

# QUARTERLY ACTIVITIES REPORT

AS AT 30 SEPTEMBER 2014

## HIGHLIGHTS

- **\$36.5m balance sheet restructure completed**
- **Mulga Rock Uranium Project Pre-Feasibility Study commenced**
- **In-fill resource drilling program at the Mulga Rock Uranium Project has commenced**
- **Bulk metallurgical drilling and test work underway**
- **Recent metallurgical test work has shown a significant reduction in acid consumption**

Energy and Minerals Australia ('EMA' or 'the Company') is pleased to present an update of activities for the September Quarter 2014.

## BALANCE SHEET RE-STRUCTURE

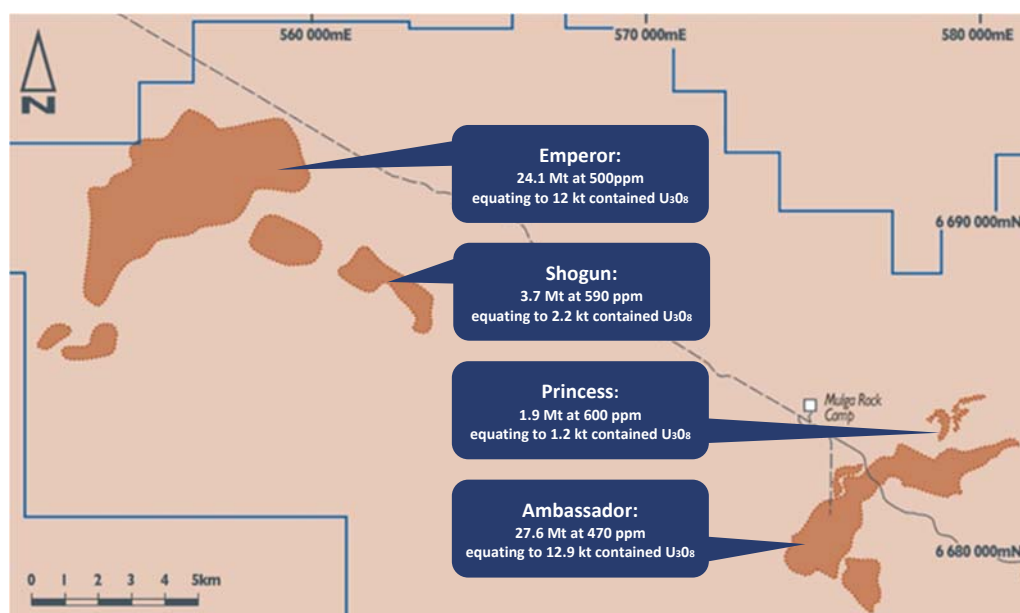
On 17 July 2014, the \$12 million equity raising placed to Forrest Family Investments Pty Ltd ('FFI'), an Andrew Forrest entity within the Minderoo Group, was received. The Company also issued FFI one free option for each share issued; each exercisable at 5 cents per share on or before 30 June 2016.

Also on the same date, the Company's previous debt holders, leading Australian resource investment groups Acorn Capital Limited and its clients; Macquarie Bank Limited; and the Element Resources Fund subscribed for a total of \$23.3 million in new shares and agreed to forego \$1.2 million of fees, thereby eliminating all of EMA's bank debt.

These transactions restructured the Company's balance sheet and increased its net assets by \$36.5 million.

## MULGA ROCK URANIUM PROJECT PRE-FEASIBILITY COMMENCES

The Company has commenced a Pre-Feasibility Study ('PFS') to establish the commercial viability and economics of the Mulga Rock Uranium Project. The Mulga Rock project is a large, world-class uranium resource located 240 km east-northeast of Kalgoorlie in Western Australia. The project, Western Australia's third largest, comprises four deposits for a total of 62.2 million pounds of  $U_3O_8$ . The full Resource statement is included in this report.



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The Company commenced the PFS in July; the Study comprises the following elements:

- Resource definition in-fill drilling (air core reverse circulation, diamond core drilling)
- down hole geophysics
- Resource estimation
- mining engineering and mine scheduling
- metallurgical bulk sampling using 8 inch diamond core drilling
- metallurgical test program
- environmental permitting, including submission of the Public Environmental Review ('PER'); and
- engineering design study

The PFS is expected to be completed in June 2015 at which time, pending a successful outcome, the Company will commence a Definitive Feasibility Study as it progresses towards production. The Company is expecting first construction and pre-stripping in the second half of 2016.

## DRILLING PROGRAM

EMA is undertaking a large, in-fill program aimed at increasing the confidence level of the existing inferred Resource estimates. The in-fill drilling programs at Princess and Ambassador East comprise 180 holes for a total of 10,600 m drilling, including 131 air core reverse circulation holes, 40 PQ diamond holes; 8 bulk metallurgical 8 inch diamond holes and 10 air-core holes for hydro test work.

