

Results of Uley 2 Value Engineering Assessment

Lycopodium

An update of the Uley 2
operating and capital costs
and option to increase
production to 100,000 dmt
per annum

Glossary of Terms

dmt	Dry metric tonnes
DSU	Delay start up
gC	The graphitic carbon contained within flake graphite
HPG	High purity graphite with a graphitic carbon level of 99.99%
JORC 2012 Ore Reserve Estimate	ASX announcement 27 November 2019, <i>Mining Study and Ore Reserve Estimate</i>
JORC 2012 Mineral Resources Estimates	ASX announcement 15 July 2019, <i>Substantial Increase in Uley 2 JORC 2012 Mineral Resources</i> ASX announcement 18 November 2021, <i>Uley 3 Drill Program Results in a Maiden Mineral Resource Estimate</i>
JORC 2012 Metallurgical Testwork	ASX announcement 11 June 2019, <i>Results of Metallurgical Testwork</i>
pa	Per annum
MRI	MRI Trading AG, the offtaker of Uley 2 production. MRI is entitled to 100% of the 2019 DFS production level (up to 55,000 tonnes per annum) for 5 years
Sunlands Energy Company	The Sunlands Energy Company Pty Ltd
Sunlands Power	Sunlands Power Pty Ltd, the incorporated joint venture between Quantum Graphite Limited and The Sunlands Energy Company Pty Ltd
tpa	Tonnes per annum
Uley 2	Uley 2 or the Uley 2 Project is the next stage of development of the greater Uley graphite resource province which is defined as a series of highly mineralised flake graphite envelopes including the historical Uley 1 and Uley 2, 3, 4, 5 and 6



Executive Summary

Quantum Graphite Limited commissioned Lycopodium Minerals to undertake a Value Engineering Assessment for Uley 2 to update the capital and operating costs and provide an option to increase mill throughput from 550,000 tpa to 1,200,000 tpa.

Based on the existing process adopted for Uley 2, this will increase production from 55,000 dmt pa to up to a maximum of 100,000 dmt pa. Details of the results of the VEA are included within Section A, Update of Capital Costs and Operating Costs.

In addition to the VEA, the Company has adopted a revised basket price following its review of market conditions and information provided by its offtaker, MRI Trading AG. The basket price has been increased by approximately 33% from US\$919 per dmt to US\$1,225 per dmt. Details of this are included in Section B, Marketing of Uley Production.

The Company expects that the impact of the VEA and the new basket price will improve the economics of Uley 2.

The Company has previously announced that the economics of Uley 2 will be further improved if it adopts the Sunlands Energy Company technology to produce High Purity Graphite (HPG) at 99.9% gC. This process enhancement to Uley 2 is not addressed in this document. The decision to produce HPG will be the subject of further announcements before the end of 2023.

The Company continues to rely on its existing technical work product, i.e., the JORC 2012 Ore Reserve Estimate, the JORC 2012 Mineral Resources Estimates and the JORC 2012 Metallurgical Testwork. Table 1 summarises the Company's Ore Reserves.

Table 1: Ore Reserve Estimate at a 3.5% gC Cut-Off

Classification	Tonnes (kt)	Total gC (%)
Proved	811	11.66
Probable	3,191	11.95
Total	4,003	11.89

The Company's exploration plan targets a significant expansion of its existing JORC 2012 mineral resources. Preparatory works required for the design of the exploration plan have commenced and were detailed in the most recent Quarterly Report.

The exploration plan will unlock the significant upside resource potential within the greater Uley resource province, increase the existing Uley JORC 2012 Mineral Resource Estimate (see Table 2) and ensure a sustainable extension of the Uley 2 mine life beyond the existing projected LOM.

