

# MINING MANAGEMENT PLAN & PUBLIC REPORT EXPLORATION OPERATIONS

## *Bigirlyi Project & Ngalia Regional Project*

**Operator: ENERGY METALS LIMITED**

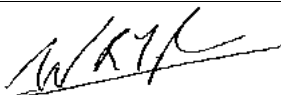

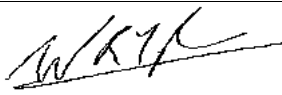
**Authorisation Number: 285-03**

**Period: November 2016 – November 2017**

**Submission Date: 12-December-2016**

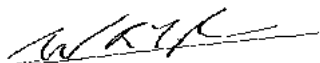
**Amendment Date: 9-June-2017**

### **MMP Endorsement:**

	<b>Author</b>	<b>Reviewed by</b>	<b>Approved by</b>
Date	9-Dec-2016	9-Dec-2016	9-Jun-2016
Name	Wayne Taylor	Matthew Blake	Wayne Taylor
Signature			

I Wayne Taylor (*name of approving person*) Exploration Manager (*position title*) declare that to the best of my knowledge the information contained in this mining management plan is true and correct and commit to undertake the works detailed in this plan in accordance with all the relevant Local, Northern Territory and Commonwealth Government legislation.

SIGNATURE:



DATE: 9-JUNE-2016

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## Amendments

As per Section 41(3) of the *Mining Management Act*, an MMP reviewed and amended under Section 41(1)(a) is to clearly identify amendments made. These changes are outlined in the table below.

Section	Amendment
General	Removal of EL30145/EL24804 from document, Change of JV partner from Paladin Energy Ltd to NT Uranium Pty Ltd.
1.1 Organisational Structure	Chart amended to include names against positions
2.3.2 Infrastructure Required	Bulk Diesel Storage comments
Attachment 1 Environmental Policy	Updated, signed and dated

## EXECUTIVE SUMMARY

The previous Mining Management Plan (MMP) for the Bigrlyi and Ngalia Regional Projects was submitted on 17 November 2015, and following a request for further information was re-submitted in revised form on 8 April 2016; subsequently the MMP was approved on 21 April 2016. An environmental bond of \$62,131 in place since 2015 was retained. Since this last authorisation, one new tenement has been granted within the Ngalia Regional Project and Energy Metals Ltd ('EME' or 'the Company') seeks to include this within the current MMP; an *Application for Authorisation* has been included with this MMP submission.

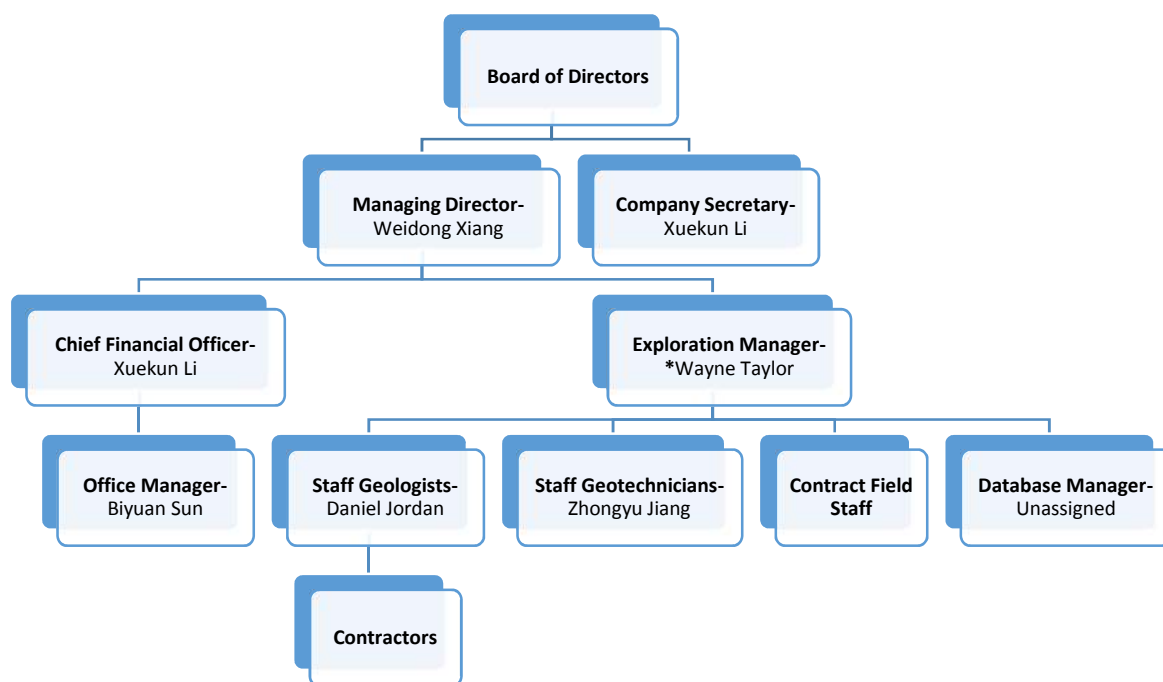
In 2016 the only ground disturbing works conducted involved a small drilling program (4 holes for 820m of mud-rotary and core drilling) undertaken at the Malawiri prospect on EL24451 and ELR41; the drill sites were fully rehabilitated in October 2016 following completion of the program. The rehabilitation progress of remedial earthworks conducted at Bigrlyi Anomaly-15 (ELR55) in August 2015 was monitored during the year. A Departmental environmental compliance audit was conducted in June 2016 and a number of compliance issues raised during the audit are discussed and addressed in this submission (see Appendix 8). Due to poor economic conditions in the uranium industry, Energy Metals' projects will remain on a minimum expenditure footing in 2017. The main proposed activities for 2017 are:

1. Monitoring and assessment of 2015 rehabilitation works completed at the Bigrlyi project and 2016 rehabilitation works completed at the Malawiri prospect;
2. Address compliance issues identified in the June 2016 Departmental audit including upgrade of Bigrlyi camp fuel storage tank to meet the Australian Standard;
3. A small RC drilling program is planned in 2017 on EL24453 and ELR45, accordingly EME wishes to carry over the previous MMP approval to drill 30 holes at the Penrynth prospect (EL24453) and 50 holes at the Walbiri prospect (EL24463/ELR45). Sufficient security bond monies are already in place to meet rehabilitation costs.

## 1.0 OPERATOR DETAILS

<b>Operator Name:</b>	Energy Metals Limited (ASX: EME)
<b>Key Contact Person/s:</b>	Wayne Taylor – Exploration Manager
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## 1.1 ORGANISATIONAL STRUCTURE / CHART



\*Exploration Manager is the designated Radiation Safety Officer (RSO).

## 1.2 WORKFORCE

Due to current market conditions and, in particular, the weak uranium price, exploration activities based out of either Bigrlyi camp or out of temporary camps at remote sites will be limited by budget constraints in 2017. Exploration in 2017 will be conducted on a campaign basis. Staff for exploration campaigns will generally consist of 1-2 geologists, 1-2 field technicians and contractors as required. The field crew fly into Alice Springs then drive to the field camp (approx. 400km by road). Outside exploration campaign periods, maintenance visits to camp by field technical staff will be undertaken on a regular basis.

Exploration campaigns may include drilling programs (RC, diamond core, aircore or rotary mud) and one drilling program is planned for 2017. The drill crew rosters are typically 3-4 personnel per shift, on a nominal 2 to 3 weeks on-site followed by a 7 to 10 day break.

Periodically, contractors, tradesmen (electrician, plumber, pest control etc.) and consultants will visit site for short durations for specific tasks.

During the wet season (December – March) Bigrlyi camp is normally closed.

## 1.3 IDENTIFIED STAKEHOLDERS AND CONSULTATION

The tenements are located on the Mt Doreen and Napperby Pastoral Leases. Other identified stakeholders include the Central Land Council, Ngalia (southern Walpiri) Native Title Holders and the Department of Primary Industry and Resources (DPIR).

Consultation is on an as needs basis engaging necessary stakeholders where appropriate. The Protocol in Attachment 1 forms the basis for the main environmental consultations. The local pastoralists are advised in advance of visits to site and planned ground disturbing exploration works. Energy Metals has a signed access agreement with the Mt Doreen Station & Napperby pastoralist's.

There is normally one annual visit to the exploration site by the Traditional Owners, usually a group of around 20 people with representatives of the CLC present. During these visits the planned exploration for the next 12 months is discussed and also any heritage issues are discussed with sufficient time given to plan heritage

surveys if required. In 2015 the annual meeting took place in Yuendumu due to the camp being closed. No meetings occurred in 2016 at Bigrlyi or Yuendumu due to the absence of exploration work in this area; a meeting with Traditional Owners took place at 10 Mile Outstation adjacent to the Malawiri prospect area in September 2016.

## 2.0 PROJECT DETAILS

### **Project Name: Bigrlyi and Ngalia Regional Projects**

*Authorisation: 0285-3*

- Ngalia Regional Project,
- Bigrlyi Joint Venture (BJV) including the Bigrlyi camp and core storage facility

The location of the Bigrlyi and Ngalia Regional projects are shown in Figure 1.

## 2.1 SITE LOCATION AND LAYOUT

### **Location:**

The Bigrlyi Project (BJV) is located on ELRs 46-55 and on ELs 30144 & 30689 approximately 350km NW of Alice Springs on the Mt Doreen Pastoral lease. Bigrlyi camp and core yard are located within the BJV tenement area on ELRs 50 and 51 (shown as 'Bigrlyi Project' in Figures 1 & 2 below).

The Ngalia Project is a large tenement package that includes granted ELs on pastoral leases along the northern and south-eastern margins of the Ngalia Basin from just north of Tilmouth Well in the east and westward from Yuendumu to the Vaughan Springs Homestead on Mt Doreen Station (Figures 1 & 2).

### **Site Access:**

Access to the Bigrlyi Camp and Ngalia Regional Project areas is on existing roads and tracks from Alice Springs. The route to Bigrlyi Camp is from Alice Springs along the Tanami Highway through to a junction 26km NW of Yuendumu then westward on the Vaughan Springs/Mount Doreen Station Road. In wet conditions access may not be possible due to flooding and difficult creek crossings (see Appendix 1 for a map of access routes).

Mt Doreen Station is notified of intended exploration activities and approval is normally given with the condition that vehicle movement be restricted if the roads are wet. Energy Metals has a letter agreement with the Mt Doreen pastoralist regarding access.

### **Mining Interests:**

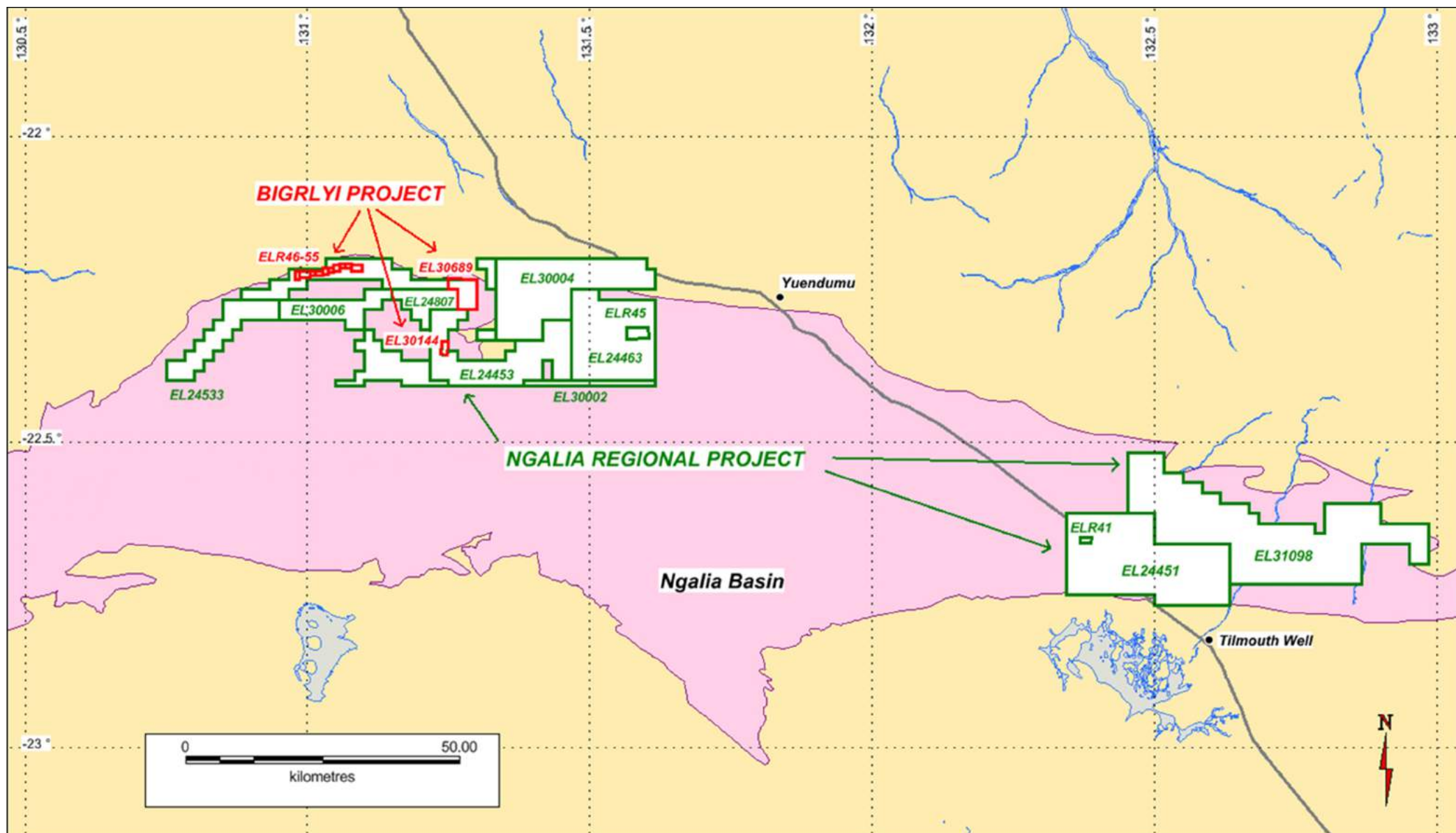
Table 1 below lists all the granted tenements which are covered by this MMP (see Figures 1 to 3 for their location). Maps showing access to exploration areas, significant topographic features, areas of current and future rehabilitation works, the general location of proposed exploration activities, exploration camp location and camp plan, plans showing proposed drilling areas for 2017, and areas of heritage significance are provided in Appendix 1 (note that all the features of the project cannot be shown on a single map alone and therefore a range of maps at different scales are provided). EME seeks to include one newly granted tenement with this MMP submission and has attached a signed *Application for Authorisation* form AF7-007.

