

# MINING MANAGEMENT PLAN

## Yalco Project - 2016

**Authorisation Number: 0818-01**

**Operator: TECK AUSTRALIA PTY LTD** - Level 2/35 Ventnor Ave, West Perth, WA, 6005, Australia. Email Perth@Teck.com

**Project Name: Yalco\*** - comprising EL25467 and EL29021

**Reporting Year: 2016**

**Tenure Holder: Marindi Metals Pty Ltd.**, Level 3, 35 Havelock Street, West Perth, WA 6005, Australia. Email: [info@marindi.com.au](mailto:info@marindi.com.au)

**Date of submission:** August 2016

### Distribution:

- Department of Mines and Energy (Northern Territory)
- Marindi Metals, Teck Australia

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\* Previously named the Batten Creek Project

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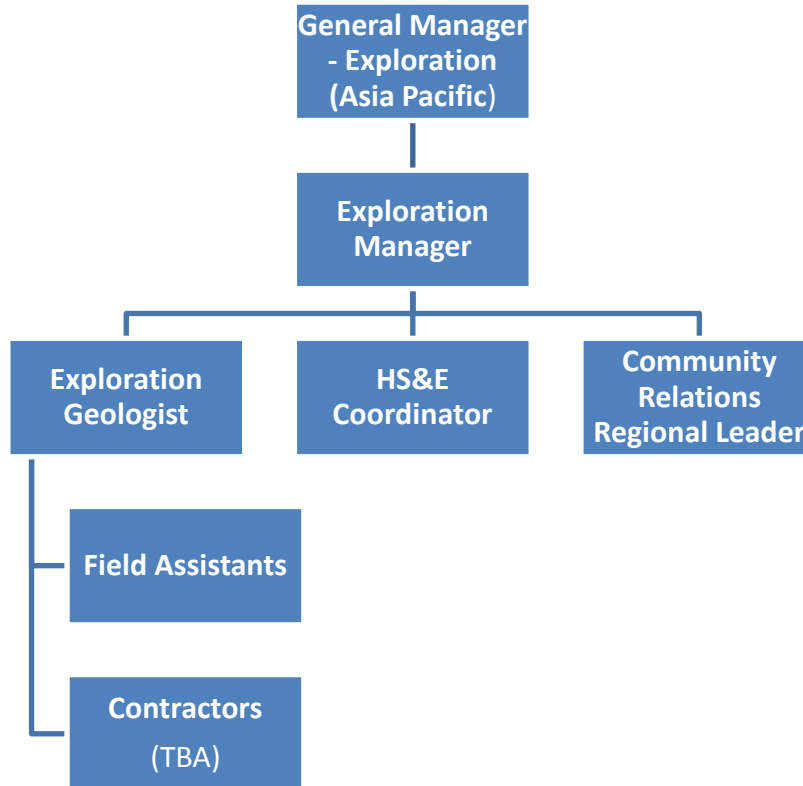
## AMENDMENTS

Section	Amendment	Date

## 1 OPERATOR DETAILS

	Owner	Operator
	Marindi Metals Ltd	Teck Australia Pty Ltd
<b>ABN</b>	84 118 522 124	35 091 271 911
<b>Key Contact Person</b>	Joe Treacy, Managing Director	Susan McKay, Senior Mining Consultant M&M Walter Consulting – 08 9381 5866
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<b>Phone</b>	08 9322 2338	08 9321 4936
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## 1.1 Organisational Structure



## 1.2 Workforce

Teck Australia employs 10 full-time geoscientists, including an in house geophysicist and data management specialist. Teck Australia also has a designated Communities officer, as well as a Safety and Environmental manager. Drilling and geophysical work is typically contracted out, with Teck staff acting as contract managers and having overall responsibility for safety and technical matters during the course of the work. Other exploration work is generally carried out by Teck employees.

Estimated staff requirements for the 2016/17 field work are outlined below in the sections describing the work plan, with Teck allocating one geologist and two field assistants from the company to the project. These will be supplemented with additional staff (and contractors) if deemed necessary. The contractor drill crew will comprise two drillers and four off-siders working day and night.

During field work, monitors from the appropriate Native Title peoples are also employed on a casual basis. Wherever possible, local contractors are preferred, including local field assistants, and earth moving crews.

## 2 IDENTIFIED STAKEHOLDERS AND CONSULTATION

Teck Australia has in the past maintained close cooperation with McArthur River Station management through the Reward project (EL10316, EL27541, EL26406, and EL30042), which is to the south of Yalco. Teck discussed scheduled exploration activities for 2015/2016 with the McArthur River Station and Lorella Springs Station when field operations affect their pastoral leases. Communication prior and during activities is completed through phone calls, email, and face to face visits and is based on a procedural process related to the nature of the activities being undertaken so as to maintain constant consultation.

Heritage surveys are coordinated through the NLC or the AAPA. Teck was issued an AAPA certificate over the Yalco project in 2015. Representatives from the relevant indigenous community are on the project to clear the relevant sites.

The tenements are managed through MMWC Group located at Suite 2, 257 York Street, Subiaco, WA, 6008

Teck Resources Australia operates consistently with Teck Limited's (Vancouver) EHSC management standards. Those standards incorporate a systems based approach to Community Relations. Teck's professional development framework incorporates community development training and practice opportunities for staff, many of whom have knowledge of "participatory approaches" to community development, and focus on free, prior and informed consent.

At the Yalco project, Teck has undertaken high level social screening using various local sources including the Northern Land Council and local indigenous families. Teck seeks input to project planning from affected members of the community and has established feedback mechanisms to capture and respond to community concerns. Teck supports local community initiatives and capacity building and will seek to promote additional community benefits as the project advances.

Teck Australia instigates routine consultations with the project stakeholders:

- Northern Land Council (NLC)
- McArthur River station pastoral lease
- Lorella Springs station pastoral lease
- The Alawa, Yanyuwa, Gurdanji and Mara People
- Independent anthropologists
- Local indigenous families
- NT Government (Mines and Energy)
- Department of Natural Resources
- NT Worksafe
- Marindi Metals

### 3 PROJECT DETAILS

The Yalco project is located approximately 675 km southeast of Darwin in the McArthur basin in the Northern Territory (Figure 1). Track condition is variable depending upon the season and many areas become waterlogged and boggy during the wet season. Some tracks also have long sandy patches and bull dust develops in some areas. There are three significant watercourses passing through the project: Pine Creek, Galah Creek and Batten Creek.

