RESOURCE ESTIMATION

ARTHUR RIVER MAGNESITE PROJECT

December 2011

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UNITS

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All maps and plans are based on GDA94, Zone 55, unless stated otherwise.

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CONTENTS

CONTENTS continued

LIST OF FIGURES

LIST OF TABLES

1. Executive Summary

Work conducted on the Arthur River Magnesite Project over the 2010/2011 period culminated in estimation of an Inferred Resource to JORC 2004 standards.

Work comprised re-logging of existing drill core, mapping, ground geophysics and drilling of an additional 11 diamond drill holes of PQ size.

At a lower cut off of 40% MgO, an Inferred Resource has been estimated which totals 25 million tonnes of fresh magnesite grading 42.4% MgO, 4.8% SiO2, 1.4% Fe2O3 and 2.6% CaO to an average depth of 100m below the surface. This estimate assumes that fresh magnesite can be easily separated from zones of internal weathering.

The resource estimate at a series of cut offs is summarised in the table below.

MgO Lower Cut Off (%)	Tonnes	MgO (%)	SiO2 (%)	Fe2O3 (%)	CaO (%)
36	36,817,508	41.1	5.9	1.7	2.9
38	32,090,037	41.7	5.4	1.6	2.8
40	**25,121,511**	**42.4**	**4.8**	**1.4**	**2.6**
42	15,279,918	43.3	4.2	1.3	2.2
44	3,042,107	44.5	3.0	1.0	1.9

Further work is required to upgrade confidence in the resource estimate, notably denser, gridded drilling to increase confidence in the geology, the controls on the contaminants and to demonstrate continuity of the higher grade zones of MgO within the broader magnesite body. The location and orientation of both the footwall and hanging wall contacts of the magnesite are poorly constrained by the information currently on hand.

2. Introduction

2.1 Location and Access

The Arthur River Magnesite Project is located in Tasmania approximately 50km to the southwest of Burnie, within mining lease 24M2009 (Figure 1). Access is via the Murchison Highway, to the township of Henrietta, thence to West Takone and Farquhars Road, to the Arthur River which is crossed by way of a light-duty 4 tonne bridge. Access within the lease is via a network of 4WD tracks created during prior logging and drilling activity.

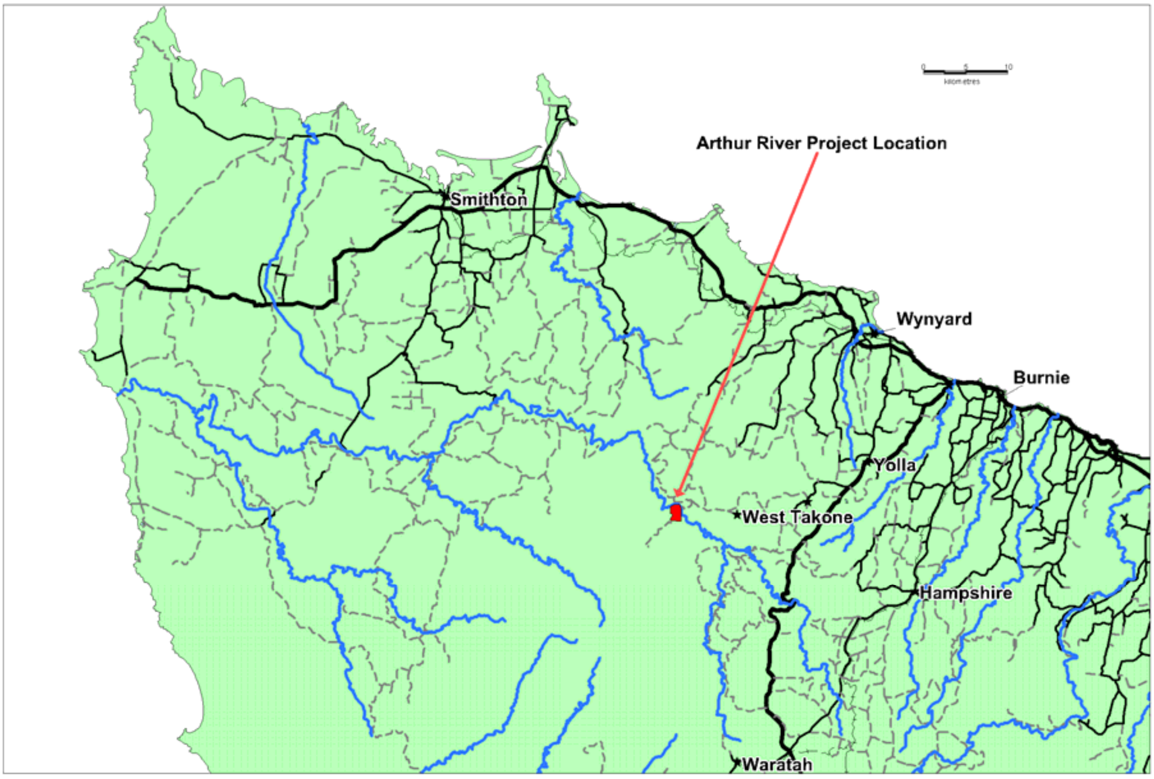

Figure 1: General Location Plan, Arthur River Project, M24/2009

2.2 Tenure

The Arthur River Project and the resource estimate is located within Mining Lease 24M2009, owned 100% by Tasmania Magnesite NL (TMNL), a wholly owned subsidiary of Beacon Hill Resources Plc.

TMNL also owns a retention lease RL18/1987 which surrounds the mining lease on two sides. The mining lease 24M2009 currently has an expiry date of 15th August 2020.

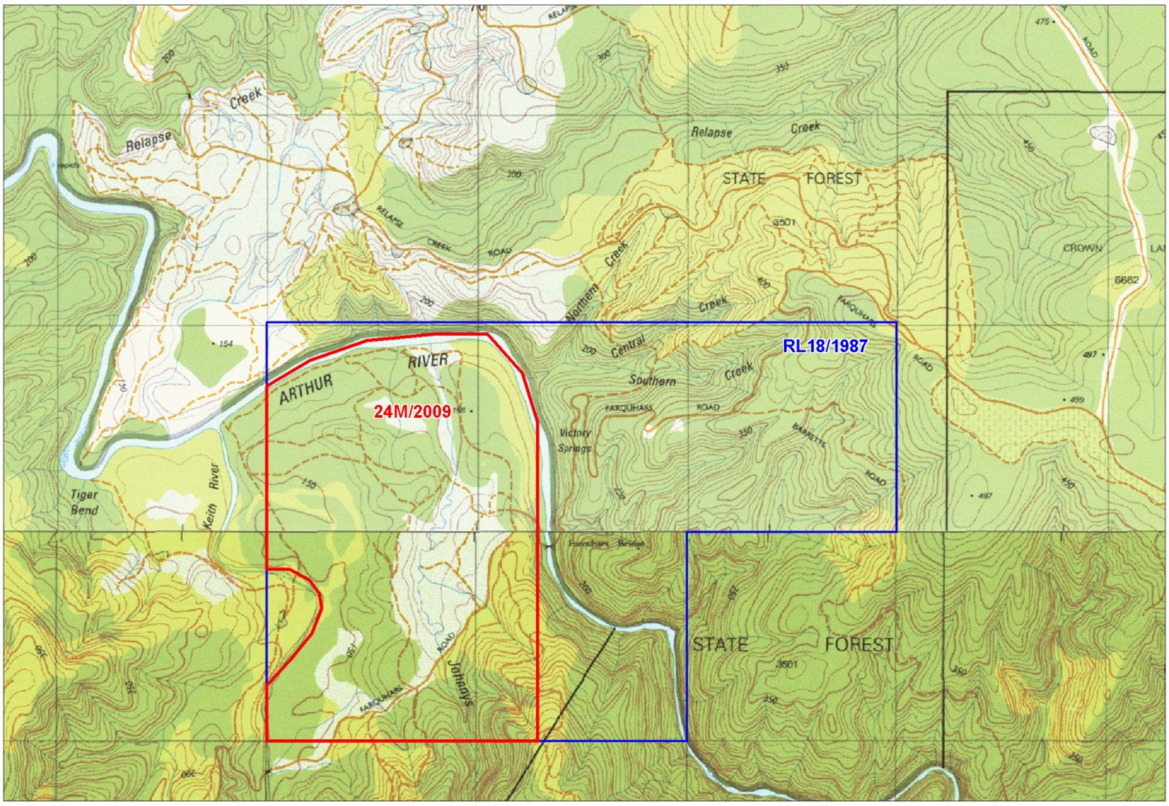

Figure 2: Tenure, Arthur River Magnesite Project.

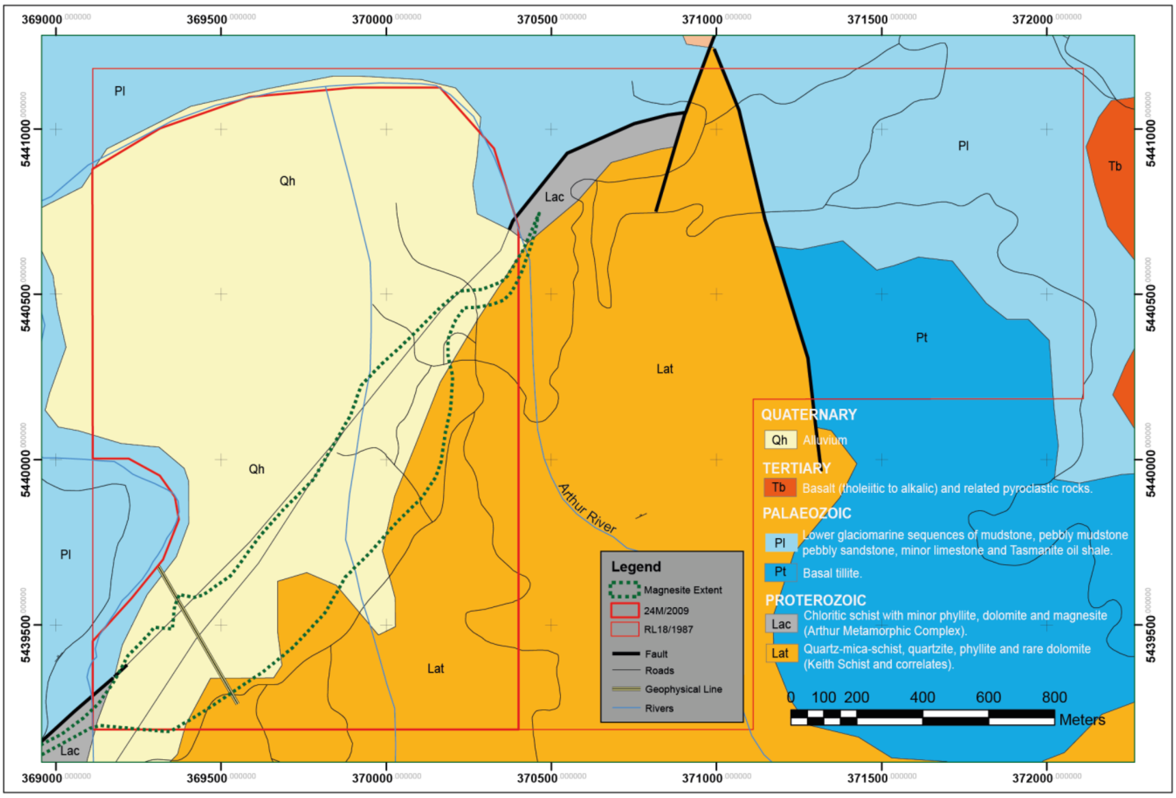

Figure 3: Surface geology of 24M2009, and retention lease RL18/1987.

2.3 Scope of this Report

The scope of this report is to;

- Document resource estimation work undertaken on the project in 2011.

2.4 Sources of Information

This technical report is based on;

1. Observations made by Stewart Capp and Chris Allen in the course of field work conducted between 2010 and 2011 (reported in Allen 2011).
2. Information collated from Open File reports by Derwent Geoscience.
3. Information compiled by Derwent Geoscience from Tasmania Magnesite NL Reports and files relating to the period 1997 to 2009.
4. Digital drilling data collected and collated by Derwent Geoscience.

Resources in this report have been classified as Measured, Indicated or Inferred under the guidelines laid out in "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves 2004 Edition" (JORC Code 2004).

2.5 Statement of Competence

The information in this report that relates to Exploration Results and Mineral Resources is based on information compiled by Stewart Capp, who is a member of The Australasian Institute of Mining and Metallurgy (#200980). Stewart Capp is a consultant geologist and a full time employee of Derwent Geoscience Pty Ltd (ABN 81 126 326 903).

Stewart Capp has sufficient experience which is relevant to the style of mineralisation and deposit type under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2004 Edition of the 'Australasian Code for Reporting of Exploration results, Mineral resources and Ore Reserves'. Stewart Capp consents to the inclusion in this report of the matters based on his information in the form and context in which it appears.

2.6 Conversion to Local Grid

The local grid used by previous workers (Crest Magnesium NL) was adopted for this study. The transformation is based on the collars of drill holes MB002 and MB005, with details of the conversion shown below in Figure 4.

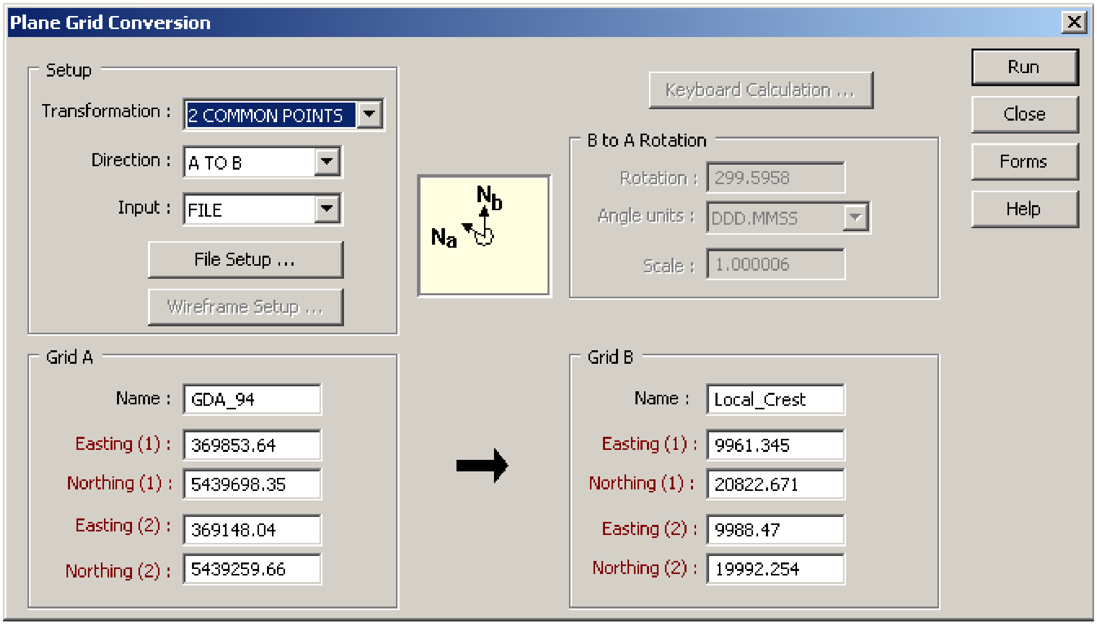

Figure 4: Grid conversion from GDA94 Zone 55 to Local Grid, Arthur River.