**Table 1. List of the Energy Metals tenement holdings relevant to this MMP**

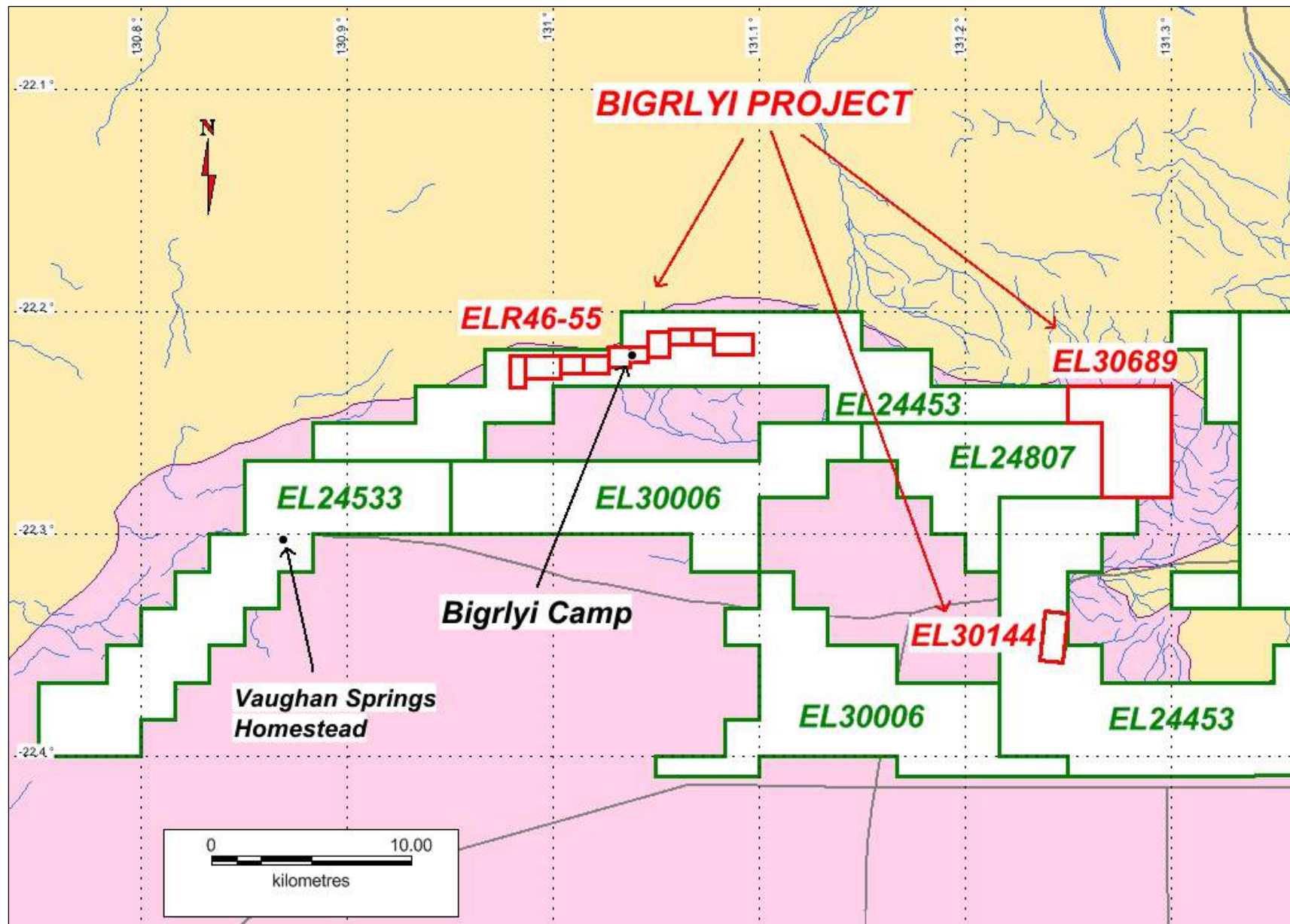
TENEMENT*	PROJECT	LOCATION	INTEREST	STATUS
<b>Northern Territory</b>				
EL24451	Ngalia Regional	Napperby	100%	Granted
EL24453	Ngalia Regional	Mt Doreen	100%	Granted
EL24463	Ngalia Regional	Mt Doreen	100%	Granted
EL24533	Ngalia Regional	Mt Doreen	100%	Granted
EL24807	Ngalia Regional	Mt Doreen	100%	Granted
ELR46	Bigirlyi Joint Venture	Mt Doreen	53.3%	Granted
ELR47	Bigirlyi Joint Venture	Mt Doreen	53.3%	Granted
ELR48	Bigirlyi Joint Venture	Mt Doreen	53.3%	Granted
ELR49	Bigirlyi Joint Venture	Mt Doreen	53.3%	Granted
ELR50	Bigirlyi Joint Venture	Mt Doreen	53.3%	Granted
ELR51	Bigirlyi Joint Venture	Mt Doreen	53.3%	Granted
ELR52	Bigirlyi Joint Venture	Mt Doreen	53.3%	Granted
ELR53	Bigirlyi Joint Venture	Mt Doreen	53.3%	Granted
ELR54	Bigirlyi Joint Venture	Mt Doreen	53.3%	Granted
ELR55	Bigirlyi Joint Venture	Mt Doreen	53.3%	Granted
ELR41	Ngalia Regional	Napperby	52.1%	Granted
ELR45	Ngalia Regional	Mt Doreen	41.9%	Granted
EL30002	Ngalia Regional	Mt Doreen	100%	Granted
EL30004	Ngalia Regional	Mt Doreen	100%	Granted
EL30006	Ngalia Regional	Mt Doreen	100%	Granted
EL30144	Bigirlyi Joint Venture	Mt Doreen	53.3%	Granted
EL30689	Bigirlyi Joint Venture	Mt Doreen	53.3%	Granted
EL31098	Ngalia Regional	Napperby	100%	Granted

\* EL = Exploration Licence (NT); ELR = Exploration Licence in Retention (NT).

The Bigirlyi Project is a Joint Venture covering ELRs 46 – 55, EL30144 and EL30689. The JV is between Energy Metals (53.3%), NT Uranium Pty Ltd (41.7 %) and Southern Cross Exploration (5%). Energy Metals is the Manager of the Joint Venture. ELR41 (Malawiri) and ELR45 (Walbiri) are separate joint ventures with NT Uranium Pty Ltd.

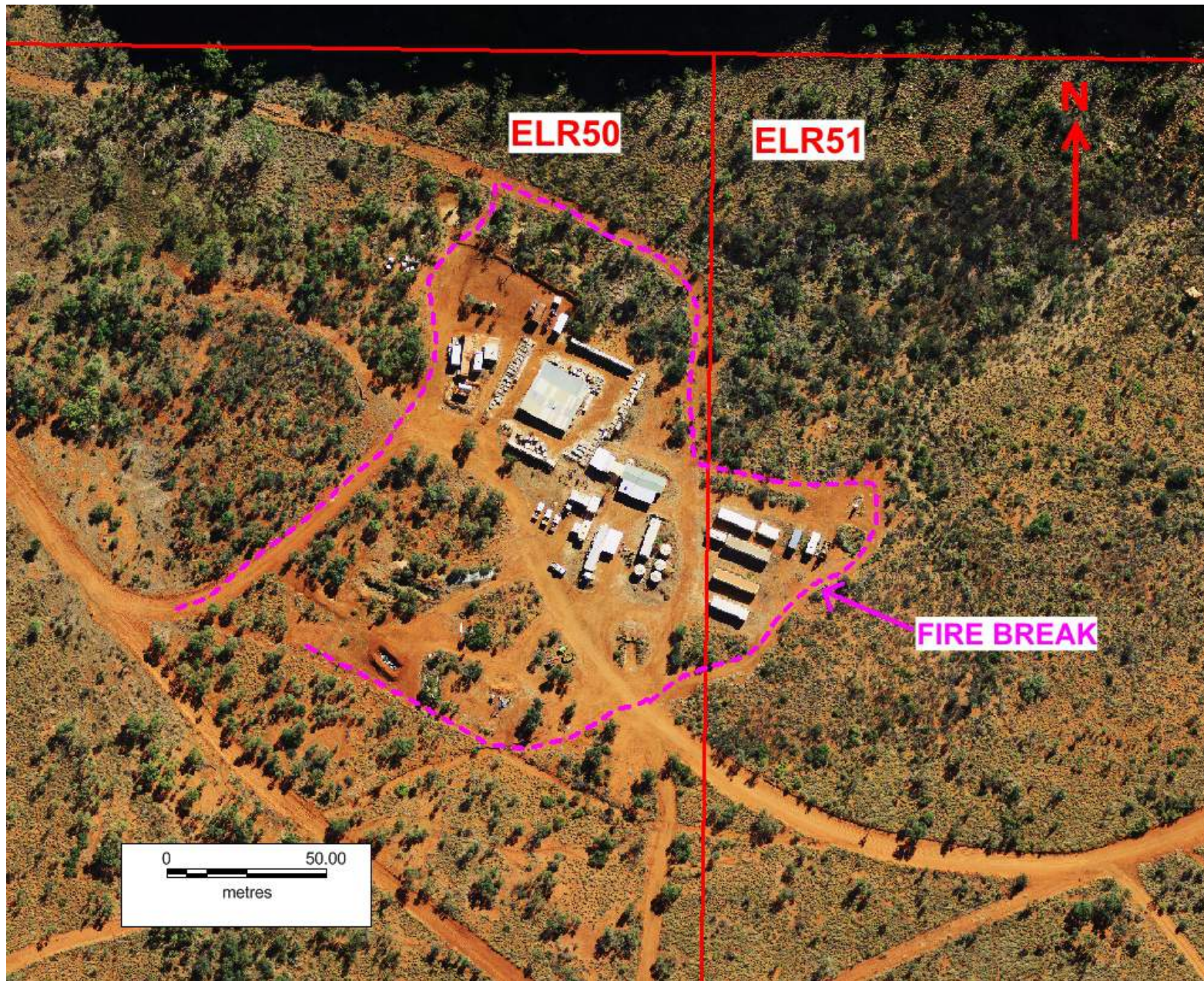


**Figure 1.** Bigrlyi and Ngalia Regional Project Location Map showing granted Ngalia tenements in green and granted Bigrlyi tenements in red. As at 16/03/2017.



**Figure 2.** Bigrlyi Joint Venture ELRs (46-55), EL30689 & EL30144 with Bigrlyi exploration camp location on ELR50/51 shown. As at 16/03/2017.





**Figure 3.** Aerial Photograph (August 2011) showing Bigrlyi Camp, fire breaks and road system. ELR50/51 Boundary also shown. Created 19/11/2014.



## 2.2 HISTORY OF DEVELOPMENT AND CURRENT STATUS

### Historical Mining

There has not been any historical mining on any of the tenements that constitute the Bigirlyi or Ngalia Regional Projects. Labels such as “Bigirlyi Mine”, “Dingos Rest Mine”, “Coonega Mine” etc. on the Mt Doreen 1:250,000 topographical map sheet are inaccurate as no mining actually took place at these sites. They are more correctly termed “Prospects”.

### Historical Exploration

The Bigirlyi uranium deposit (on ELRs 46 – 55) was discovered in the early 1970s by Central Pacific Minerals (CPM). The prospect was subject to a number of historic diamond and percussion drilling programs in the period 1974-1980. The original core yard and campsite was CPM’s main service site for the project in the 1970s; the core yard currently houses the remaining geological core record from both the Bigirlyi Project and the Ngalia Regional projects. Following incremental upgrades over the years since 2005, the Bigirlyi Camp is now used by Energy Metals as its main operational base in the Ngalia Basin. Since Energy Metals recommenced exploration at Bigirlyi in November 2005, 704 holes (both RC and diamond core) for 121,000 metres have been drilled up until 2013 and the resource base of the project more than tripled. With the exception of a few holes retained for diamond core tails or water bores, all holes and drill sites from the 2006-2013 period have been rehabilitated.

Within the Ngalia Regional Project area (see Table 1 for tenement list) there was sporadic exploration activity by several companies from the early 1960s to present. Some historical drill hole sites can be still be located on the ground; they are typically marked by a star picket and aluminium tag. Energy Metals drilling on the Ngalia Regional project ground in the period 2008-2013 amounted to 700 holes (aircore, RC and diamond core) for 55,000 metres; all holes and drill sites from the 2008-2013 period have been rehabilitated.

Due to depressed uranium market conditions and budgetary constraints, no ground-disturbing exploration works were conducted at either the Bigirlyi or Ngalia Regional Projects in 2014 or 2015. In 2016 a small drilling program of four holes was completed at the Malawiri prospect on EL24451 and ELR41 (Ngalia Regional project); the program was part of the CORE collaborative drilling and geophysics program which attracted partial funding from the NTGS; drill sites and access tracks were rehabilitated on program completion (see Appendix 9).

A summary table of 2016 rehabilitation activity within the Bigirlyi and Ngalia Regional Projects is given below in Table 2.

