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ASX : QEM

Julia Creek Project:

QEM Limited

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ASX Announcement

23 September 2025

Latest Test Work Results and Strategic Review

Highlights:

- → **Latest metallurgical test work undertaken by the University of Queensland has provided new insights that challenge certain assumptions underpinning the 2024 Scoping Study for the Julia Creek Vanadium and Energy Project (JCVEP).**
- → **Results indicate direct kerogen recovery by flotation for vanadium extraction is not technically or economically viable.**
- → **Company advises that test work results affect material assumptions underpinning the 2024 Scoping Study and its outcomes should no longer be relied upon.**
- → **QEM has initiated a strategic review of the JCVEP, with a focus on preserving capital and assessing all project and corporate opportunities.**
- → **Environmental baseline monitoring for the Environmental Impact Statement (EIS) and QEM's renewable energy initiatives with Potentia Energy will continue.**

QEM Limited (**QEM** or **Company**) (**ASX: QEM**) wishes to provide an update in respect of the Scoping Study[1] for the Julia Creek Vanadium and Energy Project (**JCVEP** or **Project**), together with details of a broader strategic review for the Project given the current depressed vanadium price and associated negative short-term global outlook.

Metallurgical Test Work Results

In 2024, the Company produced a Scoping Study as an initial evaluation of the potential for the development of the JCVEP. Since the release of the Scoping Study, the Company has continued to progress several workstreams to advance the JCVEP including, relevantly, comprehensive metallurgical test work aimed at developing and validating the Company's flowsheets.[2]

To validate some of these assumptions, the Company engaged the University of Queensland's Sustainable Minerals Institute (SMI) to conduct comprehensive metallurgical test work. The objective of the test work was to enhance flotation selectivity and improve recovery of kerogen, calcite, and vanadium-bearing minerals.

Footnotes:

1. Refer to the announcement dated 27 August 2024 titled 'Julia Creek Project – Scoping Study Completed'.
2. Refer to the announcement dated 31 July 2025 titled 'Quarterly update for the quarter ending 30 June 2025'.

The beneficiation of oil shale ores presents a complex challenge due to the intimate association of organic matter, carbonate minerals, and silicate phases. In the Julia Creek deposit, the presence of free oil and kerogen coatings on mineral surfaces significantly influences flotation behaviour, mineral liberation, and vanadium deportment.

The Company has now received the results of that metallurgical test work, the results of which were not consistent with prior assumptions:

- The strategy of direct kerogen recovery by flotation as a pathway to extract vanadium was shown to be technically and economically unfeasible.
- Direct recovery of calcite was shown to have a potentially promising result, producing a degree of selectivity between calcite and kerogen, however on its own, this result does not represent an economically feasible separation and requires further optimisation.
- Contrary to earlier assumptions, vanadium was preferentially recovered into the calcite concentrate, not the kerogen-rich tailings, challenging the hypothesis that vanadium is primarily associated with kerogen and necessitating further review of mineral associations.
- Fossilised microorganisms (coccoliths) were identified within the sample matrix as part of the calcium carbonate content, increasing the complexity for conventional flotation processing and necessitating a more detailed analysis of vanadium deportment before undertaking further test work.

In parallel the Company received results from Core Resources (**Core**) on a flotation test work programme completed on the CQLA and CQLB coquina composite material, which sits above the oil shales. This programme aimed to characterise the samples in terms of grade, mineralogy and particle size (Stage 1), and test the amenability of the samples to be upgraded by beneficiation/flotation (Stage 2).

The size-by-assay analysis showed that there was no deportment of vanadium into the fine size fractions as per other oxide vanadium projects in the region. The grade of vanadium was evenly distributed across all size fractions, and therefore it will not be possible to adopt a scrubbing-cycloning or scrubbing-screening flowsheet to remove a low-grade coarse fraction prior to flotation. Instead, a crushing-grinding-flotation flowsheet will be required, as per the previous test work completed in 2017.

While the Core test work results do not alter the overall conclusions of the UQ programme, they nonetheless provide additional clarity on processing requirements for the coquina portions of the deposit and will be incorporated into the Company's ongoing strategic review.

These test work outcomes affect material assumptions underpinning the 2024 Scoping Study. As such, QEM advises that the outcomes of the Scoping Study should no longer be relied upon. The Company will now undertake further review of flowsheet options and mineral associations before progressing additional metallurgical testing.

Strategic Review

In light of these results, combined with the current depressed vanadium price and challenging short-term global outlook, the Company has initiated a strategic review of the JCVEP. During this period, QEM will:

- Slow activities and expenditure associated with development to preserve capital.
- Continue water monitoring and environmental baseline studies required for the EIS; five new ground water monitoring bores were installed in September.

