



# Amadeus Basin Exploration

## Terrestrial Ecology Baseline Survey

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## Basis of Report

This report has been prepared by SLR Consulting Australia (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with Mosman Oil and Gas Limited (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

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- Appendix A**    **Likelihood of occurrence assessments**
- Appendix B**    **Vegetation community descriptions**
- Appendix C**    **Flora species list**
- Appendix D**    **Fauna species list**



## 1.0 Introduction

### 1.1 Project background

SLR Consulting Australia Pty Ltd (SLR) was engaged by Enviro-Value Pty Ltd on behalf of Mosman Oil and Gas Ltd to undertake an ecological assessment in support of a proposed 2D seismic gas exploration survey located in NT Exploration Permit EP145, approximately 190 km southwest of Alice Springs, Northern Territory (NT). EP145 is situated on Aboriginal and Leasehold land and covers a combined area of approximately 820 km<sup>2</sup> of the Amadeus Basin. The works involve primarily stick-raking for access of seismic units (LV) and a tracked small rig. Along the seismic lines, it is proposed to drill 100 mm diameter holes 15 m deep and 150 m distance apart and utilise 2 kg charges (within each hole) for the seismic tests.

The study area for this assessment incorporated approximately 101km of seismic lines and 500 m buffer either side of each line. Assessment of terrestrial ecological values in the study area was conducted through a combination of desktop assessment, on-ground field survey and aerial survey by helicopter.

### 1.2 Purpose and objectives

The objective of this report is to describe ecological values and protected matters in accordance with current NT and Commonwealth legislation (see Section 1.4) that occur or may occur in the study area. This was achieved through a combination of desktop and field assessment examining:

- The vegetation communities, habitats and terrestrial flora and fauna biodiversity in the study area,
- The occurrence or potential occurrence of NT listed threatened species or other values, and of matters of national significance (MNES) in accordance with current NT and Commonwealth legislation,
- Water sources and sensitive and significant vegetation within the study area as defined under the NT Planning Act, and
- The occurrence and impacts of pest flora and fauna within the study area.

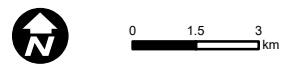
This is the first known terrestrial flora and fauna assessment conducted specifically to inform environmental approvals for development of the study area.



SITE OVERVIEW

LEGEND

- Seismic Line
- Buffer
- Exploration Permit EP145



Coordinate System: GDA2020 MGA Zone 53  
Scale: 1:180,000 at A3  
Project Number: 623.30157  
Date: 10-Aug-2023  
Drawn by: LC



EP145

## 1.3 Regulatory framework

### 1.3.1 Commonwealth legislation

#### 1.3.1.1 Environment Protection and Biodiversity Conservation Act

The Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) is administered by the Australian Government Department of Agriculture, Water and the Environment (DCCEEW). The EPBC Act provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places, which are defined in the EPBC Act as MNES. The MNES listed in the EPBC Act that are relevant to this report are:

- Nationally threatened species
- Migratory species.

Database searches and field assessments should be conducted as part of any flora and fauna impact assessment. The results of these assessments can be used to determine the presence or likelihood of the presence of any MNES within the study area. If any species or communities listed under the EPBC Act are present or likely to be present, an assessment of significance is required. If the proposed action may have a significant impact on a MNES, it must be referred to DCCEEW for assessment. If DCCEEW determines that the proposed action is likely to have significant impacts despite any suggested mitigation strategies, the project will be considered as a controlled action and will require formal assessment and approval. If the proposed action is not likely to be significant, approval is not required if the action is taken in accordance with the referral. Consequently, the action can proceed, subject to any state or local government requirements.

### 1.3.2 Territory legislation

#### 1.3.2.1 Territory Parks and Wildlife Act

The Territory Parks and Wildlife Act 1976 (TPWC Act) is administered by the NT Department of Environment, Parks and Water Security (DEPWS). The TPWC Act makes provisions for the establishment of Territory Parks and other Parks and Reserves and promotes the study, protection, conservation and sustainable utilisation of wildlife. This Act also covers the classification and management of wildlife, classification and control of feral animals, permits for taking wildlife, and designation and management of protected areas and private sanctuaries.

#### Wildlife management

The management of wildlife under this Act is to be carried out in a manner that promotes:

- The survival of wildlife in its natural habitat
- The conservation of biological diversity within the NT
- The management of identified areas of habitat, vegetation, ecosystem or landscape to ensure the survival of populations of wildlife within those areas
- The control or prohibition of:
  - The introduction or release of prohibited entrants into the NT; and
  - Any other act, omission or thing that adversely affects, or will or is likely to adversely affect, the capacity of wildlife to sustain its natural processes
- The sustainable use of wildlife and its habitat



Feral animals are to be managed in a manner that reduces their population and the extent of their distribution within the NT and controls any detrimental effect they have on wildlife and the land.

### **Protected wildlife**

Protected wildlife includes all wildlife that:

- Is in a park, reserve, sanctuary, wilderness zone or area of essential habitat; or
- Is a vertebrate that is indigenous to Australia.

The TPWC Act uses the International Union for the Conservation of Nature (IUCN) criteria to classify species. IUCN criteria classify wildlife into conservation categories as follows:

- Extinct (Ex)
- Extinct in the Wild (EW)
- Critically Endangered (CE)
- Endangered (E)
- Vulnerable (V)

Threatened wildlife is automatically given protected wildlife status.

### **1.3.2.2 Environment Protection Act**

The Environment Protection Act 2019 (EP Act) is administered by DEPWS. The EP Act and subordinate regulation (EP Regulation 2020) legislate the environmental impact assessment and approval process for the NT. The objectives of the act are to:

- Protect the environment of the NT
- Promote ecologically sustainable development so that the wellbeing of the people the NT is maintained or improved without adverse impact on the environment
- Recognise the role of environment impact assessment and environmental approval in prompting the protection and management of the environment
- Provide for broad community involvement during the process of environmental impact assessment and approval
- Recognise the role that Aboriginal people have as stewards of their country as conferred under their traditions and recognised in law, and the importance of participation by Aboriginal people and communities in environmental decision-making processes.

Additionally, the EP Act identifies activity- and location-based triggers, which may result in the referral of an action to the NT Environmental Protection Agency (EPA) for assessment in accordance with the EP Regulation. An activity-based referral trigger includes actions that the Minister considers are likely to have a significant impact on the environment. A location-based referral trigger includes areas that the Minister considers are (a) of significance because of a feature of the natural or cultural environment and (b) likely to be subject to significant impact by actions.

### **1.3.2.3 Weeds Management Act**

The Weeds Management Act 2001 (WM Act) is administered by DEPWS and legislates the declared and potential weeds of the NT and their management. The purpose of the WM Act is to:



- Prevent the spread of weeds in, into and out of the NT and to ensure that the management of weeds is an integral component of land management in accordance with the NT Weeds Management Strategy 1996 – 2005 or any other strategy adopted to control weeds in the NT
- Ensure there is community consultation in the creation of weed management plans
- Ensure that there is community responsibility in implementing weed management plans
- General duties for the owners and occupiers of land identified within the WM Act include, but are not limited to, the requirement for owners and occupiers to:
- Take all reasonable measures to prevent the land being infested with a declared weed
- Take all reasonable measures to prevent a declared weed or potential weed on the land spreading to other land
- Within 14 days after first becoming aware of a declared weed that has not previously been, or known to have been, present on the land, notify an officer of the presence of the declared weed
- Comply with weed management plans relating to declared or potential weeds that are present on the land
- Dispose of a potential weed on land which the potential weed is already present or at a designated weed disposal area.



## 2.0 Flora and fauna assessment methodology

### 2.1 Overall assessment methodology

SLR employed a joint approach of desktop analysis and field surveys in this study. The study team implemented best practice recommendations including from:

- NT Guidelines and Field Methodology for vegetation Survey and Mapping (Brocklehurst et al., 2007)
- Guidelines for Assessment of Impacts on Terrestrial Biodiversity (NT EPA, 2013)

The methodology encompassed two phases – scoping and field survey. The scoping phase encompassed:

- Project planning and definition of objectives
- Assignment of qualified ecologists
- Detailed desktop studies
- Review of previous studies
- Collation of existing records
- The field surveys phase encompassed:
  - Systematic, targeted and incidental flora surveys
  - Vegetation community mapping and assessments
  - Targeted and incidental fauna surveys

The survey work presented in this report was conducted under a permit to interfere with wildlife for commercial purposes (permit number 65326), granted to SLR by the NT Parks and Wildlife Commission.

### 2.2 Desktop analysis

#### 2.2.1 Database searches

The DCCEEW Protected Matters Search Tool (PMST) (DCCEEW, 2023a) and the Natural Resource (NR) interactive mapping tool (NR Maps) (DEPWS, 2023) were utilised to determine species, communities and areas of conservation significance with potential relevance to the study area. Both searches included a 50km buffer around a central co-ordinate within the study area, which includes the entire study area and a large buffer incorporating similar habitat in the surrounding landscape.

The results of database searches and their relevance to the study area are discussed in the Results section of this report. SLR has developed an approach for ranking threatened species and communities recorded from the desktop searches in terms of their likelihood of occurring within the study area. The approach is based on the presence of local records and the habitat requirements for each species. Details of the criteria used to assess the likelihood of occurrence for threatened species are provided in **Table 1**. The potential impacts to threatened species that may occur within the study area are discussed in Section 5 of this report.



**Table 1 Key assessment criteria for likelihood of occurrence of threatened and near threatened species**

Likelihood of occurring	Key criteria	Definition
Present	Present during survey or historical records in the study area	Species was recorded during field surveys or a historical record of the species was located in the study area
High	Known records (<50km) or within species known range AND Suitable habitat of high quality is present	Historical records of the species occur within a 50km radius of the study area or the study area is within the species known range Suitable habitat of high quality exists with the study area
Moderate	Known records (<50km) or within species known range AND Suitable habitat is present, but degraded	Historical records of the species occur within a 50km radius of the study area or the study area is within the species known range Suitable habitat is present but is significantly degraded or fragmented
Low	No records (<50km) and not within species known range OR Habitat present is unsuitable, absent, or highly degraded	No historical records of this species occur within a 50km radius of the study area and/or the study area is not within the known range for this species OR The habitat within the study area is not suitable and/or is in extremely poor condition, or is absent for the species

### 2.2.2 Mapping

The following mapping resources were reviewed as part of the desktop analysis:

- NR Maps (DEPWS, 2023)
- Atlas of Living Australia (ALA) species occurrence maps (ALA, 2023)
- NT Flora Atlas (provided by DEPWS, 2020)
- NT Fauna Atlas (provided by DEPWS, 2020)
- NT weeds database (provided by DEPWS, 2020)
- NVIS Version 3.1 National Vegetation Information System, NT Data Compilation (DENR, 2000)
- PMST interactive mapping tool (DCCEEW, 2023)

### 2.2.3 Nomenclature and taxonomy

Apart from technical descriptions and tables, all flora and fauna species are referred to by their common names throughout this report, with their scientific names given in brackets after the first reference. Scientific names for flora species within this report follow the NT Flora Species Checklist (DEPWS, 2023c). Scientific names for fauna species within this report follow the NT Fauna Species Checklist (DEPWS, 2023d). Where no common name is provided in reference texts, a search was conducted for other accepted common names and, if none were found, only the scientific name was used. An asterisk is used to denote species that are not native to Australia.



## 2.3 Flora survey methodology

### 2.3.1 Overall methodology

Techniques described in the Guidelines and Field Methodology for Vegetation Survey and Mapping (Brocklehurst et al., 2007) were used to collect sufficient data during the field vegetation assessments to validate the vegetation communities identified during baseline assessments within the study area. The key features recorded in the field relevant to this report are:

- Vegetation structure including height of each stratum and cover density
- Key species within each stratum
- Geology, landform and other land unit characteristics.
- Vegetation surveys were conducted from 1 to 6 March 2022. The purpose of flora surveys was to:
- Describe and map vegetation communities throughout the study area
- Perform targeted searches for threatened flora species identified during desktop analyses.

### 2.3.2 Vegetation assessment sites

#### Site selection

Ground-truthing of vegetation associations within the study area involved assessments of the floristic structure and composition at various locations. Assessment sites were located where they would provide representative data for the vegetation association that was the subject of the assessment. Focus was given to areas located within the disturbance footprints of the proposed activities.

The location of the assessment sites and the survey techniques employed were selected to achieve the following:

- Accurately determine each vegetation community along the proposed seismic lines
- Provide data on the vegetation community condition
- Target threatened flora species identified during desktop assessments and their habitat along the proposed seismic lines
- Compile a species inventory for the ground-accessible sections of the study area.

Locations of vegetation assessments are shown in **Figure 2**.

#### Survey techniques

Rapid assessments were conducted to validate the vegetation community mapping and to capture any variability in the structure and composition of vegetation communities. Data collected during rapid assessments included all location, environmental and structural information for the dominant and conspicuous species in each layer. In general, focus was given to the dominant species, crown cover and median height of the ecologically dominant layer, which is used to define each community. Vegetation and/or land unit characteristic notes were also undertaken at additional locations during the assessment.

### 2.3.3 Vegetation mapping

Mapping of vegetation associations was performed using a combination of vegetation traverses, survey by helicopter, and aerial imagery. Using the information gained at each of



the vegetation assessment sites, and observations made during a helicopter survey over the study area, the boundaries of vegetation associations were recorded using handheld GPS devices.

## 2.4 Fauna survey methodology

### 2.4.1 Survey timing and environmental conditions

The timing of fauna surveys incorporated survey timing and effort recommendations outlined in the Environmental Assessment Guidelines for the Northern Territory: Terrestrial Fauna Survey (NRETAS, 2011). Surveys were conducted between 01 and 06 March 2022. The timing of surveys was suited to the detection of most faunal groups as it coincided with an increase in temperatures and the onset of rainfall, which are important triggers for peak faunal activity periods.

### 2.4.2 General survey techniques

General fauna survey techniques employed during the field assessment are detailed below (Table 2). These general survey techniques were employed to develop an inventory of fauna species occupying the study area while traversing the proposed seismic exploration lines. Survey effort employed for each of the fauna survey techniques is outlined in Table 3. However, it should be noted that fauna species were continually observed throughout the survey period and incidental records were frequently obtained throughout the general area. Any notable observations, tracks, scats or other signs of fauna were recorded with reference to the location and habitat type.

**Table 2 Fauna survey methods employed throughout the study area**

Survey method	Description
Active diurnal searches	Active diurnal searches were undertaken concurrently with vegetation assessments throughout the study area. This technique involved intensive investigation of ground layer habitat features (such as under logs, rocks and leaf litter), low vegetation (under bark and tree stumps) for cryptic fauna, particularly reptiles. Searches were focussed during times of the day when reptile activity was likely to be at its peak.
Diurnal bird surveys	Birds were surveyed within each systematic fauna site for a total of at least one hour at multiple periods throughout the day, but with a particular focus during peak activity in the morning and around waterbodies. Incidental observations made whilst conducting other survey techniques were also recorded. Birds were identified from either direct observation or by their calls.
Nocturnal surveys	High-powered spotlights were used to survey nocturnal mammals (arboreal and terrestrial), birds (active nocturnal species) reptiles and frogs, with a focus on areas identified as suitable for nocturnal threatened species.
Helicopter survey for large diurnal animals and fauna habitat features	An aerial survey was undertaken to search for active large species such as Central Australian Rock-wallaby, and to search for and map suitable habitat features for threatened fauna (particularly figs, which are habitat for SRE snails).



**Table 3 Fauna survey effort for each technique**

Method	Site survey effort	Total survey effort
Diurnal active search	2 person-hours x 2 people x 3 days	12 person-hours
Diurnal bird survey	20 person-minutes x 2 people x 3 days	1.8 person-hours
Spotlight/ nocturnal searches	1.5-hour search x 2 people x 2 nights	6 person-hours
Helicopter survey	Aerial survey of all proposed seismic lines	4 person-hours

### 2.4.3 Targeted survey techniques

Targeted survey techniques were used to increase the likelihood of detecting conservation significant species and/or their habitat.

Several threatened fauna species identified in the desktop assessments have the potential to occur in the study area. The presence/absence of several of these species may be difficult to determine due to the cryptic nature of many of these species and the scale of the study area. Therefore, the mapping of potential habitat for these species was undertaken at accessible locations along the seismic lines and extrapolated using a combination of aerial survey and aerial imagery.

#### 2.4.3.1 SRE snails

Assessment for short-range endemic (SRE) snails focussed on the assessment of landscape determinants of habitat suitability. The helicopter survey included searches for fig trees on rocky scarps and ranges, and any fig trees observed were recorded on a GPS device. As microhabitats for these snails are highly localised, consisting especially of leaf litter under fig trees, active searches of habitats for the snails was not undertaken to avoid destruction of habitat. The presence of figs was used as an indicator of likely snail presence.

#### 2.4.3.2 Slater’s Skink

Searches for potential signs of Slater’s Skink were undertaken in habitats dominated by or with many shrubs of the genera *Eremophila* or *Acacia* on sandy and friable soils. If potential burrows were identified, further monitoring at night or using IR cameras was to be undertaken where possible.

## 2.5 Aerial survey

A substantial survey effort by helicopter was undertaken, using Alice Springs Helicopters and commissioning of a pilot qualified for low level survey operations. All seismic study lines that were subject to survey were traversed by helicopter. Where possible the helicopter was landed to allow brief on-ground assessment of certain habitat features (key among which was habitat for SRE snails).

During the aerial survey, georeferenced photographs were taken at regular intervals along each of the proposed seismic lines to support vegetation community mapping.

The extent of aerial survey is shown as points taken intermittently during the helicopter survey in **Figure 2**.

## 2.6 Survey limitations

The ground-based field assessment was substantially reduced in terms of scope, effort and ground covered due to significant challenges encountered in traversing the study area. Due to an extended period without use, many access tracks were severely eroded and/or



overgrown by dense thickets of *Acacia* spp. and other shrubs. Erosion included creek crossings and, in severe cases, mobilisation of deep sandy subsoils to >2 m, making tracks impossible to follow. Further, environmental flows in Illara Creek made this system impassable during the survey. Ecologists traversed an alternative track in the south of EP145; however, this track could not be followed through a gap in a rocky range created by Walker Creek, which contained water at the time of the survey.

Very high daily temperatures compounded the access difficulties encountered during the survey such that ground traverses of the study area could not be undertaken using the locations reached as a base. The study area was too large to risk travel on foot as daily temperatures exceeded 40°C.

Access issues were overcome in part through traversing difficult terrain with 4wd vehicle; however, given the conditions (multiple gully crossings requiring lowering of vehicle tyre pressure, extensive Mulga lands presenting risk of tyre puncture), this form of movement across site was slow and arduous and efforts to obtain access to key parts of the study area were unsuccessful. High temperatures and risks associated with reduced emergency response led to premature cessation of the ground-based survey. A survey by helicopter was then undertaken to provide a broader scale dataset through which the ground-based survey data could be extrapolated to the entire survey area.





Key survey effort limitations resulting from inaccessibility of much of the survey area during ground survey, and reduced effort, are:

- Some landforms, vegetation communities and fauna habitats were not subject to detailed ground survey due to lack of on-ground access; descriptions of these areas are based on extrapolation of field data and review of available literature.
- While searches were conducted for signs of Slater's Skink, spotlighting effort was reduced and survey time was insufficient to establish IR cameras at possible burrows.
- Targeted survey effort for threatened species identified as likely or moderately likely to occur—including Slater's Skink, Central Australian Rock-wallaby, Grey Falcon, several threatened flora species and several species of short range endemic (SRE) snail—were reduced. Survey effort for some species, including Central Australian Rock-wallaby, MacDonnell Ranges Cycad (*Macrozamia macdonnellii*) and habitats for SRE snails, were supplemented through helicopter survey.

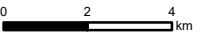


FIELD SURVEY AND AERIAL SURVEY LOCATIONS

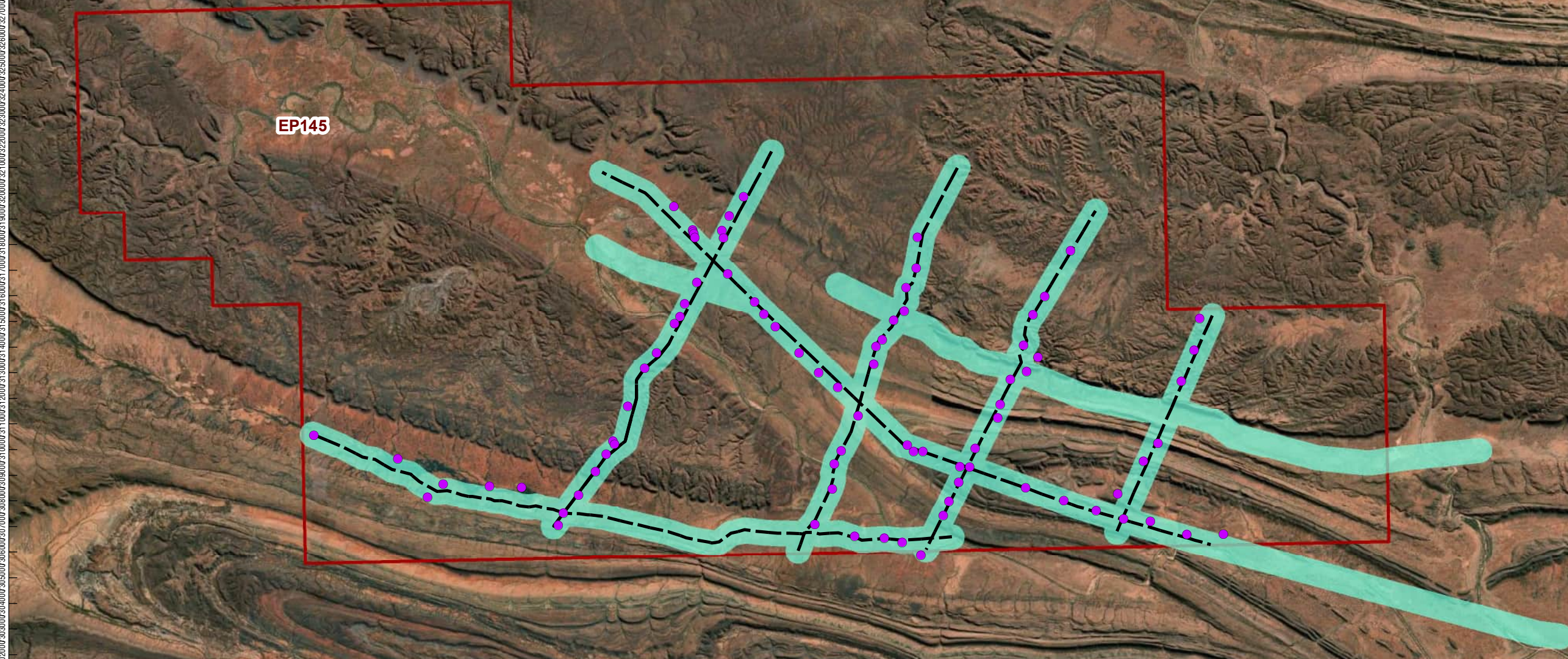
LEGEND

-  Aerial Survey Extent
-  Seismic Line
-  Buffer
-  Exploration Permit EP145

EP145



Coordinate System:	GDA2020 MGA Zone 53
Scale:	1:180,000 at A3
Project Number:	623.30157
Date:	10-Aug-2023
Drawn by:	LC



## 3.0 Desktop analysis results

### 3.1 Database searches

The EPBC Act PMST (DCCEE, 2020a, see Appendix A) and NR Map (DEPWS, 2020) searches identified eight threatened flora species, 20 threatened fauna species and 10 migratory fauna species as potentially occurring within the study area.

#### 3.1.1 NVIS vegetation communities

NR Map (DEPWS, 2020) searches identified six vegetation communities described under the NVIS within the study area. Table 4 provides a description of these communities.

**Table 4 NVIS communities identified within the study area on NR Maps (DEPWS, 2020)**

Veg. ID	NVIS L4	Community description	Environment description
444	Acacia mid sparse shrubland\Salsola low forbland	M <i>Acacia tetragonophylla</i> , <i>Acacia kempeana</i> +/- <i>Atalaya hemiglauca</i> \shrub\4\r; G ^ <i>Salsola kali</i> , <i>Thysanotus banksii</i> , <i>Enneapogon cylindricus</i> \forb\1\c	Stone mantled plains/Plains, red earths
423	Acacia mid sparse shrubland\Triodia low open hummock grassland	M ^ <i>Acacia macdonnellensis</i> , <i>Eucalyptus pachycarpa</i> , <i>Acacia aneura</i> \shrub\4\r;G+ ^ <i>Triodia brizoides</i> , <i>Triodia</i> spp., <i>Eriachne mucronata</i> \hummock grass, tussock grass\1\i	Rugged sandstone and quartzite hills, shallow gravelly sands, extensive areas of bare rock
577	<i>Allocasuarina</i> low open woodland\Acacia mid sparse shrubland\Triodia low hummock grassland	U ^ <i>Allocasuarina decaisneana</i> +/- <i>Acacia aneura</i> +/- <i>Acacia estrophiolata</i> \tree\6\r;M ^ <i>Acacia ligulata</i> , <i>Acacia dictyophleba</i> , <i>Acacia murrayana</i> \shrub\3\r;G+ ^ <i>Triodia basedowii</i> , <i>Triodia pungens</i> +/- <i>Triodia schinzii</i> \hummock grass\1\c	Extensive dune fields, infertile red siliceous and clayey, sands
367	Acacia low open woodland\Acacia tall sparse shrubland\Eragrostis low open tussock grassland	U+ ^ <i>Acacia estrophiolata</i> , <i>Atalaya hemiglauca</i> +/- <i>Acacia kempeana</i> \tree\6\r;M ^ <i>Acacia estrophiolata</i> , <i>Atalaya hemiglauca</i> +/- <i>Senna artemisioides</i> +/- <i>Acacia murrayana</i> \shrub\4\r;G ^ <i>Eragrostis eriopoda</i> , <i>Chrysopogon fallax</i> , <i>Chloris pectinata</i> \tussock grass\1\i	Gentle undulating plains, deep sands on alluvial fans/sands
420	Acacia low woodland\Prostanthera mid sparse shrubland\Triodia low hummock grassland	U ^ <i>Acacia aneura</i> , <i>Acacia kempeana</i> , <i>Acacia macdonnellensis</i> \tree\6\i;M ^ <i>Prostanthera striatiflora</i> +/- <i>Eremophila gilesii</i> +/- <i>Acacia aneura</i> \shrub\3\r;G+ ^ <i>Triodia melvillei</i> , <i>Eriachne mucronata</i> +/- <i>Enneapogon polyphyllus</i> \hummock grass, tussock grass\1\c	Rugged sandstone /quartzite ranges, shallow, gravelly, sandy soils
426	<i>Eucalyptus</i> low open woodland\Acacia mid open shrubland\Triodia low hummock grassland	U <i>Acacia aneura</i> , ^ <i>Eucalyptus gamophylla</i> , <i>Corymbia bella</i> \tree\6\r;M ^ <i>Acacia tetragonophylla</i> , <i>Eremophila sturtii</i> +/- <i>Hakea suberea</i> \shrub\3\i;G+ ^ <i>Triodia brizoides</i> , <i>Eriachne mucronata</i> , <i>Enneapogon oblongus</i> \hummock grass, tussock grass\1\c	Rocky hills, sandstone and quartzite ranges, shallow, gravelly sands, extensive areas of bare rock



### 3.1.2 Wetlands of international importance

The EPBC Act PMST report (DCCEEW, 2020a) did not identify any Ramsar wetlands of international importance within 50km of the study area.

### 3.1.3 Sites of conservation significance

Two recognised NT sites of conservation significance are located within 50 km of the study area (DEPWS, 2020) (**Figure 3**):

- Greater MacDonnell Ranges
- George Gill Range and Surrounds.

Both above sites are in part located within EP145—Greater MacDonnell Ranges in the northeast corner of the EP area, and George Gill Range and Surrounds in the southwest corner. Several other recognised NT sites of conservation significance are located ~90 km from the study area; these include Cleland Hills and Surrounds, Lake Amadeus and Lake Neale, Mount Liebig and Surrounds, and Waterhouse Range (DEPWS, 2020; Ward and Harrison, 2009).

### 3.1.4 Threatened ecological communities

No threatened ecological communities (TECs), as defined under the EPBC Act, were identified as potentially occurring within the PMST within a 50 km radius of the study area.

### 3.1.5 Threatened flora species

The PMST (DCCEEW, 2023a) and NT Flora Atlas (DEPWS, 2023) database searches identified seven threatened flora species as potentially occurring within 50 km of the study area (**Table 5**).

### 3.1.6 Threatened fauna species

A total of 21 threatened fauna species were returned from the database searches as potentially occurring within 50 km of the study area (**Table 6**). These include 14 species from the PMST (DCCEEW, 2023a) and 11 species from NT Fauna Atlas searches (DEPWS, 2023). The results of assessment of the likelihood of each of these species to occur within the study area are also provided; justification for the likelihood of occurrence outcome for each species is provided in Appendix B.

### 3.1.7 Migratory species

The EPBC Act PMST identified 10 migratory terrestrial species with potential to occur within 50 km of the study area (**Table 7**) (Appendix B). The likelihood of occurrence of each of these species was deemed low. Justification for the potential likelihood of occurrence outcome for each species is provided in Appendix B.



SITES OF BOTANICAL AND CONSERVATION SIGNIFICANCE

LEGEND

- Seismic Line
- Buffer
- Site of Botanical Significance
- Site of Conservation Significance
- Exploration Permit EP145

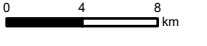
GREATER  
MACDONNELL  
RANGES

BOWSON

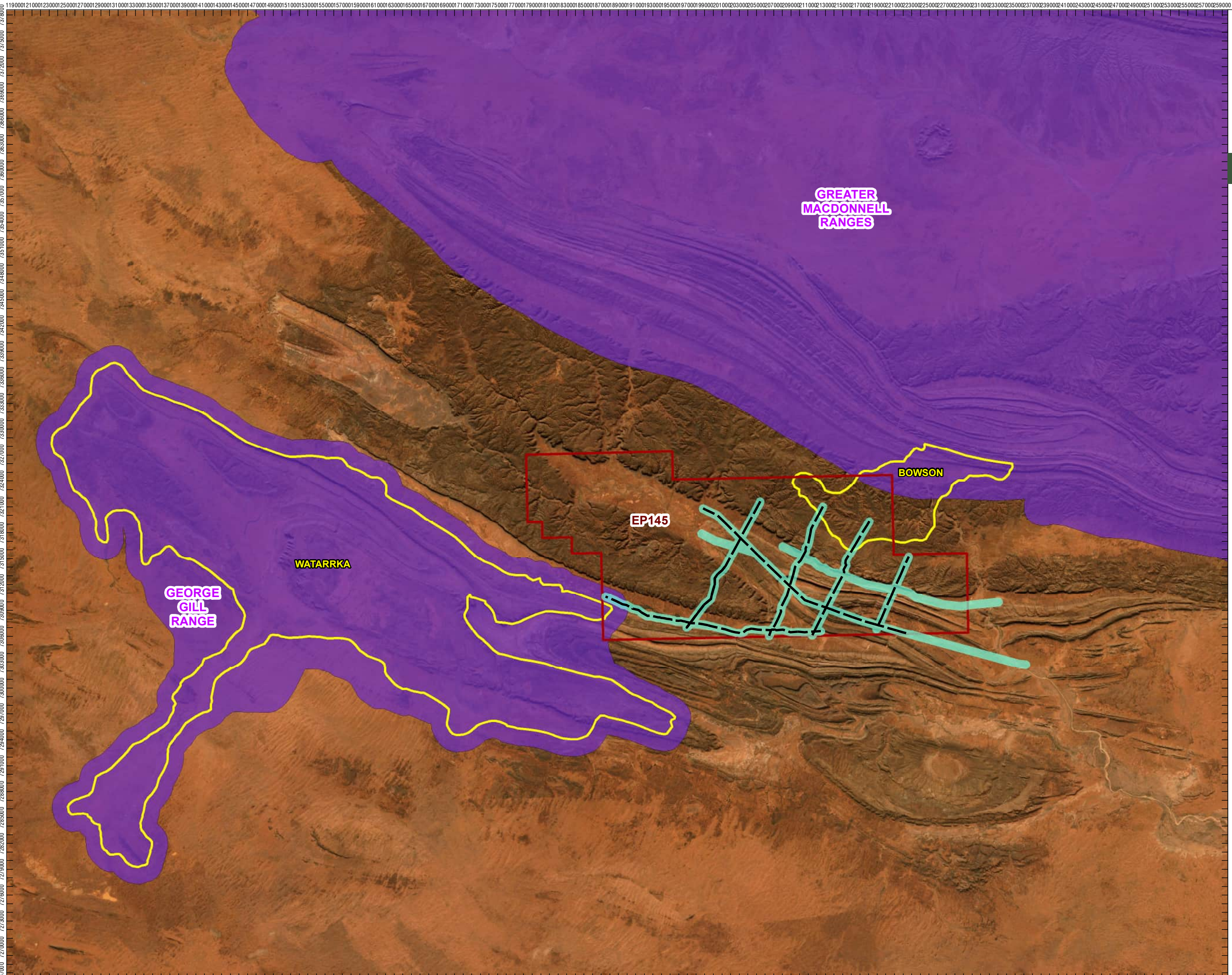
EP145

WATARRKA

GEORGE  
GILL  
RANGE



Coordinate System:	GDA2020 MGA Zone 53
Scale:	1:400,000 at A3
Project Number:	623.30157
Date:	10-Aug-2023
Drawn by:	LC



**Table 5 Threatened flora species identified from database searches**

Status		Family	Scientific name	Common name	Source	Local records	Likelihood of occurrence
TPWC Act	EPBC Act						
V	V	Asteraceae	<i>Minuria tridens</i>	Minnie Daisy	PMST and NR Maps	21	High
E	—	Cyperaceae	<i>Baumea arthropphylla</i>	Baumea	NR Maps	5	High
V	—	Euphorbiaceae	<i>Amperea spicata</i>	Amperea	NR Maps	18	High
V	V	Fabaceae	<i>Acacia latzii</i>	Tjilpi Wattle	PMST	0	Low
NT	V	Myrtaceae	<i>Thryptomene hexandra</i>	Palm Valley Myrtle	NR Maps	19	High
V	—	Santalaceae	<i>Santalum acuminatum</i>	Desert Quandong	NR Maps	46	High
NT	V	Zamiaceae	<i>Macrozamia macdonnellii</i>	MacDonnell Ranges Cycad	PMST	49	High

**Table 6 Threatened fauna species identified from database searches**

Status		Family	Scientific name	Common name	Source	Local records	Likelihood of occurrence
TPWC Act	EPBC Act						
<b>BIRDS</b>							
V	V	Accipitridae	<i>Erythrotriorchis radiatus</i>	Red Goshawk	PMST	0	Low
V	V	Falconidae	<i>Falco hypoleucos</i>	Grey Falcon	PMST/NR Maps	12	High
EX	V	Maluridae	<i>Amytornis modestus</i>	Thick-billed Grasswren	NR Maps	8	Low
E	E	Rostratulidae	<i>Rostratula australis</i>	Australian Painted Snipe	PMST	0	Low
V	CE, M, Ma	Scolopacidae	<i>Calidris ferruginea</i>	Curlew Sandpiper	PMST	0	Low
E	E	Psittacidae	<i>Pezoporus occidentalis</i>	Night Parrot	PMST	0	Low
V	V	Psittacidae	<i>Polytelis alexandrae</i>	Princess Parrot	PMST	6	Low



Status		Family	Scientific name	Common name	Source	Local records	Likelihood of occurrence
TPWC Act	EPBC Act						
LC	V	Acanthizidae	<i>Aphelocephala leucopsis</i>	Southern Whiteface	NR Maps/PMST	151	<b>Present</b>
<b>MAMMALS</b>							
DD	E	Dasyuridae	<i>Sminthopsis psammophila</i>	Sandhill Dunnart	PMST	1	Low
EWNT	E	Macropodidae	<i>Lagorchestes hirsutus</i>	Rufous Hare-Wallaby	PMST	0	Low
NT	V	Macropodidae	<i>Petrogale lateralis centralis</i>	Central Australian Rock-wallaby	NR Maps/PMST	11	<b>High</b>
CE	CE	Muridae	<i>Zyzomys pedunculatus</i>	Central Rock-rat	PMST	0	Low
E	V	Megadermatidae	<i>Macroderma gigas</i>	Ghost Bat	PMST	0	Low
V	V	Thylacomyidae	<i>Macrotis lagotis</i>	Greater Bilby	NR Maps/PMST	6	Low
<b>REPTILES</b>							
V	V	Scincidae	<i>Liopholis kintorei</i>	Great Desert Skink	PMST	0	Low
V	E	Scincidae	<i>Liopholis slateri slateri</i>	Slater's Skink	NR Maps/PMST	33	High
<b>INVERTEBRATES</b>							
V	—	Camaenidae	<i>Granulomelon squamulosum</i>	Palm Valley Rocksnail	NR Maps	2	<b>High</b>
V	—	Camaenidae	<i>Semotrachia elleryi</i>	Ellery Creek Squat Snail	NR Maps	4	<b>High</b>
V	—	Camaenidae	<i>Semotrachia esau</i>	Krichauff Ranges Squat Snail	NR Maps	32	<b>High</b>
V	—	Camaenidae	<i>Semotrachia illarana</i>	Illara Waterhole Squat Snail	NR Maps	18	<b>High</b>
NT	E	Camaenidae	<i>Sinumelon bednalli</i>	Bednall's Dwarfmelon	NR Maps	2	<b>High</b>

EX = extinct; EWNT = extinct in the wild in the Northern Territory (TPWC only); CE = critically endangered; E = endangered; V = vulnerable, NT = near threatened, DD = data deficient (TPWC Act only); LC = least concern



**Table 7 Migratory terrestrial fauna species identified from database searches**

Status		Family	Scientific name	Common name	Source	Local records	Likelihood of occurrence
TPWC Act	EPBC Act						
LC	M, Ma	Apodidae	<i>Apus pacificus</i>	Fork-tailed Swift	PMST / NR Maps	0	High
LC	M, Ma	Charadriidae	<i>Charadrius veredus</i>	Oriental Plover	PMST	0	Low
LC	M, Ma	Glareolidae	<i>Glareola maldivarum</i>	Oriental Pratincole	PMST / NR Maps	0	Low
NE	M	Motacillidae	<i>Motacilla cinerea</i>	Grey Wagtail	PMST	0	Low
NE	M, Ma	Motacillidae	<i>Motacilla tschutschensis</i> <sup>1</sup>	Eastern Yellow Wagtail	PMST	0	Low
LC	M, Ma	Scolopacidae	<i>Actitis hypoleucos</i>	Common Sandpiper	PMST / NR Maps	7	Low
LC	M, Ma	Scolopacidae	<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	PMST / NR Maps	3	Low
V	CE, M, Ma	Scolopacidae	<i>Calidris ferruginea</i>	Curlew Sandpiper	PMST / NR Maps	0	Low
DD	M, Ma	Scolopacidae	<i>Calidris melanotos</i>	Pectoral Sandpiper	PMST	0	Low

<sup>1</sup> Synonymous with Yellow wagtail (*Motacilla flava*), which is identified within the EPBC Act PMST report.



## 4.0 Field survey results

### 4.1 Environmental conditions

Weather conditions during the survey period were favourable for detecting most vertebrate fauna groups. Recent rainfall left surface water pools in watercourses and rockholes within the study area and supported the growth and reproduction of annual plants and resulted in high faunal activity. Activity levels of most fauna were in the early mornings and evenings; very high daily temperatures led to reduced activity in the heat of the day.

### 4.2 Flora survey results

#### 4.2.1 Vegetation communities

The following seven vegetation communities were ground-truthed within the study area:

- Mulga (*Acacia aneura*) and other *Acacia* spp. low woodland on plains of clay-loam or sandy loam.
- Blue-leaved Mallee (*Eucalyptus gamophylla*) and *Acacia* spp. open woodland on red sand dunes, swales and plains.
- MacDonnell Mulga (*Acacia macdonnellensis*) and/or Mulga open woodland to open forest on rocky hills and sandstone ranges.
- River Red Gum fringing woodland on quaternary alluvium.
- Wetlands and waterholes on sandstone and quartzite ranges.
- Desert Oak (*Allocasuarina decaisneana*) open woodland with tussock grasses on red dunes.
- Mulga open forest to forest on drainage lines of quaternary alluvium, and adjacent alluvial plains.

Descriptions of these communities are provided below; floristic composition and structural information is provided in Appendix B and mapped extents are presented on **Figure 4**, **Figure 5**, **Figure 6** and **Figure 7**. Two types of sensitive vegetation (as defined in the NT Land Clearing Guidelines (DEPWS, 2023a)) were identified within the study area:

- Riparian vegetation supporting high densities of hollow-bearing *Eucalyptus* spp. trees.
- Potentially groundwater-dependent vegetation, including riverine wetlands with semi-permanent to permanent shallow groundwater and small wetlands in drainage lines and gaps in sandstone ranges.

Rainfall in the months prior to the survey meant that plant species were generally identifiable; many species, particularly in the ground layer, were reproductive, facilitating identification.

Minor to moderate impacts from feral herbivores and localised impacts from historical anthropogenic disturbance were observed in some vegetation communities (absent from rocky hills and ranges). Pastoral grasses, particularly Buffel Grass, were widespread but patchily distributed, occurring on clay-loam soils and virtually absent from red sandy soils and rocky areas.



#### 4.2.1.1 Mulga (*Acacia aneura*) and other *Acacia* spp. low woodland on plains of clay-loam or sandy loam

This community was widespread in the study area and highly variable in structure. More comprehensive survey effort would likely allow this community to be dissected into two or more NVIS units, particularly *Acacia* mid sparse shrubland with chenopods and *Acacia* low open woodland with tussock grasses. Mulga was the dominant canopy species across much of this community, but in some areas other species (particularly Ironwood (*Acacia tetragonophylla*), Wanderrie Wattle (*A. kempeana*), Dead Finish (*A. estrophiolata*) and Whitewood (*Atalaya hemiglauca*) were locally dominant, with structure ranging from low woodland to shrubland. *Eremophila* spp. were common to dominant components of a lower shrub layer, where present.

The ground layer was dominated by either native tussock grasses (particularly of the genera *Aristida*, *Enneapogon*, *Eragrostis*, and *Eriachne*) or by chenopods (*Maireana*, *Salsola* and *Sclerolaena* spp.); Buffel Grass was locally dominant in some areas and was widespread in the study area.

#### 4.2.1.2 Blue-leaved Mallee and *Acacia* spp. open woodland on red sand dunes, swales and plains

This community was patchily distributed in the east of the study area and was the dominant community in low-lying areas in the west of the study area. The sparse canopy was generally dominated by Blue-leaved Mallee, with occasional Desert Bloodwood (*Corymbia opaca*); Mulga was common, occurring in drainage depressions and low-relief areas.

Where a shrub layer was present it was dominated by *Eremophila* and low *Acacia* spp. shrubs. The ground layer was generally dominated by hummock grasses, especially Lobed Spinifex (*Triodia basedowii*), with bluebushes and saltbushes common.

#### 4.2.1.3 MacDonnell Mulga and/or Mulga open woodland to open forest on rocky hills and sandstone ranges

Structurally diverse community, varying primarily in the dominant tree species and canopy density. MacDonnell Mulga or Mulga were generally the dominant tree species, but in some areas Finke River Mallee (*Eucalyptus sessilis*) dominated, and generally Horse Mulga (*Acacia ramulosa* var. *linophylla*) was the dominant species on foothills and lower slopes. Canopy density ranged from open woodland (>10%) to forest (>70%).

Shrub layers on foothills were moderately diverse, including *Eremophila* spp., Indigo (*Indigofera basedowii*), Wormwood Senna (*Senna artemisioides* nothosp. *artemisioides*), Holly-leaved Grevillea (*Grevillea wickhamii*) and Spearwood (*Pandorea doratoxylon*) and Sandalwood (*Santalum lanceolatum*). The ground layer was sparse to moderately dense and generally dominated by hummock grasses, particularly Weeping Spinifex (*Triodia brizoides*). Native forbs were moderately diverse.

#### 4.2.1.4 River Red Gum fringing woodland on quaternary alluvium

This community was restricted to substantial watercourses but was widespread in the study area. River Red Gum was generally the sole tree species, though other Myrtaceae species trees occasionally occurred. The shrub layer was absent to highly diverse; Narrow-leaved Paperbark (*Melaleuca linariifolia* var. *trichostachya*) was generally dominant on larger systems, particularly near semi-permanent or permanent pools. In ecotones between riparian vegetation and rocky ranges (gaps) shrub diversity was very high.

Ground cover was variable and depended on the adjacent vegetation type. Much of this community was subject to infestation by either Bermuda Grass (*Cynodon dactylon*) or Buffel Grass. In areas of native ground cover, tussock grasses were generally dominant.



#### **4.2.1.5 Wetlands and waterholes on sandstone and quartzite ranges**

Rockholes in the various sandstone and quartzite ranges in the study area supported numerous shallow to very deep gorges and gaps, many of which supported riparian vegetation and species reliant on semi-permanent pools and/or groundwater. Larger gorges and gaps with pools typically supported Ghost Gum (*Corymbia bella*) and Small-leaved Rock Fig (*Ficus brachypoda*); smaller gaps and drainage features supported figs only.

Where permanent pools occurred in depressions of sufficient size and alluvium was deposited, small wetlands of native plant species formed. The species composition of these wetlands was not recorded as these wetlands were observed only during the helicopter survey.

#### **4.2.1.6 Desert Oak open woodland with tussock grasses on red dunes**

This community was highly localised, occurring in one area in the centre of the study area. The canopy was dominated by Desert Oak. The community was not accessed by ground; however, assessment by helicopter indicates the community has a sparse canopy, a sparse shrub layer of *Eremophila* spp. and Whitewood, and a sparse to dense ground cover of native tussock grasses.




#### **4.2.1.7 Mulga open forest to forest on quaternary alluvium**

Dense forests of Mulga were observed during the helicopter survey, associated with drainage features and adjacent floodplains on grey-brown alluvial (likely clay-loam) soils. River Red Gum was a common emergent. Other structural and species composition of these communities were not recorded.



