

# ABN 63 111 306 533

## **HIGHLIGHTS**

# QUARTERLY REPORT TO SHAREHOLDERS

for the three months ended 31 March 2018

# ASX Code - EME

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This report and further information are available on Energy Metals' website at:

## www.energymetals.net



## **Bigrlyi Joint Venture (NT)**

Planning for Bigrlyi project Pre-Feasibility Study (PFS) re-optimisation studies in 2018-2019 period underway.

Closed-can analyses confirm Bigrlyi uraninitedominant mineralisation to be in radiochemical equilibrium.

Exploration database audit completed and database update in progress.

## Ngalia Regional Project (NT)

Tenement reorganisation plan implemented to focus exploration efforts on most prospective ground.

## **FINANCIAL**

Energy Metals had approximately \$19.14M in cash and 209.7M shares on issue at 31 March 2018.

Weidong Xiang Managing Director 30 April 2018

## **INTRODUCTION**

Energy Metals (EME) is a dedicated uranium company with eight exploration projects located in the Northern Territory (NT) and Western Australia covering over 3,400 km<sup>2</sup> (Figure 1). Most of the projects contain uranium mineralisation discovered by major companies in the 1970's, including the advanced Bigrlyi Project (NT).



Figure 1 – Location of Energy Metals Projects

Energy Metals is well placed to take advantage of the favourable outlook for Uranium as nuclear power continues to play an increasing role in reducing global carbon emissions.

Importantly Energy Metals is one of only five companies that currently hold all the required permits and authorities to export Uranium Oxide Concentrates (UOC) from Australia. The Company has completed its first shipment of UOC and is negotiating with Australian uranium producers to enable further shipments from Australia for resale, primarily to major Chinese utility China General Nuclear Power Group (CGN, formerly China Guangdong Nuclear Power Holding Company), ultimately Energy Metals' largest shareholder.

China Uranium Development Company Limited, Energy Metals' largest shareholder (with 66.45% of issued capital), is a wholly owned subsidiary of CGN. As of end 2017, CGN had 20 operating nuclear power units with a generation capacity of 21,470MWe and more than 10,270MWe of capacity under construction in 8 other nuclear power units across various locations in China. Additionally CGN is one of only two companies authorised by the Chinese government to import and export uranium.

This unique relationship with CGN gives Energy Metals direct market exposure as well as access to significant capital and places the Company in a very strong position going forward.

## NORTHERN TERRITORY

## **Bigrlyi Joint Venture (EME 53.3%)**

The Bigrlyi Joint Venture comprises 11 granted exploration licences in retention (ELRs), two granted ELs, and several applications within the Ngalia Basin, located approximately 350km northwest of Alice Springs. EME operates the Joint Venture in partnership with Northern Territory Uranium Pty Ltd and Southern Cross Exploration NL. The Bigrlyi Joint Venture tenements have been subject to significant exploration activity since discovery in 1973, including over 1,040 drill holes, metallurgical testwork and mining studies, with most work undertaken at the Bigrlyi Project (Figure 2).

The Bigrlyi Project is characterised by relatively high uranium grades and excellent metallurgical recoveries. Historical base case acid leach tests recorded extraction rates of 98% uranium. For further information on metallurgical testwork, resource estimates and economic studies please refer to ASX announcements or the Company's website www.energymetals.net.

