Quantum Graphite

MARKET RELEASE
For Immediate Release
15 July 2019

SUBSTANTIAL INCREASE IN ULEY 2 JORC 2012 MINERAL RESOURCES DFS UPDATE

Quantum Graphite Limited (**QGL**) is pleased to announce the upgrade to the Uley 2 Mineral Resources estimate (MRE). This upgrade (July 2019 MRE), reported in accordance with the JORC Code (2012), represents a substantial increase to the MRE completed in May 2015[1]. The Technical Report summarising the work undertaken in respect of the resource estimation is attached to this release.

July 2019 MRE Highlights

- **117% increase in Measured Resources**
- **39% increase in Total Resources to 6.31 million tonnes at an average grade of 11.1% total graphitic carbon (TGC)**
- **79% or 5.0 million tonnes of Total Resources are classified in the Measured and Indicated categories**

Mineral Resources – Classification and Tonnes

The July 2019 MRE comprises 6.3Mt @ 11.1 % TGC, for 697kt of TGC at a 3.5% TGC cut-off. This includes 5.0Mt @ 11.2% Measured and Indicated material for 560kt of TGC (79% of the total Resource). The respective classification and Resource tonnes are set out in the table below:

CLASSIFICATION	TONNES (Mt)	TGC (%)	DENSITY (t/M^3)	TGC (kt)
Measured	0.8	15.6	2.1	125
Indicated	4.2	10.4	2.1	435
Inferred	1.3	10.5	2.2	137
TOTAL	**6.3**	**11.1**	**2.1**	**697**

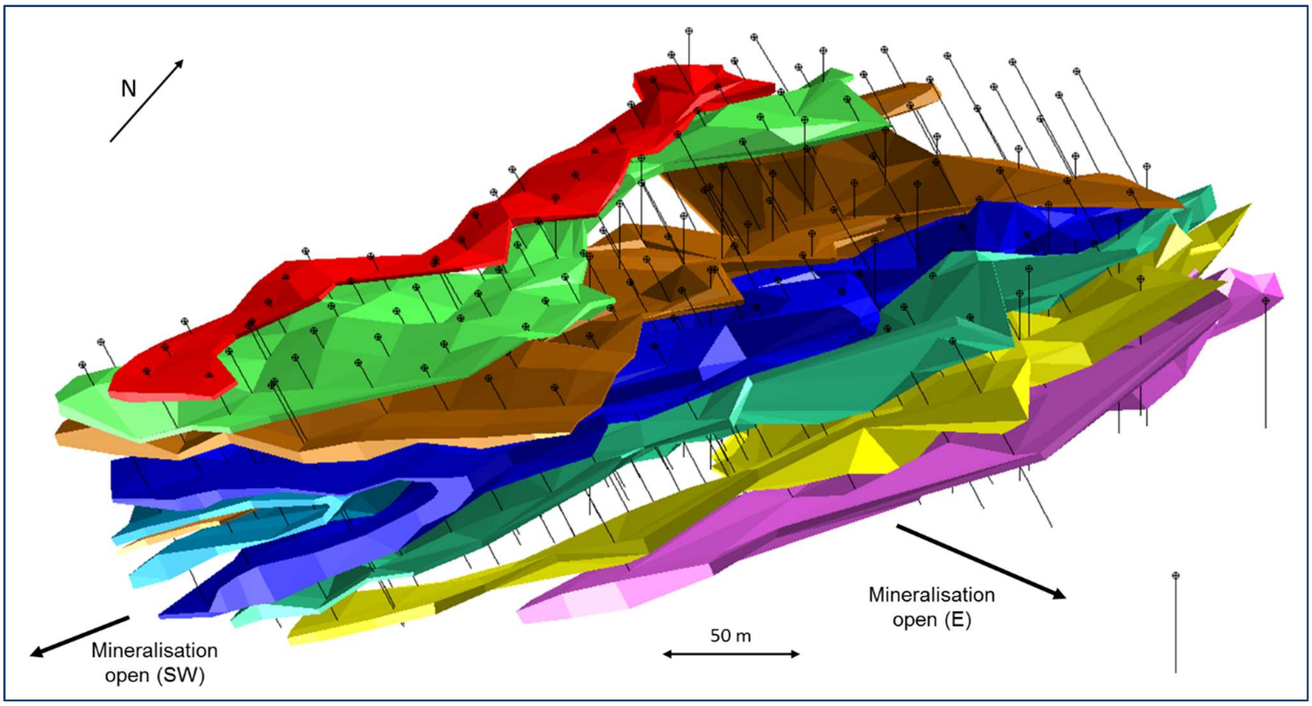
The deposit was previously constrained by Mineral Resource outlines based on mineralisation envelopes prepared using a 3.5% TGC cut-off. After statistical analysis, the cut-off was adjusted to 2% TGC as this likely represents the break between 'ore' and waste.

[1] Refer QGL ASX release dated 05/05/2015, "50% Increase in Uley Graphite Resource"

The July 2019 MRE confirms the continuity of mineralisation to the south and underpins the increase in Uley 2 Mineral Resources. Importantly the mineralisation remains open along strike to the south and east and at depth, well within the company's Mining and Retention leases.

As indicated in previous releases, the stronger geophysical response continues to be a significant factor of higher-grade mineralised areas. Future drilling programs are designed to target the extensive geophysical anomalies along the plunging anticline to confirm the presence of conductive graphite layers.

The company has not revised the Exploration Target previously announced[1] however the July 2019 MRE confirms the continued exploration to the south west and east. The oblique view of Uley 2 set out below displays the main mineralisation envelopes and drilling and clearly illustrates the areas of future exploration.



Definitive Feasibility Study – Update and Key Milestones

With the completion of the metallurgical test work and the 2019 MRE, the company is progressing the preparation of the revised mine plan for Uley 2. The company expects to release details of the mine plan within the next three weeks once optimisation studies, currently underway, are completed. This release will also set out the remaining DFS milestones.

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[1] Refer QGL ASX release dated 05/05/2015, "50% Increase in Uley Graphite Resource"

Competent Person Statement – Mineral Resource estimate

The information in this report that relates to the Uley 2 Mineral Resource estimate is based on information compiled by Ms Vanessa O'Toole who is a Member of the Australasian Institute of Mining and Metallurgy (MAusIMM) and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity to which she 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". Ms O'Toole is an external consultant to QGL and a full-time employee of Wicklow Resources Pty Ltd and consents to the inclusion in the report of the matters based on this information in the form and context in which it appears. For further details see section 8.3.1 of the Technical Report.

Competent Person Statement – Industrial Minerals statement (Clause 49 JORC Code (2012))

In accordance with Clause 49 of the JORC Code (2012), the likely product specifications and possible product marketability and overall potential for economic extraction are considered by the competent person to support the Mineral Resource estimate at Uley 2. For further details see section 8.2 of the Technical Report.

JORC Code (2012) Table 1 Compliance

Appendix A of the Technical Report includes the relevant extracts (i.e., sections 1, 2 and 3) from Table 1 of the JORC Code (2012).

For further information contact:
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Quantum Graphite

July 2019 Mineral Resource Estimate

Uley 2 Deposit

Uley Graphite Mine, Port Lincoln South Australia

*Quantum Graphite Ltd (**QGL**) commissioned Wicklow Resources Pty Ltd (**Wicklow**) to prepare an update to the Mineral Resource estimate (**MRE**) for the Uley 2 Deposit (**Uley 2**) which forms part of the Uley Graphite Project utilising exploration drilling previously not available at the time of the preparation of the May 2015 MRE completed by Coffey. This report (**Technical Report**) is a technical summary of the resource estimation work undertaken by Wicklow between September 2018 and July 2019.*

Vanessa O'Toole
Principal Consultant, Wicklow Resources

Summary of Data Procedures

I Drilling Data

No drilling data has been excluded for estimation purposes.

Logging and sampling methods for the drilling follow industry recognised procedures and are considered to be of an acceptable standard. Quality assurance and quality control (QAQC) results also support the use of the data to inform the MRE. QAQC samples inserted at 5% representivity demonstrate the accuracy and precision of the graphitic carbon to be satisfactory.

II Assay data - Laboratory sampling, sample preparation and analysis

The samples were prepared at ALS Global (Adelaide) including crushing and splitting to >70% passing -6mm and pulverised to >85% passing 75µm prior to assaying by ALS Global in Brisbane. The prepared samples underwent analytical procedures C-IR18, C-CAL15, CIR17 and C-IR07 by LECO analyser to determine graphitic carbon, inorganic carbon and total carbon.

III Assay Data - Quality control

QAQC programs included collection and insertion of certified reference material (CRM) samples at a rate of roughly 1 in 20 samples (5% rate of insertion). A total of four CRMs provided by Geostats Pty Ltd covering a grade range from 0.13 % total graphitic carbon (TGC) to 16.29 % TGC have been used. Duplicates were sampled at a typical frequency of 1 in 100 samples (1% rate of insertion). There is no record of field duplicate samples or standards having been submitted in the 30 vertical drill holes drilled prior to 2014. The results show acceptable analytical accuracy has been achieved and no analytical bias identified.

IV Data verification

While exercising all reasonable due diligence in checking and confirming the data validity, Wicklow has relied largely on the data supplied by QGL to estimate and classify the Uley 2 Mineral Resource. As such, Wicklow accepts responsibility for the resource modelling and classification while QGL has assumed responsibility for the accuracy and quality of the underlying drill data. Data was imported in to Surpac software by Wicklow and checked for errors, there were no issues identified relating to data quality.

1 Introduction

This report sets out the procedures undertaken to complete an independent estimate of the Mineral Resources of Uley 2 situated within the Uley Graphite Project.

The Uley Graphite Project is located on the Eyre Peninsula, 15km west-southwest of Port Lincoln in the state of South Australia (see Figure 1-1). Mining has not commenced at Uley 2. The nearby Uley 1 deposit has been mined previously however is not included within the Uley 2 MRE.

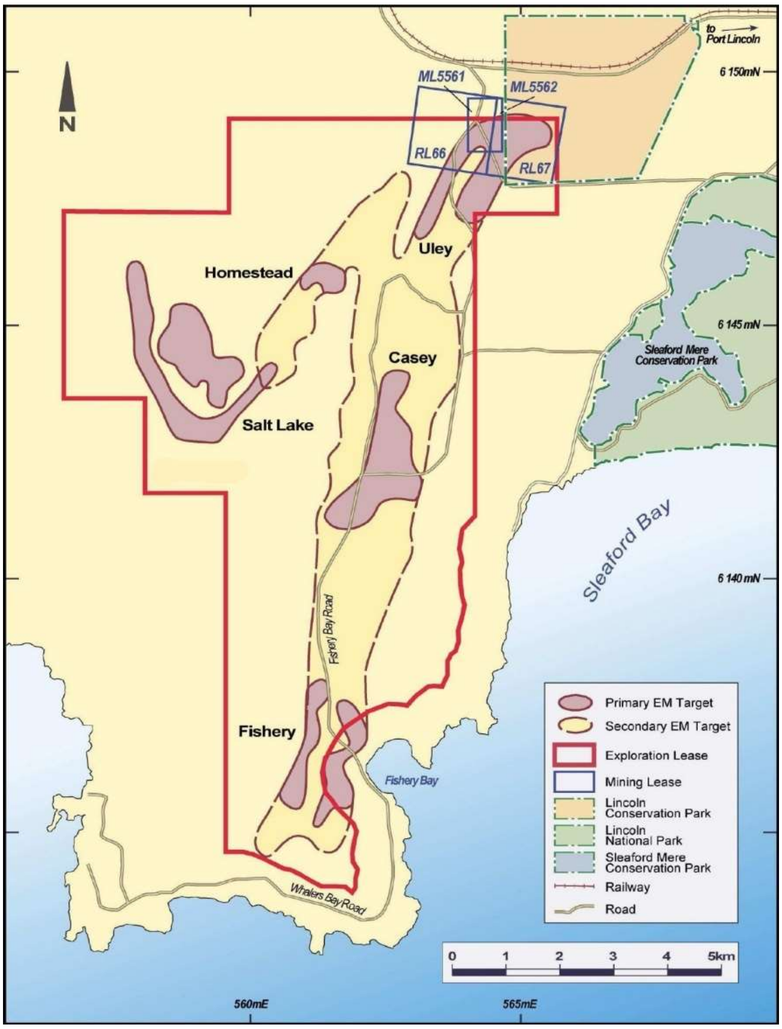


Figure 1-1 Location of Uley 2 Deposit and the QGL mining titles described below:

Tenement	Interest
ML5561	100%
ML5562	100%
RL66	100%
RL67	100%
EL6224	100%

The Uley 2 pit is situated within Mining Leases 5561 and 5562.

1.1 Approach

The process adopted by Wicklow for the purpose of this MRE is summarised below:

(a) The competent person visited the site on two occasions in 2018. This process included inspection of the exposed graphitic mineralisation on surface and in the Uley 1 pit walls. No further drilling has been undertaken at Uley 2 since February 2018. Drill core was inspected and compared to geological logs. Drill hole collar coordinates for several holes were checked using a hand-held GPS.