VEGETATION COMMUNITIES OVERVIEW

LEGEND

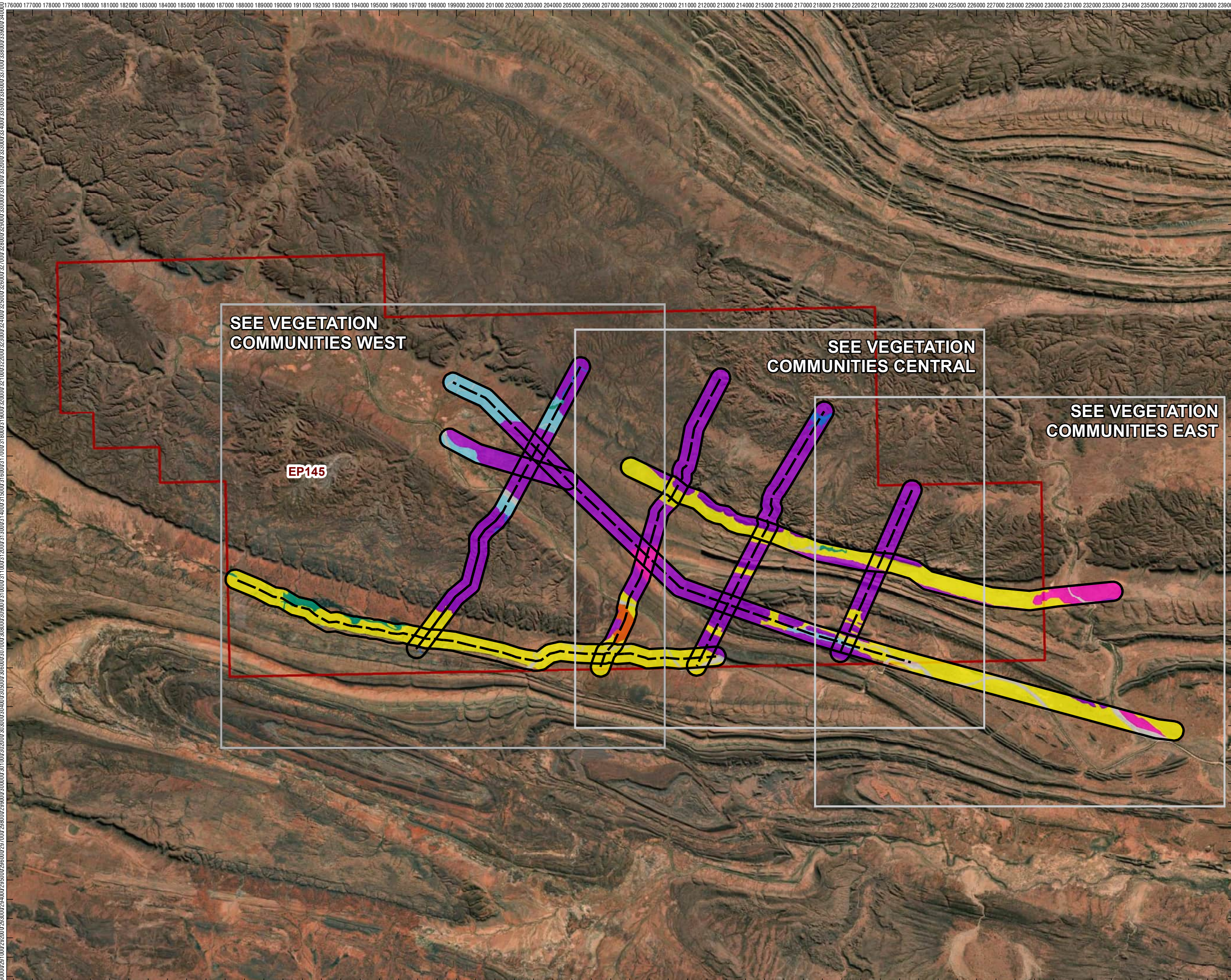
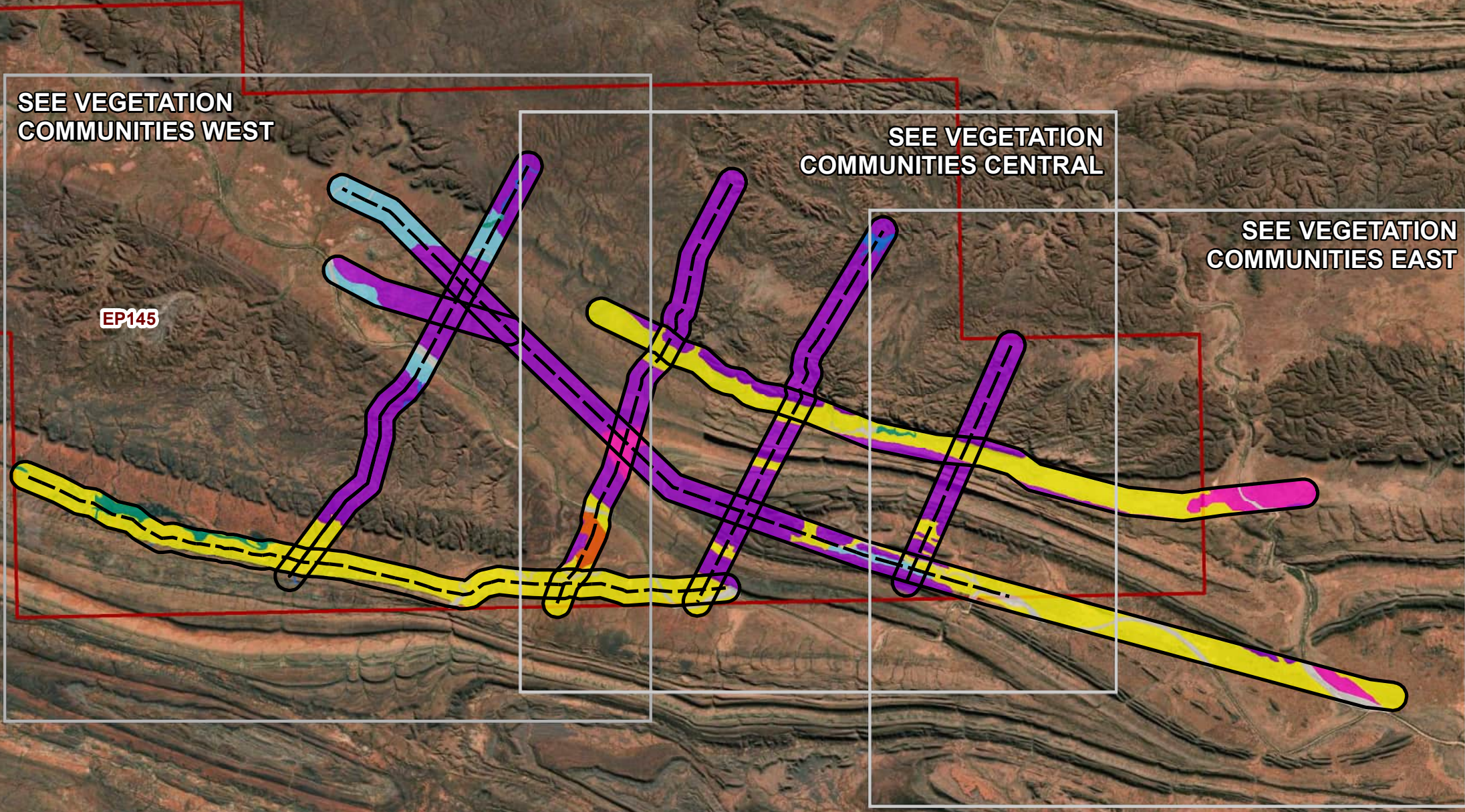
-  Seismic Line
-  Exploration Permit EP145
-  Buffer

Vegetation Community

-  Acacia spp. low woodlands and shrublands on clay loam to sandy soils
-  Desert Oak woodland on red sand dunes and swales
-  Extensive bare scalds and erosion
-  MacDonnell Mulga and Mulga woodlands on ranges and hills
-  Major wetland and rockhole areas in gaps in ranges
-  Mallee and Acacia spp. open woodland on red sand dunes and plains
-  Mulga forest on alluvial plains
-  River Red Gum fringing woodland



Coordinate System: GDA2020 MGA Zone 53  
 Scale: 1:180,000 at A3  
 Project Number: 623.30157  
 Date: 04-Aug-2023  
 Drawn by: LC

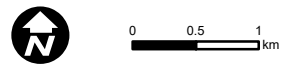


ECOLOGICAL ASSESSMENT

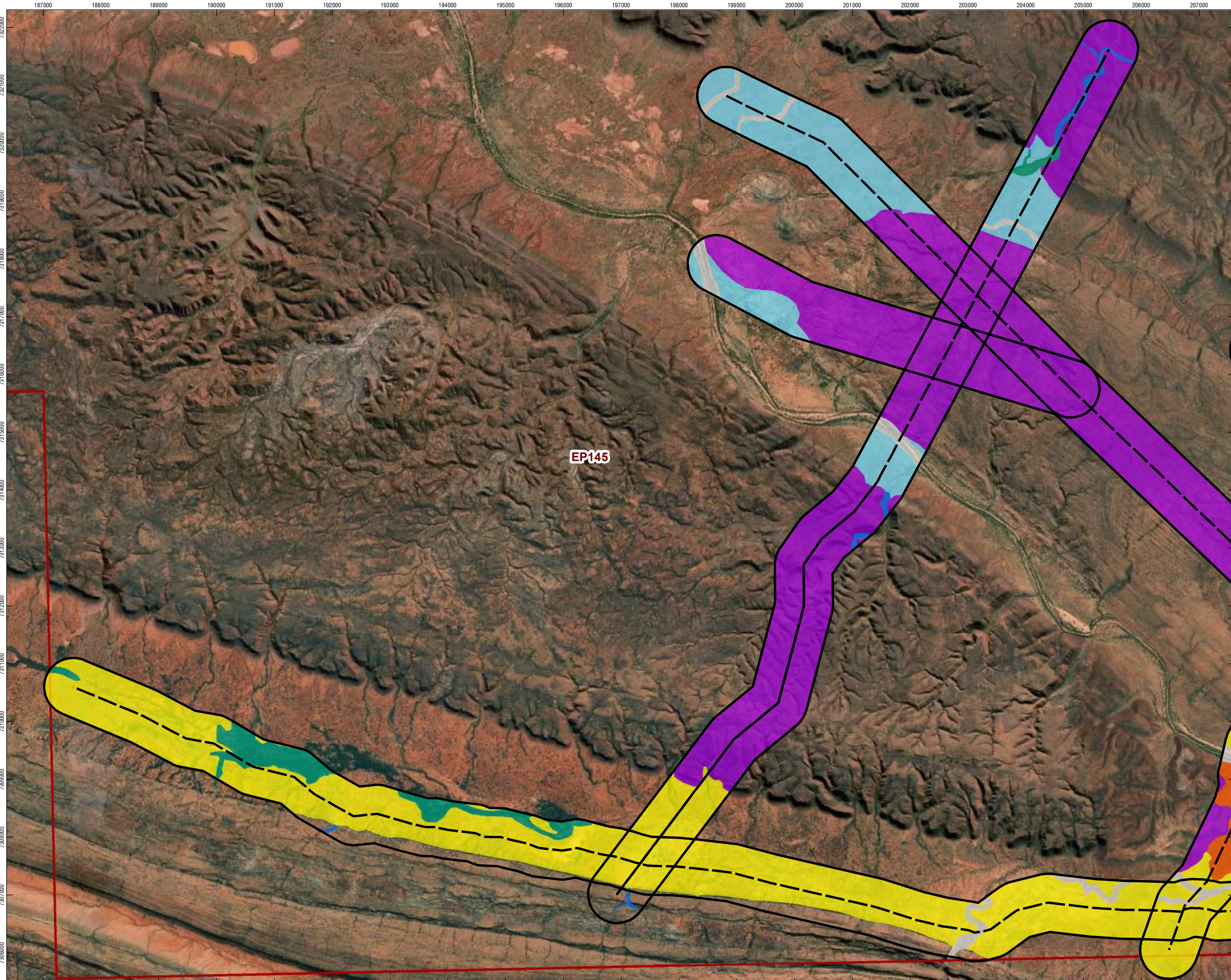
VEGETATION COMMUNITIES WEST

LEGEND

- Seismic Line
- Exploration Permit EP145
- Buffer
- Vegetation Community**
  - Acacia spp. low woodlands and shrublands on clay loam to sandy soils
  - Desert Oak woodland on red sand dunes and swales
  - MacDonnell Mulga and Mulga woodlands on ranges and hills
  - Major wetland and rockhole areas in gaps in ranges
  - Mallee and Acacia spp. open woodland on red sand dunes and plains
  - Mulga forest on alluvial plains
  - River Red Gum fringing woodland



Coordinate System: GDA2020 MGA Zone 53  
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Project Number: 623.30157  
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Drawn by: LC



VEGETATION COMMUNITIES  
CENTRAL

LEGEND

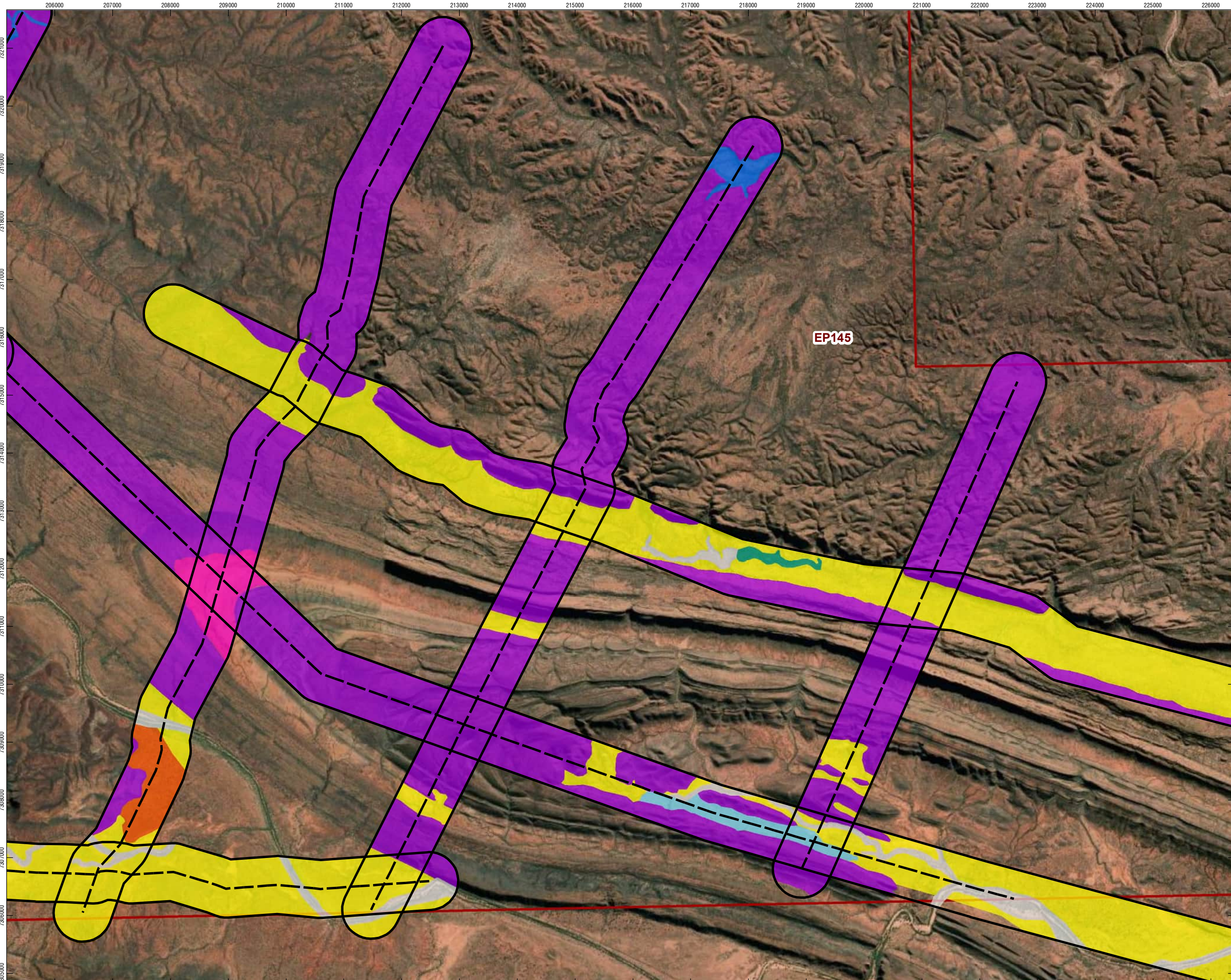
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- Exploration Permit EP145
- Buffer

Vegetation Community

- Acacia spp. low woodlands and shrublands on clay loam to sandy soils
- Desert Oak woodland on red sand dunes and swales
- Extensive bare scalds and erosion
- MacDonnell Mulga and Mulga woodlands on ranges and hills
- Major wetland and rockhole areas in gaps in ranges
- Mallee and Acacia spp. open woodland on red sand dunes and plains
- Mulga forest on alluvial plains
- River Red Gum fringing woodland



Coordinate System: GDA2020 MGA Zone 53  
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Project Number: 623.30157  
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Drawn by: LC



ECOLOGICAL ASSESSMENT

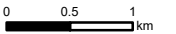
VEGETATION COMMUNITIES EAST

LEGEND

- Seismic Line
- Exploration Permit EP145
- Buffer

Vegetation Community

- Acacia spp. low woodlands and shrublands on clay loam to sandy soils
- Extensive bare scalds and erosion
- MacDonnell Mulga and Mulga woodlands on ranges and hills
- Mallee and Acacia spp. open woodland on red sand dunes and plains
- Mulga forest on alluvial plains
- River Red Gum fringing woodland



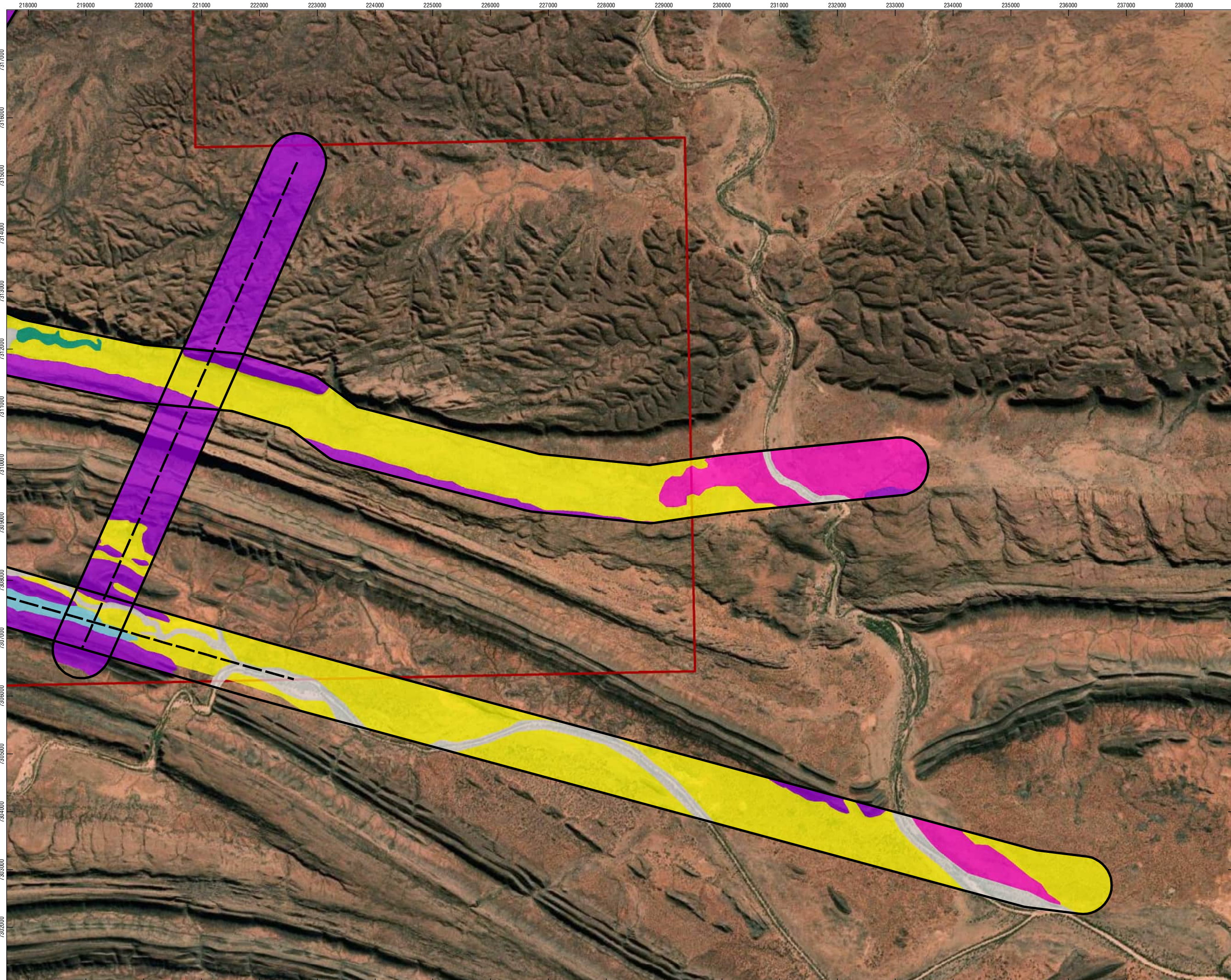
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Scale: 1:60,000 at A3

Project Number: 623.30157

Date: 04-Aug-2023

Drawn by: LC



#### 4.2.2 EPBC Act TECs

No vegetation communities consistent with EPBC Act TECs were ground-truthed to occur within the study area.

#### 4.2.3 Groundwater-dependent Ecosystems

The following types of likely GDEs were identified during the field survey:

- Canopy tree species in riverine vegetation known to access deep alluvial groundwater or likely to be groundwater dependent, particularly River Red Gum and Narrow-leaved Paperbark. These trees may utilise groundwater intermittently, but this use may be obligate, allowing trees to maintain growth or reproduce in the dry season (DNRMA, 2019).
- Riverine vegetation communities with access to permanent or semi-permanent shallow groundwater associated with springs. These communities are likely to rely on the permanent or semi-permanent access to shallow water, particularly lower vegetation strata such as shrubs, forbs and wetland plants.
- Vegetation communities associated with rockholes, soaks and seeps in gorges, gaps and drainage channels associated with sandstone ranges and hills. These vegetation communities likely rely on permanent and semi-permanent access to groundwater.
- Fauna species that rely on resources provided by surface expression of groundwater and/or GDE vegetation. These include fauna that exploit surface groundwater (in rockholes, springs or soaks) for water needs, fauna that forage on groundwater-dependent plants, and fauna that rely on GDE vegetation for habitat.

The extent of GDE vegetation in the study area was consistent with the extent of *River Red Gum fringing woodland on quaternary alluvium* and *Wetlands and waterholes on sandstone and quartzite ranges* vegetation associations described above.

#### 4.2.4 Flora species

A total of 100 flora species were identified during the survey (Appendix C). No threatened flora species were identified within the study area during the field survey; however, extent of on-ground survey effort was limited and much of the site was not subject to searches for threatened flora. Flora species of conservation significance deemed likely to occur in the study area are further discussed in **Section 5**.

#### 4.2.5 Weed species

No Weeds of National Significance (WoNS) or weeds declared under the NT WM Act were identified within the study area during the field survey. The following non-native species were recorded during the field survey:

- Buffel Grass (*Cenchrus ciliaris*)
- Bermuda Grass (*Cynodon dactylon*)
- Mimosa Bush (*Vachellia farnesiana*)
- Spiked Malvastrum (*Malvastrum americanum*)

Buffel Grass is not declared under the WM Act, but it is recognised as a very high risk weed in Central Australia in the Alice Springs Regional Weed Strategy 2021-2026 (Alice Springs Weed Strategy) (DEPWS, 2021b). In the NT (and elsewhere in Australia), Buffel Grass has spread beyond areas where it was planted and into places once thought unsuited to its survival. It is capable of transforming vegetation communities and fauna habitats, affecting biodiversity values directly by altering habitat structures for ground-dwelling native fauna,



competing with native ground cover plants and tree recruits, and indirectly through increasing the frequency and intensity of fires (DEPWS, 2021e). Buffel Grass was widespread in the study area where soils were sufficiently deep, particularly in *Acacia* spp. woodlands on grey-brown sandy loam. The species' distribution was patchy; it was absent from extensive tracts of hummock and tussock grass woodlands in the western portion of the study area. The species was absent from rocky areas.

Bermuda Grass was restricted to the banks of larger river systems where it was generally dominant and formed a dense, thick vegetative cover on the ground. Dense infestations likely lead to impacts to native grass and forb species, reduced recruitment of tree and shrub species, and minor impacts to fauna habitat values.

Occurrences of Mimosa bush were uncommon and the species did not appear to be competing significantly with native flora species or affecting fauna habitats.

Spiked Malvastrum occurrences were sparse to locally dense in areas subject to prior disturbance and near some watercourses. The species likely competes with native species in isolated areas where infestations are dense.

## 4.3 Fauna survey results

### 4.3.1 Fauna habitat features

The study area includes a variety of habitat features, with clear distinctions in habitat between low-lying areas and rocky hills and scarps. Habitat features can generally be separated and described by the vegetation communities present within the study area (Section 4.1.1, Figure 4). Common characteristics between these communities include the presence of trees in the Myrtaceae family and/or shrubs of the genera *Acacia* and *Eremophila*; leaf litter and woody debris; and either tussock or hummock grasses. Key habitat values in the study area are described below.

Large trees of the genera *Eucalyptus* and *Corymbia* often bear hollows, which provide shelter and nesting habitat for a diverse range of fauna. These were most common in fringing woodland where large River Red Gums dominated the canopy, but smaller hollows were noted in Desert Bloodwood and Ghost Gum trees, which were widespread throughout the study area at low densities.

Flowers of *Eucalyptus* species trees, as well as shrubs and trees of the genera *Melaleuca*, *Acacia*, *Grevillea* and *Eremophila*, provide important seasonal food sources for bird and mammal species. These species were the dominant canopy and shrub layer constituents throughout the study area.

Leaf litter and woody debris were most dense and widespread on low-lying alluvium where vegetation biomass was highest; on rocky scarps and hills leaf litter was patchy and concentrated in crevices, drainage lines and depressions. Leaf litter provides habitat for fossorial animals such as small lizards and snakes and small mammals; woody debris provides shelter for various fauna.

Tussock and hummock grasses were the dominant ground cover throughout most of the site, with some areas dominated by chenopods. Each of these ground covers provides specific habitat value; *Triodia* spp. grasses in particular support a diverse array of species reliant on the structure provided by these grasses for shelter and protection from predators.

The various rocky hills and ranges of the study area present diverse habitat values for fauna species, including for threatened species likely to occur, particularly Central Australian Rock-wallaby. Cracks, crevices and caves in these ranges provide shelter and foraging habitat for various fauna. Rockholes and wetlands in gaps and gorges are likely critical water sources not only for water-dependent species such as frogs but also for birds and mammals many of which require frequent access to drinking water. These ranges also provide habitat for



several SRE snail species, many of which rely on leaf litter under native fig trees that grow on shelves and in crevices in rocky ranges.

Friable clay-loam and sand soils, which dominate the low-lying areas of the project area, are used by many of Australia's arid fauna for shelter, including burrowing and 'sand-swimming' fossorial species. These include Slater's Skink, which is an obligate burrow-user, requiring firm loam soils under *Eremophila* and *Acacia* spp. shrubs.

## 4.3.2 Fauna species

### 4.3.2.1 Birds

A total of 30 bird species were observed within the study area during the field survey. Most of these species are common in similar habitats throughout the region. One threatened bird species, the Southern Whiteface (*Aphelocephala leucopsis*, listed as vulnerable under the EPBC Act) was recorded during the survey. Suitable habitat for Grey Falcon, including suitable breeding habitat, was recorded in the study area. These species are further discussed in **Section 5**.

### 4.3.2.2 Mammals

Five mammal species were identified within the study area during the field survey. Native species observed were Spinifex Hopping Mouse (*Notomys alexis*), recorded by tracks, and Common Wallaroo (*Osphranter robustus*), recorded by helicopter. No mammal species identified within the study area are listed as threatened or migratory. Survey effort for threatened mammal species likely to occur in the study area was reduced by site access challenges; active search and spotlighting efforts for Central Australian Rock-wallaby were limited in terms of area surveyed and survey effort. This species is further discussed in **Section 5**.

Evidence of three non-native (pest) species—Wild Cattle (*Bos taurus*), Camel (*Camelus dromedarius*) and Wild Horse (*Equus caballus*)—were identified during the survey. Dingo (*Canis familiaris dingo*) is listed as least concern under the TPWC Act and is considered a native species in the NT. Pest species are discussed further in **Section 5** of this report.

### 4.3.2.3 Reptiles

Eleven reptile species were observed in the study area during the field survey; Four dragon species, three skink species, two gecko species and two monitor species. Additionally, likely signs of the EPBC Act vulnerable skink Slater's Skink (*Liopholis slateri*) were observed in the form of burrows under Low, dense *Acacia* spp. and *Eremophila* spp. shrubs on deep friable sandy soils. A dense concentration of these burrows was observed in one area of habitat on the eastern end of proposed seismic line 08. Due to challenges encountered during the ground-based survey further investigation of likely Slater's Skink burrows were not undertaken; however, the following details of the burrows supported the conclusion that the burrows were likely made by Slater's Skink:

- Size (3-7cm opening diameter) conformed to the description provided in Fenner et al. (2012);
- Structure (multi-entranced burrow systems with fanned excavated soil) conformed to description of *Liopholis* spp. burrows described in Triggs (2004) and Fenner et al. (2012);
- Habitat (open shrubland on clay-loam near drainage channels) and microhabitat (in mounded soil under *Acacia* spp. and *Eremophila* spp. shrubs) conformed to descriptions in Fenner et al. (2012).



All remaining species are considered to have a least concern status under the TPWC Act, and no identified species are migratory under the EPBC Act.

A description of potential Slater's Skink habitat in the study area, and impact assessment for the species, are provided in **Section 5**. Example photographs of Slater's Skink Burrows are provided in **Photo 1** below; the location of these burrows is shown in **Figure 8**.



**Photo 1** Likely burrows of Slater's Skink under *Acacia tetragonophylla*

#### 4.3.2.4 Amphibians

No amphibian species were observed during the field survey. Several amphibian species are likely to occur in the study area; these include species reliant on regular access to water, which likely occur in proximity to rockholes, and burrowing frog species that become active after rain events. No amphibians of conservation significance are likely to occur in the study area.

#### 4.3.2.5 Invertebrates

A diverse invertebrate faunal assemblage occurs in the study area. Of key focus for the study was the potential occurrence of several species of SRE terrestrial Camaenid snails of the genera *Granumelon*, *Semotrachia* and *Sinumelon*. One shell of a deceased Camaenid snail was found under a Small-leaved Rock Fig (*Ficus brachypoda*) on a rock shelf adjacent to a permanent soak on Walker Creek, and numerous shells (likely of the same species) were found at the foothills of the sandstone range on the northern end of proposed seismic line 05. Gross morphology of the shells found, including aperture shape, height of whorls and total size (17-20mm across) most closely align to the genus *Sinumelon*, of which two species have been recorded nearby: the EPBC Act and TPWC Act listed *Sinumelon bednalli* and the not evaluated species *Sinumelon expositum*. The latter species more closely fits the specimens found based on size (up to 20mm; *S. bednalli* is larger) and angle of shell aperture.

Habitats for SRE snails in the study area, and an assessment of potential impacts to these species, are provided in **Section 5**. Example photographs of habitat and microhabitat likely to support SRE snails are provided in **Photo 2** below; locations where SRE snail habitat was observed during on-ground and helicopter surveys are shown in **Figure 8**.





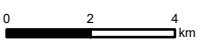
**Photo 2** Possible habitat for SRE Camaenid snails (Figs *Ficus brachypoda* in gullies) and leaf litter microhabitat



THREATENED SPECIES AND COMMUNITY OBSERVATIONS

LEGEND

- Desert Fig (SRE snail habitat)
- Slater's Skink Burrow
- Seismic Line
- Buffer
- Riparian Vegetation / Groundwater Dependent Ecosystem
- Rockhole Groundwater Dependent Ecosystem
- Exploration Permit EP145



Coordinate System: GDA2020 MGA Zone 53  
Scale: 1:180,000 at A3  
Project Number: 623.30157  
Date: 10-Aug-2023  
Drawn by: LC



#### 4.3.2.6 Introduced fauna species

Three introduced fauna species were observed during the field survey:

- Wild Cattle
- Dromedary Camel
- Wild Horse.

These non-native species are common within the local area and surrounding region. Wild Cattle and signs thereof were observed during on-ground and helicopter surveys. Cattle were most frequently observed in proximity to surface water, in habitats of tussock grass on deep alluvium and in association with larger drainage systems. Cattle likely also occur in the dense Mulga alluvial forest in the southwest of the study area. Observed impacts of livestock were minor. Wild Horse and Camel were observed at very low density in the study area, both on ground and by air. Impacts of these species in the study area are likely to be limited to minor ground disturbance.



## 5.0 Project impacts

### 5.1 Nature of project impacts

Project-related impacts will primarily be associated with vegetation clearing (primarily linear in nature) and seismic exploration activities. The following impacts have the potential to occur.

- Clearing of native vegetation communities/fauna habitats within the study area.
- Mortality of fauna during works activities such as vegetation clearing, or through vehicle strike/collision with machinery.
- Habitat degradation through the introduction and/or spread of weeds or the alteration to movement/migration of pest herbivores.
- Vegetation health impacts and habitat degradation due to dust generation and soil erosion.
- Disturbance and/or displacement of fauna due to noise and vibration.
- Impacts of clearing and disturbance on connectivity and ecological function.
- Impacts to biodiversity due to unplanned fire.

Most of these impacts will be short-term and localised (e.g., noise disturbance), however some of the impacts have the potential to be longer-term and more widespread (e.g., alteration of vegetation communities and fauna habitats by weeds).

#### 5.1.1 Vegetation clearing and vehicle movement

Clearing of native vegetation and fauna habitat will occur along proposed seismic lines and at proposed camps and other minor non-linear works areas and will generally be linear in nature. Proposed clearing is small in scale, conforming to the necessary clearing for the traversing of the site by seismic exploration equipment. Proposed clearing will consist of a very small area of vegetation relative to the extensive contiguous area of remnant and largely undisturbed native vegetation. Clearing is likely to be most substantial in areas of moderately dense shrub and tree vegetation, which are uncommon in the study area, and will generally be limited to low-impact removal of low shrubby vegetation where required.

Clearing and traversing of the site by large machinery will result in the compaction and upturning of soft soils where present, affecting fauna habitats and potentially leading to fauna mortality where species burrow underground; similarly, species sheltering in low vegetation may be at risk of mortality by machinery moving through vegetation. By contrast, works on stony sills and ranges are unlikely to result in substantial impacts to fauna habitats; machinery will likely be transported by air in order to traverse deeply incised and rugged terrain, and minimal vegetation clearing, or ground disturbance are likely to result. However, impacts to fauna habitat such as breaking of rocks or damage to shelters such as rock crevices have the potential to occur.

Increased vehicle movement on roads and tracks to and on the site have the potential to result in fauna mortality. This risk is likely to be low, as vehicle speed is likely to be low due to the undeveloped and rugged nature of site tracks.

#### 5.1.2 Weeds and pests

Habitat degradation due to weed infestation is considered the key threat to biodiversity values associated with the proposed works. Buffel Grass is recognised as a very high risk weed in the Alice Springs Weed Strategy. Though it has uses as a pasture grass, in central Australia it has proven to be an aggressive and transformative weed, severely altering native



ecosystems and fauna habitats. Buffel Grass was widespread on clay-loam soils in valleys in the east of the study area, particularly in low-lying areas and along track verges, and occurred at low densities or as isolated infestations throughout all low-lying areas on the site.

Vegetation clearing provides ideal conditions for weed proliferation due to soil disturbance and exposure. Clearing can also lead to the introduction or spread of weeds via weed contaminated vehicles and machinery used to undertake the clearing works (DEPWS, 2023a). This can lead to long-term impacts such as habitat degradation and changed fire regimes. In the study area, particular values at risk of the spread of Buffel Grass include:

- Habitat for Slater's Skink, which can be transformed by Buffel Grass and its influence on fire regimes and ground cover structure;
- Sensitive and significant communities such as riparian vegetation and GDEs, which can be degraded and suffer reduced canopy species recruitment due to dense infestations.

The proposed works on site present risk of transport of weed seeds, particularly of Buffel Grass. Weed seeds may be introduced from off-site by machinery brought onto the site, or spread throughout the site from weed plants already present. The highest risk of weed seed spread is to areas with suitable soils and drainage conditions that are currently free of Buffel Grass. Areas of highest vulnerability to impacts are sensitive and significant vegetation communities and habitats for Slater's Skink.

Three pest herbivore species were recorded during the field survey: Cattle, Horses and Camels. Impacts of these hooved herbivores include alteration of soil structure, increased soil erosion, forage pressure on native species, and spread of invasive plant species. Impacts observed in the study area were minor; however, these animals are considered to pose a direct threat to habitat for Slater's Skink through soil disturbance in floodplain habitats.

### 5.1.3 Noise and vibration

Noise and vibration have the potential to disturb fauna, disrupting normal behaviours and potentially causing animals to abandon shelter sites or nests. As the proposed exploration consists of short-term works on a small scale, impacts are likely to be limited to disruption of normal activities or, in extreme cases, abandonment of shelter sites. Impacts to threatened fauna as a result of noise and vibration is likely to be minimal, at most affecting individuals near to works areas, and will be temporary.

Faunal groups likely to be most affected are mammals and birds, as these groups use auditory signals to communicate and generally have sensitive hearing (Ortega, 2012; Newport et al., 2014). In the case of the study area, threatened species likely to be affected are Grey Falcon, Southern Whiteface and Central Australian Rock-wallaby.

## 5.2 Impact management

### 5.2.1 Impact Management Hierarchy

The environmental management hierarchy—avoid, minimise and manage—is employed in this Impact Assessment to prioritise potential measures for managing environmental issues and potential impacts on site:

- Avoiding impacts to ecological values through pre-clearance survey, by ensuring the disturbance associated with works follows a path that avoids conservation-significant matters such as significant or sensitive communities and threatened species. In addition to avoiding direct impacts by not working in these areas, indirect impacts



such as edge effects can be avoided by establishing buffers around ecological constraints where practicable.

- Avoiding unplanned negative impacts to conservation-significant matters through appropriate biosecurity management, erosion sediment control and other best-practice measures as appropriate.
- Minimising negative impacts associated with activities by restricting clearing and disturbance to the minimum area necessary for the project.
- Managing the ongoing health and viability of conservation-significant matters on site by adopting principles of adaptive management as necessary.

### 5.2.2 Vehicle Strike and Fauna/Flora Mortality

Vehicle strike represents a general threat to native fauna species. The most common cause of fauna mortality due to vehicles is generally by vehicle strike on roads; however, in the case of the study area, vehicle movement presents a risk to animals burrowing under soil or sheltering under ground cover. This is at greatest risk of occurring when vehicles leave established tracks. Vehicle strike presents a particular threat to Slater's Skink, as this species constructs shallow burrows in soil under shrubs which are at risk of being destroyed by vehicles.

#### Avoiding impacts

- Prior to vehicles driving off established site tracks, a pre-clearance survey should be undertaken to identify habitat and populations of Slater's Skink.
- If populations or signs of Slater's Skink are identified, these should be avoided and a buffer established around these locations to avoid disturbance or damage to burrows or habitat.
- Speed limits should be implemented and signposted, as appropriate for the condition of the roads and access tracks on site to reduce the risk of vehicle collisions with wildlife.

#### Minimising impacts

- Vehicle movement on site and enroute to site should be kept to existing tracks where possible.
- Site inductions or toolbox meetings should include information about sensitive aspects of the environment in which personnel are working.

### 5.2.3 Vegetation clearing

Conservation-significant vegetation and species habitats are widespread in the study area, and comprehensive mapping of all matters is not feasible. This is particularly true for habitats for SRE snails, which were found to occur in a variety of situations from large rockholes and range gaps to narrow crevices and shelves in low rocky hills. Habitats for SRE snails are also highly disjunct and any occurrence of such habitat potentially supports an important population of these fauna. The extent of habitat for Slater's Skink is also difficult to predict, as it depends on several factors such as ground cover composition and soil type. Slater's Skink habitat is limited to areas of deep sand or loam soils in valleys and lowlands, and is absent from rocky hills and ranges.

Due to their low mobility and the widespread nature of their potential habitats, SRE snails and Slater's Skink are the most vulnerable species to impacts of vegetation clearing. Significant vegetation communities (i.e., riparian vegetation and GDEs) are also sensitive to



the impacts of vegetation clearing. Further, threatened flora species are at risk of being destroyed by clearing.

### **Avoiding impacts**

Pre-clearance surveys should be undertaken as part of all vegetation clearing activities to identify threatened plants, habitat values for threatened fauna and significant vegetation, and to redirect clearing paths such that these values are avoided. A pre-clearance survey should be undertaken by a suitably qualified ecologist and will include the identification of general fauna habitats, habitat features specific to threatened fauna, and threatened flora.

### **Minimising impacts**

The use of a fauna spotter-catcher is recommended to minimise the chances of injury to native fauna. The fauna spotter-catcher should have a current rehabilitation permit and should be present during clearing activities. The role of the spotter-catcher would be to advise on appropriate clearing methods to ensure animal escape paths are maintained and relocate fauna located within the disturbance area accordingly. Impacts on nesting birds can be avoided by minimising unnecessary clearing of vegetation such as trees (especially hollow-bearing trees) and shrubs that may contain animal breeding places and by engaging a fauna spotter-catcher.

All personnel and site management should be cognisant of native fauna species on site. Any stockpiles of cleared vegetation will provide habitat for small ground-dwelling mammals and reptiles during the construction phase. It is important to locate these stockpiles away from high-traffic areas. This will reduce the likelihood of fauna travelling into clearing and construction areas and thereby reduce risks of fauna mortality. If vegetation is to be mulched, this should be done as shortly as possible after clearing, as fauna may inhabit stockpiles.

## **5.2.4 Invasive Plants and Animals**

Several invasive species occur on site, and these species have the potential to be spread by machinery and ground disturbance. One of these species, Buffel Grass, is considered to present a high risk of impact to conservation-significant ecological matters. This species is also likely to be spread by site activities. Buffel Grass spread in the study area presents risks of altering vegetation community structure, competing with native flora species, and fundamentally altering fauna habitat structure.

Plant and equipment brought to site have the potential to introduce new weed species to the study area. The Alice Springs Weed Strategy identifies 35 weed species of high concern for potential environmental harm in the region, seeds of which may be spread by equipment.

Invasive animals pose various threats to native flora, fauna and communities. Construction activities and work sites have the potential to provide resources for invasive animals including shelter, water sources and food.

### **Avoiding impacts**

- A Weed Management Plan should be developed to document appropriate measures to avoid introduction and spread of weeds, manage weed outbreaks and monitor disturbed areas.
- Vehicles and machinery brought on site should be clean and free of weeds, dirt and other material that may contain weed seeds and cause exotic species to become established within the works areas.
- Wherever possible, construction activities should work from areas with fewer weed species and smaller infestations towards areas where there is a greater abundance



of weeds to avoid transfer of weed seed to unaffected areas. If vehicles are to move from weed-infested to weed-free areas, washdown should be undertaken (incorporating appropriate hygiene measures) to ensure seed is not spread.

- Vehicles should be kept on established tracks and roads whenever possible.

### **Minimising and mitigating impacts**

- Soil disturbance is a major contributor to weed establishment and invasion, so clearing should be limited to the minimum required and be clearly marked prior to clearing, and vehicle movement should be kept within areas designated for works to minimise unnecessary disturbance of soil.
- Weed spread should attempt to be minimised by managing high priority weed infestations within the proposed works areas prior to conducting works.
- Regular observation of disturbance sites and soil stockpiles for incidence of weed species should be conducted in the short term; where any weed establishment is identified, appropriate control measures should be implemented.
- Machinery operators should be upskilled with knowledge of key weed species to increase effectiveness of the above measures.

Effort should be taken to ensure that invasive animals do not become established at work sites or camps. This may include ensuring no water source is available, and food and food scraps are appropriately stored and disposed of. Where practical, introduced fauna species are to be managed in accordance with the TPWC Act, which is in a manner that reduces their population and the extent of their distribution within the NT and controls any detrimental effect they have on wildlife and the land.

### **5.2.5 Soil and Erosion**

Areas cleared of vegetation are at risk of erosion due to reduced soil stability. Sediment fences or other suitable erosion and sediment control devices should be used in areas where soils may be mobilised, to stabilise soils such that plants are able to re-establish.

### **5.2.6 Noise and vibration**

#### **Avoiding impacts**

- Undertake noise-generating works during the day, avoiding night works that may result in more severe impacts to fauna during hours of activity.

#### **Minimising impacts**

- Minimise unnecessary noise wherever possible—vehicle and machine engines should only run when required.
- Limit high-impact noise to daylight hours.

### **5.2.7 Dust Emission**

Excavation and vehicle movement result in the generation of fine dust, which can have an impact on plant function and ecosystem health. While it is unlikely that dust produced over short timeframes and by small-scale works will substantially affect plant function, advisable dust suppression techniques include:

- application of water on trafficable surfaces,
- limiting activities in high wind conditions,



- application of water/binding agent to construction sites during construction.

## **6.0 Impact assessment**

### **6.1 Criteria for impact assessment**

#### **6.1.1 EPBC Act**

DoE (2013) states that an action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:

- lead to a long-term decrease in the size of an important population of a species
- reduce the area of occupancy of an important population
- fragment an existing important population into two or more populations
- adversely affect habitat critical to the survival of a species
- disrupt the breeding cycle of an important population
- modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline
- result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat
- introduce disease that may cause the species to decline
- interfere substantially with the recovery of the species.

An 'important population' is defined in DoE (2013) as a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:

- key source populations either for breeding or dispersal
- populations that are necessary for maintaining genetic diversity, and/or
- populations that are near the limit of the species range.

All other threatened species identified by the desktop searches have a low likelihood of occurrence and therefore, are unlikely to be significantly impacted by activities within the study area.

#### **6.1.2 TPWC Act**

The NT EPA has developed environmental factors and objectives to improve certainty, and increase transparency, within the environmental impact assessment process. The objective of the terrestrial ecosystem environmental factor is to: 'protect terrestrial habitats to maintain environmental values including biodiversity, ecological integrity and ecological functioning' (NT EPA, 2023b).

## **6.2 Internationally significant sites**

In the NT, 67 sites have been identified critical for biodiversity conservation and in need of further protection; works I these areas (described below) may constitute significant environmental harm.



### 6.2.1 Sites of conservation significance

Two sites of conservation significance (SoCS) are located in part within EP145; one of these areas, George Gill Range, overlaps with the western extent of proposed seismic line 7.

Given the small-scale nature of proposed activities, impacts to Territory protected areas that are adjacent to but outside of the proposed alignment are unlikely to occur. Impacts would be restricted to indirect impacts, such as the spread or introduction of weed or pest species. Provided the mitigation measures outlined in Section 5.2 are implemented, these impacts are likely to be negligible or non-existent.

To the extent that the George Gill Range SoCS overlaps with the proposed seismic works area, there is a high potential for impacts to the environmental values within this SoCS (e.g., habitat for threatened flora and fauna species). It is recommended that the proposed seismic lines be altered or reduced such that vegetation clearing and ground disturbance in George Gill Range SoCS is avoided.

### 6.2.2 Sites of botanical significance

Two sites of botanical significance (SoBS) are located in part within EP145. One of these areas, Bowson SoBS, overlaps with the northern sections of proposed seismic lines 4 and 5. Watarrka SoBS is located immediately adjacent to the western extent of proposed seismic line 7.

Given the small-scale nature of proposed activities, impacts to Territory protected areas outside of the proposed alignment are unlikely to occur. Impacts would be restricted to indirect impacts, such as the spread or introduction of weed or pest species. Provided the mitigation measures outlined in Section 5.2 are implemented, these impacts are unlikely to occur.

To the extent that the Bowson SoBS overlaps with the proposed seismic works area, there is a potential for impacts to the environmental values within these areas (i.e., threatened flora species and their habitats). It is recommended that proposed seismic lines be reviewed and altered to avoid works in this SoBS. Impacts to Watarrka SoBS are unlikely to occur as a result of proposed works which are outside the SoBS; however, a buffer or 250 m from the SoBS should be established and works in these areas should be avoided.

## 6.3 Sensitive or significant vegetation

Sensitive and significant vegetation is defined in the NT Land Clearing Guidelines (DEPWS, 2023a). Sensitive vegetation is a term applied to ecosystems vulnerable to alteration or degradation by adjacent land uses or management. Significant vegetation includes spatially restricted habitat types or those that provide ecosystem services critical to wider ecosystem functions; these including rainforest, monsoon vine forest or vine thicket; sandsheet heath; riparian vegetation; mangroves; and vegetation containing large trees with hollows suitable for fauna. Most of these significant vegetation types are also sensitive (DEPWS, 2023a).

Two types of significant vegetation were identified during the field survey: riparian vegetation fringing larger watercourses in the project area, and likely groundwater-dependent ecosystems (GDEs) associated with springs low-lying alluvium and in rockholes and gaps in sandstone ranges.

The NT Land Clearing Guidelines (DEPWS, 2023a) recommends impact management measures for sensitive and significant vegetation, including the establishment of buffers as follows:

- 50 m for low value vegetation,
- 100 m for medium value vegetation,



- 250 m for high value vegetation.

### 6.3.1 Connectivity and ecological function

Vegetation communities within the study area are largely ecologically intact and have been subject to minimal disturbance. Most of the vegetation in the local and broader region is also remnant with limited clearing having taken place, except for minor linear infrastructure, and disturbance associated with low-impact grazing. Vegetation within the study area can therefore be described as part of a large, connected area with mosaics of intact vegetation communities.

The vegetation communities within the study area are well represented within the local and broader region (DEPWS, 2023b). The NVIS vegetation community polygons mapped in the study area extend beyond the study area in all directions. The proposed works involve narrow linear works which will generally not require clearing of canopy vegetation due to the low density of vegetation in local vegetation communities; these impacts are unlikely to substantially alter or reduce the connectivity of vegetation and habitats at the local (study area) or regional extent.

The study area provides a variety of habitat features for fauna species (as described in Section 4.2.1), including the provision of shelter, breeding habitat and food resources. Most habitat features are abundant in similar habitats throughout the region; however, some features are isolated and uncommon, or are subject to significant threats, in the broader region. In particular, SRE snail habitats are highly disjunct and each area of habitat is potentially important for one or more species, and Slater's Skink habitat is generally at risk of degradation by Buffel Grass and other threatening processes.

Measures to avoid, reduce and mitigate project-related impacts to connectivity and ecological function are provided in **Section 5.3**. Provided these measures are followed, impacts to connectivity and function of sensitive and significant vegetation are unlikely to occur.

### 6.3.2 Riparian vegetation

Riparian vegetation, regarded as significant and sensitive to disturbance, is widespread in the study area. This community occurs on larger watercourses and in some areas in adjacent floodplains. The key structural features of the community are a tall and mid-dense canopy of River Red Gum, which provides diverse habitat values for native fauna including arboreal hollows, shade, flowers and invertebrate food sources. Riparian vegetation plays a critical role in the maintenance of instream ecological processes as well as providing physical stability to the waterway, ameliorating water quality and providing critical habitat or resources for a range of plant and animal species often not available elsewhere within a landscape.

Clearing of riparian vegetation and drainage depressions has the potential to not only result in the direct removal of sensitive/significant vegetation and impact on the values associated with this habitat, but also to negatively impact receiving environments downstream of developmental impacts (DEPWS, 2021a).

Based on the proposed project design and methods (stick-raking for access of vehicles and small seismic equipment), vegetation clearing as part of this project is not expected to involve felling of trees. Therefore, clearing of key structural and habitat values of riparian vegetation will be avoided, and appropriate native vegetation buffers will be retained to reduce impacts of land clearing on these systems. Recommended widths for riparian buffers proposed within the Land Clearing Guidelines (DEPWS, 2021a) are presented in **Table 8**.

Given that minimal vegetation clearing is proposed for the project (involving stick raking for vehicle and machinery access), impacts to riparian vegetation are expected to be negligible.



However, where possible, impacts should be further avoided or minimised by establishing buffers around riparian vegetation to avoid unnecessary impacts. DEPWS (2023a) identifies vegetation as riparian vegetation with a canopy containing many hollow-bearing trees as being “high value” vegetation. Therefore, it is recommended that a standard approach for minimising impacts to riparian vegetation in the study area that contains large hollow-bearing eucalypts is to maintain a 250 m buffer around this vegetation.

Impacts associated with creek crossings as part of the project are likely to be minor and involve the moving of logs and other debris that may otherwise impede access, excavating shallow crossings on steep banks, and establishing a firm track across sandy beds. In many cases, existing access routes will be able to be utilised (with improvements to dilapidated tracks as required).

Based on the above, and if management recommendations provided in **Section 5.2** are followed, impacts to riparian vegetation are likely to be minor.

**Table 8 Recommended widths of riparian buffers within the Land Clearing Guidelines (DEPWS, 2021a)**

Riparian class	Stream order	Minimum buffer width (m)	Measured from
Drainage depression	N/A	25	The outer edge of the drainage depression, which is the extent of the associated poorly drained soils and associated vegetation.
Intermittent streams	First	25	The outer edge of the riparian vegetation or levee (whichever is the greater). If braided channels are present, the edge of the outer most stream channel.
Intermittent streams	Second	50	The outer edge of the riparian vegetation or levee (whichever is the greater). If braided channels are present, the edge of the outer most stream channel.
Creeks	Third and fourth	100	The outer edge of the riparian vegetation or levee (whichever is the greater). If braided channels are present, the edge of the outer most stream channel.

### 6.3.3 Groundwater-dependent ecosystems

GDEs are terrestrial, aquatic, or subterranean ecosystems that take part or all of their hydrological requirements from groundwater. These include aquifers, caves, lakes, palustrine, lacustrine, and riverine wetlands that receive groundwater discharge (including spring ecosystems), rivers, and associated flora and fauna. GDEs include communities, associations, as well as populations or stands of individual species where these rely on groundwater for part or all their water requirements (DEPWS, 2021a). GDEs in arid environments can provide critical habitats and refugia for flora and fauna species and can support locally rare and important biodiversity values such as species that cannot occupy drier environments.

GDEs are highly susceptible to impacts of works that affect groundwater level or quality; water use that redirects environmental water relied upon by GDEs can result in impacts to or loss of these systems. These systems are also highly susceptible to impacts of clearing and earthworks, which can result in impacts to locally rare and significant species and habitat values; and ingress of weed species, as terrestrial and aquatic GDEs provide ideal growing conditions for weeds.

Several GDEs occur in the project area, including wetlands and rockholes in gorges and gaps, as well as riverine vegetation associated with or downstream of springs and seeps. Large eucalypt trees in low-lying riparian areas also likely access groundwater for part of



their hydrological requirements where alluvial groundwater is shallower than 20 m (DCCEEW, 2021a).

The low-scale nature of proposed works means that significant impacts to GDEs are unlikely to occur; however, due to the high sensitivity of permanent springs, rockholes and wetlands in particular, buffers should be established around such values in accordance with the buffer for high value communities presented in Section 6.3 above (i.e., 250 m). This should be readily achievable in the case of non-linear wetlands and GDEs. In the case of linear GDEs (i.e., riparian vegetation), the measures presented in **Section 6.3.2** should be followed: all works should be avoided within a 250 m buffer of riparian GDE vegetation where possible and should be limited to necessary creek and river crossings, utilising existing crossings wherever possible.

Based on the above, and if management recommendations provided in **Section 5.2** are followed, impacts to riparian vegetation are likely to be minor.

## 6.4 EPBC Act species

The following sections provide detail on the MNES identified as potentially occurring within the study area, which consist of EPBC Act listed threatened species, and potential impacts to these matters as assessed with reference to the MNES – Significant Impact Guidelines 1.1 (Department of the Environment and Energy (DoE), 2013).

### 6.4.1 EPBC Act listed flora species

No EPBC Act listed flora species were recorded during the survey; however, survey effort limitations precluded access to much of the study area. Seven species were assessed as likely to occur in the study area: Minnie Daisy, Baumea, Amperea, Palm Valley Myrtle, Desert Quandong and MacDonnell Ranges Cycad. Assessments of potential project impacts to each species against the MNES Significant Impact Guidelines 1.1 are provided below.

#### 6.4.1.1 Minnie Daisy

Minnie Daisy is a small forb occurring on sandstone hills, rises and ranges that are impregnated with limestone, calcrete or dolomite; it typically occurs on south-facing situations, in low shrublands of *Acacia kempeana*, *Senna artemisioides* and *Indigofera leucotricha* (DEPWS, 2021a), the former two of which are known to occur in the study area. Habitats are typically absent of *Triodia* spp., which are the dominant ground cover species across much of the ranges and hills of the study area, indicating that if the species occurs on site, it is not likely to be widespread.

This species is threatened by Buffel Grass invasion of its habitat, which may alter fire regimes and affect its fire response; urban and rural development; and potentially impacts of livestock such as soil disturbance and trampling.

This species was not observed on site during the field survey but may occur on southerly aspect hills and ranges where Hummock grasses do not dominate. Project impacts key to this species are habitat clearing, destruction of plants by vehicles or machinery, and spread of Buffel Grass leading to habitat degradation. Measures to manage these threats are presented in **Section 5.2**; if these measures are implemented, significant impacts to this species are considered unlikely to occur.

#### 6.4.1.2 Palm Valley Myrtle

Palm Valley Myrtle occurs on rocky ranges dominated by Mulga, where it prefers sheltered microhabitats, and in deep gorges. This species is poorly known in the NT and no threatening processes are currently recognised.



This species was not observed on site during the field survey, but potential habitat is extensive across the study area, including various hills, rises, ranges and gorges. Project impacts key to this species are habitat clearing, destruction of plants by vehicles or machinery, and spread of Buffel Grass leading to habitat degradation. Measures to manage these threats are presented in **Section 5.2**; if these measures are implemented, significant impacts to this species are considered unlikely to occur.