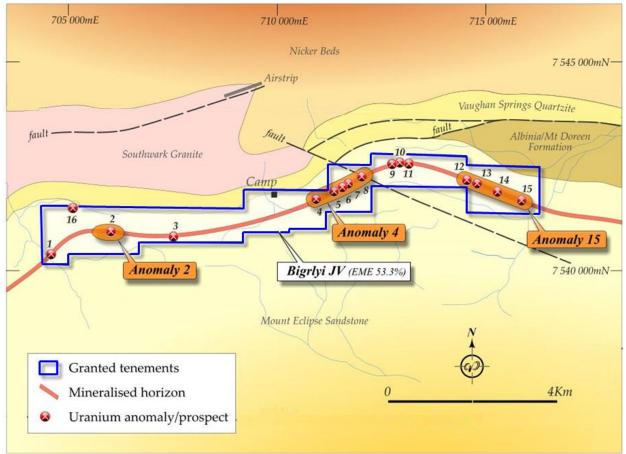


Figure 2 – Bigrlyi Joint Venture Project area showing simplified geology

The historic Karins deposit, located approximately 260km northwest of Alice Springs (Figure 3), is located on tenement applications MLN1952 and MCS318-328, which are part of the Bigrlyi Joint Venture. Karins is a tabular uranium-vanadium style of deposit similar to Bigrlyi although with an oxidised zone (carnotite zone) of variable thickness. EME acquired CPM's interest in the project in 2005, including all the historical exploration records. A maiden JORC-compliant resource estimate for the Karins Deposit was released to the ASX in July 2015.

In October 2015, a maiden JORC (2012) resource estimate was announced for the historic Sundberg deposit, a satellite of the larger Walbiri deposit (Figure 3).

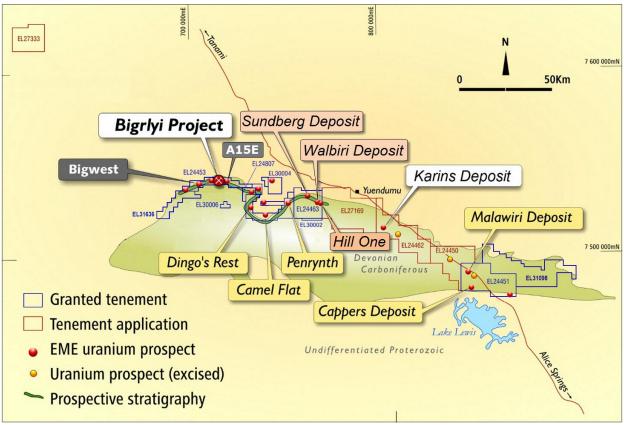


Figure 3 - Uranium deposits, occurrences and exploration target areas in the Ngalia Basin

## Walbiri Joint Venture (EME 41.9%)

ELR45, granted in August 2014, covers part of the historical Walbiri deposit and part of the Hill One satellite deposit (Figure 3). The project is a joint venture with Northern Territory Uranium Pty Ltd (58.1%), with EME as the operator. In October 2015 an initial JORC (2012) mineral resource estimate was announced for the Walbiri deposit, confirming Walbiri as the third largest sandstone-hosted uranium deposit in Central Australia after Angela and Bigrlyi.

## Malawiri Joint Venture (EME 52.1%)

ELR41, granted in August 2014, covers the historical Malawiri prospect. The project is a joint venture with Northern Territory Uranium Pty Ltd (47.9%) with Energy Metals as the operator. A program of digitisation and reprocessing of historical gamma logs, core re-logging, and historical data compilation and verification was completed in mid-2015 and a small drilling program was completed in September 2016. In late 2017 EME advanced the Malawiri project to JORC-compliant resource status with announcement of a maiden inferred-category mineral resource estimate of 542 tonnes  $U_3O_8$  (for further details see ASX announcements of  $27^{th}$  September 2016 &  $14^{th}$  December 2017).

#### JV Activities (March 2018 Quarter)

Energy Metals' exploration strategy is to progressively advance its projects toward economic development within current market constraints. For its advanced JV projects, Energy Metals' aim is to ensure that they meet the high standards necessary for any future development to proceed in a timely manner once uranium market conditions improve. In this regard planning is underway for a comprehensive review, update and re-optimisation of the Bigrlyi project Pre-Feasibility Study (PFS) in the period 2018-2019. Some preliminary aspects of this program were implemented in late 2017, including a database review and initial uranium series disequilibrium study, which are discussed below (for further information on the PFS refer to the ASX announcement of 17<sup>th</sup> June 2011).