(b) The underlying raw data, including drill hole logs, quality control reports and assay reports were reviewed and are considered suitable for use in estimating the Mineral Resources. An adjusted Access database was created and any data not relevant to 'ore' definition was eliminated.

(c) QGL supplied previous mineralisation wireframes and block models generated in Vulcan in connection with the May 2015 MRE completed by Coffey. Wireframes were based on a 3.5% total graphitic carbon (TGC) content. On analysis of the TGC sample data these wireframes were adjusted by Wicklow to a 2% TGC cut-off to reflect a more likely natural cut-off between 'ore' and background waste at the Uley 2 deposit. Mineralisation wireframes and weathering surfaces were also extended to the south to include drilling not included in the May 2015 MRE.

(d) On analysis of the sample data including TGC and carbon in the form of carbonate (i.e., CO_3) distinct zones of varying TGC and CO_3 distributions were identified. 'Geodomains' were created delineating the varying distributions. These were related to weathering profile and CO_3 content.

(e) As part of metallurgical test work drill core was sampled by the competent person in December 2018 to ensure the distribution of sampling across the newly defined 'geodomains; One metre composites were extracted for each of these domains and statistically analysed.

(f) An ordinary kriging (OK) interpolation was used to estimate TGC and CO_3 within the block model using three estimation passes.

(g) External bulk density test work was generated to reflect the varying 'geodomains'. Results from the analysis of this data was used to attribute bulk density within the block model.

(h) Classification of the mineralisation as Measured, Indicated and Inferred Resource is based on confidence in the geological and mineralisation continuity and type, drill hole spacing and bulk density test work and governed by the general relationship between exploration results, Mineral Resources and Ore Reserves as set out in JORC Code 2012 (see Figure 1-2).

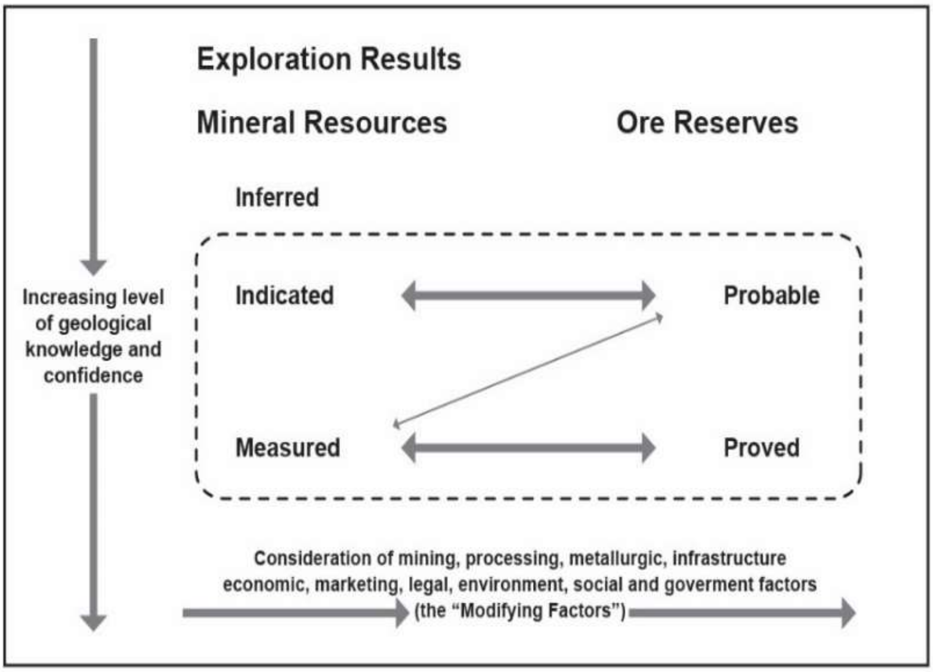


Figure 1-1 General relationship between exploration results, Mineral Resources and Ore Reserves and applicable to the estimation of this Mineral Resource as required under the JORC Code 2012 - *"framework for classifying tonnage and grade estimates to reflect difference levels of geological confidence and different degrees of technical and economic evaluation"*.

(Source: JORC Code 2012)

2 July 2019 Mineral Resource statement

The MRE for the Uley 2 Deposit has been updated and reported in accordance with the JORC Code (2012) to incorporate drilling previously unavailable for the MRE completed in May 2015[2]. The additional drilling totals 30 diamond core (DD) drill holes for 2,620 m of drilled metres[3].

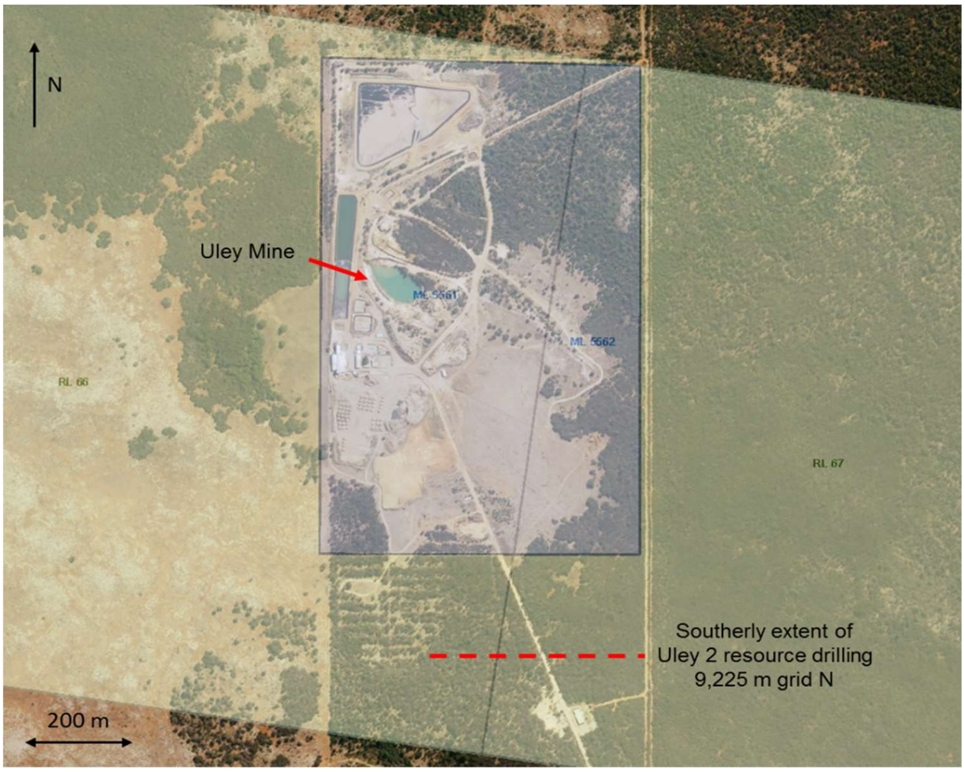
The July 2019 MRE comprises 6.3 Mt @ 11.1 % TGC, for 697 kt of total contained graphite at a 3.5% TGC cut-off (Table 2-1). This includes 5.0 Mt @ 11.2% Measured and Indicated material for 560 kt of TGC (79% of the total Resource).

Table 2-1 TGC Mineral Resource estimate for Uley 2 as at July 2019 (3.5% TGC cut-off, any differences due to rounding)

Classification	Tonnes Mt	TGC %	Density t/m³	TGC Tonnes kt
Measured	0.8	15.6	2.1	125
Indicated	4.2	10.4	2.1	435
Inferred	1.3	10.5	2.2	137
TOTAL	**6.3**	**11.1**	**2.1**	**697**

The Uley 2 drilling, tenement boundaries and mineralisation wireframes are presented in Figure 2-1 and Figure 2-2.

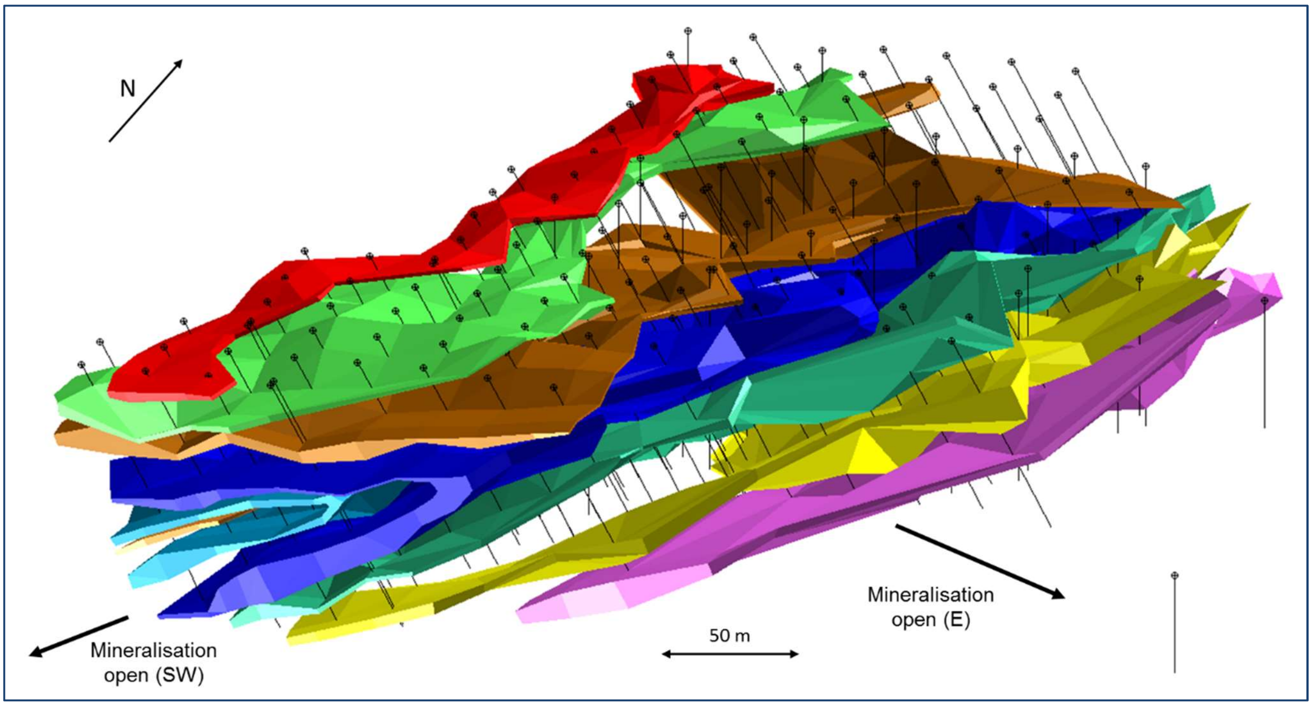
Figure 2-1 Uley tenement boundaries and resource drilling extensions



[2] Refer to the QGL ASX release dated 05/05/2015, “50% Increase in Uley Graphite Resource”

[3] Refer to the QGL ASX release dated 30/11/2018, “Uley 2 Extension Drill Results”

Figure 2-2 Oblique view looking NW displaying main mineralisation envelopes and drilling



3 Geology and mineralisation

3.1 Regional geology

The regional graphite mineralisation appears as conformable metamorphic segregations in Palaeoproterozoic schist and gneiss within the Gawler Craton. Mineralisation is hosted within the Hutchison Group metasediments that overlay the granitoid gneiss of the Sleaford Complex. The Hutchison Group is overlain by marine shelf sediments of the Wallaroo Group.

The project area is overlain by calc-arenites of the Tertiary age Bridgewater Formation. The calc-arenites are underlain by the Pliocene age Uley Formation or the Eocene age Wanilla Formation. Local laterally extensive ferricrete is developed over the Wanilla sediments.

The Hutchinson Group is split into a lower and upper, separated by the Cook Gap Schist. Mineralisation at Uley is confined to the Cook Gap schist and concentrated within tightly folded thrust structures.

3.1.1 Stratigraphy

The Warrow Quartzite forms the basal unit of the Hutchison Group, unconformably overlaying the Sleaford Complex. The upper portion of this unit varies from massive to flaggy quartzite with interbedded pelitic schists. The basal portion is dominantly massive, coarse grained, feldspathic quartzite derived from shallow marine or fluvial clastic sediments

The Middleback Subgroup is a mix of pelitic and chemical sediments and amphibolites of a mafic igneous origin. There are four units within this subgroup:

- The Katunga Dolomite is a basal unit of the Middleback Subgroup and overlies the Warrow Quartzite. It is a layered dolomitic marble with serpentine and diopside characterising high grade metamorphism, whilst tremolite, actinolite and talc characterise low grade metamorphism.
- The Lower Middleback Jaspilite contains a variety of banded iron formations, dominantly magnetite quartzite, carbonate, schist and chert, grading to jaspilite in some occurrences.
- The Cook Gap Schist overlies the Lower Middleback Jaspilite and consists of garnet-mica schists and gneisses. Strong deformation is displayed in the development of strained quartz veins and mylonite. Broad compositional layering exists as a result of sedimentary variation, while smaller scape layering of mica-rich and quart-rich bands is the result of metamorphism.
- The Upper Middleback Jaspilite overlies the Cook Gap Schist and is the uppermost unit of the Middleback Subgroup. It is very similar to the Lower Middleback Jaspilite.

