m to the south to cover the entire study area. Drill hole collars were used to provide “tie in” points in the extrapolated areas. Mineralisation below the projected surface does not outcrop and is generally considered to have insufficient data to classify as Resource, approximately 100 m of inferred mineralisation occurs under the southern extrapolated topographic surface.

9.3.1 As Built Pit Surfaces

Two known pits are present on the Wonawinta Project, Manuka and Boundary. Pit Pick-ups on 3 May 2015 for Manuka Pit and 31 March 2014 for Boundary Pit, which includes the box cut into Boundary South Pit area have been used to define the mined proportions of the block model. The mined out areas are flagged in the block model (model attribute rescat = 5). Waste dumps, tails Dams and ROM pad were picked up on 9 April 2015 (model attribute rescat = 5).

9.4 DIMENSIONS

Known anomalous mineralisation at Wonawinta extends along strike for approximately 8 km in a NNW direction (335°). At its widest part, mineralisation extends some 400 m down-dip to the west, and has not been completely closed off in this direction.

Mineralisation is variably enriched along the defined mineralised zone and includes the existing Manuka and Boundary pits. The plus 10 g/t Ag mineralisation envelope shows varying widths from thin 30 m to extensive 750 m and averages approximately 400 m.

Thickness of the mineralised envelope ranges from a minimum of 2 m to a maximum of 32 m and is dominantly between 8 m and 10 m thick. Mineralisation does not outcrop and is overlain by unmineralised weathered clays ranging from 2 m to 80 m thick and averaging around 36 m.

9.5 GEOLOGICAL INTERPRETATION

Silver-lead-zinc mineralisation at Wonawinta has been interpreted as an oxidised (supergene-enriched) Mississippi-Valley Type (MVT) deposit. The overall regional geological setting, host rocks and geometry of mineralisation fit this model. There is evidence in fresh samples for low-temperature marcasite and colloform cavity-fill textures in sphalerite typical of MVT mineralisation. Sulphur isotope values indicate a basinal brine sulphur source, with some syn-diagenetic sedimentary pyrite.

The mineralised envelope at Wonawinta is broadly stratiform and stratabound, straddling the contact between a lower limestone unit and overlying siltstone/claystone. Upper and lower contacts of this envelope are highly irregular, reflecting a complex history of primary mineralisation overprinted by weathering and supergene enrichment. Mineralisation is roughly sub-parallel to stratigraphy and is generally flat lying to gently (10°-30°) west dipping and south plunging, although gently east-dipping parts have been defined on the eastern limb of the Wonawinta Anticline (section 6.1).

Mineralised domains used for the current study were interpreted by MA from two metre down-hole composited silver grades. Mineralisation is interpreted to comprise a main, generally north-south trending zone, (Figure 7: Manuka, Boundary and Blue Mountain), two comparatively small subsidiary zones to the east designated as Pothole and Belah respectively. Bimble is NE trending zone north of Manuka running toward Bimible. The focus of MKR drill during 2020 and early 2021 focused on the Bimble-Belah areas.

9.5.1 Lithology contact model

The main lithological contacts in the Lower Winduck Group that could be modelled were as follows;

- Top granite
- Top arkose/base limestone (in many drill holes arkose is missing and limestone lies directly on granite)
- Top limestone/base clay

Contacts were extracted from the drill hole database using available lithological logging codes in the database. The majority of drill holes are too short to penetrate the entire lower Winduck Group succession and the top granite and base limestone contacts are only constrained by a few intercepts away from the Manuka and boundary deposits. The top limestone/base clay contact is highly irregular and in many cases is re-entrant in drill holes (limestone/dolomite logged above clay). The contact as modelled reflects where limestone/dolomite becomes dominant in each drill hole, so logged clay may occur below it.

Due to the irregular spacing between drill hole intercepts, a simple triangulation between points was not appropriate for generating lithological contact surfaces. Intercept points for each contact were desurveyed using Surpac (assigned x, y, z coordinates) and imported into MapInfo/Discover for interpolation. A minimum curvature method was used to interpolate z values into 20 x 20 m grid, based on the imported intercept points. Gridded points were then combined with the original intercept points to create a single point set representing the lithological contact elevation. Intercept points were preserved so that the resulting triangulated surface would pass exactly through drill holes. The point set from MapInfo was used to triangulate a DTM surface in Surpac 7.4.1. This was checked to ensure the contact had not been interpolated as crossing drill holes that had not actually intercepted it: in this case, the process was repeated with additional points inserted to keep the interpolated surface at the correct z value.

9.5.2 Base of Oxidation

A surface representing base of oxidation was created using the assigned top of fresh and the base of weathering codes in the oxidation field of the lithology table. Weathering was not consistently logged or recorded in the lithology table of the drill hole database. The oxidation codes were derived from the SWIR (shortwave infrared logging) and the logged weathering code, regolith code, lithology code and colour code from within the lithology table. Holes were assigned an integer code between 1 for fresh and 5 for transported or soil. Each oxidation contact was extracted from the drill hole database and gridded surfaces were created using inverse distance squared (ID^2) interpolation. Original data points were added back into the surfaces, ensuring they were “snapped” to the drill holes. The final base of weathering profile (box_ma2021.dtm) gridded from points belonging to the base of oxidation that fell below the extracted top of fresh wireframe combined with the top of fresh extracted points.

9.5.3 Mineralised Envelope

A mineralised envelope was defined at a cut-off grade of 10 g/t Ag, which represents a natural break in grade distribution of raw samples on a log-probability plot (Figure 6). Footwall and hanging wall points were defined by tagging assay intervals with a composite grade greater than 10 g/t. If proximal assays were less than 9 g/t Ag with a AgEq above 10g/t or less than 8 glt Ag with a AqEq greater than 20 g/t, these were included as edge dilution. Silver equivalents were only used to define the mineralised contacts. Silver equivalents included Ag, Pb and Zn. Assumed recoveries and metal prices were applied. Prices and recoveries applied were a silver price of $25/oz and 85% recovery, a lead price of $0.90/lb and 40% recovery and a zinc price of $1.2/lb and 40% recovery. The resulting formula is provided below:

$$AgEq(g/t) = Ag\ (g/t) + 9.681 \times Pb(\%) + 12.908 \times Ag\ (g/t)$$

Contacts were extracted from the drill hole database and gridded surfaces created using inverse distance squared (ID^2) interpolation. The original data points were added back into the ID^2 surface, ensuring surfaces were “snapped” to the drill holes.

Lithology contacts and base of oxidation DTM’s were used to assign oxidation state and both lithology and oxidation state were used to assign bulk density.

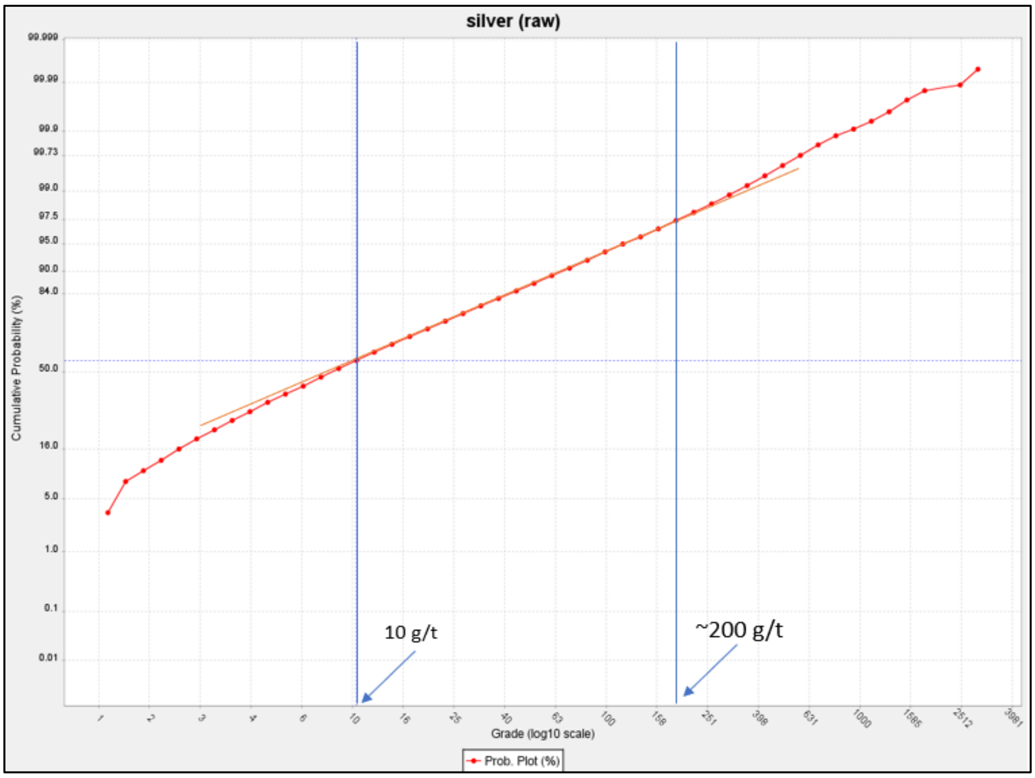


Figure 6. Log probability plot of raw (un-composited) silver grades.

Breaks at 10 g/t Ag and 200 g/t Ag indicated. Values above the 200 g/t Ag are too scattered to domain separately.

9.6 DATA PREPARATION AND STATISTICAL ANALYSIS

Statistical analysis of grade data was principally carried out using the Surpac Software package. More detailed spatial analysis (variography) was conducted within Snowdens Supervisor software.

Prior to statistical analysis, grade domaining is undertaken to delineate homogeneous areas of grade data. Statistical analysis does not take into account the spatial relationships of the data.

The drill hole database is stored in an MS Access relational database. The Wonawinta database is connected directly to Surpac for data display, down-hole compositing, wireframing of homogeneous grade domains and block model estimation.

9.6.1 Drill Hole Spacing

Drill hole data spacing is variable throughout the areas assessed and ranges from broad first-pass exploration (250 m x 50 m regionally) to the RC grade control drilling (10 x 10 m) in parts of Manuka and Boundary pits. Areas adjacent to the pits were typically drilled on a 50 m x 50 m spacing.

9.6.2 Domains & Stationarity

A domain is a three-dimensional volume that delineates the spatial limits of a single grade population, has a single orientation of grade continuity, is geologically homogeneous and has statistical and geostatistical parameters that are applicable throughout the volume (i.e. the principles of stationarity apply). Typical controls that can be used as the boundaries to the domains include structural features, weathering, mineralisation halos and lithology.

Due to the tight geological domaining, stationarity concerns are minimised with the resource estimation as each domain contains only one population of grade data.

The mineralised domains shown in Figure 7 were defined as follows:

- Domain 1 “Blue Mountain” represents generally broadly sampled, NNW trending mineralisation south of an interpreted regional fault orientated at 050° and centred on approximately 6,430,650 mN.
- Domain 2 “Boundary” represents north-south trending mineralisation in the Boundary area between approximately 6,430,650 mN and a second interpreted fault trending 050° centred at 6,432,100 mN. This domain represents most mineralisation mined to date at the Boundary pit and encompasses an area of 10 m x 10 m RC grade control drilling conducted during 2013 to the south of Boundary.
- Domain 3 “Manuka” strikes north-south between 6,432,600 mN and the dominant north east trending Bimble Domain at 6,433,500 mN. It represents mineralisation in the Manuka area including all mineralisation mined from Manuka and the broadly spaced exploration drilling to the south of Manuka.
- Domain 4 “Pothole” represents a comparatively small area of apparently northwest striking mineralisation to the east of the main zone at Manuka.
- Domain 5 “Bimble” is north of Manuka pit and strikes in a northeast direction. Probably primarily controlled by a northeast-trending structure.
- Domain 6 “Belah” is a north-south trending zone in the northeast of the project area.
- Domain 7 “Exploration Potential” represents the north-northwest trending northern portion of the main mineralised zone to the north of 6,434,200 mN and is locally only very broadly sampled.
- Domain 8 “Manuka-Boundary” is the area between Manuka and boundary pits with sparse drill spacing striking NNW between 6,432,100 mN and 6,432,600 mN. This area is also known to as Tween.

Within each domain mineralisation was assessed above and below the base of oxidation. The base of oxidation was considered a hard boundary for Ag, Pb and Zn. The boundaries between domains were considered a soft boundary as they are generally in poorly drilled areas.

The secondary element iron was estimated within the Boundary and Manuka domains constrained by the oxidation profile with specific estimation parameters. For the remainder of the domains global oxide and fresh estimation parameters were selected. Sulphur was estimated globally within the resource using the oxidation profile as a hard boundary. Calcium used the top of limestone as a hard boundary; specific parameters were obtained for Boundary and Manuka domains in the clay and limestone. Specific variograms were obtainable for Pothole clay and Belah limestone. The remaining domains were estimated with global variograms for Ca within clay and limestone.

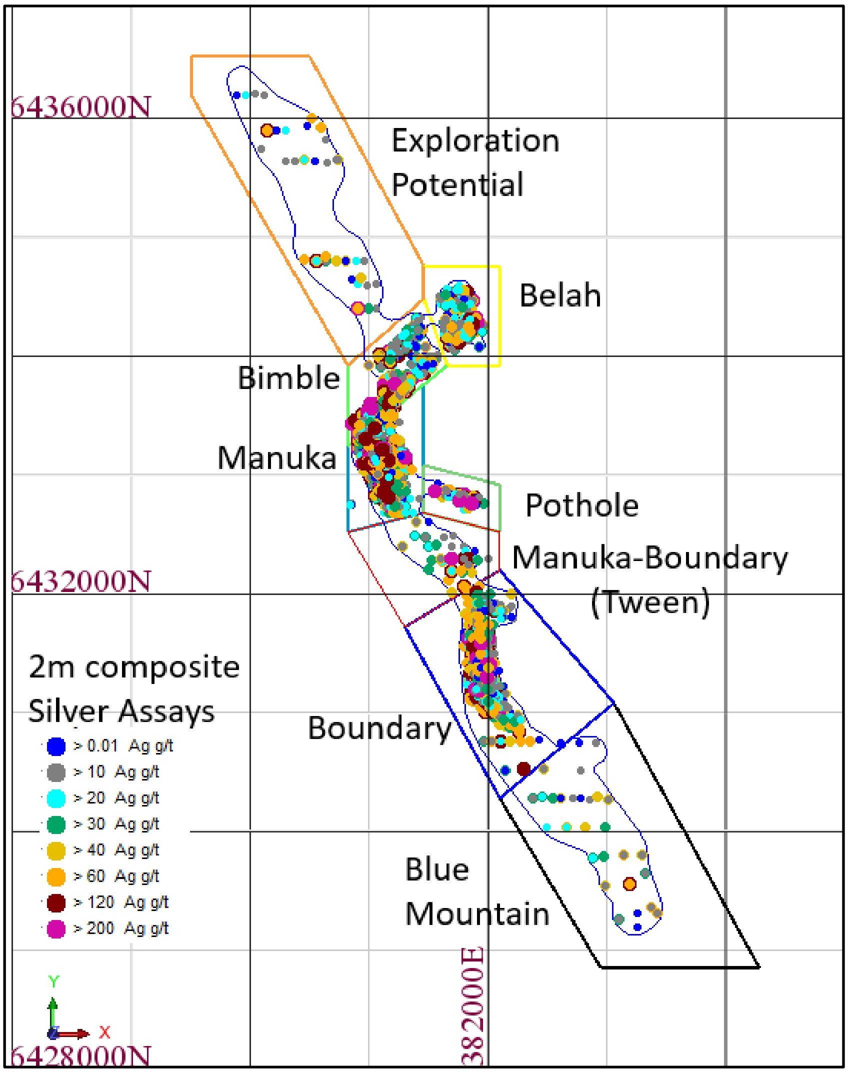


Figure 7: Resource domains and drill assays

9.6.3 Compositing

The objective of compositing data is to obtain an even representation of sample grades and to eliminate any bias due to sample length (Volume Variance). 94.8% of all RC and core samples at Wonawinta are 1 m, 3% of samples are 2 m and over.

Several important factors should be considered when compositing: planned mining method, desired selectivity, and the mining bench height. Caution should be exercised when compositing to ensure samples are not split. Manuka was mined by open pit utilising 5 m benches with 2.5 m flitches with a minimum selectivity of 5 m x 5 m by 2.5 m (XYZ).

The majority of drilling is vertical and flitch height would be likely to continue at 2.5 m. To reduce raw sample variance slightly, assay data was composited to two metres for grade interpolation into the block model.

Surpac's "Best Fit" was selected as the compositing method, with a 75% threshold for allowable short composites. The best fit method reduces the number of rejected short samples by compositing to variable, but equal lengths within a contiguous drill hole intercept. This ensures the resulting composite length is as close as possible to the nominated composite length. The resulting Surpac string files were used for statistical and variography analysis in Supervisor.