- Continuing working with our partner, Potentia Energy, on advancing the Renewables Project.
- Investigate broader corporate opportunities that may enhance shareholder value.

QEM Managing Director & CEO, Rob Cooper, said, "*While we are disappointed with the results of this test work, we consider that in the context of depressed vanadium prices, that it also presents the perfect opportunity for QEM to undertake a strategic review process as we look to pursue future opportunities*."

QEM Chair, Tim Wall, said "*At the time the Scoping Study was completed, further comprehensive test work was earmarked to be undertaken in order to validate the existing assumptions and the steps in the flowsheets. Unfortunately, the outcome of those tests was not what we had hoped for. I nevertheless remain optimistic about the future of QEM and intend to work closely with Rob and the broader team during the strategic review process."*

ENDS

This announcement was authorised for release on the ASX by the Board of QEM Limited.

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ABOUT QEM

QEM Limited (ASX: QEM) is a publicly listed company which is focused on the exploration and development of its flagship Julia Creek Vanadium and Energy Project, covering 250km² in the Julia Creek area of North West Queensland.

The Julia Creek Vanadium and Energy Project is a unique world class resource with the potential to utilise sustainable energy solutions in the production of energy fuels and vanadium pentoxide. QEM strives to become a leading producer of liquid fuels and in response to a global vanadium deficit, also aims to become a global supplier of high-quality vanadium pentoxide, to both the nascent energy storage sector and the global steel industry.

This globally significant JORC (2012) Mineral Resource of 2,870 Mt @ 0.31% V_2O_5 is one of the single largest ASX listed vanadium resources and represents a significant opportunity for development. The resource is comprised of 461Mt @ 0.28% V_2O_5 in the Indicated category and 2,406Mt @ 0.31% V_2O_5 in the Inferred category, with the added benefit of a contingent (SPE-PRMS 2018) in-situ oil resource of 6.3 MMbbls of Oil equivalent in the 1C category, 94MMbbls in the 2C category, and 654MMbbLs in the 3C category, contained within the same ore body.

The tenements form part of the vast Toolebuc Formation, which is recognised as one of the largest deposits of vanadium and oil shale in the world and located less than 16km east of the township of Julia Creek. Near to all major infrastructure and services, the project is intersected by the main infrastructure corridor of the Flinders Highway and Great Northern Railway, connecting Mt Isa to Townsville.

Competent Person Statements

The information above that relates to Exploration Results and testing is based on, and fairly represents, information reviewed by Lyon Barrett, a Competent Person, who is a Member of the Australasian Institute of Mining and Metallurgy (AusIMM). Lyon Barrett is a Principal Geologist at Measured Group, and has sufficient experience with the type of deposit under consideration to qualify as a Competent Person as defined in the 2012 Edition of the 'Australasian Code for Reporting of Exploration Results, Exploration Targets, Mineral Resources and Ore Reserves'. Lyon Barrett consents to the inclusion of the matters based on their information in the form and context in which it appears.

*The information in this announcement that relates to the mineral resource and contingent resource estimates for the Company's Julia Creek Project was first reported by the Company in its IPO prospectus dated 20 August 2018 and supplementary prospectus dated 12 September 2018 (together, the "Prospectus") and the subsequent resource upgrade announcements ("Resource Upgrade") dated 14 October 2019, 7 April 2022 and 4 March 2024. The Company confirms that it is not aware of any new information or data that materially affects the information included in the Prospectus and Resource Upgrade, and in the case of estimates of Mineral Resources and Contingent Resources, that all material assumptions and technical parameters underpinning the estimates in the Prospectus and Resource Upgrade continue to apply and have not materially changed.

ANNEXURE 1: COLLAR DETAILS

Hole Name	Easting	Northing	Elevation (m)	Depth (m)
QEM024	593636.905	7712773.718	137.69	49.08
QEM037	594064.411	7711680.341	139.52	42.37

Mineralised material used for the latest test work were from diamond drill holes QEM024 and QEM037. Longitudinally sawn half drill cores from the holes were provided to the University of Queensland for the metallurgical test work. The core samples represent the lower oil shale interval of the Toolebuc Formation from within the proposed pit shell (QEM Scoping Study 2024). Drill core interval tested from hole QEM024 was 39.58m to 43.21m. Drill core interval tested from hole QEM037 was 34.02m to 37.77m