The Upper Hutchison Group overlies the Middleback Subgroup and represents the top of the Hutchison Group. The unconformable and laterally extensive Bridgewater Formation is a calcarenite of Pleistocene age. The aeolianites form a veneer over much of the southern Eyre Peninsula.

3.2 Local geology and mineralisation

Uley is a disseminated crystalline flake graphite deposit hosted within metasediments of the Hutchison Group, specifically confined within the Cook Gap Schist. Crystallisation of 0.1mm to 2 mm graphite flakes occurred during high-grade metamorphism of carbonaceous sediments. Strong deformation is displayed in the development of strained quartz veins and mylonite within the tightly folded graphitic gneiss and schist units.

The distribution of graphite at Uley was determined by airborne and ground electrical surveys, demonstrating elongate graphitic anomalies. The conductive graphite layers show broad north-north-easterly plunging anticline, consistent with known regional structures (see Figure 3-1).

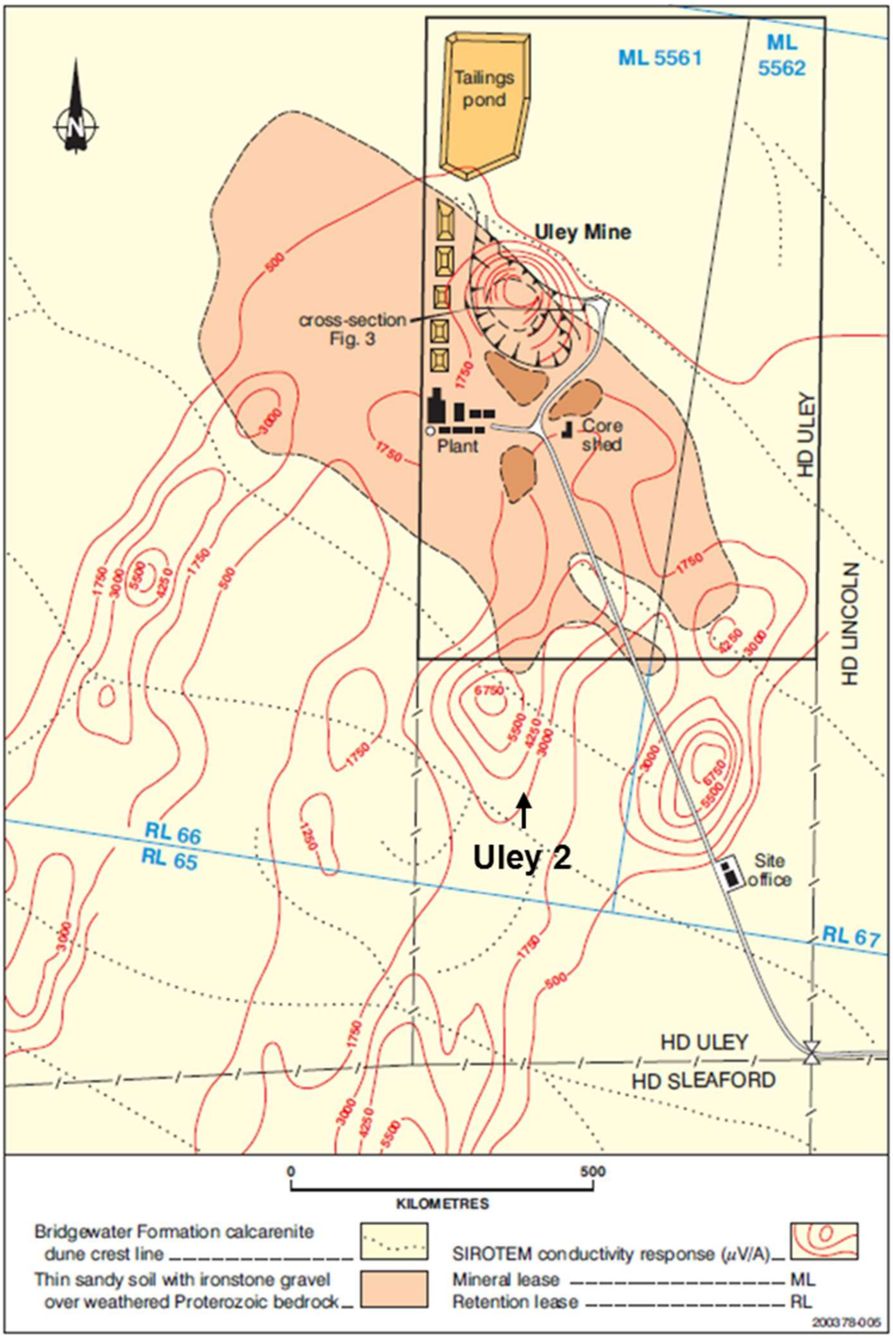


Figure 3-1 Uley project surface geology and contours of SIROTEM survey data.

Future drilling programs are designed to target the extensive geophysical anomalies along the plunging anticline to confirm the presence of conductive graphite layers.

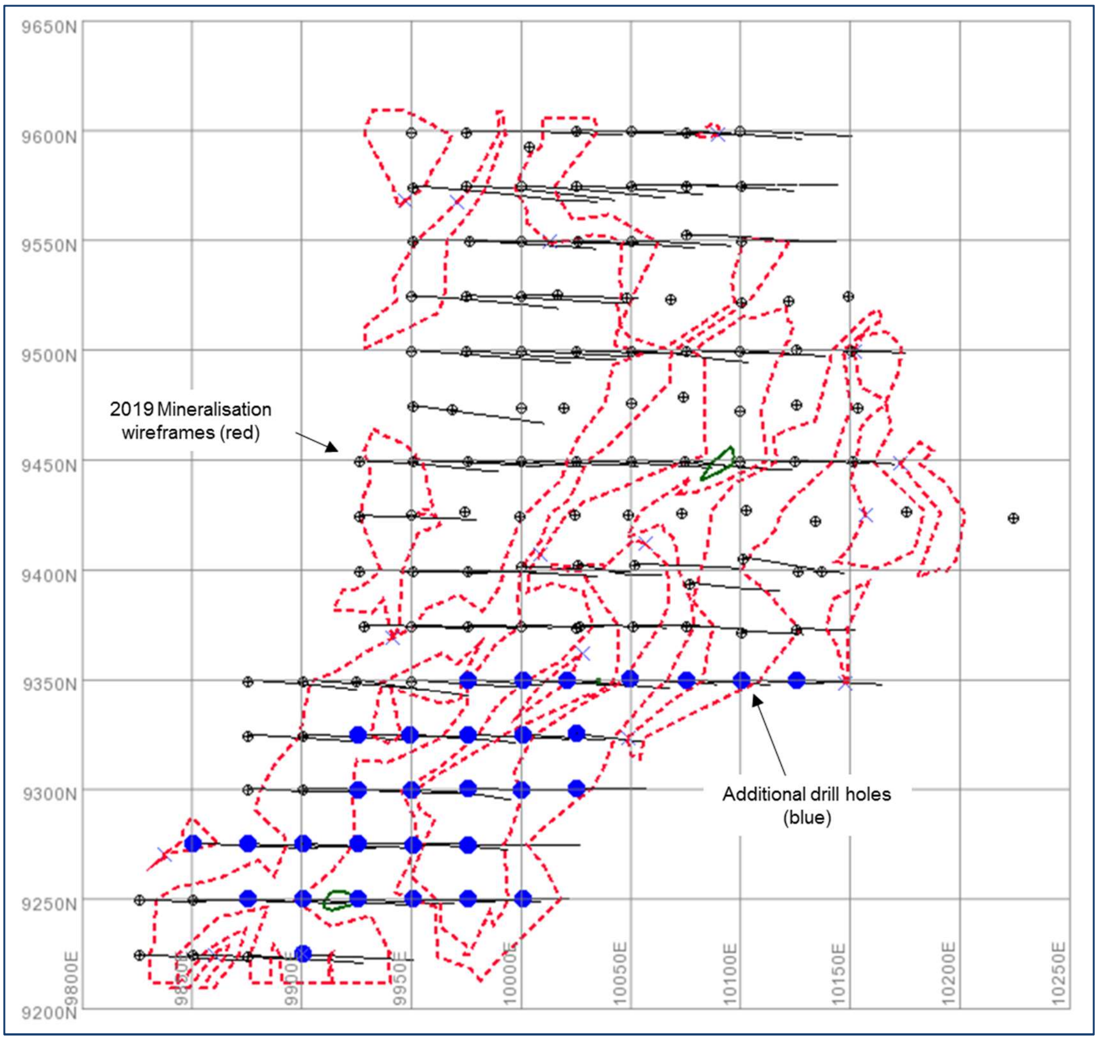
4 Drilling data

4.1 Summary

The Mineral Resource estimate is based on drilling derived from a nominal 25m spacing along and across strike with the drill sections orientated E-W and extended to a maximum of approximately 90m depth below surface. Drilling was orientated at -60 degrees towards the E (bearing 090). Prior to 2014 all drill holes were drilled vertically.

A total of 63 ore definition DD holes have been completed at Uley 2 as at July 2019. Drill collar locations are illustrated in Figure 4-1.

Figure 4-1 Drill hole collars at Uley 2 with mineralisation outlines at approximately 25m depth



Drill location co-ordinates are reported in Uley Mine Grid (transformed to truncated AMG). Drillhole collars have been re-surveyed in the field and these transformations validated.

Downhole surveys were obtained approximately every 30m and at depth of hole using a Ranger SS118 downhole camera. The angled drill holes were orientated using the Reflex ACT II RD core orientation tool.

4.2 Drill hole collar location

Drill location co-ordinates are reported in Uley Mine Grid (transformed to truncated AMG). The reported truncation was:

Easting = -554,216.866M

Northing = -6,139,092.867M

AHD = RL +404.252M

Drillhole collars have been re-surveyed in the field and these transformations validated. All drillholes were re-surveyed during 2014 by PA Dansie & Associates Pty Ltd and a whole of site survey was undertaken during 2014 by Maptek Pty Ltd.

4.3 Down hole surveys

Drillholes drilled prior to 2014 were vertical and no downhole surveying was carried out, although most drillholes are relatively shallow with assumed minor cumulative deviation.

The MD600 and 700 series drillholes, drilled in 2014, were drilled at angle -60° towards azimuth 090°. Downhole surveying was carried out using a Ranger SS118 camera tool.

4.4 Geological logging

All intervals were geotechnically logged by qualified geologists over time. All logging included lithological features, mineral assemblages, mineralisation percentage estimates and geotechnical information suitable for the development of geology models and pit slope design criteria.

4.5 Sampling

4.5.1 GMA Sampling

GMA sampled the core as 1m lengths, typically as ½ sawn drillcore. Where geology remained constant, lengths where increased to 1.5m, 2m or 3m intervals. Where geology varied at lengths less than 1m, intervals down to 0.3m were sampled. The most common sample length is 1m.

4.5.2 2011 Sampling

Whole core was selected on geological intervals of obviously highly graphitic material that were dispatched to ALS-Chemex in Perth. Sample lengths range from 0.2m to 4.0m, with an average length of 1m sampled. Fifty per cent by weight of crushed -6mm sample was retained as a reference sample.

4.5.3 2014 and 2015 Sampling

Half core was sampled on a standard 1m interval unless lithological or visual grade estimates required longer or shorter sample lengths. Minimum and maximum lengths of 0.3m and 1.2m respectively were permitted. Core was cut 1-2cm to the left of the orientation line to preserve orientation information for future reference.

5 Resource definition and analysis

5.1 Preparation of wireframes

The drilling relevant to the July 2019 MRE at Uley 2 extends over a distance of 375m (from 9,225m grid N to 9,600m grid N) and includes a 125m vertical interval from approximately 375m to 500m. The graphitic mineralisation is interpreted to extend along the full strike distance. Depth of interpreted mineralisation varies as structural events resulted in the plunge to the north-east of the tight isoclinal folds that host mineralisation.