**Database Audit and Upgrade.** During the quarter an external audit of Energy Metals' exploration databases was completed and various recommendations were made for improvements including a software update, standardisation of data entry templates and the consolidation of Energy Metals' separate project databases into one comprehensive database. These improvements are currently underway and will be progressively implemented during 2018.

**Uranium-Series Disequilibrium Study.** During the quarter, results were received ex ANSTO laboratories, Sydney, from a preliminary investigation of uranium-series disequilibrium in mineralised samples from the Bigrlyi deposit.

Radiochemical disequilibrium occurs in the uranium decay chain when geologically recent chemical processes disrupt the concentrations of one or more of the radioactive daughter isotopes. Disequilibrium is common in young, surficial, calcrete-style uranium deposits but is less common in older deposits such as Bigrlyi. A common form of disequilibrium, often occurring as a result of weathering or ground-water leaching, is caused by the migration of the radioactive isotope Radium-226 away from mineralised host rock into its surroundings. This leads to formation of a radium halo around the uranium orebody. Separation of uranium from its radium daughter isotope has implications for the determination of equivalent uranium grades ( $eU_3O_8$ ) by the downhole gamma probe method. This arises because probe measurements are dominated by contributions from gamma emitters in the Radium-226 decay chain. Where radium has migrated away from the orebody the gamma probe will under-report uranium grade, and where radium accumulates, the gamma probe will over-report grade. A correction factor known as the 'radioactive equilibrium factor' or REF (=  $U_3O_8/eU_3O_8$ ) must be applied to equivalent uranium grades where disequilibrium is proved. For the Bigrlyi deposit a REF value of 1 has previously been assumed (i.e. the deposit is in radiochemical equilibrium) and this view has been supported by extensive cross-checks of gamma probe uranium grades against chemical assay data, although the two data-sets are not strictly comparable due to differences in sampling volumes.

Where disequilibrium is suspected it is desirable to undertake direct measurements of radiochemical equilibrium. This is usually done by the so called 'closed-can' method where a uranium ore sample is sealed in a container or 'can' to prevent escape of radon gas and the activity of daughter isotopes are measured by gamma spectrometry after elapse of a sufficient period (weeks) to allow for ingrowth of radon progeny.

In the 1970/80s previous Bigrlyi project owners, Central Pacific Minerals NL, undertook over 500 closed-can measurements on drill core samples at Amdel laboratories, Adelaide, to evaluate possible disequilibrium at Bigrlyi. The historical results returned an average REF value of 1.2 but with considerable scatter, +/- 0.3, and a hint that higher REF values may occur in near surface, high-grade samples. Due to a lack of consistency in the data no explicit REF correction was applied historically to gamma probe data, and uranium grade determinations have since largely relied on chemical assay data.

In late 2017, six high-grade mineralised samples from previous drilling at Bigrlyi were selected for modern closed-can gamma spectrometric determination of uranium-series equilibrium at ANSTO laboratories, Sydney. Three samples were selected from nearer surface materials (weathered carnotite zone, <30m depth) and three samples were selected from depth (unweathered uraninite zone). The results are presented in Table 1 and indicate that within error, unweathered Bigrlyi uranium mineralisation is in radiochemical equilibrium (REF values 1.0-1.1), thus confirming previous assumptions. The results also prove that the thorium (Th) and potassium (K) decay chains do not contribute significantly to total sample radioactivity. However, near-surface, carnotite-dominant mineralisation shows a variable state of uranium series equilibrium, ranging from in-equilibrium to slightly out of equilibrium to significantly out of equilibri