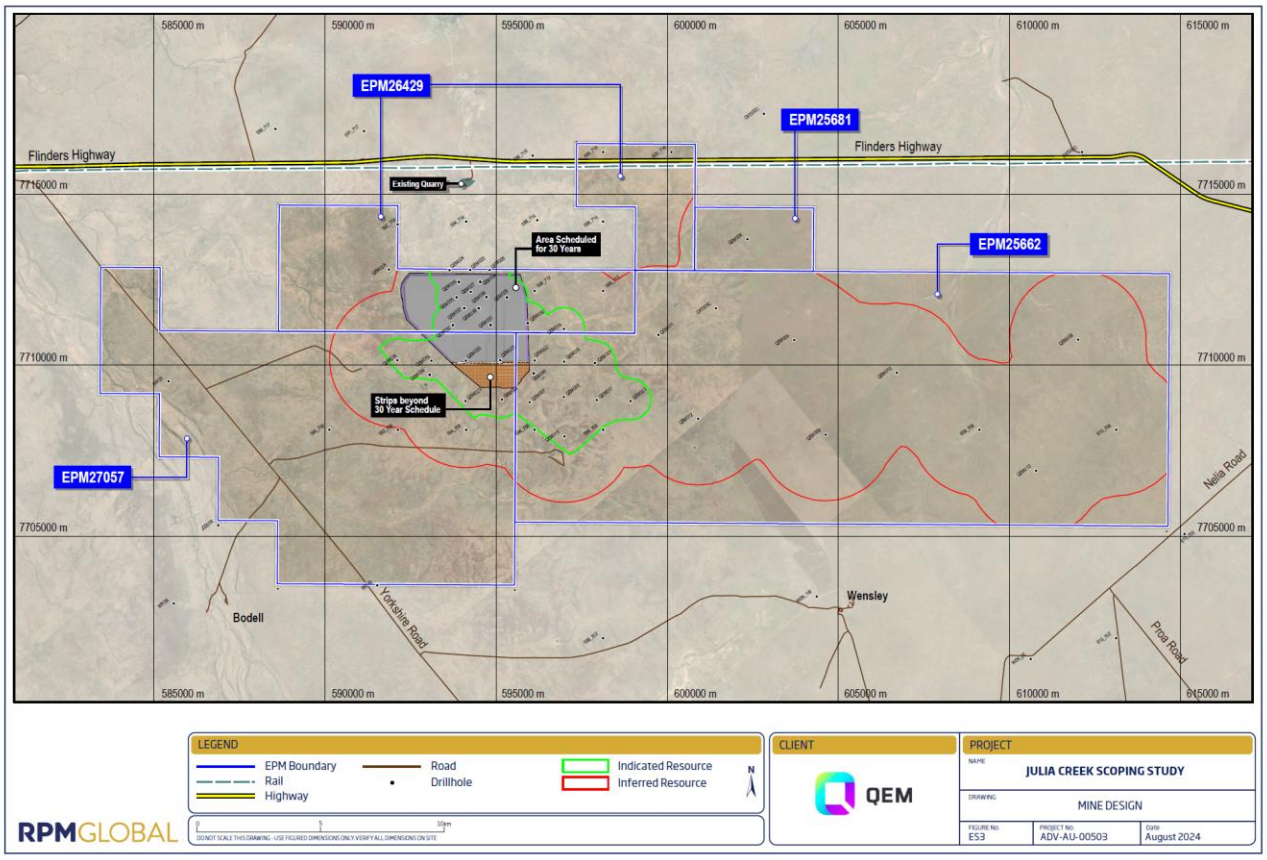

Figure 1: Mine Pit Plan - QEM Scoping Study 2024

ANNEXURE 2: MINERAL RESOURCE

Julia Creek Resource Estimate as at 9 February 2024

Total					
Resource Class	Strat.Unit	Mass (Mt)	Average Thickness (m)	Insitu Density (gm/cc)	V2O5 (wt%)
Indicated	CQLA	167	3.17	2.40	0.24
	CQLB	128	2.58	2.28	0.30
	OSU	81	1.92	1.95	0.31
	OSL	84	2.02	1.93	0.32
		461		**2.20**	**0.28**
Inferred	CQLA	697	2.46	2.42	0.23
	CQLB	826	3.13	2.23	0.39
	OSU	432	1.84	1.97	0.31
	OSL	451	1.95	1.95	0.29
		2,406		**2.18**	**0.31**
Total		**2,870**		**2.19**	**0.31**

Note:

1. *The estimate uses a minimum cut-off of 0.2% V2O5 for the oil shale units and a minimum cut-off of 0.15% V2O5 for the Coquina units.*
2. *The total resource tonnage reported is rounded to reflect the relative uncertainty in the estimate categories and component horizons may not sum correctly.*
3. *Copper (Cu), Molybdenum (Mo), Nickel (Ni), Zinc (Zn), and Aluminium (Al) are not listed due to categorisation as secondary potential by-products*