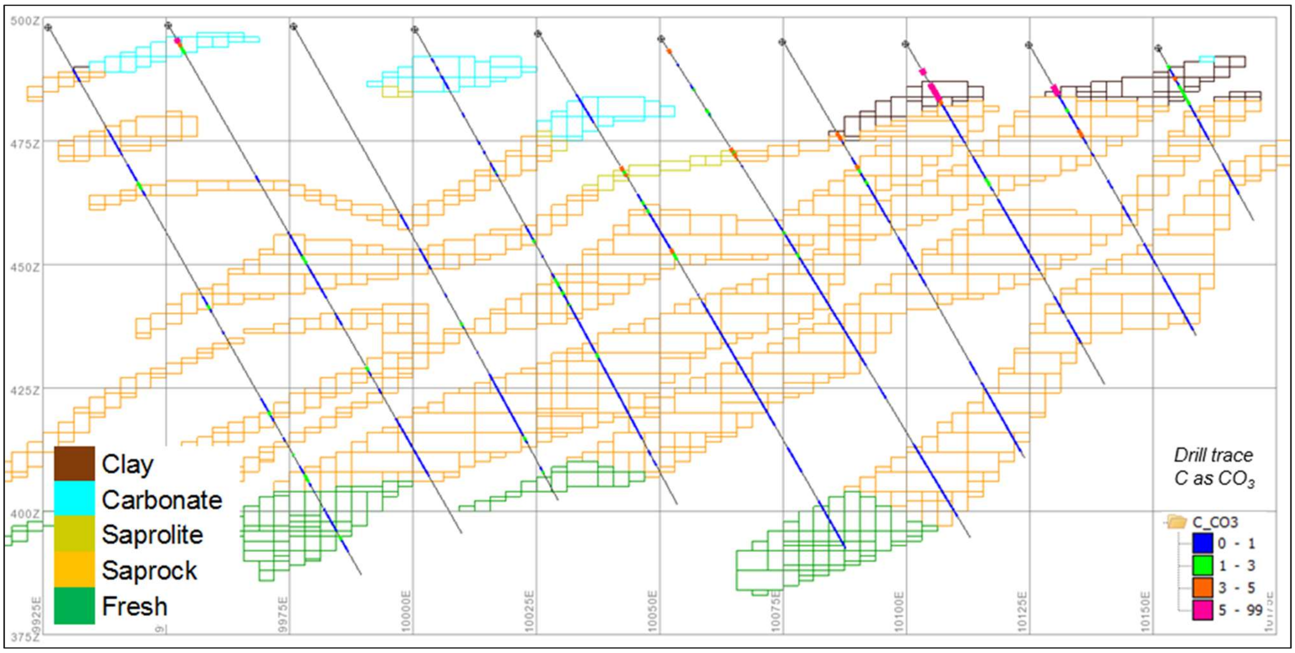
The deposit was previously constrained by Mineral Resource outlines based on mineralisation envelopes prepared using a 3.5% TGC cut-off. After statistical analysis, the cut-off was adjusted to 2% TGC as this likely represents the break between 'ore' and waste. The adjusted mineralisation interpretation applied a minimum 2 m downhole intercept with a maximum of 2m internal waste.

Geometallurgical domains were created to allow for the modelling of C as CO_3 cohesively and guide the 2018 metallurgical test work program. The geometallurgical domains (geodomains) are delineated based on lithology, mineralogy, weathering and C as CO_3 content. A "carbonate" shell was created to define elevated C as CO_3 based on a 1% C as CO_3 cut-off. Five geodomains are modelled, as summarised and presented in Table 5-1 and Figure 5-1.

Table 5-1 Summary of geometallurgical domains

Geodomain number	Geodomain code	Rock type	Rock code	Description
1	Fresh	Mineralised Garnet Gneiss	GA, GN	Unweathered mineralisation
2	Saprock	Mineralised Garnet Gneiss	GA, GN	Moderately weathered mineralisation
3	Saprolite	Mineralised Garnet Gneiss	GA, GN	Highly weathered mineralisation
4	Carbonate	Carbonate ore	CO	Elevated C as CO_3 (>1%) mineralisation
5	Clay	Clay	CL	Clay mineralisation

Figure 5-1 Section 9,450mN displaying geometallurgical domains and C as CO_3 carbonate



The surface topography used in the MRE is derived from the surveyed drillhole collars and extrapolated beyond the resource area. Surface topography at Uley 2 is relatively flat and relief is reasonably gentle. The derived topographic model is considered to be of sufficient quality and accuracy for use in the MRE.

5.2 Compositing and statistics

The sample data was coded within the mineralisation wireframes along with the oxidation surfaces and carbonate shell to flag geodomains. Compositing was completed within the geological domains based on a 1 m downhole compositing interval. Variable length compositing was used to ensure that no residuals were created. An assessment of the Coefficient of Variation (CoV – ratio of the standard deviation to the mean) showed a high CoV for C as CO_3 for some fresh domains and appropriate top-cuts were applied. The CoV was low for TGC within each mineralisation domain and therefore a top-cut was not required.

5.3 Geostatistical analysis

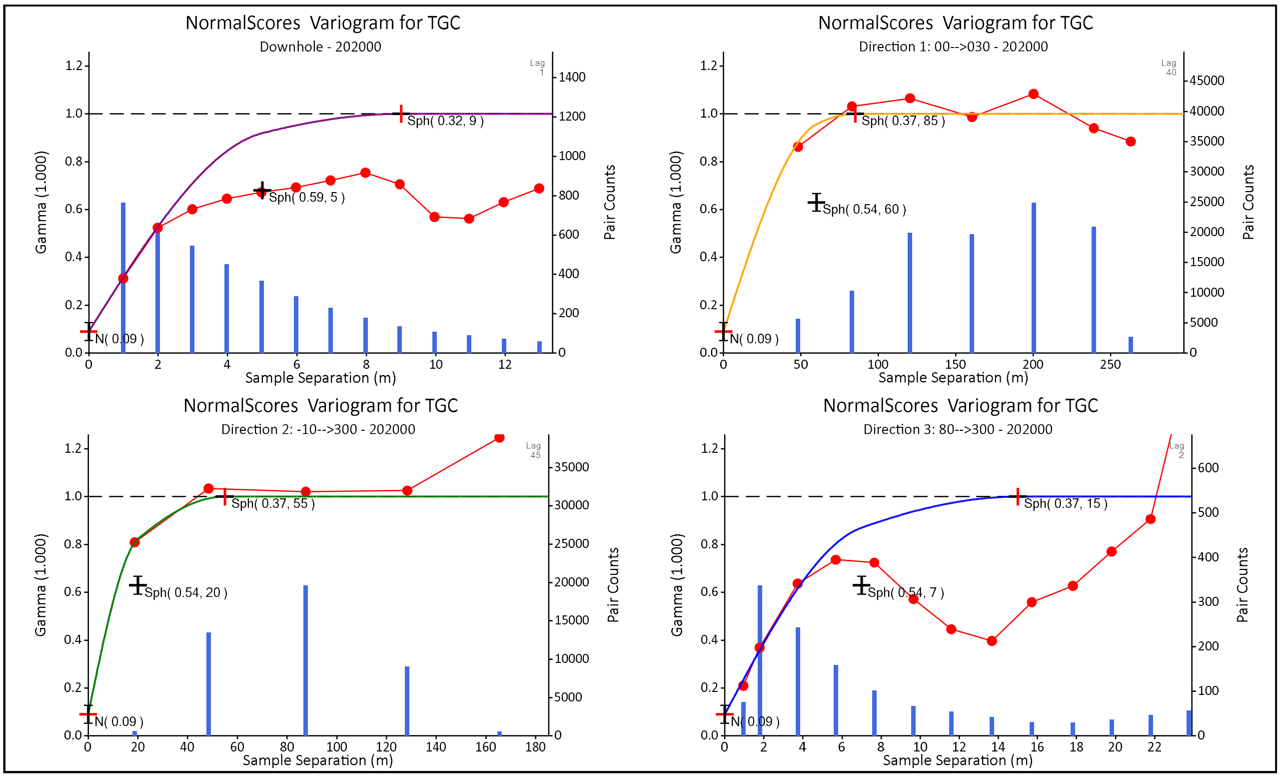
Variograms were generated to assess the spatial continuity of TGC and C as CO_3 and derive inputs to the kriging algorithm used to interpolate grades. Snowden Supervisor software was used to generate and model the variograms within each geodomain and mineralisation object. The major direction (direction of maximum continuity) was oriented along strike with the intermediate (semi-major) direction oriented horizontally and the minor direction oriented orthogonal to the dip plane. In domains with limited input data variogram parameters were adopted from other similar types (geodomains), with the major direction of continuity adjusted in line with the interpreted orientation. All variograms were modelled using the following general approach:

- All variograms were standardised to a sill of one.
- Variograms were modelled using spherical variograms with a nugget effect and two structures.
- The variograms were evaluated using normal scores variograms and the nugget and sill values back transformed to traditional variograms using the discrete Gaussian polynomials technique.
- Table 5-2 and Figure 5-2 present example variogram models for the main isoclinal fold structure (object 2).

Table 5-2 Example variogram parameters – main folded mineralisation object 2

Object	Geodomain	Major Direction	Co	Structure 1				Structure 2			
				C1	X1	Y2	Z3	C2	X2	Y2	X2
2	clay	00-->020	0.10	0.56	60	20	5	0.34	105	75	15
	saprolite	00-->-020	0.10	0.56	60	20	5	0.34	105	75	15
	saprock	00-->020	0.10	0.56	70	35	3	0.34	105	75	15
	carbonate	00-->020	0.23	0.36	70	35	3	0.41	85	40	7
	Fresh	00-->-020	0.28	0.56	60	20	5	0.34	105	75	15

Figure 5-2 Example variogram model – TGC within main object 2



6 Mineral Resource estimation

6.1 Block model

A Surpac block model (201907_uley_mod.mdl) was created to encompass the full extent of the deposit. A block size of 12.5m NS by 12.5m EW by 4m vertical was used with sub-blocks of 3.125m by 3.125m by 1m. The parent block size was selected on the basis of 50% of the average drill hole spacing across the deposit and the results of kriging neighbourhood analysis (KNA). The model cell dimensions in other directions were selected to provide sufficient resolution to the block model in the across-strike and down-dip direction. Details of the model are listed in Table 6-1.

Table 6-1 Uley 2 block model parameters

Model Name	***201907_uley_mod***		
(Grid)	Y	X	Z
Minimum Coordinates	9,200	9,800	280
Extent	9,650	10,200	540
Block Size (Sub-blocks)	12.5 (3.125)	12.5 (3.125)	4 (1)
Rotation	none		
Attributes:	Attributes:		
RTYPE	1=mineralised 2=waste		
DOMAIN	Mineralisation shell number		
OXCODE	10=fresh, 20=trans, 30=oxidised		
GDOMAIN	100=fresh, 200=saprock, 300=saprolite, 400=clay, 500=carbonate (>1% shell)		
TGC	Estimated total graphitic carbon %		
C_CO3	Estimated C as CO_3 %		
DENSITY	Calculated for mineralisation, average values for waste		
min_dis	Minimum distance for interpolation		
ave_sam	Average distance for interpolation		
num_sam	Number of samples for interpolation		
pass	Pass number for interpolation		
kvar	Kriging variance for interpolation (4 attributes for each lg/hg domain)		
RESCLASS	1=measured, 2=indicated, 3=inferred		

6.2 Grade interpolation

6.2.1 Estimation parameters

For all mineralised objects in the Uley 2 deposit, the wireframe interpretations were used as hard boundaries in the interpolation. That is, only grades inside each object or geodomain were used to interpolate the blocks inside. The ordinary kriging (OK) algorithm was selected for grade interpolation.

Orientated 'ellipsoid' search ellipses were used to select data for interpolation. The ellipse was oriented to the average strike, dip and plunge of the mineralised zones, and varied accordingly for each object. The same major direction (orientation of mineralisation) was used for TGC and C as CO_3 in order to maintain the ratios of the constituents. The search ellipse axis lengths were derived from the variogram modelling.

The maximum first-pass search radius was set at 37.5m and increased for each pass as required to ensure all blocks were estimated in the final kriging pass. The major to semi-major, and the major to minor ratios were determined from the variogram ranges. Based on KNA results a maximum number of 16 samples was used for estimation. Search parameters are presented in Table 6-2.

Table 6-2 Search parameters applied to all geodomains and objects at Uley 2

Parameter	TGC			C as CO_3		
	Pass 1	**Pass 2**	**Pass 3**	**Pass 1**	**Pass 2**	**Pass 3**
Search Type	Ellipsoid	Ellipsoid	Ellipsoid	Ellipsoid	Ellipsoid	Ellipsoid
Bearing Dip Plunge	Variable – based on individual object directions			Variable – based on individual object directions		
Major-Semi Major Ratio	2	2	2	2	2	2
Major-Minor Ratio	3	3	3	3	3	3
Search Radius	37.5m	75m	150m	37.5m	75m	150m
Minimum Samples	8	8	2	8	8	2
Maximum Samples	16	16	16	16	16	16
Block Discretisation	4X by 4Y by 2Z			4X by 4Y by 2Z		
Percentage Blocks Filled	48%	43%	9%	48%	43%	9%

6.3 Density and material type

Bulk density test work was implemented by QGL in February 2019. Analysis of 58 samples from varying geodomains was completed externally to Australian Standards by ALS Adelaide and designed to support on-site bulk density measurements completed as part of previous campaigns. Statistical analysis of the bulk density data determined a likely correlation between TGC or C as CO_3 content and bulk density, dependant on geodomain. For the saprock, saprolite and fresh mineralisation, bulk density appears related to the TGC content (Figure 6-1). Within the carbonate geodomain, the bulk density appears related to the C as CO_3 content (

Figure **6-2**). Bulk density was assigned to the model using calculations generated from the analysis. The previous MRE assigned an average value for the bulk density ranging between 1.8 and 2.1 t/m^3 dependant on the weathering profile. The average value for the calculated bulk density in the updated MRE is 2.1t/m^3. The lower values assigned in May 2015 are likely resultant of poor bulk density sampling methodology under-valuing the real bulk density values.