**Table 2. Summary table of 2016 exploration and rehabilitation activities.**

Mining Interests (i.e. titles)	ERL 46 – 55	EL24453	EL24533	EL24451 & ELR41
Number of holes drilled	0	0	0	4
Maximum depth of holes	N/A	N/A	N/A	250m
Number of drill pads cleared (Length: 20m x Width: 20 m)	0	0	0	4
Number of sumps constructed (Length: 3m x Width: 2m x Depth: 1.5m)	0	0	0	8
Length of track cleared (km) (blade up clearing only width approx. 3.5 m)	0	0	0	5.5
Number of costeans excavated (Length: x Width: x Depth: m)	0	0	0	0

Total bulk sample pits excavated (Length: x Width: x Depth: m)	0	0	0	0
New Camp area/s cleared	0	0	0	0
Length (km) of Exploration Tracks requiring rehabilitation (4 m width)	6.18	2.76	0	0
Length (km) of rehabilitated Explor- ation Tracks requiring monitoring	3.08	14.63	1.07	5.5
Drill pad area (hectares) rehabilitated this year	0	0	0	0.2
Total remaining disturbed area: camp, drill pads, tracks (hectares)	4.81	1.10	0	0
Drill holes plugged in 2016	0	0	0	4
Drill holes capped 2016 (water bores, future diamond tails)	0	0	0	0

Notes:

- Some drill pads require than 1 sump per hole.
- Tracks were cleared using blade-up clearing only, so they require little or no earthwork rehabilitation; historically tracks have undergone very successful natural re-vegetation and rehabilitation across several wet seasons and are the subject of monitoring.
- All pre-2013 drill pads and collars have been rehabilitated with the exception of some holes retained for diamond tails or water bores.
- No new modifications or site works to the Bigirlyi Exploration Camp were carried out during the reporting period. The total disturbed and semi-disturbed area of the Bigirlyi Exploration Camp is currently **2.0 ha**.

### Material Reserves/Target Materials/Minerals

Exploration is being conducted for uranium and vanadium. The current resource estimate (June 2011) for the Bigirlyi deposits is detailed in the Mineral Resource table below (Table 3). Energy Metal's strategy is to increase the resource base by infill drilling the current resource and by further drilling at historical and new prospects in the region.

At a cut-off grade of 500ppm  $U_3O_8$ , the Bigirlyi Mineral Resource totals 9,600 tonnes of  $U_3O_8$  (21.1 million pounds) and 9,000 tonnes of  $V_2O_5$ , with 66% of the contained uranium metal (or 6,400t  $U_3O_8$ ) reporting to the Indicated Resource category.

**Table 3:** Resource Summary for Bigirlyi JV. Tonnes are metric (2204.62 pounds).  
(Figures may not total due to rounding; reported under JORC 2004).

Resource Category	Tonnes (Millions)	$U_3O_8$ (ppm)	$V_2O_5$ (ppm)	$U_3O_8$ (t)	$V_2O_5$ (t)	$U_3O_8$ (Mlb)	$V_2O_5$ (Mlb)
<b>Indicated</b>	4.7	1,366	1,303	6,400	6,100	14.0	13.4
<b>Inferred</b>	2.8	1,144	1,022	3,200	2,900	7.1	6.3

An Initial Scoping Study (June 2011) assessed resource exploitation using conventional open pit and underground mining methodologies. An indicative mine schedule suggests a mine life of 8 years. Key features of this schedule include:

- Life-of-Mine ROM ore production of 2.73Mt @ 1,474ppm  $U_3O_8$  and 1,654ppm  $V_2O_5$ , of which 76% is sourced from open pit operations;
- Achievement of treatment plant name plate throughput in the second year of mine operations; and,
- Commencement of underground development and completion of open pit activity in the third and fifth years of mine operations respectively.

In February 2014, Energy Metals announced Mineral Resource estimates for three satellite deposits located in proximity to the Bigrlyi deposit within the Ngalia Regional Project area on EL24453 (Table 4). The combined resources amount to 626 tonnes U<sub>3</sub>O<sub>8</sub>.

**Table 4:** Mineral Resource Estimates for the Camel Flat, Anomaly 15 East and Bigwest Deposits.

Deposit	Cut-off U <sub>3</sub> O <sub>8</sub> (ppm)	Resource Category	Tonnes Kt	U <sub>3</sub> O <sub>8</sub> ppm	U <sub>3</sub> O <sub>8</sub> (tonnes)
Camel Flat	100	Inferred	211.3	1,384	292

Deposit	Cut-off eU <sub>3</sub> O <sub>8</sub> (ppm)	Resource Category	Tonnes Kt	eU <sub>3</sub> O <sub>8</sub> ppm	eU <sub>3</sub> O <sub>8</sub> (tonnes)
Anomaly 15 East	100	Inferred	142.0	1,320	187
Bigwest	100	Inferred	407.3	362	147

The Mineral Resources have been classified and reported in accordance with JORC (2012) requirements.

The Cappers Deposit, located approximately 180km to the NW of Alice Springs and 150km to the SE of the Bigrlyi deposits on EL24451 was identified from airborne radiometric surveying. This mineralisation is hosted in calcrete, sands and clays within near-surface cover sequences. An inferred resource estimate, completed in early 2010, comprises 22Mt at 145ppm U<sub>3</sub>O<sub>8</sub> for 3,200t or 7M lb. of contained U<sub>3</sub>O<sub>8</sub> at a 100ppm cut-off.

In October 2015, Energy Metals announced Mineral Resource estimates (Table 5) for the historic Walbiri prospect and adjacent satellite deposits: Sundberg and Hill One; located east of Bigrlyi (Figure 4). The Mineral Resources have been classified and reported in accordance with JORC (2012) requirements.

**Table 5: Estimate of JORC Mineral Resources for Walbiri and Satellite Deposits\***

Category	Deposit	Volume '000 m <sup>3</sup>	Tonnes '000 t	Grade		Mineral Resources	
				U <sub>3</sub> O <sub>8</sub> ppm	U %	U <sub>3</sub> O <sub>8</sub> Mlb	U <sub>3</sub> O <sub>8</sub> tonnes
Inferred	Hill One	192	494	321	0.027	0.350	159
Inferred	Walbiri	4,274	10,983	641	0.054	15.514	7,037
Inferred	Sundberg	391	1,005	259	0.022	0.574	260
<b>Inferred</b>	<b>Total</b>	<b>4,857</b>	<b>12,482</b>	<b>597</b>	<b>0.051</b>	<b>16.438</b>	<b>7,456</b>

\* Energy Metals' interest in the total resource is 74.4%.

## 2.3 PROPOSED ACTIVITIES 2017

### Drilling Programs and other Ground-Disturbing Works

Due to the depressed economic climate for uranium explorers and hence restricted exploration budgets Energy Metals Ltd (EME) does not propose to undertake any ground-disturbing exploration activities at the Bigrlyi Project in 2017. However, rehabilitation works that will involve use of earth-moving machinery may be required within the BJV tenements in 2017 following re-assessment of earlier rehabilitation works (see Appendix 9).

In the 2015 & 2016 MMPs, EME sought approval for 120 holes for approx. 12,000m drilling at prospects within the Ngalia Regional Project area (see Table 1, Figure 4). MMP approval was given and a \$62K security bond was paid. Due to poor economic conditions all the proposed drilling programs could not be undertaken in 2016 and EME wishes to carry over the previously approved drilling into 2017 and beyond.

In 2017, Ngalia Regional Project work will consist of approximately 5,000m RC drilling targeting the Walbiri and Penrynth prospects. A small rotary mud (RM) drilling with diamond tails was completed in 2016 on ELR41 and EL24451. Drill areas are outlined in Appendix 1.

Any clearing will be the minimum required and will be mostly confined to blade-up clearing to reduce the environmental impact. Due to the sparse nature of vegetation on some of the drill sites, it is expected that the clearing will only consist of removal of spinifex to reduce the fire risk around the machinery. Mature trees will be retained and drill holes moved to preserve trees. A grader or loader may be required on occasion to re-furbish existing tracks. A number of historical exploration access tracks, which date back to the 1970s; were retained as access routes by the landowner (pastoralist). Historical tracks not maintained by the pastoralist, while still visible and passable in a light vehicle (4WD), have shown significant vegetation regrowth since the tracks were created.

Most areas will be accessed by driving over existing tracks and then onto side tracks to the actual drill site. In some cases the presence of heritage areas/sacred sites may not allow the most direct access. Side tracks will be made simply by driving over low vegetation and/or by minor blade-up clearance with a backhoe or loader; they will be constructed in such a way as to minimise the risk of water channelling and any windrows created will be graded back onto the track during rehabilitation. These tracks will be rehabilitated on completion of the exploration activities. All track rehabilitation will be conducted in consultation with the pastoralist.

### **Sampling methodology**

The sampling methodology for RC drilling involves the collection of the entire metre drill spoil sample in biodegradable bags (calico or hessian); plastic bags are not used except in special circumstances. Dust suppression is via water injection at the rig cyclone. Once any required sampling has been completed, the bagged drill spoil sample is buried in the drill sump pit or in a specially prepared pit according to the company's Radiation Management Plan (RMP) and DPIR guidelines. Any samples in plastic bags are emptied into the disposal pit and the plastics are compressed and stored in the core yard to await later disposal. Compressed bales of used plastic bags from the 2009-2011 drilling programs are stored in the core yard.

### **Drill Water Sumps**

Sumps are constructed with egress slopes, however, in the past animals have accessed the sumps and become trapped in mud in the base of the sumps. To avoid this problem, drill sumps are now made inaccessible to animals by temporarily fencing off sumps that contain water.

Any sumps that are dry or contain only minimal water are backfilled as soon as possible (usually within a week) after the drilling has been completed. EME uses un-lined sumps to allow any water to drain away more quickly and therefore minimise the time that sumps are left open and requiring temporary fencing.

### **Rehabilitation Works – Drill Sites**

Initial rehabilitation of drill sites are generally completed within 4 weeks of the completion of the drill hole, subject to weather conditions. The cutting and burial of the drill collars will depend on the results from the down-hole probe and geochemical analysis, which will determine if there is a requirement to re-enter the hole. The final drill site rehabilitation is expected to be completed within 3 months of completing a drill hole or as soon as possible after the drill hole location has been accurately determined by DGPS surveying. However, if the hole is located within a mining resource area the drill collar may need to be retained to allow access; in this case the collar will be appropriately capped. Drill site rehabilitation consists of:

- Burial of samples in biodegradable bags
- Backfilling the drill water sump/sample disposal pit
- Cutting and burial of the drill collar in accordance with DME requirements
- Ripping the drill pad (as required)
- Spreading of any stockpiled top soil and vegetation over the drill pad
- Pre- and post-rehabilitation radiation measurements and photographs

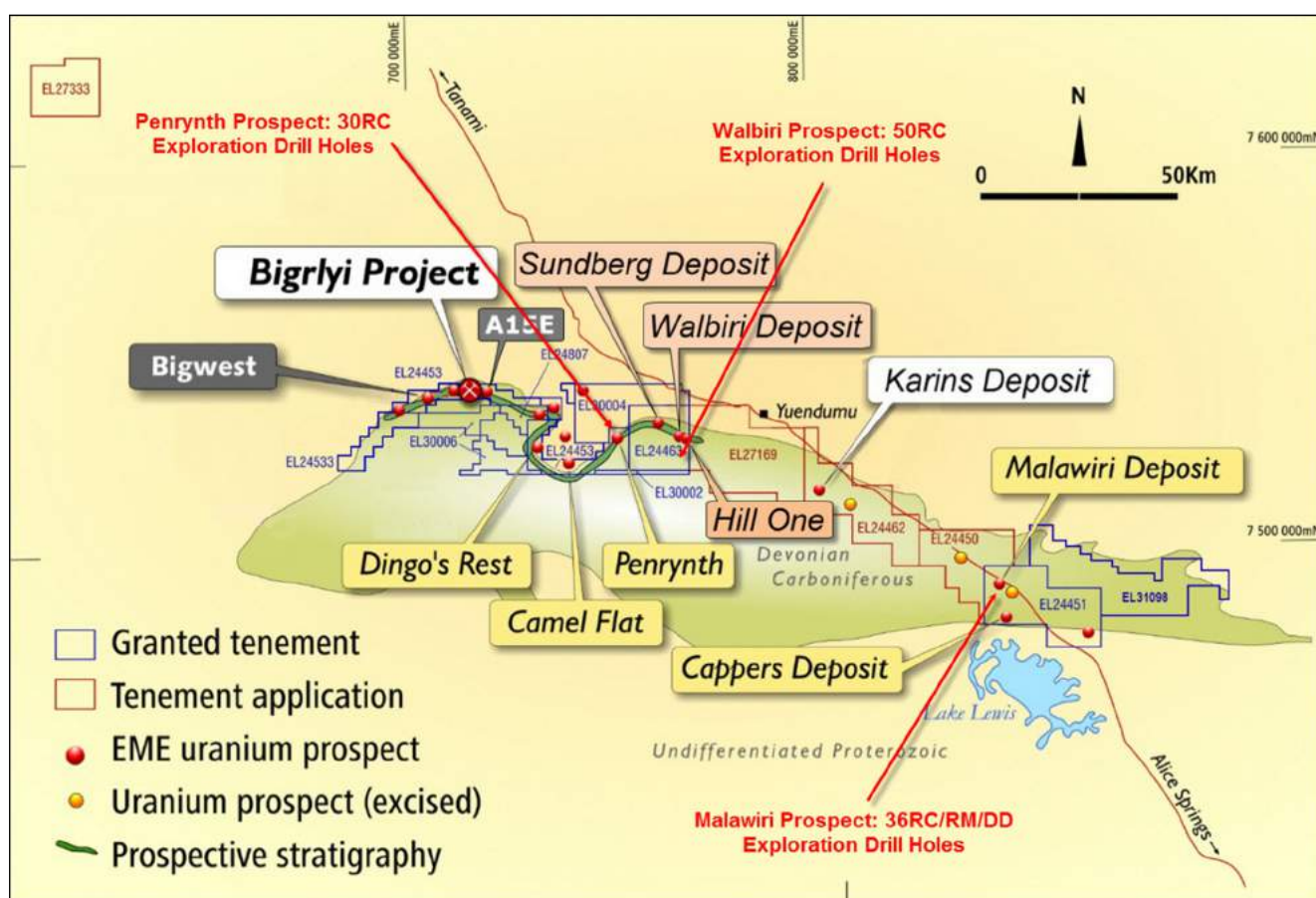
### Core Yard

The core yard is utilised for storage of radioactive core samples and mineralised drill spoil samples in a secure manner, in accordance with the company's Radiation Management Plan. The core yard was upgraded in 2012 with a new perimeter fence constructed; no works are planned for the core yard in 2017 except for regular maintenance including replacement of termite damaged pallets.