Summary of SPE-PRMS Petroleum Resource Estimate as at 9 February 2024

Total								
Resource Class	Strat Unit	Mass (Mt)	Average Thickness (m)	Total Moisture wt%	Oil Yield (L/tonne)	Oil Yield LTOM	MMBbls (in-situ PIIP)	MMBbls Recoverable
3C Contingent	CQLB	903	2.5	6.8	53.1	55.0	254	228
	OSU	621	1.8	6.8	75.9	79.0	248	223
	OSL	609	1.9	6.8	70.7	76.7	224	202
Total / Ave		2134		6.8	66.6	70.2	726	654
2C Contingent	CQLB	107	2.1	2.8	50.9	52.3	33	29
	OSU	76	1.9	13.3	78.7	81.4	36	32
	OSL	81	2.0	11.8	74.8	76.7	36	33
Total / Ave		264		9.3	68.1	70.1	105	94
1C Contingent	CQLB	7	1.9	2.8	49.0	49.6	1.9	1.8
	OSU	5	1.9	13.3	77.2	78.7	2.5	2.2
	OSL	6	2.1	11.8	74.6	76.2	2.6	2.3
Total / Ave		18		9.3	66.9	68.1	7.0	6.3

Note:

1. *The total resource tonnage reported is rounded to reflect the relative uncertainty in the estimate and component horizons may not sum correctly.*
2. *The 3C petroleum resource reported includes the 2C volumes, ie. They are cumulative not incremental as per the PRMS 2018 guidelines.*
4. *An economic cut-off of 40 L/tonne was applied prior to the calculation; it must be noted that the CQU and the CQLA did not meet the criteria of >40 L/tonne for inclusion in the volumetric calculation.*
5. *The 1C, 2C and 3C volumes reported here are unrisked.*

APPENNDIX A: JORC TABLE 1

Section 1 - Sampling Techniques and Data

(Criteria in this section apply to all succeeding sections.)

Criteria	Explanation	Commentary
Sampling techniques	• *Nature and quality of sampling (e.g. cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc.). These examples should not be taken as limiting the broad meaning of sampling.* • *Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used.* • *Aspects of the determination of mineralisation that are Material to the Public Report. In cases where 'industry standard' work has been done this would be relatively simple (e.g. 'reverse circulation drilling was used to obtain 1 m samples from which 3 kg was pulverised to produce a 30 g 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 (e.g. submarine nodules) may warrant disclosure of detailed information.*	• Sampling and testing conducted by contract geologists during the QEM 2015 drilling campaign is described below: • Testing took place on the Toolebuc Formation which is the target formation. Cored intersections of the target formation were sampled in 0.5 m sections except where samples were terminated against sharp contacts between sedimentary units. All samples were double bagged on site. Samples were assigned individual sample numbers and accompanied by a sample advice sheet. • Half cores were delivered to ALS Coal Division laboratory in Townsville Queensland for weighing, crushing, splitting and testing. Sampling was extensive, with standard tests for all samples including: - Total Moisture; - Inherent Moisture; - Ash Content; - Volatile Matter; - ICP-AES analysis. ICP-AES analysis included a suite of 33 elements, the important ones from the projects prospective being Ca, Cu, Mo and V. • Composited samples selected following the above assays: Modified Fischer Assay • Industry standard coring (4C) and sampling methods have been used. • Sample representivity was ensured by careful observation of the core by a trained geologist during sampling in order to ensure that samples do not cross unit boundaries and by recording and tracking core recoveries. • During the 2018 and 2019 drilling campaign, sampling and testing was carried out by QEM staff geologists. A similar procedure was followed for sampling and analysis, except that the stage 1 analysis step was skipped, and the samples were combined into the relevant units (CQU, CQLA, CQLB, OSU and OSL) prior to Proximate Analysis and ICP. • Sampling and testing conducted by contract geologists during the 2021, 2022 and 2023 drilling campaigns are described below:

Criteria	Explanation	Commentary
		• Testing took place on the Toolebuc Formation which is the target formation. Cored intersections of the target formation were sampled in 0.5 m sections except where samples were terminated against sharp contacts between sedimentary units or they were truncated by the start or end of a core run. All samples were placed in 100 mm PVC splits to ensure structural integrity of the core was maintained and sealed inside layflat tubing. Samples were assigned individual sample numbers and accompanied by a sample advice sheet. • Full cores were delivered Mitra PTS laboratory in Gladstone, Queensland for slabbing, weighing, crushing, splitting and testing. All samples were slabbed on delivery at the lab with one quarter of each sample being used for the below workflow. Sampling was extensive, with standard tests (Stage 1) for all samples including: - Total Moisture; - Inherent Moisture; - Ash Content; - Volatile Matter; - ICP-AES analysis including a suite of 33 elements, the important ones from the projects prospective being Ca, Cu, Mo and V. • Composited samples selected following the delivery of the above assays: • Modified Fischer Assay • Industry standard coring (4C) and sampling methods have been used. • Sample representivity was ensured by careful observation of the core by a trained geologist during sampling in order to ensure that samples do not cross unit boundaries and by recording and tracking core recoveries.
Drilling techniques	• *Drill type (e.g. core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc.) and details (e.g. 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.).*	• The 2015 drilling programme involved the drilling of 10 drillholes across the tenements. These varied in depth from 72 m (drillhole QEM002) to the deepest hole at 120 m (QEM004), drilled during August 2015. The drilling was completed by rotary core drilling, using 4C (100mm) core. The drill diameter for the chipped section of the hole was 124 mm where PCD bit was used for chipping. • In 2018, QEM commissioned two 4C drill holes (100 mm) core, with non-core sections drilled using 124 mm PCD bits for the dual purpose of infill drilling and to supply material for processing studies. • In 2019, QEM commissioned five 4C drill holes (100 mm) core, with non-core sections drilled using 124 mm PCD bits for the dual purpose of infill drilling and to supply material for processing studies. The total cumulative drilling was 536 m for all seven 2018/2019 holes. • The 2021 drilling programme involved the drilling of 6 drill holes across the tenements (plus one redrill). These varied in depth from 41.5 m (drillhole QEM023R) to the deepest hole at 83.5 m (QEM018). Drilling was

Criteria	Explanation	Commentary
		completed by rotary core drilling, using 4C (100mm) core. The drill diameter for the chipped section of the hole was 124 mm where PCD bit was used for chipping. The total cumulative drilling was 458.5 m for all seven holes. • In 2022, QEM commissioned five 4C drill holes (100 mm) core, with non-core sections drilled using 124 mm PCD bits for the dual purpose of infill drilling and to supply material for processing studies. In total, 242 m was drilled. • In 2023, QEM commissioned twelve 4C drill holes (100 mm) core, with non-core sections drilled using 124 mm PCD bits for various purposes, focused on resource exploration, groundwater bore installation, geotechnical analysis and waste characterisation. In total, 620 m was drilled. • All QEM drill holes were geologically logged on site, photographed, geophysically logged and surveyed. Cores were labelled and boxed before dispatch to the laboratory for analysis.
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 loss has been documented in the field during logging and sampling of the core. • Calculations have been performed to accumulate total core loss over the sampled interval. The core recovery from the entire Julia Creek Project is >90%, which is deemed appropriate for resource classification purposes. Detailed records have been kept of core recoveries which have allowed for analysis of the influence of core recovery on quality during resource estimation. • Geophysical validation, via gamma, caliper and density down hole surveys have used to correct logs and identify sections of core loss.
Logging	• *Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies.* • *Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography.* • *The total length and percentage of the relevant intersections logged.*	• Detailed logging of chips and core was conducted. Chips and core photographs were taken as well. All cores were geologically logged, marked and photographed. • Final drill logs include information on detailed lithological logging of the drill core, geophysical logging, core recoveries, quality and the initial interpretation in terms of stratigraphy. All drillhole logs were corrected to downhole geophysics. • The detail contained in these logs is considered sufficient for the purpose of resource estimation.
Sub-sampling techniques	• *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 the 2021 QEM drilling programme, each sample was delivered to the lab as full cores then slabbed lengthways to provide ¼ core for the below workflow. The other ¾ core was used for an alternative testing workflow.