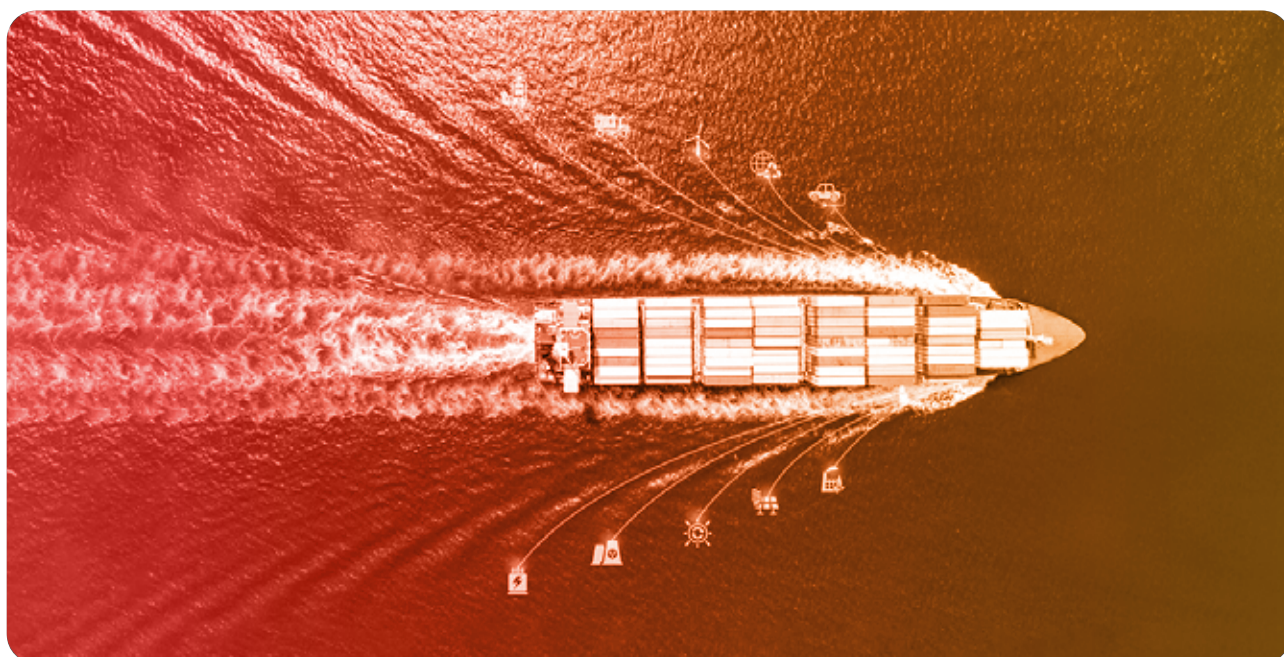
Details of the plan will be the subject of a further release once the Company receives and processes the geophysical data it will obtain from the drone survey scheduled for early December 2023

Table 2: Uley JORC 2012 Mineral Resource Estimate

Resource	Classification	Tonnes (kt)	TGC (%)	Density (t/m ³)	TGC (kt)
Uley 3	Inferred	900	6.6	2.1	59
	Uley 3 Total	900	6.6	2.1	59
Uley 2	Measured	800	15.6	2.1	125
	Indicated	4,200	10.4	2.1	435
	Inferred	1,300	10.5	2.2	137
	Uley 2 Total	6,300	11.1	2.1	697
Uley Total	TOTAL	7,200	10.5	2.1	757

Section C, Additional Information includes relevant details from the JORC 2012 Ore Reserve Estimate relating to process flows and metallurgy, mining and site infrastructure. This information remains unchanged and is provided in this document for ease of reference.

Section D, Tenement Holdings and Approvals includes a summary of the tenements held by the Company and current Uley 2 approvals. This information remains unchanged from that released in the Company’s most recent quarterly.



Section A Update of Operating and Capital Costs

The operating costs estimate is summarised in the table below.

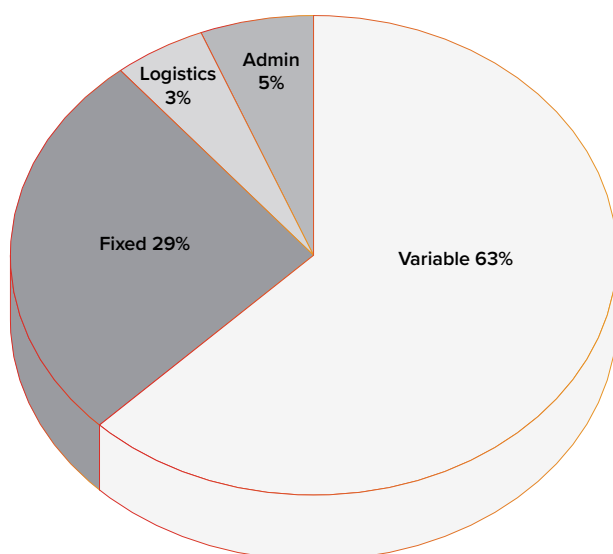
Table 3: Operating Costs

Cost Centre	Total Cost		Fixed Cost	Variable Cost
	(A\$/y)	(A\$/t)	(A\$/y)	(A\$/t)
Mobile Equipment	\$548,592	\$0.137	\$344,592	\$0.170
Labour Processing	\$5,030,000	\$4.192	\$5,030,000	-
Operating Consumables	\$10,524,849	\$8.771	\$720,849.0	\$8.170
Power	\$3,208,993	\$2.674	\$760,993	\$2.040
Maintenance & Repairs	\$1,365,420	\$1.138	\$945,420	\$0.350
Laboratory	\$1,154,120	\$0.962	\$722,120	\$0.360
Subtotal – Processing	\$21,831,974	\$17.873	\$8,523,974	\$11.090
Labor - Admin/Mine Support	\$2,035,000	\$1.696	\$2,035,000	-
General & Admin	\$2,071,625	\$1.726	\$2,071,625	-
Subtotal Admin	\$4,106,625	\$3.422	\$4,106,625	-
Estimated Total	\$25,938,599	\$21.615	\$12,630,599	\$11.090

The operating costs estimate for processing the graphitic ore is based on treating the maximum mill throughput of 1,200,000 tpa of ore to produce up to 100,000 dmt pa of Uley 2 products having the weight distribution in Table 3.