#### 6.4.1.3 MacDonnell Ranges Cycad

MacDonnell Ranges Cycad occurs in rocky situations, preferring gorges and steep, sheltered, shady rock faces, but it occasionally occurs on exposed hills and ridges (DEPWS, 2021a). The species tolerates fire, but high fire frequency may inhibit resprouting. Populations range from very dense to sparse and are typically dominated by older plants; seedling establishment is thought to be a rare event following significant rainfall events. Seeds must also be germinated by a sole invertebrate species.

Due to its habitat requirements, increased fire frequency due to climate change or Buffel Grass or Couch Grass (*Cynodon dactylon*) infestation present threats to this species. It is also threatened by any process that disrupts the obligate mutualism with its insect pollinator.

This species was not observed on site during the field survey, including during a targeted search of suitable habitats for this large and distinctive species by helicopter. However, it is possible that the species occurs in the study area, likely in gorges or deep gullies subject to seepage of groundwater draining off ranges. Project impacts key to this species are habitat clearing and spread of Buffel Grass leading to habitat degradation. Due to the large size, distinctive appearance and preference for cliff faces and steep slopes, direct damage to plants is considered unlikely to occur. Measures to manage threats to MacDonnell Ranges Cycad are presented in **Section 5.2**; if these measures are implemented, significant impacts to this species are considered unlikely to occur.

### 6.4.2 EPBC Act listed fauna species

One EPBC Act listed species, Southern Whiteface, was recorded during the survey, and probable evidence of one other EPBC Act listed species (Slater's Skink) was recorded. A further three EPBC Act listed fauna species were deemed likely or moderately likely to occur within the study area: Grey Falcon, Central Australian Rock-wallaby and Bednall's Dwarfmelon. Assessments of potential project impacts to each species against the MNES Significant Impact Guidelines 1.1 are provided below.

#### 6.4.2.1 Grey Falcon

Grey Falcon inhabits lightly timbered habitats and lowland plains, including low *Acacia* spp. shrublands, tussock grasslands, in arid and semi-arid areas. Favoured habitats are typically crossed by timbered watercourses, where the species nests in large trees such as River Red Gum, utilising the large nests of corvids and other raptor species (Marchant and Higgins, 1993).

Targeted surveys did not identify any potential nests for this species within the study area and no individuals were observed. Suitable habitat for the species was widespread in the study area and included foraging habitat (much of the sparse woodland and shrubland vegetation) and breeding habitat (fringing woodland with large eucalypt trees). Potentially suitable foraging and breeding habitats for this species, such as those within the study area, are common within the broader region.

Project-related risks to this species include loss of habitat values through vegetation clearing, habitat degradation due to introduction or spread of weeds, and noise and vibration-related disturbance. However, on the basis that proposed seismic exploration works are low-impact and assuming proposed impact management measures are employed,



it is not likely that the project will affect Grey Falcon to the extent that the significant impact criteria in **Section 6.1.1** are likely to occur. Significant impacts to Grey Falcon are unlikely to result from the proposed activities.

#### 6.4.2.2 Southern Whiteface

Southern Whiteface occupy a variety of woodland and shrubland communities on lowlands, plains and foothills, preferring sparsely vegetated habitats with shrubby and/or grassy understoreys (DCCEEW, 2023d). Habitats are typically dominated by *Acacia* spp. or eucalypts. The species forages for seeds and invertebrates, gleaning prey from the ground or from low shrubs. Breeding occurs from July to October, but is influenced by rainfall in arid regions; Southern Whiteface build large domed nests of bark and grass, typically in a tree hollow or rock crevice but occasionally in low shrubs (DCCEEW, 2023d).

One individual Southern Whiteface was observed in *Acacia* spp. low woodland on clay loam near a drainage feature and at the foothills of a low slope on proposed seismic line 08. Suitable habitat for the species encompasses all low-lying vegetation communities in the study area. No evidence of breeding was observed, but potential breeding habitat (tree hollows in River Red Gum, Ghost Gum and Desert Bloodwood, and rock crevices) are present in the study area.

Project-related risks to this species include loss of habitat values through vegetation clearing, habitat degradation due to introduction or spread of weeds, and noise and vibration-related disturbance. However, on the basis that proposed seismic exploration works are low-impact and assuming proposed impact management measures are employed, it is not likely that the project will affect Southern Whiteface to the extent that the significant impact criteria in **Section 6.1.1** are likely to occur. Significant impacts to Southern Whiteface are unlikely to result from the proposed activities.

#### 6.4.2.3 Central Australian Rock-wallaby

Central Australian Rock-wallaby occurs in the rocky ranges, cliffs, gorges and boulder fields of the ranges of central Australia, including the West MacDonnell and associated ranges. The race that occurs in the West MacDonnell Ranges is considered likely to be a separate species (DCCEEW, 2023d). This taxon occupies sedimentary ranges with cliffs, caves, gorges and boulder fields associated with collapsed cliffs, which are vegetated by open low shrublands of Mulga and MacDonnell Mulga, with hummock grass cover and Desert Figs. The species forages in these habitats as well as on associated foothills, slopes and valley floors in shrublands, grasslands and chenopod fields (DCCEEW, 2023d).

Targeted surveys did not result in the observation of this species within the study area, despite targeted searches for signs of the species in the early morning by helicopter. Suitable habitat for the species was widespread in the study area and included foraging habitat (much of the sparse woodland and shrubland vegetation) and breeding/shelter habitat (extensive rocky ranges, hills, mesas, with cliffs, gorges, caves and other sheltered areas). Given the extent of suitable habitat, the species likely occurs in the study area despite the lack of observation during site surveys. Potentially suitable foraging and breeding habitats for this species, such as those within the study area, are common within the broader region.

Project-related risks to this species include minor degradation of habitat values through vegetation clearing, habitat degradation due to introduction or spread of weeds, and noise and vibration-related disturbance. However, noise and vibration impacts will be temporary and works on rocky hills and ranges will involve minimal vegetation clearing. Measures to mitigate impacts to this species are presented in **Section 5.2**; on the basis that proposed impact management measures are enacted, it is not likely that the project will affect Central Australian Rock-wallaby to the extent that the significant impact criteria presented in **Section**



**6.1.1** are likely to occur. Significant impacts to this species are unlikely to result from the proposed activities.

#### **6.4.2.4 Slater's Skink**

Slater's Skink is a burrow-dwelling diurnal to crepuscular skink of the Finke and West MacDonnell Ranges bioregions of the NT. The species occurs on alluvial plains and in narrow drainage features among stony hills. Vegetation communities occupied are woodlands, open woodland sand shrublands of eucalypts and Mulga on heavy loam soils, where it constructs 20-30cm deep burrows in mounds of soil that form under shrubs (DCCEEW, 2023d). Key shrub species include Corkwood (*Hakea divaricata*), Turpentine (*Eremophila sturtii*), *Acacia* spp. shrubs, and occasionally under tussock grasses or fallen timber (DCCEEW, 2023d; DEPWS, 2021a).

Specific threats to the species are poorly understood, but habitat transformation by Buffel Grass is implicated in the species' local extinction from the Alice Springs area (DEPWS, 2021a). Buffel Grass infestations on creeks, drainage lines and alluvial plains causes a fundamental alteration of the soil and vegetation structure of habitats as well as alterations to fire regimes.

Likely (unconfirmed) Slater's Skink burrows were observed in the study area, and the species is known from further downstream in the Palmer River catchment on Tempe Downs Station (DCCEEW, 2023d). It is likely that the species occurs in any alluvial plain or other low-relief habitats of loam soils in the valleys between ranges across the study area. The species is likely absent from rocky habitats but may occur in narrow drainage areas between rocky hills. It is likely absent from sandy soil habitats such as dune/swale country and from any areas heavily impacted by Buffel Grass.

Project impacts relevant to Slater's Skink are habitat loss and degradation by clearing; destruction of burrows or mortality of individuals by clearing or by vehicles; and habitat transformation by Buffel Grass. Key management measures for these impacts, with a focus on this species, are provided in Section 5.2. Provided that these measures are implemented and followed, direct impacts to Slater's Skink individuals and burrows can likely be avoided and impacts to habitats can be minimised or mitigated. If these impact management measures are followed, significant impacts to this species are unlikely to result from the proposed exploration.

#### **6.4.2.5 Bednall's Dwarfmelon**

Bednall's Dwarfmelon is endemic to the MacDonnell Ranges, and records of the species are scattered across a broad area surrounding Alice Springs (DCCEEW, 2023d). Its habitat preferences are poorly known, but specimens recorded to date have been found in leaf litter and rock piles under Desert Figs (DEPWS, 2021a; Stanistic et al., 2017).

This species was not recorded during the field survey; however, habitat features were widespread in the study area. Desert Figs were recorded sporadically across rocky landforms in the study area, including on flat rocky hilltops, in narrow gullies, on cliff faces and in gorges and gaps. Though the species was not observed, targeted searches focused on identification of habitat features in the landscape and active search effort was limited to scouring near figs and associated leaf litter for snail remains. No destructive searching (i.e., disturbance of leaf litter) was undertaken.

Bednall's Dwarfmelon populations may occur in association with Desert Figs in the study area. Project-related risks to this species include habitat loss and mortality due to vegetation clearing and traversing of seismic lines with vehicles and other machinery and habitat degradation due to introduction or spread of weeds. Habitats for this species occur sporadically across the study area but consist of discrete patches associated with Desert Figs. Habitats are therefore readily identifiable and avoidable. Works in proximity to



Bednall's Dwarfmelon habitat are expected to involve low-impact vegetation clearing and traversing of rocky ranges with specialised vehicles. Impacts of these works to Bednall's Dwarfmelon habitat can be avoided by thorough pre-clearance surveys to identify and avoid SRE snail habitats, minimisation of vehicle movement off established tracks, and management of the risk of Buffel Grass and other weed seed spread.

Assuming the mitigation measures introduced in Section 5.3 are employed, impacts to Bednall's Dwarfmelon and its habitat are likely to be negligible; significant impacts to this species are considered unlikely to occur.

### 6.4.3 EPBC Act migratory species

One migratory species, Fork-tailed Swift, was deemed likely to occur in the study area. DoE (2013) states that an action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

- substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species
- result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species, or
- seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

A summary of this species' ecology and potential impacts to this species are discussed below. All other migratory species identified by the desktop searches have a low likelihood of occurrence and therefore, are unlikely to be significantly impacted by activities within the study area.

#### 6.4.3.1 Fork-tailed Swift

Fork-tailed Swift is listed as migratory under the EPBC Act. This species was assessed as likely to occur on the basis of local records and habitat suitability.

The Fork-tailed Swift is a non-breeding visitor to all states and territories of Australia. This species is known to utilise cliffs and beaches and to hunt above various habitat types including rainforest and open forests ahead of storm fronts (Higgins, 1999). This species is almost exclusively aerial, flying and foraging from less than 1m to 300m (and probably higher) above the ground (DCCEEW, 2023d). They probably roost aerially, but are occasionally observed to land (Higgins, 1999). They have been observed clinging to vertical surfaces rather than perching upright like swallows (Menkhorst et al., 2017). They are known to be insectivorous, and forage along the edge of low pressure systems which help lift prey, such as insects, from the ground and assist in flight (DCCEEW, 2023d).

There are no significant threats to the species in Australia due to the wide range of the species and its aerial habits; habitat degradation (possibly resulting in reduced foraging resources) and predation by feral animals are listed as potential threats but are considered negligible (DCCEEW, 2023d).

This species is likely to occur in the airspace above the study area on occasion. Important habitat for Fork-tailed Swift is defined in DoE (2015) as 'non-breeding habitat only: found across a range of habitats, from inland open plains to wooded areas, where it is exclusively aerial'. Habitat value for the species is effectively limited to the airspace above the study area, which is unlikely to be affected by the proposed activities. The proposed activities are also unlikely to seriously disrupt the lifecycle (i.e., feeding) of an ecologically significant proportion of the population of this species. Significant impacts to this species are considered unlikely to result from the proposed activities.



## 6.5 TPWC Act listed threatened species

Four territory listed threatened fauna species and four territory listed flora species (under the TPWC Act) were assessed as having a high likelihood of occurrence in the study area. These species are discussed here, and assessment of impacts to flora species and fauna species are each grouped on the basis that the species share habitat requirements, relevant risks from project impacts, and impact management measures.

All other territory listed threatened species identified by the desktop searches are either discussed above under EPBC Act listed species, or have a low likelihood of occurrence and are therefore unlikely to be significantly impacted by activities within the study area.

### 6.5.1 TPWC Act listed threatened fauna

Four SRE snails listed under the TPWC Act were deemed likely to occur in the study area:

- Palm Valley Rocksnail (*Granulomelon squamulosum*)
- Ellery Creek Squat Snail (*Semotrachia elleryi*)
- Krichauff Ranges Squat Snail (*Semotrachia esau*)
- Illara Waterhole Squat Snail (*Semotrachia illarana*).

These species are endemic to the greater West MacDonnell Ranges, and all have been recorded within 50 km of the project area (ALA, 2023). The Illara Waterhole Squat Snail is restricted to Illara Waterhole, which is located near the southeast corner of EP145.

None of these species were recorded during the field survey; however, habitat features were widespread in the study area. Desert Figs were recorded sporadically across rocky landforms in the study area, including on flat rocky hilltops, in narrow gullies, on cliff faces and in gorges and gaps. Though these species were not observed, targeted searches focused on identification of habitat features in the landscape and active search effort was limited to scouring near figs and associated leaf litter for snail remains. No destructive searching (i.e., disturbance of leaf litter) was undertaken.

Populations of these species may occur in association with Desert Figs in the study area. Project-related risks to this species include habitat loss and mortality due to vegetation clearing and traversing of seismic lines with vehicles and other machinery and habitat degradation due to introduction or spread of weeds. Habitats for this species occur sporadically across the study area but consist of discrete patches associated with Desert Figs. Habitats are therefore readily identifiable and avoidable. Works in proximity to Bednall's Dwarfmelon habitat are expected to involve low-impact vegetation clearing and traversing of rocky ranges with specialised vehicles. Impacts of these works to Bednall's Dwarfmelon habitat can be avoided by thorough pre-clearance surveys to identify and avoid SRE snail habitats, minimisation of vehicle movement off established tracks, and management of the risk of Buffel Grass and other weed seed spread.

Assuming the mitigation measures introduced in Section 5.3 are employed, impacts to these SRE snail species and their habitats can be avoided.

### 6.5.2 TPWC Act listed threatened flora

Four TPWC listed threatened flora species were deemed likely to occur in the study area: Baumea (*Baumea arthrophylla*), Amperea (*Amperea spicata*) and Desert Quandong (*Santalum acuminatum*). None of these species were observed in the study area during the field assessment, but these species may occur in areas not surveyed.

Baumea is highly restricted in the NT, occurring only at one location in Watarrka National Park (DEPWS, 2021a). Here it occurs in a sandstone gorge, in an area subject to



groundwater seepage. It is at threat of any stochastic event that may destroy the few plants in the population, such as change in water availability, disease or fire.

Amperea occurs in gorges in deeply incised sandstone ranges and on sandstone cliffs and key microhabitat is rock crevices. This species is threatened due to its restricted range, and is not currently known to be subject to any threatening processes, but threats such as climate change, Buffel Grass impacts to habitats, and stochastic events affecting small populations may threaten the species in the future (DEPWS, 2021a).

Desert Quandong grows on sandy or loamy soils in a variety of habitats and situations including on creek banks, dune swales, plains and low rises. The species is at threat from browsing by Camels, climate change, Buffel Grass invasion and low genetic variability.

None of the above species were observed on site during the field survey, but these species may occur in suitable habitats. Project impacts key to these species are habitat clearing, destruction by machinery or vehicles, and spread of Buffel Grass leading to habitat degradation. Measures to manage these threats are presented in **Section 5.2**; if these measures are implemented, significant impacts to this species are considered unlikely to occur.

## 6.6 Impact assessment summary

**Table 9** summarises the key threats to conservation-significant ecological matters present or likely present in the study area, and the measures appropriate to avoid, minimise or manage risks to each matter.



**Table 9 Summary table of ecological constraints, project impacts and key management strategies**

Ecological Constraint		Vegetation community or key habitat feature	Key threatening processes	Management
Category	Matter			
Territory protected areas: Sites of Conservation Significance	George Gill Range Greater MacDonnell Ranges	Considered of International Significance. Sandstone ridges and valleys, gorges, gaps with permanent water, various threatened and endemic species.	Buffel Grass and Couch Grass infestations. Feral animals including rabbit, horse, feral cat and fox. Grazing by livestock and feral herbivores. Hot fires and climate change.	Avoid works within SoCS. Establish a 250 m buffer around areas of international significance to avoid indirect impacts.
Territory protected areas: Sites of Botanical Significance	Bowson Watarrka	Important areas for botanical diversity.	Buffel Grass and Couch Grass infestations. Grazing by livestock and feral herbivores. Hot fires and climate change.	Avoid works within SoBS. Establish a 250 m buffer around areas of international significance to avoid indirect impacts.
Significant and sensitive vegetation	Riparian vegetation	Timbered watercourses with River Red Gum and tree hollows.	Loss of vegetation and fauna habitat due to clearing. Reduced sediment integrity and bank stability. Degradation due to spread of Buffel Grass, Couch Grass and other weeds.	Establish buffers of 250 m around significant riparian vegetation of high value (with hollow-bearing trees) and establish appropriate smaller buffers around minor creeks and drainage features; limit works in these buffers to low-impact creek crossings. Manage risk of spreading weeds (Buffel Grass and Couch Grass) between watercourses and riparian areas. Through a Weed Management Plan.
	Groundwater-dependent Ecosystems	Rockholes and seeps, and associated wetlands, in gorges and gaps.	Loss of vegetation and fauna habitat due to clearing.	Establish buffers of 250 m around GDEs (including riparian GDEs and rockholes/gorges/seeps); avoid undertaking works in these buffers where possible. Works in riparian GDEs should be limited to creek crossings. No works should be undertaken within a 250 m buffer of rockholes.



Ecological Constraint		Vegetation community or key habitat feature	Key threatening processes	Management
Category	Matter			
			Degradation due to spread of Buffel Grass, Couch Grass and other weeds.	Manage risk of spreading weeds (Buffel Grass and Couch Grass) from areas of weed infestation to GDEs through a Weed Management Plan.
Threatened fauna habitat	Grey Falcon	Breeding: timbered watercourses with River Red Gum Foraging: sparse low woodlands.	Habitat loss due to clearing. Habitat degradation due to spread of Buffel Grass. Disturbance due to noise and vibration.	Avoid felling large trees in riparian vegetation. Pre-clearance survey to search for potential nest sites; establish buffer from nest to reduce risk of disturbance. Minimise works in proximity to riparian vegetation.
	Southern Whiteface	Breeding: favours hollow-bearing trees but may nest in low bushes. Foraging: <i>Acacia</i> or <i>Eucalyptus</i> open woodlands and shrublands on ranges, foothills, and lowlands.		
	Central Australian Rock-wallaby	Breeding: Rocky cliffs and dissected ranges with caves, rock-piles, deep gullies, cliffs and overhangs. Foraging: Sandstone hills and rises, foothills and lowlands.	Mortality due to interaction with vehicles or machinery. Disturbance due to noise and vibration.	Establish speed limits for vehicles traveling on site access roads and tracks. Minimise unnecessary vegetation clearing. Avoid night works if possible and minimise unnecessary noise on site.
	Slater's Skink		Mortality due to interaction with vehicles or machinery. Habitat degradation due to spread of Buffel Grass.	Pre-clearance surveys to identify key habitats and populations. Where populations are identified by presence of burrows, alter path of works to avoid this habitat and establish buffer zones around populations. Manage risk of Buffel Grass spread into or around site.



Ecological Constraint		Vegetation community or key habitat feature	Key threatening processes	Management
Category	Matter			
				Ongoing weed monitoring to ensure no new weed occurrences are created.
	Palm Valley Rocksnail Ellery Creek Squat Snail Krichauff Ranges Squat Snail Illara Waterhole Squat Snail Bednall's Dwarfmelon	Rocky hills, ranges, cliffs and foothills. Gaps in ranges, rockholes. Key habitat features are Desert Figs, particularly <i>Ficus brachypoda</i> .	Habitat loss due to clearing. Habitat loss or degradation due to vehicle or machinery movement associated with exploration activities. Habitat degradation due to spread of Buffel Grass.	Pre-clearance surveys to identify Desert Fig habitat and alter path of works to avoid this habitat. Avoid ground disturbance in gorges and gaps and establish buffers around potential GDEs to avoid key areas of potential SRE snail habitat. Limit vehicle movement in gaps and around potential GDEs to established tracks. Manage risk of Buffel Grass spread into or around site. Ongoing weed monitoring to ensure no new weed occurrences are created.
Threatened flora species	Minnie Daisy	Sandstone rises and ranges. Occurs in habitats without spinifex.	Destruction of plants due to vegetation clearing or vehicle. Habitat loss due to clearing. Habitat loss or degradation due to vehicle or machinery movement associated with exploration activities. Habitat degradation due to spread of Buffel Grass.	Pre-clearance surveys to identify threatened plants in proposed seismic lines and alter path of works to avoid destroying plants. Establish buffers around potential GDEs to avoid key areas habitat for Baumea, Amperea, MacDonnell Ranges Cycad and Marsh Club Rush. Limit vehicle movement to established tracks where practicable. Manage risk of Buffel Grass spread into or around site. Ongoing weed monitoring to ensure no new weed occurrences are created.
	Baumea	Rocky hills, ranges, cliffs and foothills. Springs/seeps among sandstone rocks.		
	Amperea	Rocky hills, ranges, cliffs and foothills. Sheltered rock crevices on sandstone cliffs near gorge sections of watercourses.		
	Palm Valley Myrtle	Mulga woodland on rocky hills and ranges, deep gorges, stony slopes and ridges.		



Ecological Constraint		Vegetation community or key habitat feature	Key threatening processes	Management
Category	Matter			
	Desert Quandong	Woodlands and shrublands on sand/loamy soils; plains, swales.		
	MacDonnell Ranges Cycad	Gorges and sheltered rocky slopes, with a preference for shade and high soil moisture.		



## 7.0 Conclusions

The study area forms part of a large, connected area with mosaics of remnant vegetation communities associated with complex sandstone ranges, gorges, gaps, and valleys of deep sand and loam soils. Seven broad vegetation communities were identified within the study area, providing a diverse range of habitat resources for fauna species. These vegetation communities are well represented in the broader MacDonnell Ranges bioregion.

Two SoBS and two SoCS overlapped with or were proximal to the proposed works areas. It is recommended that no works be undertaken in these areas of international conservation significance and that buffers are established around these areas to avoid indirect impacts.

Two types of significant vegetation (as defined in the NT Land Clearing Guidelines (DEPWS, 2021a)) were identified within the study area: riparian vegetation and terrestrial and aquatic GDEs.

One threatened fauna species (listed under the EPBC Act), Southern Whiteface, was confirmed present in the study area and likely evidence of another (Slater's Skink; evidence in the form of burrows) was observed. Several other threatened flora and fauna species were deemed likely or moderately likely to occur.

No declared weed species were identified in the study area; however, Buffel Grass and Couch Grass were common in low-lying areas and riverine vegetation communities respectively. These species present a high risk to many of the matters of ecological significance in or potentially in the study area, and risk of spread of these species or introduction of other weeds should be managed through the development and implementation of a Weed Management Plan.

Key project impacts consist of low-impact vegetation clearing, noise and vibration impacts, risk of fauna mortality or destruction of threatened plants, and risk of weed seed spread. Provided the recommendations set out in Section 6 of this report are followed, significant impacts to these values are considered unlikely to result from proposed works; and the project is unlikely to conflict with the objective of the terrestrial ecosystem environmental factor (i.e. 'protect terrestrial habitats to maintain environmental values including biodiversity, ecological integrity and ecological functioning (NT EPA, 2021b)).



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# **Appendix A    Likelihood of occurrence assessments**

## **Amadeus Basin Exploration**

### **Terrestrial Ecology Baseline Survey**

**Mosman Oil and Gas Limited**

SLR Project No.: 623.30157.00101

11 August 2023

**Table B1 Likelihood of occurrence for threatened and migratory species**

STATUS <sup>1</sup>		FAMILY	SCIENTIFIC NAME	COMMON NAME	SOURCE <sup>2</sup>	LOCAL RECORDS <sup>3</sup>	ECOLOGY	LIKELIHOOD OF OCCURRENCE
TPWCA	EPBC							
<b>BIRDS</b>								
VU	VU	Accipitridae	<i>Erythrotriorchis radiatus</i>	Red Goshawk	PMST/NR	0	This species prefers open forests and woodland with a mosaic of vegetation types, particularly near riverine systems and permanent water where there is an abundance of prey species (DCCEEW, 2023d). The home range in northern Australia has been reported up to 200km <sup>2</sup> , with indications it may be even larger (Aumann and Baker-Gabb, 1991).	<b>Low</b> This species occurs very sparsely in the broader region, but the nearest record (from 1923) is over 50km from the study area in Finke Gorge National Park (ALA, 2023). The riparian vegetation in the study area presents potential breeding habitat for the species, but the broader context (among ranges and narrow valleys dominated by <i>Acacia</i> spp. woodlands) does not provide ideal foraging habitat. While the species occurs in the region it is unlikely to utilise habitats in the study area.
LC	M	Apodidae	<i>Apus pacificus</i>	Fork-tailed Swift	PMST/NR	5	The Fork-tailed Swift is a non-breeding visitor to all States and territories of Australia. This species is known to utilise cliffs and beaches and to hunt above various habitat types including rainforest and open forests ahead of storm fronts (Higgins, 1999). Swifts are hardly ever seen to land except at nests, and when they do, they cling to vertical surfaces rather than perching upright like swallows (Menkhorst et al., 2017). This species has been noted to forage in high-flying flocks 100s of meters above the ground or canopy (Menkhorst et al., 2017).	<b>High</b> This species is known from nearby Watarrka National Park and may occur over the habitats in the study area under suitable conditions. The air space above the study area represents suitable foraging habitat for this species, which is likely to occur on a sporadic or temporary basis.
LC	M	Charadriidae	<i>Charadrius veredus</i>	Oriental Plover	PMST/NR	0	The Oriental Plover arrives in northern Australia between Exmouth and Derby in Western Australia and some records along the coast of the Top End and Gulf of Carpentaria (DCCEEW, 2023d). Inland records of this species occur on blacksoil plains of northern Western Australia, Northern Territory and north-western Queensland. Inland habitats can also include freshwater systems as well as flat, open, semi-arid or arid grasslands. They have also been recorded in recently burned areas (DCCEEW, 2023d).	<b>Low</b> There are two records of this species in and near Watarrka National Park, within 50km of the study area; however, suitable habitats (inland blacksoil plains and coastal wetlands) do not occur in the study area. The species is therefore assessed as unlikely to occur.
VU	VU	Falconidae	<i>Falco hypoleucos</i>	Grey Falcon	PMST/NR	12	This species is sparsely distributed around inland drainage systems—it is usually restricted to shrubland, grassland and wooded water courses and occasionally found in open woodlands near the coast (Garnett and Dutson, 2011). Often found on stony plains and Acacia shrublands (Morcombe, 2003).	<b>High</b> There are 12 records of this species within 50km of the study area. The study area contains breeding habitat for this species (watercourses with riparian vegetation of large eucalypts) as well as suitable foraging habitat—particularly the <i>Acacia</i> spp. shrublands and Mallee woodlands in valleys and on low rocky hills in the study area. Therefore, this species has a high likelihood of occurrence.
LC	M	Glareolidae	<i>Glareola maldivarum</i>	Oriental Pratincole	PMST/NR	0	Widespread along coastlines in northern Australia. It is widespread but scattered inland. Inland habitats include open plains, floodplains or short grasslands. They often occur near terrestrial wetlands (DCCEEW, 2023d).	<b>Low</b> There are no local records of this species, the nearest being from near Alice Springs and Yulara, over 100km from site. Suitable habitat for this species is absent within the study area; therefore, it is considered to have a low likelihood of occurrence.
NL	VU	Maluridae	<i>Amytornis modestus</i>	Thick-billed Grasswren	NR Maps	8	The MacDonnell Ranges Thick-billed Grasswren ( <i>Amytornis modestus modestus</i> ) is considered extinct, having not been recorded in the territory in over 80 years. Records returned from the NR Maps search were from the 1900s, where a date was provided.  This subspecies was known from the upper Finke River Drainage Basin west of Alice Springs, from Mereenie Bluff, Hermannsburg, Laurie's Creek and Hugh River, south to Illamurta (McMinn's Creek). The primary habitat of this subspecies was the clumps of Sandhill Canegrass ( <i>Zygochloa paradoxa</i> ) beside creeks in the MacDonnell Ranges, with chenopods and flood debris in the creeks.	<b>Low</b> This subspecies is considered extinct. Further, no habitat for the species was observed during the field assessment. It is unlikely to occur in the study area.
NE	M	Motacillidae	<i>Motacilla cinerea</i>	Grey Wagtail	PMST	0	An uncommon but regular migrant to Australia, this species is rarely recorded in the It prefers montane forests and forested areas associated with watercourses. During migration, this species can be found close to beaches and rock pools (Menkhorst et al., 2017).	<b>Low</b> There are no records of this species within 50km of the study area and the study area is outside of the modelled distribution of this species within Australia. This species has a low likelihood of occurring within the study area.
NE	M	Motacillidae	<i>Motacilla tschutschensis</i>	Yellow Wagtail	PMST	0	This species is a rare but regular migrant to coastal areas within Australia. It typically inhabits open habitats, often near water and occasionally on drier inland plains and edges of mangroves (Morcombe, 2003).	<b>Low</b>



STATUS <sup>1</sup>		FAMILY	SCIENTIFIC NAME	COMMON NAME	SOURCE <sup>2</sup>	LOCAL RECORDS <sup>3</sup>	ECOLOGY	LIKELIHOOD OF OCCURRENCE
TPWCA	EPBC							
								There are no records of this species within 50km of the study area. Suitable habitats such as open waterbodies and areas prone to inundation are absent in the study area. This species has a low likelihood of occurring within the study area.
		Psittacidae	<i>Pezoporus occidentalis</i>	Night Parrot	PMST	0	Bright green with a yellow belly and distinguishing black markings, this species is nocturnal and ground-dwelling. Information pertaining to the distribution and ecology of the species was largely anecdotal until 2013, when an assumedly small population was discovered (previously presumed to be extinct) (Threatened Species Scientific Committee, 2016). The current distribution is given only as "central Australia" to protect the population (ALA, 2023). Suitable habitat features include a mix of <i>Triodia</i> sp. (spinifex), alluvial and gibber habitats (Night Parrot Recovery Team, 2017). All recent Night Parrot records have been associated with <i>Triodia longiceps</i> but other <i>Triodia</i> species might also be important. Spinifex habitats are used for roosting, breeding and feeding, while alluvial and stony habitats are used mainly for feeding. Night Parrots are known to drink at dams and raised earthen stock tanks (often called turkey nests). They are also likely to drink at other free-standing water bodies within 10–15km of roosting habitats.	<b>Low</b> There are no records of this species within 50km, the nearest being from Angas Downs Indigenous Protected Area, from 1929. This species is poorly understood and notoriously cryptic, having evaded observation for much of the last century despite its broad distribution. The species is therefore difficult to confirm absent through survey effort. Woodlands with spinifex ( <i>Triodia</i> spp.) hummock grasses are widespread in the study area, consisting of narrow valleys of low dune/swale and floodplain habitat interspersed with rocky hills and ranges. Both rocky and sandy habitats support spinifex; however, most spinifex in the study area were small clumps (particularly of <i>Triodia brizoides</i> on rocky ranges) and were not ideal habitat. Large <i>T. basedowii</i> clumps occurred in patchy Mallee communities, but hummock grass habitats were generally patchily distributed between broader areas of tussock grassland and Buffel Grass infestations. No extensive sparsely treed areas with consistent large spinifex hummocks, and no clay lakes or basins, occur in the study area. On the basis that the species has not been recorded near the site, and that potential habitats are not ideal or well represented, the species is considered unlikely to occur in the study area.
VU	VU	Psittacidae	<i>Polytelis alexandrae</i>	Princess Parrot	PMST	6	This species occurs irregularly across the arid regions of Australia from near Oodnadatta in South Australia, west to near Coolgardie and the east Murchison River in Western Australia, and north to near the Fitzroy River in Western Australia and to Howell Ponds in the NT. It may be concentrated within the central deserts and ranges. Occurrence records from the periphery of the distribution of this species in south-west and north-west Western Australia, the northern NT, and northern South Australia have become less frequent since the 1950s. This species typically occurs in shrublands and savanna woodlands in swale between sand dunes with spinifex and a variety of shrubs and scattered emergent trees. However, it has occasionally been recorded to occur in vegetated riverine or littoral areas (Garnett and Dutson, 2011 and references therein).	<b>Low</b> There are six local records of this species, including three records within the last 10 years, within 50km of the study area, in Finke Gorge and Watarrka National Parks and to the northwest of the study area. Most local records are from extensive dune/swale habitats, which are key for the species. Such habitats are poorly represented in the study area, and are limited to narrow or small patches of habitat in a broad expanse of unsuitable (rocky hill) habitat. The species is considered unlikely to occur in the study area.
VU	EN	Rostratulidae	<i>Rostratula australis</i>	Australian Painted Snipe	PMST	0	This species has been recorded at wetland sites throughout much of Australia but is most common in the eastern states. The Australian Painted Snipe is a distinct species but can be hard to detect due to its cryptic and crepuscular behaviour. This species typically occurs in shallow freshwater wetlands and other permanently or temporarily inundated areas, particularly where rank tussocks of grasses, sedges, rushes or reeds are present (DCCEEW, 2023d; Morcombe, 2003).	<b>Low</b> There is one record of this species within 50km of the study area in Finke Gorge National Park. The study area does not contain and suitable habitat (substantial wetlands, broad riverine floodplains or low relief areas prone to waterlogging). This species has a low likelihood of occurring within the study area.
LC	M	Scolopacidae	<i>Actitis hypoleucos</i>	Common Sandpiper	PMST/NR	7	Widespread but patchy distribution along all coastlines of Australia. Found in coastal wetlands and inland wetlands with varying levels of salinity (DCCEEW, 2023d). Most commonly found in muddy or rocky shores of estuaries, deltas of streams, banks upstream, lakes, pools, billabongs, reservoirs, and dams.	<b>Low</b> Seven records of this species occur within 50km of the study area. These records are associated with large river systems, wetlands and gorges. As most watercourses in the study area are ephemeral and support temporary wetland values, the species is considered unlikely to occur in the study area.
LC	M	Scolopacidae	<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	PMST/NR	3	This species occurs around the entire coast of Australia outside its breeding season, where it is found in a broad range of permanent or ephemeral water bodies, primarily brackish (DCCEEW, 2023d and references therein). It prefers muddy edges of shallow fresh or brackish wetlands, and use flooded paddocks, sedge lands and other ephemeral wetlands.	<b>Low</b> Three records of this species occur within 50km of the study area. These records are associated with large river systems, wetlands and gorges particularly in Finke Gorge National Park. As most watercourses in the study area are ephemeral and support temporary wetland values, the species is considered unlikely to occur in the study area.



STATUS <sup>1</sup>		FAMILY	SCIENTIFIC NAME	COMMON NAME	SOURCE <sup>2</sup>	LOCAL RECORDS <sup>3</sup>	ECOLOGY	LIKELIHOOD OF OCCURRENCE
TPWCA	EPBC							
VU	CR,M	Scolopacidae	<i>Calidris ferruginea</i>	Curlew Sandpiper	PMST/NR	0	This species occurs around the coasts of Australia from Cairns south. It is also quite widespread inland, with scattered records occurring in the Gulf of Carpentaria and around Alice Springs. This species mainly occurs on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets, lagoons and also around non-tidal swamps, lakes, and lagoons near the coast, foraging on mudflats and nearby shallow water (DCCEEW, 2023d and references therein).	<b>Low</b> No records of this species occur within 50km of the study area. The study area does not contain appropriate habitat (i.e., expansive shallow wetlands) required by this species. It is considered that this species has a low likelihood of occurring within the study area.
DD	M	Scolopacidae	<i>Calidris melanotos</i>	Pectoral Sandpiper	PMST/NR	0	Most records of this species are around the coasts of Australia or within south-eastern Australia (ALA, 2023). Inland records of this species are sparse and scattered, with most occurring around the Alice Springs area (ALA, 2023). This species prefers shallow wetlands (fresh to marine) and tending not to utilise small or ephemeral water bodies (Menkhorst et al., 2017).	<b>Low</b> No records of this species occur within 50km of the study area. The study area contains small wetlands; however, these are mostly likely to be ephemeral in nature and unlikely to support Pectoral Sandpiper. It is considered that this species has a low likelihood of occurring within the study area.
<b>MAMMALS</b>								
DD	EN	Dasyuridae	<i>Sminthopsis psammophila</i>	Sandhill Dunnart	PM	1	This species is represented in the NT by one specimen, collected near Lake Amadeus in 1894; it also occurs in parts of SA and WA. Further survey effort is needed to determine its persistence or regional extinction in the NT. The specimen of this species from the NT was collected in sand dune habitat with spinifex-covered dunes interspersed with Desert Oak swales (TSSC, 2015).	<b>Low</b> There is one record of this species within 50km of the study area, approximately 35km southeast of EP145 on sand dunes adjacent to the Palmer River floodplain. This record is from pre-1900, and the species has not been recorded in the territory since. While the prior record of the species is close to the study area and the species may persist in the region, sand dune/swale habitats are poorly represented in EP145, and the species is considered unlikely to occur in the study area.
EWNT	EN	Macropodidae	<i>Lagorchestes hirsutus</i>	Rufous Hare-Wallaby	PM	0	This species is considered extinct on the Australian mainland, with populations in managed reserves and parks (including the Alice Springs Desert Park). The species formerly occupied extensive areas of shrublands, woodlands and hummock grasslands in the arid centre and west of the continent. Extant populations on islands in Shark Bay, WA represent the last remaining wild populations. Reintroduction attempts into the Tanami desert was unsuccessful.	<b>Low</b> This species is considered extinct in the wild in the Northern Territory. Therefore, it is unlikely to be encountered within the study area.
NT	VU	Macropodidae	<i>Petrogale lateralis centralis</i>	Central Australian Rock-wallaby	PMST	11	The distribution of the MacDonnell Ranges subspecies is centred on the MacDonnell Ranges bioregion of the southern NT. In the NT, its range extends north to the Davenport and Murchinson Ranges, east to the Jervis Range, west to the Western Australian border and south to the South Australian border (DEPWS, 2021). The preferred habitats are rocky outcrops and steep rocky slopes.	<b>High</b> There are 11 records of this species within 50km of the study area, within or near Finke Gorge and Watarrka National Parks. The study area lies between the two national parks in the James Ranges and, while there are no records of Central Australian Rock-wallaby in EP145, the species is likely to occur in the extensive ranges and rocky hills of the study area.
	VU	Megadermatidae	<i>Megaderma gigas</i>	Ghost Bat	PMST	0	The distribution of this species is discontinuous across Australia and within the NT only occurs in the tropical north, in the vicinity of Pine Creek and in and near Kakadu National Park (DEE, 2020 and references therein). It has been recorded hunting in diverse habitats. Ghost Bats roost in caves, boulder piles, shallow escarpments, and mines, and have very specific roosting requirements with respect to temperature and humidity, requiring dark, warm, humid conditions (TSSC, 2016). The species consists of several highly disjunct populations with little or no genetic flow between them at present, and only 12 breeding locations are known.	<b>Low</b> This species was historically known from central Australia and was recorded near the community of Hermannsburg in the 1950s, but no extant populations are known to exist in the region (TSSC, 2016). The species is restricted to the northern NT in the vicinity of Pine Creek and Kakadu National Park. One substantial cave was observed near the study area during the survey; however, as the species is not known to persist in the region, it is considered unlikely to occur in the study area.
VU	VU	Thylacomyidae	<i>Macrotis lagotis</i>	Greater Bilby	PMST/NR	6	This species' original distribution encompassed arid and semi-arid regions of Australia which has now been reduced to areas in western Northern Territory and into northern parts of Western Australia, as well as a small area in the Diamantina River catchment in western Queensland (Menkhorst and Knight, 2011). Its habitat mostly consists of sandy deserts, hummock grasslands and Acacia shrublands (Menkhorst and Knight, 2011). However, broad-scale surveys of the Greater Bilby in the NT in the 1990s indicated that laterite and drainage line land systems were occupied more frequently than sand plain and dune systems (DENR, 2006a).	<b>Low</b> There are six records of this species within 50km of the study area, all of which are from the 1930s to 1960s; the nearest record is 10km from EP145 but has a high spatial uncertainty and its location cannot be verified by the description provided. Valleys in the study area, composed of deep sands and tussock/hummock grasslands, are ideal habitat for the species; however, these habitats are moderately disjunct from the broader region, being dissected by rocky ranges. The current distribution of the Bilby does not include the West MacDonnell Ranges or much of the surrounding Alice Springs region (DCCEEW, 2023d). On the basis that the study area is outside the current range of the species, it is considered unlikely to occur in the study area.



STATUS <sup>1</sup>		FAMILY	SCIENTIFIC NAME	COMMON NAME	SOURCE <sup>2</sup>	LOCAL RECORDS <sup>3</sup>	ECOLOGY	LIKELIHOOD OF OCCURRENCE
TPWCA	EPBC							
	CE	Rodentidae	<i>Zyomys pedunculatus</i>	Central Rock-rat	PMST/NR	0	The Central Rock-rat is currently only known from the West MacDonnell Ranges associated with Tjoritja/West MacDonnell National Park. The species' former range included James Range, Alice Springs, rocky areas in the Tanami Desert and Haasts Bluff, but has not been recorded in these areas in recent years.  This species occupies tussock and hummock grasslands, low shrublands and low open woodlands on rocky hills and ranges and associated valleys, using rocky habitats for shelter (DEPWS, 2021).	<b>Low</b> There are no recent records of this species from the James Ranges, including the Gardiner ranges associated with the study area. The species is currently restricted to the West MacDonnell Ranges and has not been located in other parts of its former range during recent survey efforts. Based on the current known distribution the species is considered unlikely to occur in the study area.
<b>REPTILES</b>								
VU	VU	Scincidae	<i>Liopholis kintorei</i>	Great Desert Skink	NR	0	The Great Desert Skink is endemic to the Australian arid zone. The Tanami Desert and Uluru populations are strongholds for the species. It occupies a range of vegetation types, with the major habitat being sandplain and adjacent swales that support hummock grassland and scattered shrubs (DEPWS, 2021).	<b>Low</b> There are two records of this species within 50km of the study area, both in Watarrka National Park near King's Canyon. These records are associated with extensive red sand dune/swale country, which is very poorly represented in the study area. Small patches of potential habitat are separated from other suitable habitat by rocky ranges and clay-loam soils. The species is considered unlikely to occur in the study area.
			<i>Liopholis slateri slateri</i>	Slater's Skink	NR	33	Slater's Skink is currently restricted to approximately 8 small, disjunct populations in the West MacDonnell ranges and nearby areas, including an extant population on Tempe Downs Station (TSSC, 2016). It occurs in eucalypt and mulga woodland and open woodland near drainage channels, where it relies on mounds of soil formed under shrubs, principally <i>Eremophila sturtii</i> and <i>Hakea divaricata</i> , but also <i>Acacia</i> spp. It has been recorded in other situations, including on dunes and narrow rocky creeks and using burrows under spinifex and logs.	<b>High</b> The species is known to occur on Tempe Downs station, with recent records approximately 7km from the southeast corner of EP145 in habitat congruous with suitable habitat in the study area. Extensive suitable habitat was recorded on site, this being effectively all wattle and eucalypt woodland on friable soils throughout the several valleys on site. Likely signs of the species were observed during the survey. The species is considered likely to occur in the study area.
<b>INVERTEBRATES</b>								
	—	Camaenidae	<i>Granulomelon squamulosum</i>	Palm Valley Rocksnailed	NR Maps	2	Medium-sized camaenid snail (12-17mm) with a brown/light brown subglobose shell with low spire.  Endemic to the NT, this species is known from the MacDonnell Ranges southeast of Alice Springs (Stanisic <i>et al.</i> , 2017), although records occur east and within 50km of Alice Springs (ALA, 2023). The species is generally found in and under rock piles and scree beneath <i>Ficus brachypoda</i> .	<b>High</b> This species occurs in nearby Fike Gorge National Park and near the community of Areyonga, north of the study area. Suitable habitat is present and it is considered likely to occur in the study area.
	—	Camaenidae	<i>Semotrachia elleryi</i>	Ellery Creek Squat Snail	NR Maps	4	Medium-sized camaenid snail (10-13mm) with a light brown discoidal/subdiscoidal shell with low spire.  Endemic to the NT, this species is known from the MacDonnell Ranges southeast of Alice Springs (Stanisic <i>et al.</i> , 2017). The species is generally found in and under rock piles beneath <i>Ficus brachypoda</i> at the base of cliffs.	<b>High</b> This species occurs in nearby Fike Gorge National Park and in James Range to the east of the study area. Suitable habitat is present and it is considered likely to occur in the study area.
	—	Camaenidae	<i>Semotrachia esau</i>	Krichauff Ranges Squat Snail	NR Maps	32	Medium-sized camaenid snail (8-14mm), with a light brown globose shell with moderately elevated spire.  Endemic to the NT, this species is known from the MacDonnell Ranges southeast of Alice Springs (Stanisic <i>et al.</i> , 2017), although records occur northeast to south of Alice Springs within 130km (ALA, 2023). The species is generally found in and under rock piles beneath <i>Ficus brachypoda</i> and under spinifex in semi-arid woodland.	<b>High</b> This species' distribution centres on Fike Gorge National Park, but it appears to be widespread in the James Ranges, with records near the study area to the north. Suitable habitat is present in the study area and the species is likely to occur on site.
	—	Camaenidae	<i>Semotrachia illarana</i>	Illara Waterhole Squat Snail	NR Maps	18	Small camaenid snail (7-8mm) with a light brown discoidal/subdiscoidal shell with flat spire.  Endemic to the NT, records exist only from the Illara Waterhole southwest of Alice Springs (Stanisic <i>et al.</i> , 2017). The species occupies leaf litter beneath <i>Ficus brachypoda</i> in Illara Waterhole.	<b>High</b> This species has been recorded within EP145 in the Illara Waterhole, located in the southeast corner of the site. The species is only known from this location; another record from the Areyonga community is likely to represent a different species. While its current distribution is narrow, the species occurs within the broader EP145 and may occur in nearby suitable habitat within the proposed seismic line buffers.
	E	Camaenidae	<i>Sinumelon bednalli</i>	Bednall's Dwarfmelon	NR Maps	2	Large camaenid snail (20-26mm), yellowish light brown, globose shell with elevated spire, occasionally with red band.	<b>High</b> This is a relatively widespread species, relative to other SRE snails in this assessment, and is known from Watarrka and Fike Gorge National Parks. There is a record southeast of the study area in the Palmer River catchment; suitable habitat for the species occurs on site and it is considered likely to occur in the study area.



STATUS <sup>1</sup>		FAMILY	SCIENTIFIC NAME	COMMON NAME	SOURCE <sup>2</sup>	LOCAL RECORDS <sup>3</sup>	ECOLOGY	LIKELIHOOD OF OCCURRENCE
TPWCA	EPBC							
							Occurs in the NT throughout the MacDonnell Ranges, although the species has been found in Queensland historically (ALA, 2023). The population is fragmented, occurring in pockets of habitat including Hugh Gorge, Trepina Gorge, Alice Springs Telegraph Station Historical Reserve, Owen Springs Reserve, and West MacDonnell National Park. The species occupies soil under logs, rocks, and litter beneath <i>Ficus brachypoda</i> (Stanisic <i>et al.</i> , 2017).	
<b>PLANTS</b>								
V	V	Asteraceae	<i>Minuria tridens</i>	Minnie Daisy	PMST and NR Maps	21	This is a herbaceous subshrub to 30cm high, with light purple ligules ("petals") and yellow disc florets (Nano, Kerrigan, & Albrecht, 2012a). It occurs on dolomite, limestone, and sandstone rises and ranges. It is associated with low shrublands dominated by <i>Acacia kempeana</i> , <i>Senna artemisioides</i> and/or <i>Indigofera leucotricha</i> , and suitable habitat is absent of <i>Triodia</i> spp. (Nano, Kerrigan, & Albrecht, 2012a). The current distribution of the species is within a 200km radius of Alice Springs, primarily to the west (Nano, Kerrigan, & Albrecht, 2012a).	<b>High</b> There are several records of this species near the study area. There is suitable habitat for this species in the study area, though much of the sandstone habitat in the study area is dominated by spinifex and may therefore be unsuitable and so suitable habitat may not be widespread. As there is suitable habitat in the study area it is considered likely to occur.
E	—	Cyperaceae	<i>Baumea arthropphylla</i>	Baumea	NR Maps	5	This is a perennial sedge to 2m high, with leaves which are round in cross-section and a long, narrow inflorescence. Only a single population is known to exist within the NT, in Watarrka National Park, growing amongst sandstone rocks in a seepage area (White <i>et al.</i> , 2000). As an aquatic plant, wildfire and drying of the stream in which it grows are both threats to the population (White <i>et al.</i> , 2000).	<b>High</b> While this species' range is highly localised, several areas of suitable habitat are present in the study area, and there is connectivity of sandstone ranges and hills between the site and the species' known area of occupancy. It is considered likely to occur in the study area.
V	—	Euphorbiaceae	<i>Amperea spicata</i>	Amperea	NR Maps	18	This is a small shrub to 30cm high, with linear leaves strongly recurved at the margins. It grows in sheltered rock crevices on sandstone cliffs near gorge sections of watercourses (DEPWS, 2021). It is only known from Watarrka National Park in the Stokes Creek and Kathlene Creek catchments. The species is listed due to its small known range; it is not subject to any current threats but is vulnerable to impacts of climate change and to stochastic events such as disease.	<b>High</b> While this species' range is highly localised, several areas of suitable habitat are present in the study area, and there is connectivity of sandstone ranges and hills between the site and the species' known area of occupancy. It is considered likely to occur in the study area.
V	V	Fabaceae	<i>Acacia latzii</i>	Tjilpi Wattle	PMST	0	This species occurs in two disjunct populations, one of which is near the study area; this population is restricted to Bacon Range on Henbury Station, between the Palmer River and the Stuart Highway.	<b>Low</b> None of the records of this species are within 50km of the study area, and the habitat that the species occupies is not represented in the study area. There are no siltstone or shale mesas of alkaline clay-loam; the study area is geologically different from the Bacon Range. Tjilpi Wattle is considered unlikely to occur in the study area.
NT	V	Myrtaceae	<i>Thryptomene hexandra</i>	Palm Valley Myrtle	NR Maps	19	This species is a small, woody shrub to 2m height, with linear to lanceolate leaves and small white flowers (PlantNET, 2023). Its distribution is inland southern Queensland, northern NSW, and NT within 300kms southwest of Alice Springs. The species is found in mulga woodland, deep gorges, and on stony slopes and ridges (Northern Territory Herbarium, 2013). Threatening processes are currently unconfirmed and little information on this species is available.	<b>High</b> There are several records of this species within 50km of the study area; the core of its range in Finke National Park presents similar habitat to the rocky hills in the study area; while this species' restricted known range in the NT does not include the study area, given the similarity of habitat and proximity of records the species is considered likely to occur in the study area.
V	—	Santalaceae	<i>Santalum acuminatum</i>	Desert Quandong	NR Maps	46	This species is a small tree to 8m high with pendulous branchlets and rough grey-black bark. It is widespread across southern Australia, and its northernmost distribution is in the NT, in which it occurs southwest of Alice Springs (Nano, Kerrigan, & Albrecht, 2012b). Habitat for the species includes dune swales, creek lines, on plains and low rises in sandy/loamy soil atop a foundation of limestone or sandstone (Nano, Kerrigan, & Albrecht, 2012b). The species is listed due to habitat modification/loss by weeds and pests, fire, and direct exploitation (Nano, Kerrigan, & Albrecht, 2012b).	<b>High</b> There are numerous records of this species within 50km of the study area. Its moderately broad habitat requirements mean that it may occur in effectively any sandy/loamy soil habitat in the study area, from dune/swale country to clay-loam plains. It is considered likely to occur in the study area.
NT	V	Zamiaceae	<i>Macrozamia macdonnellii</i>	MacDonnell Ranges Cycad	PMST	49	This species is a cycad which grows to 2m. It is endemic to the NT, and the population is almost entirely restricted to the MacDonnell Ranges (Kerrigan, Albrecht, & Duguid, 2006). The species generally grows in gorges and on sheltered, rocky slopes, with a preference for shade and high soil moisture (Preece, 2005). Seeds are prone to desiccation and are viable for only a short period (Kerrigan, Albrecht, & Duguid, 2006). This is a factor in one of its main threatening processes, seed poaching for horticulture (Kerrigan, Albrecht, & Duguid, 2006).	<b>High</b> There are numerous records of this species within 50km of the study area. Suitable habitats in the study area include rocky gorges and gaps in sandstone ranges, especially where groundwater expression occurs and soils are moist for long periods of the year. It is considered likely to occur in the study area.