Three rigs were mobilised to site during September and drilling will continue into the next quarter with the program finishing in late November.

The summary of drilling as of 30 September is:

- 13 twin air-core holes for total depth of 780 metres
- 10 air-core holes for hydro test work for 1,015 metres
- 22 air-core holes for resource definition for total of 1,571 metres
- 2 holes by the 8 inch diamond rig for the bulk metallurgical sampling

As well as physical drilling and assaying, each hole is logged by the down-hole geophysical logging contractor and data is collected for the following:

- total gamma
- spectral gamma (resource intervals only)
- electromagnetic induction and magnetic susceptibility
- sonic
- deviation; and
- dual density

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All samples, including drill core, will be prepared on-site and submitted to a commercial laboratory in Perth for assaying. Metallurgical core will be transported whole to a laboratory in Perth where preparation, sampling and test work will be conducted.

Appropriate QA/QC procedures are in place to ensure JORC compliance.

The PQ diamond rig mobilised to site on 30 September, and drilling started subsequent to this reporting period.

Coring has also confirmed the view that the overburden and ore zones are likely to be extracted during open pit mining using predominantly free digging methods. Only minor zones of competent silcrete have been encountered to date during drilling.

## RESOURCE ESTIMATION

Geological modelling and grade estimation for the Princess deposit using historical drilling updated with drilling carried out during the 2014 financial year, is in the final stages. The JORC Code Table 1 is being collated and updated and a JORC 2012 Resource will be released during the December quarter.

Geological modelling is also being carried out on the Ambassador deposit using historical drilling and an updated resource estimate will be undertaken during the December quarter. This model will be updated with new drilling as information becomes available.

## BULK SAMPLING (8 INCH DIAMOND) PROGRAM

The bulk sampling program will provide representative bulk samples from Ambassador and Princess ore-bodies for metallurgical testing. Approximately 600kg (dry) of representative mineralised core will be collected from suitable locations from the Princess, Ambassador East and Ambassador West deposits. These deposits are expected to provide sufficient material to support the first 10 years of mine life.

The 8 inch diamond rig commenced drilling late in the Quarter with two holes completed by the end of the reporting period. A total of 98m of pre-collar and 16.5m of 8 inch diamond core was recovered. Despite the extremely soft and erodible nature of the sediments in the ore-zone and generally testing drilling conditions, core quality was considered to be excellent with minimal core loss.

## METALLURGICAL TEST WORK PROGRAM

A review of the previous test work led to the development of a proposed flow-sheet comprising simple acid leach with resin-in-pulp extraction.

PFS test work is now underway to evaluate the entire proposed flow-sheet.

Optimisation leach test work has been progressing through the period, comparing conventional acid tank leaching with, and without, uranium ion-exchange resin present. Results from the current work have shown a **significant reduction in acid consumption** can be achieved with resin present during leaching (i.e. resin-in-pulp).

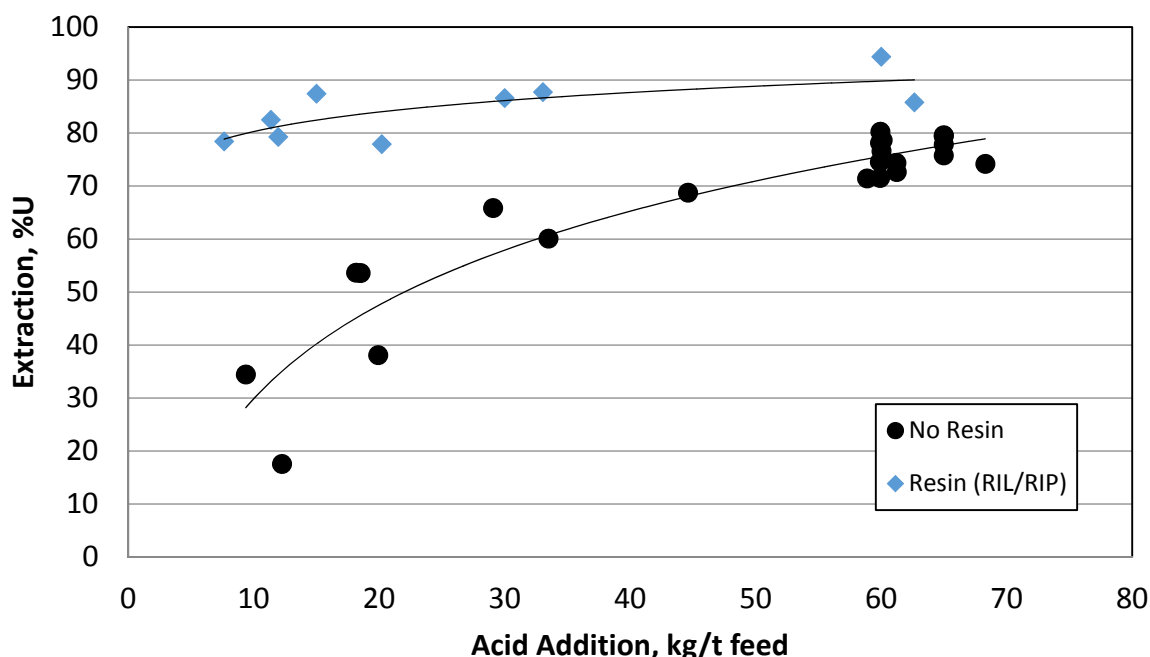
It is a misconception that metallurgy is an issue at the Mulga Rock Uranium Project, with some observers citing 'high acid consumption and low recovery' as a significant issue. This is not the case; uranium occurs as free, ionic uranium associated with the carbonaceous material and the acid leach process is proven to be able to easily extract uranium.