The operating costs estimate does not include any contingency allowances and is exclusive of local and regional government rates and charges.

Figure 1: Operating costs breakup



The respective proportions of key operating costs are illustrated in Figure 1.

Processing costs represent 50.8% of total costs. Fixed costs represent 32% of operating costs.

Logistics (inclusive of packaging), has remained substantially unchanged.

The capital cost estimate for Uley 2 is summarised in the table below.

Table 4: Capital Costs

Main Area	A\$'000
Construction Distributables	6,174
Treatment Plant Costs	83,229
Reagents and Plant Services	6,593
Infrastructure	877
Management Costs	9,251
Owner's Project Costs	8,411
Owner's Operation Costs (Working Capital)	6,763
Subtotal	138,932
Contingency	13,773
Estimated Total	152,705

Lycopodium Minerals adopted a methodology for the estimate of capital costs and operating costs that is commensurate with a definitive feasibility level study and based on an EPCM contract execution strategy. The operating and capital costs estimates are accurate +/-20% as at the end of the second quarter 2023 **(Base Date)** and USD foreign exchange rate of A\$1.00/US\$1.54.

No allowance has been made for escalation between the Base Date estimate and the time at which commitments will be incurred and payments made to suppliers.

The Company's plan to engage an EPCM Engineer to complete all detailed engineering for the process plant and infrastructure, as well as managing the procurement of all mechanical equipment, off-site fabrication and on-site installation works remains unchanged.

Section B Marketing of Uley 2 Production

Quantum has revised its analysis of the forward supply and demand outlook, including long-term pricing forecasts, for Uley 2 products (see Table 5) determined in accordance with the JORC 2012 Metallurgical Testwork.

Table 5: Uley Product Specifications

Size Fraction (um)	Size Fraction (Mesh)	Approx. Weight (%)	gC (%)	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

The initial analysis applied the same methodology previously published by the Company in connection with the determination of the 2019 basket price, i.e., the basket price was informed by the Company's review of the prices applicable to the key market segments (Target Markets) that consume Uley 2 products.

The scope of this analysis comprised a review of the Target Markets which included the market segments (and customers) previously serviced with Uley flake, i.e., traditional thermal management (e.g., refractories, foundry) and engineered products (e.g., extrusions, lubricants, foils). Importantly, Uley flake graphite products have previously been the subject of pre-qualification by several major companies operating in these market segments.

This initial analysis was then combined with the best available empirical data summarised as follows:

- Forward estimates from the leading flake graphite market data providers (see Table 6);
- Discussions and negotiations conducted by the Company with prospective industrial buyers including the major global manufacturers in Europe, Japan and Korea; and
- Information from the Company's offtaker, MRI Trading.

Table 6: Binding Offtake Agreement - Unprecedented Price Upside for Flake Graphite

Commodity Prices (US\$/t) gC	2020	2021	2022	2023E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	LT
94-97% +32 mesh	1,682	1,754	1,878	1,800	1,913	2,138	2,363	2,250	2,373	2,436	2,500	2,025
94-97% +50 mesh	1,450	1,506	1,444	1,545	1,700	1,900	2,100	2,000	2,110	2,165	2,222	1,800
94-97% +80 mesh	888	1,072	1,207	1,241	1,360	1,520	1,680	1,600	1,688	1,732	1,778	1,440
94-97% +100 mesh	782	869	984	996	1,107	1,235	1,365	1,300	1,371	1,407	1,444	1,170
94-97% -100 mesh	486	550	831	800	850	950	1,050	1,000	1,055	1,083	1,111	900
Purified spherical	3,685	3,400	3,576	3,720	4,229	4,750	5,250	5,000	5,274	5,413	5,555	4,500
Active Anode Material	7,685	7,400	7,576	7,720	8,229	8,750	9,250	9,000	9,274	9,413	9,555	8,500

Source: Macquarie Bank, Fastmarkets March 2023

QGO Product Range

The set of prices resulting from this analysis comprised a range of prices for each of the products in Table 5. The final basket price of US\$1,225 resulted from the calculation of the weighted average of these set of prices.