9.6.4 Basic Statistics

Basic statistics describe the univariate statistical characteristics of the mineralisation at Wonawinta.

Silver is presented in Table 15, lead in Table 16, zinc in Table 17, calcium in Table 18, iron in Table 19 and sulphur in Table 20. Although not estimated, mercury (Table 21) has been included in the summary statistics due to its environmental significance. Manuka and Boundary have the most assay data due to the tight spaced RC grade control drilling undertaken in the excavated pits. Table 22 shows the relative number of additional elements assayed for that were incorporated into the estimate. 92% of all assays were analysed for Lead, 61% for zinc, of the secondary elements 96% were assayed for calcium, 97% for iron, 96% were assayed for sulphur and 31% were assayed for mercury.

Table 15. Silver (2m Composite) Statistics

Statistic	Blue Mountain	Boundary	Manuka	Pothole	Bimble	Belah	Manuka-Boundary
Samples	134	4168	3890	150	1291	654	145
Minimum	1.8	1.0	2.0	1.9	1.3	1.2	3.9
Maximum	158.1	1960.0	2042.5	325.0	807.0	540.0	488.4
Mean	25.4	49.6	57.7	39.7	45.2	45.8	37.7
Standard deviation	23.3	82.8	92.8	58.3	60.4	63.1	50.8
25 percentile	11.5	13.9	14.9	10.5	13.7	13.4	14.3
50 percentile	18.5	25.4	28.7	16.8	23.9	23.0	22.6
75 percentile	31.7	55.0	61.7	40.2	51.0	51.8	41.5
97.5 percentile	77.7	188.2	232.6	167.4	178.6	162.1	107.8
CV	0.9	1.7	1.6	1.5	1.3	1.4	1.4

Table 16. Lead (2m Composite) Statistics

Statistic	Blue Mountain	Boundary	Manuka	Pothole	Bimble	Belah	Manuka-Boundary
Samples	134	4168	3072	150	1291	654	145
Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum	2.6	8.4	9.5	5.5	10.8	14.2	7.3
Mean	0.4	0.7	0.9	0.6	0.9	1.1	0.5
Standard deviation	0.4	0.9	1.1	0.7	1.2	1.7	0.7
25 percentile	0.1	0.2	0.2	0.1	0.2	0.2	0.2
50 percentile	0.2	0.4	0.4	0.3	0.5	0.4	0.3
75 percentile	0.5	0.9	1.1	0.7	1.1	1.3	0.5
97.5 percentile	1.4	2.6	3.4	2.0	3.8	4.3	1.3
CV	1.1	1.3	1.3	1.3	1.2	1.6	1.4

Table 17. Zinc (2m Composite) Statistics

Statistic	Blue Mountain	Boundary	Manuka	Pothole	Bimble	Belah	Manuka-Boundary
Samples	134	1721	2626	150	961	535	126
Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum	8.3	5.4	11.5	3.7	15.6	8.8	1.5
Mean	0.4	0.4	0.5	0.3	0.8	0.3	0.3
Standard deviation	0.9	0.5	0.7	0.7	1.5	0.6	0.3
25 percentile	0.1	0.1	0.1	0.0	0.1	0.0	0.1
50 percentile	0.2	0.2	0.2	0.1	0.3	0.1	0.2
75 percentile	0.4	0.5	0.6	0.2	0.9	0.4	0.5
97.5 percentile	0.9	1.6	2.1	2.2	3.2	1.4	1.1
CV	2.2	1.4	1.5	2.1	1.9	2.1	1.1

Table 18. Calcium (2m Composite) Statistics

Statistic	Blue Mountain	Boundary	Manuka	Pothole	Bimble	Belah	Manuka-Boundary
Samples	100	4010	3868	150	1216	607	114
Minimum	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Maximum	20.3	29.4	24.1	13.5	29.2	22.3	23.2
Mean	7.9	7.5	9.0	0.9	3.4	2.2	8.9
Standard deviation	7.3	7.7	7.6	2.4	6.3	4.9	7.8
25 percentile	0.4	0.1	0.1	0.1	0.1	0.1	0.1
50 percentile	6.5	4.1	11.5	0.1	0.1	0.1	12.1
75 percentile	14.9	15.7	16.3	0.2	1.9	0.4	16.3
97.5 percentile	18.4	19.3	18.7	6.2	18.2	16.7	18.4
CV	0.9	1.0	0.9	2.8	1.8	2.2	0.9

Table 19. Iron (2m Composite) Statistics

Statistic	Blue Mountain	Boundary	Manuka	Pothole	Bimble	Belah	Manuka-Boundary
Samples	120	4052	3967	150	1242	628	120
Minimum	0.0	0.0	0.0	0.2	0.1	0.1	0.1
Maximum	28.5	33.1	41.2	22.7	36.9	37.7	30.6
Mean	5.1	5.6	5.0	3.1	3.9	4.2	5.8
Standard deviation	5.0	4.6	4.9	4.7	4.8	6.0	5.1
25 percentile	2.0	2.7	2.7	0.4	1.0	0.5	3.5
50 percentile	3.7	4.5	3.9	1.0	2.6	1.8	4.4
75 percentile	6.7	7.0	5.3	2.9	4.6	4.9	6.0
97.5 percentile	16.3	15.8	16.4	15.3	15.0	18.0	18.0
CV	1.0	0.8	1.0	1.5	1.2	1.4	0.9

Table 20. Sulphur (2m Composite) Statistics

Statistic	Blue Mountain	Boundary	Manuka	Pothole	Bimble	Belah	Manuka-Boundary
Samples	99	3967	3869	144	1211	618	119
Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Maximum	22.7	34.6	13.8	3.7	20.8	7.5	13.8
Mean	2.6	1.0	0.2	0.3	0.9	0.3	1.1
Standard deviation	3.7	2.5	0.7	0.5	1.9	0.9	2.3
25 percentile	0.2	0.1	0.0	0.0	0.0	0.0	0.0
50 percentile	1.2	0.2	0.1	0.1	0.1	0.0	0.1
75 percentile	3.5	0.8	0.2	0.2	0.7	0.1	1.1
97.5 percentile	9.5	6.4	1.2	1.4	5.3	2.3	6.7
CV	1.5	2.5	2.6	2.0	2.1	3.1	2.1

Table 21. Mercury (2m Composite) Statistics

Statistic	Blue Mountain	Boundary	Manuka	Bimble	Pothole	Belah	Manuka-Boundary
Samples	134	708	1661	102	506	164	145
Minimum	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Maximum	0.0	320.5	292.0	33.5	237.0	251.0	28.4
Mean	0.0	12.8	10.2	5.1	21.0	11.1	2.9
Standard deviation	0.0	20.5	18.5	5.2	28.7	21.3	5.1
25 percentile	0.0	3.0	2.3	2.0	4.5	3.0	0.0
50 percentile	0.0	7.4	4.5	3.6	10.0	6.0	0.0
75 percentile	0.0	15.2	10.5	5.6	26.4	13.5	3.3
97.5 percentile	0.0	44.9	41.8	16.1	82.9	34.3	15.2
CV	0.0	1.6	1.8	1.0	1.4	1.9	1.7

Table 22. Elemental analysis relative to the number of silver assays.

Element relative to silver	Blue Mountain	Boundary	Manuka	Pothole	Bimble	Belah	Manuka-Boundary
# Ag assays	134	4168	3890	150	1291	654	145
Pb	100%	100%	79%	100%	100%	100%	100%
Zn	100%	41%	68%	100%	74%	82%	87%
Ca	75%	96%	99%	100%	94%	93%	79%
Fe	90%	97%	99%	100%	96%	96%	83%
S	74%	95%	99%	96%	94%	94%	82%
Hg	0%	17%	43%	68%	39%	25%	100%

9.6.5 Grade Capping

Capping is the process of reducing the grade of the outlier sample to a value that is representative of the surrounding grade distribution. Reducing the value of an outlier sample grade minimises the overestimation of adjacent blocks in the vicinity of an outlier grade value. At no stage are sample grades removed from the database if grade capping is applied.

Detailed grade capping analysis based on histograms, log probability plots, and descriptive statistics assess how the mean, CV, and metal content changes with varying grade caps. The detailed results for the Wonawinta deposits are presented in Table 23 (Silver), Table 24 (Lead), Table 25 (Zinc), Table 26 (Calcium), Table 27 (Iron) and Table 28 (sulphur). The various grade distributions were considered, and domains were assessed in conjunction with neighbouring domains and capped at similar values where warranted, such as Calcium domains are all capped at 25% Ca. Grade capping assessment was not carried out on oxidised and fresh data separately.

Table 23. Silver Grade Caps

	Uncapped Composite Data				Capped Composite Data				Grade	
Domain	Count	Mean	Maximum	CV	# Capped	Mean	Cap	CV	% Cap	% Δ
Blue Mountain	134	25.4	158.1	0.92	4	24.6	92.1	0.8	2.99%	-3.2%
Boundary	4168	49.6	1960.0	1.67	84	46.1	269.6	1.2	2.02%	-7.1%
Manuka-Boundary	145	37.66	488.40	1.35	3	35.31	191.7	1.0	2.07%	-6%
Manuka	3890	57.7	2042.5	1.61	78	54.0	318.8	1.2	2.01%	-6.3%
Pothole	150	39.7	325.0	1.47	4	38.5	249.3	1.4	2.67%	-3.1%
Bimble	1291	45.2	807.0	1.34	33	43.0	228.1	1.1	2.56%	-4.8%
Belah	654	45.8	540.0	1.38	17	42.9	227.3	1.1	2.60%	-6.3%

Table 24: Lead Grade Caps

	Uncapped Composite Data				Capped Composite Data				Grade	
Domain	Count	Mean	Maximum	CV	# Capped	Mean	Cap	CV	% Cap	% Δ
Blue Mountain	134	0.4	2.6	1.06	2	0.4	1.6	1.0	1.49%	-2.5%
Boundary	4168	0.68	8.37	1.27	84	0.66	3.4	1.1	2.02%	-4%
Manuka-Boundary Pb	145	0.47	7.28	1.45	3	0.43	1.7	0.8	2.07%	-10%
Manuka	3072	0.87	9.49	1.29	77	0.83	4.2	1.2	2.51%	-4%
Pothole	150	0.55	5.45	1.29	3	0.53	2.6	1.1	2.00%	-4%
Bimble	1291	0.94	10.83	1.24	26	0.91	4.6	1.1	2.01%	-3%
Belah	654	1.11	14.21	1.56	17	1.03	5.8	1.3	2.60%	-7%

Table 25. Zinc Grade Caps

	Uncapped Composite Data				Capped Composite Data				Grade	
Domain	Count	Mean	Maximum	CV	# Capped	Mean	Cap	CV	% Cap	% Δ
Blue Mountain	134	0.41	8.35	2.22	2	0.38	4.4	1.8	1.49%	-8%
Boundary	1721	0.38	5.43	1.37	26	0.37	2.1	1.3	1.51%	-3%
Manuka-Boundary	126	0.31	1.51	1.11	2	0.31	1.4	1.1	1.59%	0%
Manuka	2626	0.49	11.48	1.52	27	0.48	3.6	1.4	1.03%	-3%
Pothole	150	0.34	3.70	2.07	3	0.33	3.1	2.0	2.00%	-2%
Bimble	961	0.76	15.61	1.93	15	0.70	5.6	1.5	1.56%	-8%
Belah	535	0.31	8.83	2.08	9	0.29	2.6	1.7	1.68%	-6%

Table 26. Calcium Grade Cap Details

	Uncapped Composite Data				**Capped Composite Data**				**Grade**	
Domain	Count	Mean	Maximum	CV	# Capped	Mean	Cap	CV	% Cap	% Δ
Blue Mountain	100	7.9	20.3	0.92	1	7.9	20.2	0.9	1.00%	-0.02%
Boundary	4010	7.52	29.40	1.03	5	7.52	27.0	1.0	0.12%	-0.01%
Manuka-Boundary	114	8.90	23.20	0.88	2	8.87	19.9	0.9	1.75%	-0.33%
Manuka	3868	8.95	24.10	0.85	4	8.95	22.4	0.9	0.10%	-0.01%
Pothole	150	0.86	13.50	2.76	1	0.86	13.5	2.8	0.67%	-0.01%
Bimble	1216	3.41	29.16	1.84	2	3.41	28.1	1.8	0.16%	-0.03%
Belah	607	2.19	22.30	2.25	1	2.19	21.8	2.2	0.16%	-0.04%

 # all calcium domains were capped at 25% Ca.

Table 27. Iron Grade Cap Details

Domain	Uncapped Composite Data				Capped Composite Data				Grade	
	Count	Mean	Maximum	CV	# Capped	Mean	Cap	CV	% Cap	% Δ
Blue Mountain	134	5.1	28.5	0.98	2	5.0	20.5	0.9	1.49%	-1.8%
Boundary	4168	5.6	33.1	0.82	62	5.5	20.6	0.8	1.49%	-1.0%
Manuka-Boundary	120	5.75	30.60	0.89	2	5.67	24.2	0.8	1.67%	-2%
Manuka	3849	5.0	41.2	0.98	100	4.9	19.8	0.9	2.52%	-3.4%
Pothole	150	3.1	22.7	1.51	1	3.1	20.2	1.5	0.67%	-0.5%
Bimble	1242	3.9	36.9	1.22	19	3.8	20.4	1.1	1.53%	-2.8%
Belah	628	4.2	37.7	1.41	10	4.1	25.6	1.4	1.59%	-1.9%

Table 28. Sulphur Grade Cap Details

Domain	Uncapped Composite Data				Capped Composite Data				Grade	
	Count	Mean	Maximum	CV	# Capped	Mean	Cap	CV	% Cap	% Δ
Blue Mountain	99	2.57	22.70	1.46	1	2.55	20.5	1.4	1.01%	-1%
Boundary	3967	1.02	34.55	2.47	60	0.95	10.8	2.1	1.51%	-7%
Manuka-Boundary	119	1.10	13.84	2.07	2	1.07	9.7	2.0	1.68%	-3%
Manuka	3869	0.25	13.84	2.65	39	0.22	2.6	1.9	1.01%	-10%
Pothole	144	0.27	3.66	2.00	2	0.27	3.1	1.9	1.39%	-2%
Bimble	1211	0.92	20.84	2.07	13	0.88	7.7	1.9	1.07%	-4%
Belah	618	0.28	7.49	3.15	10	0.26	4.1	2.9	1.62%	-8%

9.7 VARIOGRAPHY

The most important bivariate statistic used in geostatistics is the semi-variogram. The experimental semi-variogram is estimated as half the average of squared differences between data separated exactly by a distance vector 'h'. Semi-variograms models used in grade estimation should incorporate the main spatial characteristics of the underlying grade distribution at the scale at which mining is likely to occur.

The semi-variogram analysis was undertaken for individual elements within each major domain that contain sufficient data to allow a semi-variogram to be generated.

Variogram analysis was conducted in unfolded space or folded space as appropriate to the estimation technique applied to each domain. The experimental variogram containing the clearest structure and greatest difference in range between each direction was selected for use in model fitting where possible. Variogram shapes were modelled using a nugget and several spherical models to mimic the experimental variogram. The key to variogram modelling is parsimony - one should model variograms with as few structures as necessary to describe the continuity (Coombes, 1997). Directional variography also defines the anisotropy of the mineralisation, generally mineralisation is more continuous in a preferred directions, e.g. along strike. The anisotropy is modelled as an ellipse and is described as ratios of the major axis to the semi-minor and minor axis.

The variogram modelling process using variables is described as follows:

- Experimental variograms with small lags orientated down hole to aid interpretation of the nugget effect.
- Generate a variogram map, computing 18 directions in the reference plane and normal to the reference plane.
- Directional variogram with 2 directions in reference plane (down dip) oriented parallel to the average orientation of the wireframe models of each domain, plus variogram normal to the plane (across strike).

Transformed variograms (log and normal scores) were cross checked with the normal variograms in a bid to elucidate subtle structures. Where normal score transformed variograms were chosen as significantly more clear than normal (un-transformed) variograms the variogram models were back transformed.

Specific variograms relating to silver were able to be generated for within Boundary, Manuka, Bimble and Belah. The variogram model parameters for silver are presented in Table 29.

The silver mineralisation at Pothole was estimated using an average of the silver variograms, Blue Mountain utilised the variogram for Boundary. Orientations for the variograms (Table 35) were either modelled or adopted based on the general strike of the mineralisation at the specific deposit.

Lead Zinc, Iron and Sulphur Variography (Table 30, Table 31,Table 32 and Table 33 respectively) focused on the four main deposits, Boundary, Manuka, Bimble and Belah. The variograms for Blue Mountain, Manuka-Boundary Pothole were borrowed were assigned an average variogram.