Figure 6-1 Bulk density vs TGC – saprock

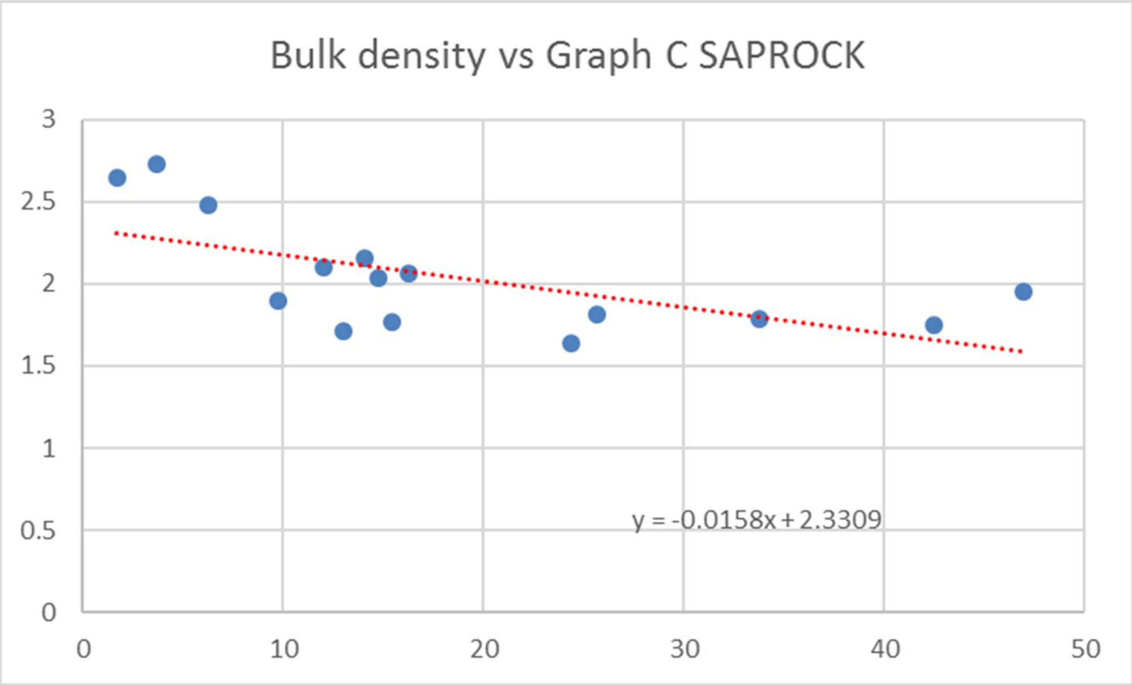
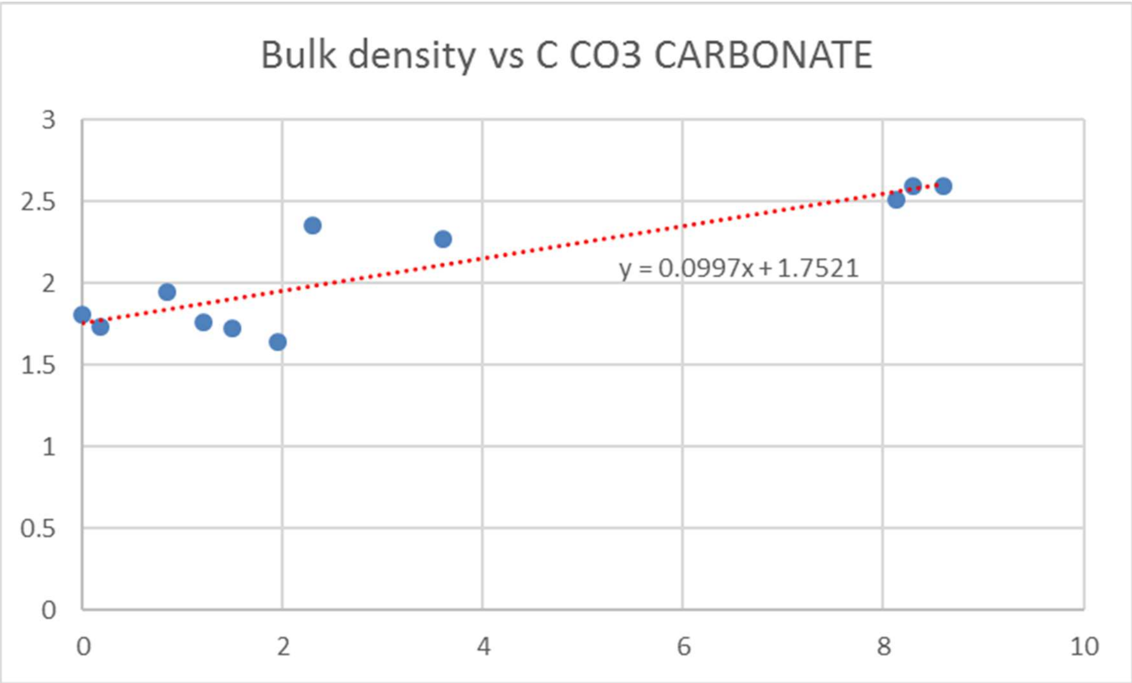


Figure 6-2 Bulk density vs C as CO_3 - carbonate



7 Model validation

A three-step process was used to validate the Uley 2 MRE. Firstly, a qualitative assessment was completed by slicing sections through the block model in positions coincident with drilling. A quantitative assessment of the estimate was completed by comparing the average grades of the composite file input against the block model output for each TGC object and geodomain.

As a further check that the interpolation of the block model correctly honoured the drilling data, a trend analysis was completed by comparing the interpolated blocks to the sample composite data. The trend analysis was completed for elevation in 4m bench heights, and 25m strike panels. Validation plots for the fresh and carbonate geodomains are presented in Figure 7-1 to Figure 7-4.