Whilst the basket price has been revised upwards by approximately 33%, the Company has not undertaken a re-optimisation of the pit shells as set out in the JORC 2012 Ore Reserve Estimate. An updated JORC 2012 Ore Reserve Estimate will be scheduled once the Company completes the next phase of exploration foreshadowed in the last Quarterly Report.



Section C Additional Information

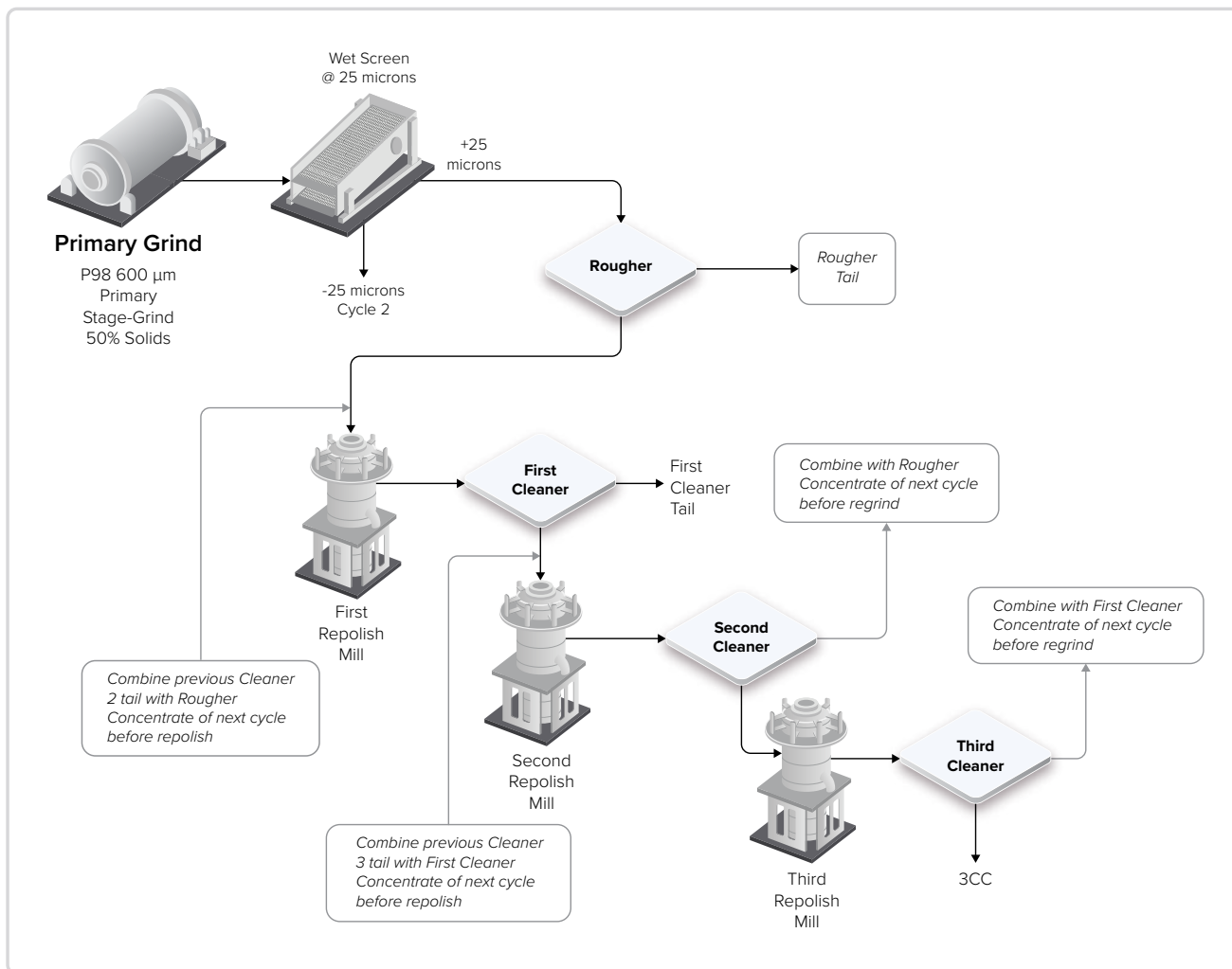
(a) Flowsheet and Metallurgical Testwork

The Company has previously announced the process flowsheet as part of its release of the JORC 2012 Metallurgical Testwork. The flowsheet, summarised in Figure 2, is generated from the proposed process plant designed for optimum flexibility to maximise recovery and flake size at grade with minimum operating costs. The flowsheet utilises unit operations that are well proven in the industry.

The process plant will accept run-of-mine ore and liberate graphite particles through crushing and grinding. The graphitic flakes will be sequentially concentrated and delaminated using progressive flotation and polishing (regrind) mills with the final product being dried and screened for bagging.

The flotation and polishing sections will be the critical processing functions for graphite recovery, upgrading of the flake to maximise graphite purity and maintaining coarse flake size as far as practicable.