The nearest sizeable township is Borroloola, which is located approximately 20km to the southeast of the project. Borroloola has a permanent population of about 700 people.

Land use in the region is predominantly cattle grazing on large pastoral holdings. Mining, fishing and tourism are also active industries in the region. The Yalco Project straddles the McArthur River and Lorella Springs pastoral stations.

**Table 1** project details

<b>Project Name:</b>	Yalco (previously Batten Creek)
<b>Location:</b>	Approximately 40 kilometres by road & station tracks north-west of Borroloola
<b>Site Access:</b>	Via the Borroloola – Bing Bong road from Borroloola then via established tracks (station & previous BHP exploration) to license areas.
<b>Mining Interest/s:</b>	EL25467, EL29021
<b>Title holder/s:</b>	EL25467 and EL29021 is owned 100% by Marindi Metals. Teck Australia Pty Ltd is earning 70% of EL25467 and EL29021 through exploration expenditure with an option to form a JV with Marindi Metals Ltd once the necessary earn in expenditure has been committed to the project.

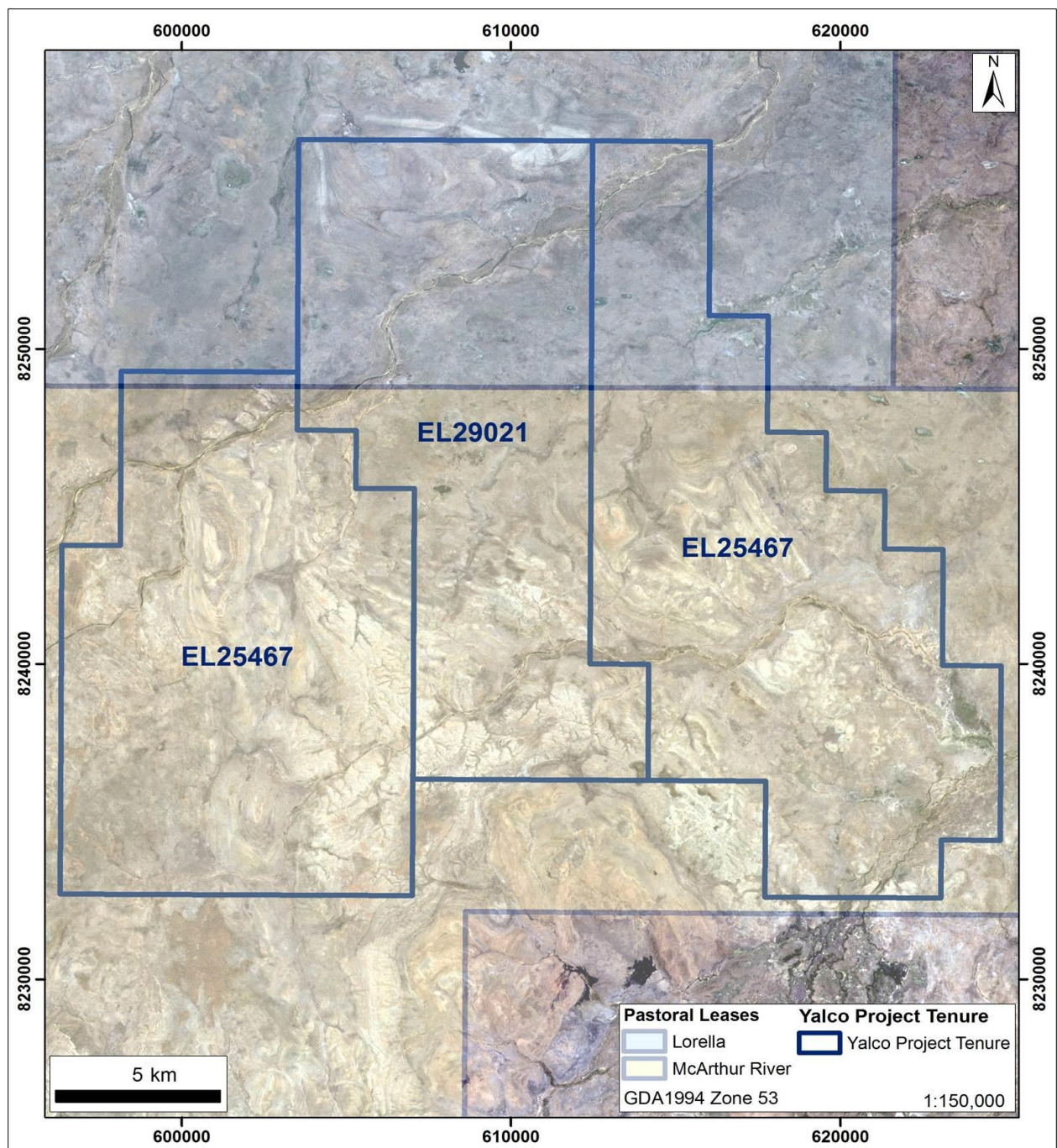


Figure 1 location map

Table 2 Yalco exploration licenses (Figure 2)

Title number	Owner	Grant Date	Expiry Date
EL25467	Marindi Metals	15/08/2007	14/08/2017
EL29021	Marindi Metals	3/8/2012	02/08/2018





**Figure 2** tenement map of the Yalco Project showing tracks and station boundaries

**3.1 Previous Activities and Current Status**

A total of seventeen exploration companies have previously worked in the area covered by the Yalco project over a period of approximately 35 years. A review of the available open file data indicates that most of these companies were focused on discovering McArthur River style Zn-Pb-Ag SHMS deposits in sub-basins containing thickened sequences of Barney Creek formation.

A wide range of different exploration techniques were applied to the project area including stream sediment and soil sampling surveys, rock chip sampling, gossan searches, ground gravity, electromagnetic (EM) surveys

(GEOTEM, HOISTEM, VTEM, QUESTEM) and a number of drilling programs. Most of the historical drilling has been shallow RAB drilling that has focused on areas where Barney Creek Formation is interpreted close to the surface or on the potential for Mn mineralisation in Cretaceous sediments. There has been limited diamond drilling on and immediately adjacent to the project area, with most of these holes failing to test the target Barney Creek Formation.

In May 2014 Teck Australia and Marindi Metals signed an earn-in option agreement. Teck is currently earning 70% of the project from Marindi and is obligated to spend no less than \$3.5 million prior to 30 June 2018.