The figure below shows a comparison of uranium extraction at different acid additions with, and without, resin present. Batch resin-in-leach/resin-in-pulp ('**RIL/RIP**') tests have shown a 50-75% reduction in acid consumption from 60kg acid/tonne ore process to 15kg/t can be achieved when compared with convention tank leach results. Importantly, the RIL/RIP process can be done at ambient temperature and pressure.

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Uranium extractions should improve in a counter current RIL/RIP circuit compared to these batch test results. It should be noted only one metallurgical composite sample has been tested to-date from the Ambassador deposit. Further work will be performed on the bulk metallurgical samples currently being obtained.



Test work has commenced on base metal extraction including, but not limited to, Cu, Ni, Co, and Zn as part of the effluent treatment of tailings. It is expected that these base metals can be extracted as separate sulphide precipitates being CuS, ZnS and Ni-Co sulphide.

Other metals such as Sc, V, and REE are also being assessed.

## ENVIRONMENTAL PERMITTING

The Mulga Rock Uranium Project is a controlled action under the EPBC Act due to the presence of Uranium. It has also been assessed as requiring a Public Environmental Review ('PER') with a 12 week review period under the auspices of the Environmental Protection Agency ('EPA'). This is being handled as a single process under a bilateral agreement between the Commonwealth and the State.

The Company submitted the Environmental Scoping Document ('ESD') to the EPA during the Quarter. The ESD outlines the items which both parties agree are to be submitted in the PER. The Company expects to complete the ESD process by late in the December quarter and to submit the PER in early January 2015.

Environmental studies on site commenced during the Quarter comprising predominantly flora and fauna surveys and water test drilling.

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## INFERRED MINERAL RESOURCE ESTIMATE

Deposit	Cut-off Grade (ppm eU <sub>3</sub> O <sub>8</sub> )	Million Tonnes	eU <sub>3</sub> O <sub>8</sub> Grade (ppm)	Contained Metal (kt U <sub>3</sub> O <sub>8</sub> )	M lbs U <sub>3</sub> O <sub>8</sub>	Author
<b>Ambassador</b>						
Upper Lignite	200	16.7	600	10.0	22.0	Coffey Mining 2010
Lower Lignite	200	3.7	320	1.2	2.6	
Sandstone	100	7.2	240	1.7	3.7	
<b>Princess</b>	200	1.9	600	1.2	2.5	EMA 2012
<b>Emperor</b>	200	24.1	500	12	26.4	Coffey Mining 2009
<b>Shogun</b>	200	3.7	590	2.2	4.8	
<b>TOTAL INFERRED</b>		<b>57.3</b>	<b>500</b>	<b>28.3</b>	<b>62.2</b>	

Resource estimates by Coffey Mining - Ambassador Estimate as announced to the ASX on 11 June 2010, using EMA and historic data - Emperor and Shogun Estimate as announced to the ASX on 13 January 2009, using historic data.

Resource estimates by Energy and Minerals Australia – Princess Estimate as announced to the ASX on 4 December 2012 using EMA and historic data.

Using cut combined U<sub>3</sub>O<sub>8</sub> composites (combined chemical and radiometric grades); t = metric tonnes; appropriate rounding has been applied.

This information 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.