Figure 2: Process Plant Configuration



(b) Mining

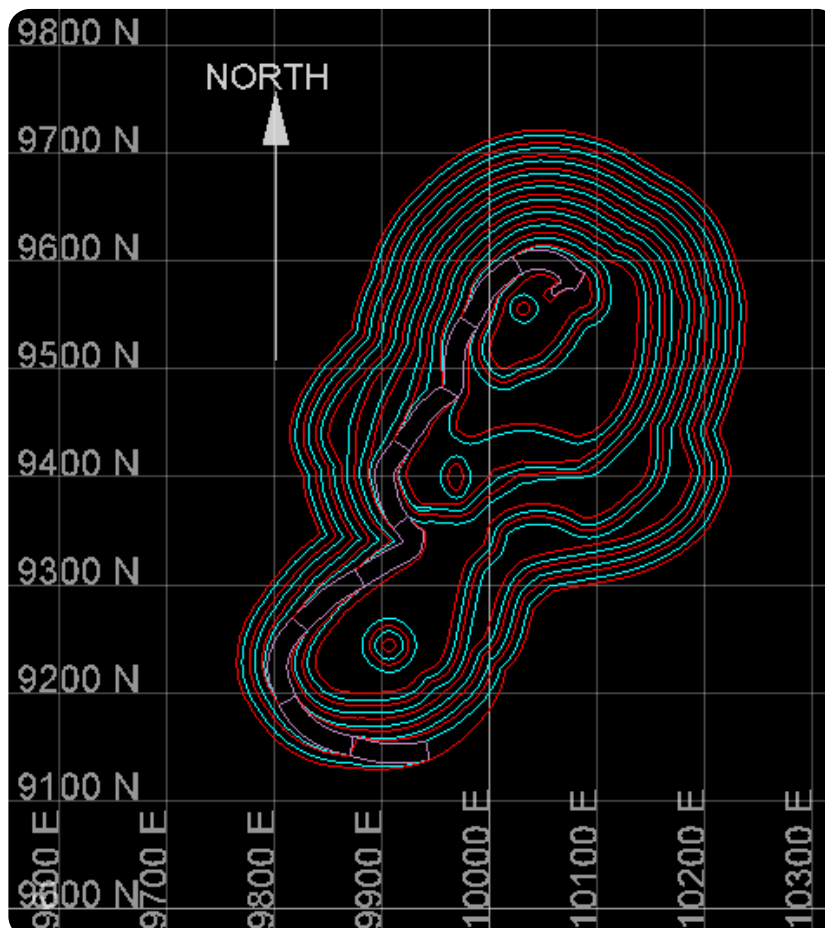
As set out in the 2019 JORC 2012 Ore Reserve Estimate, the optimisation for the pit design (see Figure 3) and mine plan was undertaken on material exclusively classified as Measured and Indicated Mineral Resources, on a 3.5% TGC cut-off.

No material classified as Inferred Mineral Resource was utilised for the pit design or mine plan.

Pit design and mine plan material considerations included the following:

- (a) Mining will be undertaken by conventional open pit methods of load and haul, utilising small mining equipment comprising 100t diesel hydraulic excavators and 60t off-highway dump trucks;
- (b) The life of mine waste to ore strip ratio is approximately 4.6:1;
- (c) Pit slope parameters were based on the slope parameters and conditions the historical Uley 1 pit and the supporting geotechnical investigations undertaken by Barrett and Fuller;
- (d) Grade control is expected to be undertaken using surface trenching using Ditch Witch equipment;
- (e) No mining dilution was included in the optimisation work given the expected strong visual mining control. A mining recovery of 95% was assumed; and
- (f) A minimum cutback mining width of 25m was adopted.