During the 2013-2014 reporting period (15<sup>th</sup> of August 2013 to 14<sup>th</sup> of August 2014) Teck completed basic reconnaissance work, stakeholder engagement, desktop reviews and field preparation for additional work programs.

Teck completed a number of surveys over the 2014-2015 reporting year including ground gravity; airborne magnetics and radiometrics; and soil sampling.

#### 2015 – 2016 Field Season

Exploration activities conducted during the preceding 12 month period are described below.

- Extensive ground gravity program to infill the 2014 survey.
- Three seismic lines
- Magnetotelluric data collected along the seismic lines;
- An extensive geochemical sampling program to infill the 2014 survey and extend sample coverage
- Re-logging of historical drill holes.
- Tracks were constructed for the seismic survey and were rehabilitated upon program completion;

Completed field work from the 2015-2016 field season (June 2015 onward) is detailed below:

#### *Community*

An AAPA certificate over the Yalco project was received by Teck Australia August 2015.

#### *Geophysical*

### **3.2 Proposed Activities**

#### Diamond Drilling

For the 2017 field season one diamond drill hole has been planned for the Yalco project (Figure 3) with an additional two holes as contingency. The drilling of these holes is entirely dependent on findings from data interpretation and subsequent target reviews. If targets are downgraded they will not be drill tested.

Drill holes will be collared with HQ sized core and this will be used until the collar has stabilized. Once this has occurred the rest of the drill hole will be completed using NQ sized core.

In addition to the diamond drill holes a bore will need to be constructed to supply water to the field camp and to the diamond rig.

No clearing or drilling shall occur within 25m of the riparian vegetation of drainage lines and creeks.

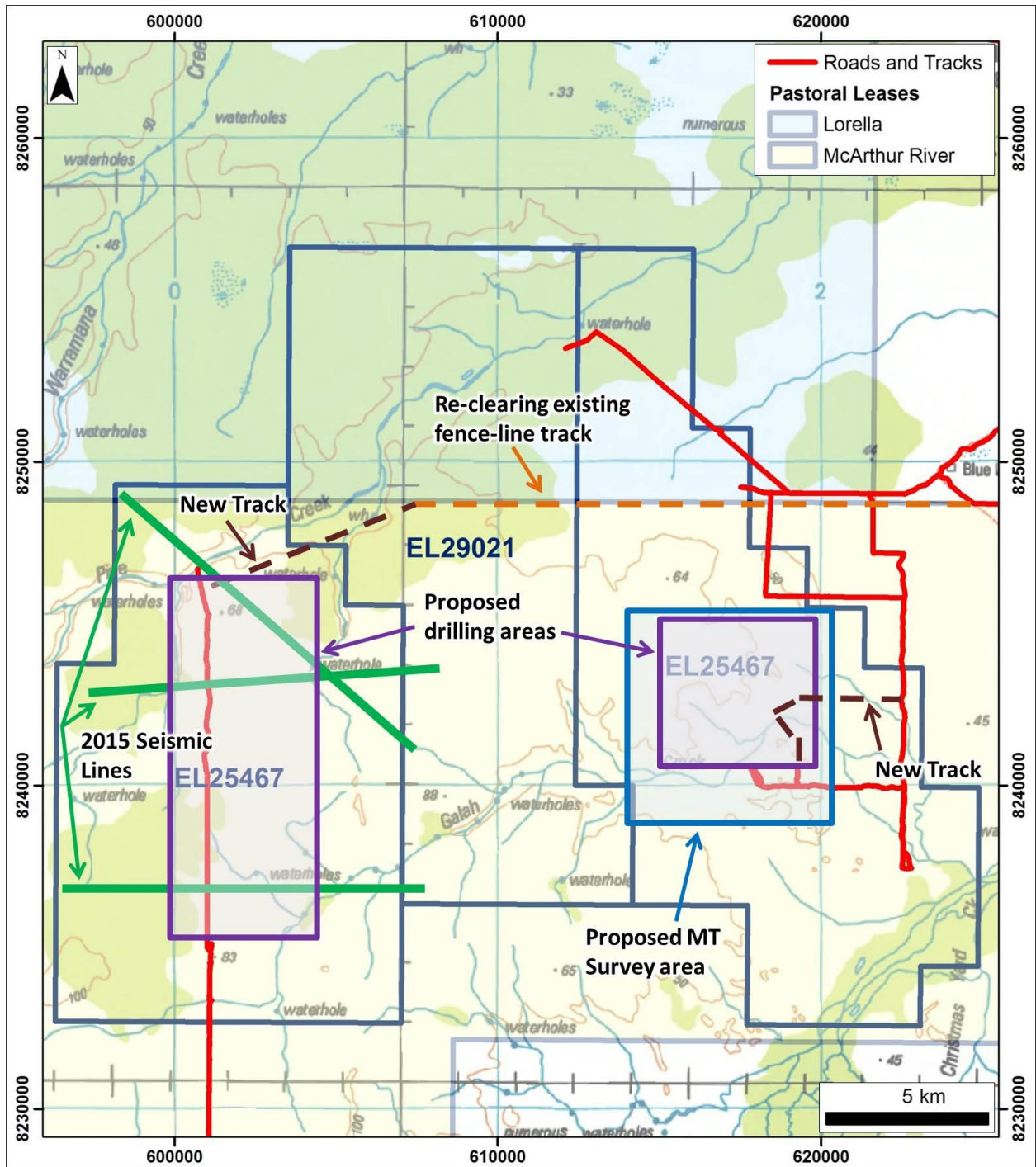


Figure 3 proposed drilling locations

### *Additional Notes*

A blow-out preventer would be fitted to the drill rig due to hole depth (>500m), despite previous experience at the Reward project to the south of Yalco indicating little risk of this occurring. The rig would also be equipped with gas monitors, with drilling halted if gas is detected, only resuming once the gas has dissipated.

Drill collar coordinates represent a centre point of an area 30m x 20m in size. This allows for each collar to be moved within this area without delay should ground problems be encountered during the drilling program, and include the footprint of down-hole geophysical surveys conducted following completion of the holes. Each drill hole requires a safe level pre-prepared work area (drill pad) of approximately 30m x 40m in size, free from vegetation and other fire and staking hazards (e.g. dead timber). The soil from each pad is piled at the side of the pad and returned during rehabilitation. The drill pads are rehabilitated progressively during the drilling program and immediately following the drilling program. It is an objective of Teck's to have all drill pads rehabilitated prior to the wet season at the end of every year.