Criteria	Explanation	Commentary
and sample preparation	• *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.*	• All QEM core samples were double bagged on-site and transported to the laboratories for testing. The labs, ALS and Mitra PTS, comply with Australian Standards for sample preparation and sub-sampling. All samples were subjected to a coarse crush and fine crush. The coarse crush size was -6mm for 70% of the sample. Samples were riffle split into 5 kg portions. One 5 kg portion was stored, and the other 5 kg portion was subjected to fine crush. Fine crush was -2mm for 70% of the sample. The fine crushed 5 kg portion was split into 2.5 kg portions - one for the proximate analysis and the other for ICP-AES analysis. For the 2015 drilling programme, the proximate analysis was done at ALS Gladstone division and ICP-AES done at Townsville division. For the 2018, 2019, 2021, 2022 and 2023 drilling programmes, ICP-MS and ICP-AES were conducted by Bureau Veritas. • For the 2015, 2021, 2022 and 2023 drilling programmes, following proximate analysis, Mitra PTS used the remaining sample, combined by length density weighting into sedimentary units as instructed by contract geologists, for Modified Fischer Analysis (MFA). • For the 2018 and 2019 drilling programmes, sample combination was not required before MFA testing, as original sampling was done to the lithological units.
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 (e.g. standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e. lack of bias) and precision have been established.*	• ALS Minerals and Geochemistry Laboratory (ALS Townsville and ALS Gladstone laboratory in Queensland), Bureau Veritas and Mitra PTS adhere to internal QAQC and inter-laboratory QAQC checks. All determinations performed adhere to the American Society for Testing and Materials (ASTM) guidelines. • ALS, Bureau Veritas and Mitra PTS comply with ASTM standards for all ore quality tests and are certified by the National Association of Testing Authorities Australia (NATA). ALS laboratories and Mitra PTS are regularly benchmarked by external auditors against the highest professional laboratory standard – ISO 17025. • Accreditation to this standard provides assurance that the laboratory systems are robust and maintained at a world-class level. • The Quality Assurance/Quality Control processes employed by QEM are as follows: - Duplicates were inserted at a frequency of 1 in 15 (approximately 7% of samples). - Certified Reference Materials (CRM) were inserted at a rate of 1 in 10 samples. Five CRMs were used, consisting of high grade and low grade equivalent materials. - Blanks were inserted into the sample stream at a rate of 1 in 30 (~3% of samples). - Umpire Checks were conducted on 1 in 10 samples. These were tested by ALS in Brisbane with ICP-MS by analytical methods ME-MS61 and ME-MS81. - Alternative Test Methods were utilised to ensure accuracy of the primary assay method. Both XRF and Lithium Borate Fusion digest with Laser Ablation ICP-MS finish were applied at a rate of 1 in 10 samples.

Criteria	Explanation	Commentary
		These checks were completed by Bureau Veritas in Perth, using analytical methods with the laboratory codes XRF202 and LA101. • Weatherford Wireline Services, Borehole Wireline Pty Ltd and Well Search Pty Ltd performed all downhole geophysical logging. Downhole sample spacing for all tools is 1 cm. Density, gamma, calliper, sonic, verticality and resistivity tools were run. • Weatherford Wireline Services, Borehole Wireline Pty Ltd, Well Search Pty Ltd are ISO9001 certified and use numerous Quality Control procedures, from the set-up and calibration of downhole tools to the final delivery of client data.
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*	• Verification of assay data was performed by means histograms of sedimentary unit composites constructed to check for outliers. • No outliers were found. Once imported into MineScape gridded assay values were visually inspected to check for anomalies. • The first two 2015 holes drilled (QEM001 and QEM002) were drilled adjacent to old CSR holes (597.8_709.9 and 596_710). Intersection depths for the top of the Coquina agreed with CSR holes to within 1 m. Although, the total thickness of the Toolebuc did differ by between 10% and 20%, however when the CQU unit is discarded (as it is from the resource) the remaining thickness of the Toolebuc Formation matched the historical holes to within an acceptable margin. • All results received from the laboratories were supplied in elemental format (ppm). As the Vanadium price is quoted according to the concentration of the oxide (V2O5), assay data in V ppm was converted to wt% oxide prior to importing into the Geological database. The ppm value was firstly divided by 10 000 to convert to wt%. The wt% of the element (V) was then multiplied by 1.7852 to convert to wt% V2O5. • Two historical drillholes were twinned as part of the 2021 drilling programme, for the purpose of further validating the reliability of historic data. The outcome of the twinned drillholes was that the thickness of, and depth to historic drilling results was confirmed, however the elevation of the units showed slight discrepancies. Further investigation has confirmed that the elevation of drillhole collars from historic data is less reliable than the collar elevations surveyed in 2021, which is consistent with previous assumptions. • The twin drillhole results between hole QEM018 and 592_710 show close agreement, however the results between hole QEM020 and 594_710 are less convincing. This suggests that although the historic data is sufficient supporting data for resource classification, it is preferential to use modern drilling as points of observation.

Criteria	Explanation	Commentary
Location of data points	• *Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation.* • *Specification of the grid system used.* • *Quality and adequacy of topographic control.*	• A differential GPS survey of all collars has been conducted upon completion of drilling by registered surveyors, M.H.Lodewyk Pty Ltd. The grid system used is MGA 94 Zone 54. • Old drillhole coordinates are in AMG 84/66 Zone 54 and were transformed into MGA 94 Zone 54 prior to importing into the database. • The topography surface was generated from an airborne LiDAR survey completed by Aerometrix over the QEM tenure package flown in 2022. The surface resolution is >1 m.
Data spacing and distribution	• *Data spacing for reporting of Exploration Results.* • *Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied.* • *Whether sample compositing has been applied.*	• Data spacing is sufficient to establish continuity in both thickness and grade. • Samples have been composited by lithological unit (CQU, CQLA, CQLB, OSU and OSL) for the resource estimation. These composites range between 1.5 – 3 m in thickness.
Orientation of data in relation to geological structure	• *Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type.* • *If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.*	• The deposit type is a weakly folded syngenetic sedimentary style deposit, therefore vertical drillholes are deemed an appropriate orientation for the purpose of unbiased sampling. • Minor extensional structures have been identified in the project with the assistance of seismic surveys, however these are not related to mineralisation and hence have not introduced a sampling bias.
Sample security	• *The measures taken to ensure sample security.*	• Sample security was ensured under a chain of custody procedure utilised between QEM and Contract personnel on-site and the receiving laboratories.
Audits or reviews	• *The results of any audits or reviews of sampling techniques and data.*	• No audits of sampling etc. done however a comprehensive set of internal company procedures exist and have been adhered to.