Figure 3: Pit design

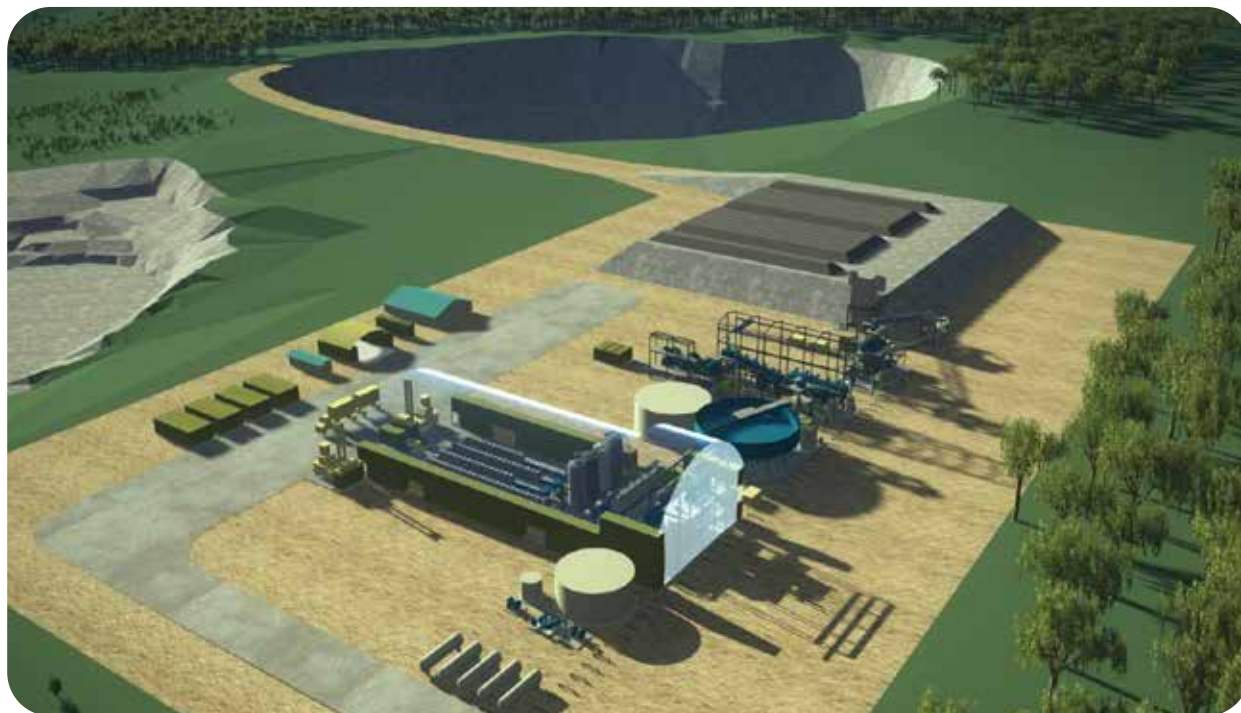


(c) Site Infrastructure and Tailings Storage Facility (TSF)

As set out in the JORC 2012 Ore Reserve Estimates the Company proposes to utilise the existing site infrastructure that serviced the previous operations subject to the following changes refurbishment and/or upgrades to facilities:

- (a) the existing SA Power Networks 33 kV electricity service will be decommissioned and a new 33kV service will be constructed along the northern boundary of the Company's property;
- (b) the existing offices, workshops and other facilities located within the mine services area will be refurbished; and
- (c) existing process plant support buildings will be decommissioned, and new plant support building will be constructed.

Figure 4: 3D Graphic of mine



The existing HDPE lined tailings storage facility of approximately 25 hectares was constructed in the north of the lease as part of the previous operation. The new facility will be a single cell with a footprint area of approximately 29 hectares utilising the existing tailings storage facility infrastructure and its geomembrane liner where practicable.

The area required for the new basin will be stripped of topsoil and the insitu soils will be reworked, conditioned and compacted to form a low permeability soil liner, suitable for installation of the overlying geomembrane primary liner.