Variograms generated within the oxide profiles were used to interpolate the respective elements into the fresh domains.

Table 29. Variogram Parameters – Silver

Domains	Variogram Parameters					1st anisotropic ratios		2nd anisotropic ratios	
Silver	C0	C1	A1	C2	A2	semift1	minorft1	semift2	minorft2
Blue Mountain	0.3	0.7	150			1.50	1.88		
Boundary	0.52	0.34	18.5	0.14	95	1.00	1.00	1.06	1.46
Manuka-Boundary	0.5	0.32	30	0.18	220	1.00	1.00	2.20	3.38
Pothole	0.71	0.229	34			1.00	1.00		
Bimble	0.35	0.28	70	0.36	100	1.13	1.75	1.33	1.67
Belah	0.4	0.32	65	0.28	120	1.63	2.17	1.33	1.71
Manuka -Boundary	0.3	0.7	150			1.50	1.88		

Table 30. Variogram Parameters – Lead

Domains	Variogram Parameters					1st anisotropic ratios		2nd anisotropic ratios	
Lead	C0	C1	A1	C2	A2	semift1	minorft1	semift2	minorft2
Blue Mountain	0.3	0.7	150			1.50	1.88		
Boundary	0.3	0.37	25	0.33	92	1.25	1.39	1.15	1.53
Manuka	0.2	0.55	26	0.25	78	1.73	2.17	1.63	2.29
Pothole	0.71	0.229	34			1.00	1.00		
Bimble	0.12	0.4	100	0.48	150	1.33	2.00	1.50	2.00
Belah	0.12	0.4	56	0.48	100	1.40	2.80	1.11	2.00
Manuka -Boundary	0.3	0.7	150			1.50	1.88	1.00	1.00

Table 31. Variogram Parameters - Zinc

Domains	Variogram Parameters					1st anisotropic ratios		2nd anisotropic ratios	
Zinc	C0	C1	A1	C2	A2	semift1	minorft1	semift2	minorft2
Blue Mountain	0.3	0.7	150			1.50	1.88	1.00	1.00
Boundary	0.1	0.25	10	0.65	180	1.25	1.67	1.38	2.25
Manuka - Boundary	0.25	0.47	67	0.28	275	1.68	2.79	1.62	3.06
Pothole	0.71	0.229	34			1.00	1.00		
Bimble	0.1	0.9	180			1.80	2.40		
Belah	0.4	0.6	100			1.25	1.67		
Manuka - Boundary	0.3	0.7	150			1.50	1.88		

Table 32. Variogram Parameters - Iron

Domains	Variogram Parameters					1st anisotropic ratios		2nd anisotropic ratios	
Iron	C0	C1	A1	C2	A2	semift1	minorft1	semift2	minorft2
Blue Mountain	0.15	0.37	94	0.48	280	1.79	1.98	1.97	2.61
Boundary	0.15	0.49	31	0.36	170	1.55	1.55	1.70	2.13
Manuka-Boundary	0.1	0.4	172	0.5	500	2.46	2.46	4.20	4.20
Pothole	0.15	0.37	94	0.48	280	1.79	1.98	1.97	2.61
Bimble	0.05	0.22	95	0.73	192	1.58	1.58	1.28	1.28
Belah	0.05	0.37	80	0.58	260	1.33	2.00	1.30	3.25
Manuka - Boundary	0.15	0.37	94	0.48	280	1.79	1.98	1.97	2.61

Table 33. Variogram Parameters - Sulphur

Domains	Variogram Parameters					1st anisotropic ratios		2nd anisotropic ratios	
Sulphur	C0	C1	A1	C2	A2	semift1	minorft1	semift2	minorft2
Blue Mountain	0.2	0.28	29	0.52	122	1.26	1.26	1.53	1.53
Boundary	0.2	0.8	300			2.00	3.00	1.00	1.00
Manuka-Boundary	0.2	0.28	29	0.52	122	1.26	1.26	1.53	1.53
Pothole	0.2	0.28	29	0.52	122	1.26	1.26	1.53	1.53
Bimble	0.1	0.9	120			1.20	1.50	1.00	1.00
Belah	0.1	0.29	42	0.61	160	2.00	3.00	2.00	3.20
Manuka - Boundary	0.2	0.28	29	0.52	122	1.26	1.26	1.53	1.53

Variograms for Mercury were poorly defined, in part due to the lack of Hg analysis outside of Manuka Pit, Table 34 shows the Manuka Mercury variogram and assigned variogram for all other deposits.

Table 34. Variogram Parameters - Mercury

Domains	Orientation			Variogram Parameters			1st anisotropic ratios	
Mercury	Bearing	Plunge	Dip	C0	C1	A1	semift1	minorft1
Boundary, Bimble, and Belah	330	-2	10	0.3	0.7	130	1.44	1.63
Manuka	330	-1.72	9.8	0.2	0.8	130	1.44	1.63

Where variogram maps showed good continuity the variogram were orientated accordingly, where variogram maps showed on clear continuity the direction of strike was selected. Table 35 summarises variogram and search ellipse orientations for Silver, Lead and Zinc. Table 36 summarises orientation of variograms and search ellipses for Iron and Sulphur.

Table 35. Variogram Orientations in unfolded space- Ag, Pb & Zn.

	Silver			Lead			Zinc		
Deposit	Bearing	Plunge	Dip	Bearing	Plunge	Dip	Bearing	Plunge	Dip
Blue Mountain	303.5	-7.6	10	303.5	-7.6	10	303.5	-7.6	10
Boundary	270	-9.4	3.5	238.8	-18.7	-7.1	350	-6.4	20
Manuka	330	0	10	151.7	39.2	-77	348.9	39.3	77
Pothole	0	90	20	0	90	20	0	90	20
Bimble	50	0	10	10.1	1.7	-9.9	35	8.6	59.6
Belah	19.4	-3.4	-19.7	70	1.7	9.8	237.2	18.9	16.6
Bumble	340	5	3.5	303.5	-7.6	10	303.5	-7.6	10
Manuka -Boundary	303.5	-7.6	10	303.5	-7.6	10	303.5	-7.6	10

Table 36. Variogram Orientations in unfolded space- Fe & S.

	Iron			Sulphur		
Deposit	Bearing	Plunge	Dip	Bearing	Plunge	Dip
Blue Mountain	330	-3	-10	310.3	-3	-90
Boundary	331.1	6.7	-18.8	10	0	10
Manuka	330.1	-1.73	9.9	310.3	-3.4	9.4
Pothole	120	-3	-6	120	-3.4	-9.4
Bimble	30.1	-1.7	9.8	279.6	-8.6	-5
Belah	170	0	40	359.85	-1.73	-9.85
Bumble	330	-3	-10	310.3	-3.4	9.4
Manuka -Boundary	330	-3	-10	310.3	-3.4	9.4

9.8 GRADE ESTIMATION

Kriging techniques were used to estimate grade into parent blocks; estimation was constrained by the mineralisation boundaries and base of oxidation wireframes. Soft boundaries were applied to individual domains (deposit boundaries).

Kriging techniques was used to estimate into large parent blocks in unfolded space. The 3D in-situ model utilised sub blocks to represent the volume between prescribed DTMs. Grade was imported from the unfolded model into the in-situ 3D parent blocks and mirrored in the flagged sub-blocks, leaving the corresponding in-situ waste sub-blocks barren.

Results of the Krige estimation were validated against raw informing data and estimates by nearest neighbour and inverse distance weighting.

9.8.1 Methodology

Ordinary kriging ("OK") is a robust grade estimation technique and is the main algorithm used in geostatistics. The most common use of OK is to estimate the average grade into blocks approximating half the scale of the available drill hole spacing, the estimated block size is adjusted to reflect the relative drill densities of the deposit areas. OK is a globally unbiased estimator that produces the least error variance for grade estimates.

Kriging is also able to accommodate anisotropy within the data and is able to incorporate this in block estimates. Another important feature of kriging is that it automatically deals with clustering of data which is important in areas where the data density is not uniform. Kriging forms a sound basis for generating block grade estimates at a scale which is appropriate to the sample density.

Inverse distance and nearest neighbour estimates were also run for cross validation checks within domains.

The mineralisation envelope was unfolded and Ag, Pb, Zn, Fe and S estimated in unfolded space.

9.8.2 Folding and unfolding

The resource estimation for the dominant mineralised zone was done in 'unfolded' space which maintains the zones internal layering irrespective of zone thickness or orientation.

This approach:

- Preserves the lodes profile characteristics (both horizontally and vertically) irrespective of thickness.
- Constrains informing samples for estimation to the zone required and improves stationarity/domaining concerns.
- Converts real RL to a relative position.

Unfolding is an advancement of the 2D gridded model technique. A 2D gridded model is often the preferred method of estimation for laterally extensive deposits. Sometimes several (stacked) gridded models are used to model the different vertical lodes individually. Unfolding is a technique designed to allow more accurate analysis of grade continuity within an undulating or folded mineralisation by honouring variations in the third dimension, and is well suited to an MVT such as the Wonawinta silver-lead-zinc deposit. Unfolding maintains relative position during the unfolding process.

The process is summarised in the following steps:

- The spatial position of the blocks to be estimated and the informing samples is determined relative to the footwall and hanging wall of the zone. The original positions are shown in the top image for each example in
- The midpoints of the blocks and informing samples are moved to a relative position, strictly vertically, but with the lodes still stacked one above the other. This is shown in the lower image in Figure 9. The absolute thickness of each lode therefore becomes a relative thickness.
- Carry out variography analyses and perform interpolations into blocks.
- Back-transform the blocks to their original positions.

The relative method of unfolding is used at Wonawinta as the vertical variation in the profile is controlled by the clay/limestone stratigraphic contact and oxidation state, and is largely independent of thickness.

Relative unfolding proportionally matches up the hanging wall, middle and footwall of each deposit even if there are rapid changes in thickness. The conversion of the real RL to a relative position of both the informing samples and the block centroids honours both the original sample support and block variance, thus maintaining kriging efficiency.

The result is to maintain the profile as seen in the drill data in the resultant 3D block model, undulating footwall contact and the detail within the zones.

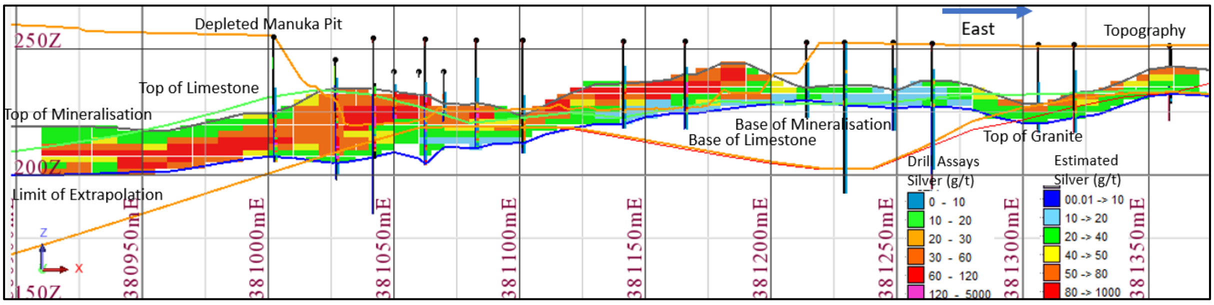


Figure 8. Wonawinta folded Block Model and informing samples (6,433,040 mN±10m).

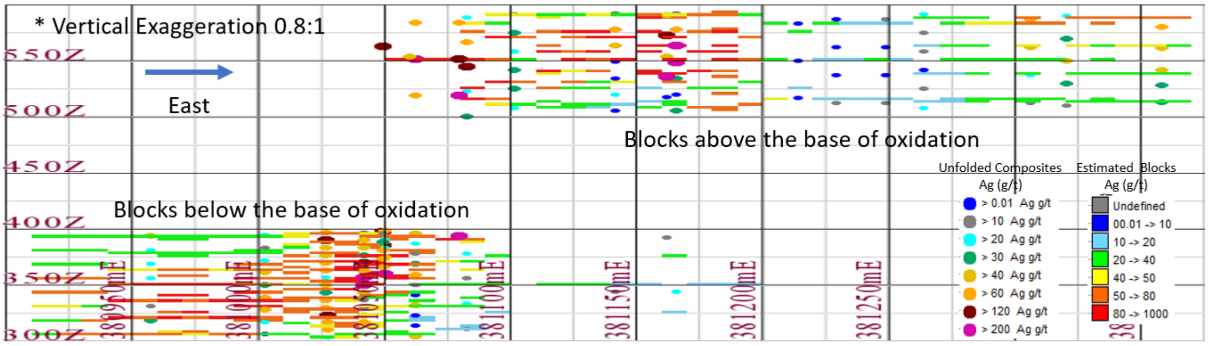


Figure 9. Wonawinta unfolded model and informing samples (6,433,040 mN±10m)

9.8.3 Block Model

The block model is orientated perpendicular to grid, the regional geology is dominantly north-south aligned negating the use of local grid or rotated block model. The parent block size was selected to best represent the available data, the data characteristics (variability as defined by variography) and the envisaged mining practises. The block model dimensions are outlined in Table 37. Block size selected was 20 m x 20 m in XY direction and 2.5 m in Z. The size reflects half the drill hole spacing within reasonably drilled areas. Sub-blocking was permitted down to 5 m x 5 m x 2.5 m to reflect the likely smallest mining unit.

Table 37. Block model origins.

Type	Y	X	Z
Minimum Coordinates	6429000	379700	125
Maximum Coordinates	6437000	383540	325
User Block Size	20	20	2.5
Min. Block Size	5	5	2.5

9.8.4 Block Model Attributes

A block model stores numerous variables (Table 38) either estimated or directly assigned. The grade variables (silver, calcium, iron, lead, sulphur and zinc) were estimated using OK. Associated statistics are stored (average distance to informing samples, distance to nearest sample and number of informing samples, krige variance, krige efficiency and conditional bias slope). The topography, weathering, lithology, mined code and density were assigned to blocks using digital terrain models. Deposit and pit areas were assigned by polygons.

Table 38. Block Model Attributes

Attribute Name	Type	Decimals	Default	Description
ag_id	Float	4	0	silver inverse distance estimate capped
ag_nn	Float	4	0	silver nearest neighbour estimate capped
ag_ok	Float	4	0	silver ordinary krige estimate capped
ag_un	Float	4	0	silver ordinary krige estimate uncapped
ca_id	Float	4	0	calcium inverse distance estimate capped
ca_ok	Float	4	0	calcium ordinary krige estimate capped
density	Float	2	0	Density
deposit	Character	-	Rock	Mineralisation Domain
fe_id	Float	4	0	iron inverse distance estimate capped
fe_ok	Float	4	0	iron ordinary krige estimate capped
mined	Integer	-	0	1 mined 0 insitu
pb_id	Float	4	0	lead inverse distance estimate capped
pb_nn	Float	4	0	lead nearest neighbour estimate capped
pb_ok	Float	4	0	lead ordinary krige estimate capped
pb_un	Float	4	0	lead ordinary krige estimate uncapped
rescat	Integer	-	-99	Resource classification
rock	Integer	-	0	0=Air 1=oxide clay 2=fresh clay 3=oxide dolostone 4= fresh dolostone 5=Oxidised basement granite or arkose, 6=fr arkose 7=Rock, 8=granite
s_id	Float	4	0	sulphur inverse distance estimate capped
s_ok	Float	4	0	sulphur ordinary krige estimate capped
weathering	Character	-	AIR	FR = FRESH ROCK, OX = OXIDISED ROCK
zn_id	Float	4	0	zinc inverse distance estimate capped
zn_ok	Float	4	0	zinc ordinary krige estimate capped
z_ads	Float	2	0	average distance to samples
z_cbs	Float	2	0	Conditional bias slope
z_dh	Integer	-	0	number of informing drill holes
z_dns	Float	2	0	distance to nearest sample
z_ke	Float	2	0	krige efficiency
z_kv	Float	2	0	krige variance
z_ns	Integer	-	0	number of informing samples
z_ps	Integer	-	0	Estimation pass number

9.8.5 Block Size Selection

9.8.5.1 Declustering

When sample spacing is uneven, or has too many samples close together, such as grade control drilling in a resource definition style drill program, can lead to biased results. Declustering can determine the amount of bias, either by analysing the declustered charts (Figure 10), or by using the weights in basic statistics to calculate a less biased result (declustered mean).

Cell Declustering (Goovaerts, 1997) is where a grid is laid over the data and a weight calculated as the inverse of the number of samples in the cell multiplied by the number of occupied cells. The optimum cell size is determined as that where the declustered mean reaches its lowest point. The following charts (Figure 10) shows the change in average grade using the cell weighting technique to decluster the data.