Section 2 - Reporting of Exploration Results

(Criteria listed in the preceding section also apply to this section.)

<table>
<tr><th>Criteria</th><th>Explanation</th><th>Commentary</th></tr>
<tr><td>Mineral tenement and land tenure status</td><td>• 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.</td><td>• QEM's Julia Creek Project comprises of EPM 25662, EPM 25681 EPM 26429 and EPM 27057. When combined, these leases cover a total area of 249.6 km².
<table>
<tr><th>Tenement</th><th>Concession Type</th><th>Area (km²)</th><th>Status</th><th>Granted</th><th>Expiry</th></tr>
<tr><td>EPM 25662</td><td>Exploration Permit Minerals other than Coal</td><td>134.5</td><td>Granted</td><td>22/01/2015</td><td>23/01/2025</td></tr>
<tr><td>EPM 25681</td><td>Exploration Permit Minerals other than Coal</td><td>6.4</td><td>Granted</td><td>06/03/2015</td><td>5/03/2025</td></tr>
<tr><td>EPM 26429</td><td>Exploration Permit Minerals other than Coal</td><td>35.2</td><td>Granted</td><td>16/03/2017</td><td>15/03/2027</td></tr>
<tr><td>EPM 27057</td><td>Exploration Permit Minerals other than Coal</td><td>73.6</td><td>Granted</td><td>02/05/2019</td><td>1/05/2024</td></tr>
</table></td></tr>
<tr><td>Exploration done by other parties</td><td>• Acknowledgment and appraisal of exploration by other parties.</td><td>• In 1981, CSR Ltd. drilled a series of exploration holes within the current QEM's Julia Creek Project for the measurement of oil yield and Vanadium content from the Toolebuc Formation. The drillholes reached a total depth of between 46 m and 161m, intersecting the Toolebuc Formation between 35 m to 142 m.</td></tr>
<tr><td>Geology</td><td>• Deposit type, geological setting and style of mineralisation.</td><td>• The Early Cretaceous Toolebuc Formation is the target geological horizon at the Julia Creek Project. This stratigraphic unit occurs throughout the Eromanga and Carpentaria Basins in eastern, central and northern Queensland and into portions of the Northern Territory and South Australia.
• The Eromanga Basin is a sub-basin of the Great Artesian Basin and consists of several thick sequences of non-marine to marine sedimentary units. The Toolebuc Formation is part of the Rolling Downs Group of the Eromanga Basin that covers a wide but relatively shallow structural depression in eastern Australia, over an area of 1.5 million Km2.
• The Toolebuc Formation is an early Cretaceous aged (Albian approximately 110 My) sedimentary unit that consists of a lower kerogenous shale (Oil Shale) and an upper interbedded limestone (coquina) and shale unit (Coxhell and Fehlberg, 2000). The Toolebuc Formation crops out at the margins of the Eromanga and Carpentaria basins or, in the case of the Julia Creek area, where it is draped over an original basement high</td></tr>
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Criteria	Explanation	Commentary
		(the St Elmo Structure). Where the unit crops out, it forms low rubbly, topographic highs which have been the source of road-building materials.
Drill hole Information	• *A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes:* • *easting and northing of the drill hole collar* • *elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar* • *dip and azimuth of the hole* • *down hole length and interception depth* • *hole length.* • *If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case*	• See the Appendix for a complete table of drill hole information relevant to the current mineral resource estimate.
Data aggregation methods	• *In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g. cutting of high grades) and cut-off grades are usually Material and should be stated.* • *Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation 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*	• For the mineral resource estimate, 0.5 m samples have been composited to the lithological units (CQU, CQLA, CQLB, OSU, OSL), typically between 1.5 – 3 m. • No metal equivalents or cut off grades have been used.