3. Regional Geology

The Arthur River magnesite deposit is located within the Arthur Lineament, which is a NNW-striking belt of highly deformed metamorphic Pre-Cambrian rocks extending from just north of Granville Harbour on the west coast, to Wynyard on the north coast. This belt is approximately 110km long and 8km wide, and is generally steeply dipping to the east. To the west of the lineament are the early to middle Neoproterozoic Rocky Cape Group correlates and the late Neoproterozoic Western Ahrberg Group. The Rocky Cape Group is composed predominantly of quartzites and siltstones, while the Ahrberg Group is an autochthonous unit composed mostly of shallow marine siliciclastics which were deposited following an extensional phase, and also coincide with the intrusion of tholeiitic dolerite dykes.

To the east of the lineament are the Burnie and Oonah Formations, which are predominantly Neoproterozoic turbidite sequences, with the Burnie Formation containing greywacke, slaty mudstone and occasional basaltic pillow lavas, and the Oonah Formation also including conglomerate, sandstone, dolomite and chert.

Rocks within the Arthur Lineament are generally phyllitic to schistose and have been variably metamorphosed to greenschist or blueschist facies, with much material within the Bowry Formation appearing as a chloritic schist. The Lineament was formed during the middle Cambrian in the early stages of the Tyennan Orogeny. Further deformation occurred during the Middle Devonian during the Tabberabberan Orogeny, resulting in additional faulting and folding.

Several magnesite deposits are known within the lineament, with three deposits in the south, and three in the north of the lineament. The deposits in the southern section are located at: Main Creek, Bowry Creek and the Savage River mine. To the north are the Lyons River, Arthur River and Cann Creek magnesite deposits. Little is known about the genesis of these deposits.

4. Local geology

Local geology is discussed in detail in Allen 2011 and is summarized herein.

Outcrops of fresh unweathered material in the Arthur River Project area are rare. The bulk of magnesite outcrops are found to the north of the Arthur River in the Main Creek and Victory Springs area, where sinkholes, blind valleys, pillars, springs and solution tubes were observed. Other outcrops may be observed in the Keith River and the Arthur River near Victory Springs.

Within the project area outcrop is masked by alluvium and glacial materials, which vary up to 20m in thickness.

4.1 Overburden

There are at least five different types of overburden in the area, with three of these covering significant areas. Glaciated materials are often the most readily observed, but other materials include weathered dolerite, magnesitic clays and alluvium.

4.1.1 Alluvial Overburden

Holocene glacial alluvium often forms a 10 to 15 metre cover over the southern part of the deposit where most of the drilling has been concentrated, giving way to iron rich clays to the north. This alluvial material consists mainly of unconsolidated glacial quartzite gravels and rubbles, with angular to rounded clasts up to 20cm in diameter. Rare rounded magnesite clasts were also observed in this material.

4.1.2 Weathered Overburden

The term 'weathered overburden' has been applied to materials which are considered to have been weathered in-situ. The area to grid local south of MB4 generally has yellow/grey clay overburden, shown by Perry (2011b) to be mostly of magnesite origin. This area is often swampy, with low topography in comparison to the surrounding environs.

4.2 Magnesite

The magnesite body forms a large pod approximately 2500m long by up to 400m wide, with drilling indicating the magnesite extends to at least a vertical depth of 290m. Dolomite is found within the magnesite body, often appearing abruptly along either weathered contacts or delineated by linear carbonate veins. In some areas the magnesite was observed to be replacing dolomite. Pyritic siltstone is also found within the magnesite, mostly at depths of over 100m, and in the majority of cases occurs as small, wispy veins, giving the appearance of being injected into the magnesite. The siltstone generally occurs on a centimeter scale, and was rarely observed to be more than 1m thick.

The appearance of the magnesite is quite variable, with the bulk of it being white to slightly pink, with clear veining of several varieties giving the material a brecciated appearance.

4.2.1 Talc Content

During the course of logging, talc was observed to form occasional veins. AR002, AR007, AR016 and MB008 were analysed using the Mineral Resources Tasmania HyLogger (Perry 2011b), in which highly variable talc contents were detected within the groundmass of the magnesite (Figures 5 & 6).

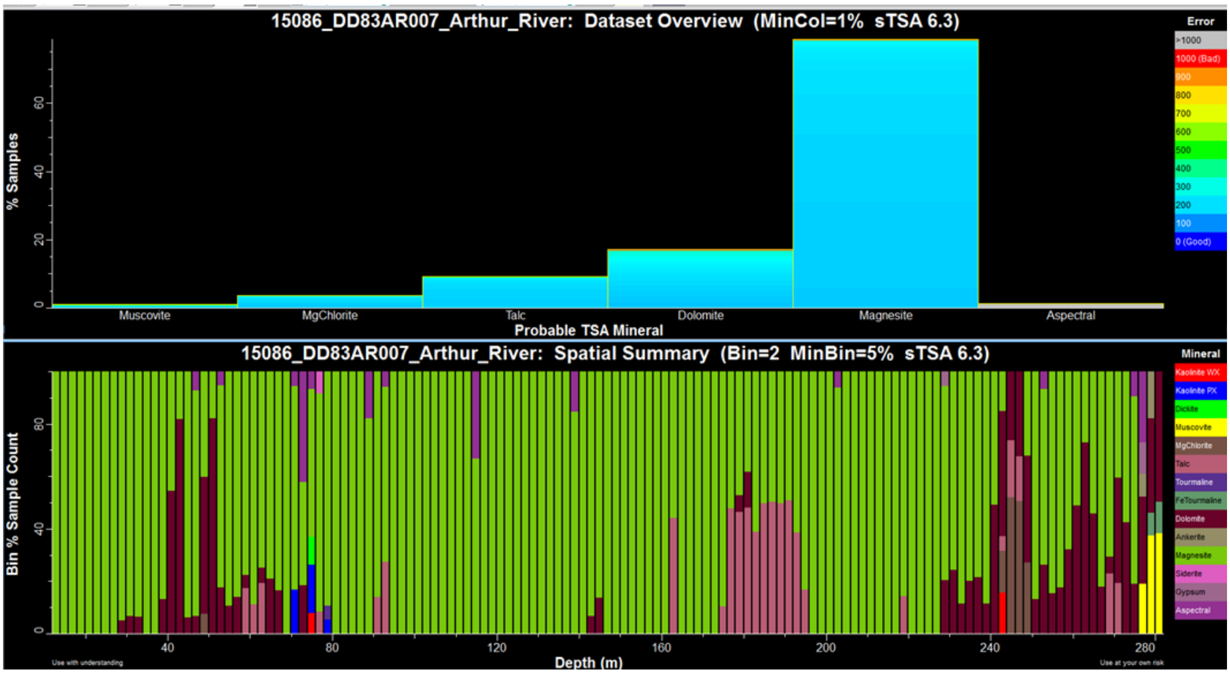

Figure 5: HyLogger data for hole AR007

Mineral contents in relative quantities are shown in the upper section, with the lower section showing the down-hole scan results on a 1m scale. Green = magnesite, light brown = talc, dark brown/purple = dolomite.

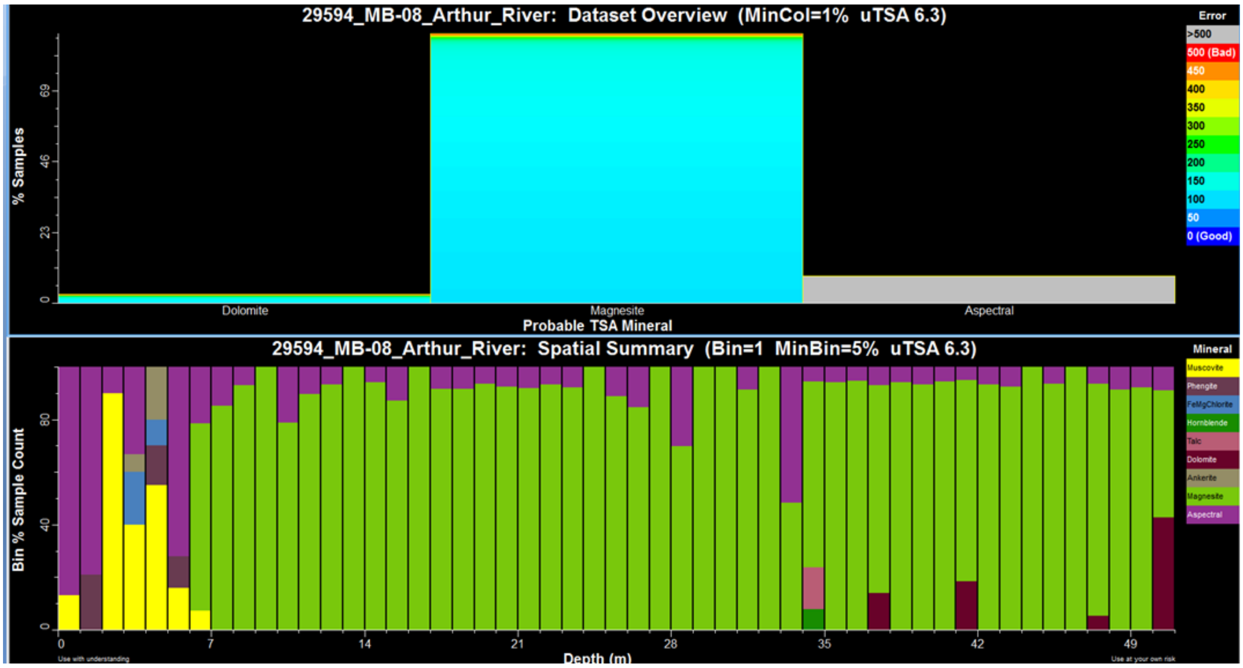

Figure 6: HyLogger data for hole AR008

Mineral contents in relative quantities are shown in the upper section, with the lower section showing the down-hole scan results on a 1m scale. Green = magnesite, light brown = talc, dark brown/purple = dolomite.

MB008 was the only hole to the north of the dolerite dyke which was analysed, and was shown to have low to negligible talc content.

4.2.2 Silica Content

Silica concentrations vary unpredictably within the magnesite, and are generally not discernable to the naked eye.

There appears to be an absence of quartz veining within the magnesite, and silica is rarely observed in the form of individual sub-angular crystals up to 3mm in diameter. The presence of micro-crystalline quartz within the matrix of the magnesite is possible, but it is considered more likely that a large fraction of the silica is dominantly contained within talc, not quartz.

4.2.3 Solution Features/Weathered Zones

Many solution features were encountered during the drilling process; the vast majority of these are filled with clayey sediment, most often derived from the weathering of the surrounding magnesite.

In the past these zones were logged as cavities. This appears to be an erroneous assumption due to the lack of core recovery in these zones. In many cases these solution features exhibit relict clear carbonate veins cross-cutting areas where the groundmass magnesite has decomposed to clay. It would appear they formed when rock adjacent to fractures allowing movement of ground water, are altered to clay over time.

Material is rarely recovered from these weathered zones as it is unconsolidated and washes away during the diamond drilling process. Several tests were conducted within these zones to determine if they were voids or filled spaces. The drill string was not able to free fall in any of them, but would make progress if the pump was turned on, suggesting they are filled with unconsolidated material. This is consistent with small quantities clay/sand material that was recovered occasionally in drilling.

4.2.4 Dolomite

Dolomite was the only other carbonate noted during lithological logging, and its' occurrences were found most often proximal to dolerite intrusive. The HyLogger data shows dolomite is distributed throughout the magnesite to varying degrees, and in general it would appear to be present in solid solution with magnesite.

4.2.5 Dolerite

Doleritic dykes and sills tend to exhibit chilled margins with magnesite. Beyond the chill margins the dolerite is typically medium to coarse-grained, suggesting the dolerite intruded the magnesite.

The dykes are constrained to within the magnesite body and do not extend into either the hanging wall or footwall sequences. The overall shape of the magnesite body suggests it might be a “mega boudin” with structural (sheared) contacts with both the footwall and hanging wall sequences. The lack of continuity of the dolerite dykes into these sequences tends to support this concept and implies the intrusion of dolerite (and hence the formation of the magnesite) occurred prior to significant deformation occurring in the Tyennan Orogeny.

An attempt at dating the dolerite proved unsuccessful (Perry, 2011b), but Perry suspects that it was emplaced during the Tyennan Orogeny, with subsequent deformation during the Tabberabberan Orogeny producing faulting and a partial to pervasive shear fabric.

5. Previous Work

The Arthur River magnesite deposit was first discovered in 1925 by the geologist B. P. Nye, who was assessing the suitability of the area for the construction of a dam. Assay results from samples taken returned results of 45 to 47.6% MgO, almost pure magnesite.

In 1970, Mineral Holdings Australia Pty Ltd (MHA) was granted a large exploration license (EL43/70) over the area and carried out exploration in association with a number of joint venture partners.

Between 1982 and 1988 MHA, in joint venture with CRAE, carried out geological mapping, geophysical gravity surveys, diamond drilling, metallurgical testing and feasibility and marketing studies with the view to assessing the Arthur and Lyons River magnesite deposits as a source of dead-burned and caustic calcined magnesite.

CRAE completed 7 diamond drill holes on the Arthur River Project (AR001 to AR007) totaling 1,610m of drilling.