### Bulk Fuel Facilities Upgrade

In 2017 Energy Metals is committed to replacement of the camp bulk fuel storage tank with a self-bunded cube-style tank that meets the Australian Standard AS1940:2004 "Storage and Handling of Combustible and Flammable Liquids" (see Appendix 8). Energy Metals has obtained permission of Joint Venture partners Paladin Energy (Now NT Uranium Pty Ltd) to proceed with the replacement. The proposed works will include:

- Decommissioning of the current camp tank;
- Removal and disposal of any contaminated soil;
- Construction of appropriate perimeter fencing to prevent entry of stock or native animals into the re-fuelling area;
- Installation of the new tank within the perimeter.



**Figure 4** – Drill target areas for Ngalia regional project with number of holes to be drilled indicted (RC=reverse circulation, RM=rotary mud, DD=diamond core). The original plan from 2014 was partially implemented in 2016 (with 4 holes of the proposed 40 drilled at Malawiri prospect); the remainder of the planned drill holes will be carried over to the 2017 program (and beyond).

### 2.3.1 Exploration Schedule

The drilling programs are expected to occur during the months of April – November and in 2017 it is most likely the program will occur in the July to September period subject to budget approvals. Preparation work and ongoing rehabilitation work will occur prior to, during and after completion of the drilling program. The proposed schedule of activities by tenement is shown in Table 6.



Field geochemical sampling, radiometric surveying and mapping/prospecting are ongoing. These activities are planned to operate in parallel with the drill programs.

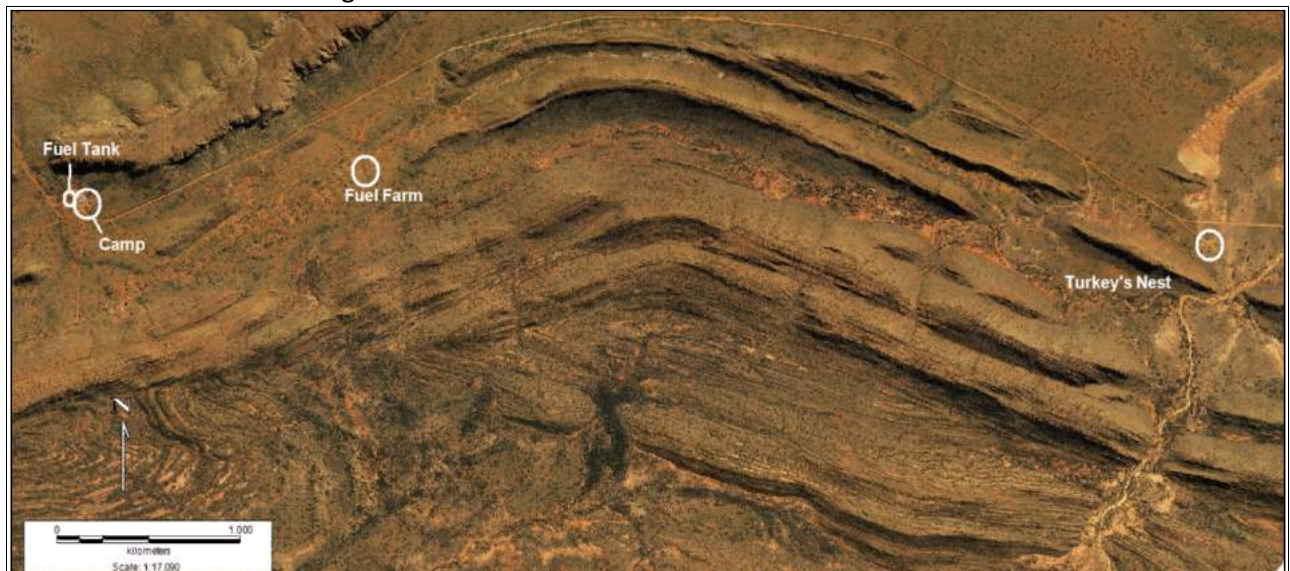
Environmental baseline studies (groundwater, flora/fauna, air quality, socioeconomic) and metallurgical test work programs are currently (from November 2014) suspended due to budgetary constraints.

### 2.3.2 Infrastructure Required/Camp Infrastructure & Location

The current exploration camp is the main service and operational centre for Energy Metals' Bigrlyi and Ngalia Regional project exploration programs. Some of the regional field activities for remote exploration may require temporary fly camps or for work on EL24451 may be based out of Tilmouth Well Roadhouse.

**Water Supply.** Water is currently carted from the Vaughan Springs Homestead under commercial contract from the pastoralist of Mt Doreen Station (Figure 2) for use in the camp/core yard, for machinery, washing and ablutions. Drinking water is purchased from the supermarket in Alice Springs. Drilling water and water for decontamination is obtained from a bore at the Turkey's Nest (Figure 5).

The Turkey's Nest is located at 716105E 7541530N (MGA 94, Zone 52) (see Figures below). A flow meter to track water usage was installed in September 2012. A total of 24.6 kilolitres of water was extracted from the bore from September to December 2012. From January 2013 until November 2014 the usage was 539.7 kilolitres. No usage was recorded for 2015 or 2016.



**Figure 5.** Location of fuel depots with respect to camp plus drilling water source at the Turkey's Nest

Any significant water yields discovered in exploration drill holes located in proximity to the camp or near the proposed site of future processing facilities are tested to determine if the water is of potable quality or suitable as process water. In 2016 no testing of ground water was undertaken. Refer to Section 4.1.4 for information regarding management of potentially contaminated waste water at site.

**Camp Plan.** The Bigrlyi camp is comprised of two ablutions blocks, a kitchen, dining / TV room, office / 1<sup>st</sup> aid room, 7 'donga' blocks for around 26 people, workshops, storage sea containers, core yard, lay down and service areas, fuel tanks, generator, rubbish and radiation contamination pits. The current camp plan is shown in Appendix 1. No changes to camp infrastructure were made in 2016.

**Bulk Diesel Storage.** Two bulk fuel tanks of total 40,000 litres capacity are located at the Fuel Farm on ELR52. Prior to 2015 these tanks were used for high fuel usage requirements (drill rigs, earthmoving equipment etc.), however, the tanks were emptied in 2015 as they do not meet the current Australian Standard for fuel storage. EME has given a commitment that these tanks will not be used in the future. They are owned by a fuel supplier under a commercial contract and if exploration work resumes at the Bigrlyi project in the future, the tanks will be replaced with a modern self-bunded storage system under a new contract; Energy Metals is unable to provide a specific date or a time frame for exchange of the tanks



at present as the resumption of exploration work is dependent on economic factors outside the control of the Company. The camp fuel tank (14,000 total capacity for light vehicle re-fuelling and camp generator use) is scheduled for replacement in 2017 (see above).



**Figure 6.** Fuel farm view looking north (2013) showing earthen bunds (the facility is not in use and will be replaced in the future).



**Figure 7.** Turkey's Nest (fenced) looking southeast (2013).



**Figure 8.** Camp fuel tank within earthen bund (2016).



**Table 6: Exploration Activity Proposed - Tenement Summary for 2017.**

	Mining Interests (i.e. titles)							
	ELR 46 – 55	EL24453	EL24533	EL24463 ELR45	EL24451 EL31098 ELR41	EL24807	EL30002 EL30004 EL30006	EL30144 EL30689
<b>What time of the year will ground disturbing exploration occur?</b>	None planned for 2017	April - November	None planned for 2017	April - November	None planned for 2017	None planned for 2017	None planned for 2017	None planned for 2017
<b>How long is exploration expected to occur?</b>	N/A	2 weeks	N/A	2 weeks	N/A	N/A	N/A	N/A
<b>Type of drilling (i.e. RAB, RC, Diamond, aircore)</b>	No drilling	RC	No drilling	RC	No drilling	No drilling	No drilling	No drilling
<b>Target commodity</b>	N/A	Uranium	N/A	Uranium	N/A	N/A	N/A	N/A
<b>Is drilling likely to encounter radioactive material?</b>	N/A	Yes	N/A	Yes	N/A	N/A	N/A	N/A
<b>Number of proposed drill holes</b>	N/A	30 RC	N/A	50 RC	N/A	N/A	N/A	N/A
<b>Maximum depth of holes</b>	N/A	300	N/A	300	N/A	N/A	N/A	N/A
<b>Number of drill pads (Length: 20 x Width: 20 m)</b>	N/A	30	N/A	50	N/A	N/A	N/A	N/A
<b>Is drilling likely to encounter groundwater? (Y, N, unsure)</b>	N/A	Yes	N/A	Yes	N/A	N/A	N/A	N/A
<b>Number of sumps (Length: 3 x Width: 3 x Depth: 1.5 m)</b>	N/A	30	N/A	50	N/A	N/A	N/A	N/A
<b>Length of line / track clearing (Kilometres: x Width: 3.5m)</b>	N/A	2.0km	N/A	1.0km	N/A	N/A	N/A	N/A
<b>Number of costeans (Length: x Width: x Depth: m)</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Total bulk sample (tonnes) (Length: x Width: x Depth: m)</b>	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Will topsoil be removed for rehabilitation purposes?</b>	Yes	Yes	N/A	Yes	N/A	N/A	N/A	N/A
<b>Previous disturbance yet to be rehabilitated on title (ha) if known</b>	4.6*	1.1**	0	0	0	0	N/A	N/A
<b>Camp (Length: x Width: m)</b>	150m x 135m	N/A	N/A	N/A	N/A	N/A	N/A	N/A
<b>Total disturbed area planned for 2017 (hectares)</b>	0	1.2	0	2.0	0	0	0	0

\*Camp & fuel farm 2.13Ha, Tracks 2.47Ha; Drill pads 0.22Ha \*\*Tracks 1.1Ha.

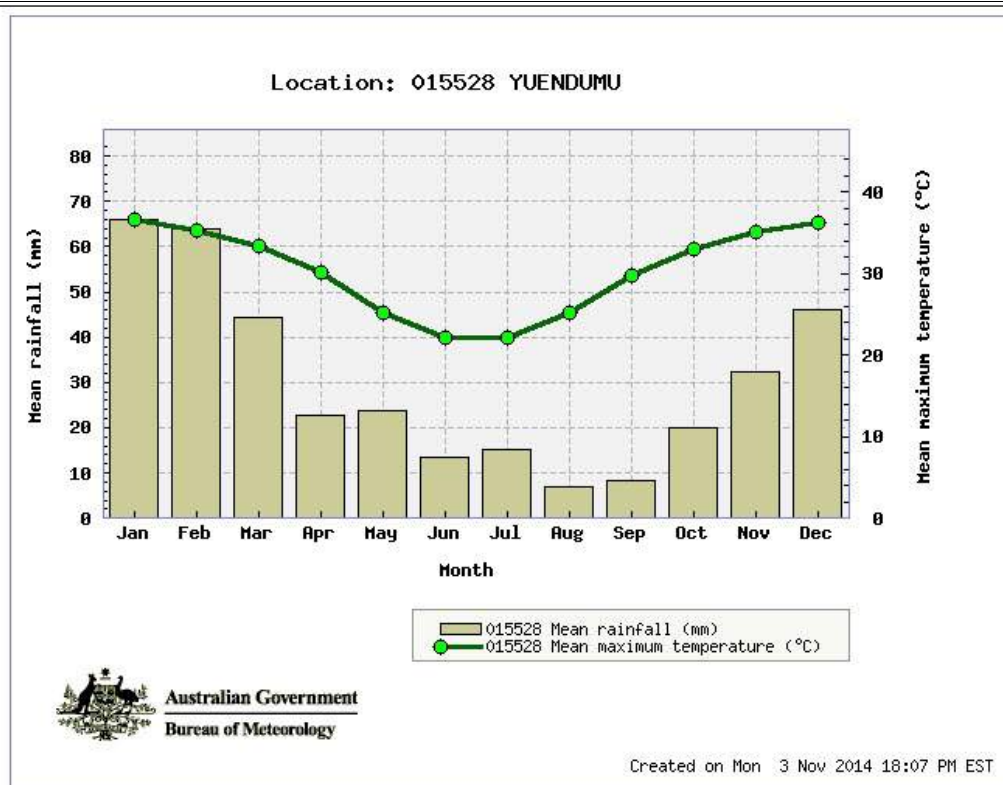
Note: Refer Table 2 above for rehabilitation status

### 3.0 CURRENT PROJECT SITE CONDITIONS

**Table 7. Site Conditions**

Site Conditions	Description
<b>Geology</b>	The Ngalia Basin is approximately 300km long and 70 km wide within the Northern Arunta Province in the central-south of the Northern Territory. The Ngalia Basin is an asymmetric synclinorium with a steep, tectonised northern boundary and a shallow northerly dipping unconformity forming the southern basin boundary.