Drill Hole**	Sample Depth (m)	Ore Mineral Zone	U₃O8 assay (%)	Activity U-238 (Bq/g)	Activity Ra-226 (Bq/g)	Activity Th-232 (Bq/g)	Activity K-40 (Bq/g)	REF	Results
BDD11138	87.1	Uraninite	9.57	1002	1040	<0.1	<2.1	1.0	Equilibrium
BDD11133	13.5	Carnotite	2.23	233	100	0.1	0.7	2.3	Disequilibrium
									Marginal
BDD11133	23.6	Carnotite	0.815	85.3	74	<0.1	0.8	1.2	Disequilibrium
BDD11140	9.5	Carnotite	0.786	82.3	73	<0.1	0.8	1.1	Equilibrium
B09066W1	113	Uraninite	7.98	836	870	0.1	<1.6	1.0	Equilibrium
B09066W1	137	Uraninite	2.68	281	250	0.1	0.9	1.1	Equilibrium

Table 1. Determination of Radiochemical Equilibrium\*

\*A REF value in the range 0.9 to 1.1 is indicative of equilibrium within error (i.e. +/- 10%). \*\* Refer to ASX releases of 23<sup>rd</sup> December 2011 and 30<sup>th</sup> July 2010 for further information regarding these drill holes.

Although the weathered zone at Bigrlyi only comprises a small proportion of the deposit as a whole, these preliminary results suggest that further investigations of radiochemical disequilibrium are warranted for weathered zone samples and that an accurate "base of oxidation" surface should be established as part of a future deposit model revision. These results will assist with Energy Metals' on-going PFS re-optimisation work and further investigations are planned in 2018. Note that these results have no material effect on the current mineral resource estimate for the Bigrlyi deposit, which is chemical assay based; however, the use of  $eU_3O_8$  data for future resource estimation purposes is now considered possible, subject to some further measurements.

## Ngalia Regional Project (EME 100%)

The Ngalia Regional project comprises twelve 100% owned exploration licences (total area approximately 3,100 km<sup>2</sup>) located in the Ngalia Basin, between 180km and 350km northwest of Alice Springs in the Northern Territory (Figure 3). The tenements are contiguous and enclose the Bigrlyi project as well as containing a number of uranium occurrences, including part of the historic Walbiri deposit and the Cappers deposit.

Nine of the twelve Ngalia Regional exploration licences have been granted; the three remaining applications (ELs 24450, 24462 and 27169) are located on Aboriginal Freehold (ALRA) land and Energy Metals is negotiating access agreements with the Traditional Owners through the Central Land Council (CLC) (Figure 3).

A number of high priority targets have been identified on the 100% owned tenements and Energy Metals is undertaking a program of systematic evaluation of these prospects, some of which were originally discovered in the 1970s. In February 2014, EME announced maiden resource estimates for the Bigwest, Anomaly-15 East and Camel Flat satellite deposits and in October 2015 EME announced inferred JORC resources for the historical Walbiri, Sundberg and Hill One deposits (Figure 3).

## Activities (March 2018 Quarter)

Planning for the 2018 exploration field season is currently underway with a focus this year on enhancing Energy Metals' understanding of the different Ngalia Basin uranium-vanadium deposits, and how they form, to improve targeting and future discoveries.

In mid-2017 an aerial electromagnetic (AEM) survey was flown over parts of EL24453 and EL31098 in the eastern Ngalia Basin in conjunction with Geoscience Australia's *Exploring for the Future Program*. Geoscience Australia has advised that final data products from the survey will be available in the second quarter of 2018.

A prospectivity and tenement review was completed during the quarter to enable Energy Metals to focus its activities on the most prospective ground. The review has resulted in a number of tenement surrenders, amalgamations and new applications, which are documented in Table 2 and summarised below:

- EL24453 reduced and portions amalgamated into EL31820 and EL31821 (yet to be granted)
- EL24807 reduced and amalgamated into EL31821 (yet to be granted)
- EL30002 and EL30006 surrender applications lodged 28/03/2018
- EL30004 portions amalgamated into EL31821, part retained
- EL31636 amalgamated into EL31820 (yet to be granted)
- ELR31754, ELR31755 and ELR31756 applied for to cover resource areas of the Bigwest, A15E and Camel Flat deposits

These changes will streamline Energy Metals' tenement management options going forward.