<sup>1</sup> Status: LC = Least Concern, NE = Not Evaluated, DD = Data Deficient, NT = Near Threatened, VU = Vulnerable, EN = Endangered, CE = Critically Endangered, M = Migratory, EW = Extinct in the Wild, EX = Extinct, '-' = not listed. TPWC Act = *Territory Parks and Wildlife Conservation Act 1976*, EPBC = *Environment Protection and Biodiversity Conservation Act 1999*.

<sup>2</sup> Source: PMST = DCCEEW Protected Matters Search Tool (DCCEEW, 2023a), NR = NR Maps (DEPWS, 2023b).

<sup>3</sup> Number of records within 25km of the study area based on an NR maps search (DEPWS, 2023b).





# **Appendix B**   **Vegetation community descriptions**







## **Amadeus Basin Exploration**

**Terrestrial Ecology Baseline Survey**







**Mosman Oil and Gas Limited**

SLR Project No.: 623.30157.00101



11 August 2023

Description	Ground-truthed floristic composition and structure					Representative photographs	
	Stratum	Modal growth-form	Mean canopy cover (%)	Mean height (m)	Species		
<p><u>Short description:</u> Acacia spp. low woodland with tussock grasses on plains of deep sandy soils</p>	U	Tree	10	7	<i>Acacia aneura, Acacia estrophiolata, Hakea suberea,</i>	 	
	M	Shrub	35	2.5	<i>Acacia kempeana, Acacia melliodora, Acacia tetragonophylla, Acacia dictyophleba, Eremophila latrobei</i>		
	G	Tussock grass	60	1.5	<i>Cenchrus ciliaris*, Aristida arida, Aristida contorta, Sida rohlenae</i>		
<p><u>Short description:</u> <i>Eucalyptus camaldulensis</i> subsp. <i>arida</i> riverine woodland on drainage lines and alluvial plains</p>	U	Tree	70	16.5	<i>Eucalyptus camaldulensis</i> subsp. <i>arida, Corymbia aparrerinja, Callitris glaucophylla</i>	 	
	M	Shrub, small tree	45	3.5	<i>Melaleuca linariifolia</i> var. <i>trichostachya, Acacia holosericea</i>		
	G	Grasses	85	0.5	<i>Cynodon dactylon*, Cenchrus ciliaris*, Enchylaena tomentosa, Einadia nutans, Salsola kali, Cucumis myriocarpus, Gossypium australe</i>		
<p><u>Short description:</u> Mallee and Acacia spp. low woodland with hummock grasses on red sand dunes, swales and plains</p>	U	Tree	10	8.5	<i>Eucalyptus gamophylla, Corymbia opaca, Eucalyptus sessilis</i>	 	
	M	Shrub	15	3.5	<i>Acacia tetragonophylla, Acacia kempeana, Acacia dictyophleba</i>		
	G	Hummock grass	45	0.5	<i>Triodia basedowii</i>		



Description	Ground-truthed floristic composition and structure					Representative photographs	
	Stratum	Modal growth-form	Mean canopy cover (%)	Mean height (m)	Species		
<p><u>Short description:</u> Mulga or MacDonnell Mulga woodland on rocky hills and ranges</p>	U	Tree	40	7	<i>Acacia macdonnellensis</i> , <i>Eucalyptus sessilis</i> , <i>Allocasuarina decaisneana</i>	 	
	M	Shrub	15	3	<i>Acacia ramulosa</i> var. <i>linophylla</i> , <i>Dodonaea viscosa</i> subsp. <i>mucronata</i> , <i>Eremophila freelingii</i> , <i>Grevillea wickhamii</i> , <i>Santalum lanceolatum</i> ,		
	G	Hummock grass	30	0.5	<i>Triodia brizoides</i> , <i>Gomphrena cunninghamii</i> , <i>Baekkea polystemona</i> , <i>Enneapogon polyphyllus</i> , <i>Eriachne aristidea</i> , <i>Tragus australianus</i> , <i>Digitaria brownii</i> , <i>Eriachne helmsii</i> , <i>Isotoma petraea</i> ,		
<p><u>Short description:</u> Fringing vegetation and wetlands in gaps, waterholes and rock pools</p>	No ground truthed data available				<i>Eucalyptus camaldulensis</i> subsp. <i>arida</i> , <i>Ficus brachypoda</i>	 	
					<i>Acacia aneura</i> , <i>Acacia macdonnellensis</i> , <i>Acacia ramulosa</i> var. <i>linophylla</i>		
					Vegetation community viewed from air only; ground cover species not identified		
<p><u>Short description:</u> <i>Acacia aneura</i> forest on alluvial plains</p>	No ground truthed data available				<i>Acacia aneura</i> , <i>Eucalyptus camaldulensis</i> subsp. <i>arida</i>	 	
					Vegetation community viewed from air only; shrub species not identified		
					Vegetation community viewed from air only; ground cover species not identified		



Description	Ground-truthed floristic composition and structure					Representative photographs	
	Stratum	Modal growth-form	Mean canopy cover (%)	Mean height (m)	Species		
<p><u>Short description:</u> <i>Allocasuarina decaisneana</i> woodland on red dunes and swales with tussock grasses</p>	No ground truthed data available				<i>Allocasuarina decaisneana</i>		
					Vegetation community viewed from air only; shrub species not identified		
					Vegetation community viewed from air only; ground cover species not identified		



# Appendix C Flora species list

## Amadeus Basin Exploration

### Terrestrial Ecology Baseline Survey

Mosman Oil and Gas Limited

SLR Project No.: 623.30157.00101

11 August 2023



**Table D1 Flora species recorded within and directly adjacent to the study area**

LC	Status			Family	Scientific name	Common name
	TPWC Act	EPBC Act	Non-native			
LC	—	—	—	Acanthaceae	<i>Gomphrena cunninghamii</i>	Amaranth
LC	—	—	—	Amaranthaceae	<i>Enchylaena tomentosa</i>	Ruby Saltbush
LC	—	—	—	Amaranthaceae	<i>Ptilotus atriplicifolius</i>	Silver-tail
LC	—	—	—	Amaranthaceae	<i>Ptilotus helipteroides</i>	Hairy Mulla-mulla
LC	—	—	—	Amaranthaceae	<i>Ptilotus macrocephalus</i>	Green Pusstail
LC	—	—	—	Asteraceae	<i>Brachyscome ciliaris</i>	Variable Daisy
LC	—	—	—	Asteraceae	<i>Chrysocephalum apiculatum</i> subsp. <i>racemosum</i>	Yellow Buttons
LC	—	—	—	Asteraceae	<i>Pterocaulon serrulatum</i> var. <i>velutinum</i>	Ragweed
LC	—	—	—	Asteraceae	<i>Sphaeromorphaea littoralis</i>	Spreading Nut-heads
LC	—	—	—	Bignoniaceae	<i>Pandorea doratoxylon</i>	Spearwood
LC	—	—	—	Campanulaceae	<i>Isotoma petraea</i>	Rock Isotome
LC	—	—	—	Capparaceae	<i>Capparis mitchelli</i>	Native Orange
LC	—	—	—	Casuarinaceae	<i>Allocasuarina decaisneana</i>	Desert Oak
LC	—	—	—	Chenopodiaceae	<i>Einadia nutans</i>	Climbing Saltbush
LC	—	—	—	Chenopodiaceae	<i>Eriochiton sclerolaenoides</i>	Wooly-fruit Copperburr
LC	—	—	—	Chenopodiaceae	<i>Maireana scleroptera</i>	Bluebush
LC	—	—	—	Chenopodiaceae	<i>Maireana</i> sp.	Bluebush
LC	—	—	—	Chenopodiaceae	<i>Salsola kali</i>	Roly-poly
LC	—	—	—	Chenopodiaceae	<i>Sclerolaena cornishiana</i>	Copperburr
LC	—	—	—	Chenopodiaceae	<i>Sclerolaena</i> sp.	Copperburr
LC	—	—	—	Convulvulaceae	<i>Evolvulus alsinoides</i>	Dwarf Morning Glory
LC	—	—	—	Cucurbitaceae	<i>Citrillus lanatus</i>	Watermelon
LC	—	—	—	Cucurbitaceae	<i>Cucumis myriocarpus</i>	Paddy Melon



TPWC Act	Status		Family	Scientific name	Common name
	EPBC Act	Non-native			
NE	—	—	Cupressaceae	<i>Callitris glaucophylla</i>	White Cypress Pine
LC	—	—	Cyperaceae	<i>Cyperus</i> sp.	Sedge
LC	—	—	Cyperaceae	<i>Fimbristylis sieberiana</i>	Fringe-sedge
LC	—	—	Goodeniaceae	<i>Scaevola</i> sp.	Fan-flower
LC	—	—	Leguminosae	<i>Acacia aneura</i>	Mulga
LC	—	—	Leguminosae	<i>Acacia dictyophleba</i>	Waxy Wattle
LC	—	—	Leguminosae	<i>Acacia estrophiolata</i>	Ironwood
LC	—	—	Leguminosae	<i>Acacia holosericea</i>	Silver-leaf Wattle
LC	—	—	Leguminosae	<i>Acacia kempeana</i>	Wanderrie Wattle
LC	—	—	Leguminosae	<i>Acacia melleodora</i>	Scented Wax Wattle
LC	—	—	Leguminosae	<i>Acacia ramulosa</i> var. <i>linophylla</i>	Horse Mulga
LC	—	—	Leguminosae	<i>Acacia strongylophylla</i>	Round-leaf Wattle
LC	—	—	Leguminosae	<i>Acacia tetragonophylla</i>	Dead Finish
LC	—	—	Leguminosae	<i>Acacia victoriae</i>	Bramble Wattle
LC	—	—	Leguminosae	<i>Cassia venusta</i>	Chocolate Cassia
LC	—	—	Leguminosae	<i>Indigofera basedowii</i>	Indigo
LC	—	—	Leguminosae	<i>Senna artemisoides</i> nothosp. <i>artemisoides</i>	Wormwood Senna
LC	—	*	Leguminosae	<i>Vachellia farnesiana</i>	Mimosa Bush
NE	—	—	Loranthaceae	<i>Lysiana exocarpi</i>	Harlequin Mistletoe
LC	—	—	Malvaceae	<i>Abutilon leucopetalum</i>	Velvetleaf
LC	—	—	Malvaceae	<i>Abutilon otoparpum</i>	Desert Lantern
LC	—	—	Malvaceae	<i>Gossypium australe</i>	Desert Rose
LC	—	*	Malvaceae	<i>Malvastrum americanum</i>	Spiked Malvastrum
LC	—	—	Malvaceae	<i>Sida rohlenae</i>	Shrub Sida



Status			Family	Scientific name	Common name
TPWC Act	EPBC Act	Non-native			
LC	—	—	Malvaceae	<i>Sida trichopoda</i>	Narro-leaved Sida
LC	—	—	Menyanthaceae	<i>Nymphoides crenata</i>	Wavy Marshwort
LC	—	—	Montiaceae	<i>Calandrinia balonensis</i>	Broad-leaved Parakeelya
LC	—	—	Moraceae	<i>Ficus brachypoda</i>	Small-leaved Rock Fig
LC	—	—	Myrtaceae	<i>Baeckea polystemona</i>	Desert Rock-myrtle
LC	—	—	Myrtaceae	<i>Corymbia aparrerinja</i>	Ghost Gum
LC	—	—	Myrtaceae	<i>Corymbia opaca</i>	Desert Bloodwood
LC	—	—	Myrtaceae	<i>Eucalyptus camaldulensis</i> subsp. <i>arida</i>	River Red Gum
LC	—	—	Myrtaceae	<i>Eucalyptus gamophylla</i>	Blue Mallee
LC	—	—	Myrtaceae	<i>Eucalyptus sessilis</i>	Finke River Mallee
LC	—	—	Myrtaceae	<i>Melaleuca linariifolia</i> var. <i>trichostachya</i>	Narrow-leaved Paperbark
LC	—	—	Nyctaginaceae	<i>Boerhavia coccinea</i>	Tar-vine
LC	—	—	Poaceae	<i>Setaria dielsii</i>	Diels' Pigeon Grass
LC	—	—	Poaceae	<i>Aristida arida</i>	Dry Wiregrass
LC	—	—	Poaceae	<i>Aristida contorta</i>	Bunched Kerosene Grass
LC	—	*	Poaceae	<i>Cenchrus ciliaris</i>	Buffel Grass
LC	—	—	Poaceae	<i>Chrysopogon fallax</i>	Golden Beard Grass
LC	—	—	Poaceae	<i>Cymbopogon oblectus</i>	Silkyheads
LC	—	*	Poaceae	<i>Cynodon dactylon</i>	Bermuda Grass
LC	—	—	Poaceae	<i>Dactyloctenium radulans</i>	Button Grass
LC	—	—	Poaceae	<i>Dichanthium sericeum</i>	Queensland Bluegrass
LC	—	—	Poaceae	<i>Digitaria ammophila</i>	Silky Umbrella Grass
LC	—	—	Poaceae	<i>Digitaria brownii</i>	Cotton Panic
LC	—	—	Poaceae	<i>Enneapogon polyphyllus</i>	Leafy Nineawn



TPWC Act	Status		Family	Scientific name	Common name
	EPBC Act	Non-native			
LC	—	—	Poaceae	<i>Enteropogon ramosus</i>	Curly Windmill Grass
LC	—	—	Poaceae	<i>Eragrostis barrelieri</i>	Pitted Lovegrass
LC	—	—	Poaceae	<i>Eragrostis lacunaria</i>	Purple Lovegrass
LC	—	—	Poaceae	<i>Eragrostis parviflora</i>	Weeping Lovegrass
LC	—	—	Poaceae	<i>Eriachne aristidea</i>	Broad-leaf Wanderrie Grass
LC	—	—	Poaceae	<i>Eriachne helmsii</i>	Woollybutt Wanderrie Grass
LC	—	—	Poaceae	<i>Eulalia aurea</i>	Silky Browntop
LC	—	—	Poaceae	<i>Panicum decompositum</i>	Native Millet
LC	—	—	Poaceae	<i>Themeda triandra</i>	Kangaroo Grass
LC	—	—	Poaceae	<i>Tragus australianus</i>	Small Burrgrass
LC	—	—	Poaceae	<i>Triodia basedowii</i>	Lobed Spinifex
LC	—	—	Poaceae	<i>Triodia brizioides</i>	Weeping Spinifex
LC	—	—	Poaceae	<i>Triodia longiceps</i>	Giant Grey Spinifex
LC	—	—	Poaceae	<i>Triodia melvillei</i>	Melville's Spinifex
LC	—	—	Poaceae	<i>Triraphis mollis</i>	Purple Plumegrass
LC	—	—	Poaceae	<i>Urochloa piligera</i>	Hairy Armgrass
LC	—	—	Portulacaceae	<i>Portulaca oleracea</i>	Common Purslane
LC	—	—	Proteaceae	<i>Grevillea juncifolia</i> subsp. <i>juncifolia</i>	Honey Grevillea
LC	—	—	Proteaceae	<i>Grevillea wickhamii</i> subsp. <i>aprica</i>	Holly Leaf Grevillea
LC	—	—	Proteaceae	<i>Hakea suberea</i>	Cork Tree
LC	—	—	Pteridaceae	<i>Cheilanthes lasiophylla</i>	Woolly Cloak-fern
LC	—	—	Pteridaceae	<i>Cheilanthes sieberi</i>	Mulga Fern
LC	—	—	Santalaceae	<i>Santalum lanceolatum</i>	Tropical Sandalwood
LC	—	—	Sapindaceae	<i>Atalaya hemiglauca</i>	Whitewood



Status			Family	Scientific name	Common name
TPWC Act	EPBC Act	Non-native			
LC	—	—	Sapindaceae	<i>Dodonaea viscosa</i> subsp. <i>mucronata</i>	Broadleaf Hopbush
LC	—	—	Scrophulariaceae	<i>Eremophila freelingii</i>	Limestone Fuchsia
LC	—	—	Scrophulariaceae	<i>Eremophila goodwinii</i>	Goodwin's Emu Bush
LC	—	—	Scrophulariaceae	<i>Eremophila latrobei</i>	Crimson Turkey Bush
LC	—	—	Scrophulariaceae	<i>Eremophila longifolia</i>	Berrigan
LC	—	—	Solanaceae	<i>Solanum ellipticum</i>	Potato Bush
LC	—	—	Verbenaceae	<i>Verbena macrostachya</i>	Native Verbena
LC	—	—	Violaceae	<i>Hybanthus aurantiacus</i>	Native Violet

Status: NE = Not Evaluated, LC = Least Concern

TPWC Act = *Territory Parks and Wildlife Conservation Act 1976*, EPBC = *Environment Protection and Biodiversity Conservation Act 1999*

\*indicates species that are non-native to Australia.



# Appendix D Fauna species list

## Amadeus Basin Exploration

### Terrestrial Ecology Baseline Survey

Mosman Oil and Gas Limited

SLR Project No.: 623.30157.00101

11 August 2023



**Table E1 Fauna species recorded within and directly adjacent to the study area**

Status			Family	Scientific name	Common name
TPWC Act	EPBC Act	Non-native			
<b>BIRDS</b>					
LC	V	—	Acanthizidae	<i>Aphelocephala leucopsis</i>	Southern Whiteface
LC	—	—	Accipitridae	<i>Aquila audax</i>	Wedge-tailed Eagle
LC	—	—	Artamidae	<i>Artamus cinereus</i>	Black-faced Woodswallow
LC	—	—	Artamidae	<i>Artamus personatus</i>	Masked Woodswallow
LC	—	—	Artamidae	<i>Cracticus nigrogularis</i>	Pied Butcherbird
LC	—	—	Cacatuidae	<i>Eolophus roseicapilla</i>	Galah
LC	—	—	Cacatuidae	<i>Nymphicus hollandicus</i>	Cockatiel
LC	—	—	Campephagidae	<i>Coracina novaehollandiae</i>	Black-faced cuckoo-shrike
LC	—	—	Columbidae	<i>Geopelia cuneata</i>	Diamond Dove
LC	—	—	Columbidae	<i>Geophaps plumifera</i>	Spinifex Pigeon
LC	—	—	Columbidae	<i>Ocyphaps lophotes</i>	Crested Pigeon
LC	—	—	Corvidae	<i>Corvus orru</i>	Torresian Crow
LC	—	—	Estrildidae	<i>Taeniopygia guttata</i>	Zebra Finch
LC	—	—	Falconidae	<i>Falco berigora</i>	Brown Falcon
LC	—	—	Falconidae	<i>Falco cenchroides</i>	Nankeen Kestrel
LC	—	—	Maluridae	<i>Malurus lamberti</i>	Variegated Fairy-wren
LC	—	—	Maluridae	<i>Malurus splendens</i>	Splendid Fairy-wren
LC	—	—	Maluridae	<i>Amytornis purnelli</i>	Dusky Grasswren
LC	—	—	Meliphagidae	<i>Epthianura tricolor</i>	Crimson Chat
LC	—	—	Meliphagidae	<i>Lichmera indistincta</i>	Brown Honeyeater



Status			Family	Scientific name	Common name
TPWC Act	EPBC Act	Non-native			
LC	—	—	Meliphagidae	<i>Ptilotula keartlandi</i>	Grey-headed Honeyeater
LC	—	—	Monarchidae	<i>Grallina cyanoleuca</i>	Magpie-lark
LC	—	—	Oreoicidae	<i>Oreoica gutturalis</i>	Crested Bellbird
LC	—	—	Pachycephalidae	<i>Colluricincla harmonica</i>	Grey Shrike-thrush
LC	—	—	Pachycephalidae	<i>Pachycephala rufiventris</i>	Rufous Whistler
LC	—	—	Pardalotidae	<i>Pardalotus striatus</i>	Striated Pardalote
LC	—	—	Pomatostomidae	<i>Pomatostomus temporalis</i>	Grey-crowned Babbler
LC	—	—	Psittacidae	<i>Melopsittacus undulatus</i>	Budgerigar
LC	—	—	Rhipiduridae	<i>Rhipidura leucophrys</i>	Willie Wagtail
LC	—	—	Turnicidae	<i>Turnix velox</i>	Little Button-quail
<b>MAMMALS</b>					
(Int)	—	*	Bovidae	<i>Bos taurus</i>	European Cattle
LC	—	—	Canidae	<i>Canis familiaris</i>	Dingo
(Int)	—	*	Camelidae	<i>Camelus dromedarius</i>	Camel
(Int)	—	*	Equidae	<i>Equus caballus</i>	Horse
LC	—	—	Macropodidae	<i>Osphranter robustus</i>	Common Wallaroo
LC	—	—	Rodentidae	<i>Notomys alexis</i>	Spinifex Hopping Mouse
<b>REPTILES</b>					
LC	—	—	Agamidae	<i>Ctenophorus slateri</i>	Eastern Ring-tailed Dragon
LC	—	—	Agamidae	<i>Ctenophorus nuchalis</i>	Central Netted Dragon
LC	—	—	Agamidae	<i>Gowidon longirostris</i>	Long-nosed Dragon
LC	—	—	Agamidae	<i>Tympanocryptis centralis</i>	Centralian Earless Dragon
LC	—	—	Gekkonidae	<i>Gehyra purpurascens</i>	Purple Dtella
LC	—	—	Pygopodidae	<i>Pygopus nigriceps</i>	Hooded Scaly-foot

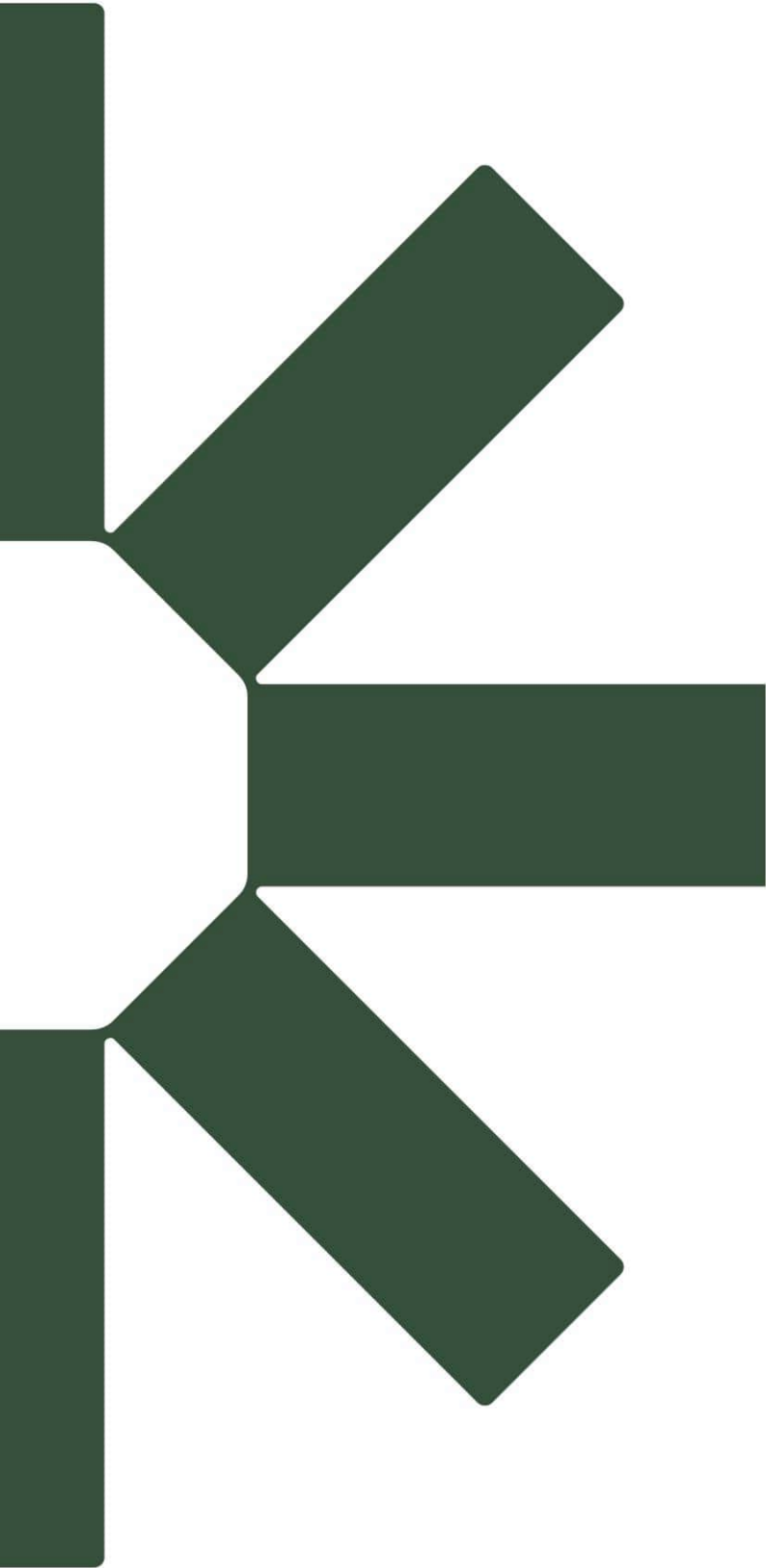


Status			Family	Scientific name	Common name
TPWC Act	EPBC Act	Non-native			
LC	—	—	Scincidae	<i>Ctenotus alacer</i>	Lively Ctenotus
LC	—	—	Scincidae	<i>Ctenotus helenae</i>	Helen's Ctenotus
LC	—	—	Scincidae	<i>Ctenotus leonhardii</i>	Leonhard's Ctenotus
LC	—	—	Varanidae	<i>Varanus giganteus</i>	Perentie
LC	—	—	Varanidae	<i>Varanus tristis</i>	Black-headed Monitor

Status: NE = Not Evaluated, LC = Least Concern, VU=Vulnerable, (Int) = non-native to Australia, M = Migratory

TPWC Act = *Territory Parks and Wildlife Conservation Act 1976*, EPBC = *Environment Protection and Biodiversity Conservation Act 1999*





Making Sustainability Happen

## Appendix 2

### 1. Risk Assessment Methodology

A risk assessment has been undertaken for the Project. This involved assessing the likelihood and consequence of identified risks, the mitigation required, monitoring requirements and the residual risk rating. This assessment process is outlined below.

#### 1.1 Impact analysis

The identification of potentially adverse impacts was informed by the regulated activity aspects outlined in Section 3 of the EMP. The severity of each of the identified impacts (both direct and indirect), was assessed based on the categories relating to the scale, intensity and duration of the impact.

#### 1.2 Risk assessment

For each potential impact, the risk assessment considered the likelihood of the impact occurring and then the worst-possible consequence to the NT EPA environmental objectives. The consequence assessment was informed both by the outcomes of the impact analysis described in Section 5 of Appendix 1, and the importance/sensitivity of environmental values. The likelihood and consequence categories adopted in the risk assessment are provided in Table 1 and Table 2. The likelihood and consequence ratings were combined to derive an overall risk rating using the matrix in Table 3.

##### Inherent risk

For each potential impact, an inherent risk rating was assigned by ranking the likelihood and consequence of the impact in the absence of any specific mitigation or management (i.e. it is a worst-case scenario). The inherent risk rating considered the project location and design, existing environmental conditions, impact sources and pathways, and the presence/absence of important and/or sensitive values and receptors.

##### Risk evaluation

Each inherent risk rating was evaluated with reference to the risk level and target action matrix in Table 4 to determine the level of mitigation and management attention required. Generally, the higher the inherent risk rating, the less tolerable/acceptable the risk is likely to be to stakeholders and regulators, and the greater the requirement for avoidance, mitigation and management.

##### Residual risk

Once all practicable mitigation and management measures were defined, each impact was re-assessed to assign a residual risk rating. The residual rating assigned to each impact reflects the level of risk that the particular element of the regulated activity poses to the environment (assuming effective implementation of the mitigation and management measures).

##### Level of scientific uncertainty

For each potential impact, any information gaps/uncertainties that preclude reliable assessment of risks, as well as any uncertainty about the effectiveness of proposed controls

were identified. Each risk rating was assigned a level of certainty using the categories in Table 5.

**Table 1 Likelihood categories adopted in risk assessment**

<b>Likelihood category</b>	<b>Description</b>
<b>Almost certain</b>	The event/impact will occur or is expected to occur. The impact occurs regularly in association with similar projects and/or in similar environments.
<b>Likely</b>	The impact will probably occur in most circumstance but there is some uncertainty about the likelihood. The impact has occurred on more than one occasion in association with similar projects and/or in similar environments.
<b>Possible</b>	The impact could occur in some circumstances. The impact has occurred infrequently on similar projects and/or in similar environments.
<b>Unlikely</b>	The impact is not expected to occur. The impact occurs very infrequently on similar projects and/or in similar environments.
<b>Rare</b>	The impact is very unlikely to occur. The impact has not occurred on similar projects and/or in similar environments.

**Table 2 Consequence categories adopted in risk assessment**

Consequence or severity of Impacts	Score	Terrestrial Flora & Fauna	Terrestrial Environmental Quality	Inland Water Environmental Quality	Hydrological processes	Social, Economic & Cultural Surrounds	Community Health & Safety
<p>A <b>SEVERE</b> impact has two or more of the following characteristics:</p> <ul style="list-style-type: none"> <li><i>Extensive</i></li> <li><i>High intensity</i></li> <li><i>Permanent</i> – values will never recover.</li> </ul>	5	Impacts to terrestrial flora and fauna, extending beyond the EP area, that permanently alter biodiversity and/or ecological integrity.	Extensive soil disturbance, erosion or contamination that irreversibly alters the integrity of environmental values that rely on good soil quality, and/or significantly affects land-holder infrastructure.	Permanent major exceedance of water quality criteria for beneficial uses in a major watercourse or across multiple sub-catchments.	<p>Catchment-wide reduction in surface water flow volumes and/or timing of flows/discharges that permanently alters the ecological health, land-uses and/or amenity.</p> <p>Drawdown of groundwater in a regional scale aquifer that permanently alters ecological health, land-uses and/or amenity.</p>	<p>Permanent impact that is felt by the majority of the regional population.</p> <p>Unauthorised destruction of Aboriginal Sacred Sites and/or heritage sites.</p>	<p>One or more fatalities.</p> <p>More than 1 people injured with permanent disabilities.</p>
<p>A <b>MAJOR</b> impact has two or more of the following characteristics:</p> <ul style="list-style-type: none"> <li><i>Widespread</i></li> <li><i>Moderate to high intensity</i></li> <li><i>Long-term</i> – felt for many years.</li> </ul>	4	Impacts to terrestrial flora and fauna, over a large proportion of the EP area, that alter biodiversity and/or ecological integrity for many years.	Widespread soil disturbance, erosion or contamination that compromises environmental values that rely on good soil quality, and/or affects some land-holder infrastructure.	<p>Long-term major exceedance of water quality criteria for beneficial uses in a major watercourse</p> <p>Or</p> <p>Long-term minor exceedance of water quality criteria for beneficial uses across multiple sub-catchments</p>	<p>Reduction in surface water flow volumes, groundwater levels and/or timing of flows/discharges that compromises ecological health, land-uses and/or amenity for many years.</p> <p>Drawdown of groundwater in a regional scale aquifer that compromises ecological health, land-uses and/or amenity for many years.</p>	<p>Long-term impact that is felt by some of the regional population.</p> <p>Unauthorised damage/desecration of Aboriginal Sacred Sites and/or heritage sites such that site integrity is lost.</p>	<p>No fatalities.</p> <p>One injury with permanent disability.</p> <p>More than 10 injuries requiring hospitalisation.</p>
<p>A <b>MODERATE</b> impact has two or more of the following characteristics:</p> <ul style="list-style-type: none"> <li><i>Localised</i></li> <li><i>Low intensity</i></li> <li><i>Medium-term</i> – felt for months.</li> </ul>	3	Impacts to terrestrial flora and fauna, extending a short distance beyond the disturbance footprint that alters the quality, abundance or distribution of environmental values in the	Localised soil disturbance, erosion or contamination that alters soil characteristics but with no measurable impact to environmental values that rely on good soil quality.	Minor medium-term exceedances of water quality criteria for beneficial uses within a single sub-catchment.	<p>Localised reduction in surface water flow volumes, and/or timing of flows/discharges with no impact on ecological health, land-uses and/or amenity.</p> <p>Localised drawdown of groundwater that alters ecological health, land-uses and/or amenity in the medium-term.</p>	<p>Medium-term impact, or one that is felt by a small number of people.</p> <p>Unauthorised entry to a Restricted Works Area established for protection of Aboriginal Sacred Sites but with no</p>	<p>No fatalities.</p> <p>No permanent disability.</p> <p>5-10 injuries requiring hospitalisation.</p>

		medium-term, but has no measurable impact to biodiversity and/or ecological integrity.				physical impact to the site.  Unauthorised access to protected heritage sites but with no physical impact to the site.	
<p>A <b>MINOR</b> impact has two or more of the following characteristics:</p> <ul style="list-style-type: none"> <li>• <i>Limited</i></li> <li>• <i>Very low intensity</i></li> <li>• <i>Short-term</i> – felt for days or a few weeks only.</li> </ul>	2	Impacts to terrestrial flora and fauna, limited to within the immediate disturbance footprint, and that does not noticeably alter the quality, distribution or abundance of environmental values, or does so only in the short-term.	Short-term and/or limited soil disturbance, erosion or contamination that is reversible without requiring significant remedial works.	Minor short-term exceedances of water quality criteria for beneficial uses within a single drainage line.	<p>Limited reduction in surface water flow volumes, groundwater levels and/or timing of flows/discharges in the immediate sub-catchment area with no impact on ecological health, land-uses and/or amenity.</p> <p>Limited drawdown of groundwater that recovers rapidly, and/or does not alter ecological health, land-uses and/or amenity.</p>	<p>Short-term disruption/ nuisance that is felt by a small number of people.</p> <p>No impact to Aboriginal Sacred Sites and/or heritage sites.</p>	<p>No fatalities.</p> <p>No permanent disability.</p> <p>Less than 5 injuries requiring hospitalisation.</p>
An <b>INSIGNIFICANT</b> impact has no noticeable or measurable impact to values.	1	No measurable impact to terrestrial flora and fauna.	No measurable soil disturbance, erosion or contamination	No measurable exceedance of pre-development water quality conditions.	No measurable change to hydrological regimes	<p>No noticeable impact to stakeholder and/or community values.</p> <p>No impact to Aboriginal Sacred Sites and/or heritage sites.</p>	<p>No fatalities.</p> <p>No permanent disability.</p> <p>No injuries requiring hospitalisation.</p>

Table 3. Risk matrix adopted in risk assessment

			CONSEQUENCE				
			1	2	3	4	5
			Insignificant	Minor	Moderate	Major	Severe
LIKELIHOOD	E	Almost Certain	Moderate (11)	High (16)	High (20)	Very High (23)	Very High (25)
	D	Likely	Low (7)	Moderate (12)	High (17)	Very High (21)	Very High (24)
	C	Possible	Low (4)	Moderate (8)	High (13)	High (18)	Very High (22)
	B	Unlikely	Low (2)	Low (5)	Moderate (9)	High (14)	High (19)
	A	Rare	Low (1)	Low (3)	Low (6)	Moderate (10)	High (15)

Table 4. Risk level and target action matrix used to evaluate risks

Risk level	Target action
Very High	Risk is unacceptable. Specific action plans required to reduce risk to an acceptable level. Director/CEO level management attention required.
High	Risk is generally unacceptable without action. Specific action plans required to reduce risk to 'as low as reasonably practicable' (ALARP). Senior management attention required.
Moderate	Risk is generally acceptable. Proactive action is required to reduce risk to ALARP. Requires routine monitoring and adaptive management in accordance with Environmental Management Plan (EMP). Line management attention is required.
Low	Risk is acceptable. Management by routine policies and procedures.

Table 5. Level of scientific uncertainty categories used to evaluate reliability of risk assessment

Category	Description
Low (1)	<ul style="list-style-type: none"> <li>Comprehensive data with strong evidence in multiple peer reviewed data</li> <li>Little disagreement between authors or experts</li> <li>Considerable and consistent on-ground experience and/or monitoring</li> </ul>
Medium (2)	<ul style="list-style-type: none"> <li>Some or incomplete data available</li> <li>Evidence provided based on a small number of references</li> <li>Authors or experts' conclusions vary</li> <li>Limited on-ground experience and/or monitoring</li> </ul>
High (3)	<ul style="list-style-type: none"> <li>Scarce or no data available; evidence provided in unpublished reports</li> <li>Few on-ground observations</li> <li>Authors and experts conclusions vary considerably</li> </ul>

### 1.3 Residual impact or risk

For each environmental factor, residual risk ratings assigned through the risk assessment process were used as the basis for identifying residual impacts. These were considered in relation to the sensitivity/importance of the environmental values that are present.

## 1.4 ALARP and Acceptability

Section 6.2 in the EMP considers the outcome of the risk assessment process and the controls to determine if all reasonably practicable control measures have been identified and implemented and that the risk to environmental factors has been reduced to ALARP as result of the proposed mitigation activities. Trident believes that if a residual risk of medium to low can be achieved, the proposed activity is acceptable.

## 1.5 Cumulative risk assessment

In accordance with Schedule 1, item 3(2)(b) of the NT Petroleum (Environment) Regulations the cumulative impacts of a project need to be assessed. A search of publicly available information has established the cumulative impacts of this and other proposals. Cumulative impacts are associated with water, flora and fauna, greenhouse gas generation, traffic, social impacts and final land use. Irrespective of future production, the nature and scale of this activity will have negligible impact. Table 6 provides a summary of the cumulative impacts associated with the project activities and takes into account other EMPs in the region.

Table 6 Summary of cumulative impacts

Aspect	Summary
Water	<p>No groundwater impacts associated with the Wild Horse Project.</p> <p>No surface water will be taken and no release to surface water is proposed.</p>
Flora and fauna	<p>Greenvale have planned access using existing road and tracks. Clearing will not be required for line access, and no new tracks are being established.</p> <p>A proposed total of approximately 1 ha will be covered for the establishment of the camp for the Project. However, no vegetation clearing will be conducted for the camp.</p> <p>Vegetation clearing for the seismic lines is not proposed under this EMP. Line preparation will minimise the impact to the native flora and fauna by meandering around heavily wooded areas and/or large trees. Groundcover will be retained. This will minimise erosion risk and aid in the rehabilitation process.</p> <p>Impacts associated with weed introduction are managed through the weed management plan. A Weed Declaration will be completed for all equipment and machinery entering the site. This aims to minimise chance of weed introduction and spread through the Project area.</p>
Greenhouse gases	<p>The cumulative emissions from the proposed exploration activities are considered minor given that materials transported to site will be kept as minimal as possible and machinery will be sourced locally where available. Also, no vegetation clearing will be conducted for the seismic survey program.</p> <p>Low emissions associated with vehicle use, camp generator use and vegetation clearing (199 tCO<sub>2</sub> e).</p> <p>Current emissions levels do not trigger the <i>Northern Territory Governments Large Emitters Policy 2021</i>.</p>
Traffic	<p>Impacts of traffic are anticipated to be minor considering the low traffic volumes associated with the project, and they will not significantly alter traffic volumes on nearby roads.</p> <p>An additional 7 vehicles per day accessing anticipated during specific work programs such as the seismic testing.</p> <p>Journey Management Planning and personnel awareness through daily pre-start meetings of increased traffic and maintaining safety for</p>

	Greenvale crews and tourists alike is a priority for Greenvale.
Social	<p>The seismic survey activities are located in a remote area on Freehold Aboriginal Land (Scheduled under ALRA). Owner is Urrampinyi Iltjiltjarri Aboriginal Land Trust.</p> <p>Given the projects small footprint and temporary nature, cumulative impacts to social aspects and the local community are expected to be negligible.</p> <p>No infrastructure proposed, short-term project only</p>
Final Land Use - Rehabilitation	Successful rehabilitation is dependent on the vegetation type, soil type and moisture content in the soil which, in turn, is dependent on the timing and amount of rainfall in the region after earth work restoration commences.

## 2. 1.3 Risk assessment outcome

The environmental risk assessment is provided in Table 7 below. A total of 24 risks were identified. A summary of the outcome of the risk assessment is documented in Section 6.2 of the EMP. All identified risks have been determined to have a residual low risk rating and low uncertainty rating. Measures to mitigate risk and uncertainty are in Section 6.3 of the EMP.

Below is a list of the activities that are involved in the seismic Program and are covered in Table 7, which covers line preparation and camp pad establishment, seismic survey and recording and vehicle movements on seismic lines and access roads/tracks.

### Civil Activities

- 1x grader, two 4WD/UTV and up to 6 personnel will perform maintenance on the existing tracks where required to provide safe access to the seismic lines.
- Erosion control will be installed in accordance with NTG Erosion and Sediment Control Guidelines.
- Seismic lines will not be cleared, however fallen timber may be moved by hand from the seismic lines.
- The camp will be established at the designated campsite location.
- Seismic lines will be driven and/or flown by the Seismic OCR and the Fauna Spotter-Catcher to determine the best route placement for the seismic line.

### Charge Hole Drilling and Charge Installation

- The drilling and loading crew consisting of 4x 4WD/UTV, 4 small Geotechnical Rigs and up to 10 people onsite.
- A helicopter will be called in from Kings Canyon to assist movement of drilling rigs in sections of rugged terrain when required.
- Charge holes drilled by a small geotechnical tracked drill rig will be sited at approximately 200m intervals. The holes will be approximately 8cm wide and 10m deep.
- Charges will be installed approximately 10 m below ground level. The explosive source will be 1kg charges of TROJAN®GEOPRIME® dBX®,
- The explosive will be handled, placed and detonated by a qualified shotfirer. Explosives will be stored on site in a portable magazine which adheres to Australian Standards AS 2187.1-1998.

## **Seismic Acquisition**

- The seismic crew consists of 2 track mounted weight drops, 4x 4WD/UTV and 8 seismic crew personnel, a Seismic OCR, Paramedic and Camp Manager (total 12 people).
- A helicopter will be used when required to assist movement of personnel and equipment in sections of rugged terrain.
- The seismic crew will receive an induction informing them of their responsibilities of all environmental, cultural and operational requirements.
- Deployment of nodes will occur from the back of a four-wheel drive (4WD) or All-Terrain Vehicle.
- The nodes will be deployed at approximately 10 m intervals along the seismic line with a handheld drill and auger bit.
- Two two weight drop sources will be deployed at approximately 15m intervals along the seismic line. The weight drops will not be deployed on sections of line too rough to traverse; these sections will be acquired with the seismic charges only.
- The pre-installed seismic charges will be detonated along the seismic lines in conjunction with the weight drop deployment.
- After the seismic sources have been acquired, retrieval of nodes will take place.

## **Decommissioning and Remediation**

- All equipment will be removed from the site, and no equipment, machinery or material will remain.
- Drill holes will be progressively remediated after firing. Detonation wires will be pulled out and the hole and remaining cuttings will be returned down the hole. A cap will be emplaced 50 cm down the hole and the hole will be backfilled with adjacent soil or gravel to ensure the hole is load bearing and no surface depression is left that might cause injury to fauna.
- Any undetonated charges will be remediated by snipping the detonator wires 1m below surface and the top portion of the drill hole will be cemented to ensure the security of the unexploded charge.
- The main seismic line will be rehabilitated back to its original land use. Rehabilitation will be undertaken in accordance with the Rehabilitation Management Plan
- The existing access track will be maintained until stabilised.

Table 7 Risk assessment

RISK ASSESSMENT																	
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section
1	Biodiversity	Threatened species (fauna)	Impact to Southern Whiteface (Aphelocephala leucopsis) (a threatened species)	Field surveys confirmed the presence of the Southern Whiteface within the Project area. One individual Southern Whiteface was observed in Acacia spp. low woodland on clay loam near a drainage feature and at the foothills of a low slope on proposed seismic line 08.	Line preparation and camp pad establishment	Damage to nest; Injury or death to Southern Whiteface; Removal of suitable habitat.	A	4	10	Moderate	<ul style="list-style-type: none"> <li>• Camp pads will not be constructed within 50 m of nesting site.</li> <li>• Vegetation clearing is not going to be undertaken.</li> <li>• Line preparation NOT conducted between June to December (breeding season).</li> <li>• Seismic lines will be driven and/or flown by the Seismic OCR and the Fauna Spotter-Catcher to determine the best route placement for the seismic line.</li> </ul>	A	3	6	Low	Low	A.3.1 Site Selection and Planning
					Seismic survey and recording	Disturbance of Southern Whiteface from detonating charges result in nest collapse.	C	4	18	High	<ul style="list-style-type: none"> <li>• Apply buffers of 100 m between the charges and nesting.</li> <li>• Ensure that field staff do not drive vehicles out of designated areas</li> <li>• Staff awareness. Staff inductions to promote staff awareness of Southern Whiteface occurrence within the Project area. Induction material will provide photographs of characteristic Southern Whiteface sign so that field staff can report any</li> </ul>	A	3	6	Low	Low	A.3.5 Biodiversity Protection

RISK ASSESSMENT																	
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section
											<p>suspected sign. If suspected sign is identified, work will cease in the area until a suitable qualified person can confirm species and provide advice on how to mitigate impacts (if it is indeed Southern Whiteface).</p>						
					Vehicle movements on seismic lines and access roads/tracks	Potential impact from vehicle strike	A	1	1	Low	<ul style="list-style-type: none"> <li>Ensure that field staff do not drive vehicles out of designated areas.</li> </ul>				Low	Low	
2	Biodiversity	Threatened species (fauna)	Significant impact to Slater's Skink (a threatened species)	Field survey observation of likely (unconfirmed) Slater's Skink burrows on proposed seismic line 08 (See Threatened species and community observations map in Appendix 1).	Line preparation and camp pad establishment	<p>Damage to potential active burrows. Injury or death to Slater's Skink. Removal of suitable habitat:</p>	B	4	14	High	<ul style="list-style-type: none"> <li>Seismic lines will be driven and/or flown by the Seismic OCR and the Fauna Spotter-Catcher to determine the best route placement for the seismic line.</li> <li>Vegetation clearing is not going to be undertaken; therefore, no impact in relation to clearing.</li> <li>Camp pads will not be constructed within 50m of Slater's Skink burrows.</li> </ul>	A	3	6	Low	Low	A.3.1 Site Selection and Planning A.3.5 Biodiversity Protection
					Seismic survey and recording	Disturbance / displacement of Slater's Skink. Vibrations from recording/detona	B	4	14	High	<ul style="list-style-type: none"> <li>Apply buffers for active burrows</li> <li>Ensure that field staff</li> </ul>	A	3	6	Low	Low	

RISK ASSESSMENT																			
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section		
						ting charges result in burrow collapse.					do not drive vehicles out of designated areas <ul style="list-style-type: none"> <li>Staff awareness. Staff inductions to promote staff awareness of Slater's Skink occurrence within the Project area. Induction material will provide photographs of characteristic Slater's Skink sign (such as burrows and diggings) so that field staff can report any suspected sign. If suspected sign is identified, work will cease in the area until a suitable qualified person can confirm species and provide advice on how to mitigate impacts (if it is indeed active Slater's Skink).</li> </ul>								
					Vehicle movements on seismic lines and access roads/tracks	Road kill	B	4	14	High	<ul style="list-style-type: none"> <li>Vehicle speed restrictions apply when travelling in permit (60 km/hr on unsealed roads in proximity (&lt;200 m) to Slater's Skink identified locations) or drive to condition as as the species is diurnal and crepuscular .</li> <li>Staff awareness. Staff inductions to promote staff awareness of Slater's Skink occurrence within the Project area. Induction material will</li> </ul>	A	3	6	Low	Low			

RISK ASSESSMENT																		
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section	
											provide photographs of characteristic the skink sign (such as burrows and diggings) so that field staff can report any suspected sign. If suspected sign is identified, work will cease in the area until a suitable qualified person can confirm species and provide advice on how to mitigate impacts (if it is indeed active Slater's Skink).							
3	Biodiversity	Threatened species (fauna under EPBC and TPWC)	Potential impact to Grey Falcon, Central Australian Rock-wallaby and Bednall's Dwarfmelon	Additional to the above fauna species a further three EPBC Act species were deemed likely or moderately likely to occur within the study area; and a further 4 TPWC Act species are endemic to the greater West MacDonnell Ranges. All have been recorded within 50 km of the project area (ALA, 2023). The	Line preparation and camp pad establishment	Damage to potential species habitat. Removal of suitable habitat:	A	4	10	Moderate	<ul style="list-style-type: none"> <li>Seismic lines will be driven and/or flown by the Seismic OCR and the Fauna Spotter-Catcher to determine the best route placement for the seismic line.</li> <li>Seismic line will not be cleared.</li> </ul>	A	3	6		Low	A.3.1 Site Selection and Planning	
			Potential impact to Palm Valley Rocksnail ( <i>Granulomelon squamulosum</i> ), Ellery Creek Squat Snail ( <i>Semotrachia elleryi</i> ), Krichauff Ranges Squat Snail ( <i>Semotrachia esau</i> ), Illara Waterhole		Seismic survey and recording	Disturbance / displacement of threatened fauna Vibrations from recording/detonating charges.	A	4	10	Moderate	<ul style="list-style-type: none"> <li>Ensure that field staff do not drive vehicles out of designated areas</li> <li>Staff awareness. Staff inductions to promote staff awareness of threatened species occurrence within the Project area. Induction material will provide photographs of characteristic threatened species sign so that field</li> </ul>	A	3	6		Low	A.3.5 Biodiversity Protection	

RISK ASSESSMENT																	
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section
			Squat Snail ( <i>Semotrachia illarana</i> ).	Illara Waterhole Squat Snail is restricted to Illara Waterhole, which is located near the southeast corner of EP145.							staff can report any suspected sign. If suspected sign is identified, work will cease in the area until a suitable qualified person can confirm species and provide advice on how to mitigate impacts.						
				None of these species were recorded during the field survey; however, habitat features were widespread in the study area.	Vehicle movements on seismic lines and access roads/tracks	Road kill	A	1	1	Low	<ul style="list-style-type: none"> <li>Ensure that field staff do not drive vehicles out of designated areas</li> <li>Staff awareness. Staff inductions to promote staff awareness of threatened species occurrence within the Project area. Induction material will provide photographs of characteristic threatened species sign so that field staff can report any suspected sign. If suspected sign is identified, work will cease in the area until a suitable qualified person can confirm species and provide advice on how to mitigate impacts.</li> </ul>	A	1	1	Low	Low	

RISK ASSESSMENT																		
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section	
4	Biodiversity	Threatened species (Migratory species)	Potential impact to Fork-tailed Swift	Additional to the above fauna species a further one EPBC Act species was deemed highly likely to occur within the study area. This species is known from nearby Watarrka National Park and may occur over the habitats in the study area under suitable conditions. The air space above the study area represents suitable foraging habitat for this species, which is likely to occur on a sporadic or temporary basis.	Line preparation and camp pad establishment	Impact to listed threatened flora	A	1	1	Low	<ul style="list-style-type: none"> <li>Seismic lines will be driven and/or flown by the Seismic OCR and the Fauna Spotter-Catcher to determine the best route placement for the seismic line.</li> <li>Seismic line will not be cleared.</li> </ul>	A	1	1	Low	Low	A.3.1 Site Selection and Planning A.3.5 Biodiversity Protection	
					Seismic survey and recording	Impact to listed threatened flora	A	1	1	Low	<ul style="list-style-type: none"> <li>Ensure that field staff do not drive vehicles out of designated areas</li> <li>Staff awareness. Staff inductions to promote staff awareness of threatened species occurrence within the Project area. Induction material will provide photographs of characteristic threatened species sign so that field staff can report any suspected sign. If suspected sign is identified, work will cease in the area until a suitable qualified person can confirm species and provide advice on how to mitigate impacts.</li> </ul>	A	1	1	Low	Low		