	<p>Unconformably overlying the Arunta Inlier are the Neoproterozoic and Palaeozoic sedimentary sequences of the Ngalia Basin.</p> <p>The Neoproterozoic basin sediments are dominantly fluvial to shallow marine quartz sandstones, shales, mudstones, conglomerates, dolomites and tillites and are between 2,000 and 3,000m thick, has been subdivided into five formations.</p> <p>In the Cambrian, Ordovician and Devonian three further sequences of shallow marine to fluvial sediments, were deposited for a total thickness of approximately 2,000m.</p> <p>Deposited on all underlying Ngalia Basin units is the Devonian to Carboniferous sedimentary sequence, the Mount Eclipse Sandstone. The Mt Eclipse sandstone is up to 3,000m thick.</p> <p>In the vicinity of the Bigrlyi uranium deposits the Mount Eclipse Sandstone overlies the Neoproterozoic age Vaughan Springs Quartzite, which is the lowest unit of the Ngalia Basin.</p> <p>Numerous geological investigations have been undertaken in the Bigrlyi and Ngalia Regional Project areas. The Mt Eclipse sandstone has had several informal stratigraphic definitions, the most commonly used is the column based on the 1970s work done by Central Pacific Minerals. This column consists of eight separate units, designated H to A, defined upwards from the base of the Formation, as follows:</p> <p>Unit H the lowermost unit is a basal boulder conglomerate 10m to 30m thick.</p> <p>Units G and E combined, varies from 65m to 395m thick and consists of fine to medium micaceous sandstone dolomite, quartz sandstone, pebble sandstone and arkosic sandstone.</p> <p>Unit D, from 10m to 100m thick, consists of medium-grained grey and red, feldspathic sandstone, and contains uranium mineralisation at several locations.</p> <p>Unit C, the principal host for uranium mineralisation at Bigrlyi, ranges from 20m to 200m thick. The unit consists of white to grey feldspathic sandstone, shale clasts and abundant carbonaceous material. Uranium mineralisation occurs principally towards the base of this unit.</p> <p>The surface uranium mineralisation is carnotite, whilst at depth and below the water table, uranium is present as uraninite and coffinite.</p> <p>Units B (40-100m thick) and Unit A are both red to brown sandstones with the former unit usually being carbonate rich</p>
<p><b>Hydrology</b></p>	<p>The company is not aware of any significant hydro-geological features contained within the project areas. The desktop soil and hydrology reports from the PFS completed March 2011 are available on request.</p> <p>Limited previous drilling did not report significant ground water. All current and future drilling will take note of the approximate water levels in holes.</p> <p>Initial environmental baseline studies include desktop groundwater and surface water studies. The report from this study is available on request.</p> <p>Exploration activities are dominantly undertaken in areas of shallow slopes, erosion via water flow is controlled by limiting vehicle movement when the ground is wet and also ensuring that any tracks are constructed to ensure water flow is controlled during rainfall events.</p> <p>The general climatic conditions for the site are comparable to the conditions at the closest Bureau of Meteorology weather station at Yuendumu and shown in the graph below. Average rainfall of 360mm has been measured at this locality (see figure below of Yuendumu Climatic statistics).</p>



Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Years
Mean rainfall (mm) for years 1952 to 2014	66.0	63.8	44.4	22.8	23.7	13.4	15.2	7.1	8.2	20.0	32.3	46.0	361.8	62
Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Years
Mean maximum temperature (°C) for years 1965 to 2014	36.6	35.2	33.4	30.1	25.2	22.1	22.1	25.2	29.7	33.0	35.1	36.2	30.3	46

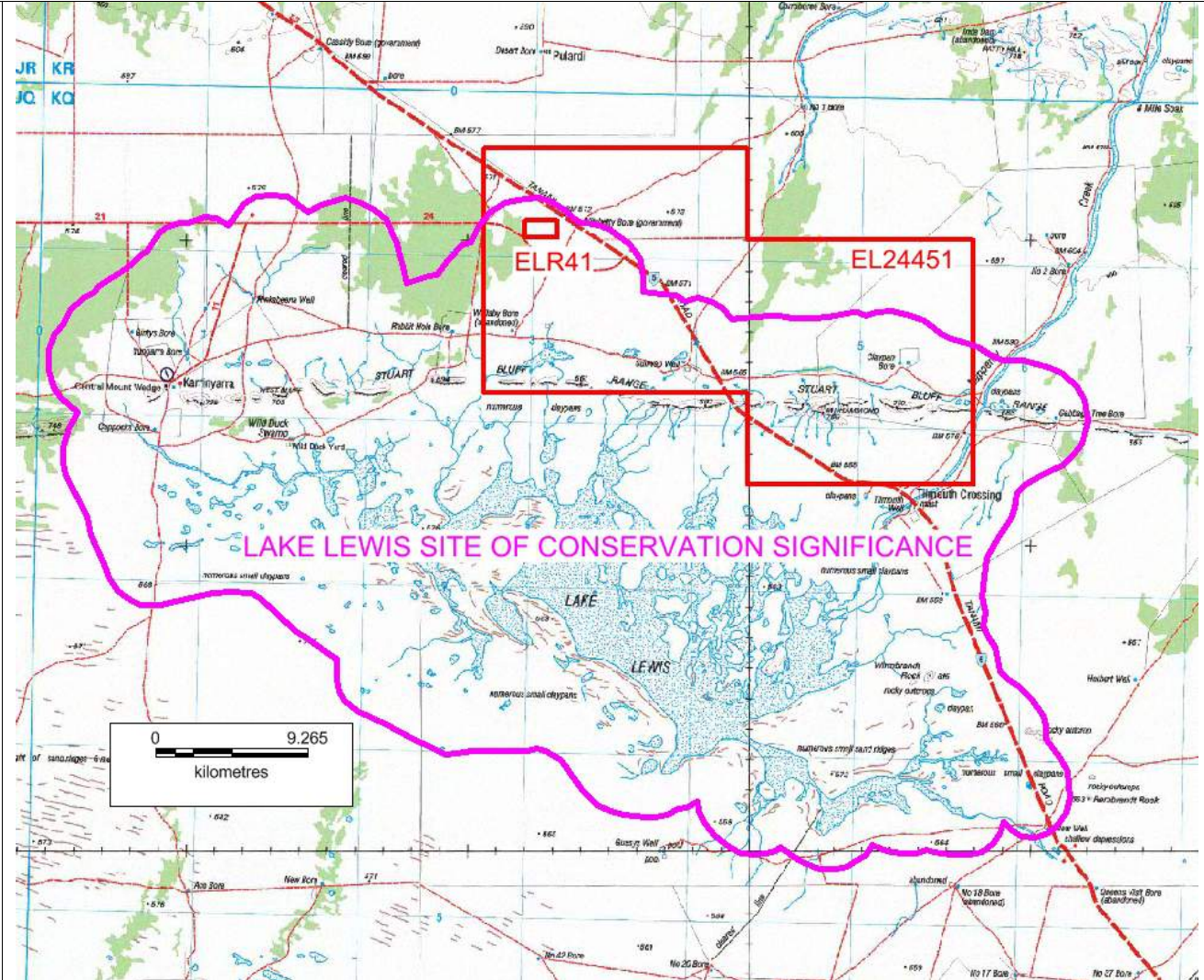
## Flora and Fauna

The sand plains of the Ngalia Basin are dominated by spinifex and mallee, small trees and shrubs may be locally abundant. The vegetation around the Biglyi project is dominated by spinifex/mallee on the sand plains; acacia (mulga) and small eucalypt trees and shrubs are more common in the vicinity of sandstone hills. Two threatened species that have been identified in the region, including *Ardeotis australis* (Australian Bustard) and *Dasycercus cristicauda* (Crest-tailed Mulgara, also called Ampurta). Threatened Species Information sheets for the two species and the Conservation Values and Environmental Resources of the Burt Palin Bioregion are attached (Attachment 2).

There have been no matters of national environmental significance identified in accordance with the Environmental Biodiversity Protection and Conservation Act (EBPC Act)

Cattle graze in some areas, however, drilling activities have a negligible effect on their daily activities. Initial environmental baseline studies for flora, fauna and dust commenced in 2010 and have been ongoing during 2011. A warm weather baseline flora and fauna survey was completed in early 2014 and the results of this study have been provided previously.

Part of EL24451 and all of ELR41 lies within the large Lake Lewis Site of Conservation Significance (see figure below). Four threatened fauna species are recorded from this site: Australian Bustard *Ardeotis australis*, Emu *Dromaius novaehollandiae*, Brush-tailed Mulgara *Dasycercus blythi*, & Southern Marsupial Mole *Notoryctes typhlops*. Two plant species reported from this site have restricted ranges (*Swainsona cyclocarpa* & *Daviesia eremaea*) and one, *Schoenus centralis*, is reported as a 'relictual sedge', however, none of these have a "Significant" ranking. Although wetland areas are ranked as being of "National Significance" the northwest parts of EL24451 and ELR41, the subject of drilling operations by EME, occur on sand plain in the vicinity of the Tanami Highway and are not associated with any saline lakes or drainage systems of significance (see Attachment 2 for further information).

	
<b>Topography</b>	<p>The entire project area is vast, with the Ngalia Regional project dominated by flat sand plains with minor ridges of outcropping sandstones and quartzite. The Bigrlyi project, located on the northern edge of the Ngalia basin, comprises generally flat sandy plains abutting rugged sandstone/quartzite hills. The ridges are around 20 - 50m above the surrounding sand plains. The Bigrlyi Project lies immediately to the south of the Treuer Range that marks the north-western edge of the Ngalia basin.</p>
<b>Land Use</b>	<p>The grazing of cattle within the granted tenements is the main land use. The pastoral lease holders are consulted in relation to the exploration activities. The Traditional Owners have access to the area through the various tracks and roads, however, they infrequently travel away from the main access roads between the remote communities</p>
<b>Historical, Aboriginal, Heritage Sites</b>	<p>A portion of the Ngalia Project area (EL24533, EL24453 and EL24463) is subject to an exploration agreement (dating from 2005) between Energy Metals Limited and the Central Land Council regarding the conduct of exploration activities within these titles. This agreement defines the areas where drilling can be undertaken and CLC recommended heritage zones where ground-disturbing operations are restricted. Heritage areas are detailed in Appendix 1. The Bigrlyi project (ELRs 46-55) is subject to a later (2008) agreement with the CLC.</p> <p>Heritage surveys have been conducted and consultation occurred with Traditional Owners in 2006-2008 to determine that there are no sites of significance in ELR 46-55, EL24463, EL24451, EL24807 and parts of EL24453 within drilling areas. Further heritage surveys will be conducted as required.</p> <p>The latest search of the AAPA register was undertaken for the tenement area in mid-2015 and various sites have been noted (see Attachment 6). In mid-2014 several AAPA sacred site surveys were conducted on new ELs and ELRs and the extents of several known sites were defined.</p>

## 4.0 ENVIRONMENTAL MANAGEMENT SYSTEM / PLAN

### 4.1 ENVIRONMENTAL MANAGEMENT PLAN

#### 4.1.1 Water Management

The water management system complies with N.T. Department of Health guidelines. Drilling water is sourced from Mt Doreen Station, from the Turkey's Nest or from local water bores. Records of the volume of water extracted are kept.

During drilling operations water generated is managed according to the drilling type:

RAB Drilling: Insignificant water is expected during this type of drilling. Water management is therefore expected to be negligible. Photos of the sites will be taken prior to and after drilling operation to compare site visuals.

RC Drilling: Significant water inflows can be expected in some RC holes and these will be channelled away from the drilling rig into small sumps on a downward slope from the drill hole. Water filled sumps are fenced prior to rehabilitation. After the hole is completed and rehabilitation of the drill site is commenced, the sump is backfilled to as near to the original ground conditions as possible. Photos of the sites will be taken prior to and after drilling operation to compare site visuals. As an earthmoving contractor is always on site during drilling operations any excessive water in-flows will be accommodated by construction of additional sump(s).

Diamond Drilling/Rotary Mud: Significant water in-flows can be expected in some holes and these will be channelled away from the drilling rig into small sumps on a downward slope from the drill hole. After the hole is completed and rehabilitation of the drill site is commenced, the sump will be backfilled to as near to the original ground conditions as possible. Photos of the sites will be taken prior to and after drilling operation to compare site visuals.

#### 4.1.2 Invasive Species Management

Vehicles mobilise from Alice Springs. Checks will be made to ensure they are clean upon mobilisation. Vehicle wash-down equipment is available on site.

Vegetation management, to reduce the risk of fire, is completed around the Bigirlyi camp by weed spraying.

Personnel undertake both pest (fauna) and termite inspections with annual spraying and baiting by pest control contractors.

Identification of invasive species is a part of the general site induction with advisory notes and posters on noticeboards.

The following four species have been noted as being noxious weeds in the Alice Springs region:

Athel Pine (*Tamarix aphylla*)

Rubber Bush (*Caloropis procera*)

Mexican Poppy (*Argemone ochroleuca*)

Saffron Thistle (*Carthamus ianatus*)

No declared weeds have been identified around any of the exploration activities or the exploration camp. Buffel grass has been noted at camp and this is managed by regular weed spraying around buildings. However, Buffel grass is not a declared weed in the NT. A vegetation inspection survey was conducted in November 2014 (see Attachment 4).

#### 4.1.3 Flora and Fauna Management

EME adopts a small 'footprint' approach to drilling operations. Minimal vegetation clearance is required for the proposed programs. Most drilling areas will be accessed by driving on existing tracks and then onto side tracks to the actual drill site. Areas requiring new tracks are usually made by simply driving machinery over areas of low vegetation to reach the drill sites or by blade-up clearance where necessary. In this way potential site erosion is minimised. Water-filled drilling sumps are fenced off to prevent entry by stock or large native fauna.

#### 4.1.4 Waste Management

The core yard contains radioactive material in the form of core, drill cuttings and dust which is managed as per the Radiation Management Plan. The core saw is used to cut core that contains radioactive material and



generates a potentially radioactive sludge. This sludge water is directed via a pipeline to the fenced and covered radiation contamination pit/sump (Appendix 1). This sump also captures grey water from the dirty ablution block (see Figure 9).



**Figure 9.** Photograph showing the fenced waste water evaporation sump. The fence is made up of a combined five tier barbed wire and low voltage portable electric fencing (white) to exclude stock.

All toilet water drains into the onsite septic systems (site map – Appendix 1). Grey water from washing etc. is piped to the fenced evaporation trenches/sumps. Rarely the septic tank system becomes full requiring a contractor from Alice Springs to visit site and pump out and remove waste.