## Macallan (EME 100%)

The Macallan project comprises a single exploration licence application (ELA27333), located

460 km NW of Alice Springs and 140 km from Bigrlyi. The tenement covers a strong 3km-wide bullseye radiometric anomaly. The Macallan anomaly lies within the Wildcat Palaeovalley, an ancient valley system that drains into Lake Mackay to the southwest. The Macallan anomaly most likely represents a surficial accumulation of uranium minerals associated with the Wildcat palaeodrainage system, although other explanations are possible.

ELA27333 lies on land under Aboriginal Freehold title and access is subject to negotiation with the Traditional Owners and the CLC. The negotiation period on the tenement has been extended until October 2018 and negotiations are proceeding.

## WESTERN AUSTRALIA

## Manyingee (EME 100%)

The Manyingee project comprises retention licence application R08/3, underlying tenement E08/1480 and exploration licence application E08/2856, which are located 85 km south of Onslow. R08/3 and E08/1480 are located adjacent to mining leases containing Paladin Energy's Manyingee resource, a stacked series of buried, palaeochannel-hosted, roll-front uranium deposits. In November 2016 EME announced an initial JORC (2012) Mineral Resource Estimate for the Manyingee East uranium deposit, which is located up-channel of Paladin's Manyingee deposit.

There was no activity during the period.

## Mopoke Well (EME 100%)

The Mopoke Well project is located 55km west of Leonora on retention licence R29/1. The project contains two historic uranium prospects (Peninsula and Stakeyard Well) hosted by calcretised sediments associated with the Lake Raeside drainage system. A JORC (2004) mineral resource estimate was released to the ASX in March 2013.

There was no activity during the period.

## Lakeside (EME 100%)

The Lakeside project is located in the Murchison district 20km west of Cue on retention licence R21/1. This project was acquired to follow up previously discovered surficial uranium mineralisation at Lake Austin associated with calcrete and saline drainages. Aircore drilling campaigns were undertaken by EME in 2007, 2008, 2010 and 2012. A JORC (2012) mineral resource estimate was release to the ASX in June 2014.

There was no activity during the period.

## Anketell (EME 100%)

The Anketell project is located 50km west of Sandstone on retention licence R58/2 and comprises surficial calcrete-style mineralisation discovered by Western Mining (WMC) in 1972.

Following completion of aircore drilling programs, an initial JORC (2004) mineral resource estimate was released to the ASX in July 2009.

There was no activity during the period.

## Lake Mason (EME 100%)

The Lake Mason project is located 25km north of Sandstone on retention licence R57/2 and comprises shallow carnotite mineralisation hosted in calcrete and calcareous sediments associated with the Lake Mason drainage system. A JORC (2004) mineral resource estimate was released to the ASX in December 2010.

There was no activity during the period.

## CORPORATE

The Permit to Possess Nuclear Material held by Energy Metals' subsidiary NT Energy Pty Ltd was renewed by the Australian Safeguards and Non-Proliferation Office (ASNO) during the period.

Energy Metals remains in a strong financial position with approximately \$19.14 million in cash and bank deposits at the end of the quarter, forming a solid resource for ongoing exploration and project development.