This work delineated the magnesite body at the Arthur River, over 3,500 meters of strike length.

In 1997, TMNL entered into an option agreement to purchase the Arthur River Project from MHA. Check and exploratory diamond drilling at Arthur River comprised seven holes totaling 1,254.3 meters (AR002C, AR007C and AR008 to AR012) confirmed the results of earlier workers.

Crest Magnesium/TMNL went on to complete a further 16 diamond drill holes, one test pumping bore and 5 monitoring bores. They estimated that an Indicated Resource of 29 million tonnes at an average grade of 42.8% MgO and 5.3% SiO_2 existed in the south-western corner of RL8718.

The work is fully described in Skwarnecki 2011 and readers are referred there for details.

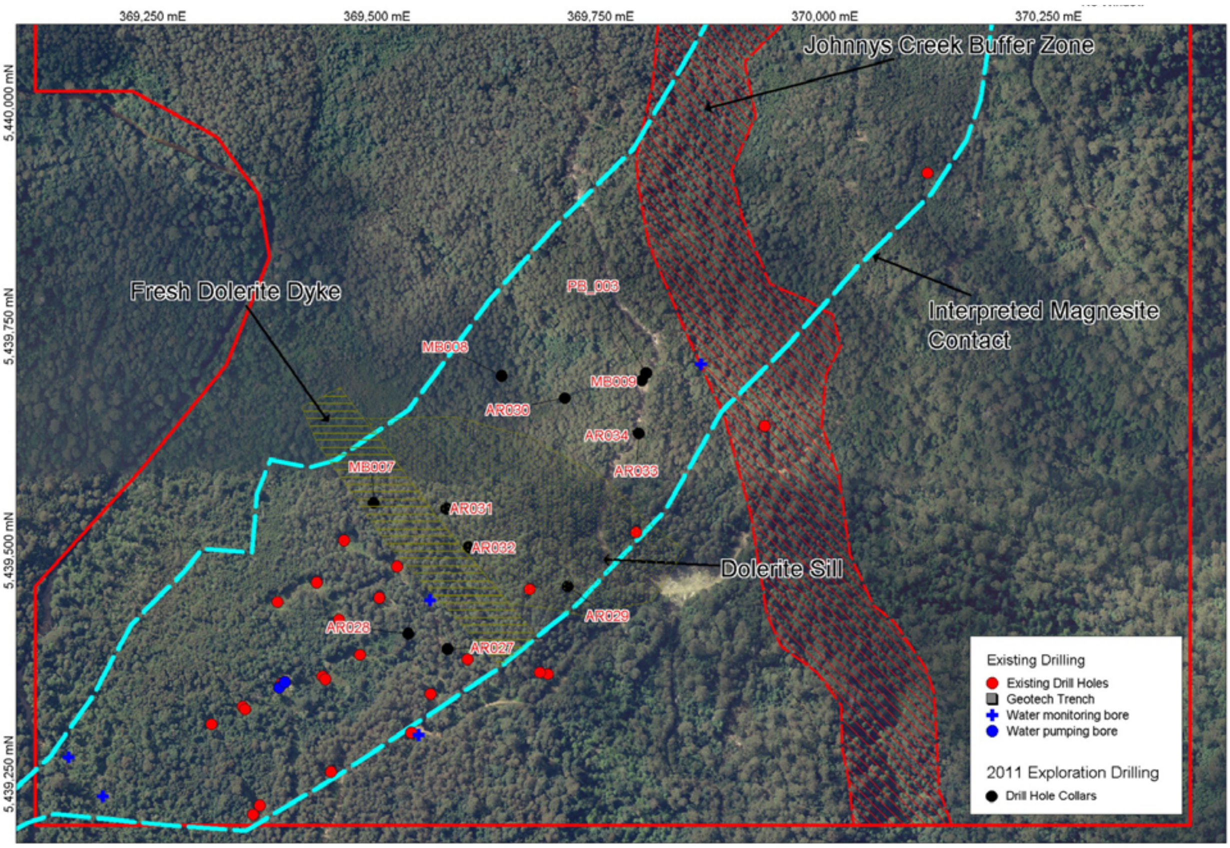

Figure 6: Location of previous and recent drilling M24/2009

5.1 Notes on Previous Drilling

5.1.1 Drilling techniques

Previous Drilling by Crest Magnesium/TMNL in 1997 was generally triconed through to the fresh rock interface, with HQ triple tube coring thereafter, this was sometimes cased down to NQ coring if difficulties were encountered. The triconed material was not geologically logged.

Drilling by CRAE was also triconed to bedrock with NQ core thereafter.

5.1.2 Logging

All previous drilling was logged by qualified geologists, usually on long hand paper logs. None of the core was orientated and there are no records of geotechnical data being collected or magnetic susceptibility measurements taken. Drilling recoveries are incompletely recorded.

Core photography is available for all previously drilled core, this is stored in hardcopy in TMNL's Hobart Office.

5.1.3 Downhole Surveys

Downhole surveys were carried out by CRAE in drill holes AR001 to AR006, generally a single survey was recovered from each hole. None of the Crest drill holes were surveyed and they are assumed to be drilled on their recorded collar orientation.

5.1.4 Core Storage

Diamond drill holes AR001 to AR003 and AR005 to AR007 are stored at the Mineral Resources Tasmania core storage facility, with drill holes AR013 to AR034 stored in TMNL's core shed in Calder Road, Wynyard.

Drill core from holes AR002C, AR007C and AR008 to AR012 appears to have been destroyed in sample preparation as whole core was crushed for assay. The crushed material from these holes appears to have been subsequently discarded by the laboratory.

6. Work Completed by the Derwent Geoscience

In 2010/2011 a number of investigations were carried out to determine the distribution and character of the dolerite dykes and also measure the depth of alluvial cover.

These work included a ground magnetics survey conducted in September 2010, surface mapping and a drilling program which concentrated on defining the dolerite body and exploring material to the north of the dyke which had not been tested in the past.

A pumping test was undertaken by GHD to better define hydrogeology of the area, building on a previous study by Golder Associates. A geophysics Honors project was undertaken by Owen Perry from the University of Tasmania (Perry 2011b), primarily investigating the geophysical properties of the overburden, and extending to mineralogical properties of the magnesite.

In addition some metallurgical test work was undertaken.

The studies are all reported separately to this report and summarized in Allen 2011.

6.1 Re-logging of Old Core

Prior to commencing of the drilling, all available drill core from previous work was re-logged.

Diamond drill holes AR001 to AR003 and AR005 to AR007 are stored at the Mineral Resources Tasmania core storage facility, with drill holes AR013 to AR026 stored in TMNL's core shed in Calder Road, Wynyard. Drill core from holes AR002C, AR007C and AR008 to AR012 were destroyed in the course of analysis at the time, and crushed material from these holes appears to have been subsequently discarded.

The re-logging allowed for greater consistency to be applied to geological interpretation across the project.

6.2 Drilling

In 2011 a diamond drilling was initiated on 28th February and was completed on the 7th June. The work was carried out by Edrill, with an Atlas Copco CS4000 diamond drill rig.

Eight exploration drill holes and two monitoring bores were drilled with PQ triple tube from surface and one monitoring bore and a pumping test bore drilled by open hole hammer with a water bore drill rig.

Figure 7: Retrieving core from AR028.

HOLE	NORTH (GDA55)	EAST (GDA55)	RL (AHD)	TOTAL DEPTH M	DIP	AZIMUTH (GDA)	PURPOSE
PB003	5439707.8	369799.5	188.2	49.5	-90	-	Pump test Bore
MB007	5439538.6	369485.4	153.0	43.3	-90	-	DD Monitoring Bore
MB008	5439689.8	369622.6	171.5	50.0	-90	-	DD Monitoring Bore
MB009	5439687.2	369789.6	188.7	48.0	-90	-	Open hole monitoring bore
AR027	5439383.3	369565.4	164.8	150.0	-55	60	DD Exploration
AR028	5439398.7	369553.0	163.6	71.1	-55	330	DD Exploration
AR029	5439449.5	369706.4	198.9	89.1	-60	330	DD Exploration
AR030	5439659.9	369691.1	180.6	143.2	-60	330	DD Exploration
AR031	5439541.5	369559.3	168.5	150.0	-60	330	DD Exploration
AR032	5439493.4	369575.7	167.3	150.0	-60	330	DD Exploration
AR033	5439620.5	369786.5	195.2	73.0	-60	330	DD Exploration
AR034	5439630.7	369779.8	194.3	150.0	-60	330	DD Exploration

Table 1: Summary of 2011 drilling

6.2.1 Drilling Aims 2011

The aim of the exploration drilling program was primarily to better define the width of the dolerite dyke and determine if there was potential for an open cut operation to extend through this barrier into magnesite on the other side, and to facilitate hydro geological test work.

6.2.2 Drilling Methods

Diamond drilling carried out in 2011 utilized the following approach;

- All holes were cored from surface, as triple tube drilling.
- Holes were collared with PQ which was drilled down until fresh bedrock was encountered.
- Drilling continued with HQ triple tube by drilling through the landing ring of the PQ barrel. It was found less problematic to not remove the PQ to put a casing shoe on the drill string.
- Drilling continued in HQ to bottom of hole, if problematic ground conditions were encountered the hole was continued in NQ triple tube by coring through the HQ landing ring.
- The casing was recovered from about half of the holes drilled.
- Ground conditions are challenging, and holes tend to cave when casing is removed.

6.2.3 Downhole Surveys

Downhole surveys were taken in at intervals of 30m where possible. A Reflex EZ-Shot instrument was used.

Downhole surveys proved problematic as the holes commonly caved when the rods were back 6m off bottom of hole to carry out the survey. In a number of cases surveys were not taken on completion of holes as they caved as the rods were extracted.

Holes that were successfully surveyed tended to deviate minimally from their planned path.

In future use of an in rod gyro survey tool is strongly recommended.

Core orientation was also undertaken using a Reflex ACT II RD tool. Unfortunately, whilst the tool worked correctly the broken nature of the ground meant that orientations were difficult to carry through complete runs, this lead to a limited amount of useful structural data being collected.

Hole	Depth (m)	Interval (m)	MgO (%)	FeO (%)	SiO (%)
AR027	102.5	44.2	43.04	0.65	7.35
AR028	39.5	19.6	43.10	0.67	3.53
AR029	-	-	-	-	-
AR030	26.0	47.0	41.40	2.30	5.13
AR031	60.0	90.0	42.34	1.49	5.44
AR032	90.0	36.0	40.87	1.22	3.79
AR032	131.0	15.0	41.09	0.81	8.17
AR033	65.5	5.0	41.12	4.78	6.28
AR034	128.5	9.5	40.56	1.93	10.26
MB007	34.3	9.0	42.84	0.93	0.98
MB008	6.9	43.4	43.79	1.93	2.55

Table 2: Summary table of significant assay results from 2011 drilling (>40% MgO).

6.2.4 Surveying and Capping of Holes

Upon completion and removal of the rig, holes were capped using PVC pipe and caps, and their position measured by a licensed surveyor using a Trimble differential GPS (see Table 1).

6.3 Handling and Processing of 2011 Drill Core

6.3.1 Recovery and Transport

At the drill site the core was extracted from the triple-tube, then placed in marked plastic core trays. Where bottom-of-core orientations had been obtained, a mark was placed on the core in red crayon pencils.

A wooden core blocks were placed at the end of each run, denoting the run length, downhole depth and amount recovered (as measured by the driller).

Filled core trays were removed from site once per day by Derwent Geoscience staff, and transported to the core shed at Wynyard.

6.3.2 Core Photography

The core was initially marked up on one meter intervals and bottom of hole orientation lines were extended along core using red crayon pencils. The orientation lines were placed on the upper side of the core prior to photographing the core.

Trays were photographed one at a time, with the start of the tray located in the top left hand corner of the photo. Digital photos are stored with the drilling data base.

Figure 8: Core Photograph - AR027.

6.3.3 Magnetic Susceptibility

The magnetic susceptibility measurements were taken using an Exploranium KT9 Kappameter, with measurements taken at intervals of approximately 1 metre where possible.

6.3.4 Specific Gravity
Specific gravity (density) measurements were collected at approximately 3m spacing's, except in zones where the rock type did not change for long intervals, or where the material was likely to decompose in water.

A simple buoyancy method was used for this project, with the rock first weighed in dry air, then weighed in water. Upon removal from the water the rock was wiped with a towel and weighed again to check for any change of weight that might have been caused by the rock disintegrating or absorbing water. Erroneous readings were repeated or replaced by a nearby rock sample.

The calculation used for calculating the specific gravity is given below:

$$S.G. = Wt_{air}/(Wt_{air}-Wt_{water})$$

Where: Wt_{air} is the free-air mass
Wt_{water} is the submerged weight

6.3.5 Alpha/Beta Measurements
Alpha and Beta measurements of structural, geotechnical and geological features were collected by the geologist during the logging process.

6.3.6 Geotechnical Logging
Geotechnical logging was carried out on all diamond drill holes prior to major disturbance of the core using a system provided by GHD.

6.3.7 Geological Logging
Geological logging was completed following geotechnical logging. In addition to lithological logging, vein features were noted for their colour, linearity, and if their occurrences were confined to clast or matrix. Other features noted included the presence of talc or sulfides and their nature, the degree of weathering, and any structures.

All logging was carried out by an appropriately qualified geologist, with assistance from a trained core technician.

6.3.8 Core Sampling
HQ and PQ core was sampled as quarter core, and NQ half core, all core was cut with a diamond saw under the supervision of the project geologist.

Sampling was focused on zones of fresh magnesite; generally other material (overburden and dolerite) was not sampled. Sampling was generally over 1meter intervals, but in zones of poor recovery or on geological boundaries this was sometimes modified. Drill core recoveries were measured for each sample interval and recorded in the drill database.

Material in solution features was not usually sampled, as it was rarely recovered in drilling.

Where cavity fill material was sampled it was sampled separately from the magnesite, the logic being that if the material was included in a magnesite sample it would not be possible to back calculate the grade of the magnesite to model a recovered grade if the fill material can be removed in a washing plant.

3-part sample ticket books were filled out, noting the meterage and recoveries. One part of the ticket was placed in the sample bag and one part in the core tray at the end of each sampled interval. The filled out ticket book butts are filed at Derwent Geosciences' Hobart office.