If the camp is occupied for more than one week food waste and scraps are burnt in a 44 gallon drum; for short visits all rubbish is bagged and disposed of in Alice Springs.

Due to the present limited occupancy of the camp, the rubbish pit is currently not in use for waste disposal.

All liquid industrial waste, including waste oil is stored in drums or plastic “pods” and trucked/disposed of in Alice Springs.

The disposal of plastic sample bags used for residual drill spoil from 2009-11 is being investigated; they are currently stored as compressed bundles of bags in a sea container within the core yard.

Small hydrocarbon spills are contained with absorbent material from spill kits which are located on all drill rigs and at the camp fuel facility, the hydrocarbon shed and generator containers. Used absorbent material from the spill kits is collected and disposed of in Alice Springs. Any contaminated soil from small spills is placed into plastic bags and transported to Alice Springs for disposal. The hydrocarbon bioremediation facility located adjacent to the waste pit at the Bigrlyi camp is currently at capacity and is not used at present. Any large oil spills will be initially contained and contaminated material removed via a truck to the nearest disposal facility (using earthmoving equipment if required).

Waste oil is sent to Alice Springs for disposal.

Where possible used materials are re-used in the manufacture of equipment on site, for example old drill rods are used in the construction of core racks, fence posts and for general construction.

When the camp is in use, plastic, aluminium, and glass waste is separated and returned to Alice Springs for recycling.

#### 4.1.5 Noise and Air Quality Management

Hearing protection is worn, as outlined in the induction manual, around core cutting and drilling operations and any other mandated locations where there is an identified risk.

Dust masks and dust monitors will be worn as per the Radiation Management Plan. The RC rig uses a dust extractor and/or water injection mechanism to reduce airborne dust from drilling activities to as close to zero as possible.

The camp generator is housed in a noise-proof sea container and does not contribute to any significant ambient noise in living areas of the camp. However, staff may be exposed to noise when servicing or refuelling the generator and hearing protection (ear muffs) is available from both the tool shed and the generator container.

#### 4.1.6 Cultural and Heritage Management

Identified cultural sites within the Bigirlyi and Ngalia projects are located through the extensive heritage surveys conducted by the CLC and local traditional owners. Heritage areas of restricted and/or sensitive nature are shown on CLC maps for the company and are available to senior site personnel (see also Appendix 1).

All exploration programs are developed and conducted on the projects are in conjunction with the zones identified under the surveys and the exploration agreement with the CLC.

A search of the AAPA database has been conducted to ensure the sites identified by the CLC cover all the registered heritage sites. There are no sites in the AAPA database (refer to Attachment 6) that are outside the CLC defined heritage zones.

#### 4.1.7 Hazardous Materials and Hydrocarbon Management

Exploration for uranium at Bigirlyi is managed under the Radiation Management Plan (Appendix 3) where radioactive materials are stored in a secure locality (i.e. fenced core yard) subject to regular monitoring.

All fuel and hydrocarbon spillage will be limited by the use of funnels and suitable fuel dispensing pumps and hoses. The Fuel Farm is not in use. The camp diesel tank is located within an earthen bund and is due for complete replacement in 2017.

Any soil contaminated by a fuel or oil spillage is bagged into plastic bags. These bags are removed from site for safe disposal. Dedicated spill kits are located at the camp fuel storage facility, generator container and the hydrocarbon shed. All drill rigs have hydrocarbon spill kits and any small hydrocarbon spills are collected and placed in a plastic bag for disposal.

Contractor induction will include inspections of machinery prior to commencement of work to identify areas at significant risk of leaks and these will require repair by the contractors.

Material Safety Data Sheets (MSDS) are available for all hazardous materials onsite (office, drill rig) and are located in the site office. Hazardous substances must not be brought onto the lease unless there is a MSDS available. Following the project audit in 2016, a review of MSDS sheets is planned in 2017.

The site induction covers the policy and procedures for any hazardous material and also the management of hydrocarbons. Hazardous material management related to radiation safety is covered by EME's Radiation Management Plan (Appendix 3) and the associated radiation safety induction.

Due to limited camp occupancy at present, the use of ARPANSA TLD badges for personal radiation monitoring has been temporarily suspended. Personal radiation monitoring for exploration campaigns of less than 4 weeks during is undertaken using Personal Electronic Dosimeters (PEDs).

Due to limited camp occupancy monitoring of the background radiation around the camp is undertaken semi-regularly. Monitoring points are identified in Appendix 1 (site map) and will be subject to review in 2017. The results of these tests are recorded in the Radiation Logbook. The latest Radiation Monitoring Report is provided in Attachment 5.

#### 4.1.8 Erosion & Sediment Control Plan (ESCP)

Key focal areas of the ESCP and associated mitigation measures are outlined below;

**Road and access track construction and rehabilitation** – Blade up clearing is preferred since less vegetative disturbance decreases the likelihood of airborne dust and focused water flows, this includes access tracks to drilling sites. Where cut tracks are necessary (blade down) then windrows will be smoothed along the road or track edges at ground level to allow sheet water flow across the track and into surrounding vegetation. Rehabilitation of access tracks will take place no longer than 12 months after exploration work ceases, however, some tracks may become permanent at the request of the pastoralist. Rehabilitation of access tracks may require sweeping of windrows on the cleared line, ripping of the soil surface perpendicular to the slope angle if on sloped terrain, repair of any erosional gullies that might occur during the life of work, diversion of water using diversion banks or “whoa boys” and lastly closure of track using dead trees/branches and debris that helps trapping sediment and vegetation seed to encourage regeneration of natural vegetation. (Refer to fact sheets; 18844 Boxed in Roads, 18851 Rehabilitation of Tracks and Fencelines, 18852 Road Drainage and 18853 Water Movement and Drainage in Attachment 9 of the Appendices).

**Maintenance of existing tracks (upkeep)** – Repair and maintenance as needed using a grader or other appropriate equipment. Minor gullies may form particularly at creek crossings, these will be levelled and the track shaped to the same level as the watercourse, new windrows will be swept to surrounding ground level or used as fill for gully repair or diversion banks elsewhere. (Refer to fact sheets; 18844 Boxed in Roads, 18847 Gully Rehabilitation and Stabilisation 18851 Rehabilitation of Tracks and Fencelines, 18852 Road Drainage and 18853 Water Movement and Drainage in Attachment 9 of the Appendices).

**Preparation and rehabilitation of drilling sites** – Drill sites to be prepared using the minimum disturbance required depending on the type of drilling (refer section Drilling Operations above) and avoiding steep and sloping land as drilling sites where possible. Upon completion of drilling, pads will have soil ripped and windrows spread back across the pad area to encourage sheet water flow and seed trapping. If sumps are required, then top soil will be stored and placed back on top of the rehabilitated sump after use, finally any cleared tree branches/shrubs or surrounding dead vegetation will be spread over the disturbed area. Tracks will be rehabilitated as outlined above. Full rehabilitation of drilling sites is to be complete no later than 12 months after drilling ceases, however, sumps, windrows and removal of unwanted drill spoil etc. will take place as soon as possible after the drilling is complete where only a capped PVC collar remains for DGPS pick up. (Refer to fact sheets; 18849 Rehabilitation and Revegetation of Degraded Sites, 18850 Rehabilitation Overview and 18853 Water Movement and Drainage in Attachment 9 of the Appendices).

**Monitoring and upkeep of the existing Bigrlyi Exploration Camp** – The Bigrlyi exploration camp is monitored for any erosional issues that may arise in the vicinity of camp. The main issue is gully erosion along access tracks associated with high-rainfall events. Such problems will be addressed in a timely manner in order to mitigate the cause and effect of the problem. Note: the camp was established by EME in 2005 but due to the economic downturn it has been on ‘care and maintenance’ with no active exploration at site since late 2013. (Refer to fact sheets; 18847 Gully Rehabilitation and Stabilisation, 18852 Road Drainage and 18853 Water Movement and Drainage in Attachment 9 of the Appendices).



## 4.2 ENVIRONMENTAL POLICY AND RESPONSIBILITIES

Energy Metals Limited understands that responsible environmental management has a positive impact on the company's success and the sustainability of the business. Hazard analysis, monitoring and auditing and inspections are used to improve and reinforce procedures and practices.

The Energy Metals Environmental Policy and Health & Safety Policy provide a structured framework for effective environmental and safety practice across all of Energy Metals activities.

### GENERAL OBJECTIVES

EME is committed to positive environmental management outcomes. EME's Exploration Manager, assisted by the company's Health & Safety Officer, is responsible for planning and implementing the environmental management program.

EME makes the following general commitments

- **Planning** ahead of the commencement of work programs to minimise, or if possible, eliminate any adverse impact on the environment.
- **Selection** of employees and contractors who demonstrate a high-level of awareness in environmental management.
- **Incorporate** measureable environmental objectives (see specific commitments below).
- **Liaison** between employees and contractors regarding environment and safety matters.
- **Implementation** of controls to minimise risk to the environment (see specific commitments below).
- **Provision** of training and information to employees and contractors.
- **Compliance** with applicable legal and regulatory requirements (see section 4.3).

### MEASUREABLE GOALS – ENVIRONMENTAL PERFORMANCE COMMITMENTS

For specific operations and tasks carried out by EME, the Company makes the following commitments regarding environments performance/compliance. In parentheses after the commitment: How the commitment is measured/documented and in specific cases which particular company employee is responsible.

#### Drilling Operations

- Drill site preparation to involve the minimum necessary vegetation clearing and track work (photographic evidence).
- Drilling operations to be carried out in a safe and efficient manner (incident reporting).
- Drill cuttings and waste water are to be contained in a sump (post-drilling inspection records)
- Earthworks contractor are to be on standby during drilling operations to handle any urgent situation such as additional sump construction if required by excessive water inflow (site geologist is responsible, post-drilling inspection records)
- Drill sites to be left free from rubbish and spills (post-drilling inspection records)
- Drill spoils to be contained in biodegradable bags until rehabilitation works are undertaken (site geologist is responsible for monitoring, incident reporting)
- Drilling contractor to adopt dust minimisation/mitigation procedures (site geologist is responsible for monitoring, incident reporting)
- Drilling contractor to adopt hydrocarbon spillage protective measures including routine use of drip trays; hydrocarbon spill kit is to be available at the drill site (site geologist is responsible for monitoring, incident reporting)
- All drill collars to be capped temporarily immediately after drilling has been completed at a site (post-drilling inspection records)
- All sumps to be backfilled and the drill pad rehabilitated as soon as practicable after drilling, and within six months (Health & Safety officer responsible, post-drilling inspection records)
- Collars to be cut and plugged as soon as possible after completion of collar pickup survey (post-drilling inspection records)
- Drill hole design & completion sheet to be filled out (site geologist is responsible, audit)

- Pre- and post-drilling site inspection data to be recorded in the drill hole rehabilitation log (site geologist is responsible, audit).
- Drill hole collar location data is to be provided to the DPIR as soon as survey data becomes available upon completion of the project (Exploration Manager responsible)
- Follow-up inspection of former drill site/access track rehabilitation progress every 12 months (inspection records)
- Records of water usage from the Turkey's Nest bore to be maintained (Health & Safety officer responsible).

#### **Fire Control**

- Controlled burning of refuse (if required) to be undertaken at the designated camp refuse site in safe burn-off conditions (Health & Safety officer responsible, incident reporting).
- Precautions to be taken in respect of fire safety including weed removal around camp, fire break maintenance, fire-fighting equipment maintenance, fire extinguishers regularly tested (Health & Safety officer responsible, incident reporting, extinguisher expiry records).
- Camp fires are to be properly extinguished prior to leaving sites (Health & Safety officer responsible, incident reporting)
- At the drill rig, spinifex and other combustible vegetation to be cleared from beneath the rig and support truck (site geologist is responsible).

#### **Hydrocarbon & Waste Control**

- Funnels and regularly maintained pumps and hoses to be used for dispensing fuel (Health & Safety officer responsible, incident reporting).
- EME to maintain a dedicated storage area with drip trays to capture leaks at camp (Health & Safety officer responsible, incident reporting).
- Liquid industrial waste, including waste oil to be stored in drums or plastic "pods" within a bunded area prior to disposal in Alice Springs (Health & Safety officer responsible, incident reporting).
- Small hydrocarbon spill incidents to be contained with absorbent material from spill kits (Health & Safety officer responsible, incident reporting).
- Soil from small hydrocarbon spills to be bagged and appropriately disposed of (Health & Safety officer responsible, incident reporting).
- Contractor induction will include inspections of machinery to identify risk of leaks prior to commencement of work (Health & Safety officer responsible, induction records).
- Material Safety Data Sheets (MSDS) to be available for all hazardous materials used onsite (Health & Safety officer responsible)
- Contractors fuel/oil drums to be placed inside a plastic-lined earthen bunded area in the driller lay down (Health & Safety officer responsible, incident reporting).
- Plastics, aluminium cans, glass bottles and other recyclables to be separated, stored on site and taken to Alice Springs for recycling.

#### **Weed Management & Pest Control**

- Transportation of weed seeds to disturbed areas to be minimised by good hygiene measures.
- Vehicles entering site to be clean; EME will request that contractors have their vehicles cleaned and inspected prior to mobilising onto EME project areas (Health & Safety officer responsible);
- To prevent movement of weeds off-site exploration equipment is to be cleaned at the designated wash-pad facilities and inspected before departing site (Health & Safety officer responsible);.
- Identification of invasive species is part of the general site induction with advisory notes to be posted on noticeboards at camp with the most up-to-date weed information (Health & Safety officer responsible).
- Camp areas to be regularly monitored and sprayed for weeds with herbicide (Health & Safety officer responsible, weed control records).
- Monitoring of any weeds along access corridors including tracks and areas of previous exploration will take place as part of rehabilitation monitoring.
- Personnel undertake pest (fauna) and termite inspections with annual spraying and baiting by pest control contractors (Health & Safety officer responsible, pest control records).