Following completion of the holes drill sites and sumps will be rehabilitated as per NT Government regulations and requirements providing they will not be used for future programs.

If progressed the construction of a water bore on-site will comply with the Minimum Construction Requirements for Water Bores in Australia. A certified water bore driller will be contracted to undertake this work.

### Access Tracks

Should the diamond drilling of the western target area proceed a second access track may be cleared to support the drilling program; provide a second emergency escape route; and to reduce travel time to and from Borroloola.

Track construction would involve clearing approximately six kilometres of new track and re-clearing 16.5 km of existing fence line tracks that run between McArthur River and Lorella Springs pastoral station. This would be done in consultation with the managers and owners of the two stations.

If the Eastern target area is drill tested, up to 6km of track will be cleared to enable access to the drill site and the water bore.

All tracks would be approximately 2.5m wide and all clearance will be done in consultation with the relevant stakeholders. The track will be constructed to minimize environmental damage and all ground disturbances will be cleared with cultural heritage monitors present. Note that the layout of the tracks shown in figure 3 may change following on from stakeholder consultation and field reconnaissance and assessment of physical factors.

A bull dozer will be used for the work and wherever possible will clear with a raised blade. This prevents windrows from being built up, leaves topsoil in place and minimizes damage to rootstock.

The new access track is likely to be rehabilitated at the end of the 2017 program depending on results.

Summary of Proposed Activities

Activities proposed for the 2017 field season at Yalco are summarised below in

**Table 3** summary of proposed activities

**Table 3** summary of proposed activities

<b>Mining Interests</b>	EL 10316, 30042, 26406 and 27541
<b>What time of the year will exploration occur?</b>	Drilling – between April 2017 and November 2017.
<b>How long is exploration expected to occur?</b>	Drilling: up to 15 weeks, mobilisation to site, camp and site preparation 2-6 weeks; demobilisation, pack up and site rehabilitation 2-4 weeks
<b>Type of drilling</b>	Diamond core, bore
<b>Target Commodity</b>	Zn, Pb, Ag
<b>Is drilling likely to encounter radioactive material</b>	No
<b>Number of proposed drill holes</b>	Up to three diamond drill holes and one water bore are proposed for 2017
<b>Max. Depth of hole</b>	up to 1600m for diamond hole, up to 100m for water bore
<b>Number and dimensions of drill pads</b>	Up to 4 drill pads. 40m x 30m pads for diamond rig (1200m <sup>2</sup> x 3); 20x30m pad for bore (600m <sup>2</sup> )
<b>Is drilling likely to encounter groundwater</b>	Potentially. The holes are planned a few hundred metres away from Pine creek/Galah creek which are likely to have groundwater flowing beneath them.
<b>Number and dimensions of sumps</b>	~2-3 sumps for each diamond hole
<b>Line length (km) / track clearing (m)</b>	Drill tracks: 2km x 2.5m (access to drill pad and water bore) Access tracks: approximately 6km x 2.5m Re-clearing of existing tracks: 16.5km x 2.5m
<b>Costeans</b>	No
<b>Total Bulk samples (l x w x d)</b>	None
<b>Will topsoil be removed for rehabilitation?</b>	No – re-applied over cleared area to facilitate re-vegetation
<b>Previous disturbances yet to be rehabilitated (if known)</b>	Main N-S access track along the Emu Fault Corridor (12.5km)
<b>Total area disturbed (ha)</b>	Up to 4 hectares of new disturbance (drill pads, new tracks, camp sites, laydown areas); approximately 3 hectares of old tracks to rehabilitate.
<b>Other</b>	Note: area of re-cleared existing tracks is approximately 4 hectares

## 4 CURRENT PROJECT SITE CONDITIONS

Table 4 project site conditions

Site Conditions	Description
Local and regional geology	<p>The project overlies rocks the Paleoproterozoic McArthur group, a thick sequence of sedimentary rocks that hosts a number of major zinc-lead orebodies in the region (e.g., HYC, Coxco etc.).</p> <p>Much of the area is covered by recent alluvium with the McArthur group rocks forming occasional outcrops. The Lynott Formation contains thinly bedded and laminated, medium to dark grey, variably pyritic, carbonaceous dolomitic siltstone and minor dolomitic siltstone, sandstone and breccia. The Reward Dolomite is a massive to (less commonly) thinly bedded dolostone, algal dolostone and dolomitic siltstone. Both of these units are resistive and form a considerable portion of the outcrop. Underlying these units is the Barney Creek Formation which comprises massive to thinly bedded and laminated, variably pyritic, carbonaceous dolomitic siltstone and minor dolomitic siltstone, sandstone, breccia and tuffaceous siltstone which are typically recessive. Teena Dolomite is a thick unit of interbedded massive to laminated, light grey to pinkish grey dolostone, algal and stromatolitic dolostone. The unit conformably overlies the Emmerugga Dolomite which consists of massive light grey dolostone and algal dolostone and minor algal plate breccia. The rocks of the McArthur group are faulted, gently folded and un-metamorphosed.</p> <p>The tenement area is assessed as a "G4 Geomorphic Province" (Aldrick &amp; Wilson, 1990). Of the six land systems described by Aldrick &amp; Wilson (1990), three occur within the area of EL10316, EL30042, EL26406, and EL27541</p> <ol style="list-style-type: none"> <li>1. Broad or narrow fluvial corridors conducting regional drainage (i.e., McArthur River). Grey and brown clays and siliceous sands are characteristic, and mid-high open woodland of <i>Eucalyptus Terminalis</i> and <i>e. Microtheca</i> with some <i>e. Papuana</i> and <i>e. Polycarpa</i> occurs. Tall fringing riparian vegetation often includes <i>Melaleuca</i> SPP.</li> <li>2. Level to gently undulating plains of mainly unconsolidated, transported materials. Yellow and brown earths and cracking clays. Mid-high open woodland of <i>E. Tectifca</i>, <i>E. Terminalis</i> and <i>Erythropheleum Cholorostachys</i>.</li> <li>3. Undulating to rolling low hills on mainly argillaceous sediment. Lithosols and shallow yellow earths. Mid-high open woodland of <i>E. Leucophloia</i>, <i>E. Tectifca</i>, <i>E. Terminalis</i> and <i>Erythropheleum Cholorostachys</i>.</li> </ol>
Hydrology	<p>Water for drilling and camping is to be sourced and filtered a water bore that is likely to be drilled between the camp and drill sites.</p> <p>The subsurface hydrology of the Yalco area is poorly understood due to a lack of drilling, notably on the western side of the project. Significant watercourses running through the project include Pine and Galah creeks, which are ephemeral and flow only during the wet season; and Batten creek, which flows year round.</p>
Flora and Fauna	<p>Climate of the area is tropical with the wet and dry seasons occurring between November to March and April to October respectively.</p> <p>The most extensive vegetation is woodland dominated by Darwin Stringybark, <i>Eucalyptus Tetrodonta</i> and Variable-barked Bloodwood c. <i>Dichromophloia</i> with spinifex understorey; and woodland dominated by Northern Box <i>Eucalyptus Tectifca</i> with tussock grass understorey.</p> <p>Investigation of the Northern Territory Natural Resource Management database for this project area is detailed in APPENDIX III and lists the vulnerable and endangered flora and fauna within the region. Fauna within the Yalco project includes kangaroos, wallabies, numerous bird species, lizards, and snakes. Crocodiles are also known to occur in the area. Cane toads Feral pigs and donkeys inhabit the area.</p> <p>Management of feral fauna, weeds and fire control is undertaken in conjunction with other regional stakeholders. Notification of located weeds and our fire control measures will be advised to the pastoralist and local authorities. Weed control will be 'prevention first' approach as per the NT Weeds Management Strategy. Introduction of weeds will be prevented by the prior and regular washing of all machinery prior to entry on site.</p> <p>The area is subject to occasional grass fires although these usually occur at the end of the dry season. Some fires are started by lightning, while others may be licensed controlled burn-offs by landowners. These are monitored via various state and nationally run bushfire websites.</p>