RISK ASSESSMENT																		
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section	
					Vehicle movements on seismic lines and access roads/tracks	Impact to listed threatened flora	A	1	1	Low	<ul style="list-style-type: none"> <li>Ensure that field staff do not drive vehicles out of designated areas</li> <li>Staff awareness. Staff inductions to promote staff awareness of threatened species occurrence within the Project area. Induction material will provide photographs of characteristic threatened species sign so that field staff can report any suspected sign. If suspected sign is identified, work will cease in the area until a suitable qualified person can confirm species and provide advice on how to mitigate impacts.</li> </ul>	A	1	1	Low	Low		
5	Biodiversity	Threatened species (Flora EPBC)	Potential impact to Minnie Daisy, Baumea, Amperea, Palm Valley Myrtle, Desert Quandong and MacDonnell Ranges Cycad.	Six flora species were assessed as likely to occur in the study area: Minnie Daisy, Baumea, Amperea, Palm Valley Myrtle, Desert Quandong and MacDonnell Ranges Cycad. However,	Line preparation and camp pad establishment	Impact to listed threatened flora	A	1	1	Low	<ul style="list-style-type: none"> <li>Seismic lines will be driven and/or flown by the Seismic OCR and the Flora Spotter-Catcher to determine the best route placement for the seismic line.</li> <li>Seismic line will not be cleared.</li> </ul>	A	1	1	Low	Low	A.3.1 Site Selection and Planning A.3.5 Biodiversity Protection	
					Seismic survey and recording	Impact to listed threatened flora	A	1	1	Low	<ul style="list-style-type: none"> <li>Ensure that field staff do not drive vehicles out of designated areas</li> <li>Staff awareness. Staff inductions to promote</li> </ul>	A	1	1	Low	Low		

**RISK ASSESSMENT**

Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section
				they were not recorded during the surveys, possibly due to survey effort limitations that precluded access to much of the study area.							staff awareness of threatened species occurrence within the Project area. Induction material will provide photographs of characteristic threatened species sign so that field staff can report any suspected sign. If suspected sign is identified, work will cease in the area until a suitable qualified person can confirm species and provide advice on how to mitigate impacts.						
					Vehicle movements on seismic lines and access roads/tracks	Impact to listed threatened flora	A	1	1	Low	<ul style="list-style-type: none"> <li>• Ensure that field staff do not drive vehicles out of designated areas</li> <li>• Staff awareness. Staff inductions to promote staff awareness of threatened species occurrence within the Project area. Induction material will provide photographs of characteristic threatened species sign so that field staff can report any suspected sign. If suspected sign is identified, work will cease in the area until a suitable qualified person can confirm species and provide advice on how to mitigate impacts.</li> </ul>	A	1	1	Low	Low	

RISK ASSESSMENT																		
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section	
6	Biodiversity	Threatened species (Flora under TPWC)	Potential impact to Baumea ( <i>Baumea arthrophylla</i> ), Amperea ( <i>Amperea spicata</i> ) and Desert Quandong ( <i>Santalum acuminatum</i> ). None of these species were observed in the study area during the field assessment, but these species may occur in areas not surveyed.		Line preparation and camp pad establishment	Impact to listed threatened flora	A	1	1	Low	<ul style="list-style-type: none"> <li>Seismic lines will be driven and/or flown by the Seismic OCR and the Flora Spotter-Catcher to determine the best route placement for the seismic line.</li> <li>Seismic line will not be cleared.</li> </ul>	A	1	1	Low	Low	A.3.1 Site Selection and Planning  A.3.5 Biodiversity Protection	
					Seismic survey and recording	Impact to listed threatened flora	A	1	1	Low	<ul style="list-style-type: none"> <li>Ensure that field staff do not drive vehicles out of designated areas</li> <li>Staff awareness. Staff inductions to promote staff awareness of threatened species occurrence within the Project area. Induction material will provide photographs of characteristic threatened species sign so that field staff can report any suspected sign. If suspected sign is identified, work will cease in the area until a suitable qualified person can confirm species and provide advice on how to mitigate impacts.</li> </ul>	A	1	1	Low	Low		
					Vehicle movements on seismic lines and access roads/tracks	Impact to listed threatened flora	A	1	1	Low	<ul style="list-style-type: none"> <li>Ensure that field staff do not drive vehicles out of designated areas</li> <li>Staff awareness. Staff inductions to promote</li> </ul>	A	1	1	Low	Low		

RISK ASSESSMENT																	
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section
											staff awareness of threatened species occurrence within the Project area. Induction material will provide photographs of characteristic threatened species sign so that field staff can report any suspected sign. If suspected sign is identified, work will cease in the area until a suitable qualified person can confirm species and provide advice on how to mitigate impacts.						
7	Biodiversity	Sensitive vegetation	Potential impacts to riparian vegetation supporting high densities of hollow-bearing <i>Eucalyptus</i> spp. Trees and waterways (sensitive / significant vegetation)	Riparian vegetation, regarded as significant and sensitive to disturbances is widespread and dry watercourses are present in the study area.	Line preparation and camp pad establishment	Removal of riparian vegetation; Degradation due to weed spread; Reduce sediment integrity and bank stability; Waterway flow impediment.	B	4	14	High	<ul style="list-style-type: none"> <li>Waterways will only be crossed when dry (which includes line preparation works, seismic survey and monitoring programs)</li> <li>Establish buffers of 250 m around significant riparian vegetation of high value (with hollow-bearing trees) and establish appropriate smaller buffers around minor creeks and drainage features;</li> <li>For any waterways crossings required to be established for this Project – X1, X2 and X3, which are all minor waterways and support arid zone riparian</li> </ul>	A	3	6	Low	Low	A.3.1 Site Selection and Planning A.3.5 Biodiversity Protection



RISK ASSESSMENT																	
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section
											existing roads or tracks): - Weed introduction and spread (covered in risk ID 11) - Erosion and sediment control (covered in risk ID 16) - Contamination from spills of hazardous waste (covered in risk ID 20)						
					Seismic survey and recording	Contamination via accidental spill of hazardous substance	B	2	5	Low	Refer to Risk ID 15	A	2	3	Low	Low	
8	Biodiversity	Sensitive vegetation	Potential impact to groundwater-dependent vegetation, including riverine wetlands with semi-permanent to permanent shallow groundwater and small wetlands in drainage lines and gaps in sandstone ranges. (sensitive / significant vegetation)	Field survey confirmed that vegetation communities likely GDEs were identified during the field survey (See Sections 4.2.3 and 6.3.3 Groundwater-dependent Ecosystems in Appendix 1)	Line preparation and camp pad establishment	Removal of riverine vegetation including large eucalypt trees in low-lying riparian areas also	C	2	8	Moderate	• Works should be avoided within a 250 m buffer of riparian GDE vegetation where possible and should be limited to necessary creek and river crossings, utilising existing crossings wherever possible.	A	3	6	Low	Low	A.3.1 Site Selection and Planning A.3.5 Biodiversity Protection

RISK ASSESSMENT																	
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section
9	Biodiversity	Important habitat	Impacts to threatened fauna and flora habitat	Habitat of target threatened fauna & flora species identified during desktop assessments and survey along the proposed seismic lines	Line preparation and camp pad establishment	Degradation of threatened flora and fauna habitat;	B	3	9	Moderate	<ul style="list-style-type: none"> <li>Clearing of vegetation is not going to take place.</li> <li>Weed Management Plan will be in place to ensure that weeds spread (Buffel Grass especially) is not going to happen</li> <li>ESCP will be in place to ensure that erosion and/or sedimentation impacts on Slater's Skink habitat are minimised (covered in risk ID 12).</li> </ul>	A	3	6	Low	Low	A.3.1 Site Selection and Planning A.3.5 Biodiversity Protection
					Seismic survey and recording	Erosion and sedimentation important habitat; Accidental spill of hazardous substance (i.e. contamination)	B	3	9	Moderate	<ul style="list-style-type: none"> <li>Weed Management Plan will be in place to ensure that weeds spread (Buffel Grass especially) is avoided.</li> <li>Refer to ESCP controls (risk ID 16)</li> <li>Refer to contamination risk (risk ID 20)</li> </ul>	A	3	6	Low	Low	
10	Biodiversity	Habitat and vegetation	Impacts to habitat (general)	Desktop assessment and field survey confirmed that lines in the study area includes a variety of habitat features, with clear distinctions in habitat between	Line preparation and camp pad establishment	Degradation of flora and fauna habitat;	B	2	8	Moderate	<ul style="list-style-type: none"> <li>Weed Management Plan will be in place to ensure that weeds spread (Buffel Grass especially) is avoided.</li> <li>Refer to ESCP controls (risk ID 16)</li> <li>Refer to contamination risk (risk ID 20 and 21)</li> </ul>	B	2	5	Low	Low	A.3.1 Site Selection and Planning A.3.5 Biodiversity Protection

RISK ASSESSMENT																		
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section	
				low-lying areas and rocky hills and scarps.	Seismic survey and recording	Dust pollution; Erosion; Contamination of soil	B	2	5	Low	<ul style="list-style-type: none"> <li>Dust pollution (covered in risk ID 13)</li> <li>ESCP (covered in risk ID 16)</li> <li>Contamination from spills of hazardous substances (covered in risk ID 20)</li> </ul>	B	1	2	Low	Low		
11	Biodiversity	Weeds	Weed introduction and spread	Weeds species, including Buffel Grass (declared weed since July 2024 in the NT), Brmuda Grass, Mimosa Bush and Spike Malvastrum were identified during survey (See Weed management Plan Appendix 5 and Appendix 1).	Bringing equipment to Project area	Introducing weeds to Project area;	C	4	18	High	<ul style="list-style-type: none"> <li>A Weed Management Plan (WMP) has been prepared and will be implemented for this Project. The plan includes the following mitigations: <ul style="list-style-type: none"> <li>All vehicles/machinery/equipment entering the Project area to be cleaned and free of soil and vegetative matter and have a valid weed hygiene declaration prior to entering Project area.</li> <li>Spot checks on vehicle/equipment/machinery to ensure inspections are completed correctly.</li> </ul> </li> </ul>	B	2	5	Low	Low	A.3.1 Site Selection and Planning A.3.5 Biodiversity Protection A.3.6 Weed Management	

RISK ASSESSMENT																	
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section
					Driving around the project area	Spreading weeds from existing infestations	C	3	13	High	<ul style="list-style-type: none"> <li>• A Weed Management Plan (WMP) has been prepared and will be implemented for this Project. The plan includes the following mitigations: <ul style="list-style-type: none"> <li>- All vehicles, machinery and equipment to stay on formed access tracks.</li> <li>- Vehicles and/or equipment coming from an area with Declared Weeds should be cleaned and obtain a weed free certificate from qualified personnel before entry.</li> <li>- If areas containing weeds are accessed, clean all equipment and machinery. Wash or blow down vehicles to prevent transfer of weeds to uncontaminated areas.</li> <li>- No vegetation clearing to minimise ground disturbance.</li> <li>- Road grading/maintenance in areas of weeds should start from the outside of the infestation towards the centre of the infestation.</li> <li>- Monitor operational areas and 'hotspots' continually.</li> </ul> </li> </ul>	B	2	5	Low	Low	

RISK ASSESSMENT																	
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section
											<ul style="list-style-type: none"> <li>- Report weed sightings in unmapped areas to the Weeds Officer, particularly Buffel Grass.</li> <li>- Site environmental inductions for all personnel and contractors to include vehicle weed hygiene requirements</li> <li>- All personnel and contractors made aware of existing infestation locations and educated in the identification of existing weeds and potential priority weeds in the region.</li> <li>- Baseline weed survey to identify weed infestations to be avoided or managed.</li> <li>- If infestations cannot be avoided, treat prior to traversing or carry out wash-down protocols at allocated wash-down site.</li> </ul>						
12	Biodiversity	Pests	Pest and disease introduction or spread	There are no known soil borne diseases; or diseases current impacting livestock or native species within Project area. Feral animal	Line preparation and camp pad establishment	Introduction of pests or disease from vehicles and machinery brought into Project area.	C	4	18	High	<ul style="list-style-type: none"> <li>• All vehicles/machinery/equipment entering the Project area to be cleaned and free of soil and vegetative matter and have a valid weed hygiene declaration prior to entering Project area this is part of weed management, but also</li> </ul>	B	2	5	Low	Low	A.3.1 Site Selection and Planning A.3.5 Biodiversity Protection

RISK ASSESSMENT																	
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section
				are present within area that may be attracted to food waste generated by Project.							minimise risk of introductions of pests and soil borne disease.						
					Seismic survey and recording	Introduction of pests or disease from vehicles and machinery brought into Project area.	C	4	18	High	<ul style="list-style-type: none"> <li>All vehicles/machinery/equipment entering the Project area to be cleaned and free of soil and vegetative matter and have a valid weed hygiene declaration prior to entering Project area this is part of weed management, but also minimise risk of introductions of pests and soil borne disease.</li> </ul>	B	2	5	Low	Low	
					Camp site management	Attraction of feral animals (i.e. cats, dogs/dingo); Increase of feral animals as a result of poor waste management.	D	3	17	High	<ul style="list-style-type: none"> <li>All waste will be covered or contained within dedicated waste disposal bins that cannot be tampered with or opened by fauna, to reduce attraction of the site from feral animal and pest species.</li> <li>Staff will be informed of their duties regarding feral animals and will not encourage or entice them on site.</li> <li>All rubbish, including food packaging, is to be disposed of in an appropriate container as soon as possible, to be</li> </ul>	B	2	5	Low	Low	

RISK ASSESSMENT																		
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section	
											transported off site (refer to waste management - covered in risk ID 21).							
13	Biodiversity	Native fauna	Fauna deaths / mortality	Field survey confirms that native fauna inhabit the Project area. Species may be actively foraging at night or day.	Line preparation and camp pad establishment	Direct mortality or injury; Habitat removal	C	4	18	High	<ul style="list-style-type: none"> <li>Vehicle speed restrictions apply when travelling in permit (60 km/hr on station access tracks and signed limit on gazetted roads) or drive to conditions.</li> <li>Vegetation clearing will not be conducted for seismic preparation.</li> <li>Site inductions will ensure that all personnel are aware of their obligations and know the correct procedures for fauna encounters.</li> <li>Ensure site environmental inductions for all site personnel and contractors include the management of onsite vegetation and flora, including site personnel to stay within designated access roads and work areas.</li> </ul>	A	3	6	Low	Low	A.3.1 Site Selection and Planning A.3.5 Biodiversity Protection	

**RISK ASSESSMENT**

Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section
					Seismic survey and recording	Accidental road kill from vehicle movements on seismic lines and access roads/tracks	C	4	18	High	<ul style="list-style-type: none"> <li>Vehicle speed restrictions apply when travelling in permit (60 km/hr on station access tracks and signed limit on gazetted roads) or drive to conditions.</li> <li>Site inductions will ensure that all personnel are aware of their obligations and know the correct procedures for fauna encounters.</li> <li>Vehicle movement will be restricted to existing access tracks and seismic lines.</li> <li>Vehicle speed restrictions apply when travelling in permit (60 km/hr on station access tracks and signed limit on gazetted roads) or drive to conditions.</li> <li>Driving on site will be restricted to daytime hours, wherever possible.</li> <li>Ensure site environmental inductions for all site personnel and contractors include the management of onsite vegetation and flora, including site personnel to stay within designated access roads and work areas.</li> </ul>	A	3	6	Low	Low	

RISK ASSESSMENT																	
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section
14	People	Sacred sites	Disturbance or damage to sacred sites	<p>Sacred sites, Restricted Works Areas (RWA) and other significant sites have been identified by AAPA &amp; CLC.</p> <p>Some sites are in close proximity to the Project footprint.</p>	All activities	Direct clearing / disturbance of site	C	4	18	High	<ul style="list-style-type: none"> <li>AAPA Authority Certificate and CLC Clearance Certificate are completed prior to groundworks so that all sacred sites and RWA are determined.</li> <li>Seismic lines have been revised to comply with conditions in the AAPA Authority Certificates and CLC Clearance Certificate for the Project. The Project footprint avoids all recorded RWAs and sacred sites.</li> <li>RWA will be clearly recorded on planning maps.</li> <li>The location of RWA will be provided in site inductions and staff made aware that they are not to enter these areas – including during rehabilitation activities post seismic recording.</li> </ul>	A	3	6	Low	Low	A.3.1 Site Selection and Planning
						Unwanted access to a significant site	C	4	18	High	<ul style="list-style-type: none"> <li>All vehicles and staff will only work within approved / designated areas.</li> <li>RWA will be clearly recorded on planning maps.</li> <li>The location of RWA will be provided in site inductions and staff</li> </ul>	A	3	6	Low	Low	

RISK ASSESSMENT																	
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section
											made aware that they are not to enter these areas – including during rehabilitation activities post seismic recording.						
15	People	Cultural Heritage	Disturbance or damage to cultural heritage sites	Cultural heritage sites, including Aboriginal Archaeological Sites, have not been identified in the project area.	Line preparation and camp pad establishment	Direct clearing / disturbance of site	D	3	13	High	<ul style="list-style-type: none"> <li>Cultural Heritage assessment was undertaken to identify objects and sites.</li> <li>Unexpected Find Protocol. The following steps will be undertaken if a suspected Aboriginal archaeological object or place is uncovered as a result of seismic works. This will involve the following: <ul style="list-style-type: none"> <li>Work in the surrounding area is to stop immediately and records are made of the finds.</li> <li>A temporary fence is to be erected around the site and appropriate controls put in place to ensure that no additional ground disturbance happens in the vicinity of the find.</li> <li>A qualified archaeologist and a representative of the Traditional Owners will be engaged to identify the material and provide an initial assessment of the significance of the object and the likely</li> </ul> </li> </ul>	A	3	6	Low	Low	A.3.1 Site Selection and Planning

RISK ASSESSMENT																		
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section	
											<p>nature and extent of any associated archaeological sites.</p> <ul style="list-style-type: none"> <li>- If the material is found to be of Aboriginal origin, the find will be reported to Heritage branch of the Northern Territory Government.</li> <li>- In the event that the Aboriginal object has been damaged or disturbed, the incident will be reported to Heritage branch of the Northern Territory Government.</li> <li>- Works will only recommence after advice from Heritage branch on the requirement for a Section 72 Works Approval; or where measures are implemented to avoid further damage to the Aboriginal archaeological place or object.</li> <li>• Staff awareness. Employees will be briefed on potential cultural heritage items that may be encountered (as part of site induction and training).</li> </ul>							
16	Land	Erosion	Erosion and sedimentation	Vegetation/land clearing	Line preparation	Unnecessary traverse of	D	2	12	Moderate	• Adhere to ESCP.	B	2	5	Low	Low	A.3.1 Site Selection	

RISK ASSESSMENT																		
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section	
			n	is not required for seismic line preparation.  Existing roads/tracks and stream crossings will require maintenance .	and camp pad establishment	erosion prone landforms; Erosion development in general; Wheel rut creation; Windrow creation; Waterway damage;					<ul style="list-style-type: none"> <li>Undertake survey to identify erosion prone landforms so they can be avoided or control be in place to minimise chance of erosion development.</li> <li>Use existing roads and access tracks where possible rather than disturbed intact vegetation and soils.</li> <li>Clearing of vegetation will not be undertaken.</li> <li>Manoeuvre around sensitive areas.</li> <li>Minimise disturbance of riparian vegetation</li> <li>Temporary stockpiling of soil, equipment and materials within watercourses, or on adjacent banks and floodplains, is to be avoided (unless integral to drainage control)</li> <li>Works will not be conducted in wet conditions.</li> <li>Implement standard erosion and sediment control planning (ESCP) on lines and tracks to minimise chance of erosion along lines and tracks.</li> <li>Ensure river/stream crossing are traversed at a right angle to the</li> </ul>							and Planning  A.3.4 Erosion and Sediment Control and Hydrology

RISK ASSESSMENT																	
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section
											waterways.						
					Seismic survey and recording (including on prepped lines and lines on existing roads)	Erosion and sedimentation of stream crossings; Erosion and sedimentation of sloped terrain;	C	2	8	Moderate	<ul style="list-style-type: none"> <li>Adhere to ESCP.</li> <li>Seismic survey activities to avoid driving in wet boggy conditions to minimise chance of wheel rut creation and other erosion.</li> <li>All vehicles to stay within designated areas and adhere to ESCP controls.</li> </ul>	B	2	5	Low	Low	
					Rehabilitation	Erosion on lines/tracks, wheel ruts, windrows	C	2	8	Moderate	<ul style="list-style-type: none"> <li>Adhere to ESCP.</li> <li>Rehabilitation and stabilisation of disturbed areas as per the Rehabilitation commitment in ESCP (see record) and Rehabilitation Management Plan.</li> </ul>	B	2	5	Low	Low	

RISK ASSESSMENT																	
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section
17	People	Dust/GHG Emissions	Dust generation /GHG emission pollution leading to injury or nuisance	It is assumed that soil surface within Project area is prone to dust generation; Sensitive receptors include Kings Canyon and Areyonga, water bores, riparian vegetation, public roads	All activities	Dust creation from vehicle movements	B	1	2	Low	<ul style="list-style-type: none"> <li>Clearly identify all sensitive receptors so field staff can ensure that dust creation and complaints are avoided.</li> <li>Use existing road and tracks and ensure tracks are suitable for the intended purpose and volume of traffic required.</li> <li>Site environmental inductions for all site personnel and contractors in relation to land management tasks</li> <li>No vegetation clearing to be undertaken</li> <li>Disturbed areas will be stabilised in accordance with the Rehabilitation Plan.</li> <li>Vehicle speed restrictions apply when travelling in permit (60 km/hr on station access tracks and signed limit on gazetted roads) or drive to conditions.</li> <li>Use water truck where applicable to manage dust emissions from vehicle movement on the site</li> <li>Visual monitoring (for dust) will be carried out to ensure that visibility for moving equipment and vehicles is not obscured.</li> </ul>	A	1	1	Low	low	A.3.1 Site Selection and Planning

RISK ASSESSMENT																	
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section
											<ul style="list-style-type: none"> <li>Emissions will be measured by recorded fuel consumption in logbooks (or equivalent).</li> </ul>						
18	People	Noise and vibration	Noise and vibration pollution leading to injury or nuisance	Assuming cattle and people will be located within /adjacent to the Project area of influence. Sensitive receptors include Kings Canyon and Areyonga, water bores, riparian vegetation, public roads	All activities	Noise/vibrations /detonation of charges causing nuisance to public and landholders; Noise/vibrations displacing native fauna	B	1	2	Low	<p><b>Noise</b></p> <ul style="list-style-type: none"> <li>Noise management and levels must comply with the Northern Territory Noise Management Framework Guideline (NT EPA 2018).</li> <li>Provide at least two weeks notification to households and businesses if operations are to be conducted within 10 km of their premises.</li> <li>All nuisance-related complaints from sensitive receptors investigated and reported upon.</li> <li>Ensure site environmental inductions for all site personnel and contractors include noise, vibration and light emissions requirements.</li> <li>Ensure vehicles, machinery and equipment is maintained</li> </ul>	A	1	1	Low	Low	A.3.1 Site Selection and Planning A.3.3 Noise



RISK ASSESSMENT																	
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section
											<ul style="list-style-type: none"> <li>vibration/detonation of charges requirements.</li> <li>• Ensure vehicles, plant and equipment are maintained and in good order.</li> <li>• Ongoing consultation with relevant parties.</li> </ul>						
19	People	Light	Light pollution leading to injury or nuisance	Light pollution will mainly be associated with camp. No night shift activities proposed.	All activities	Light pollution affecting fauna and people	B	1	2	Low	<ul style="list-style-type: none"> <li>• Ensure site environmental inductions for all site personnel and contractors include light emissions requirements.</li> <li>• Use directional lighting to limit light spread and emissions outside of the zone required.</li> <li>• Lights will be turned off when no longer required, once activity has been completed.</li> <li>• Task focussed lighting will be used and all boundary lighting will be positioned to face inwards to provide</li> </ul>	A	1	1	Low	Low	A.3.1 Site Selection and Planning

RISK ASSESSMENT																	
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section
											adequate lighting for safe operations, without excessive overspill <ul style="list-style-type: none"> <li>Avoid / minimise night driving</li> <li>Camp pads will be situated away from sensitive receptors.</li> </ul>						
20	Land	Contamination	Contamination from spills of hazardous substances	Hazardous substances include diesel, oils, lubricants will be used. Small quantities of other liquid for vehicle maintenance - such as Coolants.	All activities	Inappropriate storage or handling of hazardous substances. Poor refueling or fuel transfer practices leading to spills and contamination of soils and groundwater	C	2	12	Moderate	<ul style="list-style-type: none"> <li>Use, storage and handling of fuel, chemicals and oils on site: <ul style="list-style-type: none"> <li>must comply with WHS legislation</li> <li>be in accordance with their approved safety data sheet</li> <li>must be stored to prevent release to the environment and to contain any spills</li> </ul> </li> <li>liquid hydrocarbons, whether separated or mixed with other fluids at a concentration greater than 1% by volume, must not be stored in any open top structure or pit</li> <li>Any hazardous chemicals or those that may cause environmental harm are to be stored within secondary containment.</li> </ul>	A	3	6	Low	Low	<p>A.3.1 Site Selection and Planning</p> <p>A.3.8 Containment of Contaminants</p> <p>C.7.2 Spill Management Plan</p>



RISK ASSESSMENT																	
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section
											<p>walled storage tanks.</p> <ul style="list-style-type: none"> <li>All secondary containment (when in use) shall be inspected weekly, unless being operated through the wet season during which they should be monitored daily. If the secondary containment is damaged or compromised, repairs must be carried out as soon as practicable.</li> <li>Materials that escape from primary containment or are otherwise spilled onto secondary containment shall be removed as soon as possible.</li> <li>Storage areas will be distant from sensitive environmental features including RWAs.</li> <li>Adhere to Spill Management Plan. Outlines spill prevention, response procedure and spill clean-up processes.</li> </ul>						
21	Land	Contamination	Contamination from wastewater and general waste	Majority of waste and wastewater will be associated with camp site management	Camp management and general site works	Contaminated soil from wastewater from camp; general waste from all activities	B	3	9	Moderate	<ul style="list-style-type: none"> <li>Adhere to Waste and Wastewater Management Plan.</li> <li>Designated waste storage/irrigation area will be located away from sensitive receptors area such as waterways or</li> </ul>	A	3	3	Low	Low	<p>A.3.1 Site Selection and Planning</p> <p>A.3.8 Containment of Contaminants</p>

RISK ASSESSMENT																		
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section	
											drainage lines • Wastewater will be treated to the required environmental guidelines for advanced secondary effluent (Class "B") • Designated waste storage and handling area to be planned for and provided onsite. • Removal and disposal of hazardous wastes to be in accordance with NT hazardous waste disposal requirements. • Sufficient waste receptacles will be provided on site and any work areas. • Waste will be segregated for ease of disposal. • All staff to be informed of the waste management plan and regular inspections will ensure compliance.							C.7.2 Spill Management Plan

RISK ASSESSMENT																	
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section
22	Land	Fire	Bushfire a result of Project activities	Assumes fuel loads in surrounding bushlands will be high and flammable.	All activities	Project activity cause fire in surrounding vegetation. This could result in impacts to tourist and pastoral activities, community and also impacts to ecological values.	C	4	18	High	<ul style="list-style-type: none"> <li>Adhere to Bushfire Management Plan</li> <li>Analysis of baseline fire information (at least 10 years)-</li> <li>Coordination with the landholder and other land users and consistency with the landholder's fire management obligations and strategies</li> <li>No hot works are permitted on total fire ban days without written approval from a fire control officer or fire warden</li> <li>Implementation of the interest holder's appropriate fire mitigation measures such as:               <ul style="list-style-type: none"> <li>Monitoring of seasonal conditions and fuel loads</li> <li>Maintenance of fire access trails and fire breaks around infrastructure.</li> <li>Communication system for monitoring bushfire alerts in the area.</li> <li>Annual fire mapping to monitor changes to fire frequency in the relevant area</li> <li>Monitor the NAFI website and adhere to total fire ban days.</li> </ul> </li> </ul>	A	3	6	Low	Low	A.3.1 Site Selection and Planning  A.3.7 Fire Management

RISK ASSESSMENT																				
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section			
											<ul style="list-style-type: none"> <li>Updates provided at daily toolbox meetings.</li> <li>• Fire extinguishers fitted to all vehicles</li> <li>• All personnel and contractors will be informed about the key features of the BMP as part of their induction</li> <li>• Clean out vehicle engine bay regularly, with special attention paid on red alert days, to prevent grass igniting on the hot vehicle components</li> <li>• Smoking only allowed in designated smoking areas.</li> </ul>									
23	Land	Land access	Unwanted access or interference with TO activities	Existing tracks to be used for access and seismic survey; Sacred sites present in area	All activities	Impacting tracks due to wet weather; Unwanted access; Increased traffic on roads resulting in accidents or delays to stakeholder activities.	A	3	6	Low	<ul style="list-style-type: none"> <li>• Site inductions are to ensure that all personnel are aware of and understand social constraints of working within the permit area.</li> <li>• All workers will be required to attend cultural awareness training and code of conduct.</li> <li>• Work instruction to be issued to all contractors relating to access constraints.</li> <li>• Consult with other relevant land users and public interest groups, such as Aboriginal communities, natural resource managers,</li> </ul>	A	2	3	Low	Low	A.3.1 Site Selection and Planning			

RISK ASSESSMENT																	
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section
											<p>conservation groups, tourism operators and other affected parties, to exchange information and facilitate good working relationships as required.</p> <ul style="list-style-type: none"> <li>• Prior to commencement onsite, communicate with stakeholder. Provide detail of the time and dates proposed to be on site, and the location, in advance of works commencing according to the regulations, including detailed maps.</li> <li>• Conducted maintenance on any tracks or roads that were used during the seismic program. This will be identified by site inspections, monitoring results and at the stakeholder request. All maintenance activities will be discussed and approved by the relevant owner/stakeholder.</li> </ul>						

RISK ASSESSMENT																	
Risk ID	Theme	Aspect	Possible impact	Assumptions / Limitations / Information	Activity	Hazard(s)	L*	C*	Score	IR*	Mitigation measures	L*	C*	Score	RR*	Uncertainty (SCI)	COP Section
24	Land	Rehabilitation	Rehabilitation failure	Rehabilitation will be limited to maintenance	Rehabilitation	Ineffective or ongoing degradation of vegetation, land and soil (post activity)	C	2	8	Moderate	<p>Adhere to Rehabilitation Plan (Appendix L), which will ensure the following:</p> <ul style="list-style-type: none"> <li>• Work areas are progressively rehabilitated as soon as possible following the completion of work.</li> <li>• Stockpiled soil and vegetation are re-spread over disturbed areas to facilitate vegetation regrowth and limit erosion.</li> <li>• Any rehabilitation issues (i.e. erosion, weed infestation, soil degradation, low vegetation cover) are discovered early so remedial works can be effectively undertaken without disturbance to other rehabilitating areas.</li> </ul>	A	2	3	Low	Low	A.3.1 Site Selection and Planning A.3.9 Rehabilitation

## Appendix 3

### 1. Environmental Outcomes, Performance standards and Measurement Criteria

Trident is committed to ensuring that Project activities are conducted in a manner that minimises impacts to the environment and meets the Code of Practice for Petroleum Activities in the Northern Territory Part A – Surface Activities. Trident's performance against its environmental goals and objectives is measured by setting environmental outcomes and environmental performance standards.

The following sections outline the proposed environmental outcomes and environmental performance standards for each identified risk (Table 7 Appendix 2). This includes ALARP rationales, environmental outcomes, performance measures, monitoring and records, reporting and responsibility. The related activities, associated hazards and proposed mitigation measures are included in Table 7, Appendix 2, as part of the Risk Assessment process.

This EMP has been developed to protect the integrity of the existing and surrounding environment from risks associated with the Activity through the establishment and implementation of:

- **Environmental Outcomes:** That will be achieved if the environmental impacts and environmental risks of the Activity are reduced to a level that is ALARP and acceptable.
- **Environmental Performance Standards:** That relate to managing environmental impacts and environmental risks of the Activity, and apply to persons, systems, equipment, or procedures involved in the Activity.
- **Measurement Criteria:** The criteria/records used to determine if an environmental outcome or environmental performance standard has been met.

The objective of this EMP is to demonstrate that the environmental impacts and risks associated with the Activity will be reduced to ALARP and acceptable. To achieve this objective, the Activity will be carried out in such a manner so that all the requirements of the Code will be met, and all reasonably practicable risk management controls have been identified and implemented as described in the Environmental Risk Assessment Process in Section 6 and Appendix 2 of the EMP.

By implementing the mitigation measures outlined in Section 6.3 of the EMP, the risk of an impact from the Activity on the environment will be reduced to ALARP and be acceptable. Performance standards and measurement criteria associated with the environmental outcomes sought to be achieved in undertaking the Activity as described in this EMP are outlined in the tables below.

Tables below sets out the key environmental outcomes to be achieved, the relevant environmental performance standards, and the measurement criteria.

## 1.1 Threatened species - Southern Whiteface

Environmental Performance measure related to identified risk ID 1 (See Appendix 2 Risk Assessment Table 7)	
<b>ALARP rationale</b>	<ul style="list-style-type: none"> <li>Vegetation clearing will NOT be conducted to avoid disturbance to Southern Whiteface nesting sites.</li> <li>Camp pads will not be constructed within 50m of nesting site.</li> </ul>
<b>Environmental outcome</b>	<ul style="list-style-type: none"> <li>The activity causes no significant impact to threatened fauna Southern Whiteface and their habitat.</li> </ul>
<b>Environmental Performance Standard</b>	<b>Measurement criteria</b>
<ul style="list-style-type: none"> <li>No disturbance to active Southern Whiteface nest sites.</li> </ul>	<ul style="list-style-type: none"> <li>No impact to nests, achieved through, prior to access, a suitably qualified person (fauna spotter) will map any southern whiteface nests along line 8 (where the species has been recorded), these areas will be flagged for avoidance). This activity will be conducted within 1 month before seismic work to record the location of active Southern Whiteface nest sites on proposed seismic line 08, so avoidance strategies (and suitable buffers) will be implemented based on results from line preparation activities.</li> <li>When seismic activities are close to Southern Whiteface nest sites buffer area(s), daily inspections will be conducted to ensure that buffer areas have not been entered by vehicles. This will form part of daily checklists conducted by the Civil Construction Superintendent</li> <li>GPS track logs will be collected for all seismic lines and disturbance areas. This will be evidence to indicate that Southern Whiteface nesting areas, have been avoided as per agree buffers.</li> </ul>
<ul style="list-style-type: none"> <li>No Southern Whiteface deaths.</li> </ul>	<ul style="list-style-type: none"> <li>Record any Southern Whiteface encounters, injuries or death as result of seismic survey on the flora and fauna register for the duration of works.</li> </ul>
<b>Reporting</b>	<ul style="list-style-type: none"> <li>Line-preparation survey report provided by ecologist</li> <li>All observations or evidence of Southern Whiteface will be documented in flora and fauna register.</li> <li>If death or injury of a Southern Whiteface is reported as a result of seismic activities, this must be immediately reported to DEPWS and will be documented in flora and fauna register.</li> <li>Annual environmental performance report will be submitted to DEPWS</li> </ul>
<b>Responsibility</b>	<ul style="list-style-type: none"> <li>Seismic OCR</li> </ul>
<b>CODE</b>	<ul style="list-style-type: none"> <li>A.3.1 Site Selection and Planning</li> <li>A.3.5 Biodiversity Protection</li> </ul>
<b>Guidelines and legislation</b>	<ul style="list-style-type: none"> <li><i>Environment Protection Act</i> (Northern Territory)</li> <li><i>Territory Parks and Wildlife Conservation Act</i> (Northern Territory)</li> <li><i>Environment Protection and Biodiversity Conservation Act</i> (Commonwealth)</li> <li>NTG Land Clearing Guidelines</li> <li>Code of Practice: Onshore Petroleum Activities in the NT</li> </ul>

## 1.2 Threatened species - Slater's Skink

Environmental Performance measure related to identified risk ID 2 (See Appendix 2 Risk Assessment Table 7)	
<b>ALARP rationale</b>	<ul style="list-style-type: none"> <li>Vegetation clearing will NOT be conducted to avoid disturbance to active Slater's Skink burrows.</li> <li>Vegetation clearing will NOT be conducted to minimise disturbance to Slater's Skink habitat and potential feeding grounds.</li> <li>Traffic management and staff awareness will minimise potential for accidental roadkill.</li> </ul>
<b>Environmental outcome</b>	<ul style="list-style-type: none"> <li>The activity causes no significant impact to Slater's Skink.</li> </ul>
<b>Environmental Performance Standard</b>	<b>Measurement criteria</b>
<ul style="list-style-type: none"> <li>No disturbance to active Slater's Skink burrows</li> </ul>	<ul style="list-style-type: none"> <li>No impact to Slater's Skink burrows achieved through line preparation survey (by suitable qualified person, fauna spotter) (and report), on suitable habitat identified by the SLR report. This activity will be conducted within 1 month of line preparation to record the location of active Slater's Skink burrows, and active feeding areas, so avoidance strategies (and suitable buffers) can be implemented.</li> </ul>
<ul style="list-style-type: none"> <li>No disturbance of active Slater's Skink feeding areas</li> </ul>	<ul style="list-style-type: none"> <li>When seismic activities are close to Slater's Skink buffer area(s), daily inspections will be conducted to ensure that buffer areas have not been entered by vehicles. This will form part of daily checklists conducted by the seismic OCR.</li> <li>GPS track logs will be collected for all seismic lines and disturbance areas. This will be evidence to indicate that Slater's Skink burrows, and feeding areas, have been avoided as per agree buffers.</li> </ul>
<ul style="list-style-type: none"> <li>No Slater's Skink deaths (via road kill)</li> </ul>	<ul style="list-style-type: none"> <li>Record any Slater's Skink encounters, injuries or death as result of seismic survey on the flora and fauna register for the duration of works.</li> </ul>
<b>Reporting</b>	<ul style="list-style-type: none"> <li>Line preparation survey report provided by ecologist</li> <li>All observations or evidence of Slater's Skink will be documented in flora and fauna register.</li> <li>If death or injury of a Slater's Skink is reported as a result of seismic activities, this must be immediately reported to DEPWS and will be documented in flora and fauna register.</li> <li>Annual environmental performance report will be submitted to DEPWS</li> </ul>
<b>Responsibility</b>	<ul style="list-style-type: none"> <li>Seismic OCR</li> </ul>
<b>CODE</b>	<ul style="list-style-type: none"> <li>A.3.1 Site Selection and Planning</li> <li>A.3.5 Biodiversity Protection</li> </ul>
<b>Guidelines and legislation</b>	<ul style="list-style-type: none"> <li><i>Environment Protection Act</i> (Northern Territory)</li> <li><i>Territory Parks and Wildlife Conservation Act</i> (Northern Territory)</li> <li><i>Environment Protection and Biodiversity Conservation Act</i> (Commonwealth)</li> <li>NTG Land Clearing Guidelines</li> <li>Code of Practice: Onshore Petroleum Activities in the NT</li> </ul>

### 1.3 Threatened species – Fauna

#### Native fauna

Environmental Performance measure related to identified risk IDs 3 and 13 (See Appendix 2 Risk Assessment Table 7)	
<b>ALARP rationale</b>	<ul style="list-style-type: none"> <li>Vegetation clearing will NOT be conducted to avoid disturbance to potential threatened fauna species.</li> <li>Vegetation clearing will NOT be conducted to minimise disturbance to potential threatened fauna species habitat and potential feeding grounds.</li> <li>Traffic management and staff awareness will minimise potential for accidental roadkill.</li> </ul>
<b>Environmental outcome</b>	<ul style="list-style-type: none"> <li>The activity causes no significant impact to threatened fauna species.</li> </ul>
<b>Environmental Performance Standard</b>	<b>Measurement criteria</b>
<ul style="list-style-type: none"> <li>No disturbance to threatened fauna species</li> </ul>	<ul style="list-style-type: none"> <li>No impact to threatened fauna and native fauna achieved through Line preparation survey (by suitable qualified person, fauna spotter) (and report), on suitable habitat identified by the SLR report. This activity will be conducted within 1 month of line preparation to record possible location of possible, and active feeding areas, so avoidance strategies (and suitable buffers) can be implemented.</li> </ul>
<ul style="list-style-type: none"> <li>No disturbance of threatened fauna species feeding areas</li> </ul>	<ul style="list-style-type: none"> <li>When seismic activities are close to threatened fauna species buffer area(s), daily inspections will be conducted to ensure that buffer areas have not been entered by vehicles. This will form part of daily checklists conducted by the seismic OCR.</li> <li>GPS track logs will be collected for all seismic lines and disturbance areas. This will be evidence to indicate that threatened fauna species breathing and feeding areas, have been avoided as per agree buffers.</li> <li>Prior to onsite activity, so that suitable buffers / avoidance can be implemented if detections occur, document preclearance survey results for EPBC Act listed fauna species and TPWC Act listed threatened fauna. Include recording geospatial data of any detections.</li> </ul>
<ul style="list-style-type: none"> <li>No threatened fauna species deaths (via road kill)</li> </ul>	<ul style="list-style-type: none"> <li>Record any threatened fauna/native fauna encounters, injuries or death as result of seismic survey on the flora and fauna register for the duration of works.</li> </ul>
<b>Reporting</b>	<ul style="list-style-type: none"> <li>Line preparation survey report provided by ecologist</li> <li>All observations or evidence of Slater's Skink will be documented in flora and fauna register.</li> <li>If death or injury of a Slater's Skink is reported as a result of seismic activities, this must be immediately reported to DEPWS and will be documented in flora and fauna register.</li> <li>Annual environmental performance report will be submitted to DEPWS</li> </ul>
<b>Responsibility</b>	<ul style="list-style-type: none"> <li>Seismic OCR</li> </ul>
<b>CODE</b>	<ul style="list-style-type: none"> <li>A.3.1 Site Selection and Planning</li> <li>A.3.5 Biodiversity Protection</li> </ul>
<b>Guidelines and legislation</b>	<ul style="list-style-type: none"> <li><i>Environment Protection Act</i> (Northern Territory)</li> <li><i>Territory Parks and Wildlife Conservation Act</i> (Northern Territory)</li> <li><i>Environment Protection and Biodiversity Conservation Act</i> (Commonwealth)</li> <li>NTG Land Clearing Guidelines</li> <li>Code of Practice: Onshore Petroleum Activities in the NT</li> </ul>

## 1.4 Threatened species – Migratory species

Environmental Performance measure related to identified risk ID 4 (See Appendix 2 Risk Assessment Table 7)	
<b>ALARP rationale</b>	<ul style="list-style-type: none"> <li>Vegetation clearing will NOT be conducted to avoid disturbance to threatened migratory species nesting sites.</li> </ul>
<b>Environmental outcome</b>	<ul style="list-style-type: none"> <li>The activity causes no significant impact to threatened migratory species and their habitat.</li> </ul>
<b>Environmental Performance Standard</b>	<b>Measurement criteria</b>
<ul style="list-style-type: none"> <li>No disturbance to active threatened migratory species nest sites.</li> </ul>	<ul style="list-style-type: none"> <li>No impact to threatened migratory species through line preparation survey on proposed seismic line (by suitable qualified person, fauna spotter). This activity will be conducted within 1 month of line preparation to record the location of active threatened migratory species nest sites on proposed seismic lines, so avoidance strategies (and suitable buffers) will be implemented based on results from line preparation activities.</li> </ul>
<ul style="list-style-type: none"> <li>No disturbance to potential threatened migratory species nesting habitat.</li> </ul>	<ul style="list-style-type: none"> <li>When seismic activities are close to threatened migratory species nest sites buffer area(s), daily inspections will be conducted to ensure that buffer areas have not been entered by vehicles. This will form part of daily checklists conducted by the Civil Construction Superintendent</li> <li>GPS track logs will be collected during work for all seismic lines and disturbance areas. This will be evidence to indicate that threatened migratory species nesting areas, have been avoided as per agree buffers.</li> <li>Prior to onsite activity, so that suitable buffers / avoidance can be implemented if detections occur, document preclearance survey results for EPBC Act listed fauna species and TPWC Act listed threatened fauna. Include recording geospatial data of any detections.</li> </ul>
<ul style="list-style-type: none"> <li>No threatened migratory species deaths.</li> </ul>	<ul style="list-style-type: none"> <li>Record any threatened migratory species encounters, injuries or death as result of seismic survey on the flora and fauna register for the duration of works.</li> </ul>
<b>Reporting</b>	<ul style="list-style-type: none"> <li>Line-preparation survey report provided by ecologist</li> <li>All observations or evidence of threatened migratory species will be documented in flora and fauna register.</li> <li>If death or injury of a threatened migratory species is reported as a result of seismic activities, this must be immediately reported to DEPWS and will be documented in flora and fauna register.</li> <li>Annual environmental performance report will be submitted to DEPWS</li> </ul>
<b>Responsibility</b>	<ul style="list-style-type: none"> <li>Seismic OCR</li> </ul>
<b>CODE</b>	<ul style="list-style-type: none"> <li>A.3.1 Site Selection and Planning</li> <li>A.3.5 Biodiversity Protection</li> </ul>
<b>Guidelines and legislation</b>	<ul style="list-style-type: none"> <li><i>Environment Protection Act</i> (Northern Territory)</li> <li><i>Territory Parks and Wildlife Conservation Act</i> (Northern Territory)</li> <li><i>Environment Protection and Biodiversity Conservation Act</i> (Commonwealth)</li> <li>NTG Land Clearing Guidelines</li> <li>Code of Practice: Onshore Petroleum Activities in the NT</li> </ul>

## 1.5 Threatened species – Flora species

Environmental Performance measure related to identified risk IDs 5 and 6 (See Appendix 2 Risk Assessment Table 7)	
<b>ALARP rationale</b>	<ul style="list-style-type: none"> <li>Vegetation clearing will NOT be conducted to avoid disturbance to threatened flora species.</li> <li>Activities will be conducted to minimise erosion, contamination, weed or dust issues.</li> </ul>
<b>Environmental outcome</b>	<ul style="list-style-type: none"> <li>The activity causes no significant impact to threatened flora species.</li> </ul>
<b>Environmental Performance Standard</b>	<b>Measurement criteria</b>
<ul style="list-style-type: none"> <li>Exploration activities will only occur during dry soil conditions.</li> </ul>	<ul style="list-style-type: none"> <li>Review weather forecasts as part of daily toolbox safety meetings for the closest weather station</li> </ul>
<ul style="list-style-type: none"> <li>No impact to threatened flora species.</li> </ul>	<ul style="list-style-type: none"> <li>Scouting survey (flora spotter) conducted within 1 month prior to seismic work to select route that will not impact on threatened flora species.</li> <li>Document line preparation results, by a suitable qualified person (flora spotter), for EPBC Act listed flora species and TPWC Act listed threatened flora. Include recording geospatial data of any detections.</li> </ul>
<ul style="list-style-type: none"> <li>No disturbance outside the approved seismic survey area.</li> </ul>	<ul style="list-style-type: none"> <li>Inspections by seismic OCR: <ul style="list-style-type: none"> <li>Daily inspections to ensure controls are in place and functioning as designed. Ensure that buffer areas are maintained for the duration of seismic works.</li> <li>During seismic works, weekly inspection of drainage crossings will be conducted to ensure appropriate controls are in place and functioning as designed.</li> <li>If rainfall occurs during seismic activities, drainage crossings will be inspected following the rainfall to ensure controls are functions as designed.</li> <li>Weekly during seismic work check habitat disturbance issues that may require corrective actions.</li> </ul> </li> <li>GPS tracklog will be recorded to delineate constructed disturbance area and to provide evidence that line did not impact on threatened flora species.</li> </ul>
<ul style="list-style-type: none"> <li>No erosion issues</li> </ul>	<ul style="list-style-type: none"> <li>Refer to Section 1.12 (Erosion)</li> </ul>
<ul style="list-style-type: none"> <li>No contamination issues</li> </ul>	<ul style="list-style-type: none"> <li>Refer to 1.16 and 1.17 (Spills)</li> </ul>
<ul style="list-style-type: none"> <li>No weed issues</li> </ul>	<ul style="list-style-type: none"> <li>Refer to 1.8 (Weeds).</li> </ul>
<ul style="list-style-type: none"> <li>No dust issues</li> </ul>	<ul style="list-style-type: none"> <li>Refer to 1.13 (Dust/GHG emission)</li> </ul>
<b>Reporting</b>	<ul style="list-style-type: none"> <li>Line-preparation survey report provided by ecologist</li> <li>All observations or evidence of threatened flora species will be documented in flora and fauna register.</li> <li>Annual environmental performance report will be submitted to DEPWS</li> </ul>
<b>Responsibility</b>	<ul style="list-style-type: none"> <li>Seismic OCR</li> </ul>
<b>CODE</b>	<ul style="list-style-type: none"> <li>A.3.1 Site Selection and Planning</li> <li>A.3.5 Biodiversity Protection</li> </ul>
<b>Guidelines and legislation</b>	<ul style="list-style-type: none"> <li><i>Environment Protection Act</i> (Northern Territory)</li> <li><i>Territory Parks and Wildlife Conservation Act</i> (Northern Territory)</li> <li><i>Environment Protection and Biodiversity Conservation Act</i> (Commonwealth)</li> <li>NTG Land Clearing Guidelines</li> <li>Code of Practice: Onshore Petroleum Activities in the NT</li> </ul>

## 1.6 Sensitive vegetation

Environmental Performance measure related to identified risk IDs 7 and 8 (See Appendix 2 Risk Assessment Table 7)	
<b>ALARP rationale</b>	<ul style="list-style-type: none"> <li>Vegetation clearing will NOT be conducted to avoid disturbance to sensitive vegetation by selecting line and crossing point with lowest vegetation cover.</li> <li>Activities will be conducted to minimise erosion, contamination, weed or dust issues.</li> </ul>
<b>Environmental outcome</b>	<ul style="list-style-type: none"> <li>The activity causes no significant impact to sensitive vegetation.</li> </ul>
Environmental Performance Standard	Measurement criteria
<ul style="list-style-type: none"> <li>Exploration activities will only occur during dry soil conditions.</li> </ul>	<ul style="list-style-type: none"> <li>Review weather forecasts as part of daily toolbox safety meetings for the closest weather station</li> </ul>
<ul style="list-style-type: none"> <li>Impact to sensitive vegetation is minimised.</li> </ul>	<ul style="list-style-type: none"> <li>Scouting survey (flora spotter) conducted within 1 month prior to seismic work to select lowest disturbance route.</li> </ul>
<ul style="list-style-type: none"> <li>No disturbance outside the approved seismic survey area.</li> </ul>	<ul style="list-style-type: none"> <li>Inspections by seismic OCR               <ul style="list-style-type: none"> <li>Daily inspections to ensure controls are in place and functioning as designed.</li> <li>During seismic works, weekly inspection of drainage crossings will be conducted to ensure appropriate controls are in place and functioning as designed.</li> <li>If rainfall occurs during seismic activities, drainage crossings will be inspected following the rainfall to ensure controls are functions as designed.</li> </ul> </li> <li>GPS tracklog will be recorded to delineate constructed disturbance area and to provide evidence that line did not impact on threatened flora species.</li> </ul>
<ul style="list-style-type: none"> <li>No erosion issues</li> </ul>	<ul style="list-style-type: none"> <li>Refer to Section 1.12 (Erosion)</li> </ul>
<ul style="list-style-type: none"> <li>No contamination issues</li> </ul>	<ul style="list-style-type: none"> <li>Refer to 1.16 and 1.17 (Spills)</li> </ul>
<ul style="list-style-type: none"> <li>No weed issues</li> </ul>	<ul style="list-style-type: none"> <li>Refer to 1.8 (Weeds).</li> </ul>
<ul style="list-style-type: none"> <li>No dust issues</li> </ul>	<ul style="list-style-type: none"> <li>Refer to 1.13 (Dust/GHG emission)</li> </ul>
<b>Reporting</b>	<ul style="list-style-type: none"> <li>Line-preparation survey report provided by ecologist</li> <li>Annual environmental performance report will be submitted to DEPWS</li> </ul>
<b>Responsibility</b>	<ul style="list-style-type: none"> <li>Seismic OCR</li> </ul>
<b>CODE</b>	<ul style="list-style-type: none"> <li>A.3.1 Site Selection and Planning</li> <li>A.3.5 Biodiversity Protection</li> </ul>
<b>Guidelines and legislation</b>	<ul style="list-style-type: none"> <li><i>Environment Protection Act</i> (Northern Territory)</li> <li><i>Territory Parks and Wildlife Conservation Act</i> (Northern Territory)</li> <li><i>Environment Protection and Biodiversity Conservation Act</i> (Commonwealth)</li> <li>NTG Land Clearing Guidelines</li> <li>Code of Practice: Onshore Petroleum Activities in the NT</li> </ul>