- Note: a weed assessment around camp and at selected drill sites was conducted in late 2014 by Dr Ian Fordyce (Ian Fordyce and Associates, geobotanical consultants) with no declared weed species identified (Attachment 4 of Appendices).
- Refer to the Northern Territory Government Weed Management Handbook (Attachment 8 in Appendices) for a full list of potential weed species and weed management. Weed spread prevention guidelines for best practice in weed management are also included in Attachment 8.

### **Radiation Control**

- A Radiation Log Book containing all records relevant to radiation safety at site will be maintained (Radiation Log Book).
- A trained RSO or Deputy RSO to be available at site during exploration operations (Exploration Manager responsible).
- Workers and visitors to site to undergo a radiation safety induction, which will include locations of supervised areas (Health & Safety Officer responsible, Annual Radiation Safety Report, induction records).
- All the necessary calibrated radiation monitoring equipment is to be available on-site when required (Exploration Manager responsible, Radiation Log Book).
- Personal radiation levels to be monitored for all staff and contractors on site for exploration programs (Health & Safety officer responsible, Radiation Log Book).
- Baselines have been established in the project area for radiation levels/radionuclide concentrations in soil, dust, groundwater, and air by regular monitoring over at least a 2 year period (Exploration Manager responsible, Annual Technical Report to the DME).
- EME to provide sufficient resources to allow the RSO to conduct his/her duties (Managing Director is responsible).
- RC drill contractors to drill with water injection and utilise cyclone and collar returns to minimize dust generated during drilling (site geologist is responsible, dust pump monitoring records).
- A decontamination procedure to be in place so that no contaminated equipment leaves site (Health & Safety officer responsible, Clearance Certificate - Radiation Log Book).
- Radioactive samples to be stored securely in a Supervised Radiation Control Area (Health & Safety officer responsible, annual inspection)
- Supervised radiation areas to be signposted (Health & Safety officer responsible, annual inspection)
- Radioactive drill cuttings will be disposed of down the hole or in pits/sumps, the location of which will be photographed, located with GPS and radiation readings taken (post-drilling inspection records).
- After project completion, the exploration site shall be rehabilitated such that radiation levels are commensurate with pre-disturbance baseline levels (post-drilling inspection records)
- Transport codes to be adhered to for radioactive material leaving site (Health & Safety officer responsible, Radiation Log Book).
- Radiation monitoring to be conducted during exploration programs (Health & Safety officer responsible, Radiation Log Book).
- Report on doses, exposures and any radiological incidents to be prepared annually (Health & Safety officer responsible, Annual Radiation Safety Report).

### **Erosion & Sediment Control**

- Identify risks of greatest soil or surficial erosion prior to any ground disturbing works;
- Plan for appropriate mitigation or preventative measures to ensure that erosional problems do not arise;
- Prior to any ground disturbing activity for exploration purposes, an assessment to identify potential risks in relation to drainage control, erosion control and sediment control to be carried out. Any areas deemed to be very high risk e.g. steep hillside slopes, will be reassessed as to whether that particular exploration activity is required at that site or whether it can be transferred to a lower risk site without loss of exploration purpose.
- Monitoring of rehabilitated areas annually for first 2 years following the NT wet season (November – March) and thereafter at irregular intervals.

### 4.3 LEGISLATIVE REQUIREMENTS

*Mining Management Act*  
*Mineral Titles Act*  
*Weeds Management Act*  
*Bushfires Act*  
*Native Title Act*  
*NT Sacred Sites Act*  
*Environment Protection & Biodiversity Conservation Act*  
*Atomic Energy Act*  
*Radioactive Ores and Concentrates (Packaging and Transport) Act (NT)*  
*Code of Practice for Safe Transport of Radioactive Materials 2001*  
*Water Act*  
*Code of Practice for Radiation Protection and Radioactive Waste Management in Mining and Processing (Mining and Processing Code)*  
*Work Health and Safety Act*  
*Soil Conservation and Land Utilization Act*  
*Territory Parks and Wildlife Conservation Act*  
*Waste Management and Pollution Control Act*  
*MMP Authorisation conditions*

### 4.4 OTHER REQUIREMENTS

*Bigirlyi Radiation Management Plan*  
*DME Exploration Tenement Technical Reporting.*  
*Risk Management Plan*  
*Emergency Management Plan*  
*Bigirlyi Site Induction*

### 4.5 INDUCTION AND TRAINING

On-site inductions are undertaken for all personnel (staff, contractors and short term visitors) and include reference to the Policy and Responsibilities includes topics of:

- Minimising environmental disturbance and preservation of trees
- Capping of drill holes
- Weed control
- Hydrocarbon spill remediation
- Removal of rubbish from site and disposal options
- Timely removal of sample bags (generally within 6 months), dependent on the requirements for further sampling and metallurgical testwork

The general Bigirlyi site induction, including environmental requirements, is completed by all onsite personnel and subcontractors. A copy of this induction is included in Appendix 2. Induction records are maintained on site with copies of these inductions sent to Energy Metals Perth office. The Bigirlyi site induction was last reviewed and updated in 2015. All site personnel are required to be re-inducted on an annual basis to ensure that all aspects of the induction are understood and followed.

All contractors will be required to comply with company policies whilst they are present at and/or they are carrying out work at Bigirlyi or work sites. Drilling contractors will provide on-site rig inductions to all EME staff prior to working on the drill site.

Contractors will be required to produce a copy of their own environmental management plan and the subcontractor will identify the person responsible within their organisation for environmental matters.

Contractors must provide a Certificate of Currency for Public Liability, Workers Compensation, Motor Vehicle and Plant & Equipment Comprehensive insurances before commencement of work.

Environmental training is based on informal environmental awareness training and cultivating respect for the fragile semi-arid environment. Topics include noxious weed identification; proper drill-site housekeeping and rehabilitation; on-site recycling and pest control. It is a requirement that all staff ensure all exploration activities are done in the most environmentally sustainable manner. Training for any staff member who requests more formal environmental training would be provided. Informal environmental training consists of our staff being involved, where possible, with the baseline environmental surveys.

## 4.6 IDENTIFICATION OF ENVIRONMENTAL ASPECTS AND IMPACTS

Currently the most significant environmental impact activity of the exploration and evaluation of the Bigrlyi project and the Ngalia Regional project is the ground disturbance resulting from exploration drilling. The identified impacts include the clearing of the native vegetation and site erosion, other moderate level impacts include the excavation of the drill sumps to retain fluids (both drilling muds and water encountered in the drilling activities). Low impact aspects include the possible dust dispersion from the exploration activities (dominated by vehicle movement with a minor contribution from drilling activities), the spread of noxious weeds in the disturbed areas and possible hydrocarbon spills.

The environmental objectives are to undertake the exploration activities and the ongoing investigations into the viability of developing a mine at the Bigrlyi project with a minimal environmental impact. All exploration activities will be done with the aim of having no long term environmental impact and the short term environmental footprint to the activities is as small as possible.

These objectives will be achieved by empowering all staff and contractors on site.

The target is to successfully explore the project areas in a manner that is environmentally sustainable and leaving no environmental impact. The main target is to ensure the rehabilitation of all exploration holes are completed within a few months of the return of chemical assays.

**Table 8:** Environmental Mitigation Measures

Aspect	Impact	Risk Rating	Management measures (prevention)	Management measures (remediation)
Filling vehicles or drill rig fuel tanks	Minor hydrocarbon soil contamination potential	Moderate	All hoses have cut-off dispensing handles. Rigs have drip trays.	Small Spills collected on spill mats that are burnt with domestic waste, contaminated soil is removed into plastic bags and taken to an appropriate waste facility.
Rupture/leakage of bulk fuel storage	Major hydrocarbon soil contamination potential ( $\leq 20,000\text{l}$ )	Moderate	All bulk storage tanks contained in bunds able to hold at least the capacity of the entire tanks. Tanks regularly inspected by fuel transport company, if any	Bulk Fuel tanks bunded to over 110% capacity. Any significant spill will be remediated by removing contaminated soil with earthmoving

Aspect	Impact	Risk Rating	Management measures (prevention)	Management measures (remediation)
			potential risks identified, the tanks will be repaired or replaced.	equipment and liquids into tankers and to a waste facility.
Water intersected while drilling	Water run-off from drill pads	Low	All sites have drill water sumps sufficient to the expected water inflow from the drill hole. Earthmoving equipment is available to dig more sumps if required.	When Sumps are full the drilling is suspended, until more sumps can be dug.
Dust – generation from drilling	Dust spread from around the drill site	Moderate	All Drilling activities (involving air drilling) uses dust suppression equipment. All drilling will produce minor dust.	Any dust deposits from drilling activities is removed and placed into the drill sumps during rehabilitation
Radioactive contamination from RC Drilling	Radioactive material in sample bags on site	Low	All material from drilling activities retained is directly placed in the drill spoil sumps, a small calico bag is retained.	Sample material buried in dry empty drill sumps and / or tipped down the drillhole when rehabilitation is done – usually within 6 months of completion of drilling.
Radioactive contamination from Diamond Drilling	Radioactive material in drill core retained on site	Low	All drill core is retained in plastic core trays and stored in the secure Bigrlyi core yard. Core volumes are low (usually 45mm diameter) so radiation levels are very low.	Shielding of the mineralized core is achieved by surrounding the mineralized core with barren core. The long term disposal plan would be to bury the mineralized core.
Site clearance for drill pads and/or access	Loss of native vegetation	Low	All clearing limited to smallest area possible	Top soil spread over any disturbed areas, all drill pads ripped when drill pads are

Aspect	Impact	Risk Rating	Management measures (prevention)	Management measures (remediation)
				rehabilitated, drill track ripping after access is no longer required.
Creation of access tracks	Excessive soil erosion from surface run-off channelling	Low	Vehicle movement restricted during wet season. Drainage channels/whoa boys to divert surface run-off away from tracks.	Earthmoving equipment used to maintain roads fill in any wheel ruts as soon as the tracks dry out to enable vehicle access
Vehicle trafficking	Weeds spread into unaffected areas	Low	Inspection of vehicles that moving from one prospect to another; wash-down as necessary	Weed sprays used to kill weeds around camp and any drill sites where weeds are identified.

**Table 9. Risk matrix used for potential or actual incidents involving people, property or the environment.**

CONSEQUENCE & PROBABILITY (A)

EXPOSURE (B)

PROBABILITY	CONSEQUENCE						
	Noticeable First Aid Treatment	Important Casualty Treatment	Serious Injury	Serious Injury	Very Serious Fatality	Disaster Multiple Fatalities	Catastrophic Numerous Fatalities
Almost Certain 1 in 10	10	30	70		150	400	1000
Quite Possible 1 in 100	6	18	42		90	240	600
Unusual But Possible 1 in 1,000	3	9	21		45	120	300
Remotely Possible 1 in 100,000	1	3	7		15	40	100
Conceivable But Very Unlikely 1 in 1,000,000	0.5	1.5	3.5		7.5	20	50
Practically Impossible or Not Possible	0.2	0.6	1.4		3	8	20

X

EXPOSURE	
Continuous Many times daily	10
Frequent Once a day	6
Occasional Once a month	3
Infrequent Once a year	2
Rare Has been reported before	1
Very Rare Never before	0.5

=

RISK LEVEL	
Very High (>401)	Risk
High Risk (201 - 400)	
Substantial (51 - 200)	Risk
Moderate (11 - 50)	Risk
Low Risk (0 - 10)	

CALCULATION:

180

INSTRUCTIONS: Select the Calculation Box and use the following basic formula =CELL(A)\*CELL(B)ENTER.  
OR in the field multiply A and B to give you the risk level.

## 4.7 EMERGENCY PROCEDURES AND INCIDENT REPORTING

Incident reports are completed for any site based accident, incident or near miss incident. Incidents or accidents include those involving **people, property** or the **environment**. Occupational health and safety procedures are covered by EME's Risk Management Plan (Appendix 6). EME's Emergency Management Plan (Appendix 5) has been designed to ensure potential incidents are identified, risks are minimised and incidents are managed in an effective manner. Work practices at site are governed by EME's Job Hazard Safety Analysis (see Appendix 4 for a listing of Safe Work Method Statements or SWMS), which regularly forms a topic of discussion at daily toolbox meetings.

Incident reports relating to occupational health and safety will be sent to NT Worksafe in accordance with the reporting requirements outlined in Appendices 6 and 7.

An environmental incident or serious environmental incident (i.e. one rating Class 2 or above) will be reported in accordance with Section 29 of the Mining Management Act (MMA) using Form CF7-001 "Notification of an Environmental Incident". The reporting procedure is outlined in DPIR Advisory AT8-006 "Environmental Incident Reporting Guideline". An environmental incident is defined as an unplanned event that causes environmental harm (i.e. where an activity or procedure not contained in or contemplated by the approved Mining Management Plan occurs and its impact is harmful to the environment).

Incidents likely to be the subject of a section 29 incident report in the context of EME's Bigirlyi and Ngalia Regional Projects include:

- Spillage or escape from containment of fuel, oil, chemical or radioactively contaminated substances (solid, liquid, gas, dust etc.);
- Uncontrolled or accidental fire affecting or with potential to affect site infrastructure and/or exploration infrastructure and/or the site environment and/or the safety of personnel;
- Severe storm or flood-generated damage where it affects exploration worksites or infrastructure or personnel safety, such as severe erosion on access tracks, slope stability failure, structural failure, lightning strike etc.;
- Unauthorised and/or uncontrolled discharge of ground waters;
- Damage to a Sacred Site, Aboriginal Protected Area, other protected area, archaeological or heritage site;
- Unauthorised clearing of vegetation or disturbance of the ground;

Environmental reporting is also guided by EME's Radiation Management Plan (Appendix 3) and the EALP (Attachment 1). Note that environmental baselines at site have previously been established for flora and fauna, environmental radioactivity, dust dispersal and ground water chemistry.

In the event of an incident or an accident, the first priority is to ensure the safety of personnel on site. The next priority is to minimise any environmental impacts by ensuring the source of the emergency is limited or contained. Site clean-up after an emergency is given the highest priority of any activity on site.