6.3.9 *Sample Preparation and Assays*

Samples were submitted Burnie branch of ALS Chemex, where sample preparation was carried out, with pulps being freighted to ALS Chemex in Brisbane for analysis. Pulps and bulk rejects are stored at ALS in Burnie.

- At ALS in Burnie the samples were initially sorted and dried at 100°C prior to coarse crushing in a jaw crusher.
- Approximately 300 grams of material was then split off and pulverised to a nominal 90% passing 80# mesh.
- In Brisbane the samples were analysed using ALS's Limestone/Dolomite Suite (Code: ME-XRF12s).

This comprised fusion XRF for CaO, SiO2, Fe2O3, Al2O3, Mn2O3, Na2O, K2O, SO3, MgO, TiO2, Cr2O3, P2O5, SrO and TGA furnace for Loss on Ignition (LOI). A 0.01% detection limit applies to all elements in this suite.

6.3.10 *Quality Control*

To provide quality control on sample assays, standards from previous assays were inserted at intervals of approximately 25 samples. Three standards of varying composition were used, each comprised of material used in metallurgical studies.

Upon receiving assay results, standards were compared to previous results to confirm the reliability of assays. These are shown graphically in Figures 9 & 10, which shows all samples well grouped, and each standard has a distinctive composition.

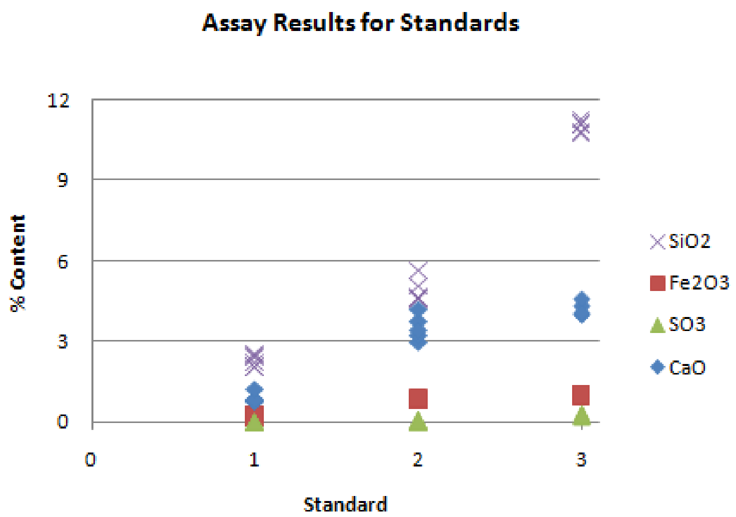

Figure 9: Grouped results for standards used for assays, showing well grouped results for all analytes.

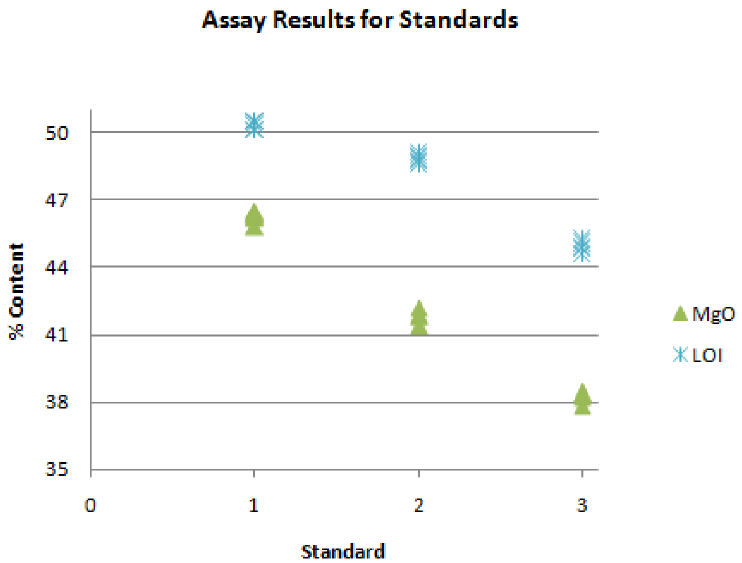

Figure 10: Grouped results for standards used for assays, showing well grouped results for all analyses.

7. Resource Estimation

An Inferred Resource has been estimated for the magnesite at Arthur River. The estimate utilized all drilling and geological data on hand in September 2011.

7.1.1 Information used in this Estimate.

Data used in this resource estimate includes all information on hand as of September 2011. Some drill holes were excluded from the estimate as their locations were not accurately documented , one drill hole AR006 was excluded as the analytical data could not be located and all open hammer holes were excluded as they were either not sampled, or samples appear to be contaminated.

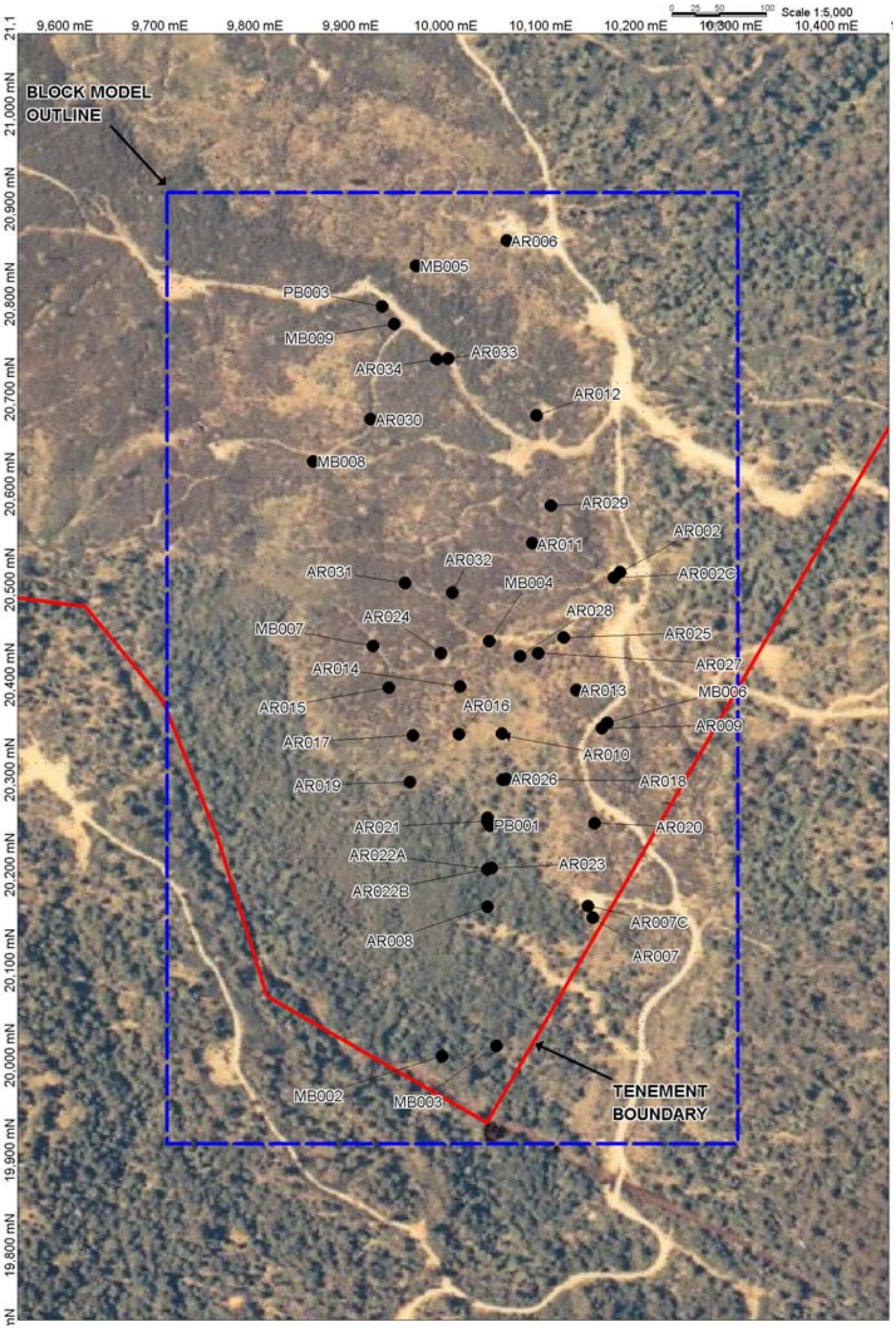

Figure 11: Block Model Outline and Drill Collars (Local Grid)

HOLE	Company	Included or Excluded	COMMENT
AR001	CRAE	Excluded	Drilled outside resource area.
AR002	CRAE	Excluded	Twined by Crest, but collar location not accurately recorded.
AR002c	Crest	Included	Collar location not surveyed, location estimated
AR003	CRAE	Included	Collar location not surveyed, location estimated
AR004	CRAE	Excluded	Hole abandoned in collar, not sampled
AR005	CRAE	Included	Collar location not surveyed, location estimated
AR006	CRAE	Excluded	Analytical data not located
AR007	CRAE	Excluded	Twined by Crest, but collar location not accurately recorded.
AR007C	Crest	Included	
AR008	Crest	Included	
AR009	Crest	Included	
AR010	Crest	Included	
AR011	Crest	Included	
AR012	Crest	Excluded	Not sampled
AR013	Crest	Included	
AR014	Crest	Included	
AR015	Crest	Included	
AR016	Crest	Included	
AR017	Crest	Included	
AR018	Crest	Included	
AR019	Crest	Included	
AR020	Crest	Included	
AR021	Crest	Included	
AR022	Crest	Excluded	Core to 33.7m
AR022A	Crest	Included	Sampled to 51m, hole abandoned
AR022B	Crest	Included	Sampled from 37m.
AR023	Crest	Included	
AR024	Crest	Included	
AR025	Crest	Excluded	Not sampled
AR026	Crest	Included	
AR027	TMNL	Included	
AR028	TMNL	Included	
AR029	TMNL	Included	
AR030	TMNL	Included	
AR031	TMNL	Included	
AR032	TMNL	Included	
AR033	TMNL	Included	
AR034	TMNL	Included	
PB001	Crest	Excluded	Open Hole, sampled on 3m intervals, but samples are very low grade in comparison with adjacent holes, contamination is strongly suspected.
PB002	Crest	Excluded	Open Hole, not sampled.

HOLE	Company	Included or Excluded	COMMENT
PB003	TMNL	Excluded	Open Hole, not sampled
MB001	Crest	Excluded	Not sampled
MB002	Crest	Included	
MB003	Crest	Included	
MB004	Crest	Excluded	Not sampled
MB005	Crest	Included	
MB006	Crest	Excluded	Not sampled
MB007	TMNL	Included	
MB008	TMNL	Included	
MB009	TMNL	Excluded	Open Hole, not sampled

Table 3: Drill Holes used or excluded from the Resource Estimate

7.1.2 Data density and distribution.

Within the area subject to the resource estimate drilling has been conducted on an east west orientation on sections spaced approximately 50m apart. Drill spacing on sections is highly variable with a number of sections having 2 drill holes collared in opposite direction from a single pad. On average the sectional spacing is of the order of 100m.

7.1.3 Geological Interpretation.

Geological interpretation was undertaken by Chris Allen of Derwent Geoscience and documented in a separate report, Allen 2011. The sectional interpretation was imported into Vulcan software and wire framed into a solid model.

These files are included in the attached digital appendix xx.

7.1.4 Estimation and modeling techniques.

A block model (AROct11_V5.bmf) was constructed in local grid using Vulcan software. The model has the following dimensions;

Min X	9,700	Max X	10,300
Min Y	19,900	Max Y	20,900
Min RL	-20	Max RL	230

Maximum block size is 20mX x 40mY x 10mRL with sub-blocking down to 5mX x 10MY x 5mRL.

The model was created with the following fields;

Rock – Rock Type
- too – transported overburden
- mag – magnesite
- magox – Oxidised magnesite
- foot – footwall rocks
- hang – hanging wall rocks
- dola,b,c,d - dolerites

Ox – Oxidation State
- co – completely oxidised
- uo – unoxidised (fresh) rock.

MgO – MgO grade %

SiO2 – SiO2 grade %
Fe2O3 – Fe2O3 grade %
Cao – CaO grade %
Sg – Specific Gravity
Sg_mod – Specific gravity modified to include weathering zones in magnesite

The drill database was composited to 3m downhole lengths and grade estimation was carried out in two passes using an ellipse with an orientation striking 350o to grid north, and dipping at -35o to grid east.

The following search distances were applied to each pass.

Pass	X	Y	Z
1	80	80	10
2	160	160	20

The estimate utilized Inverse Distance Squared interpolation to estimate grades of MgO and contaminants into each block.

7.1.5 Tonnage factors.

The following specific gravity values were applied to the model in the "sg" field.

Rock Code	Completely oxidised (t/m3)	Fresh (t/m3)
too	2.2	-
mag	2.3	2.9
magox	2.3	-
foot	2.2	3.0
hang	1.9	2.7
dola,b,c	2.1	2.9
dold	2.4	2.4

The densities utilized in this block model should be considered to be wet densities due to the manner in which the measurements were made.

The weathered zones associated with solution features are estimated to comprise 13% of the volume of the fresh magnesite. The estimate is based on the average drilling recoveries measured by Derwent Geoscience in the most recent round of drilling. Drilling recoveries are incompletely recorded for previous work conducted by Crest. Whilst it is recognized that a portion of these losses are attributable to other issues (broken ground, driller error etc) there is no means of quantifying the magnitude of these losses. Hence a conservative assumption that all loses are attributable to unrecovered weathered features has been made.

The specific gravity of the clayey weathered zones is assumed to be 2.2 t/m3, based on a single measurement made in the course of recent drilling.

In order for the block model to report correct tonnages of magnesite the specific gravity of the fresh magnesite was factored in the following manner. All other specific gravity values remain unchanged in this field.

sg_mod *= (0.87 * sg magnesite)*
*= (0.87 * 2.9)*
= 2.52 t/m3

It should be noted that for the block model to correctly report tonnages of all materials within a volume the following calculation must be made.