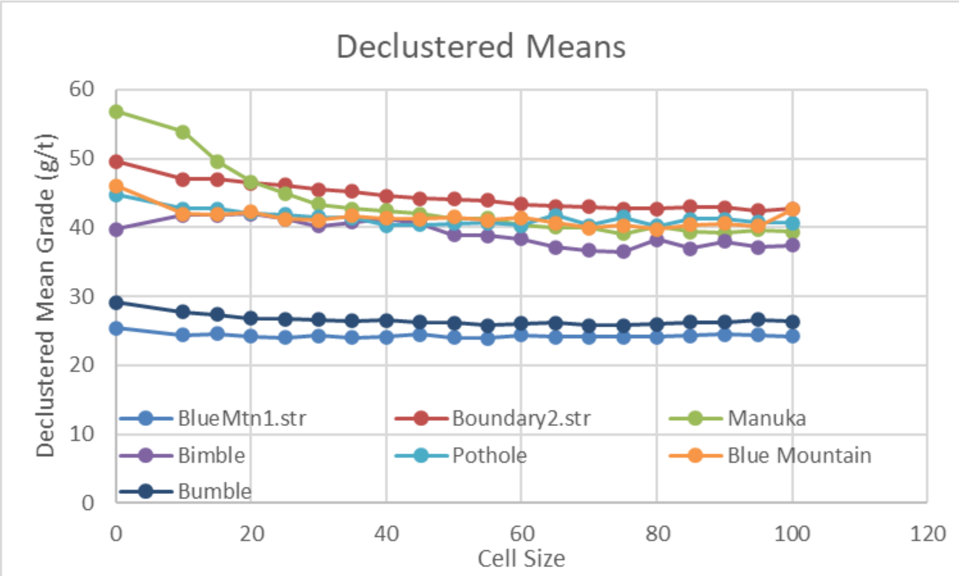


Figure 10. Declustered Averages with varying Cell Size

A variation (Isaaks & Srivastava, 1989) is to weight each sample equally within each cell. The assumption is made that the clustering is in either high or low areas, which is generally the case. A nearest neighbour estimate is also a proxy for declustering data as only one assay (selected as the nearest to the centroid of the block) is assigned to the block, in effect declustering the data.

9.8.5.2 Block Estimation resolution

The Declustered means appear to stabilise at 20m block size indicating this would be a reasonable estimation resolution for blocks (Figure 10). Drill spacing within the project area varies considerably and it is appropriate to vary the estimation resolution (Table 39). In well informed domains where RC grade control exists, an estimation resolution of 10 x 10 x 2.5 was selected as the smallest blocks to estimate. In the regional areas where only exploration drilling has occurred an estimation resolution 40 x 40 x 10 is more appropriate. Estimation was performed within parent blocks; sub-blocks within the mineralised footwall and hanging wall were assigned the value of the parent block.

Table 39. Varied Estimation Resolution

Domain	Estimation Resolution (Ag, Pb, Zn)
Blue Mountain	40 x 40 x 10
Boundary	10 x 10 x 2.5
Manuka-Boundary	40 x 40 x 10
Manuka	10 x 10 x 2.5
Pothole	20 x 20 x 5
Bimble	20 x 20 x 5
Belah	20 x 20 x 5

9.8.6 Search Parameters

The variability in drill hole spacing creates some difficulties in selection of appropriate search criteria. The current estimates include four progressively relaxed search criteria which represent a compromise between providing reasonably robust local estimates and estimating a large proportion of the potentially mineralised areas.

Search radii are generally optimal at or near the distance that the variogram reaches the sill. Variograms show long tails, and relatively steep first structures, the first pass was restricted to a similar range as twice first structure, ensuring the samples closest to the estimation point are utilised. The search distances are then multiplied by the pass number. The fourth pass is to fill the distal blocks and is very rarely included in the Inferred resource category where geological continuity is inferred. A vertical restriction was placed on the ellipse so that samples further than 75 m in unfolded Z direction were not used to inform the blocks. The anisotropic semi major and minor ratios for the search axis are guided by variogram analysis.

Orientations were derived from semi-variogram analysis; the defined search ellipses were generated in Surpac and checked against the respective domains to ensure the parameters observed fitted the geological interpretation. Search parameters are summarised in Table 40. The main considerations (Ag, Pb and Zn) were estimated with the same search ellipse to reduce order relation issues between the individual elements. Fe and S constant anisotropic ratios for all domains.

Table 40. Search Parameters

Deposit	Horizontal Distance	Ag, Pb, Zv Ellipse Ratios		Fe Ellipse Ratios		S Ellipse Ratios		Limit per Hole
		Semi major Axis	Minor Axis	Semi major Axis	Minor Axis	Semi major Axis	Minor Axis	
Blue Mountain	75	1.50	1.88	1.5	1.9	1.4	1.9	4
Boundary	50	1.06	1.46	1.5	1.9	1.4	1.9	3
Manuka	50	2.20	3.38	1.5	1.9	1.4	1.9	3
Pothole	60	1	1	1.5	1.9	1.4	1.9	4
Bimble	60	1.33	1.67	1.5	1.9	1.4	1.9	3
Belah	60	1.33	1.71	1.5	1.9	1.4	1.9	3
Manuka - Boundary	60	1.50	1.88	1.5	1.9	1.4	1.9	4

9.8.7 Informing Samples

Each element was estimated with a minimum of 6 and maximum of 12 samples in pass 1, reducing to 4 and 12 during pass 2 and further reducing to a minimum of 3 and a maximum reduced to 9 for pass 3 and 4 (Table 41).

Table 41: Number of Informing Composites

Pass	One	Two	Three
Min	6	4	3
Max	18	12	9
Search	Ellipsoid	Ellipsoid	Ellipsoid

Most blocks, about 80% for Belah, Bimble and Manuka have a sample within 40 m of their centroid (Figure 11). Boundary include some sparce drilling outside the pit boundary, however most blocks (about 80%) have a sample within 60 m.

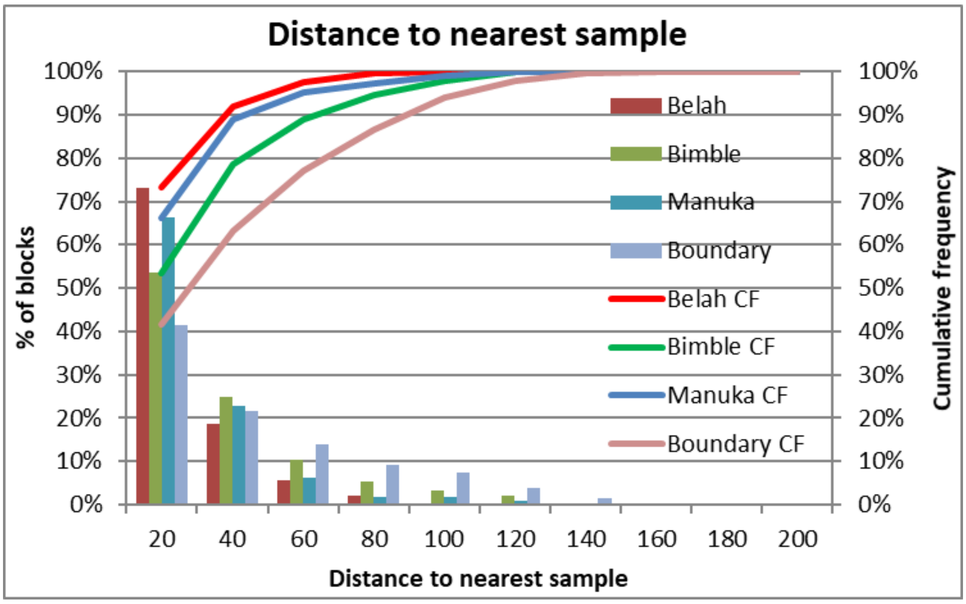


Figure 11. Three selected lodes showing distance to nearest sample.

9.8.8 Discretisation

Discretisation is a means of correcting the krige estimate for the volume variance effect. It is used to give an indication of the size and form of the block to the kriging system. This ensures that the estimates are a good representation of the block throughout the whole block, discretisation points were 4 x 4 x 2 (XYZ).

9.9 VALIDATION AND COMPARISON WITH PREVIOUS ESTIMATES

Block models were validated by visual and statistical comparison of drill hole and block grades and through grade-tonnage analysis. Initial comparisons occurred visually on screen, using extracted composite samples or drill holes in both unfolded space and in 3D space.

9.9.1 Alternate Estimation Methods

Alternate estimation methods were plotted as grade tonnage curves (Figure 12) to ensure the krige estimate was not completely erroneous, such as nearest neighbour and ID^2. The alternate estimates provided expected correlations. Nearest neighbour shows less tonnes and higher grade as it does not employ averaging techniques to assign the block grade. The ID^2 estimate is closer to kriging as it does use averaging weighted by distance, but cannot assign anisotropy nor have the ability to de-cluster the input data or take into account a nugget effect. The ordinary krige estimate is the most reliable due to the technique's ability de-cluster the data and weight the samples based on a variogram, which incorporates anisotropy and nugget effect. The grade tonnage curve for the block model demonstrates the desired smoothing when estimating grade from point data (composites) into blocks, whereby the lower grade material shows an increase and the higher grade material shows a decrease in tonnes.

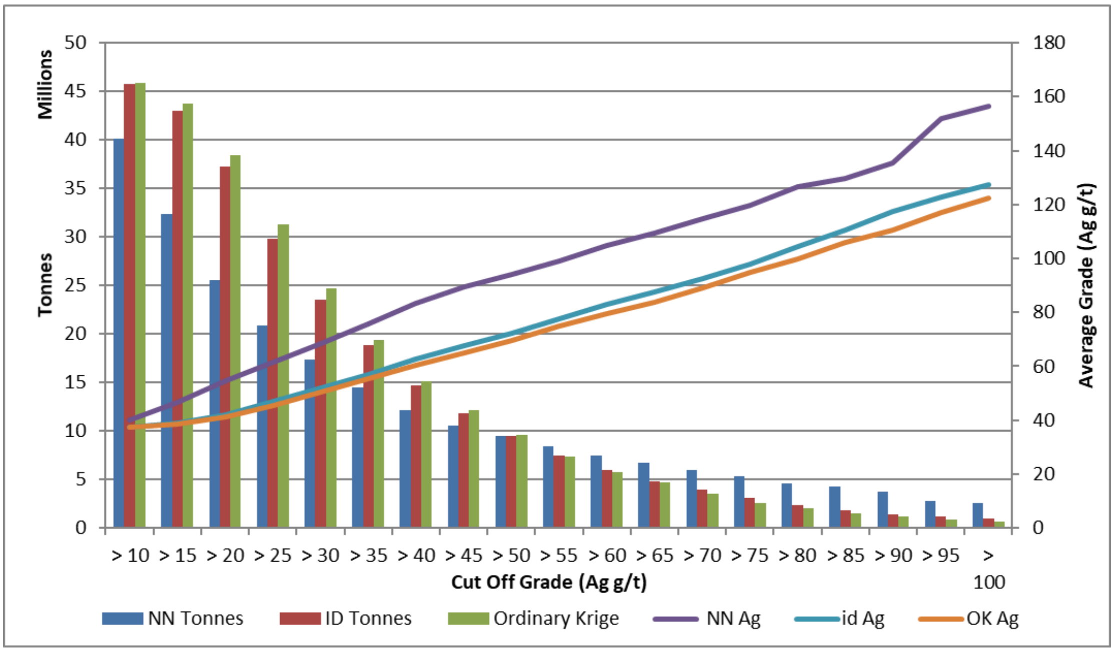


Figure 12. Wonawinta Project Grade tonnage curves (OK, ID² NN)

9.9.2 Global Bias check

A comparison of global mean values within the grade domains shows a reasonably close relationship between composites and block model values (Figure 13, Ag, Figure 14 Pb and S**Error! Reference source not found.**). The Wonawinta project shows a good correlation between informing samples and the estimate. Silver estimates tend to site below the 1:1 line, Lead estimates are closer but show a similar trend.

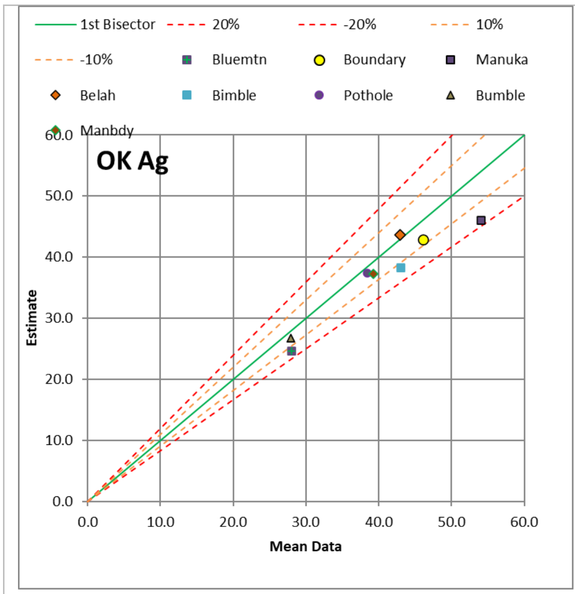


Figure 13. Global validation – Silver domains

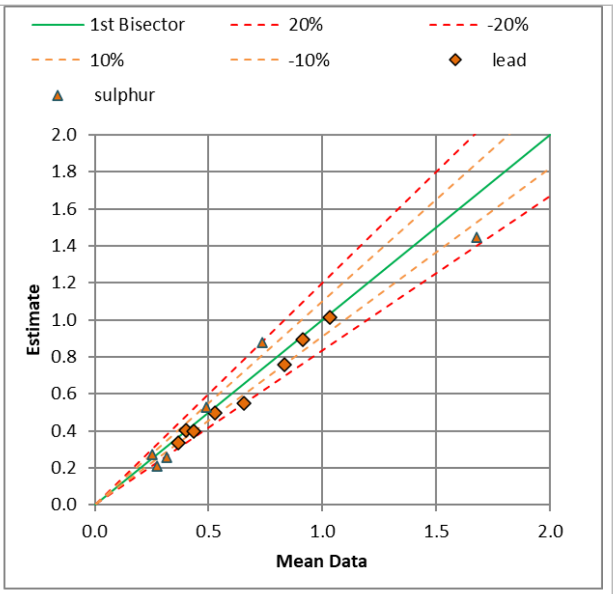


Figure 14. Global Validation – Lead and Sulphur domains

9.9.3 Estimation Pass Check

The estimation pass check is undertaken to ensure that the majority of blocks have been estimated in the first or second pass, and that only a small proportion of blocks have gone beyond the limits of stationarity within the domain (Pass 3 or 4). This has been checked visually and by reporting tonnage and total metal by estimation pass from the block model. Table 42 shows percentage of blocks filled (tonnes) in various passes, compared to the percentage of contained metal for each domain estimated within Pass One.

Table 42:Gold Estimation Pass Summary

Deposit	Pass 1	Pass 2	Pass 3	Pass 4	% contained metal in pass 1
Boundary	43%	38%	65%	21%	49%
Belah	64%	33%	3%	0%	68%
Bimble	61%	34%	11%	1%	65%
Pothole	84%	15%	0%	0%	84%
Manuka	40%	46%	27%	4%	49%
Manuka - Boundary	2%	78%	33%	3%	1%
Boundary	43%	38%	65%	21%	49%
Blue Mountain	1%	54%	187%	21%	1%

Most blocks are estimated within the first pass, except for the poorly drill section between Manuka and boundary and south of boundary, Blue Mountain. The majority of estimated metal resides within the first pass estimates.

9.9.4 Swath Plots

Swath plots were generated on 20m northings for the well drilled domains with grade control spaced RC data, (Figure 15 & Figure 16) 40m swaths for typical resource definition drilling (Figure 17, Figure 18 & Figure 19). The average assay grade and the average estimated gold grade are presented as line graphs (right hand axis) and the bar chart (left hand axis) represents the estimated tonnes per assay within the swath (section). In areas with 20 x 20 m drill patterns with some RC grade control drilling on a 10 x 10 m pattern, the tonnes per composite are less than 5000 t.