	Data obtained from a recent NRETAS review (see fauna summary Appendix III) identified the potential for the existence of a number of endangered species including the northern quoll and Gouldian finch. Teck Australia will ensure that all staff & contractors are made aware of the potential existence of endangered species and the need to restrict activities to avoid interference of any description.
<b>Current Land Use</b>	The proposed work will fall within the McArthur River Pastoral Lease upon which normal grazing activities are carried out. The pastoral leasee will be contacted regarding the proposed work to be carried out. There are no parks, reserves, communities, town sites or aboriginal land within the boundaries of EL25467 and EL29021. There are no extractive mining activities taking place within EL25467 and EL29021.
<b>Historical, Aboriginal, Heritage Sites</b>	Several AAPA authority certificates covering the Yalco project have been issued: C2015/138

## 5 ENVIRONMENTAL MANAGEMENT SYSTEM

### 5.1 Environmental Policy and Responsibilities

The exploration manager is accountable for ensuring every Teck Australia employee observes this code, and is also responsible for reviewing and updating the Environmental Management procedures that comprise Teck's management system. The HSE coordinator is responsible for the execution of the environmental management of the project.

Teck Resources Australia operates consistently with Teck Resources Limited's Environmental, health, safety and Community management standards which incorporate and the corporate wide Charter of Corporate responsibility, Code of Sustainable Conduct, Health and Safety Policy and Indigenous Peoples Policy which is attached in Appendix IV.

All staff and contractors are responsible for implementing, and conducting sound environmental practices. In particular personnel are made aware of the terms and conditions related to the grant of EL25467 and EL29021.

### 5.2 Statutory and Non-Statutory Requirements

#### 5.2.1 Statutory

Exploration will be conducted in compliance with the conditions of the authorisation and statutory requirements of the Northern Territory and Commonwealth Legislation. Outlined below are the relevant acts considered during exploration.

- Mining Management Act
- Minerals Title Act and Regulations
- Bushfires Act
- Weeds Management Act
- Aboriginal Sacred Sites Act
- Heritage Act
- Work Health and Safety Act
- Soil Conservation and Land Utilisation Act
- Territory Parks and Wildlife Conservation Act
- Plant Health Act
- Waste Management and Pollution Control Act
- Water Act

Relevant legislative and regulatory requirements are captured in Teck's legal risk register which is available for all staff prior to project activities.

### 5.2.2 Non-Statutory

There are no non-statutory requirements for the Yalco project.

### 5.3 Induction and Training

All aspects of this Mine Management Plan and Teck HSEC Standards and policies are presented during inductions for all staff and contractors. Particular attention will be paid to environmental issues during the daily “toolbox” environment and safety review. These would include any fuel/oil spills, water discharges etc. Any issues raised during these meetings will be formally noted in the weekly site report and actioned promptly. Information is also detailed in the relevant sections of both the Geologist and Field Assistant manuals, which are made available onsite.

Onsite inductions will be undertaken and includes reference to:

- Minimising environmental disturbance;
- Use of vehicles on the site;
- Capping all drill holes;
- Weed control;
- Removal and correct disposal of all rubbish from site;
- Removal of sample bags within six months or less;
- Rehabilitation of drill sites and access tracks;
- Responsibilities with regard to avoiding sacred sites and restricted work areas;
- Risk management and safety of all staff and contractors; and
- Incident reporting.

### 5.4 Identification of Environmental Aspects and Impacts

Identification of actual and potential environmental impact is undertaken by an analysis of the task/work to be undertaken. Prior to any field work, Teck Australia conduct comprehensive hazard and environmental impact assessments. These assessments are designed to address site specific conditions, situations, and instigate appropriate mitigation and contingency measures if required. Figure 4 shows the risk matrix used by Teck Australia. Environmental Aspects and Impacts identified for this project are shown in Table 5 Environmental Aspects and Impacts (lists possible incidents and their associated controlling measures). Note that likelihood and consequence ratings as per figure 4 are provided in the risk rating column..

<b>Risk Matrix</b>						
Combined effect of Likelihood / Consequences - Four Levels of Risk						
		Likelihood				
		5. Almost Certain	4. Likely	3. Possible	2. Unlikely	1. Rare
Consequences	A. Catastrophic	Extreme	Extreme	Extreme	High	High
	B. Major	Extreme	Extreme	High	High	Moderate
	C. Moderate	Extreme	Extreme	High	Moderate	Low
	D. Minor	Extreme	High	Moderate	Low	Low
	E. Insignificant	High	High	Moderate	Low	Low

**Figure 4** risk matrix used by Teck Australia



**Table 5** Environmental Aspects and Impacts (lists possible incidents and their associated controlling measures). Note that likelihood and consequence ratings as per figure 4 are provided in the risk rating column.