Figure 7-1 Validation trend plot – TGC in the fresh geodomain

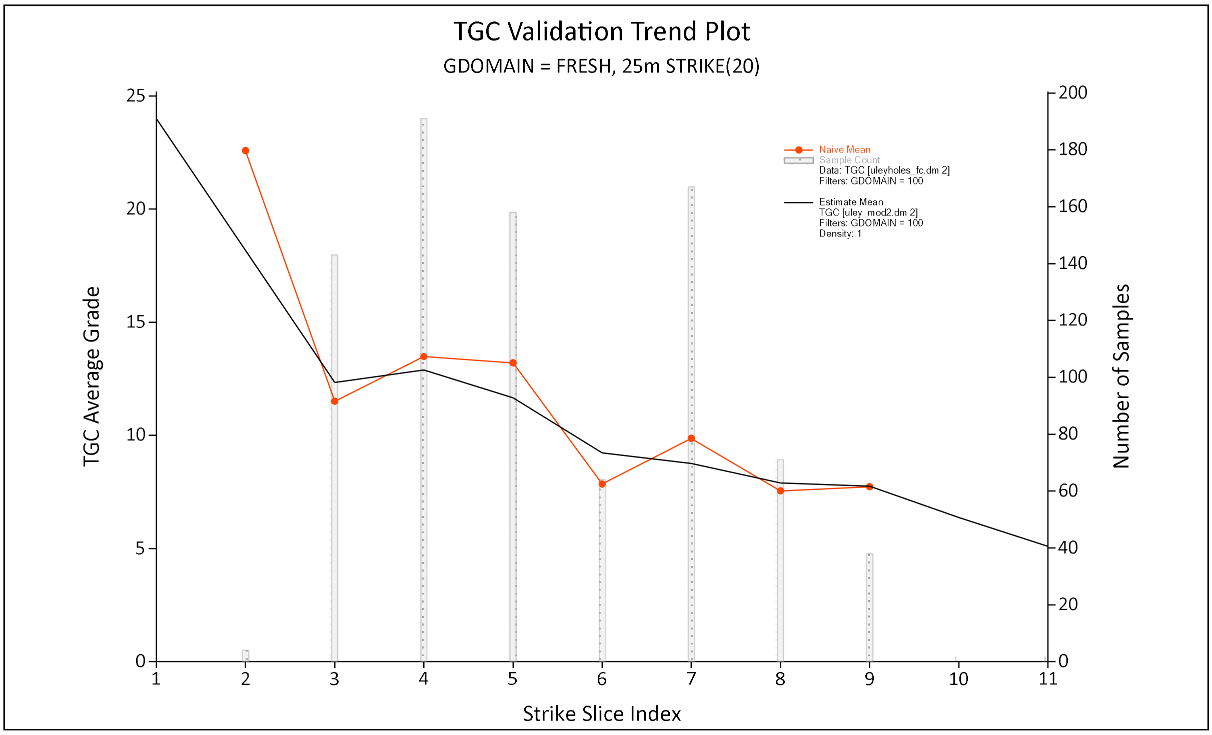


Figure 7-2 Validation trend plot – C as CO_3 in the fresh geodomain

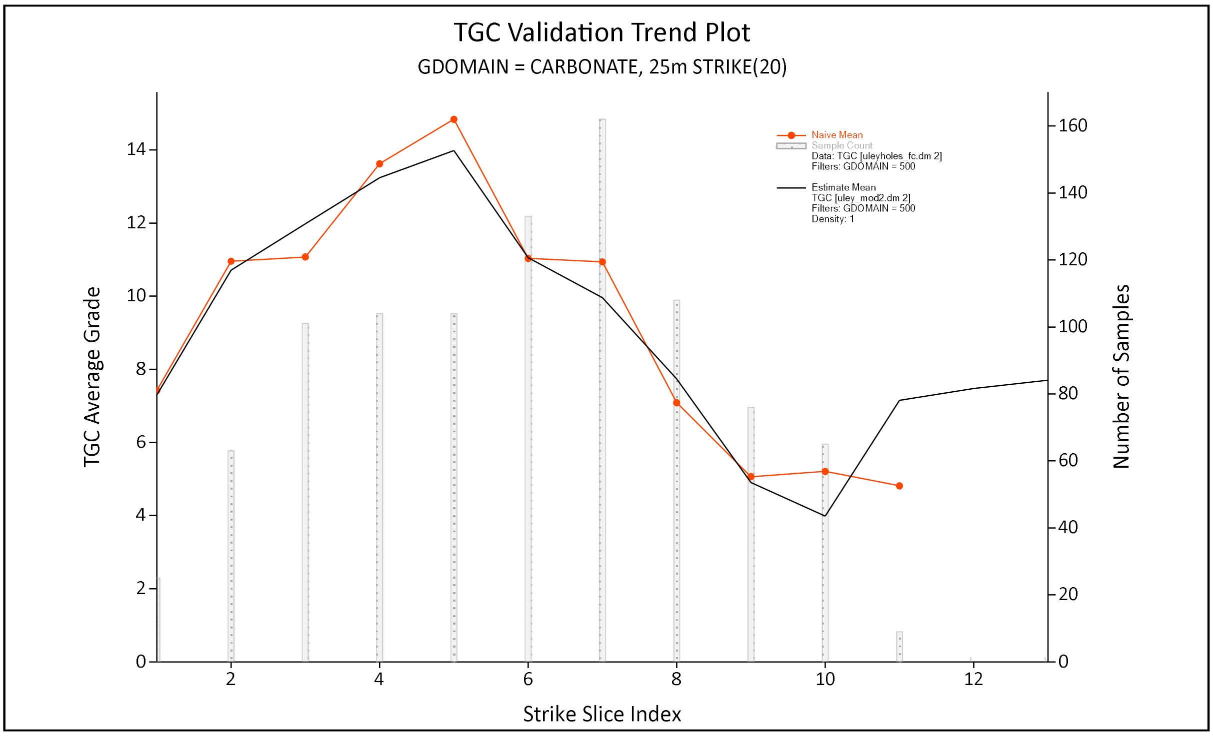


Figure 7-3 Validation trend plot – TGC in the carbonate geodomain

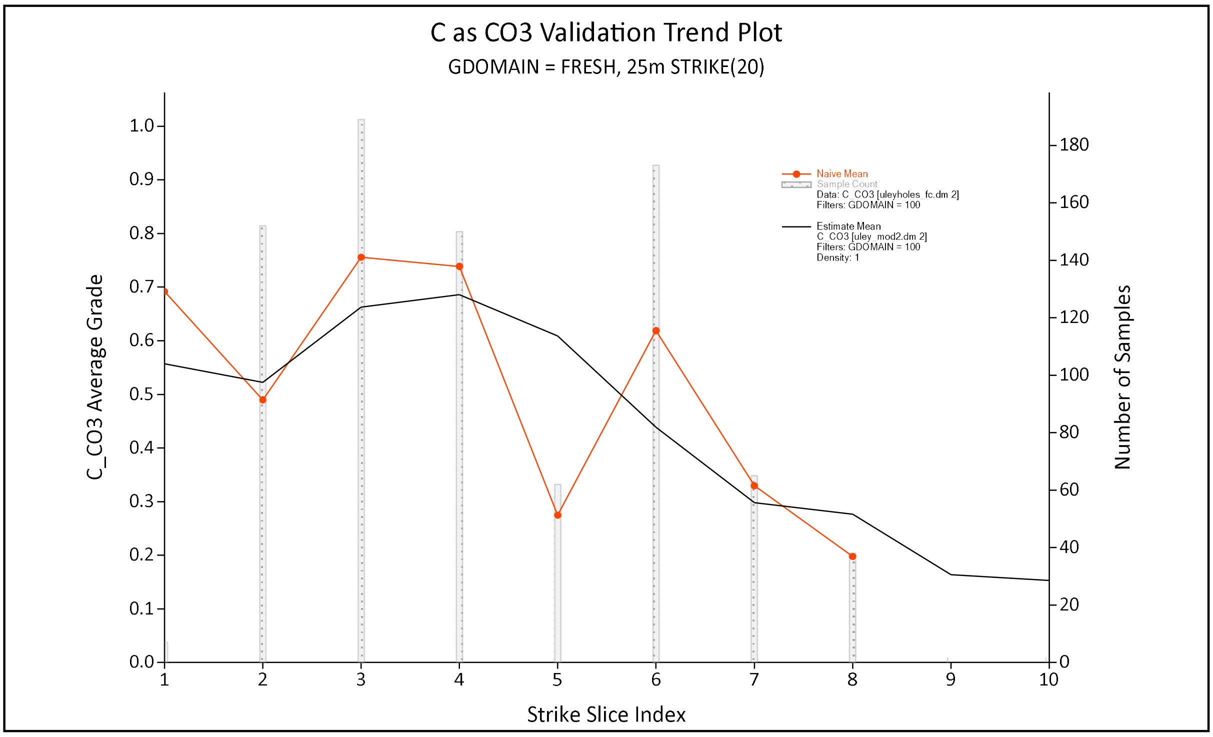
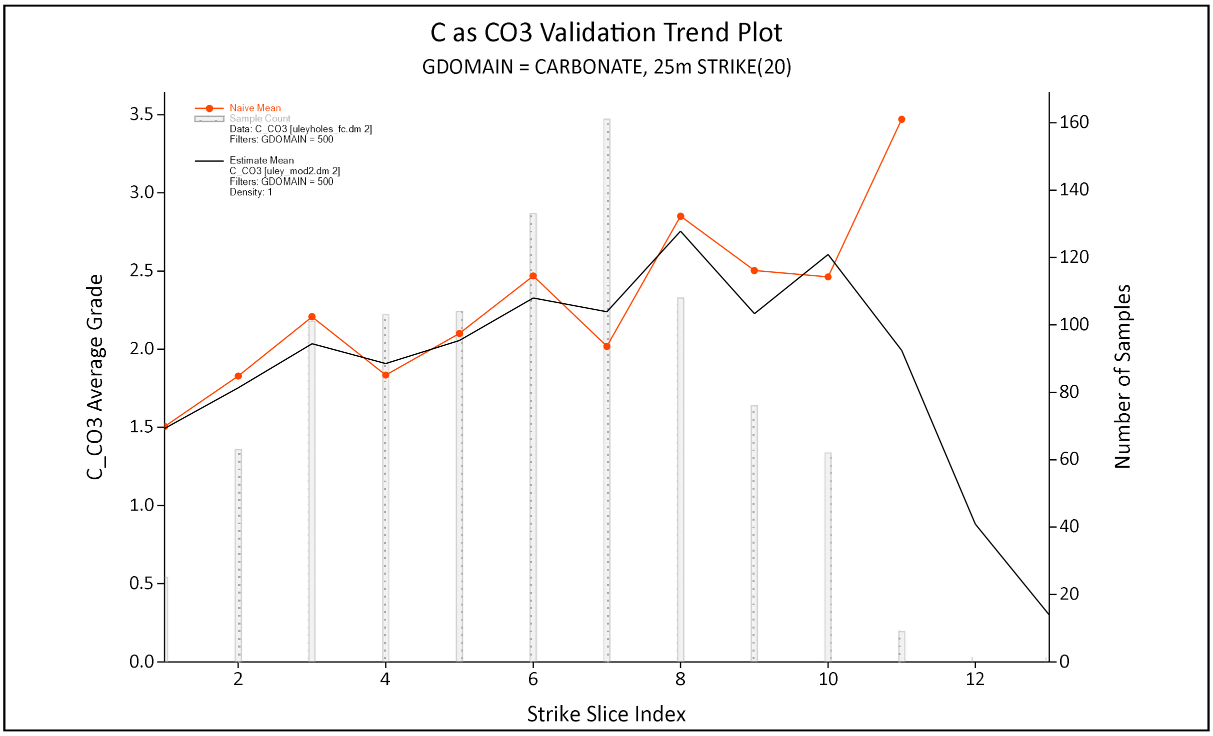


Figure 7-4 Validation trend plot – C as CO_3 in the carbonate geodomain



The conclusions from the model validation work are as follows:

- Visual comparison of the model grades and the corresponding drillhole grades shows a good correlation and trends observed in the drilling are honoured in the block estimates.
- A comparison of the global drillhole mean grades with the mean grade of the block model estimated grade for each geodomain demonstrates an absolute difference in mean grade typically below 4% for TGC and 8% for C as CO_3, which is a good outcome.
- With the exception of extrapolated regions with minimal informing data, the grade trend plots show a reasonable correlation between the trends in the block model grades compared with the drillhole grades.

8 Mineral Resource classification and reporting

8.1 Classification

The July 2019 Uley 2 MRE was classified and reported in accordance with the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (JORC Code, 2012).

The Mineral Resource classification criteria were developed based on an assessment of the following items:

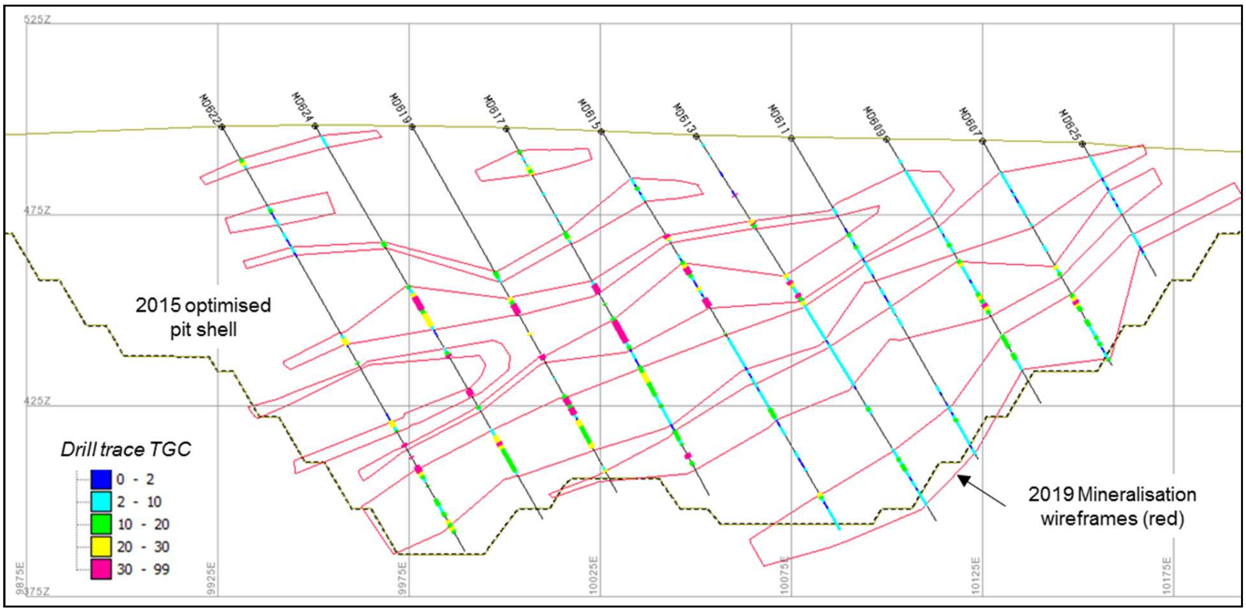
- Nature and quality of the drilling and sampling including QAQC review.
- Drilling density.
- Confidence in the understanding of the underlying geological and grade continuity and the structural characteristics.
- Confidence in the estimate of the mineralised volume.
- Bulk density data.
- Model validation results.
- The criteria listed in Table 1 Section 1 and Section 3 of the JORC Code.

The resource classification scheme (Measured, Indicated and Inferred) adopted for the Uley 2 MRE was based on the following:

- The majority of mineralisation was classified as Indicated Resource where the drilling density was 25mE x 25mN. A portion of the Resource where vertical drilling has reduced the drill density and supported the thickness and grade was classified as Measured Resource.
- Where mineralisation wireframes were extrapolated to more than half of the drill density (approximately 12.5m), the Resource was classified as Inferred Resource. There is no extrapolation outside of an appropriate range for Inferred classification. Material outside of the mineralisation envelopes was not classified.
- Smaller mineralisation objects derived from minimal informing samples (less than 2 drill holes) were classified as Inferred.
- Bulk density data test work completed in 2018 increased confidence in volume to tonnage conversions.

- Optimisation studies completed in May 2015 on the previous Uley 2 MRE (Coffey) support the use of a 3.5% cut-off grade for Resource reporting.[4] Figure 8-1 demonstrates the 2015 optimised pit shell in section with the block model TGC grades.

Figure 8-1 Section 9,450mN showing the 2015 optimised pit shell



8.2 Metallurgical considerations

The JORC Code Clause 49 requires that industrial minerals must be reported "*in terms of the mineral or minerals on which the project is to be based and must include the specification of those minerals*". Clause 49 also states that it "*may be necessary prior to the reporting of a Mineral Resource or Ore Reserve to take particular account of key characteristics or qualities such as likely product specifications, proximity to markets and general product marketability*."

Petrographic studies by Pontifex Pty Ltd demonstrated a range of graphite flake sizes within a gneissic quartz-feldspar matrix. Minor amounts of mafic gangue minerals such as biotite, amphiboles and pyroxenes are also present. Biotite is shown to be intergrown with the graphite in some samples. Graphite liberation test work completed during 2014 and 2015 by QGL delivered promising results. The subsequent 2019 metallurgical campaign was designed to ensure the necessary sample representivity across all geodomains. The 2019 program exceeded the previous test work and was achieved utilising limited crushing and grinding to 0.6 mm followed by conventional froth flotation concentration with multiple stages of polishing. The resultant flake size distribution is presented in Table 8-1.

[4] *Refer to the QGL ASX release dated 14/05/2015, "Major increase to graphite ore reserve and mine life"*

Table 8-1 Uley 2 – flake size distribution and purity

Size fraction µm	Size fraction (Mesh)	Approx. weight Distribution %	Graphitic C Purity %	LOI %
+300	+50	10.5	97.8	0.26
-300+150	-50+100	35.4	97.2	0.34
-150+75	-100+200	27.1	96.6	0.36
-75	-200	27.0	90.7	0.73

In accordance with Clause 49 of the JORC Code (2012), the likely product specifications and possible product marketability and overall potential for economic extraction are considered by the competent person to support the Mineral Resource estimate at Uley 2.