Fresh Magnesite tonnages - *report correctly from the model using "sg_mod"*

Fresh Magnesite volumes - *"mag" volume reporting from the block model * 0.87*
Weathered zone volumes - *"mag" volume reporting from the block model *0.13*
Weathered zone tonnages - *"mag" volume reporting from the block model * 0.13 * 2.2*

Figure 12: Weathered zone in AR032 – 92.5m

7.1.6 Mining factors or assumptions.
The resource model was constructed on the assumption that mining of the magnesite would be via open pit methods. In addition it is assumed that grade control will be used to selectively mine higher grade parcels of magnesite, and to determine the distribution of contaminants on a local scale.

7.1.7 Metallurgical factors or assumptions.
A primary metallurgical assumption is that the weathered clay zones contained within the fresh magnesite (discussed above) will be upgraded in the first stage of processing by crushing wet screening the ROM material to remove the unconsolidated weathered material.

Hence the block model has been constructed in such a manner that an economic assessment can be made by looking directly at the grades of the fresh magnesite without considering dilution by weathered zones.

Test work is required to confirm this assumption.

7.1.8 Cut off grades or parameters.
A cut off grade of +40% MgO has been utilized in quoting the resource. This is based on input from Process Technologies Australia Pty Ltd, metallurgical consultants advising TMNL, who also advised that maximum levels of contaminants should fall below 6% SiO_2, 2% Fe_2O_3 and 5% CaO.

7.1.9 Classification.
The resource is classified as Inferred in its entirety for the following reasons;

- Lack of geological understanding.

- The orientation of the higher grade zones within the magnesite body is inferred from observations made in a few specific areas, there is no guarantee that this orientation is pervasive throughout the magnesite. A variographic study performed by Hellman & Schofield (Appendix A) failed to demonstrate continuity, denser drilling is required to determine the orientation and continuity of high grade zones.
- The controls on the various contaminants (which impacts directly on the value of the magnesite and cost of processing) is unknown. Denser drilling is required to elucidate controls on contaminants.
- The location of both the footwall and hanging wall of the magnesite body is poorly constrained, additional drill holes are required.
- The thickness and nature of overburden, and the weathering interface is poorly constrained as a significant portion of the drilling was angled from a single point in the centre of the magnesite body. Gridded drilling is required.

- Downhole surveys – it is noted that the bulk of the historical drilling has not been surveyed downhole, this leads to some uncertainty as to the location of most of the samples used in this estimate, however as deviation of drill holes that have been surveyed is not significant, and the magnesite body is large this is unlikely to contribute a significant level of uncertainty to the estimate.
- The specific gravity of the weathered material has not been determined as the material is rarely recovered in drilling. In situ measurements should be undertaken in future drilling, or a targeted program to recover material need to be undertaken.
- Insitu measurements of density will also allow for a more accurate estimate of the proportion of the volume of weathered zones within the fresh magnesite.

7.1.10 Recommendations to upgrade the Resource Estimate

It is recommended that a preliminary economic assessment of the magnesite resource is undertaken so that future work can focus on areas which are most likely to add value to the project. Work to upgrade confidence should focus initially on these areas.

1. Drilling should be undertaken on a grid to a recommended density of 50 x 50m.
2. Drilling should target multiple intercepts into the foot wall and hanging wall in order to define the dip and location of these contacts.
3. In situ density measurements should be undertaken to confirm the specific gravity of the internal weathered zones, and to attempt to quantify the proportion of weathering within the magnesite.
4. Commercial standard reference material should be sourced if possible to provide stronger quality assurance, or internally selected standards should be developed and documented.
5. The current sampling and logging practices should be maintained.

8. References

Abbott, J, 2011	Resource Potential of the Arthur River Magnesite Deposit. Unpublished internal technical report for Derwent Geoscience by Hellman & Schofield Pty Ltd.
Allen, C.A. 2011	Field Work Arthur River project 2011. Unpublished internal technical report by Derwent Geoscience Pty Ltd for Tasmania Magnesite NL.
Perry, O. 2011a	Geology and genesis of Magnesite deposits and a series of deposits within the Arthur Lineament in NW Tasmania, Australia. Unpublished Honors Literature Review, University of Tasmania.
Perry, O. 2011b	A Geophysical and Geological Study of the Arthur River Magnesite Deposit, Northwest Tasmania. Unpublished Honors Research Thesis, University of Tasmania.
Skwarnecki, M. 2011	Arthur-Lyons Magnesite project – Update. Competent persons report by Coffey Mining for Beacon Hill Resources PLC.

APPENDIX A – Hellman & Schofield Report

H & S Hellman & Schofield Pty Ltd

Technical specialists to the minerals industry
ABN 14 083 082 722

mineral resource and ore reserve studies
geostatistical software
technical audits and reviews
MP© grade control systems

geostatistical applications and research
JORC compliance assessment
geological databases and modelling
geochemical exploration

27th September 2011

Mr Stewart Capp
Derwent Geoscience Pty Ltd
PO Box 1081
Sandy Bay, Tasmania 7005

By Email

Dear Stewart

RE: Resource potential of the Arthur River Magnesite deposit

1. Introduction and summary

Hellman & Schofield Pty Ltd (H&S) was commissioned by Derwent Geoscience Pty Ltd (Derwent) to review sampling information available for Tasmania Magnesite's (TMNL) Arthur River Magnesite deposit in northwest Tasmania. Primary goal of this review is estimation of the deposits resource potential and recommendation of work required to report mineral resources in accordance with the JORC code.

The current review is based on sampling data and interpreted geological and mineralisation wireframes provided by Derwent. Derwent specified that H&S was not required to review the validity or quality of the sampling data and it has been used on an as supplied basis.

The supplied mineralised domain strikes north-south and has been interpreted over 1.3 kilometres with an average width of approximately 300 metres. It extends below the base of drilling to around 300 metres depth. Mineralisation is overlain by generally around five to ten metres of alluvium and is cross cut by several variably oriented barren dolerite dykes. The supplied oxidation surface shows considerable variability and ranges from around 10 to 80 metres deep.

Supplied sampling data includes results from 17 RAB and 44 diamond holes for approximately 7,300 metres. This drilling samples the mineralisation on an irregular, commonly broad pattern, ranging from in the order of 100 metres east-west by 50 metres north-south over 350 metres of strike in the central portions of the deposit to considerably broader in the northern and southern parts.

Assay results are not available for a significant proportion of diamond drill hole intersections with the mineralised domain. These unassayed intervals apparently represent a combination of core that has been deliberately not sampled on the basis of geological observations and intervals of core loss. Derwent estimate that around 13% of the mineralised domain comprises weathered clay zones for which diamond drilling typically achieves very poor recovery.

The current review includes MgO, and primary contaminant grades specified by Derwent to include CaO, Fe_2O_3 and SiO_2. Although there is no notable correlation between MgO grades and the individual contaminant grades, there is a general reduction in combined contaminants grade with increasing MgO values reflecting the high proportion of magnesite (47.8% MgO, 52.2% CO_2) represented by MgO high grade samples. The small set of composite intervals with very low MgO grades have particularly high Fe_2O_3 and SiO_2 assays.

For each of the attributes included in the current study, grade continuity is poorly defined by the available broadly spaced drilling. Variogram analysis shows no measurable continuity in the east-west direction reflecting broad spaced sampling in this direction. A set of variogram models produced for the current study assume east-west continuity based on the north-south direction and are of uncertain reliability.

Two Ordinary Kriged (OK) models were constructed for unoxidised magnesite mineralisation, and are designated as Model A and Model B. Model A includes only composites with at least partial assay coverage. For Model B unassayed intervals within the mineralised domain were reviewed on a case by case basis and were classified as either waste, or potentially mineralised dependent on logged lithology and nearby MgO assays. Potentially mineralised intervals were assigned null values and the waste intervals were assigned nominal grades for all attributes on the basis each attribute's correlation with MgO grades.

Table 1 presents both model estimates at the grade thresholds specified by Derwent as representing the current interpretation of potentially economic mineralisation. Both models extend to the base of drilling at around 280 metres below surface. The estimates are subdivided into relatively higher and lower confidence estimates designated as category 1 and 2 estimates respectively with category 1 estimates representing mineralisation tested by generally 100 by 50 metre drilling. The considerable variation between Model A and Model B estimates provides an indication of the sensitivity of estimates to treatment of unassayed intervals.

The Arthur River mineralisation is currently insufficiently well defined to justify reporting of Mineral Resources. The current estimates should be considered as representing the project's exploration potential. JORC resource reporting requirements specify that estimates of exploration potential be reported as a range, and not be aggregated with Mineral Resource estimates for public release. This potential mineralisation is based on broadly spaced drilling and has had insufficient exploration to define a Mineral Resource, and the estimates of tonnage are conceptual in nature. It is uncertain that further drilling will convert any of the exploration potential to a Mineral Resource.

Gemcom software was used for data compilation, wire-framing and composite calculation, and GS3©, the resource estimation software marketed by H&S was used for resource estimation. The resulting GS3© model was imported into Gemcom for reporting of resources, and a Vulcan format model was created for use by Derwent.

Table 1: Arthur River preliminary estimates

> 40% MgO, < 5% CaO, <3% Fe_2O_3, <6% SiO_2						
	Confidence Category	**Mt**	**MgO%**	**CaO %**	**Fe_2O_3 %**	**SiO_2%**
Model A	1	19	43	2.9	1.3	4.1
	2	20	43	2.8	1.6	4.0
	Total	**39**	**43**	**2.8**	**1.5**	**4.0**
Model B	1	14	43	2.8	1.3	4.2
	2	15	43	2.9	1.6	3.8
	Total	**29**	**43**	**2.9**	**1.5**	**4.0**

Recommendations:

Key recommendations to improve confidence in estimates for the Arthur River deposit and progress towards reporting mineral resource estimates in accordance with the JORC code are outlined below:

Infill drilling: Drill spacing required to define grade continuity with sufficient confidence for resource estimation are not clear. However, from the information available for H&S it appears likely that infill drilling to a consistent 50 by 50 metre pattern will allow estimation of Inferred resources.

Sample recovery: Resource estimates are sensitive to treatment of the unassayed intervals that represent a significant proportion of mineralised drill intercepts. Future drill programmes should investigate alternative drilling methods to improve sample recovery, particularly for the weathered, clayey zones. Achieving reliable sample recovery through such zones will improve confidence in future sampling, and allow more accurate assignment of grades to unassayed intervals for existing drilling.

Data collection: Where possible, the current practise of comprehensive sample recovery monitoring, and regular density measurement should be continued for future drill programmes. No information about assay quality monitoring (QAQC) for drilling to date was supplied for the current review. The quality of sampling and assaying for future drilling should closely monitored by routine submission of reference standards, blanks, inter-laboratory checks, and where appropriate duplicate sampling.

Domain interpretation: The supplied geological and mineralisation wireframes appear logically interpreted and generally well constructed. However, there appears to be some, comparatively small areas where minor modifications to domain boundaries including internal dolerite dykes may be improve definition of the mineralised domain and improve confidence in estimates.

Economic potential: JORC reporting rules require resource estimates to be potentially economically viable. In addition to application of appropriate cut off grades, this can require application of appropriate depth constraints, or pit shells for open pit resources. Reporting of Arthur River Mineral Resources in accordance with the JORC code may require some consideration of the limits of potential of economic extraction for the deposit.

2. Available information

2.1 Data compilation

The current review is based on sampling data and interpreted geological and mineralisation wireframes supplied by Derwent in a set of Microsoft Excel files and DXF format triangulations on the 14th of September 2011 (**Table 2**). Checking of the supplied data files for internal consistency by H&S revealed no errors demonstrating that the database has been carefully compiled and thoroughly checked.

Table 2: Key data files

	File	**Description**
Drill data	Drilling_collar_July_2011.xlsx	Collar information
	DHS.xlsx	Downhole surveys
	Assay.xlsx	Downhole assays
	Lith.xlsx	Geological logging
	SG.xlsx	Density measurements
Wireframes	topo.dxf	Surface topography
	bo_alluvium_extended.dxf	Base alluvium
	to_fresh.dxf	Top of fresh rock (base oxidation)
	dolerite_1.dxf	Dolerite
	dolerite_2.dxf	Dolerite
	dolerite_3.dxf	Dolerite
	dolerite_4.dxf	Dolerite
	magnesite.dxf	Magnesite mineralised domain

Table 3 summarises the drill hole database compiled for the current review, and **Figure 1** shows drill hole traces coloured by sampling type relative to the supplied mineralised domain at the base of oxidation. This table and figure exclude five trenches contained in the supplied sampling database.

Table 3 demonstrates that drilling by Crest Magnesium between 1998 and 1999 provides the majority (61%) of the diamond dataset, with CRA drilling from the 1980's providing 24%, and TMNL's recent drilling contributing 11% of drilling.

Figure 1 shows that drill hole coverage of the mineralisation is highly variable. In the closest sampled portion of the deposit, between approximately 20,150 and 20,500 mN which represents around a quarter of the mineralised domain, data coverage averages approximately 100 metres east-west by 50 metres north south. For the majority of the domain, which extends around 800 metres to the north and 150 metres to the south of this more closely sampled area, the drill hole spacing is considerably broader and less regular.