<b>Environmental Aspects and Impacts</b>								
<i>Use: To assess risks and assign a treatment</i>								
Risk Id	Date Revised	Aspect	Impact	Risk Rating	Management Measures (prevention)	Management Measures (remediation)	Residual Risk Rating	Acceptable? Y/N
1	3/8/2016	Clearing of drill pads / tracks / camp	Loss of native flora and habitat	Low 1, C	As per DME Clearing and Rehabilitation of Tracks.	As per DME Clearing and Rehabilitation of Tracks.	Low	Y
2	3/8/2016	Invasive species	Spread of weeds / pests	High 3, B	Vehicle inspections prior to vehicles entering site. If required, vehicles will be washed down in Borrooloola, or cleaned at Teck's Yalco field camp. Before leaving site vehicles will be inspected. Due to water shortage at site, no wash down facilities are available. Plant material will be manually removed and vehicles will be washed in Borrooloola or at Teck's Reward field camp before leaving the area.	If any invasive species are found at site they will be removed and disposed of.	Low-Mod	Y
3	3/8/2016	Driving	Hitting fauna	Low 1, C	Restricted driving at night, restricted speed limits, awareness of animal pathways	Remove fauna from roads or tracks	Low	Y
4	3/8/2016	Driving – transport of fuels	Hydrocarbon leak / spill* - contamination of soil, surface and ground water	Mod-High 2, C	Suitable containers used for transport, readily available spill kits, procedures for disposing used oils. Conduct regular inspections during transport to ensure no leaks are present	Immediate removal of contaminants and contaminated surface. Disposal at an appropriate waste facility, likely Mt Isa	Low	Y
5	3/8/2016	Fuel Storage	Hydrocarbon leak / spill* - contamination of soil, surface and ground water	Mod-Low 1, C	All fuels are kept in self-bunded areas, with spill kits located in close proximity to fuels. No fuels to be kept within 25m of water course. For drilling, fuel will be stored in a self-bunded fuel truck. Inspections of the storage areas will be undertaken by the senior Teck staff member present on site – includes being built into the drill rig audit. Conduct regular inspections during transport to ensure no leaks are present	Immediate removal of contaminants and contaminated surface. Disposal at an appropriate waste facility, likely Mt Isa	Low	Y
6	3/8/2016	Refueling Vehicles	Hydrocarbon leak / spill* - contamination of soil, surface and ground water	Mod-Low 1, C	All refueling will occur >25m from water courses. Spill kits will be present in case of a spill.	Immediate removal of contaminants and contaminated surface	Low	Y
7	3/8/2016	Refuelling Generators	Hydrocarbon leak / spill* - contamination of soil, surface and ground water	Mod-Low 1, C	All generators kept on spill matting and bunded and/or self bunded Readily available spill kit	Immediate removal of contaminants and contaminated surface	Low	Y
8	3/8/2016	Drilling	Hydrocarbon leak / spill* - contamination of soil, surface and ground water	Mod-Low 1, C	Drilling to occur >25m from water course. Spill kits will be present in case of a spill.	Clean -up kits, Immediate removal of contaminants and contaminated surface	Mod-Low	Y

9	3/8/2016	Drilling	Dust and noise emission - pollution and disturbance to fauna	Low 1, C	Selection of drilling equipment that meets high standards. The rig and ancillary equipment will be subject to a safety audit prior to arriving on site. Due to the use of a diamond drill rig noise and dust pollution will be minimal. Due to the shallow nature of the water bore and the relatively short drill time noise pollution is not expected to have a significant impact on the surrounds.	Use dust and noise suppression if required	Low	Y
10	3/8/2016	Drilling	Sump overflow / spills: pollution and disturbance of flora	Moderate 2, C	Suitable Sump size and number	Pump excess water to other sumps to evaporate	Low	Y
11	3/8/2016	Camp site	Grey water discharge: pollution and disturbance of flora	Low 1, D	Discharge to shallow evaporitic sump, containment in sump, no discharge into streams	Rehab of sump at end of season.	Low	Y
12	3/8/2016	Camp site	Littering : pollution and disturbance of flora and fauna	Low 1, D	All waste will be separated into categories of recyclable, non-recyclable and hydrocarbon, and removed from the site weekly to an appropriate waste disposal facility either in Borroloola or Mt. Isa. No clearing or drilling shall occur within 25m of the riparian vegetation of drainage lines and creeks	Removal of all waste from site.	Low	Y

\*Please note that hydrocarbons used and stored on site will comply with Australian Standard 1940-2004 'The storage and handling of flammable and combustible liquids'.

## **5.5 Environmental Audits, Inspections and Monitoring**

In 2016 Teck implemented an environmental baseline system that requires data collection and environmental management at all stages of the exploration process related to critical themes. These guidelines cover all the stages of exploration.

Environmental Auditing is completed against pre and post disturbance documentation created for drill pad preparation - the Environmental Assessment and Site Preparation Instructions and Checklist.

Ongoing monitoring of disturbed areas is planned till 2020 or further should the level of impact require an extension.

In accordance with the Section 29 of the Mining Management Act, a register of all environmental incidents is recorded in a site register. Incidents that are Class 2 and above will be reported to the Chief Executive Officer of the DPIR in accordance with the procedures set out in the Environmental Incident Reporting Guidelines.

### Weed and Pest management

Vehicles entering and exiting the project will be inspected for pests and weeds. Onsite inspections will involve a visual inspection of the vehicle, with particular emphasis on examining the undercarriage. Any flora or fauna attached to the vehicle will be removed with a brush and disposed of. Due to a lack of facilities and water on-site, cleaning at this stage will not utilize water.

Before going out to site and upon returning from site vehicles will be washed down in Teck Australia's core yard in Borrooloola where water can be readily accessed.

## **5.6 Environmental Performance**

### 5.6.1 Objectives and Targets

The company's goals are to complete environmental inspections at the start and the end of each field season and these are documented internally and reported in the MMP for the next year. The work is completed and signed-off by the HSE coordinator and approved by the exploration manager. Because of the extremely large size of the McArthur River and Lorella Springs pastoral leases, and their remoteness, inspection and sign off by the landholder each year is not always practical.