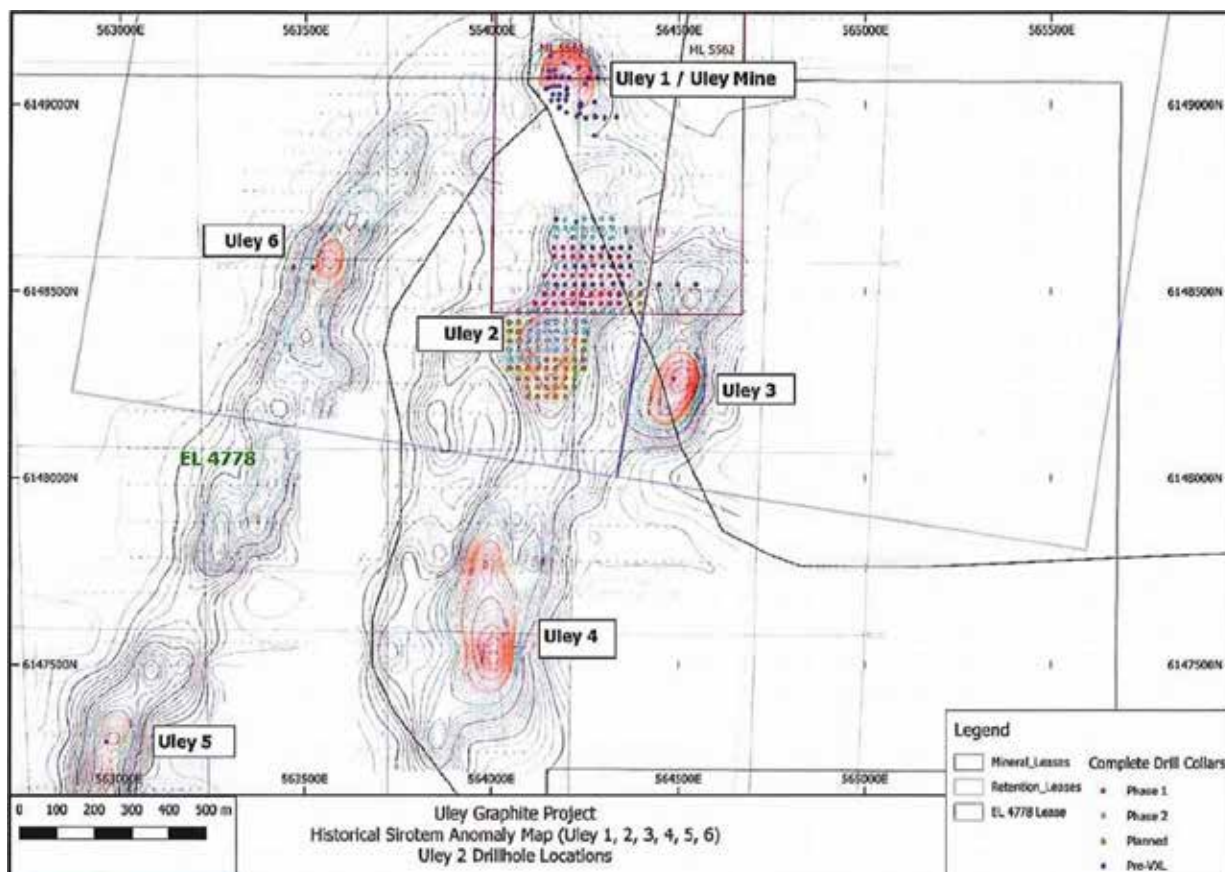
The materials for construction of the embankment will be sourced from mining operations and borrow areas. The embankment will be raised annually over the life of the mine to a maximum of approximately 25 m.

A decant tower system will be utilised to recycle supernatant and rainwater from the TSF basin over the life of the facility with a pump back system to the process plant to provide process makeup.

Section D Tenement Holdings and Approvals

Uley 2 sits within the greater Uley graphite resource province which is defined as a series of highly mineralised envelopes including the historical Uley 1 and Uley 2, 3, 4, 5 and 6 and consists of five contiguous tenements on the Eyre Peninsula of South Australia, of which two are retention leases (RL66 & RL67), two are mining leases (ML5561 & ML5562) and one is an exploration licence (EL6224).