## 1.7 Habitat/Important habitat

Environmental Performance measure related to identified risk IDs 9 and 10 (See Appendix 2 Risk Assessment Table 7)	
<b>ALARP rationale</b>	<ul style="list-style-type: none"> <li>Seismic lines and camp sites have been selected within existing cleared areas, roads and tracks (where available).</li> <li>Clearing will be conducted to avoid large trees and minimise clearing of small trees / shrubs.</li> </ul>
<b>Environmental outcome</b>	<ul style="list-style-type: none"> <li>No significant impact on habitat value of the area.</li> </ul>
<b>Environmental Performance Standard</b>	<b>Measurement criteria</b>
<ul style="list-style-type: none"> <li>No disturbance outside the approved seismic survey area.</li> </ul>	<ul style="list-style-type: none"> <li>Scouting survey (flora/fauna spotter) conducted within 1 month of line preparation to select lowest disturbance route.</li> <li>GPS tracklog will be recorded as evidence of selected route.</li> <li>See measurement criteria related to 1.8 (Weeds), 1.9 (Pests) and 1.12 (Erosion).</li> </ul>
<b>Reporting</b>	<ul style="list-style-type: none"> <li>Line-preparation survey report provided by ecologist</li> <li>Annual environmental performance report will be submitted to DEPWS</li> </ul>
<b>Responsibility</b>	<ul style="list-style-type: none"> <li>Seismic OCR</li> </ul>
<b>CODE</b>	<ul style="list-style-type: none"> <li>A.3.1 Site Selection and Planning</li> <li>A.3.5 Biodiversity Protection</li> </ul>
<b>Guidelines and legislation</b>	<ul style="list-style-type: none"> <li><i>Environment Protection Act</i> (Northern Territory)</li> <li><i>Territory Parks and Wildlife Conservation Act</i> (Northern Territory)</li> <li><i>Environment Protection and Biodiversity Conservation Act</i> (Commonwealth)</li> <li>NTG Land Clearing Guidelines</li> <li>Code of Practice: Onshore Petroleum Activities in the NT</li> </ul>

## 1.8 Weeds

Environmental Performance measure related to identified risk ID 11 (See Appendix 2 Risk Assessment Table 7)	
<b>ALARP rationale</b>	<ul style="list-style-type: none"> <li>• Controls are industry standard for weed management.</li> <li>• The introduction of weeds has been limited in line with standards and any weeds introduced or present on site will be identified and appropriately managed to reduce extent.</li> <li>• Weed management plan is in place and is guided by the Regional Weed management plans. This management plan outlines standard practice management techniques for the NT.</li> </ul>
<b>Environmental outcome</b>	No weed issues associated with the project
<b>Environmental Performance Standard</b>	<b>Measurement criteria</b>
<ul style="list-style-type: none"> <li>• All staff are to be aware and understand weed obligations for the project.</li> </ul>	<ul style="list-style-type: none"> <li>• All project staff undertake an induction, to be recorded in the Training Register at the beginning of the seismic program.</li> </ul>
<ul style="list-style-type: none"> <li>• No exotic species and plant diseases imported into or exported from the exploration permit area.</li> </ul>	<ul style="list-style-type: none"> <li>• Documentation that all vehicle/equipment/machinery entering site has undergone weed hygiene checks, as described in Weed Management Plan (see Appendix 5).</li> <li>• A register of vehicle/equipment/machinery inspections will be kept and maintained (provided in WMP; Appendix 6)</li> </ul>
<ul style="list-style-type: none"> <li>• No spreading of weeds within the seismic survey area.</li> </ul>	<ul style="list-style-type: none"> <li>• Weed inspections, during exploration, and weed monitoring post-exploration – as per Weed Management Plan (see Appendix 5) to provide evidence that there is no spread of weeds.</li> <li>• Develop a map of Buffel Grass presence along the seismic line when driving lines for seismic work. Monitor Buffel grass annually, if present after a big rain event, and update the Buffel Grass map after the monitoring.</li> </ul>
<ul style="list-style-type: none"> <li>• Adhere to Weed Monitoring program commitments</li> </ul>	<ul style="list-style-type: none"> <li>• As per Weed Management Plan (see Appendix 5).</li> </ul>
<ul style="list-style-type: none"> <li>• Reporting</li> </ul>	<ul style="list-style-type: none"> <li>• Annual environmental performance report will be submitted to DEPWS</li> <li>• Weed records and monitoring survey effort will be maintained within the flora and fauna register and GIS database and provided to the NT Government's Onshore Petroleum Weed Management Officer.</li> </ul>
<ul style="list-style-type: none"> <li>• Responsibility</li> </ul>	<ul style="list-style-type: none"> <li>• Seismic OCR</li> </ul>
<ul style="list-style-type: none"> <li>• CODE</li> </ul>	<ul style="list-style-type: none"> <li>• A.3.1 Site Selection and Planning</li> <li>• A.3.5 Biodiversity Protection</li> <li>• A.3.6 Weed Management</li> </ul>
<ul style="list-style-type: none"> <li>• Guidelines and legislation</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Environment Protection Act</i> (Northern Territory)</li> <li>• <i>Weed Management Act</i> (Northern Territory)</li> <li>• NTG Land Clearing Guidelines</li> <li>• Weed Management Planning Guide: Onshore Petroleum Projects</li> <li>• Alice Springs Regional Weed Strategy 2021 – 2026 (DEPWS 2021)</li> <li>• <a href="#">Buffel Grass Management Strategy: Central Australia 2024 – 2030</a></li> </ul>

## 1.9 Pests

Environmental Performance measure related to identified risk ID 12 (See Appendix 2 Risk Assessment Table 7)	
<b>ALARP rationale</b>	<ul style="list-style-type: none"> <li>Implementing strategies to ensure only clean machinery enters the project area will minimise risk if pest and disease introduction.</li> <li>Implementation waste and rubbish management will minimise the potential for increasing pest and feral animals within the Project area (such as cats, dogs).</li> </ul>
<b>Environmental outcome</b>	<ul style="list-style-type: none"> <li>Zero pest or disease issues associated with the project.</li> </ul>
<b>Environmental Performance Standard</b>	<b>Measurement criteria</b>
<ul style="list-style-type: none"> <li>No exotic species and plant diseases imported into or exported from the exploration permit area.</li> </ul>	<ul style="list-style-type: none"> <li>Documentation that all vehicle/equipment/machinery entering site has undergone weed and pest hygiene checks, as described in Weed Management Plan (see Appendix 5).</li> <li>A register of vehicle/equipment/machinery inspections will be kept and maintained (provided in Appendix 6)</li> </ul>
<ul style="list-style-type: none"> <li>No pest animals observed within waste facilities.</li> </ul>	<ul style="list-style-type: none"> <li>Daily record of food waste storage at camp sites to ensure waste and rubbish are appropriately handled / stored during field work and surveys.</li> <li>Daily observations of feral animals / pests (i.e. cats) within the exploration works areas will be reported to management, recorded in register. If applicable, pest problem will be rectified (i.e. remove pest attractant).</li> </ul>
<b>Reporting</b>	<ul style="list-style-type: none"> <li>Annual environmental performance report will be submitted to DEPWS</li> <li>Records with identification of pest will be maintained on the flora and fauna register.</li> </ul>
<b>Responsibility</b>	<ul style="list-style-type: none"> <li>Seismic OCR</li> </ul>
<b>CODE</b>	<ul style="list-style-type: none"> <li>A.3.1 Site Selection and Planning</li> <li>A.3.5 Biodiversity Protection</li> </ul>
<b>Guidelines and legislation</b>	<ul style="list-style-type: none"> <li><i>Environment Protection Act</i> (Northern Territory)</li> <li>NTG Land Clearing Guidelines</li> </ul>

## 1.10 Sacred Sites

Environmental Performance measure related to identified risk ID 14 (See Appendix 2 Risk Assessment Table 7)	
<b>ALARP rationale</b>	<ul style="list-style-type: none"> <li>CLC and AAPA Certificate granted and the relevant stakeholders have been consulted with, and operational staff will be educated on sacred site identification to reduce risk of impact is these sites/items are present.</li> <li>Seismic lines will avoid sacred sites/heritage sites and/or RWA identified by CLC and AAPA.</li> </ul>
<b>Environmental outcome</b>	<ul style="list-style-type: none"> <li>No prohibited access to, or disturbance of, recorded sacred sites and/or RWAs (as per CLC and AAPA Authority Certificates for the Project - see EMP)</li> </ul>
<b>Environmental Performance Standard</b>	<b>Measurement criteria</b>
<ul style="list-style-type: none"> <li>CLC and AAPA Authority Certificate and any conditions outlined on the certificates are met.</li> </ul>	<ul style="list-style-type: none"> <li>GPS track log of vehicles and disturbance areas to prove that RWA and significant sites were not accessed during exploration activities.</li> </ul>
<ul style="list-style-type: none"> <li>No unauthorised disturbances of aboriginal places/objects or Aboriginal Sacred Sites.</li> </ul>	<ul style="list-style-type: none"> <li>GPS track log of vehicles and disturbance areas to prove that RWA and significant sites were not accessed during exploration activities.</li> <li>Zero complaints recorded from AAPA, Traditional Owners or CLC in regard to the works program. Complaints recorded in register and follow up immediately.</li> </ul>
<b>Reporting</b>	<ul style="list-style-type: none"> <li>Reporting to CLC and AAPA if new finds are made.</li> <li>Annual environmental performance report will be submitted to DEPWS</li> </ul>
<b>Responsibility</b>	<ul style="list-style-type: none"> <li>Seismic OCR</li> </ul>
<b>CODE</b>	<ul style="list-style-type: none"> <li>A.3.1 Site Selection and Planning</li> </ul>
<b>Guidelines and legislation</b>	<ul style="list-style-type: none"> <li>NTG Land Clearing Guidelines</li> </ul>

## 1.11 Cultural Heritage

Environmental Performance measure related to identified risk ID 15 (See Appendix 2 Risk Assessment Table 7)	
<b>ALARP rationale</b>	<ul style="list-style-type: none"> <li>Risk is as low as possible as surveys have been conducted, and operational staff will be educated on presence of cultural heritage objects to reduce risk of impact if these objects/places are encountered.</li> <li>Seismic lines will meet recommendations provided by Heritage Branch.</li> </ul>
<b>Environmental outcome</b>	<ul style="list-style-type: none"> <li>No prohibited access to, or disturbance of, cultural heritage values</li> <li>No disruption to local culture</li> </ul>
<b>Performance Standard</b>	<b>Measurement criteria</b>
<ul style="list-style-type: none"> <li>No unauthorised disturbances of aboriginal archaeological places/objects</li> </ul>	<ul style="list-style-type: none"> <li>Sacred Site and Heritage register maintained. Physical inspections that known sites are flagged on primary spatial databases to avoid accidental impacts. Also ensure that any changes to the route or widening GPS track log of vehicles and works areas as evidence that RWA, significant sites, heritage sites were not accessed during exploration activities.</li> <li>Scout survey to demarcate archaeology sites to be avoided as per approved buffers.</li> <li>When works approach close to known archaeological sites, it will be mentioned in the daily toolbox meetings to ensure that these sites are avoided.</li> <li>If unexpected find of an Aboriginal archaeological object or place occurs, site supervisor will adhere to Unexpected Finds Protocol and provide suitable documentation as proof of actions undertaken.</li> <li>GPS track log of vehicles and disturbance areas to prove that archaeological sites were not accessed during exploration activities.</li> </ul>
<b>Reporting</b>	<ul style="list-style-type: none"> <li>Reporting to NT Heritage Branch if new finds are made.</li> <li>Annual environmental performance report will be submitted to DEPWS</li> </ul>
<b>Responsibility</b>	<ul style="list-style-type: none"> <li>Seismic OCR</li> </ul>
<b>CODE</b>	<ul style="list-style-type: none"> <li>A.3.1 Site Selection and Planning</li> </ul>
<b>Guidelines and legislation</b>	<ul style="list-style-type: none"> <li>NTG Land Clearing Guidelines</li> <li><i>Heritage Act</i> (Northern Territory)</li> </ul>

## 1.12 Erosion

Environmental Performance measure related to identified risk ID 16 (See Appendix 2 Risk Assessment Table 7)	
<b>ALARP rationale</b>	<ul style="list-style-type: none"> <li>Minimal and selective clearing will ensure that the minimum area of vegetation will be cleared to complete the activities.</li> <li>Implementing an ESCP developed by a qualified professional that outlines industry standard controls will ensure risks are limited to ALARP.</li> </ul>
<b>Environmental outcome</b>	<ul style="list-style-type: none"> <li>Zero erosion or sedimentation issues as a result of the activity.</li> </ul>
<b>Environmental Performance Standard</b>	<b>Measurement criteria</b>
<ul style="list-style-type: none"> <li>No soil erosion and discharge of sediment or soil into waterways or established drainage systems.</li> <li>No new instances of erosion and sedimentation</li> </ul>	<ul style="list-style-type: none"> <li>Erosion and sediment controls in place prior to the commencement of the works</li> <li>Spatial data of vehicle route supplied to DEPWS at the completion of seismic work.</li> <li>Visual inspection and monitoring of existing tracks, seismic lines and waterway crossings conditions. This will occur weekly or following a rainfall event).               <p>These will occur:</p> <ul style="list-style-type: none"> <li>During siting of seismic lines and drill pads (baseline assessment)</li> <li>After completion of a key phases of activity</li> <li>After the wet season to look for signs of erosion</li> <li>Annually for up to 5 years (unless monitoring reports say otherwise).</li> </ul> </li> <li>Routine visual inspections (Weekly or following a rainfall event (i.e., greater than 20 mm in a 24-hour period) of the creek and drainage line crossings and any damage observed to be repaired as soon as practicable after the event.</li> </ul>
<b>Reporting</b>	<ul style="list-style-type: none"> <li>Annual environmental performance report will be submitted to DEPWS</li> </ul>
<b>Responsibility</b>	<ul style="list-style-type: none"> <li>Seismic OCR</li> </ul>
<b>CODE</b>	<ul style="list-style-type: none"> <li>A.3.1 Site Selection and Planning</li> <li>A.3.4 Erosion and Sediment Control and Hydrology</li> </ul>
<b>Guidelines and legislation</b>	<ul style="list-style-type: none"> <li>NT Land Clearing Guidelines</li> <li>International Erosion Control Association (IECA) Best Practice for Erosion and Sediment Control (2008)</li> </ul>

## 1.13 Dust/ GHG Emissions

Environmental Performance measure related to identified risk ID 17 (See Appendix 2 Risk Assessment Table 7)	
<b>ALARP rationale</b>	<ul style="list-style-type: none"> <li>Industry standards for dust management has been adopted. Based on the remote location of the works these dust management methods should prevent any dust impacts on surrounding stakeholders/communities.</li> <li>Industry standards for GHG emission management has been adopted</li> </ul>
<b>Environmental outcome</b>	<ul style="list-style-type: none"> <li>No environmental nuisance from dust at sensitive receptors – such as homesteads, populated areas</li> <li>No environmental nuisance from emissions.</li> </ul>
<b>Environmental Performance Standard</b>	<b>Measurement criteria</b>
<ul style="list-style-type: none"> <li>No significant dust plumes identified.</li> </ul>	<ul style="list-style-type: none"> <li>Daily visual monitoring will be carried out to ensure that visibility for moving equipment and vehicles is not obscured. In this event, water will need to be applied to reduce dust.</li> </ul>
<ul style="list-style-type: none"> <li>No complaints from surrounding landholders.</li> </ul>	<ul style="list-style-type: none"> <li>Weekly communication with landholder.</li> </ul>
<ul style="list-style-type: none"> <li>Keep emission within thresholds</li> </ul>	<ul style="list-style-type: none"> <li>When refuelling emission will be measured by recorded fuel consumption in logbooks (or equivalent). GHG Emission (tonnes)</li> </ul>
<b>Reporting</b>	<ul style="list-style-type: none"> <li>Annual environmental performance report will be submitted to DEPWS</li> </ul>
<b>Responsibility</b>	<ul style="list-style-type: none"> <li>Seismic OCR</li> </ul>
<b>CODE</b>	<ul style="list-style-type: none"> <li>A.3.1 Site Selection and Planning</li> </ul>
<b>Guidelines and legislation</b>	<ul style="list-style-type: none"> <li>NTG Land Clearing Guidelines</li> </ul>

## 1.14 Noise and Vibration

Environmental Performance measure related to identified risk ID 18 (See Appendix 2 Risk Assessment Table 7)	
<b>ALARP rationale</b>	<ul style="list-style-type: none"> <li>• Remote location</li> <li>• Landholders will be notified prior to works.</li> <li>• Vehicles well maintained and speed will be limited when within proximity to receptors.</li> <li>• Wildlife will be able to avoid the area of influence due to progressive work activities.</li> </ul>
<b>Environmental outcome</b>	<ul style="list-style-type: none"> <li>• No noise or vibration impacts on surrounding communities or exploration workers.</li> <li>• No disruption to wildlife.</li> </ul>
<b>Environmental Performance Standard</b>	<b>Measurement criteria</b>
<ul style="list-style-type: none"> <li>• No breach of noise thresholds identified in NT Noise Management Framework Guidelines</li> </ul>	<ul style="list-style-type: none"> <li>• Provision of equipment and activity noise thresholds prior work commencement and daily during work.</li> </ul>
<ul style="list-style-type: none"> <li>• No complaints from stakeholders</li> </ul>	<ul style="list-style-type: none"> <li>• Weekly consultation with landholders for duration of the work</li> <li>• Immediately on receipt, complaints reported to management, recorded and followed-up / rectified</li> </ul>
<b>Reporting</b>	<ul style="list-style-type: none"> <li>• Annual environmental performance report will be submitted to DEPWS</li> </ul>
<b>Responsibility</b>	<ul style="list-style-type: none"> <li>• Seismic OCR</li> </ul>
<b>CODE</b>	<ul style="list-style-type: none"> <li>• A.3.1 Site Selection and Planning</li> <li>• A.3.3 Noise</li> </ul>
<b>Guidelines and legislation</b>	<ul style="list-style-type: none"> <li>• NTG Land Clearing Guidelines</li> <li>• Northern Territory Noise Management Framework Guidelines</li> </ul>

## 1.15 Light pollution

Environmental Performance measure related to identified risk ID 19 (See Appendix 2 Risk Assessment Table 7)	
<b>ALARP rationale</b>	<ul style="list-style-type: none"> <li>Lighting will only be utilised when absolutely necessary, and when used will be directional and used for the minimum time required.</li> <li>Night driving will be avoided in Southern Whiteface and Slater's Skink habitat</li> </ul>
<b>Environmental outcome</b>	<ul style="list-style-type: none"> <li>No environmental nuisance from light at sensitive receptors</li> </ul>
<b>Environmental Performance Standard</b>	<b>Measurement criteria</b>
<ul style="list-style-type: none"> <li>No complaints associated with lighting</li> </ul>	<ul style="list-style-type: none"> <li>Weekly consultation with landholders for duration of the work</li> <li>Recording of complaints immediately on receipt</li> </ul>
<b>Reporting</b>	<ul style="list-style-type: none"> <li>Annual environmental performance report will be submitted to DEPWS</li> </ul>
<b>Responsibility</b>	<ul style="list-style-type: none"> <li>Seismic OCR</li> </ul>
<b>CODE</b>	<ul style="list-style-type: none"> <li>A.3.1 Site Selection and Planning</li> </ul>
<b>Guidelines and legislation</b>	<ul style="list-style-type: none"> <li>NTG Land Clearing Guidelines</li> <li>Northern Territory Noise Management Framework Guidelines</li> </ul>

## 1.16 Contamination from spills of hazardous substances

Environmental Performance measure related to identified risk ID 20 (See Appendix 2 Risk Assessment Table 7)	
<b>ALARP rationale</b>	<ul style="list-style-type: none"> <li>Chemicals and hazardous materials will be stored and per industry best practice.</li> <li>Appropriate spill kits and spill response procedures and materials will be available on site minimising the risk consequence</li> </ul>
<b>Environmental outcome</b>	<ul style="list-style-type: none"> <li>Zero impacts on soil, surface water, groundwater, sensitive habitat and air quality.</li> <li>Zero ground surface contamination or spill incidents.</li> </ul>
<b>Environmental Performance Standard</b>	<b>Measurement criteria</b>
<ul style="list-style-type: none"> <li>No off-site releases of chemicals or hydrocarbons.</li> <li>No accidental on-site release of chemicals or hydrocarbons.</li> </ul>	<ul style="list-style-type: none"> <li>Weekly inspection report of fuel and chemical storage areas, including secondary containment areas and structures, containers and spill kits (Daily if work conducted over wet season).</li> <li>Inspection reports and maintenance records of fuel and chemical storage areas, including secondary containment areas shall be kept.</li> <li>Daily maintenance records of machinery and vehicles.</li> </ul>
<ul style="list-style-type: none"> <li>Spills cleaned up immediately and appropriately disposed of.</li> </ul>	<ul style="list-style-type: none"> <li>Spills reporting– including incident reporting as per Appendix 5 Spill management Plan.</li> </ul>
<b>Reporting</b>	<ul style="list-style-type: none"> <li>Inspection reports and maintenance records of secondary containment shall be kept.</li> <li>Spills reporting as needed – including incident reporting as per Appendix 5 Spill Management Plan.</li> <li>Annual environmental performance report will be submitted to DEPWS</li> </ul>
<b>Responsibility</b>	<ul style="list-style-type: none"> <li>Seismic OCR</li> </ul>
<b>CODE</b>	<ul style="list-style-type: none"> <li>A.3.1 Site Selection and Planning</li> <li>A.3.8 Containment of Contaminants</li> <li>C.7.2 Spill Management Plan</li> </ul>
<b>Guidelines and legislation</b>	<ul style="list-style-type: none"> <li>NT Dangerous Goods Act</li> <li>Flammable and Combustible Liquids Regulations and AS1940.</li> <li>NT Waste Management and Pollution Control Act 1998</li> <li>National Environment Protection (Assessment of Site Contamination) Measure.</li> </ul>

## 1.17 Contamination from wastewater and general waste

Environmental Performance measure related to identified risk ID 21 (See Appendix 2 Risk Assessment Table 7)	
<b>ALARP rationale</b>	<ul style="list-style-type: none"> <li>All waste will be collected, treated and disposed of correctly. This reduces the risk to ALARP as there are no further actions that can be taken to reduce risk.</li> <li>Wastewater will be stored, treated and irrigated as per industry best practice.</li> <li>The Code of Practice requires storages of wastewater to meet the 0.1% AEP freeboard requirement. This indicates that industry standard for wastewater management and storage have been adopted, limiting the risk.</li> </ul>
<b>Environmental outcome</b>	<ul style="list-style-type: none"> <li>Zero impacts to soil, surface water, groundwater, sensitive habitats and air quality.</li> <li>Zero attraction of pest species from waste storage (i.e. food scraps).</li> <li>Zero adverse impact on soil, surface water, groundwater or sensitive habitats</li> </ul>
<b>Environmental Performance Standard</b>	<b>Measurement criteria</b>
<ul style="list-style-type: none"> <li>All wastewater treated to the required effluent class.</li> </ul>	<ul style="list-style-type: none"> <li>Daily inspections of waste storage. Inspect waste storage to ensure waste and rubbish are appropriately handled / stored during seismic activities (personnel safety and to minimise attraction from pest fauna).</li> <li>Weekly inspection of wastewater disposal area</li> <li>Maintain waste register, including receipts to verify waste has been properly disposed of</li> </ul>
<ul style="list-style-type: none"> <li>Reporting</li> </ul>	<ul style="list-style-type: none"> <li>Annual environmental performance report will be submitted to DEPWS</li> </ul>
<b>Responsibility</b>	<ul style="list-style-type: none"> <li>Seismic OCR</li> </ul>
<b>CODE</b>	<ul style="list-style-type: none"> <li>A.3.1 Site Selection and Planning</li> <li>A.3.8 Containment of Contaminants</li> <li>C.7.2 Spill Management Plan</li> </ul>
<b>Guidelines and legislation</b>	<ul style="list-style-type: none"> <li><i>Waste Management and Pollution Control Act 1998</i></li> <li>Code of Practice for Wastewater Management 2020</li> <li>National Environment Protection (Assessment of Site Contamination) Measure.</li> <li>Food Act 2004</li> <li>Australian Drinking Water Guidelines (2011)</li> <li>National Construction Code</li> </ul>

## 1.18 Bushfire as result of Project activities

Environmental Performance measure related to identified risk ID 22 (See Appendix 2 Risk Assessment Table 7)	
<b>ALARP rationale</b>	<ul style="list-style-type: none"> <li>Industry standard controls will be implemented to reduce the risk of fire.</li> <li>Fire extinguishing devices will be available at all work to control fires as needed. .</li> <li>Equipment controls and safety mechanisms, as well as regular checking of fire danger will ensure this risk has been reduced to ALARP.</li> </ul>
<b>Environmental outcome</b>	<ul style="list-style-type: none"> <li>To successfully complete the activity without a bushfire incident.</li> </ul>
Environmental Performance Standard	Measurement criteria
<ul style="list-style-type: none"> <li>No bushfires caused by site activities.</li> <li>No safety incidents associated with fire.</li> <li>No damage to equipment or environment from fire generated by Project Activity</li> </ul>	<ul style="list-style-type: none"> <li>Adhere to Bushfire Management Plan in Appendix 5.</li> <li>Daily monitoring for bushfire alerts and fire bans (primarily via the <a href="https://securent.nt.gov.au/alerts">https://securent.nt.gov.au/alerts</a> and <a href="http://www.bushfires.nt.gov.au/incidentmap/">www.bushfires.nt.gov.au/incidentmap/</a> and <a href="https://firenorth.org.au/nafi3/">https://firenorth.org.au/nafi3/</a> websites and notifying all site personnel of the risks of fire during toolbox meetings.</li> <li>All incidents of fire will be recorded in an incident register</li> </ul>
<ul style="list-style-type: none"> <li>No complaints from stakeholder in regard to fire occurrence or management activities.</li> </ul>	<ul style="list-style-type: none"> <li>Communication with land owner prior to entering the land where seismic activity is going to take place and weekly during the work.</li> </ul>
<ul style="list-style-type: none"> <li>Awareness of fuel load in region achieved</li> </ul>	<ul style="list-style-type: none"> <li>Annual fire scar mapping. Mapping will be conducted using North Australia and Rangelands Fire Information website (<a href="https://firenorth.org.au/nafi3/">https://firenorth.org.au/nafi3/</a>)</li> </ul>
<b>Reporting</b>	<ul style="list-style-type: none"> <li>Annual environmental performance report will be submitted to DEPWS</li> <li>All incidents of fire will be recorded in an incident register, and reported to relevant land owner and Bushfires NT.</li> </ul>
<b>Responsibility</b>	<ul style="list-style-type: none"> <li>Seismic OCR</li> </ul>
<b>CODE</b>	<ul style="list-style-type: none"> <li>A.3.1 Site Selection and Planning</li> <li>A.3.7 Fire Management</li> </ul>
<b>Guidelines and legislation</b>	<ul style="list-style-type: none"> <li>Bushfire Management Act</li> <li>Bushfire Management Planning Guide: Onshore Petroleum Projects</li> </ul>

## 1.19 Unwanted access or interference with TO activities

Environmental Performance measure related to identified risk ID 23 (See Appendix 2 Risk Assessment Table 7)	
<b>ALARP rationale</b>	<ul style="list-style-type: none"> <li>LAA and stakeholder consultation will ensure all parties are aware of access requirements and informed of activities.               <ul style="list-style-type: none"> <li>Regular contact with landholders will ensure land use isn't significantly affected by work activities.</li> <li>Working with neighbouring groups and communities to facilitate working relationships, as well as ensuring access tracks are closed and rehabilitated will limit the time that unwanted access is possible.</li> <li>Minimising access during wet periods and monitoring weather conditions ensures that work is completed during dry times and minimises the impact on tracks. This reduces the risk to as low as possible.</li> </ul> </li> <li>Landholders will be notified prior to activities               <ul style="list-style-type: none"> <li>Vehicles well maintained and speed will be limited.</li> <li>Engagement with stakeholders will ensure they are aware of work activities and the increased traffic associated with Project.</li> </ul> </li> </ul>
<b>Environmental outcome</b>	<ul style="list-style-type: none"> <li>Zero complaints</li> <li>Ongoing stakeholder and other regional engagement show no concerns regarding access to property or impact on land holders' activities.</li> </ul>
<b>Environmental Performance Standard</b>	<b>Measurement criteria</b>
<ul style="list-style-type: none"> <li>No complaints from stakeholders or community</li> <li>No reports of trespass during work activities.</li> </ul>	<ul style="list-style-type: none"> <li>Maintain a community engagement records for the duration of the Project</li> <li>Complaints reported to Trident and recorded in register and followed up immediately on receipt of complaint.</li> <li>Weekly consultation with landholders</li> <li>Access report:               <ul style="list-style-type: none"> <li>Visual inspection and monitoring of existing tracks, seismic lines, water waterway crossings.</li> <li>These will occur:                   <ul style="list-style-type: none"> <li>During siting of seismic lines (baseline assessment)</li> <li>After completion of a key phases of activity</li> <li>After the wet season to look for signs of erosion</li> <li>Annually (post wet) for up to 5 years.</li> </ul> </li> </ul> </li> </ul>
<ul style="list-style-type: none"> <li>No significant impacts to road/track condition</li> </ul>	<ul style="list-style-type: none"> <li>Inspection reports (during Activity)</li> <li>Rehabilitation monitoring (post Activity, if relevant).</li> </ul>
<b>Reporting</b>	<ul style="list-style-type: none"> <li>Annual environmental performance report will be submitted to DEPWS</li> </ul>
<b>Responsibility</b>	<ul style="list-style-type: none"> <li>Project Manager</li> <li>Seismic OCR</li> </ul>
<b>CODE</b>	<ul style="list-style-type: none"> <li>A.3.1 Site Selection and Planning</li> </ul>
<b>Guidelines and legislation</b>	<ul style="list-style-type: none"> <li>NT Petroleum (Environment) Regulations</li> <li>Stakeholder Engagement Guidelines Land Access</li> </ul>

## 1.20 Rehabilitation failure

Environmental Performance measure related to identified risk ID 24 (See Appendix 2 Risk Assessment Table 7)	
<b>ALARP rationale</b>	<ul style="list-style-type: none"> <li>Rehabilitation plan implements industry best practice methodology and ongoing monitoring will ensure rehabilitation success.</li> </ul>
<b>Environmental outcome</b>	<ul style="list-style-type: none"> <li>Disturbed areas returned to pre-disturbance condition</li> <li>No impacts to adjacent sensitive ecological areas or CLC scared sites, AAPA RWAs.</li> </ul>
<b>Environmental Performance Standard</b>	<b>Measurement criteria</b>
<ul style="list-style-type: none"> <li>As per rehabilitation success criteria described in Rehabilitation Plan</li> </ul>	<ul style="list-style-type: none"> <li>Monitoring to occur as described in the Rehabilitation Plan.</li> <li>Monitoring will take place at the end of the wet season (February to June): approximately between six- and nine-months post rehabilitation works, then on an annual basis until successful rehabilitation criteria (as per Rehabilitation Plan) have been met and signed off by the Minister.</li> <li>If relevant, monitoring will be conducted adjacent to RWAs for weeds, erosion and sedimentation, pollution, wherever the regulated activity goes to the boundary of a RWA</li> </ul>
<b>Reporting</b>	<ul style="list-style-type: none"> <li>Annual rehabilitation monitoring report (conducted after each annual monitoring event)</li> <li>Rehabilitation status will be described within annual environmental performance report to be submitted to DEPWS</li> </ul>
<b>Responsibility</b>	<ul style="list-style-type: none"> <li>Project Manager</li> </ul>
<b>CODE</b>	<ul style="list-style-type: none"> <li>A.3.1 Site Selection and Planning</li> <li>A.3.9 Rehabilitation</li> </ul>
<b>Guidelines and legislation</b>	<ul style="list-style-type: none"> <li>NT Land Clearing Guidelines</li> <li>Code of Practice for Petroleum Activates in the Northern Territory Part A – Surface Activities</li> <li>NTG Land Clearing Guidelines</li> <li>International Erosion Control Association (IECA) Best Practice for Erosion and Sediment Control (2008)</li> </ul>

## Stakeholder Communications Register

COMMUNICATIONS REGISTER							
Company:		Trident Energy					
Project Name:		Wild Horse 2D Seismic					
Project Description:		2D seismic program across EP 145 in the NT					
Date	Stakeholder	Interest holder Representative	Communication Method	Summary of engagement	Stakeholder response / action	Interest holder response / action	Actions Closed?
29 March 2021	CLC - ██████████ ██████████	Julie Daws	Email	Request for meeting between Trident & CLC to discuss exploration program		Meeting organized for 19 <sup>th</sup> April 2021	Yes
16 April 2021	CLC - ██████████ ██████████ ██████████	Julie Daws	Email	Trident provides a short presentation on planned exploration activity in EP145			Yes
19 April 2021	CLC - ██████████ ██████████	Julie Daws & Andy Carroll	Meeting – Alice Springs	In person meeting between Trident & CLC to provide update on work program and discuss timing of ecology survey.	CLC concern of overlapping activities of CLC sacred site clearance and ecology survey. Also concern of potential change of seismic line placement after aerial gravity survey – not keen to go back and do a second clearance. Would like information on timing of aerial survey so communities can be advised and not concerned by plane flying about.	Reviewing timing of ecology so as not to overlap with TO's being on country. Trident to provide notice of intent to CLC containing information on timing and methodology of planned gravity survey.	Yes
24 May 2021	CLC - ██████████ ██████████	Julie Daws	Email	CLC requested more information on the seismic charge source methodology, size and type of charges, safety protocols. Also, more information on type of camp to be used.		Trident to provide requested information.	Yes
11 June 2021	CLC - ██████████ ██████████	Julie Daws	Email	CLC requested clarification on camp locations		Trident to answer clarifications	Yes
7 July 2021	CLC - ██████████ ██████████	Julie Daws	Phone	Phone meeting confirming timing of gravity surveys and sacred site clearance			N/A

COMMUNICATIONS REGISTER							
Company:		Greenvale Energy (formerly Trident Energy)					
Project Name:		Wild Horse 2D Seismic					
Project Description:		2D seismic program across EP 145 in the NT					
Date	Stakeholder	Interest holder Representative	Communication Method	Summary of engagement	Stakeholder response / action	Interest holder response / action	Actions Closed?
16 August 2021	CLC - ██████ ██████	Julie Daws	Email	CLC request Trident to delay Ecology scouting until after sacred site clearance	Concern from the traditional owners that the ecology scouting may unknowingly disturb unidentified Sacred Sites and request that the Sacred Site Clearance is undertaken before the ecology survey is done.	Trident agrees to delay ecology survey until CLC SSCC is received.	Yes
25 February 2022	CLC - ██████ ██████	Julie Daws	Email	Update on Ecology scout timing and request CLC Entry Permits		CLC to issue Entry Permits for access to ALRA Lands	Yes
31 March 2022	CLC - ██████ ██████	Julie Daws	Email	Questions about number of campsites and locations		Trident to confirm details	Yes
4 April 2022	CLC - ██████ ██████ ██████	Julie Daws, Andy Carroll	Meeting – Alice Springs	In person meeting to finalise Wild Horse sacred site survey details. Issues raised were line 07 crossing an existing RWA.		Trident to move line 7 outside the RWA	Yes
13-14 April 2022	CLC - ██████ ██████	Andy Carroll, Julie Daws	Emails	Working through the relocation of line 7 to avoid Restricted Work Area			Yes
16 May 2022	CLC - ██████ ██████	Mark Kneipp	Phone Call	Request by CLC for a brief summary of the purpose of the survey and the difference between a dynamite survey and fracking, specifically with regards to impact on water tables. Information to be used to inform TO's during CLC consultation.		Trident to provide summary	Yes
16 February 2023	CLC - ██████ ██████	Andy Carroll	Email	CLC Issue Sacred Site Clearance Certificate for Wild Horse Work program			N/A

COMMUNICATIONS REGISTER							
Company:		Greenvale Energy (formerly Trident Energy)					
Project Name:		Wild Horse 2D Seismic					
Project Description:		2D seismic program across EP 145 in the NT					
Date	Stakeholder	Interest holder Representative	Communication Method	Summary of engagement	Stakeholder response / action	Interest holder response / action	Actions Closed?
31 March 2023	CLC – ██████ ██████	Julie Daws	Email	Update on timing of seismic planning and request for access permits to undertake further site scouting to understand RWA conditions.			Yes
13 April 2023	CLC – ██████ ██████	Mark Kneipp	Meeting – Alice Springs	Update on timing of seismic planning and detailing on site scouting			Yes
7 September 2023	CLC – ██████ ██████	Mark Kneipp	Phone Call	Discuss AAPA's request for a copy of the Urrampinyi Iltjiltjarri ALT Deed. CLC request deed be kept confidential.		Trident confirms it will keep deed confidential.	Yes
16 October 2023	CLC – ██████ ██████	Andy Carroll	Email	Request for update regarding the AAPA request for information from CLC.	CLC to provide update		Yes
11 December 2023	CLC – ██████ ██████	Mark Kneipp	Phone Call	Discuss AAPA request for information and seek assistance co-ordinating CLC providing information.	CLC to follow up with information for AAPA on the consultation undertaken by CLC with the Traditional Owners.		Yes
21 December 2023	AAPA - ██████ ██████	Andy Carroll	Email	Email confirming AAPA received comprehensive information on custodians' site protection advice from the CLC.		AAPA to produce an Authority Certificate on the basis of information received from the CLC	Yes
4 April 2024	CLC – ██████ ██████	Mark Kneipp	Phone	Call from CLC to discuss the Greenvale farm-in and implication of Deed amendment.			Yes
4 April 2024	CLC – ██████ ██████	Andy Carroll	Email	Email to CLC discussing amendment to Deed for Greenvale as primary interest holder and operator		Organize meeting to discuss further	Yes

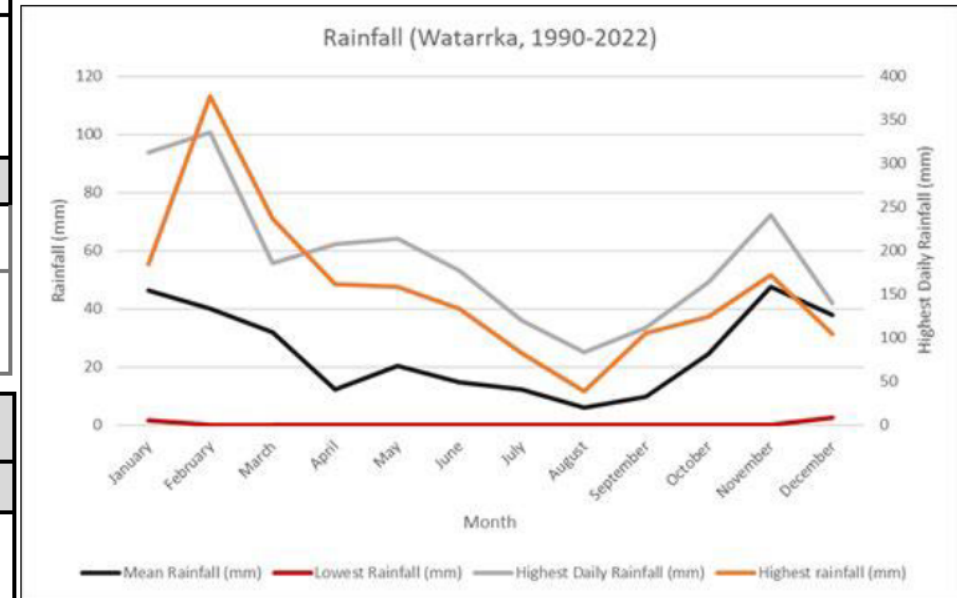
COMMUNICATIONS REGISTER							
Company:		Greenvale Energy (formerly Trident Energy)					
Project Name:		Wild Horse 2D Seismic					
Project Description:		2D seismic program across EP 145 in the NT					
Date	Stakeholder	Interest holder Representative	Communication Method	Summary of engagement	Stakeholder response / action	Interest holder response / action	Actions Closed?
15 April 2024	CLC – ██████ ██████	Mark Kneipp	Email	Provide copy of slides for 2024-2025 planned work program update			Yes
15 April 2024	CLC – ██████ ██████	Julie Daws	Meeting – Alice Springs	Discuss new interest holder and process of updating Deed, timing of seismic planning, upcoming well site clearance request.	CLC are satisfied with all the information they have been provided about seismic program and will just require a permit access certificate for personnel who will be in the field. CLC need to be legally informed regarding change of operator. No requirement to meet TO's regarding new Interest Holder – will be done by CLC.	Trident to legally inform CLC that Greenvale Energy will be new Operator in majority Interest Holder	
1 November 2024	CLC – ██████ ██████	Mark Kneipp	Call	Update on status of Permit interest holders (Greenvale withdrawing from EP145) and on project timing (early 2025).	Discussion on expiry of SSCC in Feb 2025.	Trident to submit extension request for SSCC	Yes
1 November 2024	CLC – ██████ ██████	Julie Daws	Email	Formal Update on status of Permit interest holders and request SSCC extension.	CLC to action request		Yes

22 November 2024	CLC – [REDACTED] [REDACTED]	Mark Kneipp	Email	Follow up on timing for SSCC extension.			
25 November 2024	CLC – [REDACTED] [REDACTED]	Mark Kneipp	Email	E-Meet [REDACTED] as new CLC Minerals and Energy Officer. Commitment on timing update.		CLC to provide update on timing for SSCC request.	

# Wild Horse 2D Weather Management Plan

TRIDENT WILD HORSE 2D	
Property land uses	Trident operates the Wild Horse 2D program under EP 145
Site Description	EP 145 located 190km WSW of Alice Springs in the Northern Territory adjacent to the existing Mereenie field (OL4)
Wet Season Management Plan	
Purpose	To respond to the risks associated with wet weather on daily operations.
Objectives	Ensure that all operational and workover activities can continue to be undertaken safely and with minimal risk to the environment during the wet season.

Contact	Plan Owner	Implementation
		Project Manager



WET SEASON RISKS	
Key Risks	Controls
<p>Flooding within the operational areas</p>	<p>Operations are shut down during significant wet weather or flooding and only restarted once potential for extensive damage has passed.</p> <p>Following shut down due to flooding or inundation the risk assessment will be revisited to ensure controls are still appropriate to manage risk to ALARP.</p> <p>All chemicals and hydrocarbons are stored within vehicles or suitable containers to prevent rain ingress and overflows where possible.</p>
<p>Erosion/damage to access tracks and roads</p>	<p>After a rain event any unsealed roads will be inspected to ensure they are safe for vehicles.</p> <p>Earthworks will not occur during rainfall events.</p> <p>Erosion &amp; Sediment Controls will be examined after a significant rain event and repairs undertaken if required.</p>

WET SEASON MONITORING		
Monitoring	Information location/Action	Frequency
Weather forecast	<a href="http://www.bom.gov.au/nt/">http://www.bom.gov.au/nt/</a>	Daily
Road conditions	<a href="https://roadreport.nt.gov.au/home">https://roadreport.nt.gov.au/home</a>	After significant rainfall event
Internal roads and access tracks	Visual monitoring for erosion	After significant rainfall event



# Wild Horse 2D Erosion and Sedimentation Control Plan

	Owner	Field Implementation
ESCP	Project Manager	Seismic OCR
Property land uses	Trident operates the Wild Horse 2D program under EP 145	
Objectives	To minimise land and water impacts in relation to seismic exploration activities by preventing erosion and controlling sediment discharge.	

EROSION AND SEDIMENTATION RISKS	
Key Risks	Controls
<p>Arid to semi-arid climate, hot dry summers and cool dry winters with a low average annual rainfall.</p> <p>More rainfall occurs in the summer months associated with monsoonal influences; but the amount of rainfall in the arid zone is highly variable.</p>	
<p><b>Movement of heavy machinery and vehicles</b></p>	<p>Avoid driving after significant rainfall events</p> <p>No driving beyond access tracks</p> <p>Personnel access to the facility and any site/area by permit approved by the CLC</p>
<p><b>Significant rainfall events</b></p>	<p>Operations are shut down during significant wet weather or flooding and only restarted once potential for extensive damage has passed.</p> <p>Following shut down due to flooding or inundation the risk assessment will be revisited to ensure controls are still appropriate to manage risk to ALARP.</p> <p>After a rain event any unsealed roads will be inspected to ensure they are safe for vehicles.</p> <p>Earthworks will not occur during rainfall events.</p> <p>Erosion &amp; Sediment Controls will be examined after a significant rain event and repairs undertaken if required.</p>

LIKELY IMPACTED AREAS	
<p><b>Disturbance areas</b></p>	<p>Existing tracks</p> <p>Previously cleared seismic lines</p> <p>The proposed Wild Horse 2D seismic lines</p>

EROSION AND SEDIMENTATION MONITORING PROGRAM			
Mitigation Measure	Measurement Criteria	Monitoring frequency	Record
<p><b>Seismic lines (during seismic acquisition)</b></p>	<p>Minimise disturbances. Use existing tracks. Travel at slow speeds.</p> <p>No work during wet weather events.</p> <p>No clearing of vegetation or land for tracks.</p> <p>Maneuver around sensitive areas.</p> <p>No work during wet weather events.</p>	<p>Visual inspections of Wild Horse area undertaken to ensure that a stable landform is being maintained.</p> <p>Ensure restricted works areas are visually inspected for ESC impacts and that all controls are in sound working order.</p> <p>Inspections after significant rainfall events (e.g., greater than 15mm in 24hrs).</p> <p>Drone footage and photographic images will be recorded prior to and post the Wild Horse program.</p>	<p>Rehabilitation report:</p> <ul style="list-style-type: none"> <li>Area of disturbed land available for rehabilitation at the start of the reporting period</li> <li>Area of disturbance that occurred during the reporting period.</li> <li>Area where rehabilitation commenced during the reporting period.</li> <li>Area of disturbed land (if any) remaining to be rehabilitated at the end of the reporting period.</li> <li>Drone and photographic monitoring point GPS locations and results of monitoring undertaken during the reporting period.</li> <li>Monitoring of progressive rehabilitation, including flora type and density, fauna activity and soil stability</li> <li>Any erosion and sedimentation issues</li> <li>Any stakeholder consultations and results of discussions related to rehabilitation.</li> <li>Any issues that may affect the rehabilitation success factors noted in the measurement criteria within the Rehabilitation Management Plan. and remedial actions taken or required to be undertaken to allow the success factor to be realized.</li> <li>Monitoring of contaminated sites (if any)</li> <li>Weed monitoring</li> </ul>
<p><b>Access tracks (post-acquisition)</b></p>	<p>Rehabilitate existing sections of the track exhibiting erosion issues.</p> <p>Reprofile to prevent concentration of sheet flow.</p> <p>Install erosion controls to redirect water from the track and other restricted works areas (eg. mapped heritage exclusion zones and ecologically significant areas).</p> <p>Install erosion controls upstream to reduce erosion and lower water velocities in some locations.</p> <p>No windrows.</p> <p>No work during wet weather events.</p>		
<p><b>Main Seismic line clearing</b></p>	<p>Reprofile to prevent concentration of sheet flow.</p> <p>Install erosion controls to redirect water from the track and other restricted works areas (eg. mapped heritage exclusion zones and ecologically significant areas).</p> <p>Install erosion controls upstream to reduce erosion and lower water velocities in some locations.</p> <p>Ensure breaks in windrows.</p> <p>No work during wet weather events</p>		

TYPICAL EROSION AND SEDIMENTATION CONTROL DEVICES*		
Type	Use	Example
<p><b>Fibre rolls</b></p>	<p>Fibre rolls consist of small-diameter, biodegradable straw/coir- filled logs.</p> <p>Can be used as check dams in wide, shallow drains so long as the logs can be anchored to prevent movement.</p> <p>Best used in locations where it is desirable to allow the log to integrate into the vegetation, such as in vegetated channels.</p>	
<p><b>Cross ban (whoa boy) drainage</b></p>	<p>Divert water off tracks</p> <p>Collect and divert sheet flow off roads and tracks</p>	

Devices will be as per the design standards of \*IECA Best Practice Erosion and Sediment Control Guidelines

Source: *Erosion and Sediment Control- A Field Guide for Construction Site Managers, Version 5, 2012, Catchments & Creeks Pty Ltd*

## Wild Horse 2D Weed Management Plan

Contact Details	Name
Weeds Officer	

### TRIDENT WILD HORSE 2D

Property land uses	Trident operates the Wild Horse 2D program under EP 145
Site Description	EP 145 located 190km WSW of Alice Springs in the Northern Territory adjacent to the existing Mereenie field (OL4)

### Weeds Management Plan

Purpose	To prevent and control new and existing weed species within the operating Licence areas.
Objectives	To prevent weeds through the following process steps: 1. Identification 2. Prevention 3. Control 4. Disposal

### NOTIFICATION, RECORDING AND REPORTING

Aspect	Action
Notification	<ul style="list-style-type: none"> <li>Notify the Weed Management Branch within 48 hours of the discovery of a new declared weed species (i.e., not previously identified in weed surveys or recorded in the NR Maps system) within the seismic survey locations.</li> <li>Initial notification will be by telephone with follow up written notification provided within seven (7) working days.</li> <li>Written notification is to include a preliminary species identification and location (easting and northing).</li> </ul>
Recording	<ul style="list-style-type: none"> <li>Weed survey is undertaken by the Weeds Officer. Weed Officer to have AHC BIO203 certification and demonstrated previous experience in weed management.</li> <li>Data on weed distribution will be maintained in Trident's geographical information system and be provided to the NT government as part of the annual report on performance against the WMP, or when requested by the Weeds Management Branch.</li> </ul>
Reporting	<ul style="list-style-type: none"> <li>A report on the performance against this WMP will be submitted to DLPE as part of EMP reporting.</li> </ul>

RISKS AND MANAGEMENT CONTROLS	
Key Risks	Management Controls
Machinery and equipment from weed infested locations – potential for introduction and spread of weeds	<ul style="list-style-type: none"> <li>Machinery washdown prior to entering site.</li> <li>If coming from known weed-infested areas or interstate, vehicles will have a weed-hygiene certificate issued by a qualified inspector (AHC BIO203 – Inspect and Clean Machinery, Tools and Equipment to Preserve Biosecurity)</li> <li>Compulsory site inductions provided to all personnel, contractors, and visitors prior to entering the site.</li> </ul>
Spread of weeds due to driving vehicles and trucks along tracks	<ul style="list-style-type: none"> <li>Machinery washdown prior to entering and after leaving the site.</li> <li>Location of weeds reported to Weeds Officer when observed by workers.</li> <li>Avoid driving through areas of high infestation to low infestation where possible.</li> </ul>
Insufficient survey effort	<ul style="list-style-type: none"> <li>Use of NTG spatial data sets to find areas of weed infestations within close proximity to the site.</li> </ul>
Weeds present on site not identified during survey	<ul style="list-style-type: none"> <li>Completion of a site survey prior to commencing work in new areas.</li> </ul>

### MANAGEMENT PROCESS

Process Step	Objective	Actions	Frequency
	Weed species and area of infestation are identified and monitored	<ul style="list-style-type: none"> <li>Access tracks, seismic lines, stub lines and all camp areas to include visual checks to be noted during pre-start activities.</li> <li>Formal weed survey of all disturbance areas noted above undertaken annually by dedicated weeds officer.</li> <li>Photograph weed species identified (and/or areas of infestation recorded with GIS and mapped)</li> <li>Report to the Trident HSE Team and included within weed survey report.</li> <li>Weed survey findings used to determine control programs in consultation with Trident or suitable contractors.</li> <li>Trident site staff to be trained in identification of weeds, particularly particularly Buffel Grass, a declared weed and potential other declared weeds and WoNS.. Trident staff should familiarize themselves with declared weeds that have potential to enter the site (e.g., Athel pine)</li> </ul>	Annual Weed survey, or more regularly if determined by Weeds Officer.
Weed Prevention	No new declared weeds, WoNS or environmental weed individuals or infestations	<ul style="list-style-type: none"> <li>Vehicles and/or equipment coming from an area with Declared Weeds will be cleaned and obtain a weed hygiene certificate from qualified personnel before entry.</li> <li>If areas containing weeds are accessed, particularly the declared weed Buffel Grass, clean all equipment and machinery. Wash or blow down vehicles to prevent transfer of weeds to uncontaminated areas.</li> <li>No unnecessary clearing to minimize ground disturbance.</li> <li>Road grading in areas of weeds should start from the outside of the infestation towards the centre of the infestation.</li> <li>No off-road driving except for the designated seismic line.</li> <li>Monitor operational areas and 'hotspots' continually.</li> <li>Report weed sightings in unmapped areas to the Weeds Officer, particularly Buffel Grass.</li> </ul>	Ongoing as part of activities
Weed Control	Existing weeds are controlled using effective methods. Personnel and infrastructure are protected from increased fire risk due to weed infestations. No spread of weeds No new weed species present	<ul style="list-style-type: none"> <li>Use the correct control and/or removal method selected by trained personnel/contractor based on species present and extent of infestation.</li> <li>Plan a rapid response to seasonal changes to maximize the effectiveness of control activities.</li> <li>Engage local traditional owners, rangers or contractors to assist with mechanical and chemical control of weed species at the site.</li> <li>Trident staff will also undertake weed control when they are available during normal operations.</li> <li>Control activities are mapped using the same methods as undertaken in past surveys undertaken by Trident to ensure consistent capture of information. This will enable the Weeds Officer to be more aware of the spread or containment of existing weeds and the effectiveness of weed control</li> </ul>	Control/removal scheduled to occur prior to weed seeding where practicable - timing with seasons and predicted rainfall (Usually Nov-March)
	Weed control methods result in no environmental harm	<ul style="list-style-type: none"> <li>Only suitably trained personnel will use chemicals and herbicides, in accordance with Trident's chemical handling and storage procedures.</li> <li>Relevant stakeholders will be consulted prior to chemical herbicide being used.</li> <li>Assess areas outside of operational areas prior to weed control to identify conservation-listed flora.</li> <li>Ensure non-target conservation-listed species are not impacted by weed control.</li> <li>Minimize drift by spraying on low wind days.</li> <li>No use of residual herbicide pellets within 2-3 canopy diameters of trees or shrubs</li> <li>Follow-up surveys will refine the impacts of weed removal of the potential for future vegetation re-growth</li> </ul>	During weed control activities as part of operational procedures Prior to weed control in areas outside of operational area.
Disposal of weeds and chemicals	Weeds disposed of in environmentally friendly manner. No further weed spread from disposal. Correct disposal of chemical containers	<ul style="list-style-type: none"> <li>Any weed plant material (leaves, seeds, flowers, branches etc.) that are physically removed from plants chemically treated in situ as part of vegetation clearing will be removed from site (e.g., via waste bins)</li> <li>It is illegal to transport declared weeds. If declared weeds enter the site, these should be captured by the dedicated weeds officer and provided to the Northern Territory Governments Weeds Management Branch for disposal and to prevent emergence of seeds or seedlings.</li> <li>Chemical containers disposed of correctly</li> </ul>	On completion of weed control activities
Reporting	Compliance with NTG requirements	Annual update provided to DLPE to include weed control activities; updated locations of weed spread.	Annual survey report provided to DLPE


**Wild Horse 2D**  
**Weed Management Plan**

**Identified Declared Weeds Species:**

**Buffel Grass *Cenchrus ciliaris***

Under section 7(1) of the Weeds Act, Buffel grass (*Cenchrus ciliaris* and *Cenchrus pennisetiformis*) has been declared a weed for the purposes of preventing the plant entering into and managing the plant in the Territory. This declaration does not mean that land managers are expected to eradicate Buffel grass ([buffel-grass-declaration-fact-sheet.docx](#)).