Table 3: Compiled drill hole database

	RAB		**Diamond**		**Total**	
	Holes	**Metres**	**Holes**	**Metres**	**Holes**	**Metres**
CRA 1983-1984	13	159	7	1,644	20	1,802
Crest 1998-1999	2	100	27	4,226	29	4,326
TMNL 20111	2	97.5	10	1,070	12	1,168
Total	**17**	**356.1**	**44**	**6,940**	**61**	**7,296**

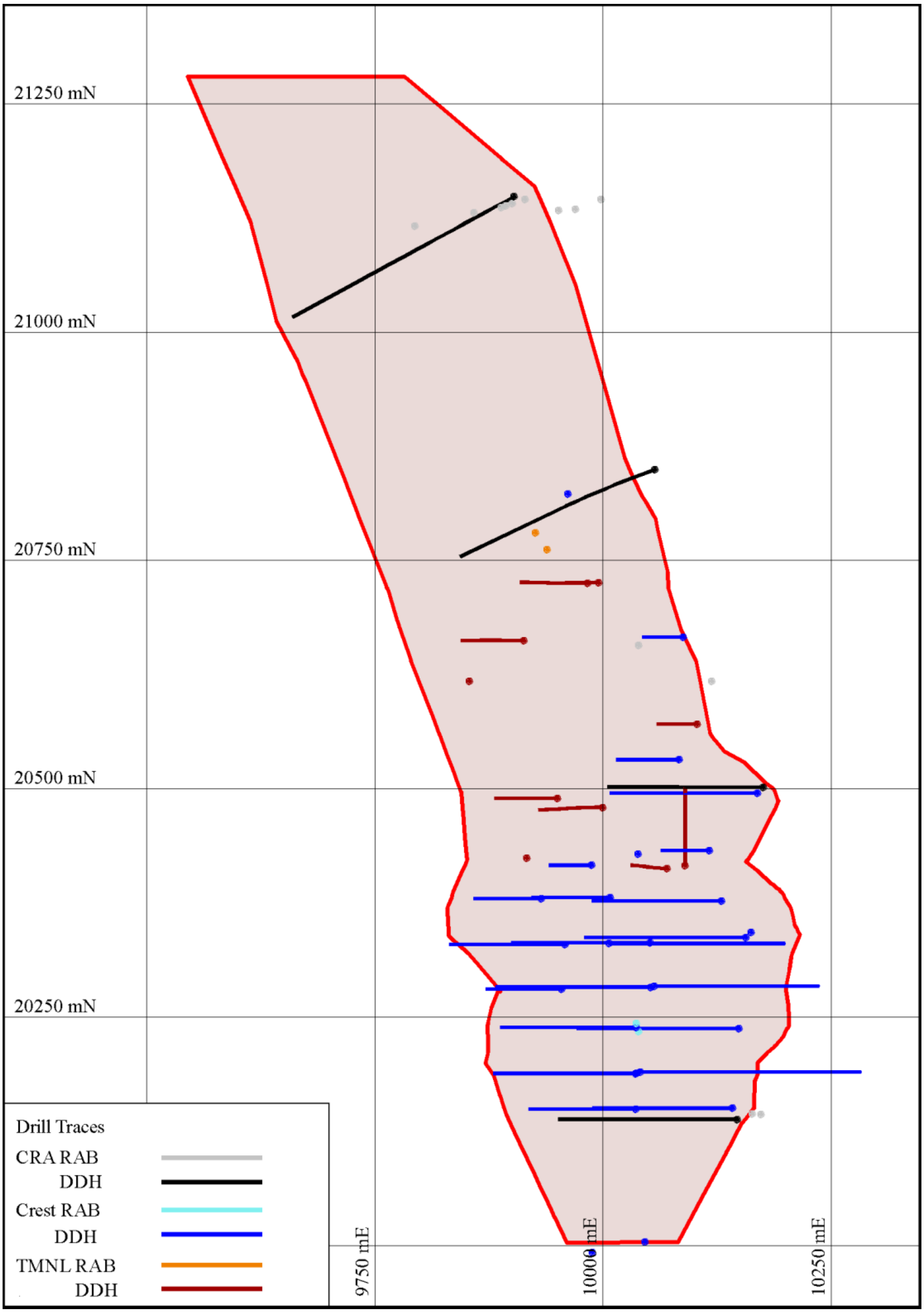

Figure 1: Drill hole traces and mineralised domain

2.2 Sample lengths

Figure 2 presents a histogram of sample lengths for assayed intervals of diamond core. This figure demonstrates that diamond core sample lengths range from 0.1 to 18 metres and vary considerably with sampling phase. Although TMNL's sampling was commonly conducted over metre intervals, the older CRA drilling was generally sampled over longer intervals and is dominated by five metre length samples, and Crests's drilling was generally sampled over intervals of around 1.5 to 3.0 metres.

For the combined dataset of assayed diamond core, 78% was sampled over intervals between 1 and 3 metres in length and the data reviews and Kriged models created for the current study are based on three metre down-hole composites.

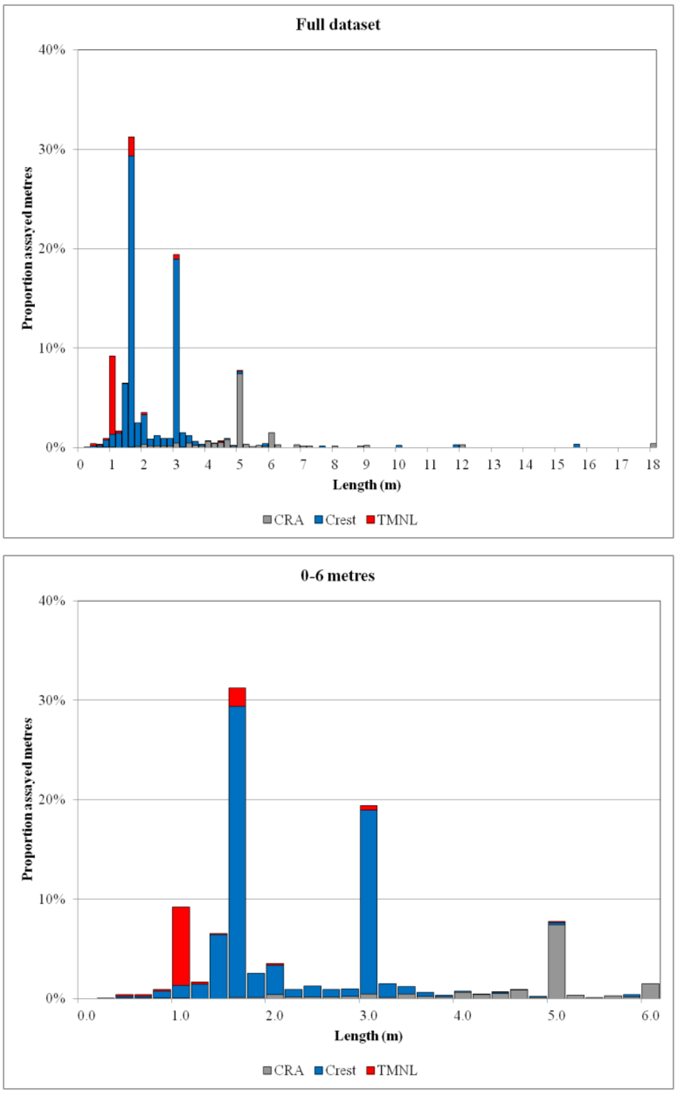

Figure 2: Histogram of diamond core sample lengths

2.3 Assay coverage

Table 4 summarises assay coverage for three metre down-hole composites within the mineralised domain. This table demonstrates that, for each sampling phase assay results are unavailable for a significant proportion of diamond drill hole intervals within the mineralised domain. **Table 4** makes no allowance for core recovery of assayed intervals. The partially assayed composite intervals in this table represent composites where assayed intervals do not provide complete assay coverage of the nominally three metre composites lengths. For these intervals, assay coverage ranges from 3 to 93% and averages 53%.

CRA's drilling has the lowest proportion of assay coverage, with only 52% of mineralised domain drilling from this phase having complete assay coverage. For the combined dataset only 75% of composites have complete assay coverage.

The unassayed and partially assayed composites within the mineralised domain appear to represent a combination of intervals that were deliberately not sampled on the basis of geological observations, such as small intervals of dolerite, and intervals of core loss.

Derwent report that, around 13% of TMNL's drilling within the mineralised domain intersected weathered clay zones for which core recovery was generally very low, suggesting that such intervals are also likely to contribute to a high proportion of the unassayed intervals from other drill phases.

Although the grades of unassayed intervals unclear, available information suggests that they are likely to have lower MgO grades and generally higher contaminant grades than assayed intervals.

Table 4: Assay coverage for mineralised domain composites

		Number	**Proportion**
CRA	Unassayed	160	41%
	Partially assayed	31	8%
	Completely assayed	203	52%
	Total	**394**	**100%**
Crest	Unassayed	109	9%
	Partially assayed	52	4%
	Completely assayed	1,003	86%
	Total	**1,164**	**100%**
TMNL	Unassayed	51	22%
	Partially assayed	49	21%
	Completely assayed	134	57%
	Total	**234**	**100%**
Total	Unassayed	320	18%
	Partially assayed	132	7%
	Completely assayed	1,340	75%
	Total	**1,792**	**100%**

2.4 TMNL core recovery

Information available for TMNL's diamond drilling includes comprehensive measurement of core recovery. The summaries of TMNL core recovery presented in **Table 5** and **Figure 3** exclude a single anomalous interval with greater than 100% recovery (MB007, 42-43.3 metres).

Table 5 and **Figure 3** demonstrates that for the fresh mineralisation that is the focus of current investigations core recovery is generally reasonable and averages 80% and around 50% of mineralised composites have average recoveries of greater than 90%. However, the mineralised drilling does include a significant proportion of low recovery samples with 20% of composites having average recoveries of less than 60% and 10% having less than 40% recovery.

Figure 4 plots core recovery against composite MgO grade and demonstrates that there is no consistent relationship between high or low recovery intervals and MgO grade.

Table 5: Summary of core recovery for mineralised composites from TMNL diamond drilling

	Core Recovery (%)		
	Oxide	**Fresh**	**Total**
Number	31	151	182
Average	**42**	**80**	**73**
Minimum	7	20	7
1st Quartile	16	63	47
Median	**38**	**90**	**83**
3rd Quartile	54	100	100
Max	100	100	100

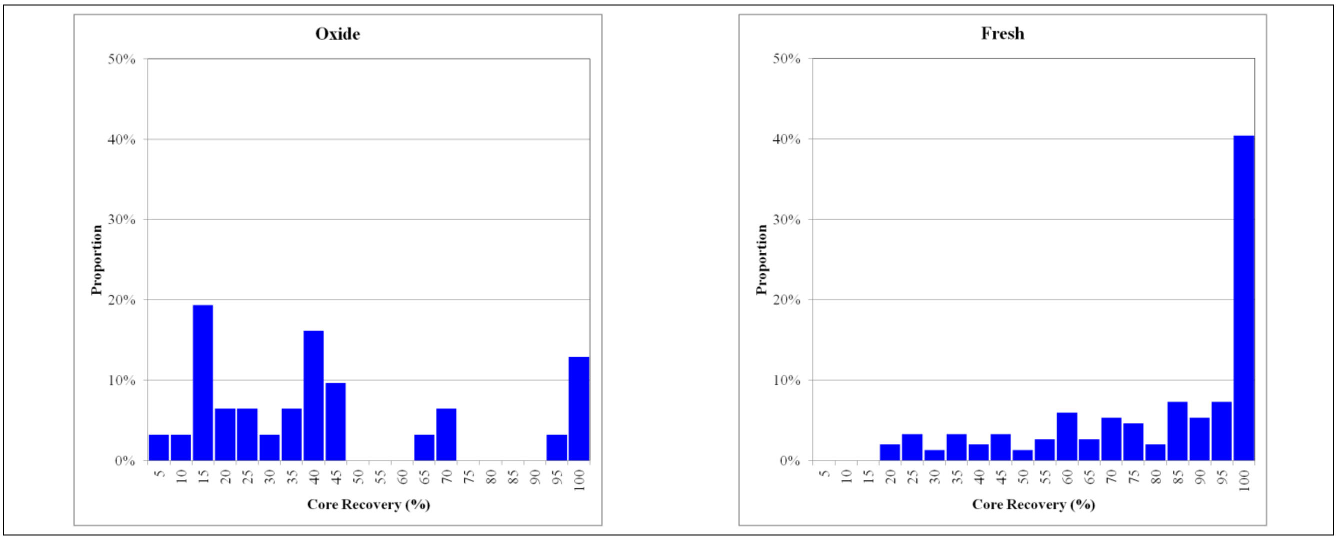

Figure 3: Histograms of core recovery for mineralised TMNL composites

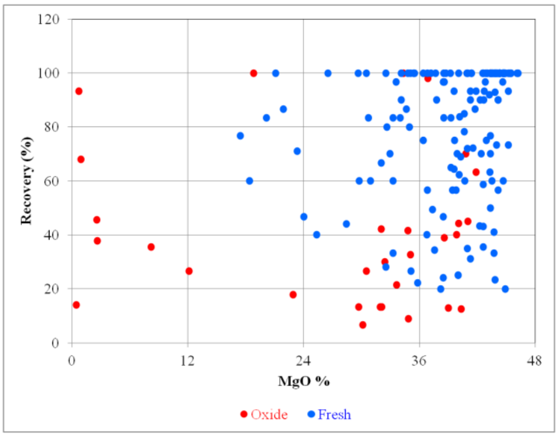

Figure 4: Core recovery vs. MgO grade for mineralised TMNL composites

3. Data reviews

3.1 Mineralised domain composites

The current data reviews and OK models are based on nominally three metre down-hole composites from diamond core sampling. These composites were assigned to mineralised, or background domains and were classified as oxidised or unoxidised on the basis of the wireframes supplied by Derwent.

Composites were assigned to mineralised, and oxidation domains by intersecting drill hole traces with the appropriate wireframes. This coding was checked on a hole by hole basis, and several drill hole intersections were modified for consistency with composited values. These modifications include the southern traverse of holes where the supplied wireframe terminates exactly at the drill holes rather than being extrapolated some additional distance and the drill holes were not initially correctly coded.

3.2 Grade relationships

Correlation between MgO and contaminant assay grades for mineralised domain composites are shown by the summary correlation statistics presented in **Table 6** and the scatter plots in **Figure 5**. **Figure 6** shows average contaminant grades for increments of MgO grades for the full dataset of composites, including background domains. This table and figures demonstrate that, although there is a general reduction in combined contaminate grade ($CaO+Fe_2O_3+SiO_2$) with increasing MgO grade there is no notable correlation between individual contaminant grades and MgO assays.

The low combined contaminant grade for high grade MgO composites reflects the high proportion of magnesite for these intervals, with the maximum MgO composite grade of 47.0% approximating pure magnesite which has an MgO grade of 47.8%.

Figure 5 and **Figure 6** demonstrate that only few composites are available with MgO grades of less than 15%, which prevents accurate estimation of average contaminant grades for such low MgO grades.