Figure 5: Greater Uley graphite resources

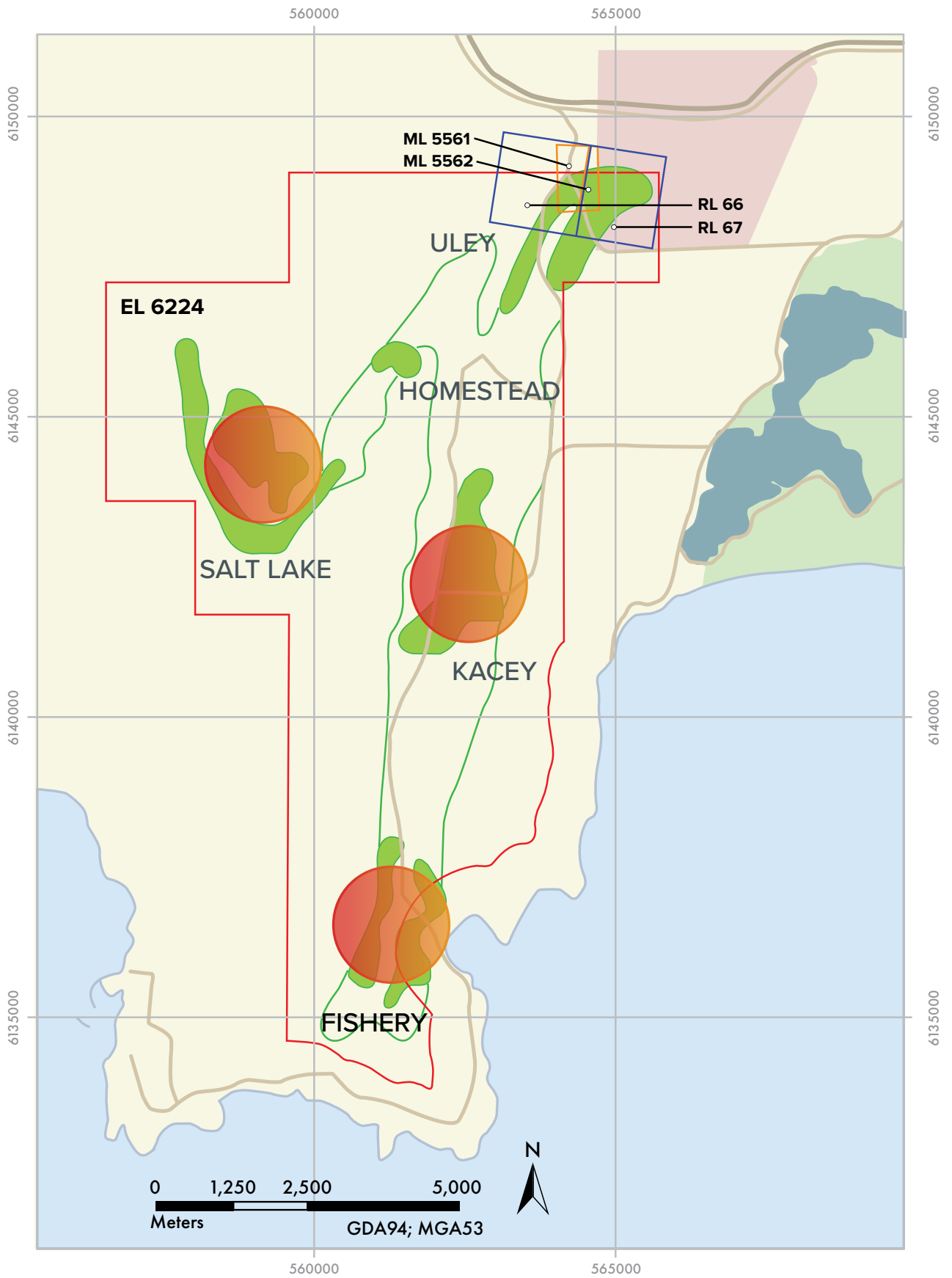


The Company has a 100% interest in these tenements and there are no royalty, joint venture or other material agreements impacting its interests. Figure 6 delineates the boundaries of the various tenements together with road and rail infrastructure and the key exploration targets denoted by positive electromagnetic survey results.

Mining development is subject to the approved Program for Environmental Protection and Rehabilitation (PEPR) regime and relevant Environmental Licensing mandated under South Australian State legislation. There are no known impediments to obtaining a license to operate in the area.

The Company has an approved PEPR applicable to Uley 2 and relevant Environmental Licences as set out in PEPR Version 2.1 approved on 23 December 2014 by the South Australian Director, Mining Regulation.

Figure 6: Company tenements



Cautionary Statements

The VEA results should not be considered a profit forecast or production forecast. It is an engineering assessment of the increased capital and operating costs of Uley 2. The reports referred to in this document are based on the necessary technical and preliminary economic assessments previously published by the company.

While the Company considers any material assumptions to be based on reasonable grounds, there is no certainty that they will prove to be correct or that the range of outcomes indicated will be achieved. To achieve the potential mine development outcomes indicated in this document, project funding will be required and investors should note that there is no certainty that the Company will be able to raise project funding. The Company has developed a funding structure and concluded that it has a reasonable basis for providing the forward-looking statements included in this document and previous announcements to the market relating to funding. It is of the view that it has a reasonable basis to expect it will be able to fund the development of Uley 2. It is also possible that the Company may pursue other funding strategies to provide alternative or additional funding options to those previously disclosed to the market.

Forward Looking Statements

Some of the statements contained in this report are forward looking statements. Forward looking statements include but are not limited to, statements concerning estimates of tonnages, expected costs, statements relating to the advancement of Uley 2 and other statements which are not historical facts. When used in this report, and on other published information of the company, the words such as “aim”, “could”, “estimate”, “expect”, “intend”, “may”, “potential”, “should” and similar expressions are forward-looking statements. Although the Company believes that its expectations reflected in the forward-looking statements are reasonable, such statements involve risk and uncertainties and no assurance can be given that actual results will be consistent with these forward-looking statements. Various factors could cause actual results to differ from these forward-looking statements include the potential that Uley 2 may experience technical, geological, metallurgical and mechanical problems, changes in product prices and other risks not anticipated by the Company.

The Company is pleased to present this document in a fair and balanced way and believes that it has a reasonable basis for making the forward-looking statements in this document, including with respect to any mining of mineralised material, modifying factors, production targets and operating costs estimates.

This document has been compiled by the Company from information contained within the reports referred to throughout this document.

Competent Persons Statements

The Company refers to the Competent Persons Statements included within the JORC 2012 reports referred to in this document and defined in the Glossary of Terms. These reports are:

- (a) JORC 2012 Ore Reserve Estimate
- (b) JORC 2012 Mineral Resources Estimates
- (c) JORC 2012 Metallurgical Testwork





QUANTUM
GRAPHITE

Results of Uley 2 Value Engineering Assessment

November 2023