This Buffel declaration will ensure there is a focus on reducing the negative impacts of Buffel on the environment and culture.

Common and scientific name	Observed location	Image	Description	Spread
Buffel grass <i>Cenchrus ciliaris</i>	Buffel Grass was widespread in the study area where soils were sufficiently deep, particularly in Acacia spp. woodlands on grey-brown sandy loam. The species' distribution was patchy; it was absent from extensive tracts of hummock and tussock grass woodlands in the western portion of the study area. The species was absent from red sandy soils and rocky areas.		Long lived dense tussock grass with deep tap-root system up to 1m tall. Stalks are tough and branched with swollen bases. Leaves are produced at the basal and higher nodes. Rhizomes up to 0.5 m long. Flower- varies in colour from straw to purple. Long cylindrical, dense, spike-like, 2.5–15 cm long. Leaves- blueish-green, hairy with pointed tips, flat or folded. Seed heads- Dense, hairy, cylindrical spike up to 15 cm long and 2 cm wide. Seeds enclosed in a cluster of bristles, giving 'fluffy' appearance.	Buffel grass spreads readily where the soils have a crumbly or loose, soft surface, such as those in Central Australia. In southern regions of the NT Buffel grass can be spread by grass seeds on people, animals, machinery and equipment.

The declaration of Buffel creates a duty for land owners and occupiers to:




- Take reasonable measures to prevent the land becoming infested with a declared weed
- Take reasonable measures to prevent a declared weed spreading to other land
- Follow a statutory weed management plan for any weeds on the land

The below Table includes actions from the Buffel Management Strategy which are and are not enforceable under the *Weeds Act*.

Actions from the Buffel Management Strategy which are enforceable under the Weeds Act		Key actions from the Buffel Management Strategy which are not enforceable under the Weeds Act
<ul style="list-style-type: none"> <li>• Limit introductions into areas where buffel is not established</li> <li>• No new introductions of buffel grass into the NT without a permit</li> <li>• Prevent land being 'infested' (i.e. dominated, excluding other species)</li> <li>• No transport of uncovered buffel grass</li> <li>• Avoid transport of contaminated product/machinery on public roads or between differing land tenures</li> <li>• Report buffel where it has not previously been known</li> </ul>		<ul style="list-style-type: none"> <li>• Prioritise treatment of new outbreaks and treat isolated outbreaks as a priority and follow up</li> <li>• Minimise soil disturbance</li> <li>• Avoid moving through infestations</li> <li>• Follow up after buffel control to prevent re-establishment during native rehabilitation</li> <li>• Implement vehicle, plant, equipment, machinery and construction material hygiene protocol to prevent re-introductions after control</li> </ul>
Objective	Management action	Frequency
Build capacity & commitment/Detection	Map Buffel Grass areas. Develop a monitoring plan Report Buffel where it was not previously known.	When driving lines for seismic work. Before seismic work During monitoring
Detection		
Early intervention	Prioritise treatment of new outbreaks Limit introductions into areas where Buffel is not established Provide education to road users at strategic locations, on vehicle hygiene/washdown procedures	During monitoring events Before seismic work.
Prevent establishment/ spread on land Prevent/reduce spread off-site	Implement vehicle, plant, equipment, machinery and construction material hygiene protocol to prevent spread/establishment and re-introductions after control of new outbreaks. Complete vehicle hygiene Designate wash down areas Monitor Buffel free area along the seismic lines,	When moving vehicles from areas of infestation into areas with no infestation For 5 years, annual post summer after completion of work and during rehabilitation. However, if no or very low rain even in summer weed survey may not be justified and will be discussed with Regulator at the time.

## Wild Horse 2D

### Weed Management Plan

IDENTIFIED WEEDS SPECIES			
Common Name	Observed Location	Image	Description
Bermuda Grass <i>Cynodon dactylon</i>	Bermuda Grass was restricted to the banks of larger river systems where it was generally dominant and formed a dense, thick vegetative cover on the ground.		A wiry perennial grass with creeping stolons and rhizomes. Foliage is gray-green to bluish green and forms dense mats. As a desirable turfgrass, bermudagrass is typically maintained at less than 1 inch mowing height. Plants grow during summer and produce seedheads through mid to late summer. Foliage turns brown and persists through the dormant winter months and new green shoots arise in the spring.
Mimosa Bush <i>Vachellia farnesiana</i>	Occurrences of Mimosa bush were uncommon and the species did not appear to be competing significantly with native flora species or affecting fauna habitats.		Mimosa bush is a rounded shrub or small tree generally growing 2–3 m high, occasionally to 5 m. It often forms thorny thickets, and is nearly always multi-stemmed. The branches grow in a zigzag shape and are usually a grey-brown colour with prominent white spots. Leaves are a ferny type, with 1–6 pairs of leaf 'branches' each with 5–20 pairs of narrow, rounded leaflets 4–8 mm long. Leaves are sometimes more of a yellowish green than a pure green. Thorns are found in pairs at the base of each leaf and can grow up to 10 cm long. Golden yellow to orangeish flowers are ball-shaped, about 1 cm across, and grow on stalks, usually two stalks at the base of each leaf. Flowers develop into clusters of cigar-shaped pods, slightly curved and up to 6 cm long. The pods are dark brown or black and woody at maturity, with seeds embedded in the pith. Pods do not split open and tend to stay on the plant for a length of time.
Spiked Malvastrum <i>Malvastrum americanum</i>	Spiked Malvastrum occurrences were sparse to locally dense in areas subject to prior disturbance and near some watercourses. The species likely competes with native species in isolated areas where infestations are dense.		Erect, annual, or short-lived perennial herb to 1m tall. Most parts with short, scattered, stellate hairs, dense on young growth. Leaves ovate to lanceolate. Flowers in a dense terminal spike, yellow to orangish yellow. Can produce root suckers.

## Wild Horse 2D Bushfire Management Plan

TRIDENT ENERGY WILD HORSE 2D	
Property land uses	Trident operates the Wild Horse 2D program under EP 145
NT Fire Management Zone	Alice Springs
NT Fire Protection Zone	EP145 is not located within a NT Fire Protection Zone
Aim	To minimise the potential and impact of fires from Trident's activities to people, environment, culturally significant sites, public infrastructure and community lands.
Objectives	Minimise the risk of causing bushfires from Trident's activities and to prevent accidental fire risk and ensure safe storage of chemicals
Plan Owner	Trident HSE Advisor

	Contact Details	Name
Bushfire Officer	[REDACTED]	[REDACTED]
Stakeholders	Contact Details	
Emergency	000 or 112 from mobile	
Bushfire NT	08 8922 0840 (head office) 088952 3066 (Alice Spring) <a href="mailto:Bushfires.nt@nt.gov.au">Bushfires.nt@nt.gov.au</a>	
NAFI	<a href="https://firenorth.org.au/nafi3/">https://firenorth.org.au/nafi3/</a>	
Bureau of Meteorology	<a href="http://www.bom.gov.au/">http://www.bom.gov.au/</a>	
NT Fire Incident Map	<a href="http://www.pfes.nt.gov.au/incidentmap/">www.pfes.nt.gov.au/incidentmap/</a>	
Secure NT	<a href="https://securent.nt.gov.au/alerts-">https://securent.nt.gov.au/alerts-</a>	
Central Land Council	[REDACTED]	

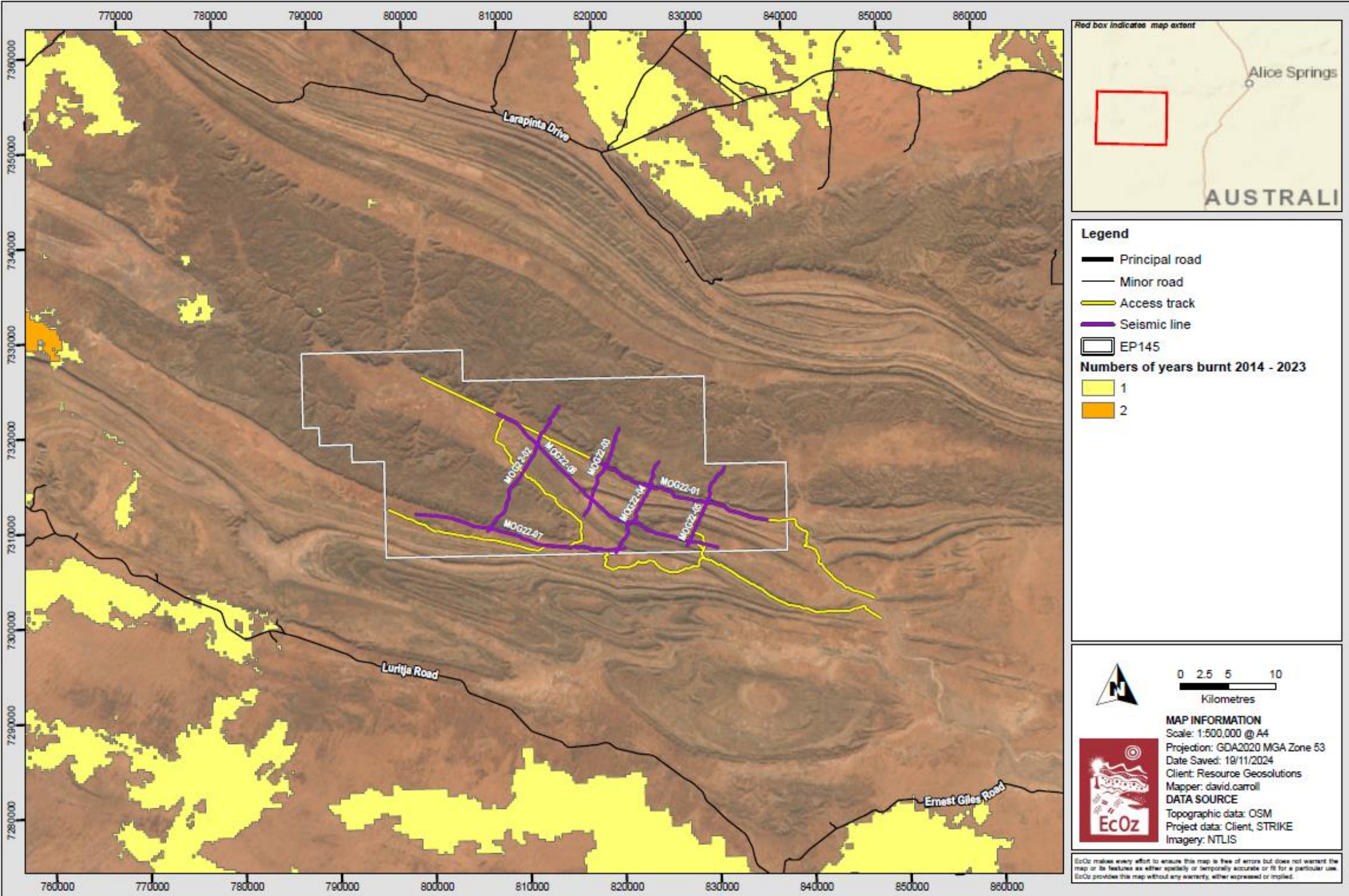
SEASONAL BUSHFIRE RISK CALENDAR			
Month	Bushfire risk	Month	Bushfire risk
Jan	High	Jul	Low
Feb	High	Aug	Low
Mar	High	Sep	Low
Apr	Medium	Oct	Medium
May	Medium	Nov	Medium
June	Low	Dec	High

BUSHFIRE RESPONSE—ERP	
Actions	
<b>Move Away</b>	Move yourself and others away from danger
<b>Raise Alarm</b>	Raise alarm on field radio <i>UHF Channel 1</i> /SOS alarm on tracker/ phone Notify emergency services Activate alarms and muster, as required
<b>Gather Information</b>	Fire location Wind direction Wind strength Size of fire Type of fire Any injured/missing personnel
<b>Mobilise SERT</b>	Mobilise Site Emergency Response Team (SERT) if additional resources are needed The control of a bushfire rests with owner / occupier of the land to ensure fire risk is managed to ALARP, all elements of this Management Plan are to be adhered to. SERT will be engaged in the event of fire being reported. In all instances of uncontrolled fire, the SERT leader shall notify local fire control officers / wardens (ie. Rural Fire Brigades and applicable landowners). SERT will also review what plant must be shut down or additional fire breaks be prepared.
<b>Notify</b>	Neighbours in surrounding properties and local fire wardens / Rural Fire Brigades.
<b>Monitor</b>	Weather information Wind direction Local fire information/NAFI Road condition reports
<b>Record and Report</b>	All fire incidents, near misses and potential hazards are logged through Trident's incident reporting system for further investigation and initiating corrective actions

BUSHFIRE ALERTS	
<b>Advice</b>	Areas which have either a small fire which is controllable, planned fuel reduction burning or an area likely to be affected by smoke
<b>Watch and Act</b>	An area that has a bushfire approaching a community, changing with conditions or will threaten property or life if not controlled
<b>Emergency Warning</b>	An area that is in immediate danger from the bushfire and you must act now to protect your life

BUSHFIRE MANAGEMENT ACTIONS	
Activity	Management Controls
<b>Seismic exploration program</b>	Fire extinguishers to be available within vehicles Designated smoking areas provided Ignition sources to be managed Onsite risk assessment to be conducted each day No open fires permitted
<b>General</b>	Staff members responsible for managing bushfire risk to be competent in the role they perform Daily monitoring for fire alerts to be undertaken using NAFI and/or local contacts, and communicated to staff during daily toolbox talks. Fuel load mapping using NAFI fire scar data to be undertaken annually prior to fire season (Dec-Mar) to map season conditions and allow time for appropriate fire management (including controlled burns if appropriate) Fire access tracks to be maintained. Emergency response plans to include response requirements for fires Inductions to include bushfire risks, hazardous zones, controls, communication procedures, and emergency response procedures Storage of chemicals to be in accordance with the relevant Australian Standards Sufficient water to be available onsite to enable Trident to provide an initial response to an accidental fire If unable to control fire notify Bushfires NT and properties where spread is likely to go Fire break maintenance and infrastructure design mitigations not required because there is no planned infrastructure related to proposed activity.

Fire scar data from North Australia and Rangelands Fire Information (NAFI) indicate that EP145 has not been burned in the past 10 years. Recent proximate bushfires occurred approximately 25 km south of the proposed seismic lines in 2022



Path: Z:\01 EcOz\_Documents\05 EcOz M-Files GIS\2024\EZ24252 - Wild Horse 2D seismic Survey EMP\1. Project Files\2. Report Maps\EZ24252 - Wild Horse 2D Seismic Survey\EZ24252 - Wild Horse 2D Seismic Survey.aprx | Map of fire history (2014 - 2023)

Map of fire history (2014 - 2023)

# Wild Horse 2D

## Rehabilitation Management Plan

TRIDENT ENERGY WILD HORSE 2D	
Property land uses	Gas exploration
Climate	In general, EP 145 experiences an arid to semi-arid climate, which is characterized by hot dry summers and cool dry winters with a low average annual rainfall. Typically, more rainfall occurs in the summer months associated with monsoonal influences; however, the amount of rainfall in the arid zone has a history of being highly variable.
Site Description (pre-disturbance)	EP 145 located 190km WSW of Alice Springs in the Northern Territory adjacent to the existing Mereenie field (OL4)

Environmental Strategies and timing		
Activity	Strategies	Timing
Analogue sites	Identify appropriate analogue sites for each of the disturbance areas	After the first wet season in conjunction with the first monitoring event
Post seismic activities	Remove rubbish Re-instate soils Re-spread vegetation previously cleared	Commence post seismic activities
Land use	The disturbed areas will be returned to the original land use.	Commence post seismic activities
Soil Stability	Remove any flow concentration points that may block overland sheet flow Re-instate natural drainage channels (i.e. removal of bunds and structures that temporarily altered flow paths) Return soil profile with topsoil replaced as final layer where possible Ensure all cleared areas have a rough surface to aid in water, seed and litter catchment Erosion and sedimentation devices installed and maintained	Commence post seismic activities
Contaminated soil	Undertake remediation of contaminated soil in accordance with spill management plan / emergency response plan	Remediation of contamination to be undertaken immediately.
Revegetation	Revegetation of disturbed areas is undertaken post soil stability. Where possible natural regeneration of areas will be promoted. If there is limited materials to promote regeneration then seeding a cover crop may be used to assist in soil stability until pioneer species emerge. Where natural regeneration requires assistance seeding of native plants will be undertaken.	Commence post seismic activities
Monitoring	All monitoring to be undertaken by a suitably qualified person and in accordance with this Plan. Identified restricted work areas within 100m of disturbed areas will be monitored during rehabilitation monitoring to ensure no occurrences of weeds or erosion.	Refer to the rehabilitation measurement criteria and monitoring program

Contact Details		Name
Rehabilitation Officer		
Rehabilitation Objectives	Actions for successful Rehabilitation	
Minimise disturbance as far as reasonable practicable.	Utilisation of a multi criteria assessment (inclusive of rehabilitation objectives) to select a preferred location	
Progressively rehabilitate significantly disturbed land which is not required for ongoing activities	Completion of pre-disturbance surveys	
Return all disturbed areas to a safe and stable landform as close as possible to the surrounding environment	Preparation of maps defining boundaries of different rehabilitation management areas or zones and infrastructure	
Ensure significantly disturbed land is re-established to its pre-disturbed condition and land use	Topsoil is stockpiled onsite around the edges of the lease in low profile mounds (<2m) to preserve the biological activity	
No residual contamination	Vegetation stockpiled separately on the edge of the lease preserved for seed bank, habitat and erosion protection	
No land management issues for future land managers.	Erosion and sediment devices are put in place as per the ESCP	
	All wastes managed per the EMP	

Rehabilitation Risks	
Key Risks	Controls
<b>Drought</b> — impacting the establishment of rehabilitated vegetation	Time rehabilitation actions to coincide with the beginning of the wet season, to ensure access to the site and maximize the establishment period of vegetation over the wet season Re-spread topsoil across the site to utilize the local seed bank Ongoing monitoring to identify if further seed inputs are required Collection of seed from the local area to ensure seed stock is suited to the climatic conditions of the site.
<b>Fire</b> —impacting revegetation	Establish a mix of perennial and annual grass species Ongoing monitoring to determine fire impacts on revegetation. Ongoing monitoring to determine if further seed inputs are required
<b>Grazing</b> —impacting revegetation	Establish a mix of perennial and annual grass species Re-spread timber with top soil Ongoing monitoring to determine grazing impacts on revegetation. Ongoing monitoring to determine if further seed inputs are required Ongoing monitoring to determine if fencing is required
<b>Lack of topsoil and soil inversion</b> — impacting rehabilitation success	Soils are to be returned to pre-disturbance soil profiles Topsoil spread over the entire lease evenly. Topsoil may need to be made or brought in if there is a lack of topsoil
<b>Exposed Ground</b> — leading to an increase in weed establishment and/or erosion	Remove windrows and topsoil's Respread of topsoil and vegetated mater across the site Annual weed surveys of rehabilitated area once rehabilitation is established Control of any weed incursions

Decommissioning and Rehabilitation Process		
Asset	Specific activities to the asset	General activities across all assets
Seismic line	Remove rubbish. Re-instate soils. Re-spread vegetation previously cleared to promote natural regeneration. Implement ESC devices at high-risk erosion areas. Re-seed if required	Any imported gravel material is removed and returned to the source quarry or utilized elsewhere on Trident's operational sites. The site is re-contoured as close as possible to the pre-existing natural landscape. Hardstand is deep ripped to relieve compaction, encourage infiltration and water retention. Topsoil is respread evenly over the lease area and lightly scarified to encourage moisture retention and seed capture. Vegetation is respread over the lease, this acts as erosion control, provides habitat and promotes natural revegetation.
Camps	All services are blinded and left safe or removed. Sewage treatment facility is removed. Temporary fence around the irrigation area removed	Any weeds or invasive species are managed per the weed management plan during the rehabilitation process. Temporary erosion and sediment controls to support the rehabilitation designed and installed where required. All waste removed from site. If natural revegetation success is low, seeding may be required, this will be assessed through the monitoring program.

Seasonal Rehabilitation Calendar					
Mo	Season	Activities	Mo	Season	Activities
Jan	Wet	Revegetation Broadcasting seeds Collection of seeds	Jul	Dry	Decommission and remove non-essential infrastructure Install ESC for new infrastructure Establish analogue sites for new infrastructure
Feb	Wet		Aug	Dry	
Mar	Wet		Sep	Dry	
Apr	Wet	Repair ESC controls Weeds survey and management Collection of seeds	Oct	Dry	Decommission and remove non-essential infrastructure Install ESC for new infrastructure Establish analogue sites for new infrastructure Prepare rehabilitation areas for wet season
May	Wet	Repair ESC controls Weeds survey and management Collection of seeds Complete rehabilitation annual monitoring	Nov	Transition	Check ESC controls Prepare rehabilitation areas for wet season
June	Transition	Repair ESC controls Monitor and prepare for bushfires	Dec	Wet	Revegetation Broadcasting seeds Collection of seeds

Wild Horse 2D Rehabilitation Management Plan — Rehabilitation Measurement Criteria and Monitoring Program				Contact Details		Name	
				Trident Rehabilitation Officer			
Acceptability Criteria				Annual Monitoring Program			
Rehabilitation Outcome	Endpoint(s)/Performance Standards	Measurement Criteria	Rational	Frequency	Proposed Methodology (adaptive depending on seasonal conditions)	Rational	Corrective Actions
<ul style="list-style-type: none"> <li>The vegetation composition (e.g., type, density and maturity) of the rehabilitation is recognizable as the target vegetation community and indistinguishable from the surroundings.</li> <li>The vegetation structure of the rehabilitation is recognizable as or is trending towards the target plant community.</li> <li>No adverse erosion</li> </ul>	<ul style="list-style-type: none"> <li>Dominant species in analogue sites are represented in rehabilitated areas.</li> <li>Community structure is substantially the same as the analogue site/s groundcover, shrubs and trees.</li> <li>Perennials have established, stabilizing soils and reducing erosion potential.</li> <li>Habitat structures and habitat quality are substantially similar to analogue sites, creating connection to the adjacent landform and vegetation allowing for fauna re-use of the site.</li> <li>Completely stable (or in dynamic systems such as dunal landforms, same degree of stability as surrounding terrain)</li> </ul>	<ul style="list-style-type: none"> <li>Ground cover - 75% foliage cover and density of the analogue site</li> <li>Perennial Cover- recruitment of woody perennial species achieves 75% of the analogue site.</li> <li>Plant species richness and abundance achieves 75% of the analogue site.</li> <li>No declared weed species under the Northern Territory Weeds Management Act</li> <li>No weed species</li> <li>50% of the organic litter and coarse woody debris of the analogue site</li> <li>No evidence of soil subsidence and &lt;2% erosion across the site (qualitative – photo evidence of scar-ring, rill/sheet erosion)</li> </ul>	<ul style="list-style-type: none"> <li>Cover equivalent to 75% of the analogue site/s is likely to self-sustain over time and rehabilitated areas become ecologically integrated with surrounding areas.</li> <li>Species richness shows the rehabilitation site is able to support the full complement of species from analogue sites, even if not all species are yet at the same abundance, noting that in an arid environment, species such as spinifex grow extremely slowly.</li> <li>In arid regions soil stability is critical for the success of rehabilitation</li> </ul>	<ul style="list-style-type: none"> <li>Annually, commencing after the first wet season, and noting the following: <ul style="list-style-type: none"> <li>The Amadeus Basin is located in an arid region and establishment of vegetation generally is slower than areas with higher rainfall. Therefore, it is unlikely that quantitative assessments will provide meaningful data to determine rehabilitation success in years 1, 2 and 3</li> </ul> </li> <li>In year 1 the analogue sites will be set up, the photo monitoring points will be established and the permanent woody species transect will be established. The site will be assessed for stability and any weed issues.</li> <li>2 and 3, if there is no evidence of vegetation regeneration but the sites appear to be stable, and free from erosive forces or fire effects, a visual assessment only of cover and structure will be made.</li> <li>In year 4, and year 5 monitoring against endpoints will be undertaken. An adaptive approach will be taken year on year for the monitoring. A suitably qualified person may adapt the monitoring based on the seasonal conditions (i.e. the wet season). This will be documented in the annual rehabilitation report.</li> <li>Post 5 years the EMP will need to be updated and the data collected will be used to update the new rehabilitation plan.</li> </ul>	<ul style="list-style-type: none"> <li>2 or more analogue sites in nearby undisturbed vegetation community and landforms as per the analogue definition and selected by a suitably qualified person.</li> <li>Establish permanent 100x4m woody species transects.</li> <li>Establish photo monitoring and collect photos.</li> <li>Record any weather events during the period.</li> <li>Check for subsidence across the rehabilitated area.</li> <li>Assess the % of erosion across the rehabilitated area.</li> <li>Check for any loss of topsoil through erosion and map areas of concern.</li> <li>Check for soil inversion issues and map areas of concern.</li> <li>Weed Survey</li> </ul> <p style="text-align: center;"><b>Year 2 and Year 3</b></p> <ul style="list-style-type: none"> <li>Check for integrity of works and ability for future rehabilitation success.</li> <li>Record any weather events during the period.</li> <li>photo monitoring</li> <li>Check for subsidence across the rehabilitated area.</li> <li>Assess the % of erosion across the rehabilitated area.</li> <li>Check for any loss of topsoil through erosion and map areas of concern.</li> <li>Check for soil inversion issues and map areas of concern.</li> <li>Weed survey.</li> </ul> <p style="text-align: center;"><b>Year 4</b></p> <ul style="list-style-type: none"> <li>Woody species transects from the permanent 100x4m.</li> <li>Collect 1x1 m ground cover quadrants every 10m along a transect. Transect to be randomly selected.</li> <li>Photo monitoring collected.</li> <li>Record any weather events during the period.</li> <li>Check for subsidence across the rehabilitated area.</li> <li>Assess the % of erosion across the rehabilitated area.</li> <li>Check for any loss of topsoil through erosion and map areas of concern.</li> <li>Check for soil inversion issues and map areas of concern.</li> <li>Weed survey.</li> </ul> <p style="text-align: center;"><b>Year 5</b></p> <ul style="list-style-type: none"> <li>Woody species transects from the permanent 100x4m.</li> <li>Collect 1x1 m ground cover quadrants every 10m along a transect. Transect to be randomly selected.</li> <li>Photo monitoring collected.</li> <li>Record any weather events during the period.</li> <li>Check for subsidence across the rehabilitated area.</li> <li>Assess the % of erosion across the rehabilitated area.</li> <li>Check for any loss of topsoil through erosion and map areas of concern.</li> <li>Check for soil inversion issues and map areas of concern.</li> <li>Weed survey</li> </ul>	<ul style="list-style-type: none"> <li>As per the Code of Practice A3.9 (b) the rehabilitation plan should be appropriate to the scale and nature of the activity. Experience shows operating in the Amadeus Basin, which is an arid region the establishment of vegetation takes time. It takes 10+ years for sites to reach the rehabilitation outcomes. The rehabilitation plan has been developed to meet the scale and nature of the rehabilitation (i.e. size of the disturbance and the time to rehabilitation)</li> <li>As per the Code of Practice A3.9 (e) Regular maintenance and at least yearly monitoring of rehabilitated areas must take place to measure compliance with the rehabilitation Plan. Rehabilitation success relies on good site preparation and rainfall and an adaptive approach for monitoring is required to take in the seasonal conditions. This will rely on a suitably qualified person to assess the seasonal variations and match the appropriate monitoring to undertake each year. This could include the use of technical advances like drones, satellites, remote sensing and lidar to assess the site stability and vegetation cover.</li> <li>The quantitative data is of significant value as the rehabilitation matures and reaches the acceptability criteria. In addition, the year-on-year growth in an arid environment is slow and therefore yearly monitoring of all parameters is not necessary. The key is to assess if the site is on the right trajectory to achieve the acceptability criteria, which aligns with the adaptive management approach.</li> </ul>	<ul style="list-style-type: none"> <li>Weeds impacting revegetation success – implement the weed management plan.</li> <li>Pest species impacting the rehabilitation success – Identify the pest species and put in place measures to protect the rehabilitated areas (e.g. fencing)</li> <li>Poor vegetation germination/re-growth is limited in richness/ or community structure inconsistent with the analogue site – Infill seeding and/or top dress with a soil additive/topsoil or fertilize.</li> <li>Erosion and sediment control remediation of failed erosion and sediment controls</li> <li>Review the re-profiling of the site to address any stabilization issues. Undertake earthworks for re-profiling as necessary</li> </ul>

# Wild Horse 2D Spill Management Plan






SPILL RISKS	
Key Risks	Controls
Contamination of groundwater	Avoidance—Groundwater will not be accessed as part of the Wild Horse 2D.
Contamination of surface waters	The storage of contaminants will be in accordance with relevant SDSs and within dual lined tanks, containers or pallets (with capacity of 110% of storage receptacle) and no closer than 50m of any identified watercourses (ephemeral or running). In the event of a release to grade, the area will be immediately addressed with either a spill kit to contain / absorb the spill or where contaminants have entered a watercourse an appropriate aquatic spill kit will be deployed to contain the spill and suck up contaminated water for waste disposal.
Contamination of soil	In the event of a release to grade the area will be immediately addressed with either a spill kit to contain / absorb the spill or where contaminants have soaked into topsoil it will be scraped up and disposed of as contaminated material. All contaminated soil is to be captured and disposed of unless deemed significant (ie. Level 3) where a remediation plan will be developed as part of the incident reporting process. This will include an ongoing remediation and sampling program until deemed 'clean'

TRIDENT ENERGY WILD HORSE 2D	
Property land uses	Trident activities for the Wild Horse program are under EP 145
Aim	To minimize the potential impact of spills from Trident's activities to people, environment, culturally significant sites, public infrastructure, and community lands.
Objectives	Operate with due care to prevent loss of containment, ensure safe storage and handling of potentially contaminating substances and undertaking effective spill clean- up
Communications	

SPILL SCENARIOS AND MANAGEMENT												
Activity	Activity Duration	Mechanism	Location	Quality	Approximate Quantity (per event)	Key Management Control						
Storage of chemicals, hydrocarbons, sewage, and greywater	66 days	Container rupture Lids / taps not fitted / fitted correctly	Within Vehicles Temporary camp	As per SDS	Vehicle—100L Camp—10,000L	Daily inspection of vehicles Minimize the quantity of chemicals carried onsite to only those required for the seismic exploration program. Place spill absorbent pad beneath storage containers to minimize contact with the soil. Secondary containment at the camp site storage areas Daily check of tanks and secondary containments						
							Rig and weight drop tractor refueling	Daily if required	Incorrect refueling setup. Poor refueling practices	Seismic Line	100 L	Operators maintain visual contact whilst refueling all machinery.
							Storage of liquid waste (oils degreasers etc.)	66 days	Container rupture Lids not fitted / fitted correctly	Within vehicles Temporary camp	Less than 2L	Daily inspection of waste storage area and ensure all hazardous liquids are stored in dual lined containers or on bunded pallets.

SPILL TIER LEVELS		Spill (L)		
		20-200L	200-2,500 L	>2,500 L
Receiving Environment	Bund or contained impervious area	Internal report	Level 1	Level 1
	Onsite lease pad, camp pad, hardstand, plant operating areas (CTP/ESS), road or work area compacted or sealed surface	Internal report	Level 1	Level 2
	Undisturbed permeable surfaces/areas adjacent to lease pads, camp pads, onsite roads where spills have moved beyond the approved activity area	Level 1	Level 2	Level 3
	Sensitive environmental or cultural feature (waterway, drainage lines, wetland, high valued habitat and sacred site) or where the spill has, or has the potential to, cause material or serious environmental harm	Level 2	Level 2	Level 3

<b>LEVEL 1</b>	Spills can be contained within the disturbance footprint & cleaned up by site personnel with no external involvement. Spills < 200L Clean-up time generally < 1 day Examples: diesel spills during fuel transfer, oil spillage during routine maintenance, chemical spills during mixing, and storage, small wastewater spills ERP not triggered
<b>LEVEL 2</b>	Spill that may not be completely contained within the site boundary and/or may require additional resources to clean-up. Has not entered sensitive environment or cultural feature. ERP not triggered. Clean-up time <1 week ERP not triggered
<b>LEVEL 3</b>	Spills cannot be contained and require substantial additional resources to clean up or the spill has entered a sensitive environment or cultural feature. Clean-up time > 1 week ERP triggered. <b>Offsite incident</b> —EPA must be notified of any incident outside of the OL that is causing or threatening to cause pollution as soon as practicable, but no less than 24 hours after becoming aware of the incident. NT EPA Pollution Hot- line 1800 064 567.

SPILL RESPONSE		
Actions		
Stop		Request assistance if needed. Ensure all personnel are safe and clear of area -Stay clear of vapor, fumes, smoke and spills. Evacuate and muster (if necessary) If safe to do so: Remove any potential escalation factors (e.g. ignition sources etc.) Isolate the spill source. For larger incidents, emergency services may be mobilized to assist under the Emergency Response Plan (ERP)
Contain		Review SDS If safe to do so, contain the spill using containment resources. Distribute spill control and absorbent material around and over the entire spill area, working from the outside to inside
Report		Report the spill and notify as per spill incident reporting requirements. Gather as much information about the spill as you can including spill source and location, type of waste/chemical, spill area, volume released. Notify neighbors in surrounding properties if required under the ERP
Clean-up		Clean-up the spill using clean-up equipment (e.g. spill kit materials etc) as soon as possible by: Recover free liquid. Remove contaminated material and store in the waste storage area. Dispose clean-up materials at licensed waste disposal facility. If clean-up takes longer than one day, use fencing to prevent access by personnel, livestock, and terrestrial fauna Develop a remediation management plan for contaminated sites
Manage/ Improve		Investigate the root cause of the spill and implement management actions

	Environmental Harm	Any harm to or adverse effect on the environment, or any potential harm (including the risk of harm and future harm) to or potential adverse effect on the environment, of any degree or duration and includes environmental nuisance Environmental nuisance, in relation to land, means an adverse effect on the amenity of the land caused by noise, smoke, dust, fumes or odour, or (b) an unsightly or offensive condition on the land
	Material Environmental Harm	Environmental harm that is not trivial or negligible in nature, or consists of an environmental nuisance of a high impact or on a wide scale, or results, or is likely to result, in not more than \$50,000 being spent in taking appropriate action to prevent or minimise the environmental harm or rehabilitate the environment, or results in actual or potential loss or damage to the value of not more than \$50,000
	Serious Environmental Harm	Environmental harm that is more serious than material environmental harm and includes environmental harm that is irreversible or otherwise of a high impact or on a wide scale, or damages an aspect of the environment that is of a high conservation value, high cultural value or high community value or is of special significance, or results or is likely to result in more than \$50,000 being spent in taking appropriate action to prevent or minimise the environmental harm or rehabilitate the environment, or results in actual or potential loss or damage to the value of more than \$50,000

SPILL INCIDENT NOTIFICATION		
Recordable Incidents	Reportable Incidents	WMPC Act Incident
<p><b>DETAIL</b></p> <p>Recordable incidents are defined in the <i>Petroleum (Environment) Regulations 2016</i> as meaning an incident, other than a reportable incident, arising from a regulated activity that:</p> <ul style="list-style-type: none"> <li>has resulted in an environmental impact or risk not specified in the current EMP for the activity, or</li> <li>has resulted in a contravention of an environmental performance standard specified in the current EMP, or</li> <li>is inconsistent with an environmental outcome specified in the current EMP.</li> </ul> <p><b>ACTION</b></p> <p>DLPE of a recordable incident as soon as practicable but no later than 15-days after the reporting period (agreed period or each 90-day period after the day on which the EMP is approved).</p>	<p><b>DETAIL</b></p> <p>Reportable incidents are defined in the Regulations as meaning an incident, arising from a regulated activity that has caused, or has the potential to cause, material environmental harm or serious environmental harm.</p> <p><b>ACTION</b></p> <p>An interest holder must notify DLPE of a reportable incident as soon as practicable but no later than 2 hours after the first occurrence of the incident or after the time the interest holder becomes aware of the incident.</p> <p>DLPE can be notified via the DLPE Onshore gas non-compliance hotline on 1800 413 567.</p> <p>Any verbal report to DLPE must be followed up by a written report from the Project Manager within three days in accordance with the Petroleum (Environment) Regulations.</p> <p>In the unlikely event a spill impacts a restricted works area notification will be made to AAPA and the relevant Traditional Owners as part of ongoing community engagement practices.</p>	<p><b>DETAIL</b></p> <p>Where contaminants or waste is not confined within the land on which the petroleum activities are undertaken (i.e., the approved disturbance areas where the petroleum activity is occurring).</p> <p><b>ACTION</b></p> <p>The EPA must be notified of any incident causing or threatening to cause pollution as soon as practicable, but no less than 24 hours after becoming aware of the incident.</p> <p>The notification shall be made to the NT EPA Pollution Hotline 1800 064 567.</p> <p>In the unlikely event a spill impacts a restricted works area, notification will be made to the relevant Traditional Owners through AAPA.</p>

**Types of Incidents**

**Reportable Incident** — an incident, arising from a regulated activity, that has caused or has the potential to cause environmental harm, material environmental harm or significant environmental harm (refer to definition of environmental harm / material / serious environmental harm in this plan). All reportable incidents shall provide notice of the incident within 2 hours (once the interest holder becomes aware of the incident) orally or in writing outlining:

- the contact details of the interest holder; and
- all material facts and circumstances about the reportable incident that the interest holder knows or is able, by reasonable search or enquiry, to find out; and
- information about any action taken to avoid or mitigate material environmental harm or significant environmental harm in relation to the reportable incident; and
- information about the corrective action that has been taken, or is proposed to be taken, to prevent a similar reportable incident.

If notification is provided orally, the interest holder must, not later than 24 hours after giving oral notice, give the Minister a written notice about the reportable incident specifying all the matters mentioned above.

An initial report about the reportable incident shall be given to the Minister within 3 days of the incident first occurring and shall include: the results of any assessment or investigation of the conditions or circumstances that caused or contributed to the occurrence of the reportable incident, including an assessment of the effectiveness of the designs, equipment, procedures, and management systems that were in place to prevent the occurrence of an incident of that nature.

- the nature and extent of the material environmental harm or significant environmental harm that the incident caused or had the potential to cause.
- any actions taken, or proposed to be taken, to clean up or rehabilitate an area affected by the incident.
- any actions taken, or proposed to be taken, to prevent a recurrence of an incident of a similar nature.
- A final report about the reportable incident shall be given to the Minister as soon as practicable but no later than 30 days after the clean up or rehabilitation of the area affected by the reportable incident is completed. The final report will include a root cause analysis of the incident.

**Recordable Incident** — an incident arising from a regulated activity that:

- has resulted in an environmental impact or environmental risk not specified in the current plan for the activity; or
- has resulted in a contravention of an environmental performance standard specified in the current plan for the activity; or
- is inconsistent with an environmental outcome specified in the current plan for the activity; and is not a reportable incident.

All recordable incidents shall be reported within 15 days of end of each reporting period (every 90 days after EMP approval). The report shall contain:

- a record of all recordable incidents that occurred during the reporting period; and
- all material facts and circumstances concerning the recordable incidents that the interest holder knows or is able, by reasonable search or enquiry, to find out; and
- any action taken to avoid or mitigate any environmental impacts and environmental risks of the recordable incidents; and
- the corrective action that has been taken, or is proposed to be taken, to prevent similar recordable incidents.

## Wild Horse 2D Personnel & Equipment List

### (a) Personnel - Civils

Role	Number
Seismic OCR	1
OCR Offsider/HSE/Medic	1
Civils Manager / Mechanic	1
Civils Operator	1
Campy / Cook	1

### (b) Personnel - Drilling

Role	Number
Seismic OCR	1
OCR Offsider/HSE/Medic	1
Drill Manager / Mechanic	1
Driller / Loader	5
Campy / Cook	1

### (c) Personnel - Acquisition

Role	Number
Seismic OCR	1
OCR Offsider/HSE/Medic	1
Crew Manager	1
Seismic Technician / Shotfirer	6
Machinery Operator	2
Campy / Cook	1

**(d) Civils & Shothole Drilling Equipment**

Item	Number
Grader – Caterpillar 12H (or equivalent)	1
GeoProbe 3126GT GeoTech Drill Rig	1
GeoProbe 6610DT GeoTech Drill Rig	1
EcoProbe EP-10 66Hz Sonic GeoTech Drill Rig	1
EcoProbe Eco-mini 66Hz Sonic GeoTech Drill Rig	1
Electric Track Mounted Compressor	2

**(e) Source Equipment**

Item	Number
GPEG-500 Weight Drop System	1
WD1400 Weight Drop System	1
ASV RT-50 Compact Track Loader	1
ASV RT-135 Forestry Track Loader	1
Daveytronic® III Digital Blasting System	2
Geoprime dBX™ DB1000 Seismic Charges	450
Electronic detonator Daveytronic®	900

**(f) Vehicles**

Item	Number
Toyota LandCruiser 4x4 Tray top – Mechanic/Supply	3
Toyota Hilux 4x4 Dual Cab – Seismic Crew	2
Toyota Landcruiser 4x4 Ambulance - Paramedic	1
Toyota Landcruiser 4x4 Trayback – Seismic OCR	1

**(g) Camp**

<b>Item</b>	<b>Number</b>
QUICKCAMPS EXPLORATION SERIES – KING KITCHEN/DOUBLE/BATHROOM	1
QUICKCAMPS EXPLORATION SERIES – CRIB / MEETING / BATHROOM	3
QUICKCAMPS EXPLORATION SERIES – 4 BED SLEEPER	1
Trailer – Potable Water	1
Trailer – Grey Water	1
Trailer – Black Water / Hard Waste	1
Trailer – 45 kVA Generator	1
Trailer – Double Lined Fuel - 10,000 ltr	1

Trident Energy

Wild Horse 2D

SEISMIC SURVEY

EP145

Amadeus Basin

EMERGENCY RESPONSE PLAN

DOC ID: 1037AMAMOG-07

REVISION: 1

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## DOCUMENT CONTROL – ISSUE and AMENDMENT

### Document Approval

Document Approval							
Rev	Description	Original	Review Date	Review Approval	Date	Approved	Date
0	Issue for Use	15/05/24				M.Turner	16/05/24
1	Update Interest Holder		23/11/24			J Daws	24/11/24

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# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## Glossary and Definitions

Item	Description
AIR	Action Item Register
EMS	Emergency Management System
Close Out	Completion of a <b>Corrective Action</b> in accordance with the procedure
Competent Person	A person who has acquired through training, qualification, or experience, the knowledge and skills, qualifying that person to perform the task required by this Standard
Continual Improvement	Process of enhancing the MS to achieve improvements in overall HSE performances, in line with Tridents Policies. NOTE: Process need not take place in all areas of activity simultaneously.
DMA	Decision Making Authority – CEO or similar
Document Custodian	Usually an Operations line or discipline manager appointed to approve new documents or changes to existing documents, relevant to their area of responsibility
Emergency	Instance/undesirable conditions that can develop quickly, and danger to humans, damaging facilities / assets, and / or damage the environment, which must be addressed quickly and appropriately to prevent subsequent occurrence, spreading and stop the incident
EMT	Emergency Management Team, the Brisbane based team assigned to support the ERT, strategically managing the emergency situation at a Wild Horse 2D operational site
EP	Environment Plan - the element of the management system that specifically addresses environmental management
ER	Emergency Response
ERP	Emergency Response Plan, specifically prepared for the Wild Horse 2D field operations
ERT	Emergency Response Team, a team which is assigned to tactically address an emergency at a Wild Horse 2D field operations site
Hazard	A source or a situation with a potential for harm in terms of human injury or ill-health, damage to property, damage to the environment or a combination
Health Surveillance	Monitoring of individuals for the purpose of identifying changes in health status that may be due to occupational exposure to a hazard
HR	Human Resources
HSE	Health, Safety, Environment – the incorporation of all elements
Incident	An undesired event, resulting in, or having the potential to result in injury, ill health to personnel, the environment, damage to property or loss of process (including near misses or high potentials)
Interested Stakeholders	Parties, individual(s) or group(s) concerned with, or affected by the HSE performance of SA
May/Should	Defined as a possible/preferred/optional course of action
OHS	(workplace) Occupational Health and Safety
Personnel	Includes workers, employees, contractors, sub-contractors
Pollution	Spills of fuel, lubricating oil and/or chemicals, uncontrolled, into the environment
PTW	Permit to Work

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

Item	Description
PC	Principal Contractor
Risk	(In relation to any potential injury or harm) the likelihood and consequence of that injury or harm occurring. NOTE: Wherever the term 'risk' occurs in this Plan this is to be taken to mean 'work place or occupational health and safety risk'.
Shall/Will	Defined as a mandatory course of action
SOP	Standard Operating Procedure
TPC	Third Party Contractor
Worker	WHS title for all TRIDENT personnel (titled 'Employee' in previous legislation)
ES	Emergency Services
MAE	Major Accident Event(s)
Pollution	Spills of fuel, lubricating oil and/or chemicals, uncontrolled, into the environment
Stakeholders	Any interested parties, individual(s) or group(s) concerned with, or affected by the activities or performance of TRIDENT operations

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 1. INTRODUCTION

This Emergency Response Plan (ERP) is the primary source of reference for TRIDENT emergency preparedness and response procedures to cover the Wild Horse 2D.

The ERP is intended to guide the site Emergency Response Team Leader (Site ERTL) and site Emergency Response Team (ERT) in their response to effectively manage site level emergencies and to return the site to normal operations as quickly as possible.

The ERP outlines the organisational structure and the specific roles and responsibilities of designated key personnel who will participate in a tactical response to a field related emergency and to ensure the health and safety of other personnel who may be affected by that emergency. Further support is provided to our ERPs and ERTs through the CEMS (see Figure 1), specifically the Emergency Management Plan (EMP).

### 1.1 Overview

TRIDENT is committed to zero harm in its workplaces (so far as is reasonably practicable) and will take every reasonable precaution to avoid emergencies through its daily operations and long-term strategic planning by operating in a safe and responsible manner. Through this ERP, TRIDENT undertakes to establish and maintain appropriate emergency preparedness for all operations and activities.

This ERP has been prepared to support and contribute to that commitment, by providing a standard methodology for the ERT Leader (ERTL) and ERT, in coordinating strategic responses to an emergency. TRIDENT has developed this ERP to actively manage its preparations for, response to and recovery from any emergency, which may threaten the safety and security of TRIDENT's personnel and the environment,

### 1.2 Statutory Legislative Framework

This ERP adheres to the principles and guidance of NT's Work Health and Safety (National Uniform Legislation) Act 2011 and other legislative elements and standards, which may also be applicable, including:

- Petroleum Act 1984
- Environmental Protection Act 2019 and associated Environment Protection Regulations 2020

### 1.3 Objectives

The objective of this ERP is to ensure (so far as is reasonably practicable), an effective CEMS is in place to allow TRIDENT to prepare for, respond to and recover from events that have the potential to threaten the safety and health of the, workers, the environment, asset integrity and/or PTRIDENT operations associated to the other potential operational activities.

### 1.4 Scope

This ERP applies to the Wild Horse 2D site and/or activities associated to TRIDENT operations and addresses all categories of emergency situations.

### 1.5 Emergency Definition

For the purpose of this ERP, an emergency is defined as an unexpected or unplanned event, which has the potential to threaten or impact life, the environment and/or local community interests or property.

An emergency is a deviation from normal operations and objectives, that requires immediate attention to prevent escalation.

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 1.6 Operational Details

The corporate operations will be managed from the TRIDENT Office which is the location of the Emergency Management Room (EMR), staffed by the Emergency Management Team (EMT) for the strategic management of any emergency relating to operations.

TRIDENT will conduct all its field operations using this ERP, with the Field Staff or Operating Company Representative the nominated Operations person in charge (PIC) and is responsible for, and in charge of all emergency responses infield, if under TRIDENT control. Procedures described in this ERP are intended to support planning and to reflect the regulatory requirements for operations conducted in the permit area.

## 1.7 Participants in the Plan and their Responsibilities

All TRIDENT personnel will be considered participants in this ERP and are required to maintain familiarisation with the ERP, be familiar with their roles within this Plan and to key respondents and classifications. All contractors who operate within the TRIDENT operational areas, are responsible for ensuring their own ERP and its components are kept current, is appropriately communicated to all contractor personnel and tested prior to commencing operations at site.

## 1.8 Use of This Plan

The TRIDENT Crisis and Emergency Management System (CEMS) organization structure involves a three-tiered model (refer to Figure 2.1 CEMS Response Framework), which involves the Operational ERT at the impacted site and the TRIDENT EMT Leader in Sydney. Corporate and external support teams may be activated to assist the ERT or the EMT as required.

Where doubt exists over the severity or appropriate response to an infield emergency, the EMTL will liaise with the ERTL and agree a course of action. Once an alarm has been raised and the ERT is activated, the person with overall responsibility of the affected location MUST be advised immediately. The responsible person must then decide to shut down the operation if it is no longer safe to continue operating or to order an evacuation or abandonment of the location.

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 1.9 Identifying Levels of Emergency Criticality

Incidents and emergency situations are to be classified promptly to enable the appropriate level of response. A situation is usually classified in accordance with the severity, nature, extent and potential for escalation and can be categorised as shown in Table 2.