To date all non-essential tracks have been rehabilitated in accordance with the 2015 MMP and previous objectives prior to the wet season.

Rehabilitated areas from the 2015 field season were visited during Q1 and Q2 of 2016.

### 5.6.2 Performance Reporting

The review completed in Q3 2016 on the condition of the rehabilitated seismic tracks from 2015 showed no issues or corrective actions required. All targets in terms of regrowth and land stability were met.

## **5.7 Emergency Procedures and Incident Reporting**

Emergencies of an environmental nature will be dealt with in accordance with section 5 herein, and also Teck Australia's Environmental Response Plan (Figure 5).

In accordance with the Section 29 of the Mining Management Act, a register of all environmental incidents' are recorded in a site register. Incidents that are Class 2 and above will be reported to the Chief Executive Officer of the DME in accordance with the procedures set out in the Environmental Incident Reporting Guidelines.

# Emergency Response Flow Chart

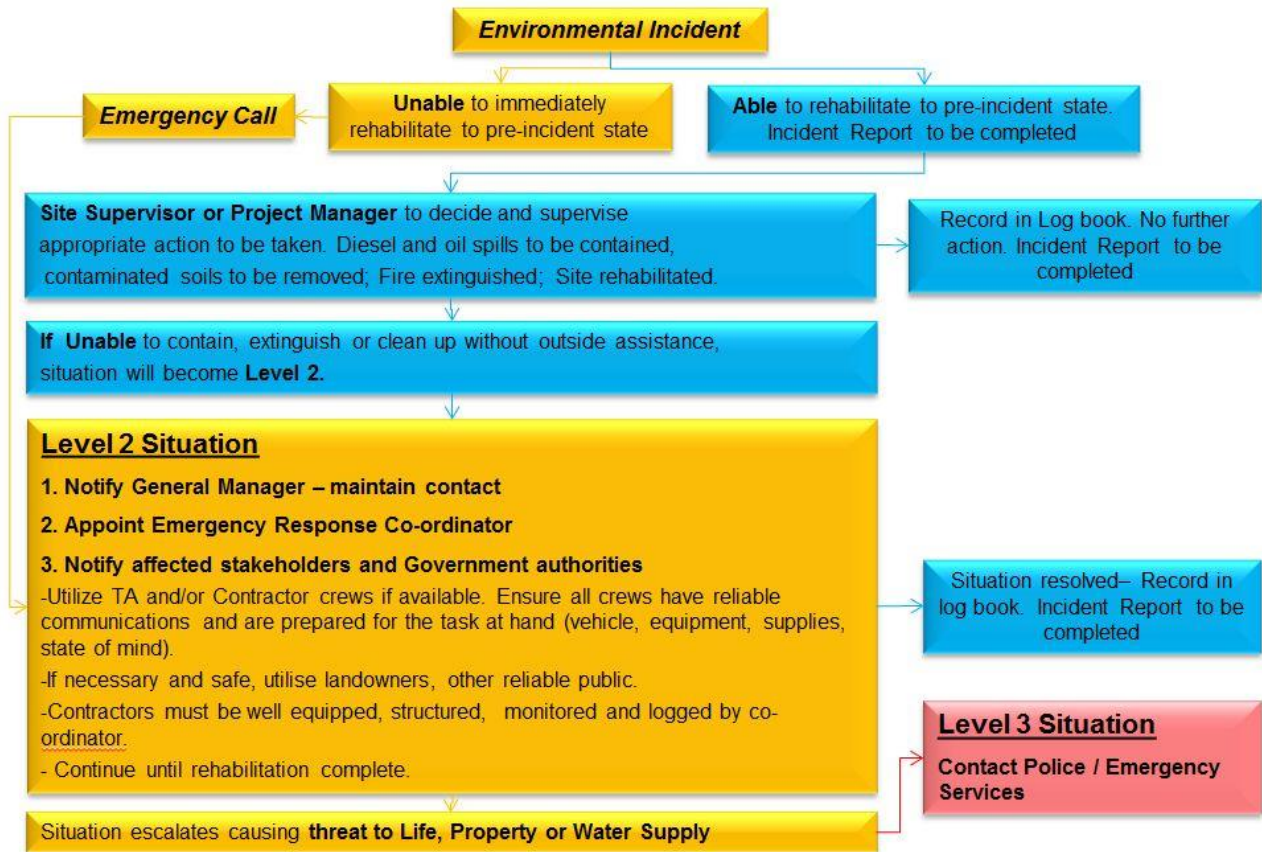


Figure 5 procedure used for dealing with environmental incidents

## 6 EXPLORATION REHABILITATION

The rehabilitation methods used and/or planned for the Yalco program are detailed below (Table 6).