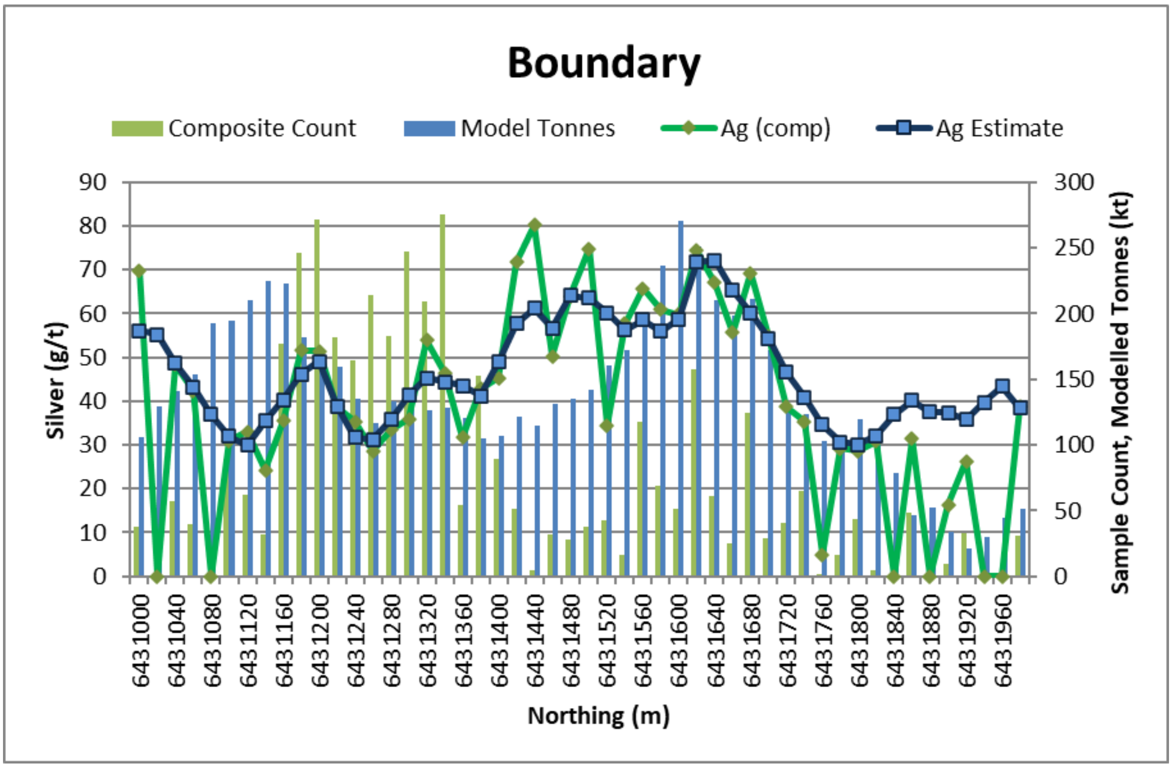


Figure 15. Swath Plot for Boundary (20m Swaths)

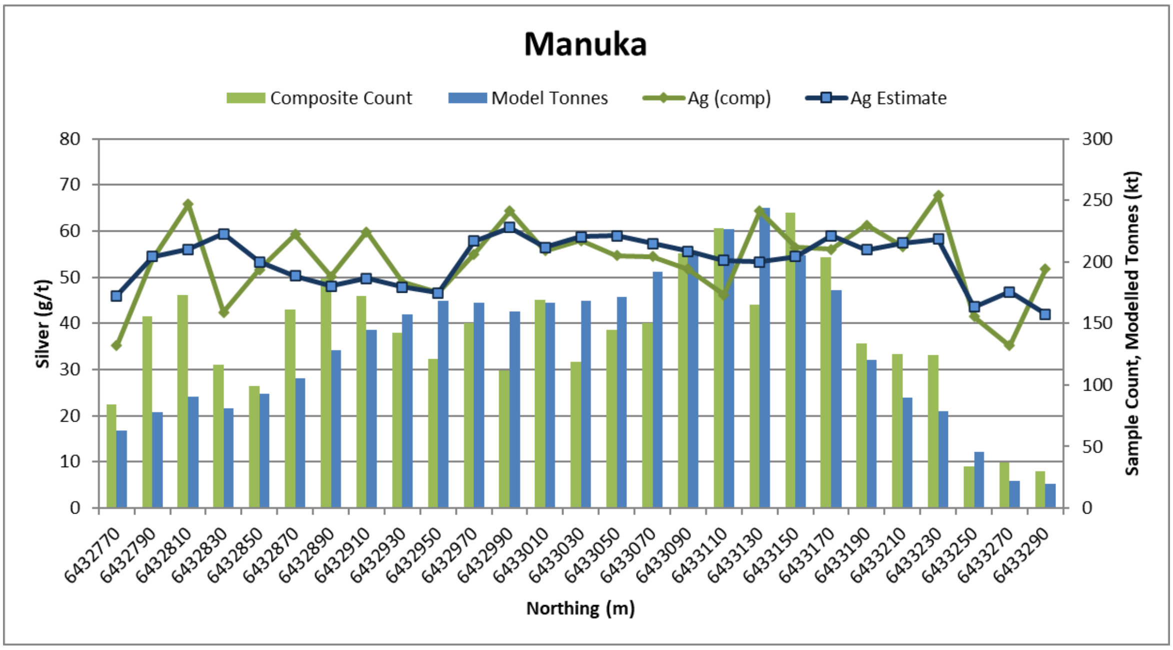


Figure 16. Swath Plot for Manuka (20m Swaths)

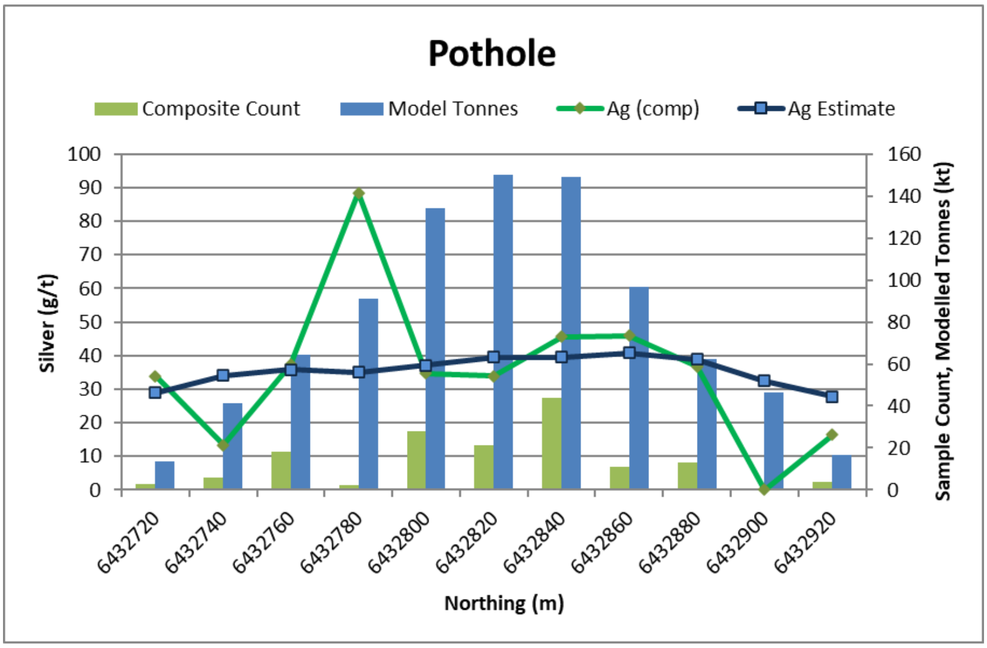


Figure 17. Swath for Pothole (20m swaths)

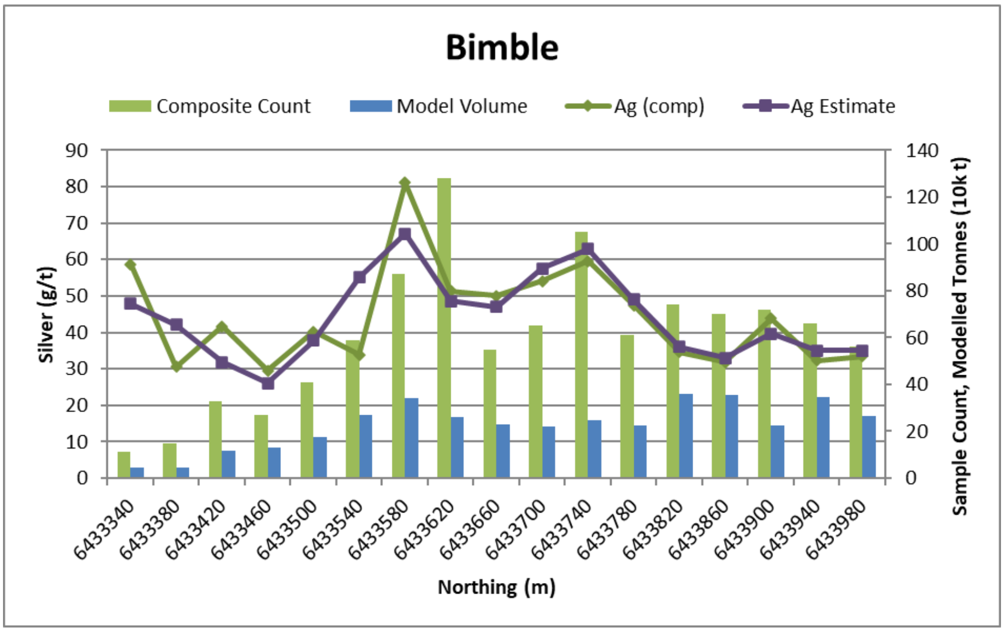


Figure 18. Swath Plot for Bimble (40m Swaths)

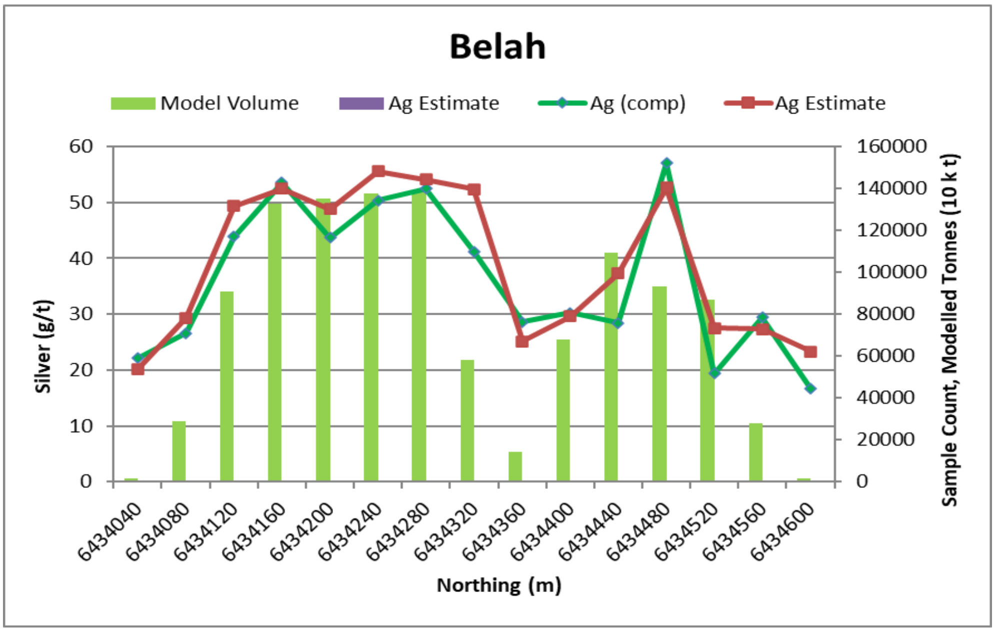


Figure 19. Swath Plot for Belah (40m Swaths)

9.9.5 Comparison with previous estimates

Previous resource estimates presented are an estimate of the quantity, grade and metal of the deposit that has not been verified as a current mineral resource or ore reserve, and which was prepared before MRL into an agreement to acquire an interest in the property that contains the deposit.

The previous MA block model is shown in Table 43 reported above 20 g/t Ag. The current resource is shown in Table 44 above a 20g/t Ag cut off. The MA model reduces the tonnes and marginally increases the grade of both silver and lead, resulting in a reduction of contained silver ounces and an increase in the contained lead tonnes.

Table 43. 2016 MA resource estimate reported at 20g/t

Resource Category	Material (Mt)	Ag (g/t)	Pb (%)	Ag Moz	Pb kt
Measured	0.89	45.0	0.70	1.29	6.22
Indicated	8.50	48.5	0.79	13.24	67.45
Inferred	29.39	40.0	0.55	37.84	162.87
Total	38.77	42.0	0.61	52.37	236.5

Table 44. Current MA 2021 model reported >20g/t Ag

Resource Category	Material (Mt)	Ag (g/t)	Pb (%)	Ag Moz	Pb kt
Measured	1.1	47.3	0.69	1.65	7.5
Indicated	12.3	45.5	0.83	18.04	102.8
Inferred	24.9	39.0	0.39	31.25	96.9
Total	38.3	41.3	0.54	50.94	207.2

9.9.6 Reconciliations

Between 2012 and March 2014 CCR Ltd processed 1,139,187 tonnes of ore to produce 2,109,342 ounces of silver dore, and from March to September 2015, Black Oak Minerals produced approximately 762 koz of silver dore from 350,312 tonnes at an average head grade of 96 g/t Ag (Table 45). Total recorded mine production from the Manuka deposit is 1,911,595 t at 89 g/t for 5,470,885 contained oz of Ag. Mill production is recorded as 1,489,499t at 98 g/t and 77% recovery for a recovered 3,585,051 oz Ag.

Table 45. Mine and mill production (2012 - 2015)

Company	CCR							BOK			
Quarter	Sep Q 2012	Dec Q 2012	Mar Q 2013	Jun Q 2013	Sep Q 2013	Dec Q 2013	Mar Q 2014	Jan Q 2015	Mar Q 2015	Jun Q 2015	Sep Q 2015
Mine production											
Ore mined	129,035	198,765	204,290	236,132	155,624	196,949	177,081	409,742	203,977	-	-
Ore grade – silver	72	90	97	94	92	99	89	85	80	-	-
Contained koz	298.7	575.1	637.1	713.6	460.3	626.9	506.7	1126.2	526.2	-	-
Processing Plant											
Ore processed	75,561	177,919	171,398	199,158	157,995	188,945	168,211	-	30,973	183,934	135,405
Ore grade - silver	83	93	101	89	109	109	96	-	98	98	93
Recovery - silver	90%	81%	79%	80%	73%	77%	77%	-	69%	70%	71%
Recovered Silver koz	181.0	430.9	439.7	455.9	404.2	509.9	399.8	-	67.2	407.0	289.0

The model is depleted for Manuka (Figure 20) and Boundary Pits.

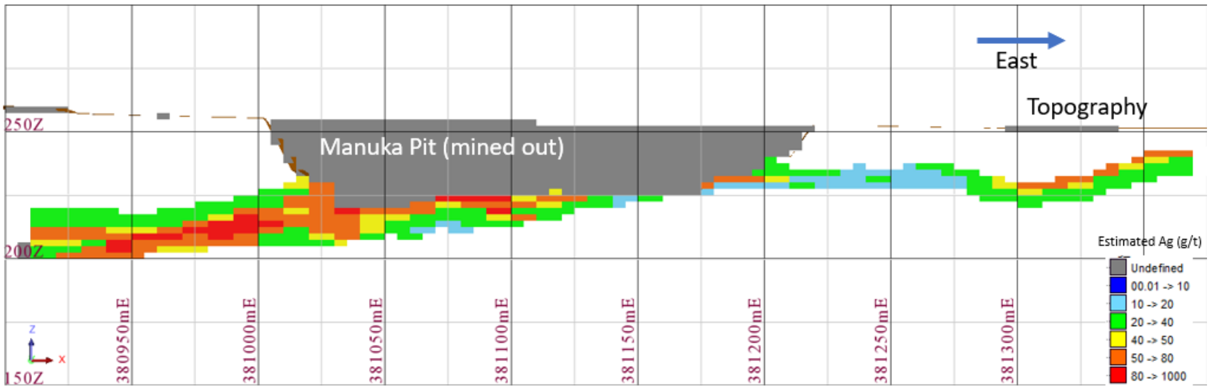


Figure 20. Manuka depleted block model (6,433,040 mN±10m).

9.10 ASSUMPTIONS FOR 'REASONABLE PROSPECTS FOR EVENTUAL ECONOMIC EXTRACTION'

All resources have been stated above a 20g/t Ag cut-off.

Assumptions for reasonable prospects for eventual economic extraction applied to this deposit, include but may not be limited to the following summarised assumptions as provided in Table 46.