8.3 Mineral Resource statement

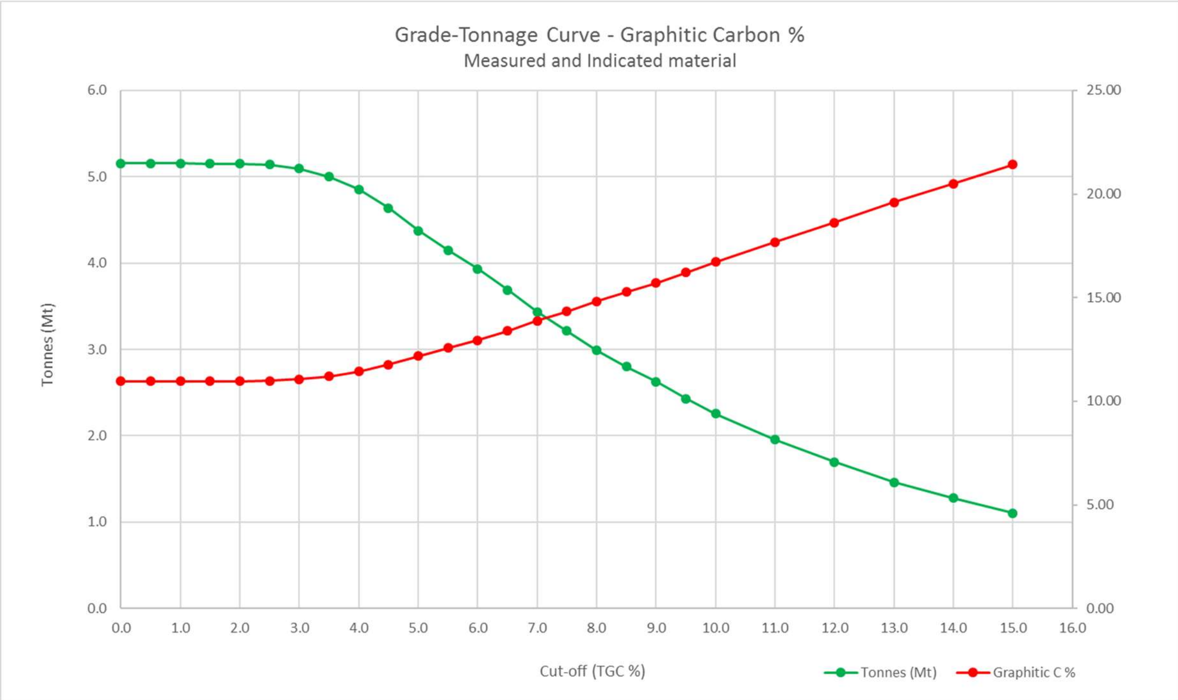
The July 2019 MRE comprises 6.3 Mt @ 11.1% TGC, for 697 kt of total contained graphite at a 3.5% TGC cut-off (Table 8-2). This includes 5.0 Mt @ 11.2% Measured and Indicated material for 560 kt of TGC (79% of the total Resource).

Table 8-2 Mineral Resource TGC estimate for Uley 2 as at July 2019 (3.5% TGC cut-off)

Classification	Oxidation	Tonnes Mt	TGC %	Density t/m^3	TGC Tonnes kt
Measured	Oxide	0.0	7.5	1.9	1,160
	Transitional	0.6	16.8	2.1	107,960
	Fresh	0.1	11.4	2.2	16,280
	Subtotal	**0.8**	**15.6**	**2.1**	**125,400**
Indicated	Oxide	0.4	8.6	2.0	29,600
	Transitional	3.1	10.5	2.1	320,300
	Fresh	0.8	10.7	2.2	85,000
	Subtotal	**4.2**	**10.4**	**2.1**	**434,900**
Inferred	Oxide	0.0	6.4	2.0	2,120
	Transitional	0.5	10.8	2.1	53,470
	Fresh	0.8	10.4	2.2	81,340
	Subtotal	**1.3**	**10.5**	**2.2**	**136,930**
TOTAL		**6.3**	**11.1**	**2.1**	**697,260**

Figure 8-2 displays the grade-tonnage curve including all Measured and Indicated Resource for a range of TGC cut-offs. The sensitivity of the Mineral Resource tonnages to the reporting cut-off grade is minimal at cut-offs between 3.0% and 4.0% TGC, i.e., there is little impact on the total reported tonnes when comparing these cut-off grades.

Figure 8-2 Uley 2 grade-tonnage curve for Measured and Indicated Resources



8.3.1 Competent Person's Statement – Mineral Resources

The information in this report that relates to the Uley 2 Mineral Resource estimate is based on information compiled by Ms Vanessa O'Toole who is a Member of the Australasian Institute of Mining and Metallurgy (MAusIMM) and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity to which she 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". Ms O'Toole is an external consultant to QGL and a full-time employee of Wicklow Resources Pty Ltd and consents to the inclusion in the report of the matters based on this information in the form and context in which it appears.

While exercising all reasonable due diligence in checking and confirming the data validity, Wicklow has relied largely on the data supplied by QGL to estimate and classify the Uley 2 Mineral Resource. As such, Wicklow accepts responsibility for the resource modelling and classification while QGL has assumed responsibility for the accuracy and quality of the underlying drill data.

8.4 Comparison to previous MRE

Comparisons between the May 2015 MRE completed by Coffey and the June 2019 MRE relevant to this report are presented in Table 8-3. C as CO_3 was not reported as part of any previous MREs. The Measured Resources increased by 0.44 Mt with an 11% drop in TGC grade. Total Resources increased by 39% tonnages with a 4% drop in TGC % for an overall increase in TGC tonnages of 32%.

Table 8-3 Comparisons between the 2015 and 2019 Uley 2 MREs, 3.5% TGC cut-off

Classification	May 2015			July 2019			Difference %*		
	Tonnes Mt	TGC %	TGC Mt	Tonnes Mt	TGC %	TGC Mt	Tonnes Mt	TGC %	TGC Mt
Measured	0.36	17.5	0.06	0.80	15.6	0.13	122%	-11%	117%
Indicated	2.75	11.4	0.31	4.20	10.4	0.43	53%	-9%	39%
Inferred	1.44	10.6	0.15	1.31	10.5	0.14	-9%	-1%	-7%
TOTAL	**4.54**	**11.6**	**0.53**	**6.31**	**11.1**	**0.70**	**39%**	**-4%**	**32%**

**Positive values indicate an increase in value from 2015 to 2019*

Variations to grade and tonnages are the result of the following adjustments to resource definition and estimation procedures:

- Wireframes were adjusted to extend through the south-west of Uley 2 to include drilling unavailable for the May 2015 MRE. This increased the overall reported tonnages.
- Based on statistical analysis of the raw drill hole data, wireframes were adjusted to allow for a 2% TGC cut-off. The previous MRE utilised wireframes created using a 3.5% cut-off. This contributed to an overall increase in tonnages and a 4% reduction in TGC% grade.
- The addition of bulk density test work allowed for the increase in Measured Resources in zones where close-spaced drilling confirmed the continuity and thickness of TGC and C as CO_3 grade. The use of regression formulas based on grade and bulk density relationships to calculate the bulk density increases the confidence in reported tonnages within these zones.
- Metallurgical test work targeting individual geodomains and mass composites has increased confidence in the definition of the Uley 2 Resource and subsequent conversion of Inferred to Indicated and Measured Resources.

Appendix A

The following extract from the JORC Code 2012 Table 1 is provided for compliance with the Code requirements for the reporting of Ore Reserves.

Section 1 Sampling Techniques and Data (Criteria in this section apply to all succeeding sections)

Criteria	JORC Code Explanation	Commentary	Competent Person
Sampling techniques	▪ Nature and quality of sampling (eg 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. ▪ In cases where 'industry standard' work has been done this would be relatively simple (eg 'reverse circulation drilling was used to obtain 1m samples from which 3kg was pulverised to produce a 30g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (eg submarine nodules) may warrant disclosure of detailed information.	▪ All holes used in the Resource Estimate were HQ diamond drillholes, sampling moderately dipping strata bound graphite mineralised zones. ▪ 30 vertical drillholes were used for ore definition together with 114 drillholes drilled at -60° towards 090. ▪ Half cores samples were obtained on geological intervals, typically 1m in length but ranging from 0.3m to 4m. ▪ High grade graphite mineralisation is reasonably visible during geological logging and sampling. ▪ Visibly mineralised intervals were crushed and pulverised to at least 85% passing 75µm, then sent to ALS Brisbane for analysis by LECO method. ▪ The sample preparation and assaying techniques are industry standard and appropriate for this type of mineralisation. ▪ Some core material remains selectively sampled.	KL
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 holes used in the Resource Estimate were drilled from surface. ▪ 30 vertical drillholes were drilled using HQ standard tube and were not orientated. ▪ 114 angled drillholes were drilled using HQ triple tube. Downhole surveys were obtained using a Ranger SS118 downhole camera. The angled drillholes were orientated using the Reflex ACT II RD core orientation tool.	KL
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.	▪ Core recovery was captured by logging "Core Loss" in areas of no or low recovery. ▪ Industry standard procedures/techniques were employed to ensure maximum downhole recovery. Overall core recovery for all resource drillholes is 87%. ▪ There has been no identified relationship between sample recovery and grade.	KL
Logging	▪ Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate	▪ Geological and geotechnical logging of the drillholes is of an appropriate standard to support a Mineral Resource estimation, mining studies and	KL

Criteria	JORC Code Explanation	Commentary	Competent Person
	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.	metallurgical studies. ▪ Geological core logging is qualitative. ▪ Core photography is available. ▪ The total cumulative length of the sample intervals for all holes used for resource definition was 11,270 m (90% of total core length was sampled).	
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.	▪ Half core samples were taken. In competent core, these were cut by diamond saw. In incompetent material, the sample was collected by manual halving of the material. Half core sampling is an appropriate, industry standard technique. ▪ Bulk reject duplicate samples were taken in the current angled drillholes to ensure sample representivity. These duplicates were typically inserted at a frequency of 1 in 100 samples (1% rate of insertion). Certified reference standards were inserted at a typical rate of 1 in 20 samples (5% rate of insertion) for quality assurance checks of analyses reported by the mineral testing laboratory ALS Global. ▪ There is no record of field duplicate samples or standards having been submitted in the 30 vertical drillholes to test sampling representativity. ▪ Samples from the 18 vertical CRAE drillholes were crushed and sieved on site prior to dispatching the coarse +75µm to ALS-Chemex for assaying. There is no available data on the weights of the sieved fractions. If the fine fraction made up a significant proportion of the total sample, assays from the coarse fractions should be higher than corresponding whole rock assays. A comparison of grades from the CRAE drilling with the whole rock assays from other drilling programmes shows no difference in grade tenor. Visual comparison of grades in the CRAE drillholes with neighbouring holes from the other programme likewise shows no notable difference in grade tenor. As such, despite the description of assaying of coarse fractions only, the assays from the CRAE drilling are treated in the same manner as whole rock assays with no tonnage correction required. ▪ Some discrepancies were noted in the C values in the CRAE samples, with non-carbonate C occasionally being greater than the Total C value. These are assumed to reflect a lack of complete homogenization in the crushing/sieving process carried out on site. ▪ Sample preparation on the 12 vertical drillholes (2011 campaign) and the 92 angled drillholes (2014 and 2015 campaigns) was undertaken by ALS Adelaide. Samples were crushed and split to >70% passing -6mm and pulverized to >85% passing 75µm prior to assaying by ALS Brisbane. ▪ Sample sizes (half core samples) are deemed appropriate for the material that is being sampled.	KL

Criteria	JORC Code Explanation	Commentary	Competent Person
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.	Techniques used are: ▪ C-IR18 (Graphitic carbon by LECO analyser). ▪ C-CAL15 (Inorganic carbon by difference). ▪ C-IR17 (Organic carbon by LECO analyser). ▪ C-CON01 (Carbon concentrate by LECO analyser). ▪ C-IR07 Total Carbon by LECO analyser). ▪ C-IR18 was used for the 2014 and 2015 samples, and C-IR17 was used for previous samples. As the rocks are assumed to contain no organic material (supported by petrographic study), the difference between these two techniques is less than the analytical error of the techniques and hence considered negligible. ▪ Bulk reject duplicate samples were taken in the 2014 angled drillholes at a typical frequency of 1 in 100 samples (1% rate of insertion). Certified reference standards were inserted at a typical rate of 1 in 20 samples (5% rate of insertion). ▪ There is no record of field duplicate samples or standards having been submitted in the 30 vertical drillholes. ▪ Internal laboratory QAQC for all sampling has been reviewed with no problems highlighted with respect to sampling bias or precision.	KL
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.	▪ Metallurgical drillholes were designed to allow for twin drilling analysis. Analysis demonstrated acceptable comparative intercepts for tenor and thickness of mineralization. ▪ Assays in the database have been checked against laboratory certificates and original logs which contained assay data. No inconsistencies were identified. ▪ Non-sampled intervals were assumed to be “unmineralised” and given a Graphitic C value of 0.01%, equivalent to half the detection limit of C-IR18. ▪ No adjustments to any assay data were done.	KL
Location of data points	▪ Accuracy and quality of surveys used to locate drillholes (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.	▪ Drill location co-ordinates are reported in Uley Mine Grid (transformed to truncated AMG). The reported truncation was: Easting = -554,216.866m Northing = -6,139,092.867m ADH = RL + 404.252m ▪ Drillhole collars have been re-surveyed in the field and these grid transformations validated. All drillholes were re-surveyed during 2014 by PA Dansie & Associates Pty Ltd. ▪ A complete site survey was undertaken during 2014 by Maptek Pty Ltd.	KL
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.	▪ No exploration results are reported or included in this Mineral Resource estimate. ▪ Diamond drilling on an infill spacing of up to 25m X 25m was used to estimate geological and grade continuity at a level deemed appropriate for the classification and reporting of a Mineral Resource estimate	KL