Table 6: Correlation statistics

Oxide	**MgO %**	**CaO %**	**Fe_2O_3 %**	**SiO_2 %**
Number			98	
Mean	**29.4**	**2.45**	**10.5**	**19.4**
Variance	192	27.1	225	348
Coeff. Var.	0.47	2.13	1.43	0.96
Minimum	0.37	0.01	0.42	0.20
1st Quartile	22.9	0.13	2.51	6.62
Median	34.3	0.31	4.21	11.8
3rd Quartile	40.0	1.28	11.2	24.4
Maximum	46.5	26.5	66.8	78.9
Pearson Correl.		-0.01	-0.76	-0.78
Spear. Correl.		0.31	-0.62	-0.76
Fresh	**MgO %**	**CaO %**	**Fe_2O_3 %**	**SiO_2 %**
Number			1,374	
Mean	**40.7**	**3.62**	**1.62**	**6.5**
Variance	22.1	16.6	3.46	24.6
Coeff. Var.	0.12	1.13	1.15	0.76
Minimum	17.4	0.11	0.01	0.01
1st Quartile	39.2	1.00	0.60	2.74
Median	42.0	2.14	1.10	5.4
3rd Quartile	43.9	4.82	1.9	9.1
Maximum	47.0	27.7	27.7	35.2
Pearson Correl.		-0.78	-0.40	-0.57
Spear. Correl.		-0.59	-0.41	-0.57

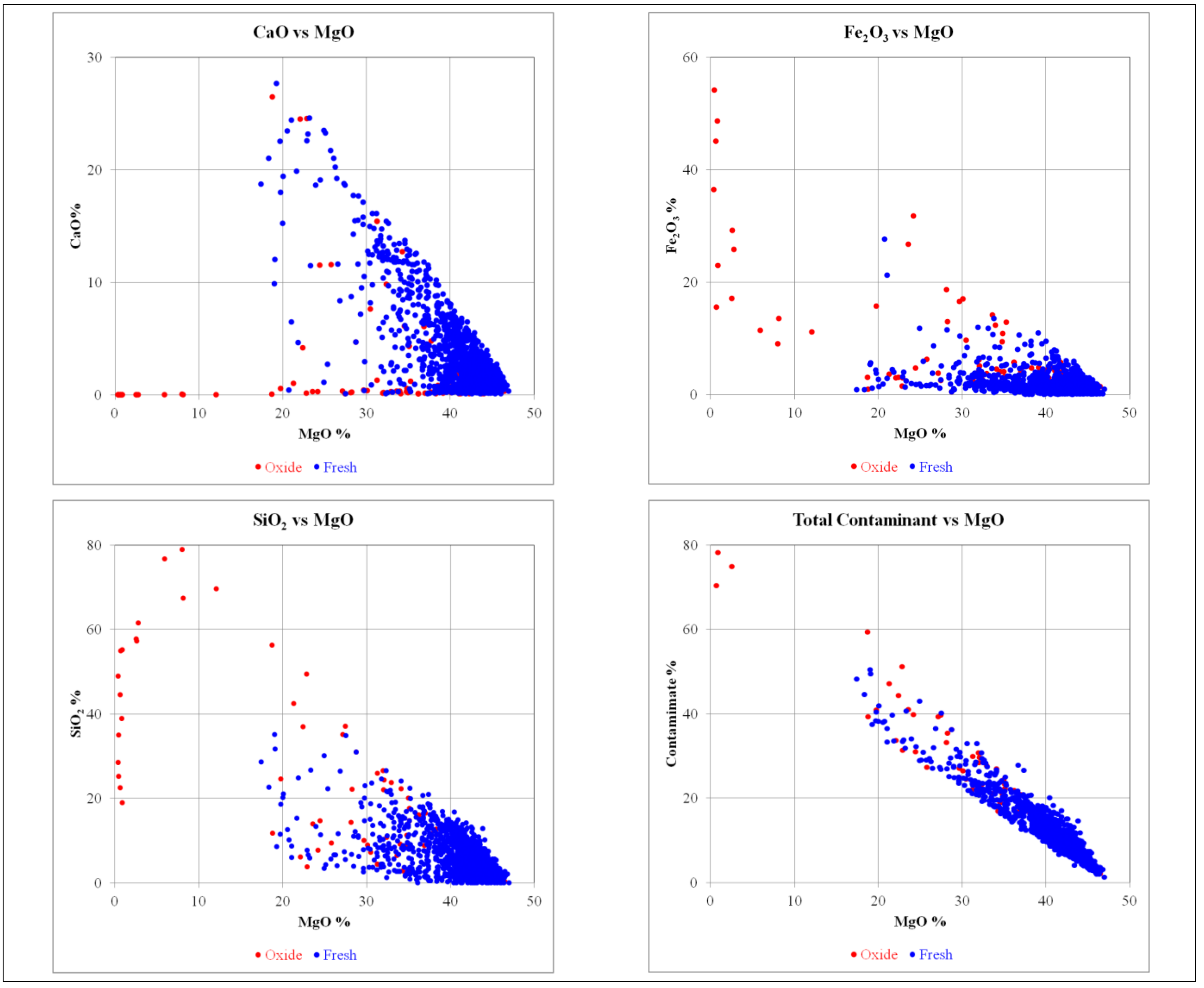

Figure 5: Mineralised composite scatter plots

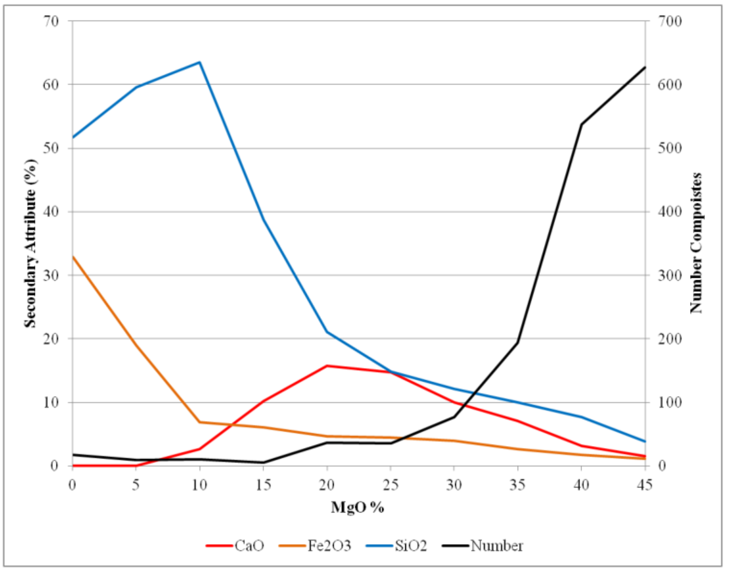

Figure 6: Contaminant grade vs. MgO trend plot

3.3 Composite total grades

Although the Arthur River dataset does not include CO_2 assay results for, composite grades for this attribute can be estimated from the theoretical 1.092:1 CO_2: MgO ratio for pure magnesite. **Table 7**, **Figure 7** and **Figure 8** summarise composite assay totals for the attributes included in the current study including CO_2 grades estimated from MgO values.

Although composite total grades average close to 100% for higher grade mineralised composites, for low MgO grade composites, total grades tend to be lower and are commonly around 80 to 90%. This trend appears to reflect proportionally higher concentrations of attributes that are not included in this review such as Al_2O_3, for low grade composites.

Table 7: Composite total grades

	Background domains		Mineralised domain	
	Oxide	**Fresh**	**Oxide**	**Fresh**
Number	18	21	98	1,374
Average	**89.8**	**90.5**	**93.9**	**97.0**
Minimum	63.4	63.4	71.9	77.4
1st Quartile	81.4	86.5	90.7	95.9
Median	**95.2**	**94.2**	**95.8**	**98.1**
3rd Quartile	97.0	96.7	97.9	99.1
Maximum	104.6	104.6	106.1	106.3

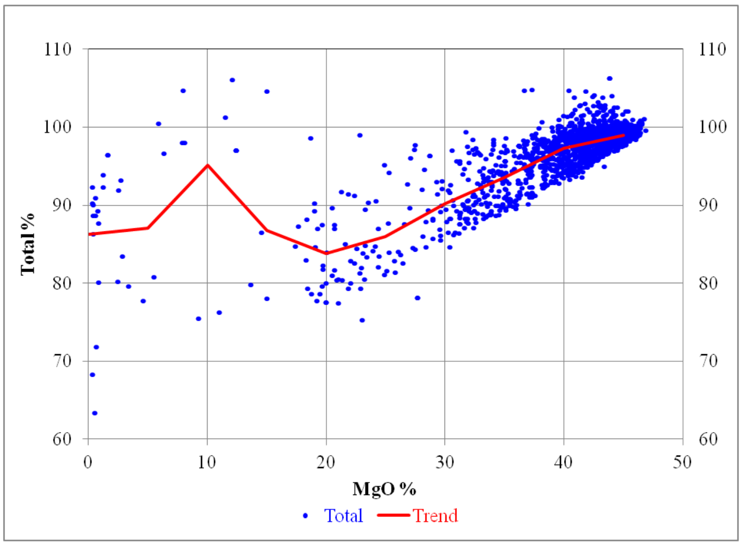

Figure 7: Composite total grade vs. MgO for full dataset

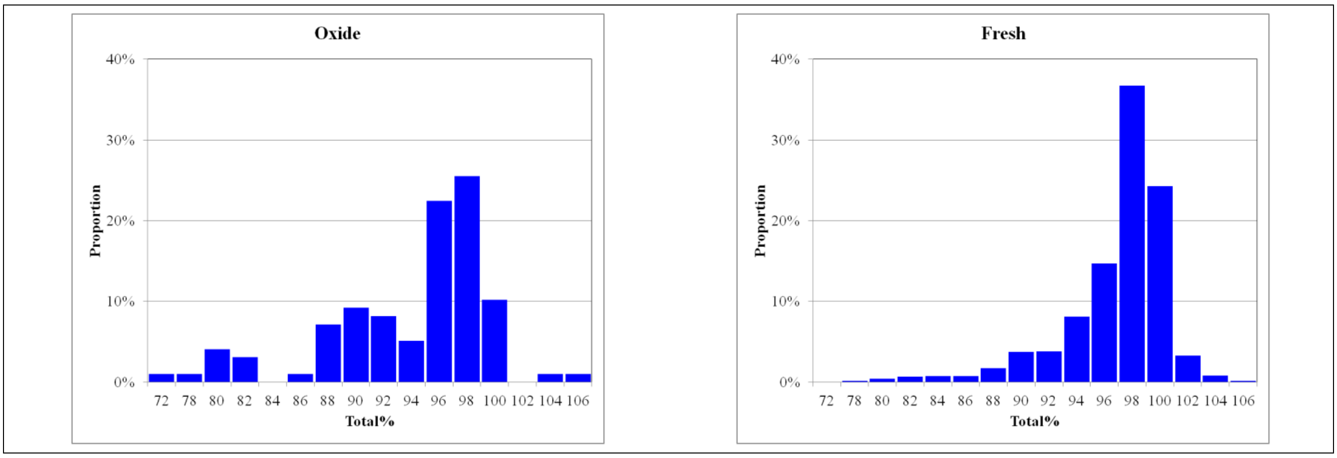

Figure 8: Histograms of composite total grades for mineralised domains

3.4 Bulk density

Information supplied for the current review includes 299 immersion density measurements performed on samples of TMNL diamond core. Not details of the density measurement technique were provided. **Table 8** summarises density results by domain and oxidation type, and **Figure 9** compares density with MgO grade for the 186 density measurements with associated assay grades.

Figure 9 demonstrates a general association between increasing MgO grade and increasing density, with an increase in average density from around 2.75 t/bcm at 20% MgO to around 2.93 t/bcm for composites with MgO grades close to the grade of pure magnesite at around 47%. This upper density value is slightly less than the density of pure magnesite of 3.0 t/m^3.

Table 8: Summary of density results

Domain	Oxidation	Number	Density (t/bcm)		
			Minimum	Average	Density
Background	Oxide	12	2.06	2.50	2.65
	Fresh	22	2.61	3.05	3.91
Dolerite	Oxide	29	1.77	2.19	2.95
	Fresh	36	2.05	2.76	3.01
Mineralised domain	Oxide	33	1.40	2.53	2.96
	Fresh	166	1.84	2.86	3.36

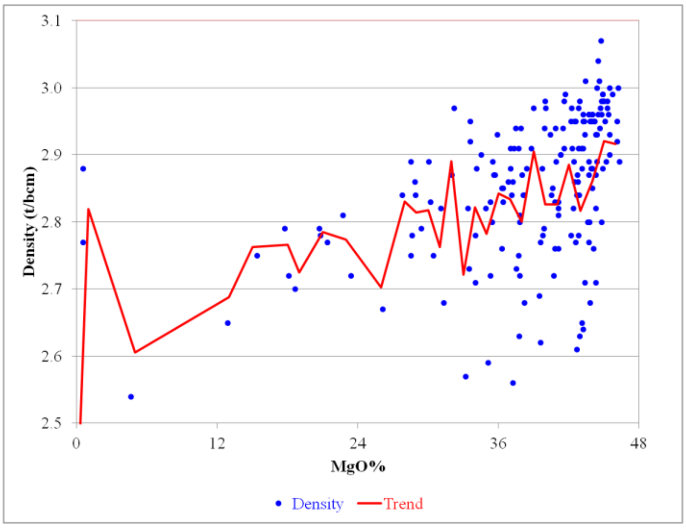

Figure 9: Density vs. MgO grade

Derwent specified that the current study assumes a density of 2.9 t/bcm for fresh magnesite mineralisation and include allowance for 13% weathered clay zones within the magnesite at an average density of 2.2 t/bcm. As shown in **Table 9** this gives a weighted average density of 2.8 t/bcm for the fresh mineralisation.

Table 9: Determination of average mineralisation density

	Proportion	Density (t/bcm)
Unoxidised magnesite mineralisation	87%	2.9
Weathered clay zones	13%	2.2
Total	**100%**	**2.8**

3.5 Spatial continuity analysis

Derwent requested that the current review include development of variogram models for each of the attributes of interest. With few regularly spaced holes and a minimum spacing of around 100 metres east-west by 50 metres north-south, the available sampling includes too few regularly gridded data for reliable variogram modelling.

Figure 10 shows plots of the variograms produced for the current study. In the north-south direction, where data spacing in the closely sampled central portions of the deposit is around 50 metres, these plots show some grade continuity. However, for the east-west direction, where data spacing is generally broader than 100 metres, these plots show no apparent grade continuity.

This lack of measurable grade continuity, particularly in the east-west direction appears to be a reflection of the lack of regularly gridded data. Although data requirements for meaningful variogram modelling are currently unclear, the available information suggests that infill drilling a significant volume of the mineralisation to around 50 by 50 metre spacing is likely to improve understanding of grade continuity.