- The cost of mining ore and waste has been consolidated against ore tonnes.
- An assumed resource to reserve conversion rate of 70% Strip Ratio of 1.5.
- The assumed mining cost is $6.2 per tonne of ore for an overall average cost of $98.08 million.
- The assumed cost of Administration is $3 per tonne of ore for a total cost of $47.46 million.
- The assumed cost of processing is $16 per tonne of ore for a total of $253.12 million.
- The assumed capital refurbishment and float circuit costs are $40 million and is included in the total cost per tonne of ore.
- The total operating cost of mining, processing and administration is $25.2 per tonne of ore

- Giving reasonable prospects for economic extraction of material above a cut-off 20 g/t Ag

Table 46. Cut-off Grade and Optimisation Assumptions

Parameter	Unit	Value
Mill throughput	Mtpa	1.50
Capital Cost	AUD$/t ore	$ 1.77
Assumed Strip Ratio	t	1:5
General and Admin cost	AUD$/t ore	$ 3.00
Processing cost	AUD$/t ore	$ 16.00
Average mining cost	AUD$/t ore	$ 6.20
Total Cost	AUD$/t ore	$ 26.97
Silver Price	AUD$/Oz	$ 30.00
Lead Price	AUD$/lb	$ 0.90
Zinc Price	AUD$/lb	$ 1.20
Average recovery – Ag		80%
Average recovery – Pb		80%
Average recovery – Zn		80%
Reported Resource cut-off grade (Ag g/t)		20

The breakeven cut-off grade includes all listed costs in Table 46.

The grade tonnage chart for classified resources (depleted to May 2015: no mining has occurred since) at Wonawinta Project is shown in Figure 21.

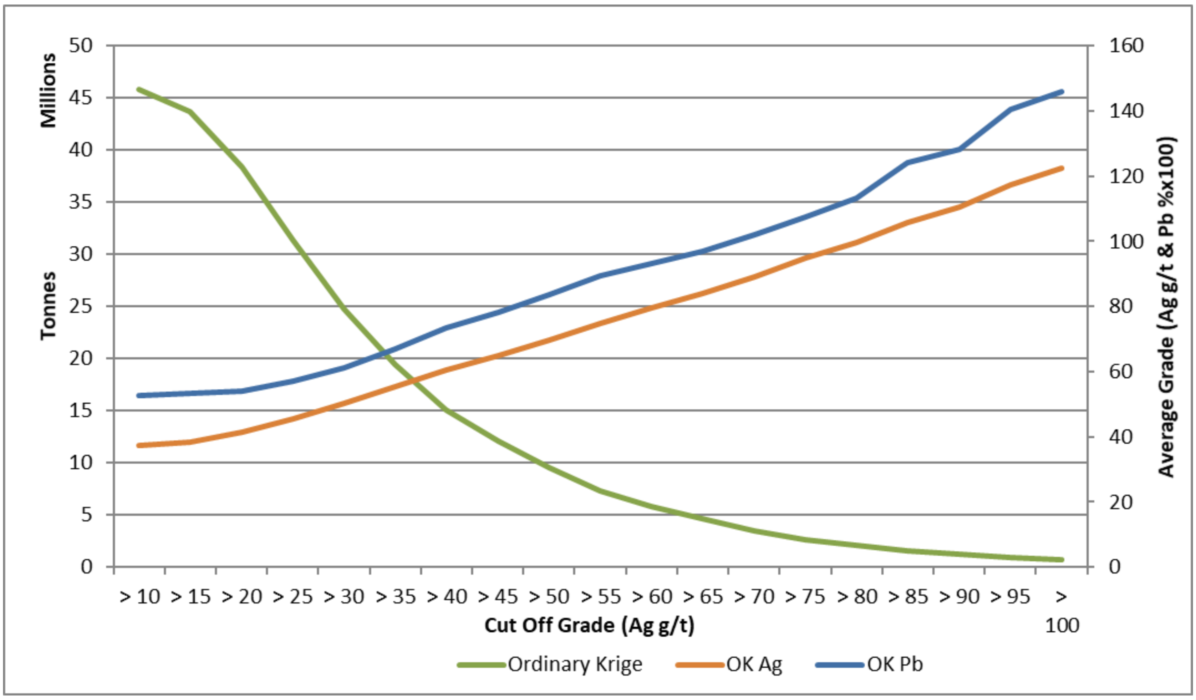


Figure 21. Wonawinta Project Grade Tonnage Chart

9.11 BULK DENSITY

MKR undertook 31 density measurements using the Caliper method as described in Lipton, 2001. Measurements were of oven dried drill core from 13 diamond holes over Bimble and Belah. Readings ranged from 1.69 to 2.74, oxidised and reduced clay samples average 1.96 and fresh samples averaged 2.44.

Bulk density information was taken from previous reports by MPR (2014) and a report summarising the measurement of density data (CCR, 2014). Original bulk density data was not included in the drill hole database and MA was unable to locate it after searching through the supplied digital data.

Density determinations were made on a total of 165 samples of PQ core from CCR drilling in the Boundary deposit area in 2009. Two density measurements were made on each sample:

- In situ bulk density: density of material at natural water content. Used for mining and processing tonnages.
- Dry bulk density: density of material after drying water from voids. Used for resource tonnage calculations.

Measurement of density used the water displacement method, with the samples being measured as is for in situ bulk density, then being oven dried at 120°C to obtain a dry bulk density. Samples were not sealed prior to immersion in water. While this is probably not an issue with clay samples, it is not recorded if any of the fresh dolomite/limestone samples contained solution cavities/voids that would result in over-estimation of density if not accounted for.

Table 47 shows a summary of density measurements by lithology type as compiled by MPR (2014). Limestone is generally under-represented, particularly mineralised oxide limestone, which contributes a large volume to resources.

Table 47. Density measurement summary (from MPR, 2014).

Mineralised Domain	Lithological Domain	Number Samples	Dry Bulk Density (t/m^3)		
			Minimum	Average	Maximum
Waste	Oxide clay	62	1.50	2.02	2.17
	Sulphide clay	9	1.33	1.75	2.12
	Oxide limestone	5	1.60	1.86	2.14
	Sulphide limestone	12	2.61	2.77	3.00
	Subtotal	88	1.33	2.08	3.00
Mineralised (>22 g/t Ag)	Oxide clay	37	1.41	1.94	2.39
	Sulphide clay	11	1.77	2.04	2.32
	Oxide limestone	11	1.94	2.30	2.74
	Sulphide limestone	6	2.19	2.60	2.80
	Subtotal	65	1.41	2.08	2.80
Total	Oxide clay	99	1.41	1.99	2.39
	Sulphide clay	20	1.33	1.91	2.32
	Oxide limestone	16	1.60	2.16	2.74
	Sulphide limestone	18	2.19	2.71	3.00
	Subtotal	153	1.33	2.08	3.00

MPR (2014) produced a plot of density versus silver grade grouped by lithotype (Figure 22). This showed no clear association between silver grade and density, although there are too few samples for the interpretation to be conclusive. A simple association between silver and density is unlikely in any case given the quantities of silver bearing minerals even at high silver grades (eg >100 g/t). A correlation between density and combined iron, lead and zinc would be more likely because these elements will form minerals with higher density than the gangue.

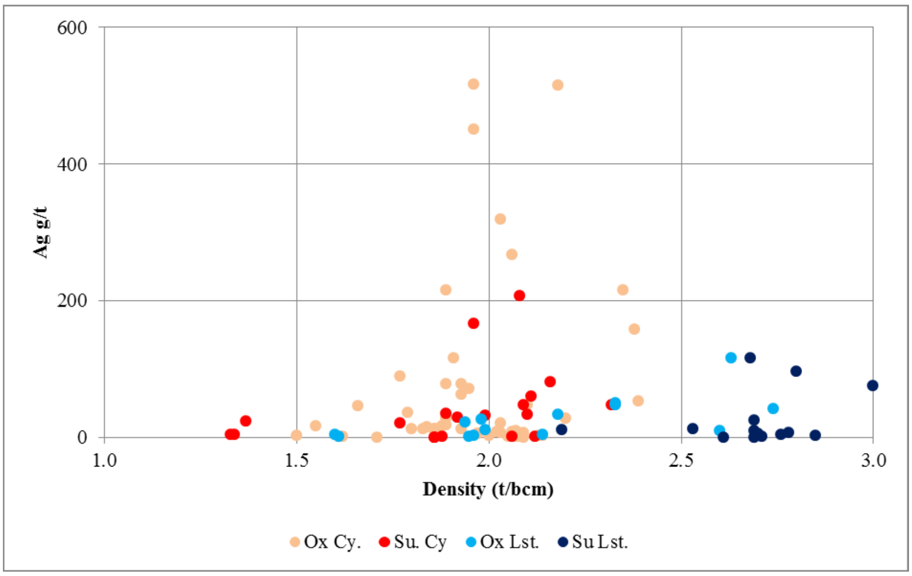


Figure 22. Silver grade versus dry bulk density (from MPR, 2014).

Table 48 shows the dry bulk densities applied to the current resource estimate by lithotype and oxidation state.

Table 48. Dry bulk densities applied to resource estimate

Lithotype	Dry bulk density (t/m^3)
Oxide Clay	2.0
Sulphide Clay	2.0
Oxide Limestone	2.2
Sulphide Limestone	2.6

The CCR and MRK density results are agree and in MA's opinion the average density measurements are adequate for defining mineral resources. However, in any localised areas of high lead, zinc and iron grades they are likely to under-estimate tonnages slightly. In addition, zones of limestone containing higher proportions of voids in the form of vughs/cavities may have over-estimated tonnages.

9.12 MOISTURE

Moisture contents were determined by weight differences between in-situ and oven dried samples as part of the density determination procedure described above. In addition, CCR undertook moisture determinations on 21 RC samples from Boundary, within the area of previous core drilling.

Average moisture content of clay lithotypes varied between 12% and 15% for core samples and 7% and 12% for RC samples. Moisture content in limestone was around 4% for core and 1% for RC. The reasons for the discrepancies between samples were not understood by CCR. Possible explanations include increase in core moisture contents from drilling fluids and loss of moisture in RC due to partial drying by hot compressed air during drilling. Higher moisture content in limestone core samples may have also been due to the presence of solution cavities destroyed by RC drilling.

9.13 MINING & METALLURGICAL FACTORS

No mining factors have been applied to the in-situ grade estimates for mining dilution or loss as a result of the grade control or mining process. No metallurgical factors have been applied to the in-situ grade estimates.

9.13.1 Mining Depletion

The block model utilised an attribute names "mined" to store depletion, with blocks that are still available for exploitation assigned the value 0. The resource category attribute for mined material was assigned a value of 5. Open pit workings were surveyed by BOK survey staff and stored as Surpac digital terrain models (DTMs) asbuilt_manuka150503.dtm and asbuilt_boundary140331.dtm. MA understands no mining was carried out at the Wonawinta Project after these dates.

9.14 RESOURCE CLASSIFICATION

Based on the study herein reported, delineated mineralisation of the Wonawinta Project is classified as a resource according to the definitions from JORC Code standards:

A 'Mineral Resource' is a concentration or occurrence of solid material of economic interest in or on the Earth's crust in such form, grade (or quality), and quantity that there are reasonable prospects for eventual economic extraction. The location, quantity, grade (or quality), continuity and other geological characteristics of a Mineral Resource are known, estimated or interpreted from specific geological evidence and knowledge, including sampling. Mineral Resources are sub-divided, in order of increasing geological confidence, into Inferred, Indicated and Measured categories. (JORC Code 2012)

Resource classification is based on data quality, drill density, number of informing samples, kriging efficiency, conditional bias slope, average distance to informing samples and deposit consistency (geological continuity).

The quality of the data is suitable for the resource estimates, summary reports provided by independent consultants provided to previous lease holders were relied on in the preparation of this report. MA has not sighted historical physical hard copies or certified laboratory reports, nor historical geological logging sheets of core or RC chips. MA has reviewed MRK's procedures, a selection of certified laboratory reports and geology logging sheets associated with MKR's drilling while on site.

A breakdown of the current Wonawinta project resource estimate by resource category above 20 g/t depleted to May 2015 by resource category is provided in Table 49.

Table 49. Resource Categories of the Wonawinta Project (> 20g/t Ag)

Resource category	Material Type	Tonnes (Mt)	Ag (g/t)	Pb (%)	koz	kt
Measured	OX	0.5	54.6	0.94	0.8	4.3
	FR	0.6	42.0	0.52	0.8	3.2
Indicated	OX	8.4	46.3	0.96	12.6	81.3
	FR	3.9	43.8	0.55	5.5	21.4
Inferred	OX	6.9	39.9	0.47	8.9	32.2
	FR	18.0	38.6	0.36	22.4	64.7
Total		38.3	41.3	0.54	50.94	207.2

Table 50. Wonawinta Resource by Prospect (>20g/t Ag)

		Measured					Indicated					Inferred				
Deposit		Tonnes (kt)	Ag (g/t)	Pb (%)	koz	kt	Tonnes (kt)	Ag (g/t)	Pb (%)	Moz	kt	Tonnes (kt)	Ag (g/t)	Pb (%)	Moz	kt
Blue Mountain	OX	-	-	-	-	-	-	-	-	-	-	999	28.1	0.4	0.9	3.9
	Fr	-	-	-	-	-	-	-	-	-	-	8,101	34.0	0.3	8.9	26.7
Belah	Ox	-	-	-	-	-	1,778	51.4	1.2	2.9	21.5	534	50.0	1.0	0.9	5.1
	Fr	-	-	-	-	-	299	38.1	0.6	0.4	1.8	482	39.1	0.8	0.6	3.8
Bimble	Ox	-	-	-	-	-	3,180	44.6	1.0	4.6	33.1	497	39.6	1.0	0.6	5.1
	Fr	-	-	-	-	-	956	46.1	0.6	1.4	5.9	1,032	46.9	0.7	1.6	6.7
Boundary	Ox	314	52.5	0.90	0.5	2.8	1,560	50.0	0.8	2.5	12.0	2,242	48.4	0.6	3.5	12.6
	Fr	253	37.7	0.45	0.3	1.1	1,272	37.7	0.4	1.5	5.1	4,014	40.7	0.4	5.2	16.5
Manuka-boundary	Ox	-	-	-	-	-	-	-	-	-	-	1,675	35.6	0.0	1.9	-
	Fr	-	-	-	-	-	-	-	-	-	-	2,427	42.6	0.0	3.3	-
Manuka	Ox	144	59.4	1.02	0.3	1.5	1,418	42.4	0.9	1.9	12.1	777	33.0	0.6	0.8	4.6
	Fr	376	44.9	0.56	0.5	2.1	1,348	49.2	0.6	2.1	8.6	1,918	44.5	0.6	2.7	10.9
Pothole	Ox	-	-	-	-	-	504	39.3	0.5	0.6	2.7	190	41.0	0.5	0.3	0.9
	FR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SubTotal	**Ox**	458	54.6	0.9	0.8	4.3	8,440	46.4	1.0	12.6	81.3	6,914	39.9	0.5	8.9	32.2
SubTotal	**Fr**	629	42.0	0.5	0.8	3.2	3,875	43.8	0.6	5.5	21.4	17,974	38.7	0.4	22.3	64.6
Total		1,087	47.3	0.7	1.7	7.5	12,315	45.6	0.8	18.0	102.8	24,888	39.0	0.4	31.2	96.8

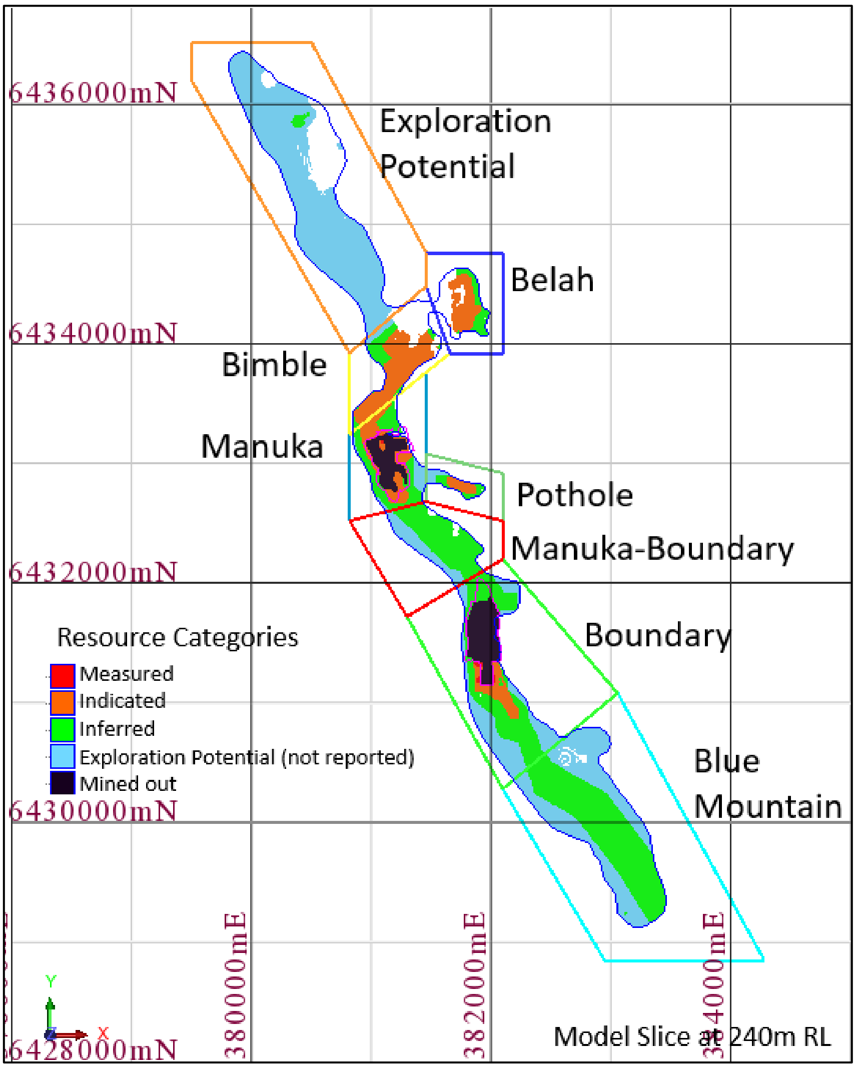


Figure 23. Wonawinta Project Resource Boundaries

For the classification of Mineral Resources for the Project, the following definitions were adopted and applied to each domain separately:

Measured Mineral Resources: those portions of the deposit estimated with a nominal drill spacing of 10 m x 10 m and demonstrate a high level of confidence in the geological and grade continuity of mineralisation. Blocks are dominantly estimated with a minimum of 12 composites, the nearest drill hole within 20 m and the average distance to all informing samples approximately 30 m or less. Krige efficiencies for measured mineral resources are dominantly higher than 0.5. The conditional bias slope recorded is greater than 0.8. Measured Mineral Resource are estimated in the first kriging run.