TENEMENT*	PROJECT		INTEREST								
		LOCATION	INTEREST	CHANGE IN QUARTER							
Northern Territory											
EL24451	Ngalia Regional	Napperby	100%	-							
EL24453	Ngalia Regional	Mt Doreen	100%	Title Replaced							
EL24463	Ngalia Regional	Mt Doreen	100%	-							
EL31636	Ngalia Regional	Mt Doreen	100%	Title Replaced							
EL24807	Ngalia Regional	Mt Doreen	100%	Title Replaced							
EL31098	Ngalia Regional	Napperby	100%	-							
ELA31820	Ngalia Regional	Mt Doreen	100%	Application							
ELA31821	Ngalia Regional	Mt Doreen	100%	Application							
ELRA31754	Ngalia Regional	Mt Doreen	100%	Application							
ELRA31755	Ngalia Regional	Mt Doreen	100%	Application							
ELRA31756	Ngalia Regional	Mt Doreen	100%	Application							
ELR46	Bigrlyi Joint Venture	Mt Doreen	53.3%	-							
ELR47	Bigrlyi Joint Venture	Mt Doreen	53.3%	-							
ELR48	Bigrlyi Joint Venture	Mt Doreen	53.3%	-							
ELR49	Bigrlyi Joint Venture	Mt Doreen	53.3%	-							
ELR50	Bigrlyi Joint Venture	Mt Doreen	53.3%	-							
ELR51	Bigrlyi Joint Venture	Mt Doreen	53.3%	-							
ELR52	Bigrlyi Joint Venture	Mt Doreen	53.3%	-							
ELR53	Bigrlyi Joint Venture	Mt Doreen	53.3%	-							
ELR54	Bigrlyi Joint Venture	Mt Doreen	53.3%	-							
ELR55	Bigrlyi Joint Venture	Mt Doreen	53.3%	-							
ELR41	Malawiri Joint Venture	Napperby	52.1%	-							
ELR45	Walbiri Joint Venture	Mt Doreen	41.9%	-							
EL30002	Ngalia Regional	Mt Doreen	100%	Surrendered							
EL30004	Ngalia Regional	Mt Doreen	100%	-							
EL30006	Ngalia Regional	Mt Doreen	100%	Surrendered							
ELA27169	Ngalia Regional	Yuendumu	100%	-							
EL30144	Bigrlyi Joint Venture	Mt Doreen	53.3%	-							
ELR31319	Bigrlyi Joint Venture	Mt Doreen	53.3%	-							
ELA24462	Ngalia Regional	Yuendumu	100%	-							
ELA24450	Ngalia Regional	Yuendumu	100%	-							
ELA27333	Macallan	Tanami	100%	-							
MCSA318-328	Bigrlyi Joint Venture	Yuendumu	53.3%	-							
MLNA1952	Bigrlyi Joint Venture	Yuendumu	53.3%	-							
EL30689	Bigrlyi Joint Venture	Mt Doreen	53.3%	-							
Western Australia											
E08/1480	Manyingee	Yanrey	100%	-							
E08/2856	Manyingee	Yanrey	100%	-							
R08/3	Manyingee	Yanrey	100%	-							
R21/1	Lakeside	Cue	100%	-							
R29/1	Mopoke Well	Leonora	100%	-							
R57/2	Lake Mason	Sandstone	100%	-							
R58/2	Anketell	Sandstone	100%	-							

**Table 2:** Tenement Information as required by listing rule 5.3.3

\* EL = Exploration Licence (NT); ELA = Exploration Licence Application (NT); ELR = Exploration Licence in Retention (NT); ELRA = Exploration Licence in Retention Application (NT); MCSA = Mineral Claim (Southern) Application (NT); MLNA = Mineral Lease (Northern) Application (NT); E = Exploration Licence (WA); R = Retention Licence (WA).

#### **Competent Persons Statement**

Information in this report relating to exploration results, data and cut-off grades is based on information compiled by Dr Wayne Taylor and Mr Lindsay Dudfield. Mr Dudfield is a member of the AusIMM and the AIG. Dr Taylor is a member of the AIG and is a full time employee of Energy Metals; Mr Dudfield is a consultant to Energy Metals. They both have sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which they are undertaking to qualify as a Competent Person as defined in the "Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves – The JORC Code (2012)". Dr Taylor and Mr Dudfield both consent to the inclusion of the information in the report in the form and context in which it appears.

This report references mineral resource estimates and/or related information that was prepared and first disclosed under the JORC Code 2004. It has not been updated since to comply with the JORC Code 2012 on the basis that the information has not materially changed since it was last reported.