Variogram models developed for the current study are summarised in **Table 10**, and shown as red lines in the east-west and down-hole plots in **Figure 10**. Since modelling of east-west grade continuity is currently impractical, the variograms for this direction are copied from the north-south direction. These models are of uncertain reliability and additional sampling is required to provide a confident measure of grade continuity.

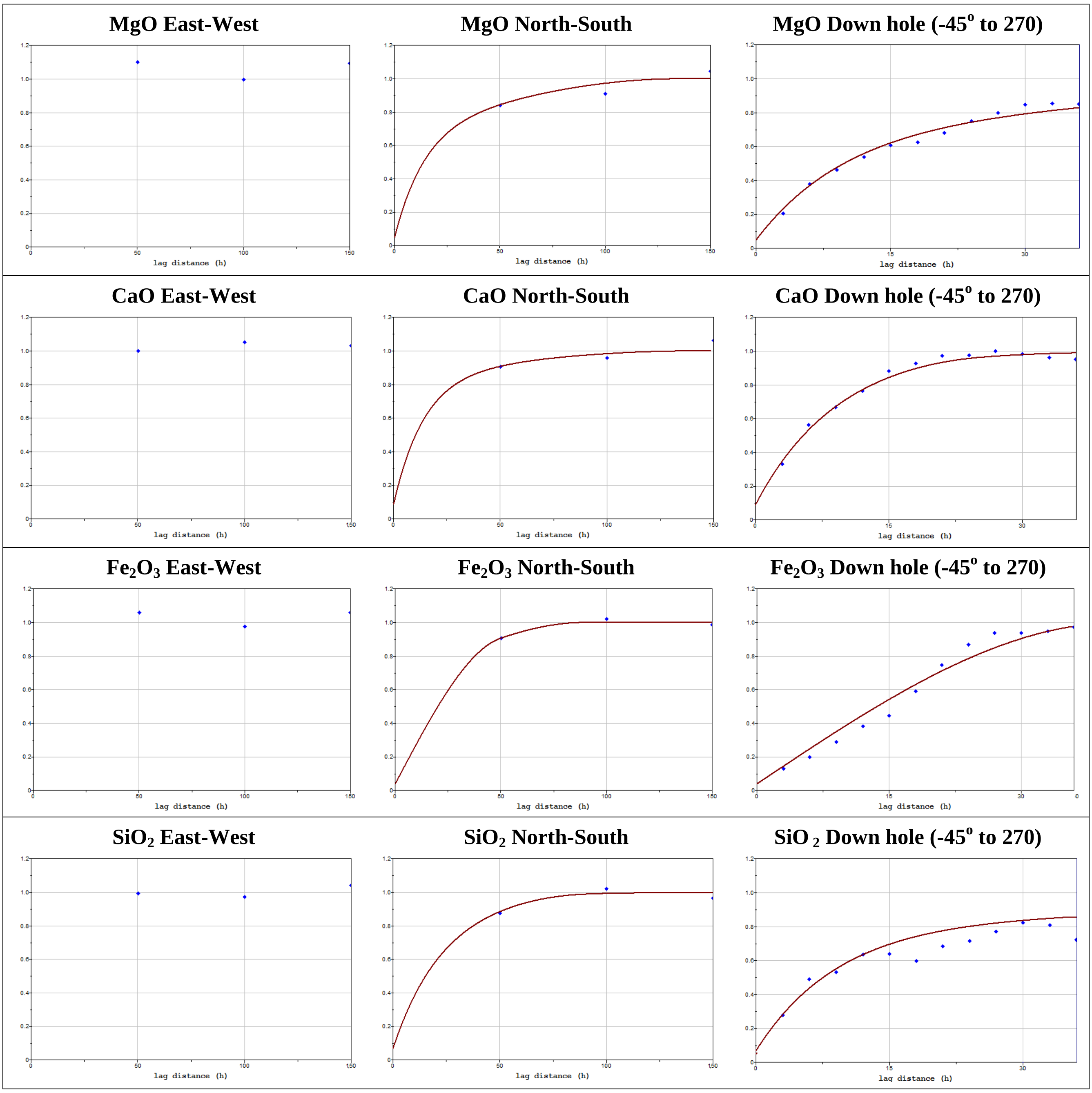

Figure 10: Variogram plots

Table 10: Variogram models

Attribute	Nugget	First Structure			Second Structure		
	Co	Sill	Model	Range (x,y,z)	Sill	Model	Range (x,y,z)
MgO	0.05	0.66	exp	43,43,30	0.29	sph	135,135,110
CaO	0.09	0.77	exp	43,43,25	0.14	sph	140,140,25
Fe_2O_3	0.04	0.59	sph	50,50,40	0.37	sph	90,90,43
SiO_2	0.07	0.76	exp	64,64,28	0.17	sph	90,90,205

4. Ordinary Kriged models

4.1 General

The current study included construction of two Ordinary Kriged models for fresh magnesite mineralisation. The two models, which are designated as Model A and Model B used consistent estimation parameters and differed only in treatment of unassayed intervals.

Model A included only composites with at least partial assay coverage, and ignored unassayed intervals. For Model B unassayed intervals within the mineralised domain were reviewed on a case by case basis, and dependent on logged lithology and nearby assay values data were classified as either waste, or potentially mineralised. The potentially mineralised intervals were assigned null values and the waste intervals were assigned nominal grades for all attributes on the basis each attributes correlation with MgO grades.

This approach was adopted to investigate the effect of the treatment of unassayed intervals on resource estimates.

Both models included composites from oxidised and fresh portions of the magnesite domains. The resultant estimates were reported within a wireframe representing unoxidised magnesite mineralisation trimmed by the barren dyke wireframes.

Both models assume a density of 2.8 t/bcm on the basis of the values specified by Derwent for fresh magnesite with allowance for 13% weathered clay zones at 2.2 t/bcm.

Gemcom software was used for data compilation, wire-framing and composite calculation, and GS3©, the resource estimation software marketed by H&S was used for resource estimation. The resulting GS3© model was imported into Gemcom for reporting of resources, and a Vulcan format versions of both model were created for use by Derwent.

4.2 Estimation of waste grades

In addition to 1,340 three metre composites with complete assay coverage, diamond drilling within the mineralised domain includes 132 partially assayed composites, and 320 completely unassayed composite intervals.

The dataset used for estimation of Model A included all completely and partially unassayed composites with no modification for unassayed portions.

As described above, for Model B the partially and completely unassayed composite intervals were reviewed and assigned to potentially mineralised or waste categories on a case by case basis. Out of the combined set of 452 completely, or partially unassayed composites 149 (23%) were classified as potentially mineralised and 303 (67%) were assigned to the waste category.

For the Model B dataset, unassayed portions of each mineralised domain composites were assigned the attribute grades listed in **Table 11.** These values were derived from the relationship between secondary attribute grades and MgO assays described in section 3.2. Reliability of these assumed grades is unclear.

The assigned grades give a total composite grade of approximately 81%, which is within the range of the trend shown for composite total grades (**Figure 7**) and consistent with the plot of combined contaminant grade versus MgO grade shown in **Figure 5**.

Table 11: Grades for unassayed "waste" intervals

Attribute	**Grade (%)**
MgO %	0.01
CaO	0.05
Fe_2O_3	30
SiO_2	51
CO_2 (Estimated from MgO)	0.01
Total	**81.1**

4.3 Composite statistics

Summary statistics for the composite datasets used for Model A and Model B are presented in **Table 12**. This table demonstrates that, as expected, relative to Model A data, the Model B dataset shows lower average MgO grades, and comparatively higher average contaminant grades. The greatest relative difference is shown for Fe_2O_3 grades reflecting the comparatively high grades assigned to unassayed waste intervals for this attribute.

Table 12: Resource dataset composite statistics

Model A	**MgO %**		**CaO %**		**Fe_2O_3 %**		**SiO_2 %**	
	Oxide	**Fresh**	**Oxide**	**Fresh**	**Oxide**	**Fresh**	**Oxide**	**Fresh**
Number	98	1,374	98	1,374	98	1,374	98	1,374
Mean	**29.4**	**40.7**	**2.45**	**3.62**	**10.5**	**1.62**	**19.4**	**6.49**
Variance	192	22.1	27.1	16.6	225	3.46	348	24.6
Coeff. Var.	0.47	0.12	2.13	1.13	1.43	1.15	0.96	0.76
Minimum	0.37	17.4	0.01	0.11	0.42	0.01	0.20	0.01
1st Quartile	22.9	39.2	0.13	1.00	2.51	0.60	6.62	2.74
Median	34.3	42.0	0.31	2.14	4.21	1.10	11.8	5.38
3rd Quartile	40.0	43.9	1.28	4.82	11.2	1.90	24.4	9.10
Maximum	46.5	47.0	26.5	27.7	66.8	27.7	78.9	35.2
Model B	**MgO %**		**CaO %**		**Fe_2O_3 %**		**SiO_2 %**	
	Oxide	**Fresh**	**Oxide**	**Fresh**	**Oxide**	**Fresh**	**Oxide**	**Fresh**
Number	252	1,415	252	1,415	252	1,415	252	1,415
Mean	**9.57**	**38.5**	**0.89**	**3.40**	**23.8**	**3.21**	**40.5**	**8.97**
Variance	224	91.9	11.0	15.7	147	37.7	303	108
Coeff. Var.	1.56	0.25	3.74	1.16	0.51	1.91	0.43	1.16
Minimum	0.01	0.0	0.01	0.05	0.95	0.01	2.64	0.01
1st Quartile	0.01	37.6	0.05	0.86	15.38	0.62	25.3	2.85
Median	0.01	41.7	0.05	2.01	30.00	1.19	51.0	5.86
3rd Quartile	19.8	43.8	0.13	4.47	30.0	2.30	51.0	10.4
Maximum	44.0	47.0	26.5	27.7	66.8	30.0	74.1	51.0

4.4 Estimation parameters

Estimation parameters selected for the current study reflect the current data availability. As development of the project continues and additional drilling is completed the criteria adopted for estimation are likely to change.

Table 13 presents the extents and block sizes of the block model created for the current study. The model extents encompass the full extents of the supplied mineralisation to the base of drilling at around 300 metres depth.

To precisely represent the volume of the mineralised domain, each block in the model was flagged with the proportion intersected by the magnesite mineralised domain truncated to the base of oxidation and trimmed to the cross cutting dykes.

Table 13: Block model extents and block sizes

	Easting	Northing	Elevation
Minimum	9,450 mE	19,800 mN	-120 mRL
Maximum	10,650 mE	21,400 mN	220 mRL
Extents	1,200 m	1,600 mN	340 m
Block size	50 m	50 m	5
Number of blocks	24	32	68

The three progressively more relaxed search criteria used for estimation are presented in **Table 14**. These criteria selected to inform a high proportion of the supplied mineralised domain and include search raddi that are very long relative to apparent grade continuity.

Table 14: Search criteria

Search Pass	Radius (x,y,z)	Minimum Data	Minimum Octants	Maximum Data
1	100,100,10	8	2	32
2	200,200,20	8	2	32
3	200,200,20	4	1	32

Variograms used for the current estimates are described in section 3.5.

To provide an indication of the relative confidence of the current estimates, blocks in the model are assigned to comparatively higher or comparatively less confident categories. Blocks informed by search pass 1 to the south of 20,550 mN were assigned to the higher confidence category (category 1) and all other estimated blocks were assigned to confidence category 2. This process assigns estimates in the area with approximately 100 by 50 metre spaced drilling to category 1.

4.5 Model estimates

Table 15 shows Model A and Model B estimates subdivided by confidence category for several cut off grade scenarios, including the set of MgO and contaminant thresholds specified by Derwent as representing potentially economic mineralisation.

Table 15 demonstrates that, for the entire estimated volumes, Model B estimates similar tonnages to Model A, with lower MgO grades and higher contaminant grades. When reported at the various cut offs shown in **Table 15**, Model B gives considerably lower tonnage estimates at comparable grades to Model A. The variation between Model A and Model B estimates provides an indication of the sensitivity of estimates to treatment of unassayed intervals.

Table 15: Model estimates

Cut off	Confidence Category	Tonnes Million	MgO %	CaO %	Fe_2O_3 %	SiO_2 %
Model A estimates						
	1	52	41	3.1	1.8	6.9
Entire estimated volume	2	136	38	5.4	1.8	8.7
	Total	**188**	**39**	**4.8**	**1.8**	**8.2**
	1	48	42	2.9	1.4	6.5
> 38% MgO	2	73	41	3.1	1.4	7.5
	Total	**121**	**41**	**3.0**	**1.4**	**7.1**
	1	39	42	2.7	1.4	5.9
> 40% MgO	2	51	42	2.6	1.3	6.6
	Total	**90**	**42**	**2.6**	**1.3**	**6.3**
	1	19	43	2.3	1.2	4.8
>42% MgO	2	20	43	2.2	1.2	5.1
	Total	**39**	**43**	**2.2**	**1.2**	**5.0**
	1	19	43	2.9	1.3	4.1
>40% MgO, < 5% CaO, <3% Fe_2O_3, <6% SiO_2	2	20	43	2.8	1.6	4.0
	Total	**39**	**43**	**2.8**	**1.5**	**4.0**
Model B Estimates						
Cut off	**Confidence Category**	**Tonnes Million**	**MgO %**	**CaO %**	**Fe_2O_3 %**	**SiO_2 %**
	1	54	38	2.9	3.7	9.9
Entire estimated volume	2	136	34	4.7	5.0	13.2
	Total	**190**	**35**	**4.2**	**4.6**	**12.3**
	1	39	41	2.8	1.5	6.9
> 38% MgO	2	50	41	2.7	1.4	7.4
	Total	**89**	**41**	**2.7**	**1.4**	**7.2**
	1	30	42	2.5	1.5	6.1
> 40% MgO	2	39	42	2.5	1.4	6.7
	Total	**69**	**42**	**2.5**	**1.4**	**6.4**
	1	15	43	2.1	1.3	5.0
>42% MgO	2	16	43	2.2	1.2	5.1
	Total	**31**	**43**	**2.2**	**1.2**	**5.1**
	1	14	43	2.8	1.3	4.2
>40% MgO, < 5% CaO, <3% Fe_2O_3, <6% SiO_2	2	15	43	2.9	1.6	3.8
	Total	**29**	**43**	**2.9**	**1.5**	**4.0**

Yours Sincerely

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