Indicated Mineral Resources: those portions of the deposit estimated with a drill spacing of 40 m x 40 m that demonstrate a reasonable level of confidence in the geological continuity of mineralisation. The following estimation statistics were used as a guideline to assist defining grade continuity. Indicated blocks have been estimated with a minimum of 6 samples, and within 40 m of a drill hole, and an average distance to all informing composites of 80m. Krige efficiencies of blocks within the Indicated category fall within the range of 0.25 to 0.4. Lower efficiency blocks may be included if a structural trend is present. Indicated resources may be estimated in the first or second kriging run.

Inferred Mineral Resources: those portions of the deposit estimated with a drill spacing of greater than 40 m x 40 m, and include areas drilled on a 250 m x 100 m sections or those portions of the deposit with a smaller number of intersections but demonstrating a reasonable level of geological confidence. Inferred Mineral Resource are estimated in the first, second or third kriging run, limited blocks from the fourth run are included where geological continuity can reasonably be assumed to exist between drill intercepts.

9.14.1 Stockpiles

In addition to the resources detailed in Table 50, stockpiled mineralised material remains on the ROM pad. In June 2016 a detailed LIDAR drone survey was undertaken to define stockpile volumes. Stockpile grades were derived from BOK and CCR production records, and densities were assigned as either 1.8 t/m^3 or 2.0 t/m^3 depending on the degree of inferred compaction. Results are shown in Table 51. The 'unknown' material type refers to surveyed stockpiles of uncertain origin that are most probably low grade material. Stockpiled material is classified as Indicated Resources due to the uncertainty in tonnages and grades.

Table 51. Stockpile tonnage and grade estimate.

Likely material	Tonnes	Ag (g/t)	Contained Oz Ag
Mill Feed	377,677	75.50	917,000
Low grade	86,956	55.00	154,000
Unknown	51,107	55.00	90,000
Total	**515,740**	**70.01**	**1,161,000**

Stockpiles were re-surveyed in February 2020 (Table 52). In September 2020 MRK undertook a stock pile sampling using an excavator to collect bulk samples.

The excavator took "bites" out of the stockpile. A bite was defined as digging ~5 buckets of material to a pile. A sub sample of 3 scrapes with the bucket jaw crusher was collected from bottom to top of each excavated pile. Multiple 5kg samples of 20 mm crushed rock were collected as the crushed material formed a cone. The 5kg samples were composited to a two 20-40kg sample to ALS Orange.

ALS crushed the 20-40kg composite samples to 4 mm and rotary split off 3 kg for pulverizing and analysis.

Table 52: Summary Volumes and grade from MRK stockpile sampling program

SP	Material	Stockpile Volume	Sample Count	Ag (g/t)	Pb (%)
2	Mill Feed	11006	10	94.3	1.73
3	Mill Feed	173392	56	72.0	1.20
4	Mill Feed	2148	6	70.0	0.50
5	Mill Feed	5878	6	83.6	1.36
7	Low Grade	2606	8	48.3	0.94
8	Low Grade	40349	18	59.4	1.08
9	Low Grade	8421	12	56.2	0.82
S	Low Grade	7167	8	48.8	0.51

The results of the stockpile sampling program confirm the grades of the Mill Feed confirm the grades were derived from BOK and CCR production records.

9.15 DISCUSSION ON FACTORS POTENTIALLY AFFECTING MATERIALITY OF RESOURCES AND RESERVES

The following factors could potentially impact on the materiality of the mineral resource estimate:

The quality of the data is suitable for resource estimates; however, no physical hard copies or certified laboratory reports have been sited, no original density data is available and no original geological logging sheets or core/RC chip have been sighted of the historical data. MA has sighted physical hard copies of logging and certified laboratory reports while on site. Drilling activities, sampling and logging were inspected during the personal site visit conducted in December 2020.

Limited metallurgical test work has been conducted at the Wonawinta Project and MA understands the previous operators had recovery issues. The resource is provided in Table 53 in broad lithological units divided by oxidation state as each subgroup is likely to have different metallurgical characteristics.

Pit Areas	Lithology 1 (Oxide Clay)			Lithology 2 (Reduced Clay)			Lithology 3 (Oxide Limestone)			Lithology 4 (Fresh Limestone)			Lithology 5 (Oxidised Basement)		
>20 g/t Ag	kt	Ag g/t	Pb %	kt	Ag g/t	Pb%	kt	Ag g/t	Pb %	kt	Ag g/t	Pb %	kt	Ag g/t	Pb%
Belah	1639	48	1.1	68	43	0.8	537	63	1.3	536	39	0.7	135	36	1.0
Bimble	2532	47	1.1	728	46	0.7	1018	37	0.9	877	46	0.6	129	48	1.1
Pothole	639	40	0.5	0	0	0.0	54	36	0.5	0	0	0.0	1	36	0.5
Boundary	2841	51	0.7	1495	46	0.5	1270	44	0.6	3472	38	0.4	11	32	0.6
Blue Mountain	530	29	0.4	1533	32	0.3	128	28	0.4	567	32	0.3	341	27	0.4
Manuka	997	39	0.9	161	34	0.5	1307	41	0.7	3278	48	0.6	36	32	0.5
Manuka-Boundary	536	52	0.0	449	63	0.0	1146	28	0.0	1978	38	0.0	0	0	0.0
Totals	9714	44	0.8	4434	36	0.4	5459	34	0.6	10708	34	0.4	653	33	0.7

Table 53. Wonawinta Project resources by area and oxidation state

Zn, Fe, Ca, Hg and S are estimated in the model where sufficient data is available. These secondary elements are provided in the block model to aid ore characterisation but not considered in the reported Mineral Resource.

9.16 MINERAL RESOURCE ESTIMATE STATEMENT

JORC categorised Mineral Resources for the Wonawinta Project have been classified as measured, indicated and inferred confidence categories on a spatial, areal and zone basis and are listed in Table 54. The total resource is 38.3 million tonnes at 41.3 g/t Ag and 0.54% Pb providing 50.94 thousand ounces and 207.2 thousand tonnes of lead.

Table 54. Resource Categories of the Wonawinta Project (> 20g/t Ag)

Resource category	Material Type	Tonnes (Mt)	Ag (g/t)	Pb (%)	koz	kt
Measured	OX	0.5	54.6	0.94	0.8	4.3
	FR	0.6	42.0	0.52	0.8	3.2
Indicated	OX	8.4	46.3	0.96	12.6	81.3
	FR	3.9	43.8	0.55	5.5	21.4
Sub Total	OX	6.9	39.9	0.47	8.9	32.2
MI	FR	18.0	38.6	0.36	22.4	64.7
Inferred	OX	0.5	54.6	0.94	0.8	4.3
	FR	0.6	42.0	0.52	0.8	3.2
Total MII		38.3	41.3	0.54	50.94	207.2
Stockpiles (Indicated)		0.516	70.01		1,161	

Note: Reported differences may be present due to rounding of significant figures.

"The information in this report that relates to Mineral Resources is based on information compiled by Mr Ian Taylor, who is a Certified Professional by The Australasian Institute of Mining and Metallurgy and is employed by Mining Associates Pty Ltd. Mr Taylor has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Mr Taylor consents to the inclusion in the report of the matters based on his information in the form and context in which it appears".

10 REFERENCES

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COMPETENT PERSON’S CONSENT FORM

Pursuant to the requirements of ASX Listing Rules 5.6, 5.22 and 5.24 and Clause 9 of the JORC Code 2012 Edition (Written Consent Statement)

Report Description:

Resource Estimate Update of the Wonawinta Silver Project, NSW, Australia. Prepared by Mining Associates Limited for Manuka, (“the Report”).

I, Ian Andrew Taylor confirm that I am the Competent Person for the Report and:

I have read and understood the requirements of the 2012 Edition of the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012 Edition).

I am a Competent Person as defined by the JORC Code 2012 Edition, having at least five years’ experience that is relevant to the style of mineralisation and type of deposit described in the Report, and to the activity for which I am accepting responsibility.

I am a Certified Professional Geologist by The Australasian Institute of Mining and Metallurgy

I have reviewed the Report to which this Consent Statement applies.

I am a consultant working for Mining Associates Pty Ltd, and have been engaged by Manuka to prepare the documentation for the Wonawinta silver Project on which the Report is based, for the period ended 25/10/2016.

I have disclosed to the reporting company the full nature of the relationship between myself and the company, including any issue that could be perceived by investors as a conflict of interest.

I verify that the Report is based on and fairly and accurately reflects in the form and context in which it appears, the information in my supporting documentation relating to Mineral Resources

CONSENT

I consent to the release of the Report and this Consent Statement by the directors of Manuka

Signature of Competent Person:

Signed on 30/03/2020

Ian A Taylor
BSc (Hons) MAusIMM(CP)

Signature of Witness:

`

Signed on 30/03/2020

Kylie Prendergast
BSc (Geology) Hons, PhD, MAIG
(Sherwood Qld 1075)

APPENDIX 1 APPENDIX 1: JORC CODE, 2012 EDITION – TABLE 1

SECTION 1. SAMPLINE TECHNIQUES AND DATA

Criteria	JORC Code explanation	• Commentary
Sampling techniques	• *Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc). These examples should not be taken as limiting the broad meaning of sampling.* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* • *Aspects of the determination of mineralisation that are Material to the Public Report.*	• Reverse circulation (RC), diamond coring (core) and aircore (AC) drilling undertaken by Cobar Consolidated Resources Limited (CCR) was used to obtain over 76% of the samples and Manuka Resources Ltd (MRK) have obtained 15% of the samples used in the resource estimate Grade control RC drilling by Black Oak Minerals (BOK) in 2015 is also included. The remaining samples were sourced from diamond and RC undertaken by previous explorers Geopeko, CBH, Savage, Pasminco and Triako. The drilling database within the resource area comprises 2163 RC and 13 pre-collared core holes and 49 diamond core holes. Also, in the database (not used in the resource estimate) are 920 rotary air blast holes, 148 Air Core holes and 10,472 blast holes. • RC and AC samples were predominantly collected over one metre intervals and subsampled utilising a rig-mounted cyclone/ cone splitter to provide a 1.5kg to 3.0kg assay sample. Diamond core (NQ, HQ) was halved with a diamond saw, PQ core was ¼ cored. In highly weathered material a hammer and chisel were used to provide representative sub-samples. Aircore samples were sub-sampled every metre using a two-tier riffle splitter. MRK drill core was photographed in the splits before placement into core trays. • Measures taken to ensure the sample representivity included routine monitoring of sample recovery and RC field duplicates. Assay quality control measures included duplicates, blanks and certified reference standards. In addition, the laboratories undertook their own duplicate sampling as part of their own internal QA processes. The available QAQC data demonstrate that the sampling and assaying are of appropriate quality for use in the current estimates. • MKR used portable XRF readings to determine intervals to be sent for analysis, blank holes in the database showed no silver in the pXRF readings.
Drilling techniques	• *Drill type (eg core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc) and details (eg core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc).*	• All RC drilling used face sampling bits. • Core holes were drilled PQ triple tube (83mm core diameter), HQ (63mm core diameter) triple tube was trailed. The diamond holes were surveyed using a multi-shot camera and core orientations undertaken using an Ace orientation tool. The core was photographed in detail, and the core remaining after sampling was used in its entirety for metallurgical test work.
Drill sample recovery	• *Method of recording and assessing core and chip sample recoveries and results assessed.* • *Measures taken to maximise sample recovery and ensure representative nature of the samples.* • *Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.*	• RC drilling was closely monitored by field geologists and used face-sampling bits, and generally had sufficient air capacity to provide dry, high recovery samples. The RC drilling rigs usually had access to booster compressors. • For RC holes visual estimates were made of recovery and wetness. It is estimated that less than 2% of samples were damp or wet. • Diamond drilling core recovery was estimated from recovered core lengths and showed an average recovery of 89% within mineralised sections. • The available sample recovery data shows generally reasonable recoveries and no relationship between recovery and assay grade, and no indication of significant biases due to sample loss.

Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc) photography.* • *The total length and percentage of the relevant intersections logged.*	• All RC and AC samples were logged for lithology, texture, grainsize, colour, alteration, regolith and wetness. In addition core holes were geotechnically logged and had density determinations undertaken. Logging of holes drilled by explorers prior to MKR was undertaken in a similar manner. MKR and CCR routinely photographed all diamond core and RC chip trays. • All the resource drilling has been qualitatively logged with appropriate detail, to support the current Mineral Resource estimates, and metallurgical and mining studies.
Sub-sampling techniques and sample preparation	• *If core, whether cut or sawn and whether quarter, half or all core taken.* • *If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry.* • *For all sample types, the nature, quality and appropriateness of the sample preparation technique.* • *Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples.* • *Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling.* • *Whether sample sizes are appropriate to the grain size of the material being sampled.*	• RC hole logs were reviewed and the samples scanned with a field portable XRF analyser prior to the selection of mineralised or potentially mineralised intervals for laboratory analysis. Remaining samples were stored pending receipt of analytical results. The sampled intervals were extended if required. • Sub-sampling of RC holes was undertaken using a rig-mounted rotary or riffle splitter to provide a 1-3kg lab sample. Less than two percent of the samples were damp or wet. • Harder sections of PQ core were filleted (CCR) or ¼ cored (MKR) with a diamond saw. Clay sections of core were sampled with a hammer or chisel, or by filleting with an angle grinder. In all cases the sampled portion represented about 20% of the core or 2kg per linear metre. • All samples were sent to an external laboratory (mostly ALS Global - Orange) for preparation and analysis. Samples were dried, crushed and pulverised to get 85% passing a 75um sieve to provide a 0.5g sample for aqua regia digestion with an ICP-AES finish. • RC field duplicates undertaken on a 1:40 basis showed acceptable variation and repeatability. • Samples sizes are appropriate to the grain size of the silver mineralisation which is predominantly very fine.
Quality of assay data and laboratory tests	• *The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total.* • *For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc.* • *Nature of quality control procedures adopted (eg standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (ie lack of bias) and precision have been established.*	• Samples from RC and diamond drilling were sent to ALS laboratories for preparation and analyses. No information from geophysical methods or hand held XRF devices are used in resource estimations, except to confirm holes are barren, as opposed to assays pending. • Aqua-regia analyses are considered to be a total extraction given the style of mineralisation. MKR's BOKs and CCR's samples were analysed by ALS Global, an accredited commercial laboratory in Orange, NSW. After oven drying, (and jaw crushing of core samples and RC samples with coarse material), the samples were pulverised to at least 85% passing 75 microns. Sub-samples were digested by aqua regia and analysed by ICP for silver, lead, zinc, iron, sulphur, manganese, calcium and magnesium. When results were above upper detection limits the analyses were repeated using a multi-acid digestion and ICP. Quality control methods included field duplicates, coarse blanks and certified standards. Three control samples were inserted for every 20 to 30 samples. The laboratories also maintain their own process of QA/QC utilising standards, repeats and duplicates. • QAQC procedures and results for MRK's drilling are available and were reviewed by MA. • QAQC procedures and results for pre-CCR and BOK drilling are not available, although QAQC samples are present in the assay databases. The pre-CCR/BOK drilling only informs a small proportion of the resources.