*The information in this announcement that relates to the Princess Exploration Results, Princess Mineral Resource Estimate (U<sub>3</sub>O<sub>8</sub>), Resource Database and Bulk Density are based on information compiled by Xavier Moreau and Michael Fewster, who are Members of the Australian Institute of Geoscientists. Mr Moreau is a full time employee of the Company. Mr Fewster is a consultant to the Company and potential beneficiary of the Busani Family Trust, a substantial shareholder of the Company. Messrs' Moreau and Fewster have sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which is being undertaken to qualify as Competent Persons as defined in the 2004 Edition of the JORC 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'. Messrs' Moreau and Fewster consent to the inclusion in the announcement of the matters based on his information in the form and context in which it appears.*

*The information in this announcement that relates to the Ambassador, Emperor and Shogun Mineral Resource estimates (U<sub>3</sub>O<sub>8</sub>) is based on information compiled by Neil Inwood and Iain Macfarlane on June 2010. Mr Inwood and Mr Macfarlane are Members of the AusIMM. Mr Inwood and Mr Macfarlane were employed by Coffey Mining as consultants to the Company at the time of the resource estimates and public release of results. As Mr Inwood and Mr Macfarlane are now no longer employed by Coffey Mining, Coffey Mining has reviewed this report and consent to the inclusion, form and context of the relevant information herein as derived from the original resource reports for which Mr Inwood's and Mr Macfarlane's consents have previously been given. Mr Inwood and Mr Macfarlane have sufficient experience relevant to the style of mineralisation and type of deposit under consideration and to the activity which is being undertaken to qualify as a Competent Person as defined in the 2004 Edition of the JORC 'Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves'.*

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## TENURE

During the Quarter E38/2822 was surrendered.

Tenement	Nature of Interest	Mineral Field	Interest at Beginning of Quarter	Interest at End of Quarter
M39/1080	Current	Mt Margaret	95.40 km <sup>2</sup>	95.40 km <sup>2</sup>
M39/1081	Current	Mt Margaret	30.16 km <sup>2</sup>	30.16 km <sup>2</sup>
E39/876	Current	Mt Margaret	103.20 km <sup>2</sup>	103.20 km <sup>2</sup>
E39/877	Current	Mt Margaret	91.05 km <sup>2</sup>	91.05 km <sup>2</sup>
E39/1148	Current	Mt Margaret	156.70 km <sup>2</sup>	156.70 km <sup>2</sup>
E39/1149	Current	Mt Margaret	177.80 km <sup>2</sup>	177.80 km <sup>2</sup>
E39/1150	Current	Mt Margaret	79.37 km <sup>2</sup>	79.37 km <sup>2</sup>
E39/1551	Current	Mt Margaret	62.51 km <sup>2</sup>	62.51 km <sup>2</sup>
P39/4877	Current	Mt Margaret	1.49 km <sup>2</sup>	1.49 km <sup>2</sup>
P39/4878	Current	Mt Margaret	1.11 km <sup>2</sup>	1.11 km <sup>2</sup>
P39/4879	Current	Mt Margaret	0.31 km <sup>2</sup>	0.31 km <sup>2</sup>
P39/4880	Current	Mt Margaret	0.93 km <sup>2</sup>	0.93 km <sup>2</sup>
P39/4881	Current	Mt Margaret	0.22 km <sup>2</sup>	0.22 km <sup>2</sup>
P39/4882	Current	Mt Margaret	0.25 km <sup>2</sup>	0.25 km <sup>2</sup>
L39/193	Current	Mt Margaret	316.9 km <sup>2</sup>	316.9 km <sup>2</sup>
L39/219	Current	Mt Margaret	2.36 km <sup>2</sup>	2.36 km <sup>2</sup>

Exploration and development expenditure for the Quarter was \$1,944,796.

**For further information, please contact:**



**Mike Young**  
**Chief Executive Officer**  
**Tel: +61 8 9389 2700**

Dated: 21 October 2014

# ABOUT EMA

Energy and Minerals Australia (ASX: EMA) is a Perth-based resource development company. EMA's primary focus is the development of the Mulga Rock Uranium Project, located about 240 km northeast of the regional city of Kalgoorlie-Boulder. The project shares access infrastructure with the large Tropicana Gold Project.

Mulga Rock, which consists of four separate deposits named Ambassador, Emperor, Shogun and Princess, is one of Australia's largest undeveloped uranium resources. The deposits also contain nickel, cobalt, rare earth elements, yttrium, scandium, vanadium, copper, zinc and gold. EMA holds title to approximately 1,000 square kilometres of land at Mulga Rock. The discoveries to date demonstrate the significant exploration potential of this land-holding for the low-cost discovery of additional uranium resources.

For a comprehensive view of information has been lodged on the ASX online lodgement system and the Company website please visit at [asx.com.au](http://asx.com.au).

## GENERAL INFORMATION

<b>ASX Symbol:</b>	EMA
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## DIRECTORS AND MANAGEMENT

The Hon. Cheryl Edwardes	Non-Executive Chairman
Mike Young	Managing Director and CEO
Julian Tapp	Executive Director
David Cornell	Non-Executive Director
Felicity Gooding	Non-Executive Director
Shane McBride	CFO and Company Secretary
Xavier Moreau	General Manager – Geology and Exploration

## PROJECT LOCATION