**Table 6** description of rehabilitation methods

Disturbance	Rehabilitation Methods	Schedule (Timing)	Closure Objectives/Tar gets	Monitoring and Remediation
Drill holes (Intersecting aquifers)	Collars capped/plugged immediately after drilling (commonly use concrete plug). When no longer required plugged across aquifer confining bed interface to 4m collars cut off at 400mm below ground level, plugged and backfilled with topsoil/subsoil. Soil backfill should be compacted and mounded slightly over the hole to allow for subsidence and prevent surface water pooling.	Collar temporarily capped after completion of the hole Rehabilitation of drill holes will be done after the drill campaign, and if necessary, after wireline logging. A temp capping may be done if the hole needs to be re-entered.	All holes capped or plugged prior to the start of the wet season/end of program	Inspection of collars (and drill pads) at regular intervals post rehabilitation (starting after the cessation of the wet season), and documented via photo point. Photographs are taken prior, immediately after, and at regular intervals after rehabilitation (6/12/24 months). Identified rehabilitation failures will be remediated as soon as reasonably possible.
Drill holes (Not intersecting aquifers)	Collars capped/plugged immediately after drilling (commonly use concrete plug). When no longer required collars are removed or cut off at 400mm below natural ground surface, plugged and backfilled with topsoil/subsoil. Soil backfill should be compacted and mounded slightly over the hole to allow for subsidence and prevent surface water pooling.	Collar temporarily capped after completion of the hole Rehabilitation of drill holes will be done after the drill campaign, and if necessary, after wireline logging. A temp capping may be done if the hole needs to be re-entered.	All holes capped or plugged prior to the start of the wet season/end of program	Inspection of collars (and drill pads) at regular intervals rehabilitation (starting after the cessation of the wet season), and documented via photo point. Photographs should be taken prior, after, and at regular intervals once rehabilitation has been completed. Identified rehabilitation failures will be remediated as soon as reasonably possible.
Drill pads	All drill cuttings, fencings, and general rubbish removed and disposed of at an approved facility Any windrows surrounding the pad should be removed to prevent erosion. Sumps should be filled and rehabilitated (see point below) The area should then be ripped to a depth of 75mm along the contour (not down slope) to loosen compacted soil and aid re-vegetation Stockpiled soil should be raked over the pad, and then covered with the top soil (kept in a separate pile when originally cleared). Vegetation matter (i.e. trees) removed during clearing should be moved back onto the pad to promote re-vegetation.	Rehabilitation of drill pads will be done after the drill campaign, prior to the start of the wet season.	Drill pads re-vegetated and blending in with natural surroundings. No water pooling/erosion	Inspection of drill pads at regular intervals post rehabilitation (starting after the cessation of the wet season), and documented via photo point. Photographs are taken prior, immediately after, and at regular intervals after rehabilitation (6/12/24 months). Identified rehabilitation failures will be remediated as soon as reasonably possible.
Sumps	Bagged mineralised material (from the SRU) removed and disposed of at an approved facility (likely Mount Isa). If the sump contains slurry, flocculent should be added to remove particulate matter – all 'clean' water must be removed prior to backfilling. All plastic liners, fencing and general rubbish should be removed and disposed of at an approved facility. Stockpiled subsoil during excavation should be used to backfill the sumps, forming a slight mound to allow for subsidence and prevent water pooling. (As per drill pad rehabilitation) Upper topsoil, and removed vegetation should returned to the	Rehabilitation of sumps will be done after the drill campaign, prior to the start of the wet season. It should be done prior to, and/or in conjunction with drill pad rehabilitation.	Sumps re-vegetated and blending in with natural surroundings. No water pooling/erosion	Inspection of sumps (and drill pads) at regular intervals post rehabilitation (starting after the cessation of the wet season), and documented via photo point. Photographs are taken prior, immediately after, and at regular intervals after rehabilitation (6/12/24 months). Identified rehabilitation failures will be remediated as soon as reasonably possible.

	backfilled sumps, and the area ripped to 75mm along to contour to aid re-vegetation and prevent erosion.			
Tracks	<p>Back-grade all windrows onto the access track to prevent channeling and erosion</p> <p>Remove any fill or obstructions placed in gullies, creek beds, or waterways to allow for natural water flow to return</p> <p>Ripping of access tracks may be required if they have become compacted or deeply rutted, or the topsoil has been significantly disturbed.</p> <p>On sloping tracks avoid ripping down the slope. 200mm high berms should be installed perpendicular to the slope to reduce water flow and prevent erosion.</p>	<p>Rehabilitation of tracks will be done after the drill campaign, prior to the start of the wet season. A modified version of this rehabilitation may be done if tracks are to be re-used the following field season.</p>	<p>Tracks re-vegetated and blending in with natural surroundings. No water pooling/erosion.</p>	<p>Inspection of tracks at regular intervals post rehabilitation (starting after the cessation of the wet season), and documented via photographs. Photographs are taken prior, immediately after, and at regular intervals after rehabilitation (6/12/24 months). Identified rehabilitation failures will be remediated as soon as reasonably possible.</p>
Camp	<p>Sewage and grey water pits should have all infrastructure removed as soon as practicable, remaining contents should be buried <i>in situ</i></p> <p>All fencings, recycling, and general rubbish removed and disposed of at an approved facility</p> <p>Any windrows surrounding the site should be removed to prevent erosion</p> <p>The area should then be ripped to a depth of 75mm along the contour (not down slope) to loosen compacted soil and aid re-vegetation</p> <p>Stockpiled soil should be raked over the pad, and then covered with the top soil (kept in a separate pile when originally cleared).</p> <p>Vegetation matter (i.e. trees) removed during clearing should be moved back onto the pad to promote re-vegetation.</p>	<p>Rehabilitation of the camp site will be done after the drill campaign, prior to the start of the wet season. A modified version of this rehabilitation may be done if the camp site is expected to be re-used the following field season</p>	<p>Cam site re-vegetated and blending in with natural surroundings. No water pooling/erosion.</p>	<p>Inspection of camp site at regular intervals post rehabilitation (starting with after the cessation of the wet season), and documented via photographs. Photographs are taken prior, immediately after, and at regular intervals after rehabilitation (6/12/24 months). Identified rehabilitation failures will be remediated as soon as reasonably possible.</p>
Waste Sites	<p>Remove all waste from the exploration site and dispose of at an approved facility</p> <p>All items that can be recycled (plastics, paper etc.) should be taken to the nearest recycling centre</p> <p>Any areas contaminated with hydrocarbons or chemicals during the exploration program need to be remediated if not already done so –removal of all contaminated soil and replacing with clean fill.</p> <p>All fencings, and general rubbish should be removed and disposed of at an approved facility</p> <p>Any windrows surrounding the site should be removed to prevent erosion</p> <p>The area should then be ripped to a depth of 75mm along the contour (not down slope) to loosen compacted soil and aid re-vegetation</p> <p>Stockpiled soil should be raked over the pad, and then covered with the top soil (kept in a separate pile when originally cleared).</p> <p>Vegetation matter (i.e. trees) removed during clearing should be moved back onto the pad to promote re-vegetation.</p>	<p>Rehabilitation of waste sites will be done after the drill campaign, prior to the start of the wet season.</p>	<p>Waste site re-vegetated and blending in with natural surroundings. No water pooling/erosion.</p>	<p>Inspection of waste sites at regular intervals post rehabilitation (starting with after the cessation of the wet season), and documented via photographs. Photographs are taken prior, immediately after, and at regular intervals after rehabilitation (6/12/24 months). Identified rehabilitation failures will be remediated as soon as reasonably possible.</p>

6.1.1 Performance Objectives

<b>Targets to be achieved during the Yalco 2017 exploration program</b>	
<b>Objective</b>	<b>Responsible party</b>
Zero lost time injuries. (Program Completion)	All staff and contractors
No significant safety incidents (program completion)	All staff and contractors
No significant environmental issues. (program completion)	All staff and contractors
Rehabilitation of all drill holes, drill access tracks and drill pads To DPIR requirements. (program completion)	All staff and contractors
Statutory reporting of activities. (program completion)	Project manager