		• The quality control measures have established that the assaying is of appropriate precision and accuracy for the current estimates.
Verification of sampling and assaying	• *The verification of significant intersections by either independent or alternative company personnel.* • *The use of twinned holes.* • *Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols.* • *Discuss any adjustment to assay data.*	• Reported significant intersections were reviewed by geological staff onsite, and checked by senior geological management, including the Exploration/Geology Manager • Six diamond holes and two RC holes were drilled to twin earlier RC and aircore holes, with satisfactory results. • Geological logging data and sampling information is recorded on printed standard forms and then key punched into Excel spreadsheets. • Summaries of geological logs, survey and analysis data were electronically merged and validated into a central database in Surpac mining software. Data was viewed and interpreted using Surpac software. • Assay results were not modified for resource estimation. • All pXRF readings over 10ppm are verified by certified assay analysis.
Location of data points	• *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control*.	• Qualified surveyors using high accuracy DGPS equipment surveyed all CCR resource drill hole collars. Accessible drillhole collars of previous explorers were re-surveyed by DGPS. • Down-hole surveys were normally not undertaken on shallow (usually less than 50m) vertical holes drilled early in the exploration stage. Check bottom-of-hole surveys of 10 vertical RC holes showed less than 1^{o} deflection from vertical (less than 1m horizontal offset). Downhole surveying using a Camteq multi-shot camera was carried out for holes drilled at close spacings (10m x 10m or 20m x 20m) to be potentially used for mine grade control purposes. MKR's diamond drill holes are routinely surveyed down-hole using a single shot camera. There are no strongly magnetic rocks within the deposit. • The MGA94 co-ordinate system is used for the mine grid, and for exploration (Zone 55 South). • Topographic control for the mine is based on an aerial topographic survey (0.5-1.0m contour interval) together with known land survey control. This provides sufficient accuracy for the current estimates.
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.* • *Whether sample compositing has been applied.*	• RC hole spacing varies from a 10m x 10m grade control density in areas shortly to be mined, to 40m x 20m and 80m x 40m in the vicinity of pit areas, to 250m x 150m at the southern extremity of the resource zone. • The data spacing and distribution establishes geological and grade continuity adequately for the current Mineral Resource. • No compositing of sample intervals in the field was undertaken. Samples were composited to 2 metre down-hole intervals for resource modelling.
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.*	• The resource drilling comprises mostly vertical holes, perpendicular or at a high angle to the flat-lying and gently dipping mineralisation. • Available information indicates that the drilling orientations provide unbiased sampling of the mineralisation • The MKR diamond holes and the majority of RC are vertical, several RC drill fences were angled -60 SE to test the granite contact at the Bimble deposit.
Sample security	• *The measures taken to ensure sample security.*	• Samples were placed in sealed polywoven bags for transport by road to the ALS Global Laboratory in Orange, by a commercial transportation company.

		• The laboratory routinely reconciles received sample numbers against sample submission forms and sample number data files.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• All QA/QC data is reviewed on an ongoing basis. • In 2008 AMC Consultants reviewed CCR's QAQC data and the available information from previous explorers, and concluded that the data is acceptable for resource estimation. • In 2010 BM Geological Services reviewed the data and concluded that the data quality was acceptable for use in resource estimation, and that the QAQC was adequate. • The data was again reviewed in 2014 by MPR Geological Consultants and found the field duplicate, standard, blank and repeat assays confirm the reliability of sub-sampling and assaying. • MA reviewed the MKR QAQC data and concluded it is suitable for use in a Resource Estimate

SECTION 2. REPORTING OF EXPLORATION RESULTS

Criteria	JORC Code explanation	• Commentary
Mineral tenement and land tenure status	• *Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings.* • *The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.*	• ML1659 is held by Manuka Resources Limited (MKR) MKR is holder of 7 exploration licences in the district. The exploration Licences are EL 6155, EL 6302, EL6623, EL 6482, EL 7515, EL 8498 and EL 7345. • The property Manuka, on which the resources are situated, is owned by MRL. • The resources occur in the Western Lands Leases of NSW where Native Title has been extinguished. However, where disturbance could occur by mining operations or drilling, Aboriginal heritage surveys are undertaken in consultation with traditional owners. • The Company notes that no land within the licence area may be classified as sensitive land. No further approvals other than those required under the Mining Act 1992 are required.
Exploration done by other parties	• *Acknowledgment and appraisal of exploration by other parties.*	• Stream sediment sampling by Geopeko in 1989 resulted in the discovery of significant base metal sample values. Drilling programs (RAB, RC and diamond) were carried out by Geopeko, CRA, Savage Resources, Pasminco and Triako. Follow up work by CCR resulted in definition of the Wonawinta silver - lead deposits. BOK completed some RC grade control drilling in one open pit.
Geology	• *Deposit type, geological setting and style of mineralisation.*	• The Wonawinta silver-lead-zinc project, is a carbonate-hosted Pb-Zn-Ag deposit with affinities to MVT-style mineralisation. The primary host is the dolomitised upper fossiliferous portion of the Booth Limestone member of the Early Devonian Winduck Group. • Oxide Ag-Pb-Zn mineralisation is developed as a gently-dipping blanket up to 160m wide and averaging 13m thick on and around the contact between the Booth Limestone and an overlying thick quartz-kaolinite-illite- muscovite clay sequence. Discrete silver minerals are rare with the bulk of the silver associated with lead and iron oxides and sulphates, and lead and zinc carbonates and dolomite. Primary mineralisation consists of vein, breccia and replacement style marcasite, galena and sphalerite. • The NNW-trending, strata-bound Wonawinta deposit extends for about 6km along the western flank of the Wonawinta Anticline.
Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:* • *easting and northing of the drill hole collar* • *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* • *dip and azimuth of the hole* • *down hole length and interception depth* • *hole length.* • *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.*	• Drillhole data and results are too numerous to list. No new exploration results are included in this announcement. • Summary drillhole information was prepared and first disclosed under the JORC Code 2004. It is not being reported in detail according to the JORC Code 2012 on the basis that the information has not materially changed since it was originally reported. • Drilling by MKR has been publicly disclosed under the JORC Code 2012 on an ongoing basis as appropriate.
Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (eg cutting of high grades) and cut-off grades are usually Material and should be stated.* • *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation*	• No new exploration results are included in this announcement.

	should be stated and some typical examples of such aggregations should be shown in detail. • *The assumptions used for any reporting of metal equivalent values should be clearly stated.*	
Relationship between mineralisation widths and intercept lengths	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (eg 'down hole length, true width not known').*	• The resource drilling is dominated by steep to vertical holes drilled perpendicular or at a high angle to gently dipping mineralisation
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	• Appropriate diagrams in relation to the deposit, including plans and cross sections, accompany previous public announcements.
Balanced reporting	• *Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced avoiding misleading reporting of Exploration Results.*	• It is not practical to list individual drill holes and intersections due to the high number of drill holes concerned. No new exploration results are included in this report.
Other substantive exploration data	• *Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.*	• No exploration data has been collected or is considered material to this announcement.
Further work	• *The nature and scale of planned further work (eg tests for lateral extensions or depth extensions or large-scale step-out drilling).* • *Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.*	• MKR intend to develop further infill drilling and resource extension drilling budget as a result of this update to the Mineral Resource Estimate • Manuka Resources has commenced an initial 16 hole program as proof of concept for base metal sulphides hosted within the Booth Limestone. This program will be reported on in due course.

SECTION 3. ESTIMATION AND REPORTING OF MINERAL RESOURCES

Criteria	JORC Code Explanation	• Commentary
Database integrity	• *Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes.* • *Data validation procedures used*	• Resources were estimated from drill hole data in a MS Access format database linked to Geovia Surpac. Consistency checking between and within these files showed no significant inconsistencies. • Historic data were supplied as CSV files exported from a Micromine database. Supplied data is assumed validated and checked for data corruption, based on historic resource estimation reports that detail validation checks. Random checks of assay values in database against original assay certificates did not find any inconsistencies. All data was imported into an Access database linked to Surpac mining software and checked for errors in collar locations, down hole depths and intervals.
Site visits	• *Comment on any site visits undertaken by the Competent Person and the outcome of those visits.* • *If no site visits have been undertaken indicate why this is the case.*	• The competent person has visited the site on three occasions in March 2016, August 2020 and in December 2020 for one to two days to examine the geological setting of the deposit, observe drilling activities including sampling logging and the core storage facility.
Geological interpretation	• *Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit* • *Nature of the data used and of any assumptions made.* • *The effect, if any, of alternative interpretations on Mineral Resource estimation.* • *The use of geology in guiding and controlling Mineral Resource estimation.* • *The factors affecting continuity both of grade and geology*	• Geological setting and mineralisation controls of the deposit have been confidently established from drill hole logging and geological mapping, including development of a robust three-dimensional model of the major rock units. • Geological and mineralisation interpretation was carried out on approximately 10 m spaced sections in the pit areas and 25 m spaced sections away from the pit areas, oriented with the main drilling direction. • Resources were estimated within a mineralised domain wireframe capturing the zone of continuous mineralisation grading more than approximately 10 g/t silver. Intercepts of lesser grade were sometimes included to aid continuity. • The domains are flat lying and comprise a main, generally north-south trending zone, and two smaller subsidiary zones. The main zone was subdivided into seven mineralised domains on the basis of the tenor of silver grades, data spacing and mineralisation orientation. • Drill hole logging and sampling, surface mapping and grade control including blast hole sampling were all used to help build the geological and mineralisation models to a high degree of confidence. The mineralised domain displayed very good continuity between sections. • Lithological wire-frames interpreted from drill hole logging were used to assign densities to the estimates. • Due to the confidence in understanding of mineralisation controls and the robustness of the geological model, investigation of alternative interpretations is unnecessary.
Dimensions	• *The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource*	• The main mineralised zone extends over approximately 6.5 km of strike with an average width of approximately 380 m. • Thickness of the mineralised domains averages around 13 m with an average of around 36 m of barren overburden. Estimated resources extend to around 100 m depth.
Estimation and	• *The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of*	• Silver resources were estimated by Ordinary Kriging within unfolded model space that preserved the stratiform nature of mineralisation. Lead, calcium,

modelling techniques	*extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used.* • *The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data.* • *The assumptions made regarding recovery of by-products.* • *Estimation of deleterious elements or other non-grade variables of economic significance (eg sulphur for acid mine drainage characterisation).* • *In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed.* • *Any assumptions behind modelling of selective mining units.* • *Any assumptions about correlation between variables.* • *Description of how the geological interpretation was used to control the resource estimates.* • *Discussion of basis for using or not using grade cutting or capping.* • *The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.*	iron and sulphur grades were estimated by Ordinary Kriging. • Continuity of silver grades was characterised by variograms modelled for the main mineralised domains. • Silver, lead and zinc Lead estimates for each domain included upper cuts of between 2.5 and 5% which generally approximate the 98.5th percentile of each dataset. • Mineralised domains boundaries were generally extrapolated around 20 m across strike and up to 100 m along strike from drill holes. • Some areas of mineralisation are broadly sampled with up to approximately 240 m between drill traverses. In these areas, the estimates are extrapolated to around 120 m from drilling (1/2 the drill spacing). • The mineralised domains used for resource estimation are consistent with geological interpretation of mineralisation controls. • Geovia Surpac software was used for data compilation, domain wire-framing, coding of composite values, and resource estimation. • The estimation techniques are appropriate for the mineralisation style. • Available information suggests that the blast hole samples poorly represent grade and were not used in to estimate grade of the Mineral Resource. (they were used to help define the extents of mineralisation) • With allowance for these deficiencies in the production data, the current estimates reconcile reasonably with production. • Estimated resources include only silver and lead grades, with no assumptions about recovery of by-products. • The resource model includes estimates of sulphur, iron and calcium grades within the mineralised domains. • Resources were estimated into varying block sizes depending on drill spacing: 10 x 10 x 2.5 m where RC grade control exists; 40 x 40 x 10 where only wide-spaced exploration drill lines exist, and 20 x 20 x 5 in all other areas. • Estimation of silver, lead, zinc, iron, and sulphur occurred in un-fold space, composite locations and blocks were unfolded using the midpoint of the mineralised domain as a reference surface. Calcium grades were estimated without-unfolding. • The estimation included a four pass search strategy with a limitation on the maximum number of samples per drill hole. Major axis search distances ranged from 50 m to 75 m, with a semi-major ratio between 1 and 2.2 and a minor ratio between 1 and 3.8. • The modelling did not include any specific assumptions about correlation between variables. • Wire-framed interpretations of key rock units were used to assign densities to the estimates. • Model validation included visual comparison of model estimates and composite grades, and trend (swath) plots, along with comparison with production estimates. • Available information suggests that mined grade control ore outlines have included significant misclassification and comparison between production and model estimates are not definitive.
Moisture	• *Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content*	• Tonnages were estimated on a dry basis

Cut-off parameters	• *The basis of the adopted cut-off grade(s) or quality parameters applied.*	• A cut-off grade was applied according to actual mining and processing methods and their associated costs, recoveries, state royalties and silver price (AU$30/oz in this case). A cut-off grade of 20 g/t was used for any material that could potentially be mined by open pit methods.
Mining factors or assumptions	• *Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.*	• No mining factors have been applied to the in-situ grade estimates for mining dilution or loss as a result of the grade control or mining process. No metallurgical factors have been applied to the in situ grade estimates • Open Pit Mining is a considered a likely scenario for extracting the mineral resources.
Metallurgical factors or assumptions	• *The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made*	• Actual silver recoveries based on plant performance since July 2011.
Environmental factors or assumptions	• *Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made*	• No specific issues beyond normal requirements for open pit mining in NSW
Bulk density	• *Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples.* • *The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc), moisture and differences between rock and alteration zones within the deposit.*	• Densities were applied to the estimates by rock type. Densities of 2.0, 2.0, 2.4 and 2.6 t/bcm were applied to oxide clay, sulphide clay, oxide limestone and sulphide limestone respectively. • These values were derived from 153 immersion density measurements of oven dried drill core from six diamond holes • MKR have obtained 31 calliper measurements of oven dried drill core from 13 diamond holes over Bimble and Belah. Reading ranged from 1.69 to 2.74, oxidised and reduced clay samples average 1.96 and fresh samples averaged 2.44
Classification	• *The basis for the classification of the Mineral Resources into varying confidence categories.* • *Whether appropriate account has been taken of all relevant factors (ie relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).* • *Whether the result appropriately reflects the Competent Person's view of the deposit.*	• Resource classification is based on data quality, drill density, number of informing samples, kriging efficiency, conditional bias slope, average distance to informing samples and deposit consistency (geological continuity). • Measured resources adopt the following guidelines. Blocks are dominantly estimated with a minimum of 12 composites, the nearest drill hole within 20m and the average distance to all informing samples approximately 30m or less. Krige efficiencies for measured mineral resources are dominantly higher than 0.5. The conditional bias slope recorded is greater than 0.8. Measured Mineral Resource are estimated in the first kriging run.

		• Indicated resources are defined as those portions of the deposit estimated with a drill spacing of 40 m x 40 m that demonstrate a reasonable level of confidence in the geological continuity of the mineralisation. The following estimation statistics were used as a guideline to assist defining grade continuity. Indicated blocks have been estimated with a minimum of 6 samples, and within 40m of a drill hole, and an average distance to all informing composites of 80 m. Krige efficiencies of blocks within the indicated category fall within the range of 0.25 to 0.4. Lower efficiency blocks may be included if a structural trend is present. Indicated resources may be estimated in the first or second kriging run. • Inferred resources are defined as those portions of the deposit estimated with a drill spacing of greater than 40 m x 40 m, and include areas drilled on a 250 m x 100 m sections or those portions of the deposit with a smaller number of intersections (including limited blocks estimated in pass 4) but demonstrating a reasonable level of geological continuity. • The resource classification accounts for all relevant factors.
Audits or reviews	• *The results of any audits or reviews of Mineral Resource estimates*	• The resource classifications reflect the Competent Person's views of the deposit.
Discussion of relative accuracy/ confidence	• *Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.* • *The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.* • *These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.*	• The Resource estimate for the Manuka deposit is considered robust and is representative of the global tonnes and grade contained within the area of the deposit tested by drilling. The interpretations of geology and mineralisation are well constrained and support high confidence in the estimate. • Confidence in the relative accuracy of the estimates is reflected by the classification of estimates as Measured, Indicated and Inferred. • With allowance for some deficiencies in the grade control production data, the current estimates reconcile reasonably with production undertaken by past tenement holders.