Criteria	JORC Code Explanation	Commentary	Competent Person
	▪ Whether sample compositing has been applied.	(updated estimate). ▪ 1m sample composites were used during the resource estimation process.	
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.	▪ Drilling orientation is considered appropriate considering the deposit type and orientation of moderately WNW dipping mineralisation. Sampling bias related to the orientation of sampling is considered minimal.	KL
Sample security	▪ The measures taken to ensure sample security.	▪ All reasonable measures were being taken to ensure sample security along the value chain. These measures included the recording of sample dispatch and receipt reports, secure storage of samples, and a locked and gated core shed. ▪ The assay method used is destructive. A representative sample library is maintained on site for reference.	KL
Audits or reviews	▪ The results of any audits or reviews of sampling techniques and data.	▪ No formal third-party audits have been undertaken to date. ▪ Laboratory procedures and manuals are comprehensively documented on-site and both the AMDEL and ALS laboratories are considered to be reputable laboratories for carbon analysis. As the assaying techniques used are broadly destructive techniques, with a limited ash residue, they are not suited for replicate analysis. ▪ The quality control protocols implemented at Uley 2 are considered to represent good industry practice and allow assessment of analytical precision and accuracy to a degree. The assay data is considered to display an acceptable level of precision and accuracy. ▪ Internal laboratory QAQC data (standards, blanks and duplicates) have been reviewed and no significant problems were identified regarding the quality of the chemical assaying.	KL

Section 2 Reporting of Exploration Results (Criteria listed in the preceding section also apply to this section)

Criteria	JORC Code Explanation	Commentary	Competent Person
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.	▪ The Uley Graphite Project consists of five contiguous tenements on the Eyre Peninsula of South Australia, of which two are retention leases, two are mining leases and one is an exploration licence. Tenement identification numbers are: RL66, RL67, ML5561, ML5562 and EL4778. ▪ Mining development is subject to the approved Program for Environmental Protection and Rehabilitation (PEPR) and an Environmental Licence which is mandated under South Australian State legislation. ▪ QGL has a 100% interest in these tenements and no royalty, joint venture or other material agreements are in place other than a royalty of 1.5% with its former parent company, SER. ▪ Tenement ownership is secure with expiration dates varying from 2016 (EL4778) to March 2017 (ML5561 and ML5562). There are no known impediments to obtaining a license to operate in the area.	KL
Exploration done by other parties	▪ Acknowledgment and appraisal of exploration by other parties.	▪ Historically a number of parties have undertaken exploration on the leases. The data set held by QGL, and used in the resource update, includes all available information.	KL
Geology	▪ Deposit type, geological setting and style of mineralisation.	▪ Graphite is developed as a constituent mineral in coarse prograde metamorphic assemblages as well as in the fabric and foliation of micaceous schists. These are interpreted to be the folded, thrusted and metamorphosed equivalents of the Cook Gap Schist. Folding of stratigraphy on various local scales is obvious from the core logging.	KL
Drillhole Information	▪ A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drillholes: ◦ easting and northing of the drillhole collar ◦ elevation or RL (Reduced Level – elevation above sea level in metres) of the drillhole 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.	▪ A summary of all drillholes used in the Resource Estimate is provided in Section 4 of this report.	VO/KL
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	▪ This Table accompanies a Resource Estimation, and is not reporting Exploration results. ▪ No metal equivalents are used.	KL

Criteria	JORC Code Explanation	Commentary	Competent Person
	grade results and longer lengths of low grade results, the procedure used for such aggregation 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 drillhole 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').	▪ As this table accompanies a Resource Estimation, and is not reporting Exploration results, this section is not applicable. ▪ The relationships are captured and defined on a hole-by-hole basis in the resource model and orientations of holes to mineralised zone are appropriately accounted for in the estimate.	KL
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 drillhole collar locations and appropriate sectional views.	▪ Refer to Section 4 and **Figure 5-1**.	VO/KL
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 to avoid misleading reporting of Exploration Results.	▪ QGL carry out balanced reporting of exploration results. ▪ Selective sampling of visible graphitic material only has been carried out on the 2011 and current drill core.	VO/KL
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.	▪ All available and material exploration information has been considered. This comprised a drilling database, previous estimates and reports, academic literature, petrological reports, metallurgical test work reports, dry rock density determinations, and site visit photography/communication. Historical production records from the original Uley Mine provided assumptions related to future potential economic extraction.	KL
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.	▪ Exploration work to quantify the extent and continuity of mineralisation within the QGL-held tenure is ongoing. This work includes planned additional diamond and reverse circulation drilling, further geophysical surveys and geological mapping. Details of this exploration effort are deemed commercially sensitive.	KL

Section 3 Estimation and Reporting of Mineral Resources (Criteria listed in the preceding sections where relevant, also apply to this section)

Criteria	JORC Code Explanation	Commentary	Competent Person
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.	▪ Data has been provided by QGL in the form of an Access database. ▪ A total of 18 1993 era diamond drill holes drilled by Graphite Mines of Australia, 12 SER diamond drillholes drilled in 2011, and 112 Valence angled diamond drillholes in the Uley area have been used in the resource modelling update. The database used for resource estimation consists solely of diamond drilling and has been reviewed and re-validated for obvious errors by Wicklow prior to commencing the resource estimation study. The assay data has been cross-checked against assay certificates provided by ALS Chemex. ▪ The following checks were completed prior to uploading the drilling data into a Surpac database: ◦ Check and correct overlapping intervals. ◦ Ensure downhole surveys existed at a 0m depth. ◦ Ensure consistency of depths between different data tables, for example survey, collar and assays. ◦ Check gaps in the assay data were replaced by -1 as a code for missing data. Non-sampled intervals were assigned a value of 0.01% Graphitic C.	VO
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.	▪ Site visits were completed by the competent person in September and December 2018.	VO
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.	▪ The current geological interpretation is based on a review of previous estimates and reports and has been augmented by the geological and structural information provided by the additional drillholes not available for the May 2015 MRE. ▪ Information from site visits and geological reports suggests the graphite lenses occurs within an anticlinorium i.e. a fold with parasitic folds on its limbs, as occurred in the now depleted Uley mine to the north. The current model is of a recumbent antiform plunging very shallowly to the ENE, with HW lodes dipping shallowly to the WNW and FW lodes dipping moderately (~33°) to the WNW. ▪ The deposit was previously constrained by Mineral Resource outlines based on mineralisation envelopes prepared using a 3.5 % TGC cut-off. On review the cut-off was adjusted to 2% TGC as the distribution in grade demonstrates a distinct variance at 2%. This likely represents the break between "ore" and waste. The adjusted mineralisation interpretation applied a minimum 2m down hole intercept with a maximum of 2 m internal waste. ▪ Geometallurgical domains were created to allow for the modelling of C as CO_3 cohesively and guide the 2018 metallurgical test work program. The	VO

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		geometallurgical domains (geodomains) are delineated based on lithology, mineralogy, weathering and C as CO3 content. A "carbonate" shell was created to define elevated C as CO3 based on a 1% C as CO3 cut-off.	
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 drilling relevant to the Mineral Resource estimate at Uley 2 extends over a distance of 375 m (from 9,225 m grid N to 9,600 m grid N) and includes a 125 m vertical interval from approximately 375 m to 500 m. The graphitic mineralisation is interpreted to extend along the full strike distance. Depth of interpreted mineralisation varies as structural events resulted in the plunge to the north-east of the tight isoclinal folds that host mineralisation. Mineralisation becomes shallower and closer to the surface towards the south-west of Uley 2.	VO
Estimation and modelling techniques	▪ 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 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 (e.g. 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 drillhole data, and use of reconciliation data if available.	▪ Based on the dominant sample length, 1 m composites for TGC and C as CO_3 were extracted within the coded mineralisation by geodomains. Variable length compositing was used to ensure that no residuals were created. ▪ An assessment of the Coefficient of Variation (CV – ratio of the standard deviation to the mean) parameter resulted in the decision to top-cut C as CO_3 during grade estimation for some fresh domains. The CV was low for TGC within each mineralisation domain and therefore a top-cut was not required. ▪ TGC (%) and C as CO_3 (%) were estimated into the block model using Ordinary Kriging (OK) utilising the cut 1m composites in Surpac mining software. Grade estimation was constrained to blocks inside individual mineralisation wireframes and geodomains with hard boundaries applied. Results below the detection limit were assigned a value of 0.01 % for both graphitic C and C as CO_3. ▪ Variograms were generated to assess the spatial continuity of TGC and C as CO_3 and as inputs to the kriging algorithm used to interpolate grades. Snowden Supervisor software was used to generate and model the variograms within each geodomain. The major direction (direction of maximum continuity) was oriented along strike with the intermediate (semi-major) direction oriented horizontally and the minor direction oriented orthogonal to the dip plane. ▪ A Surpac block model was used for the estimate with a block size of 12.5 m NS by 12.5 m EW by 4m vertical with sub-cells of 6.275 m by 6.275 m by 1 m. The chosen parent block size is based on the nominal drill hole spacing along with consideration of the geometry of the mineralisation and the results of the grade continuity analysis. ▪ OK grade interpolation used an oriented 'ellipsoid' search to select data for interpolation. Estimation parameters were developed specifically for TGC and C as CO_3 within each mineralised geodomain. Where cohesive variograms could not be achieved due to limited data, parameters were borrowed from other like domains. Search directions were adjusted to allow for variations in orientation as a result of folding. ▪ A three-step qualitative and quantitative process was applied to validate	VO

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		the grade estimate. This included visual comparison of block grades and the input drill hole composites and global comparisons of these grades. The grade trends shown by the composite data are honoured by the block model within each domain. Trend plots comparing the model and composite grades along and across strike and with depth were generated. The plots displayed good correlation between the sample grades and the block model grades in each direction. ▪ No other elements, deleterious or not, were estimated to date. No assumptions were made concerning mining selectivity beyond small to medium scale open pit mining.	
Moisture	▪ Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.	▪ Tonnes are estimated based on an average dry insitu bulk density values.	VO
Cut-off parameters	▪ The basis of the adopted cut-off grade(s) or quality parameters applied.	▪ Optimisation studies completed in May 2015 on the previous Uley 2 MRE (Coffey) support the use of a 3.5% cut-off grade for Resource reporting.	VO/KL
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.	▪ The Uley graphite deposit has been historically mined by open cut mining methods and it is assumed that this will still be the case for any future mining operation in the area. ▪ No assumptions have been made about mining selectivity for specific material types or quality. ▪ No external mining dilution or other factors have been applied to the resource estimate.	
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.	▪ Petrographic studies by Pontifex Pty Ltd demonstrated a range of graphite flake sizes within a gneissic quartz-feldspar matrix. Minor amounts of mafic gangue minerals such as biotite, amphiboles and pyroxenes are also present. Biotite is shown to be intergrown with the graphite in some samples. Graphite liberation test work completed during 2014 and 2015 by QGL delivered promising results. The subsequent 2019 metallurgical campaign was designed to ensure the necessary sample representivity across all geodomains. The 2019 program exceeded the previous test work and was achieved utilising limited crushing and grinding to 0.6 mm followed by conventional froth flotation concentration with multiple stages of polishing. The resultant flake size distribution is.	MG
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	▪ Mining development is subject to the approved Program for Environmental Protection and Rehabilitation (PEPR).	KL

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	environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.		
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. ▪ Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.	▪ Bulk density test work was implemented by QGL in February 2019. The analysis was completed externally to Australian Standards by ALS Adelaide and designed to support on-site bulk density measurements completed as part of previous campaigns. Statistical analysis of the bulk density data determined a likely correlation between TGC or C as CO3 content and bulk density, dependent on geodomain. Bulk density was assigned to the model using calculations determined from the analysis.	VO
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.	▪ The Mineral Resource classification criteria were developed based on an assessment of the following items: • Nature and quality of the drilling and sampling including QAQC review. • Drilling density. • Confidence in the understanding of the underlying geological and grade continuity and the structural characteristics. • Confidence in the estimate of the mineralised volume. • Bulk density data. • Model validation results. • The criteria listed in Table 1 Section 1 and Section 3 of the JORC Code. ▪ The resource classification scheme (Measured, Indicated and Inferred) adopted for the Uley 2 MRE was based on the following: • The majority of mineralisation was classified as Indicated Resource where the drilling density was 25 mE x 25 mN. A portion of the Resource where vertical drilling has reduced the drill density and supported the thickness and grade was classified as Measured Resource. • Where mineralisation wireframes were extrapolated to more than half of the drill density (approximately 12.5 m), the Resource was classified as Inferred Resource. There is no extrapolation outside of an appropriate range for Inferred classification. Material outside of the mineralisation envelopes was not classified. • Smaller mineralisation objects derived from minimal informing samples (less than 2 drill holes) were classified as Inferred.	EM

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		• Bulk density data test work completed in 2018 increased confidence in volume to tonnage conversions.. ▪ The classification scheme as applied is considered to adequately reflect the sample density and geological interpretation based on all available drillhole data.	
Audits or reviews	▪ The results of any audits or reviews of Mineral Resource estimates.	▪ No third party reviews have been undertaken on the Mineral Resource estimation process to date, though formal peer review as part of mine planning processes have been completed.	VO
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 grade estimate is based on the assumption that open cut mining methods will be applied and that a form of high confidence grade control sampling, for example based on RC grade control drilling or ditch-witch bench top sampling, will be available for final ore/waste demarcation. As such the resource estimate should be considered to represent a global resource estimate.	EM

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