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Relationship between mineralisation widths and intercept length	• *These relationships are particularly important in the reporting of Exploration Results.* • *If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported.* • *If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g. 'down hole length, true width not known').*	• The orientation of drilling/sampling is not seen to introduce any bias as all drilling is vertical and mineralisation is stratiform, with the host Toolebuc Formation is regionally flat lying, exhibiting gentle folding across the project area.
Diagrams	• *Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.*	• See Appendices.
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.*	• All exploration results pertaining to holes drilled during QEM drilling at the Julia Creek Project have been fully documented in this report. Holes drilled previously have been reported in QDEX reports by CSR Ltd. and others.
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.*	• Extensional structures in the project area have been interpreted by Velseis, who completed two seismic surveys across the project in 2019 and 2023 respectively. • In 2019, QEM commissioned Velseis to conduct a 26 km 2D seismic survey using mini-SOSIE. The seismic survey consisted of two east-west lines, line 01 being 17 km and south of that line 02 being 9 km long. • In 2023, QEM again commissioned Velseis to conduct a 7.3 km 2D seismic survey using mini-SOSIE. The seismic survey consisted of two east-west lines. Line 01 is located north of the existing 2019 survey lines at a length of ~3.6 km and south of that is line 02, located between the 2019 survey lines, approximately 3.7 km long. • The results showed that seams are continuous across the surveyed area and that there are some minor N-S striking faults, with the largest fault displacement calculated at 12.5 m and the bulk of the interpreted structures appearing to be below the 3 m resolution limit.

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		The results of the latest 2025 Metallurgical test work were: • Surface Treatment for Oil Removal - Thermochemical activation (alkaline pH 11 and elevated temperature 80°C) was the most effective strategy, achieving up to 15.61% free oil extraction. - Ethanol treatment under ambient conditions yielded up to 74.86% oil removal with minimal kerogen loss, making it highly selective and suitable for pre-flotation conditioning. - Surfactant-based treatments (e.g., SDS, starch) showed moderate success but were less effective than ethanol or thermochemical methods. - Attrition milling enhanced surface cleaning but generated ultrafines, complicating filtration and reducing TOC recovery. • Kerogen Flotation Behaviour - Natural floatability of kerogen was confirmed, complicating selective separation due to its inherent hydrophobicity. - Sodium metasilicate (Na_2SiO_3) at 100 gpt provided the highest kerogen recovery (79%) and enrichment ratio (1.18), though selectivity remained limited. - Emulsified collectors (kerosene + ethanol) did not significantly improve flotation performance. - Alkaline pH and heat treatments suppressed kerogen recovery but did not enhance selectivity. - SDS surfactant caused excessive frothing and non-selective recovery. - Combined ethanol + SDS treatments showed modest improvements in selectivity (ER = 1.07), especially at reduced SDS dosages. - Overall, the treatments used in this study were able to produce kerogen recovery of up to 80%, but with no selectivity. This means that the strategy of direct kerogen recovery to extract vanadium is not technically or economically feasible. • Calcite Flotation and Selectivity - High starch dosage (1000 gpt) effectively depressed kerogen but also reduced calcite recovery. - Lower starch dosage (100 gpt) improved calcite recovery (ER = 1.07) but compromised selectivity. - Alkaline pH and heat treatment enhanced calcite recovery (ER = 1.11) and suppressed kerogen (ER = 0.66), representing the most promising selective separation condition.

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		- Ethanol pretreatment over-depressed all phases, resulting in poor froth formation and non-selective recovery. - Overall, it was found that calcite can be recovered while kerogen is partially depressed. This results in a calcite concentrate that produces 35% calcite recovery, compared to 21% kerogen recovery. On its own, this result does not represent an economically feasible separation. However, it presents a first indication that such a separation could be feasible upon further optimisation. • Vanadium Deportment - Contrary to earlier assumptions, vanadium was preferentially recovered into the calcite concentrate, not the kerogen-rich tailings. - This finding challenges the hypothesis that vanadium is primarily associated with kerogen and suggests a need to reassess mineral associations. • Mineralogical Insights from Fossilised Carbonates - Coccoliths and other fossilised microorganisms were identified within the sample matrix, contributing to calcium carbonate content. - These biogenic carbonates differ from crystalline calcite in texture, surface chemistry, and organic associations, potentially affecting flotation behaviour. - Kerogen encapsulation within fossil structures was observed, indicating complex mineral-organic interactions. - Conventional MLA techniques cannot reliably distinguish fossilised carbonates from crystalline calcite. - Advanced characterisation methods (e.g., ToF SIMMS, SEM/EDS, Raman spectroscopy, synchrotron microanalysis) are recommended to resolve these complexities and guide process optimisation.
Further work	• *The nature and scale of planned further work (e.g. 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.*	• Additional drilling on the eastern side of the deposit is required to upgrade the resource confidence.