The internal incident reporting procedure is outlined in the Induction Manual (Appendix 2). Copies of incident reports are maintained on site and a copy is also sent to the Perth office within 24 hours of the incident. Any incident or accident with a risk rating of 11 – 25 requires an investigation conducted either by the Exploration Manager or Site Supervisor (the matrix for evaluating the risk rating is provided in Table 9).

## 4.8 ENVIRONMENTAL AUDITS AND INSPECTIONS

Rehabilitation monitoring is on-going.

A formal auditing system was implemented in 2012. Monitoring includes photographic evidence of areas prior and after disturbance and inspection of drill sites by senior personnel. Drill sites will also be monitored for radiation contamination using calibrated scintillometers on dose rate mode. Checks will be done in



accordance with the RMP (Appendix 3) with pre and post disturbance measurements. The results of these checks are compiled on site and stored in the rehabilitation files.

The Project Geologists, along with all site personnel, ensure that environmental policies and procedures are adhered to during the exploration activities. The Exploration Manager will conduct ongoing environmental inspections on the project and will take note of suggestions from the DPIR environmental inspection team.

An annual internal audit of exploration activities is generally conducted at the end of the field season. However, in 2016 only minor ground disturbing exploration works took place at the Malawiri prospect and the camp was visited for short durations in May, June, August, September and November 2016. A DPIR environmental compliance audit took place in June 2016 and EME has addressed a number of compliance issues raised (refer Appendix 8).

## **4.9 ENVIRONMENTAL PERFORMANCE REPORTING**

Documents produced as a result of MMP requirements are filed appropriately and stored securely with the intention of being available for the life of the project and beyond. Energy Metals keeps copies of key documents both at site and in the Perth office.

### **Progress made against rehabilitation and closure objectives**

Holes drilled by EME in the period 2006 to 2012 have now been rehabilitated (with the exception of a number of collars that are required to be accessible for later re-entry). Field inspections carried out by DME staff in May 2014 and September 2015 found that the extent of previous rehabilitation was satisfactory. The rehabilitation of a number of elevated drill sites at Anomaly15 (ELR55) was completed in August 2015 and judged to be satisfactory following an inspection by the DME in September 2015. Follow-up monitoring in 2016 indicates that erosion has been contained and natural re-vegetation is progressing (see Appendix 9).

By November 2015 all drill pads from the 2013 drilling program had been rehabilitated and, with the exception of a few collars retained for diamond tails, all collars were cut and plugged and spoil buried. No drilling took place in 2014 or 2015. Disturbed ground from the 2016 drilling program at the Malawiri prospect has been rehabilitated (see Appendix 9)

Collars have been retained for number of historical holes drilled prior to 2005 at the Camel Flat prospect. Some of these have been capped and retained as water bores; all others were plugged in 2015.

In the event that the project is closed and the tenements relinquished, the outstanding closure requirements include the removal of the exploration camp, fuel storage facilities, and the ripping the exploration tracks that are currently being used. The only environmental issue that remains to be resolved and completed is the removal of the used plastic sample bags, the pastoralist has shown a reluctance to allow Energy Metals to bury the bags on site and as no waste disposal sites will accept potentially uranium contaminated materials, the bags are currently being stored in compressed form in a sea container within the camp core yard.

### **Reviews, inspections, audits conducted during the year**

Issues raised in the June 2016 DME audit report have been addressed in Appendix 8. A Rehabilitation Status Report for 2015-16 is provided in Appendix 9.

### **Environmental Monitoring in 2016**

- An automatic weather station located at Bigrlyi camp provides regular climatic data and was last downloaded in June 2016.
- Rehabilitation status of erosion prone areas at A15 and A15E were monitored during the year.
- Post-rehabilitation inspection at Malawiri prospect took place in November 2016.

## Management of industrial waste, oils, greases, domestic waste, and sewage on site in 2015

Refer to sections 4.1.1, 4.1.4 and 4.1.7. No waste issues were reported during the year due to limited camp occupancy.

### Progress with respect to Environmental Performance

Problems identified in the 2016 environmental audit will be addressed in 2017 (see Appendix 8).

## 5.0 EXPLORATION REHABILITATION

In March 2013 a rehabilitation report was provided to the DME which detailed the company's rehabilitation works up until the end of 2012.

In May 2014 a Field Inspection carried out by DME officers identified a number of specific rehabilitation issues which were addressed in 2015.

In September 2015 another inspection was carried out by DME officers following remedial earthworks at A15 and other areas.

In June 2016 an environmental compliance audit was carried out by DME staff with a field inspection of areas rehabilitated at A15 and A15E undertaken.

**Table 10: Rehabilitation Schedule for Closure Planning**

Disturbance	Rehabilitation Activities	Schedule (Timing)	Closure Objectives / Targets	Monitoring Techniques
<b>Drill holes</b>	Historic – Approx 450 holes	Done	Done	Completed
	2005 – 13 holes	Done	Holes Plugged	Completed
	2006 – 104 holes	Done	Holes Plugged	Completed
	2007 – 274 holes	Done	Holes Plugged	Completed
	2008 – 148 holes	Done	Holes Plugged	Completed
	2009 - 528 holes	Done	Holes Plugged	Completed
	2010 - 68 holes	Approx 5 remain	Holes Plugged	Completed
	2011 – 232 holes	Approx 15 remain	Holes Plugged	Completed
	2012 – 31 holes	Done	Holes Plugged	Completed
	2013 – 228 holes	Completed	Collars Cut/Holes Plugged	Completed
	2016 – 4 holes	Completed	Collars Cut/Holes Plugged	Photographed and documented
<b>Drill pads</b>	Historic – 450 pads	Done		
	2005 – 13 pads	Done	Ripped and topsoil spread	Photographed and documented
	2006 - 96 pads	Done	Ripped and topsoil spread	Photographed and documented
	2007 - 276 pads	Done	Ripped and topsoil spread	Photographed and documented
	2008 - 91 pads	Done	Ripped and topsoil spread	Photographed and documented
	2009 - 76 pads	Done	Ripped and topsoil	Photographed and

<b>Disturbance</b>	<b>Rehabilitation Activities</b>	<b>Schedule (Timing)</b>	<b>Closure Objectives / Targets</b>	<b>Monitoring Techniques</b>
			spread	documented
	2010 - 68 pads	Done	Ripped and topsoil spread	Photographed and documented
	2011 – 240 pads	Done	Ripped and topsoil spread	Photographed and documented
	2012 – 40 pads	Done	Ripped and topsoil spread	Photographed and documented
	2013 – 228 pads	Completed	Ripped and topsoil spread	Photographed and documented
	2015	Completed	Seven outstanding drill pads and tracks on ELR55 rehabilitated	Photographs and ongoing monitoring
	2016	Completed	Ripped and topsoil spread	Photographed and documented
<b>Sumps</b>	Historic – unknown	Done	Backfilled	Photographed and documented
	2005 - No Sumps	None		
	2006 - 96	Done	Backfilled	Photographed and documented
	2007 - 276	Done	Backfilled	Photographed and documented
	2008 - 93	Done	Backfilled	Photographed and documented
	2009 – 76 sumps	Done	Backfilled	Photographed and documented
	2010 – 68 sumps	Done	Backfilled	Photographed and documented
	2011 – 240 sumps	Done	Backfilled	Photographed and documented
	2012 – 40 sumps	Done	Backfilled	Photographed and documented
	2013 – 236 sumps	Done	Backfilled	Photographed and documented
	2016 – 8 sumps	Done	Backfilled	Photographed and documented
<b>Costeans</b>	Historic - No Costeans known	N/A		
	2005 – 2011 - No Costeans	N/A		
<b>Bulk sample pits</b>	Historic – No - Bulk Pits Known	N/A		
	2005 – 2011 - No Bulk Sample Pits	N/A		
<b>Tracks / Gridlines</b>	Historic	End of Exploration activities	Rip all tracks except those required for Pastoral use	Photographed and documented
	2005 – 2013 Minimal New Tracks	End of Exploration activities	Rip all tracks – return to Pastoral use	Photographed and documented
	2016	Completed	Return to Pastoral use	Photographed and documented
<b>Sample bags</b>	Historic	Done		
	2005	Done	Buried	Documented

<b>Disturbance</b>	<b>Rehabilitation Activities</b>	<b>Schedule (Timing)</b>	<b>Closure Objectives / Targets</b>	<b>Monitoring Techniques</b>
	2006	Done	Buried	Documented
	2007	Done	Buried	Documented
	2008	Done	Buried	Documented
	2009	Done	Buried	Documented
	2010	Done	Bags removed <sup>#1</sup> – Spoil buried	Photographed and documented
	2011	Done	Bags removed <sup>#1</sup> – Spoil buried	Photographed and documented
	2012	Done	Bags removed <sup>#1</sup> – Spoil buried	Photographed and documented
	2013/14/15	Completed	Bags removed <sup>#1</sup> – Spoil buried Big West & A15E prospect	Photographed and documented
<b>Camp</b>	Remove all infrastructure	End of Exploration activities	Return to pastoral use by removing structures then ripping all disturbed areas. Diamond drill core to be buried on completion of exploration or mining activities <sup>#2</sup>	Photographs and documentation

#1 all plastic bags have been emptied, compressed into bundles and are currently being stored in a sea container within the Biglyi core yard. A final rehabilitation plan for these bags remains to be completed.

#2 Diamond drill core will on completion of the exploration or mining will be offered to the Northern Territory Geological Survey and any core not required by the NTGS will be buried either in the base of an open pit (should the project advance to a mine) or in a core burial pit. If the latter occurs then an appropriate radiation monitoring program will be undertaken, if the core is disposed of in the base of an open pit (or underground workings) then the radiation from the core being buried would be monitored as a part of the closure obligations of the mine.

Rehabilitation of drilling is conducted in a safe and timely manner following the conclusion of all geochemical, geophysical, hydrological and metallurgical requirements. Certain drill collars may remain uncut for drill re-entry, water bore or hydrological testing purposes.

## 5.1 COSTING OF CLOSURE ACTIVITIES

A Rehabilitation Status Report including an updated Security Calculation Spreadsheet was submitted to the Department in October 2015. Approval of the security calculation permitted the refund to EME of the previous accumulated cash bonds with a bank guarantee of \$155K remaining in place with the DPIR to cover all future (i.e. planned) and remaining rehabilitation activities. Due to budget constraints, previously planned drill programs in 2015 were not conducted or were only partially conducted; since sufficient bond monies are in place EME intends to carry these programs over to 2017 and beyond.

## 6.0 PERFORMANCE OBJECTIVES

### **The company sets the following targets for the coming year (and how they will be measured):**

- Zero Lost Time Injuries (LTIs) (measured: Incident Reporting);
- No significant safety or environmental incidents (measured: Incident Reporting);
- Completion of rehabilitation of 2016 drill holes and access tracks (measured: Program Completion Rehabilitation Report);
- Monitoring of rehabilitation works at elevated drill pads on ELR55 and surrounding area (measured: site visits, photographs and rehabilitation reports);
- Continued radiation monitoring programs (measured: Radiation Log Book, Annual Radiation Safety Report);
- Continued engagement with stakeholders including Traditional Owners, their representative bodies and Pastoral Leaseholders (measured: Traditional Owners Meeting; this year at 10 Mile Outcamp; access agreement letter with pastoralist);
- Fulfil all statutory reporting requirements (measured: DPIR Technical Reports; MMP Approval);

### **During the past year (2016) our performance is summarised as;**

- No lost time injuries.
- No significant safety incidents.
- No environmental incidents.
- Rehabilitation progress at A15 and adjacent areas monitored.
- Radiation monitoring was ongoing as per EME's RMP (see Attachment 5)
- Although personal radiation monitoring using TLD badges via ARPANSA is currently suspended, radiation doses were monitored during exploration work using Personal Electronic Dosimeters (PEDs). No staff or contractors received an above background dose during the year.
- A Traditional Owners meeting was held at 10 Mile Outcamp in September 2016 (Malawiri project area).
- All statutory reports have been lodged with the Department.

### **Improvements to environmental management issues:**

In the 2014-15 period EME's major improvement to environmental management was the appointment to EME staff of a dedicated Health & Safety Officer with responsibilities for Environmental and Radiation Safety Management. This resulted in a significant improvements to policy implementation, record keeping and timely preparation of annual reports. The Health & Safety Officer also has the role of deputy RSO. Regrettably due to budget cut-backs the position of Health & Safety Officer was unable to be continued beyond August 2015. The Health & Safety Officer's responsibilities have now been reassigned to the Exploration Manager (responsible for policy development and regulation) and Senior Site Geologist (all on-site Health & Safety Officer responsibilities assumed).

If the company's exploration activities expand in the future, a dedicated Health & Safety Officer may be re-appointed. In 2016, the Bigryi site induction and Radiation Management Plan was reviewed and updated. These revisions are part of EME's commitment to continuous improvement.

## **7.0 APPENDICES**

**Appendix 1 – Site Maps & Plans including Proposed Exploration Areas 2017**

**Appendix 2 – Site Induction**

**Appendix 3 – Radiation Management Plan (version 1.4)**

**Appendix 4 – Job Hazard Safety Analysis SWMS Listing**

**Appendix 5 – Emergency Management Plan**

**Appendix 6 – Risk Management Plan**

**Appendix 7 – Incident Reporting**

**Appendix 8 – Environmental Audit Report Comments & Commitments for 2017**

**Appendix 9 – Rehabilitation Status Report 2016 & Spreadsheets**

**ATTACHMENT 1 - Environmental Policy & Exploration Protocol**

**ATTACHMENT 2 - Threatened Species**

**ATTACHMENT 3 - Yuendumu Climatic Statistics**

**ATTACHMENT 4 - Vegetation Survey**

**ATTACHMENT 5 - Radiation Monitoring Report 2015-2016**

**ATTACHMENT 6 - AAPA Database Search Map**

**ATTACHMENT 7 - Security Spreadsheet (as previously provided)**

**ATTACHMENT 8 - NT Weed Management**

**ATTACHMENT 9 - Soil Management and Erosion Control**