**Table 2: Emergency Criticality Classification and Response**

Level	Definition	Examples	Response
<b>ERT Category 1</b>	<ul style="list-style-type: none"> <li>Situational control maintained by ERT, does not require external support</li> <li>Potential risk to life and/or limited damage to the environment, assets and/or reputation</li> </ul>	<ul style="list-style-type: none"> <li>Single injury and/or medical treatment</li> <li>Minor fire, or environmental spill/release</li> <li>Minor equipment malfunction, damage</li> <li>Security incident/criminal act</li> <li>Emergency shutdown, muster and/or evacuation</li> </ul>	<ul style="list-style-type: none"> <li>Managed by ERT IC, ERTL and ERT</li> <li>EMT Leader notified by the ERT Leader</li> </ul>
<b>EMT Category 2</b>	<ul style="list-style-type: none"> <li>Situational control may require some external support</li> <li>Life is at risk and/or damage to environment, assets and/or reputation</li> <li>Situation may have public affairs, technical, operational or personnel implications</li> <li>External emergency services may be required</li> </ul>	<ul style="list-style-type: none"> <li>Serious injuries to 1 or more personnel, Medivac</li> <li>Serious fire/explosion (field, buildings, fuel storage etc.)</li> <li>Security related situation(s)/credible bomb threat</li> <li>Moderate DG/HazMat release/oil or chemical spill</li> <li>Moderate to severe weather activity (floods, lightning)</li> <li>Transport related emergencies (i.e. vehicle accidents, tanker collision/rupture etc.)</li> </ul>	<ul style="list-style-type: none"> <li>Initial Response by ERT IC but escalates beyond immediate control</li> <li>Managed by ERTL and EMTL</li> <li>CMT is notified</li> </ul>
<b>CMT Category 3</b>	<ul style="list-style-type: none"> <li>Situational control requires significant external resources and/or assistance</li> <li>Assistance may be sought from Govt, partners or other third parties</li> </ul>	<ul style="list-style-type: none"> <li>1 or more fatalities/urgent Medivac</li> <li>Major fire/explosion or HazMat release</li> <li>Severe weather and/or natural disaster/earthquake</li> <li>Major structural/mechanical failure(s)</li> <li>Oil, condensate, gas, crude, chemical release/spill</li> </ul>	<ul style="list-style-type: none"> <li>Managed by EMT and CMT</li> <li>As required, other external and/or Govt. resources</li> </ul>

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 1.10 Protection Hierarchy

In any TRIDENT related emergency, the following protection hierarchy is to be observed:

- Preserve life and ensure the safety of people;
- Minimize the impact on the environment;
- Preservation of TRIDENT's reputation, protect equipment, commercial operability and business continuity.

## 1.11 Emergency Response Team (ERT) – Level 1

The TRIDENT ERT is comprised of TRIDENT, and where relevant, Contractor personnel. The ERT is typically lead by the Site Supervisor as the ERT Leader (ERTL) and provides the initial response to infield incidents, which may include making the operation safe, conduct lifesaving, first aid, limited fire-fighting or operational repair in response to an incident.

All nominated ERT personnel are required to have an understanding of their roles in the ERP and the support functions associated to other Plans. For personnel with specific roles or responsibilities within this framework, it is imperative they receive all necessary induction and training. The primary point of contact between the ERT and the EMT shall be via the ERTL.

### 1.11.1 TRIDENT Incident Controller (IC)

The TRIDENT Incident Controller (IC) is typically:

- 1<sup>st</sup> TRIDENT person to discover and/or respond to a TRIDENT related emergency at any TRIDENT operational site, this role may ultimately be assumed by a more senior personnel such as:
  - Nominated ERT IC in this ERP;
  - Contractor Site Supervisor at a particular TRIDENT location; OR
  - TRIDENT Company Representative, supervising a TRIDENT contract SoW on a Contractor site or facility.

The ERT IC forms part of the ERT and is the primary interface and point of contact between any impacted site or activity and the TRIDENT ERTL. Furthermore, the TRIDENT IC provides the initial oversight to all on-site incidents and ongoing briefings to the TRIDENT ERTL and ERT.

### 1.11.2 TRIDENT ERT Leader (ERTL)

The TRIDENT ERT Leader (ERTL) is typically:

- TRIDENT Site Supervisor or nominee

The ERTL leads the TRIDENT ERT and is the primary interface and point of contact between any impacted site/ERT IC and the TRIDENT EMTL.

## 1.12 Emergency Management Team (EMT) – Level 2

The EMT typically comprises the TRIDENT Management team responsible for the Wild Horse 2D operations being undertaken and is led by the EMTL (typically the project manager).

The EMT provides strategic, logistical and technical services support to the relevant field ERT.

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 1.13 Landowner/Local Community Interaction

A process is to be implemented where there is consultation with landowners and neighbouring communities considered in this ERP. In the event the EMT Leader determines the emergency requires an external alert, the Police may be contacted to assist TRIDENT with advising the wider community of the current status, protection methods and evacuation if needed.

## 1.14 Critical Incident Impact Cycle

Critical incidents rarely occur in isolation, inadequate HSE management, awareness, training, responses or failure to close out actions typically cause multiple ripple effects often leading to a critical incident. This ERP has been developed to assist in managing:

- Preparations for;
- Response to (management of); and
- Recovery from;

any potential emergency or business interruption event which may threaten the safety and security of TRIDENT personnel, Contractor(s), stakeholders, the environment, TRIDENT's reputation and/or the commercial viability of TRIDENT operations.

## 1.15 ERP Training and Testing

### 1.15.1 General Inductions

All TRIDENT personnel likely to be required to assume a role within the ERT, or at an operations or site emergency response level, are to be made aware of, inducted into and be trained in their likely roles and tasks. The ERTL is responsible for ensuring TRIDENT operations conduct appropriate ER induction and training processes, training and testing activities consist of:

- ERP awareness and induction training;
- Specialist training for relevant ERT personnel (Telephone Support, Relatives Response, Media and External Affairs etc.);
- Role specific training for ERT members (i.e. desktop and insitu training exercises).

### 1.15.2 Desktop and Insitu Emergency Drills

TRIDENT will conduct a desktop training drill annually and also prior to the commencement of any new operations, to confirm the CEMS framework and response arrangements are in place and understood by all personnel involved in the execution of the operations.

## 1.16 Incident Investigation and Reporting

All incidents will be investigated and conducted in accordance with the TRIDENT Incident Investigation and Reporting Procedure, to identify failures and recommend corrective actions. Care is to be taken to preserve any incident scene and to collect evidence however, on some occasions the actions required to prevent or contain the incident may result in the scene being contaminated.

TRIDENT will report any serious bodily injury, illness or dangerous incident, which has occurred at any TRIDENT workplace, to the regulator as per various prescribed pieces of legislation. The TRIDENT ERT Leader will ensure the incident is reported to the relevant regulatory authority as appropriate.

## 1.17 ERP Review and Update

This ERP is to be reviewed and updated (as necessary) in response to one or more of the following:

## **WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN**

- Every 2 years;
- When major changes occur which may affect the ER coordination capabilities;
- Following routine testing of the ERP and associated response teams;
- After an actual incident/emergency; or
- Before installing and commissioning new plant and equipment.

During the review and update phase, the following aspects are also to be considered:

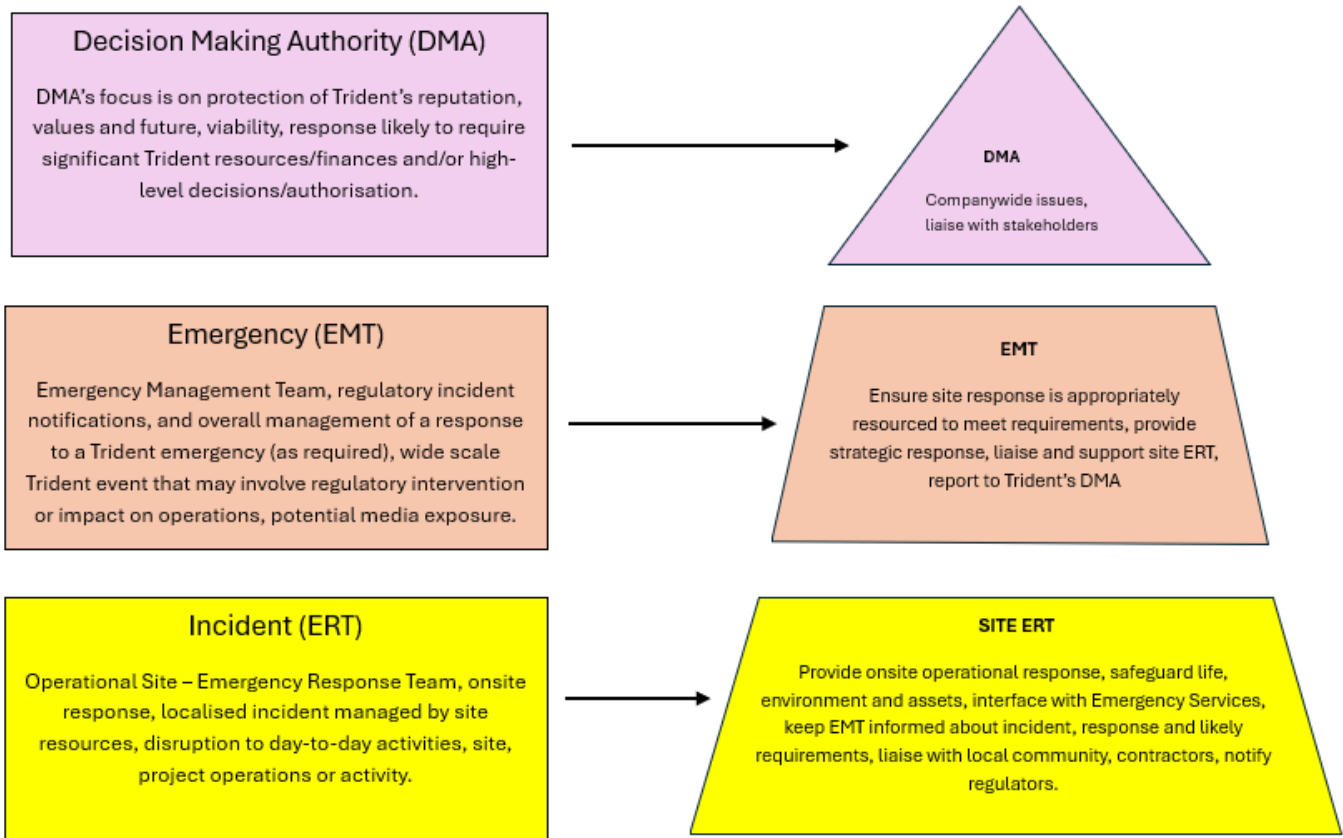
- Lessons learned from any changes in legislative requirements;
- Improvements or changes to the effectiveness of ER strategies;
- Management communications;
- Developments in the latest techniques and technology in responding to emergencies;
- Changes to, or movement of relevant people within the organisation;
- Changes to contact details of internal and external organisations; or
- Revisions to existing availability of ERT personnel, ER tools and/or resources, suppliers and/or contractors.

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 2. EMERGENCY ACTIVATION/CLASSIFICATION

### 2.1 Crisis and Emergency System (CEMS) Framework

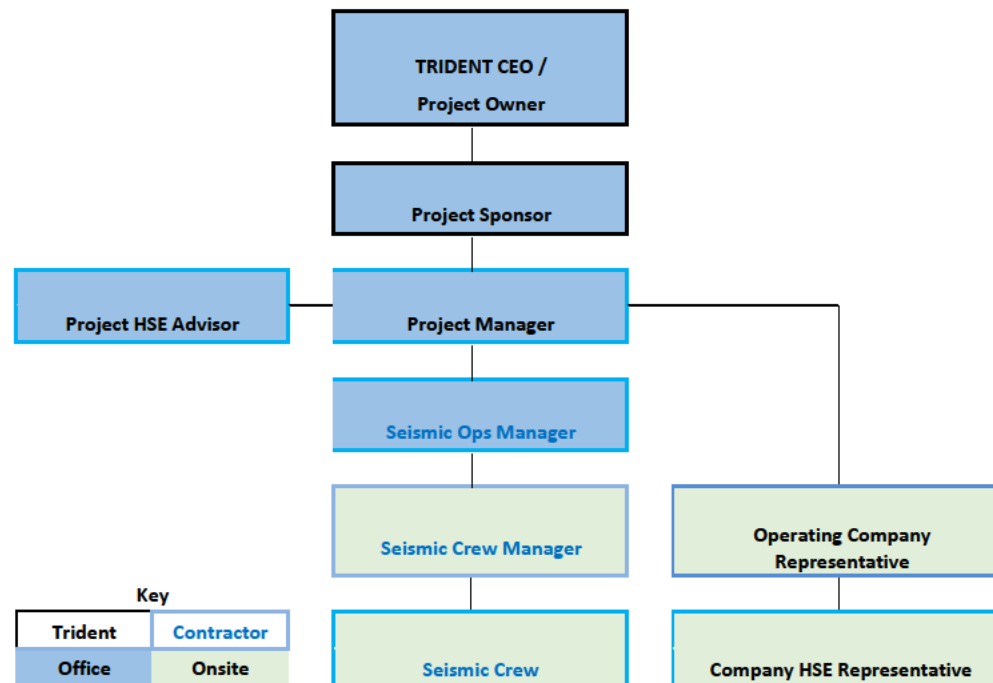
Figure 2.1: CEMS Response Framework



# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 2.2 EMS Organisational Response Structure

Figure 2.2: TRIDENT Emergency Response Structure

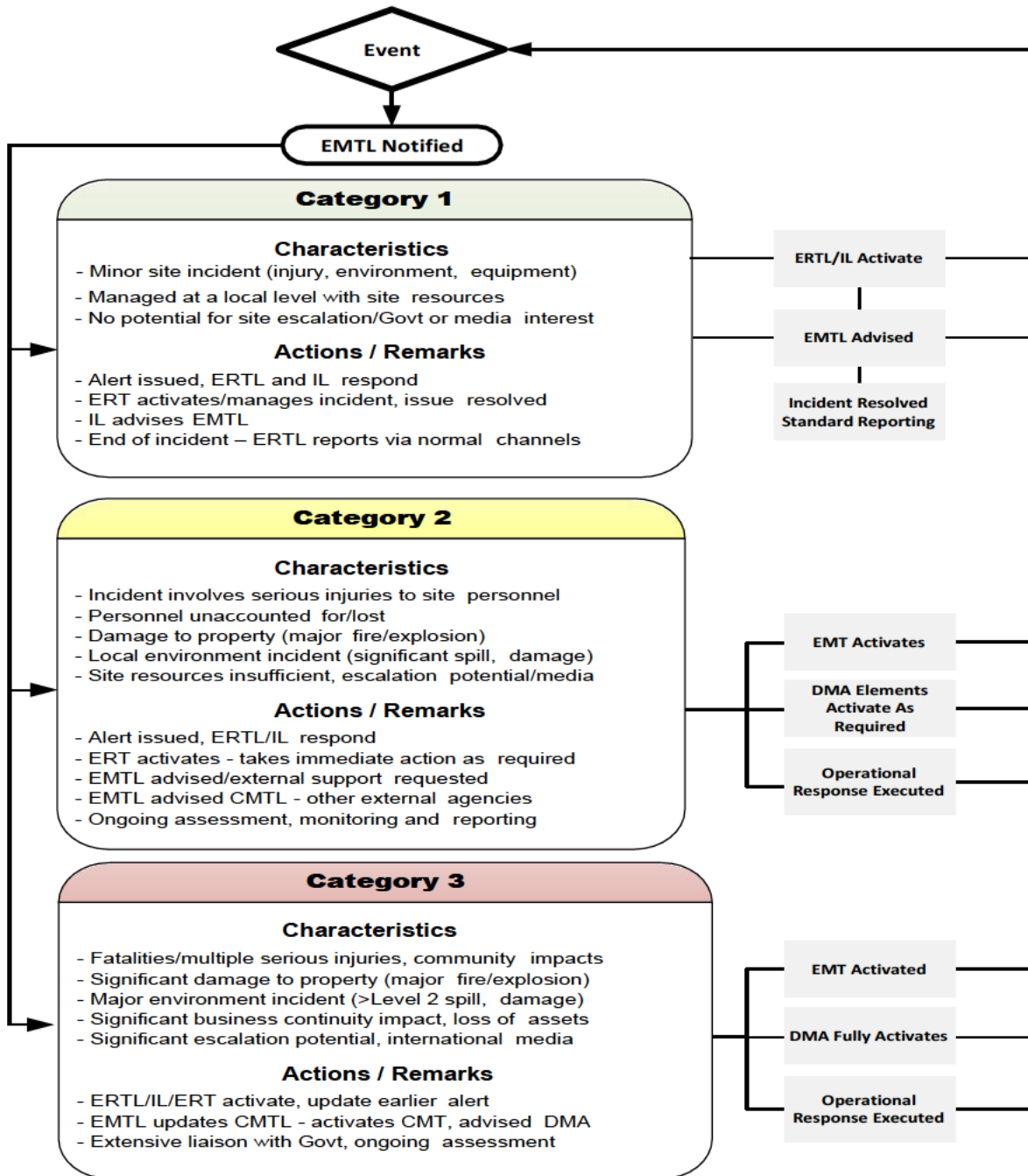


# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 2.3 Escalation Classifications

If an emergency is declared, the ERTL will determine the appropriate level of initial response and recommended escalation in consultation with the ERT Incident Controller (IC), and determine the initial emergency classification using the escalation options in Figure 2.4 below.

Figure 2.4: Escalation Classifications



# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 3 ROLES and RESPONSIBILITIES

### 3.1 General Overview

This section defines the responsibilities of the ERTL, ERT Incident Controller (IC) and ERT, additional support to the ERT will be provided by the EMT as required, details for the EMT are provided in the TRIDENT Emergency Management Plan (EMP).

### 3.2 TRIDENT ERT Roles

ERT “roles” and responsibilities are to be clearly defined and understood, to minimize confusion and to ensure essential response activities are assessed and carried out:

- This section of the ERP provides guidance for key TRIDENT personnel who may assume an ERT “role” identified in this Plan;
- ☐ Roles are not a rigid list of prescribed duties, they are a flexible series of prompts, designed to cater for an escalating range of responses and/or a change in the severity of an emergency;
- ☐ Role methodology is not designed to reflect a corresponding title within the TRIDENT organizational structure, it is also not designed to cater for every likely or specific emergency, they are only intended to be utilized as a pro-active prompt, appropriate to the response required at the time.

**NOTE:** During the early activation of the TRIDENT ERT, responding members may initially assume one or more “role(s)” during the preliminary stages of the response. Subject to the emergency, and as more senior or experienced personnel respond, “role(s)” and personnel may change. It is essential that all response personnel are kept informed of the current status of position holders at all times.

### 3.3 Communication Protocols

In an emergency situation, communications are to adhere to the following general guidelines:

- ☐ Be clear, brief and factual;
- ☐ Keep a log of all calls made and actions taken concerning the incident or emergency situation;
- ☐ Use mobile phones or tape recorders where available to facilitate recording of information.

All communications originating from the office environment are to be by mobile phone, telephone or facsimile, do not depend on email to transmit vital information. If used, follow up with phone or fax.

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 3.4 Initial Actions on Receipt of a TRIDENT Emergency Call

Calmly Request Following Details From Caller	
1. <b><u>WHO</u></b> – obtain name, return contact details and position of incident caller	<input type="checkbox"/>
– name of senior TRIDENT person involved or in charge	<input type="checkbox"/>
2. <b><u>WHAT</u></b> - obtain factual description of event/immediate reputation issues	<input type="checkbox"/>
– number of personnel involved in or impacted by the event	<input type="checkbox"/>
– brief details of any personnel killed or injured	<input type="checkbox"/>
– are all TRIDENT personnel accounted for, if not who is missing	<input type="checkbox"/>
– type of damage or environmental impact	<input type="checkbox"/>
– what response actions are currently being taken	<input type="checkbox"/>
– has there been any media attention	<input type="checkbox"/>
3. <b><u>WHEN</u></b> – local time that the caller understands the event occurred	<input type="checkbox"/>
4. <b><u>WHERE</u></b> - location of emergency (reference to specific area at a particular well site);	<input type="checkbox"/>
– basic details of any other personnel/public present/involved	<input type="checkbox"/>
– any potential impact on landowners or the public	<input type="checkbox"/>
– name of hospital/medical facility where casualties are now located (if removed from the site)	<input type="checkbox"/>
5. <b><u>HOW</u></b> – identify how the response is being managed	<input type="checkbox"/>
– in the mind of the caller is the incident escalating or is it contained	<input type="checkbox"/>
– which emergency teams are currently involved	<input type="checkbox"/>
– any likely immediate requirements from the ERT or support teams	<input type="checkbox"/>
6. <b><u>IF</u></b> – clarify if any Regulatory Authorities have been notified/are involved	<input type="checkbox"/>
– identify name (if known) of any senior Authority person contacted (if involved)	<input type="checkbox"/>
7. Try to confirm what information is speculation and what is known fact	<input type="checkbox"/>
8. Determine what information is still required to be gathered	<input type="checkbox"/>
9. Provide your name and return contact details to caller	<input type="checkbox"/>
10. Contact ERT Members to advise on emergency details	<input type="checkbox"/>

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 3.5 ERT Leader (ERTL)

**Primary ERT Role:** Reports to TRIDENT EMT Leader (EMTL), leads ERT in tactical incident assessment, re-establishing TRIDENT operations back to normal business as quickly as possible.

<b>PRE-EMERGENCY ACTIONS</b>	✓
1) Maintain familiarization with TRIDENT ERP, key respondents, emergency classifications	<input type="checkbox"/>
2) Be aware of the range/potential emergencies TRIDENT could be exposed to	<input type="checkbox"/>
3) Provide 24/7 monitoring, reporting and initial reaction capability for TRIDENT emergency's	<input type="checkbox"/>
4) Ensure all of your emergency contact details are current	<input type="checkbox"/>
<b>INITIAL ACTIONS (1<sup>ST</sup> HOURS)</b>	✓
1) With the ERT Incident Controller (IC), <b>IDENTIFY, ISOLATE and MANAGE</b> the INCIDENT	<input type="checkbox"/>
2) <b>Kick-Off:</b> Initiate ERT incident briefing (by phone if needed) classify incident	<input type="checkbox"/>
3) <b>Incident Details:</b> Review initial incident details, decide IC update briefing schedule	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Injured personnel, fatalities <input type="checkbox"/></li> <li>• Environmental/landowner impacts <input type="checkbox"/></li> <li>• Determine the core nature of the incident and how bad it could it get</li> <li>• Monitor the safe suspension of operations and associated activities as required</li> <li>• Obtain relevant drawings, plans, charts, photographs and technical support as required</li> <li>• Ensure personnel involved in the response have all resources they require</li> </ul>	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Loss of operability/income <input type="checkbox"/></li> <li>• Damage to equipment/infrastructure <input type="checkbox"/></li> </ul>	<input type="checkbox"/>
4) <b>EMTL:</b> Advise EMTL of initial response strategy, incident details and likely requirements	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Regularly update EMTL, determine ongoing briefing schedule</li> <li>• Consider any need for aerial/site photos for pictorial incident record/review</li> <li>• With ERT IC, coordinate required response equipment, materials and services</li> <li>• Liaise with EMTL on next of kin (NOK) implications (for any TRIDENT personnel)</li> <li>• In multiple fatality/serious injury events, consider requirements for handling NOK calls</li> </ul>	<input type="checkbox"/>
<b>ONGOING ACTIONS</b>	✓
5) <b>Communications:</b> Commence/maintain personal log of incident events and actions taken	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• What don't we know, identify any extra information required, initiate actions to obtain</li> <li>• Liaise with relevant Emergency Services/mutual aid provider(s) (as required)</li> <li>• Identify any immediate communication needs for the site and ERT responders</li> </ul>	<input type="checkbox"/>
6) <b>Oil Spill Incident:</b> Review options to control/contain spill and activate OSRO specialists	<input type="checkbox"/>
7) <b>Landowner Impacts:</b> Brief ERT HSE on landowner liaison, ensure EMT activated	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Liaise with EMT relevant to specific lease/permit/contract impacted</li> </ul>	<input type="checkbox"/>
8) <b>Regulatory:</b> With ERT HSE, ensure regulatory notifications are made as required	<input type="checkbox"/>
9) <b>Technical:</b> With ERT Technical, determine/authorize technical support requirements	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Activate technical support resources, or put on standby for activation</li> </ul>	<input type="checkbox"/>
<b>POST-EMERGENCY ACTIONS</b>	✓
1) Declare end of emergency when satisfied all criteria have been met	<input type="checkbox"/>
2) Coordinate/record financial activities (charge account numbers etc.) associated to incident	<input type="checkbox"/>
3) Conduct debrief of all ERT personnel; provide update to TRIDENT EMT	<input type="checkbox"/>

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 3.6 ERT Incident Controller (IC)

**Primary Role:** Reports to ERT Leader, this role assumes control and liaison activities at an actual TRIDENT incident site (this role may be assumed by the first person on scene and then assumed by a more senior or experienced person as an emergency escalates).

<b>PRE-EMERGENCY ACTIONS</b>	✓
1) Maintain familiarization with TRIDENT ERP, key respondents, Emergency Classifications	<input type="checkbox"/>
2) Establish contact with organizations whose assistance may be required in an emergency	<input type="checkbox"/>
3) Ensure location specific resource schedules and contacts are maintained	<input type="checkbox"/>
<b>INITIAL ACTIONS (1<sup>ST</sup> HOURS)</b>	✓
1) <b>IDENTIFY CAUSE, ISOLATE, MANAGE the INCIDENT and INITIAL RESPONSE</b>	<input type="checkbox"/>
2) <b>Kick-Off:</b> Participate in incident briefing (by phone if needed) help classify incident	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• If not first on scene, obtain relevant incident information from person who raised alarm <input type="checkbox"/></li> <li>• Liaise with any contractor involved, determine incident status/response actions taken <input type="checkbox"/></li> <li>• Attend incident site, make preliminary assessment, determine nature/extent of incident <input type="checkbox"/></li> <li>• Initiate immediate actions to mitigate incident effects, request likely required resources <input type="checkbox"/></li> </ul>	<input type="checkbox"/>
3) <b>Incident Details:</b> Review incident details, try to determine how bad the incident could be	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Injured personnel, fatalities <input type="checkbox"/></li> <li>• Environmental/landowner impacts <input type="checkbox"/></li> <li>• Determine exact location of incident, lease/tract number, title, directions, advise ERTL <input type="checkbox"/></li> <li>• Monitor the safe suspension of operations and associated activities as required <input type="checkbox"/></li> <li>• Ensure any operations involved are secured with correct protocols (if applicable) <input type="checkbox"/></li> <li>• Fire, explosion, loss of operability <input type="checkbox"/></li> <li>• Damage to equipment/infrastructure <input type="checkbox"/></li> </ul>	<input type="checkbox"/>
4) <b>ERTL:</b> Liaise with ERTL, provide specific incident details, likely requirements, updates	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Determine the core nature of the incident and likely escalation potential <input type="checkbox"/></li> <li>• Assess causes, escalation potential, consequences of response strategies <input type="checkbox"/></li> <li>• Update ERTL on response progress, what is required, long term likely requirements <input type="checkbox"/></li> <li>• Assess likely incident impact to simultaneous operations, land owner or environment <input type="checkbox"/></li> </ul>	<input type="checkbox"/>
<b>ONGOING EMERGENCY ACTIONS</b>	✓
5) <b>Response Actions:</b> Advise ERT HSE of any injury status and to attend incident location	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Evacuate any injured/at risk personnel to a safe area/initiate head count <input type="checkbox"/></li> <li>• Coordinate any initial medical, rescue and/or fire fighting activities and responders <input type="checkbox"/></li> <li>• Liaise with ERT HSE regarding any likely medical/Medivac support requirements <input type="checkbox"/></li> <li>• Consider need to activate Emergency Services and personnel to meet and guide them <input type="checkbox"/></li> </ul>	<input type="checkbox"/>
6) <b>Communications:</b> Commence/maintain personal log of incident events and actions	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Confirm your contact details with relevant responders, determine update times <input type="checkbox"/></li> </ul>	<input type="checkbox"/>
7) <b>Contractors:</b> Ensure technical specialist/contractors likely required are put on standby	<input type="checkbox"/>
<b>POST EMERGENCY ACTIONS</b>	✓
1) Debrief personnel in your charge before standing them down	<input type="checkbox"/>
2) Contribute to ERT/EMT debrief at the conclusion of the incident	<input type="checkbox"/>
3) Review ERP/incident response events; provide recommendations for ERP improvements	<input type="checkbox"/>

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 3.7 ERT HSE

**Primary ERT Role:** Reports to ERT Leader, role is to ensure all HSE, medical, legislative and regulatory commitments are fully understood and actioned as appropriate by the ERT.

<b>PRE-EMERGENCY ACTIONS</b>	✓
1) Maintain familiarization with TRIDENT ERP, key respondents, Emergency Classifications	<input type="checkbox"/>
2) Establish contact with organizations whose assistance may be required in an emergency	<input type="checkbox"/>
3) Ensure location specific resource schedules and contacts are maintained	<input type="checkbox"/>
<b>INITIAL ACTIONS (1<sup>ST</sup> HOURS)</b>	✓
1) <b>Kick-Off:</b> Participate in incident briefing (by phone if needed) help classify incident	<input type="checkbox"/>
2) <b>Incident Details:</b> Obtain current Site personnel manifest and headcount results	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Injured personnel, fatality(s) <input type="checkbox"/></li> <li>• Environmental/landowner impacts <input type="checkbox"/></li> <li>• Attend incident location (as required) and if safe/possible to do so</li> <li>• Review site feedback to try to determine how bad the incident could be</li> <li>• Obtain relevant drawings, plans, diagrams and technical support as required</li> </ul>	<ul style="list-style-type: none"> <li>• Loss of operability <input type="checkbox"/></li> <li>• Damage to equipment/infrastructure <input type="checkbox"/></li> </ul>
3) <b>ERTL:</b> Advise ERTL of initial response progress, who has activated, what is still required	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Regularly update ERTL and IC, determine ongoing briefing schedule</li> <li>• Determine what we don't know, assist ERTL/IC to identify any information required</li> <li>• Assist with conducting emergency impact assessment from IC feedback</li> <li>• Evaluate status of incident and emergency response needs with ERTL</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
<b>ONGOING EMERGENCY ACTIONS</b>	✓
4) <b>Response Actions:</b> Liaise with ERT IC regarding likely Medivac support requirements	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Activate relevant emergency support (medical, Doctor, hospital etc.)</li> <li>• Coordinate emergency response equipment, materials, services and technical support</li> <li>• Provide input into and develop incident safety plan with ERTL</li> <li>• Ensure weather and catering requirements are assessed regularly</li> <li>• Assist Logistics with material handling/procurement of equipment as appropriate</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>
5) <b>Communications:</b> Commence/maintain personal log of incident events and actions	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Identify any immediate communication needs for the location and ERT responders</li> <li>• Arrange additional support to staff ER communications and administration activities</li> </ul>	<input type="checkbox"/> <input type="checkbox"/>
6) <b>Regulatory:</b> Ensure regulatory authority notifications are made as per requirements	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Track all regulatory authority notifications and ensure update notifications are timely</li> </ul>	<input type="checkbox"/>
7) <b>Technical:</b> Liaise with ERT Technical to determine likely technical support requirements	<input type="checkbox"/>
<ul style="list-style-type: none"> <li>• Ensure technical specialists/contractors likely to be required are put on standby early</li> </ul>	<input type="checkbox"/>
8) <b>Contractors:</b> Ensure technical specialists likely to be required are put on standby early	<input type="checkbox"/>
<b>POST EMERGENCY ACTIONS</b>	✓
1) Debrief personnel in your charge before standing them down	<input type="checkbox"/>
2) Contribute to ERT/EMT debrief at the conclusion of the emergency	<input type="checkbox"/>
3) Review ERP/incident response events; provide recommendations for ERP improvements	<input type="checkbox"/>

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 4 RESPONSE PROCEDURES

### 4.1 Purpose and Scope

**Purpose:** To provide “All Hazards” emergency response procedures to previously identified threats to TRIDENT operations and activities. The procedures are not intended to replace existing TRIDENT standard operating procedures, but to simply strengthen and support the operating procedures during emergencies.

The procedures are not rigid or prescribed rules, but prompts to address likely hazards in which common sense must prevail at all times.

**Scope:** The procedures are designed to address all likely TRIDENT operations including contractor areas of activity. Any emergency procedures that relate specifically to an individual TRIDENT operation or work site will have those procedures identified in the relevant ERP Location Specific Details to further assist with an effective response.

### 4.2 Methodology

- ☐ Methods of response to any emergency must be determined by the personnel involved, whether to report an incident or threat immediately as an emergency, or to try to control the situation to prevent it from becoming a greater threat;
- ☐ Respondents are not expected to place themselves at risk by trying to control a potentially major emergency, if a respondent(s) believes they can control a potential emergency and they are trained to do so, then proceed, if not, raise the alarm immediately and respond as advised.

***Safety of self and other persons is always the first priority***

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 4.3 Injured Person

**ACTION (for TRIDENT Personnel)** ✓

- 1<sup>st</sup> Person at incident scene – assume Incident Controller role, raise the alarm, then:**
- Check Scene Safety?** If scene is unsafe or at anytime becomes unsafe, GET OUT!
- Response?** Tap shoulder, shout out or ask for name of the IP
- Activate Ambulance - Get AED** Send a bystander, if alone do it yourself
- Breathing?** Look at face and chest for any breathing, or only gasping
- Normal Breathing Present?** Place person in recovery position and monitor breathing
- Normal Breathing Absent?** Perform CPR starting with compressions, provide continuous cycles and 2 rescue breaths
- Compressions**
- 2 hands on center of chest;
  - At least 5cm in depth;
  - Rate or at least 100 times a minute;
  - Hard, fast, full rebound, minimize interruption;
- Rescue Breaths**
- Tilt head, lift chin to open airways first;
  - 1 second in length;
  - Make chest visibly rise but no more;
- Defibrillation with AED**
- Turn on power;
  - Attach pads;
  - If indicated, give shock;
  - Immediately resume CPR;
  - Follow AED voice instructions.
1. Render the accident scene safe (isolate power, mechanical drives, belts, motors etc.)
  2. Patient breathing and stable; keep in recovery position,
  3. Attract attention, send someone or personally notify the ERTL, nearest Medical Centre or Ambulance, advise clearly and slowly: 
    - Your name and location;  • What has happened;
    - What actions you have taken;  • Location of injured;
    - Any exposures that are likely to escalate the incident (e.g. fumes, fire etc.)
  4. For all Hot Metal and/or HAZMAT burns, flush continuously with copious amounts of cool water until attended to by First Aid
  5. If possible, person who treated patient to stay with patient for reassurance
  6. If safe to do so, wait at location until the ERTL or Medic or Rescue Team arrive
  7. If relatives of injured person(s) are working on the site arrange for them to be notified
  8. Next of kin notification to be conducted by TRIDENT ERTL (OCR)
  9. Provide a report of your version of the incident events to the ERTL and ERT HSE who will record the incident details as per TRIDENT reporting process.

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 4.4 Vehicle in Distress/Missing

ACTION (for TRIDENT Personnel) ✓	
<b>Uncertainty Phase: - When vehicle(s) fails to reach destination at scheduled time or to make contact advising status</b>	
1. TRIDENT Incident Controller to advise ERTL, maintain liaison	<input type="checkbox"/>
2. Refer to Journey Management details; confirm departure time, vehicle details and last or any communication received	<input type="checkbox"/>
3. Confirm number of personnel onboard, intended route and destination ETA	<input type="checkbox"/>
4. Initiate continuous attempts to contact vehicle using sat phone or mobile phone, local phones or VHF radio; (as applicable); maintain efforts	<input type="checkbox"/>
5. Check any tracking device coordinates	<input type="checkbox"/>
6. Ensure dedicated personnel monitor radio and phone continuously but specifically every hour and/or half hour for any distress call	<input type="checkbox"/>
7. Contact any local route checkpoints for last known contact, maintain liaison	<input type="checkbox"/>
8. Alert TRIDENT First Aider to standby for possible mobilization	<input type="checkbox"/>
<b>Alert Phase: - 90 minutes after initiation of 'Uncertainty Phase'</b>	
9. Calculate theoretical fuel range of missing vehicle, use range as search radius from point of last known contact; dissect radius into search grids for controlled SAR activity	<input type="checkbox"/>
10. Dispatch search vehicle (GPS equipped if possible) from closest location to initiate preliminary search along last known route, personnel to take binoculars if available	<input type="checkbox"/>
11. Ensure only experienced personnel are mobilised and preferably 2 per vehicle (ensure search vehicle tracking procedures are in place)	<input type="checkbox"/>
12. Consider the suspension of current work program pending SAR activities	<input type="checkbox"/>
13. Alert other TRIDENT facilities/operations/vehicles/personnel in the area	<input type="checkbox"/>
14. Determine further SAR resources and place on short notice standby	<input type="checkbox"/>
<b>Distress Phase: - 3 hours after initiation of 'Uncertainty Phase'</b>	
15. Alert authorities and request participation in SAR as appropriate	<input type="checkbox"/>
16. TRIDENT Incident Controller and ERTL to maintain liaison	<input type="checkbox"/>
17. Dispatch further search vehicle(s) (GPS equipped if possible) to cover specific search grids as determined by preliminary search	<input type="checkbox"/>
18. Instruct search personnel to look for signals every hour/half hour (i.e. smoke, flare etc.)	<input type="checkbox"/>
19. Maintain communication with SAR vehicle(s) (VHF, sat phone, mobile phones etc.)	<input type="checkbox"/>
20. Assess upgrading status of incident (i.e. serious accident, fatality)	<input type="checkbox"/>
21. Consider calling off search at night or if conditions become hazardous to searchers	<input type="checkbox"/>
22. Maintain log of events	<input type="checkbox"/>

**\* NOTE: See "Missing Person" procedure section 4.6 for roles of personnel lost/missing**

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 4.5 Missing Person

ACTION (for TRIDENT Personnel) ✓	
<b>Uncertainty Phase: - 30 minutes after person fails to comply to normal schedule or routine or to make contact advising status</b>	
1. TRIDENT Incident Controller to advise ERTL, maintain liaison	<input type="checkbox"/>
2. Ensure all relevant TRIDENT personnel are informed ASAP	<input type="checkbox"/>
3. Check missing person(s) room, work area, mess and ablutions area	<input type="checkbox"/>
4. Check camp location board for likely whereabouts	<input type="checkbox"/>
5. Confirm "last seen" details with any witness(s)	<input type="checkbox"/>
6. Ensure Medic/First Aider is on standby to examine missing person(s)	<input type="checkbox"/>
<b>Alert Phase: - 90 minutes after initiation of 'Uncertainty Phase'</b>	
7. Notify Police and advise of all relevant information	<input type="checkbox"/>
8. Instigate search of field location/surrounding area based on missing person(s) assigned duties for the day	<input type="checkbox"/>
9. Ensure, where possible, each search party consists of two people to assist each other in case of smoke, gas or fire difficulties or security problems	<input type="checkbox"/>
10. Contact nearest aviation contractor to assist with aerial SAR (if available)	<input type="checkbox"/>
11. Contact emergency services and local expertise for advice and assistance	<input type="checkbox"/>
<b>Distress Phase: - 4 hours after initiation of 'Uncertainty Phase'</b>	
12. Initiate full SAR phase requiring relevant Authorities to assist with search	<input type="checkbox"/>
13. Activate emergency services and local expertise for assistance	<input type="checkbox"/>
14. Defer SAR control to Police as the SAR Incident Controller	<input type="checkbox"/>
15. Request assistance from other mutual aid companies in area	<input type="checkbox"/>
16. Put medical service provider on notice or alert	<input type="checkbox"/>
<b>Missing Person(s):</b>	
1. Attend to any injured personnel with you; try to determine extent of injuries	<input type="checkbox"/>
2. Try to contact Operations office via any means possible before SAR plan is activated	<input type="checkbox"/>
3. Make radio/phone calls as appropriate but at least on the hour/half hour	<input type="checkbox"/>
4. If contact is made, give precise details of location, landmarks, number of people, any injuries	<input type="checkbox"/>
5. If alone and missing in a vehicle, do not wander away from the vehicle	<input type="checkbox"/>
6. Light fires, use a heliograph or mirror, flash vehicle lights, sound horn or fire off a flare, whichever is appropriate for your circumstances, on the hour/half hour	<input type="checkbox"/>
7. Identify your position in relation to any known possible assistance or landmark (homestead, mine site, mutual aid camp, trig point)	<input type="checkbox"/>
8. Take stock of provisions, budget their use, stay calm and remember your survival skills	<input type="checkbox"/>

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 4.6 Fire and/or Explosion (Control Room/Warehouse/Camp/Facility)

### ACTION (for TRIDENT Personnel)



First person on the scene to assume Incident Controller Role:

- R Rescue** any personnel in danger (do not endanger yourself)
- A raise Alarm** and evacuate the work area to emergency assembly area
- C Contain** fire, close doors/windows to contain the fire
- E Extinguish** fire only if it is safe and you are trained to do so

1. If fire is small and responder is trained to do so, use nearest fire extinguisher and attempt to fight the fire/extinguish the source while calling for assistance
2. If fire escalates or is bigger than first anticipated, immediately raise the alarm ensuring all relevant TRIDENT personnel are informed
3. Confirm location, extent and type of fire/explosion; where possible eliminate the source
4. Mobilise ERT support, fire team (if available) and mobilize emergency services to attend the incident site (if required) and/or if available
5. Ensure the safety of all personnel when responding to the incident
6. Evacuate personnel upwind using fire team's direction, checking for clearance of each area and continue to emergency assembly area muster point
7. Isolate or shut down electrical supply to affected area if safe to do so
8. Check for any exposures likely to escalate the incident (fuel drums, chemicals, oxy-acetylene bottles, petrol, kerosene, gas bottles, tires etc.)

### If Gas Fire:

9. Do not try to extinguish unless gas flow can be turned off **IMMEDIATELY** – if gas cannot be turned off, concentrate on stopping spread of fire and cooling activities
10. When rescuing personnel in danger, ensure own escape route first; do not endanger yourself by entering an area containing smoke/noxious fumes
11. Have all vehicles moved away from the immediate area of the incident if safe to do so
12. Confirm all personnel are accounted for via EAA head count
13. Consider suspension of operations, take actions to secure area, initiate damage control

### If Control Room Fire:

14. Cease all pumping, transfers and process activities, de-pressure to flare, isolate system
15. Shutdown process systems in the case of damage to control system(s)
16. If inside building, contain incident by closing doors, windows and vents as you evacuate
17. Evacuate the Control Room to EAA
18. Consider activating ESD for entire operations managed by the Control Room
19. Monitor events and determine need for full evacuation of personnel/equipment
20. When feasible log all events and actions and provide to the ERTL
21. Ensure relevant Authorities are/have been contacted

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 4.7 Site Evacuation (Facility/Camp/Warehouse)

ACTION (for TRIDENT Personnel) <span style="float: right;">✓</span>
<b>1<sup>st</sup> Person at Incident Scene - Assume role of Incident Controller</b>
1. On hearing alarm, evacuate area to EAA; remain until advised of alternate location <span style="float: right;"><input type="checkbox"/></span>
2. All escorted visitors are to be taken to the EAA <span style="float: right;"><input type="checkbox"/></span>
3. All personnel are required to participate in head count; results to ERTIC <span style="float: right;"><input type="checkbox"/></span>
<b>Contractor Incident – TRIDENT Representative to assume role of Incident</b>
4. Notify TRIDENT OCR (ERTL) of incident status and likely requirements <span style="float: right;"><input type="checkbox"/></span>
5. Ensure all TRIDENT personnel are informed of emergency status <span style="float: right;"><input type="checkbox"/></span>
6. Advise all personnel to comply with instructions <span style="float: right;"><input type="checkbox"/></span>
7. Consider immediate shut down of operations and securing of the area <span style="float: right;"><input type="checkbox"/></span>
<b>If Flooding Incident:</b>
8. Hazardous areas to be barricaded/signposted and personnel to be advised of situation <span style="float: right;"><input type="checkbox"/></span>
9. Post wardens near any entry areas to ensure personnel do not enter unintentionally <span style="float: right;"><input type="checkbox"/></span>
10. Emergency Services to be called to assist with any rescue or evacuation activities <span style="float: right;"><input type="checkbox"/></span>
11. Mobilise equipment and resources to assist with pumping and damming <span style="float: right;"><input type="checkbox"/></span>
<b>If Extreme Weather Incident:</b>
12. Monitor weather forecasts during evacuation activities <span style="float: right;"><input type="checkbox"/></span>
13. If personnel working in remote locations ensure they are advised to return or evacuate to alternate location; include them in headcount <span style="float: right;"><input type="checkbox"/></span>
14. Notify and take advice from ERTL in regard to situation overview and escalation; maintain liaison as conditions permit <span style="float: right;"><input type="checkbox"/></span>
15. Contact relevant Authorities, plan evacuation route according to available information <span style="float: right;"><input type="checkbox"/></span>
16. Use local and/or external resources and contacts, continually monitor situation <span style="float: right;"><input type="checkbox"/></span>
17. Confirm verified personnel list of evacuees and communicate to ERTL, arrange for arriving personnel to be confirmed against personnel lists <span style="float: right;"><input type="checkbox"/></span>
18. Ensure transport/provisions are adequate and prepared for departure to refuge location and arrange for evacuees to be met on arrival at refuge location <span style="float: right;"><input type="checkbox"/></span>
19. If communications unavailable, make own evacuation arrangements as appropriate; ensure all sensitive records and/or confidential files are secured or taken <span style="float: right;"><input type="checkbox"/></span>
20. Ensure all evacuees are aware of arrangements made on their behalf <span style="float: right;"><input type="checkbox"/></span>
21. Ensure medical assistance is available at evacuation location if required <span style="float: right;"><input type="checkbox"/></span>
22. Activate SAR procedures in the event of any missing personnel <span style="float: right;"><input type="checkbox"/></span>
23. When feasible log all events and actions and provide to the ERTL <span style="float: right;"><input type="checkbox"/></span>

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 4.8 Urgent MEDIVAC

ACTION (for TRIDENT Personnel) ✓	
<b>1<sup>st</sup> Person at Incident Scene - Assume role of Incident Controller</b>	
1. Determine if MEDIVAC is urgent, type and special conditions of transport required	<input type="checkbox"/>
2. Contact TRIDENT 1 <sup>st</sup> Aider for assistance	<input type="checkbox"/>
3. Provide details to ERTL on urgency of IP(s) condition and ambulance requirement	<input type="checkbox"/>
4. Provide details to ERTL on number of IP(s) and their personal details	<input type="checkbox"/>
<b>Contractor Incident – TRIDENT Representative to assume role of Incident Controller</b>	
5. Dial 000 and liaise with ambulance service provider on the need for Ambulance	<input type="checkbox"/>
6. Notify ERTL (TRIDENT OCR) of incident status and likely requirements	<input type="checkbox"/>
7. Access requirements for a doctor, nurse or paramedic to attend with ambulance	<input type="checkbox"/>
8. Determine with doctor/Ambulance the need for an aviation Medivac	<input type="checkbox"/>
9. Assess need for an escort for casualty(s) transfer and the first aid level of escort required	<input type="checkbox"/>
10. Determine with doctor/Ambulance the Hospital/casualty collection destination of the IP(s)	<input type="checkbox"/>
11. Document full details of IP(s), ensure any personal details are communicated by secure communications by consulting medical records kept on site	<input type="checkbox"/>
<b>TRIDENTERT Leader:</b>	
12. Notify TRIDENT EMT Leader of incident status and likely requirements	<input type="checkbox"/>
13. Contact employer (for contractor IP) and provide all relevant details	<input type="checkbox"/>
14. Provide any verbal follow-up reports to EMTL or Contractor management	<input type="checkbox"/>
15. Consider arranging for relatives of IP(s) to be brought to the relevant hospital	<input type="checkbox"/>
<b>Post Incident:</b>	
16. When feasible log all events and actions and provide to the EMTL	<input type="checkbox"/>

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 4.8.1 Urgent Helicopter MEDIVAC

**Call LifeFlight on: 1300 883 422**

Information to be given to LifeFlight at the time of the MEDIVAC request:

- ② Location of the landing area including:
  - Description (e.g. identified IHLS or prepared roadway),
  - Latitude/Longitude,
  - Any local landmarks,
- ② Emergency specific hazards (i.e. gas release, flare etc.);
- ② Nature of medical condition/injury;

The pilot will determine the most suitable location to land unless there has been a nominated site landing location.

### **Figure 4.8: LifeFlight Helicopter MEDIVAC Flight Timeframes**

*Add 30 minutes for day-time and 60 minutes for night-time*

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 4.9 Bulk Fuel/HAZMAT Incident

ACTION (for TRIDENT Personnel) <span style="float: right;">✓</span>
<b>1<sup>st</sup> Person at Incident Scene - Assume role of Incident Controller</b>
1. Raise alarm (report location, type and extent of incident) <span style="float: right;"><input type="checkbox"/></span>
2. Ensure ERTL are advised of incident, likely implications and requirements <span style="float: right;"><input type="checkbox"/></span>
3. Identify and isolate any sources of ignition and restrict vehicular access to the spill area <span style="float: right;"><input type="checkbox"/></span>
4. Determine what types of HAZMAT products are involved and what quantities <span style="float: right;"><input type="checkbox"/></span>
5. Obtain SDS's and any other relevant documentation (i.e. Hazchem Codes, shipping documents etc.); ensure Emergency Services receive copies when activated <span style="float: right;"><input type="checkbox"/></span>
6. Rescue trapped or injured personnel and provide medical aid if qualified and if safe <span style="float: right;"><input type="checkbox"/></span>
7. Use emergency showers and eye washes to rinse any contaminated personnel <span style="float: right;"><input type="checkbox"/></span>
8. If first to arrive, or if called to the scene, try to minimize the impact on the surrounding area by implementing three C's rule: <span style="float: right;"><input type="checkbox"/></span>
<ul style="list-style-type: none"> <li>• CEASE flow <span style="margin-left: 100px;"><input type="checkbox"/></span> • CLEAN-UP <span style="float: right;"><input type="checkbox"/></span></li> <li>• CONTAIN substance <span style="margin-left: 100px;"><input type="checkbox"/></span> • Activate OSCP <span style="float: right;"><input type="checkbox"/></span></li> </ul>
9. Do not approach spill area if substance is totally unknown or unless suited with appropriate PPE; ensure all respondents are wearing appropriate PPE <span style="float: right;"><input type="checkbox"/></span>
10. Immediately try to locate primary source of spill and, if possible and safe to do so, cease the substance flow (i.e. close valve, switch off pump etc.) <span style="float: right;"><input type="checkbox"/></span>
11. Establish Hazardous Control Zone upwind of the incident, establish a decontamination area <span style="float: right;"><input type="checkbox"/></span>
12. Warn other personnel in the area inclusive to move upwind of the incident area and advise them not to use any electrical equipment that could create an ignition source <span style="float: right;"><input type="checkbox"/></span>
13. Move to the nearest upwind communication point and make emergency services calls, keep all affected personnel informed of developments <span style="float: right;"><input type="checkbox"/></span>
14. Advise any contractors of incident and likely requirements <span style="float: right;"><input type="checkbox"/></span>
15. Do not go downwind of any fume/smoke source to alert/rescue personnel, this action is potentially life threatening <span style="float: right;"><input type="checkbox"/></span>
16. If substance is flammable reduce ignition risk with foam blanket (if available) <span style="float: right;"><input type="checkbox"/></span>
17. Review any HAZCHEM Codes prior to initiating concentrated response effort <span style="float: right;"><input type="checkbox"/></span>
18. Neutralize spill substance if containment is not possible <span style="float: right;"><input type="checkbox"/></span>
19. If the spill is uncontainable, ensure evacuation procedures are initiated <span style="float: right;"><input type="checkbox"/></span>
20. Consider community perception/outrage issues, activate appropriate procedures <span style="float: right;"><input type="checkbox"/></span>
21. Consult spill specialists for appropriate cleanup advice <span style="float: right;"><input type="checkbox"/></span>
22. Dispose of recovered debris and restore environment in accordance with specialist advice – all fuel/chemicals spilt to be disposed of according to EPA requirements and SDS directions <span style="float: right;"><input type="checkbox"/></span>
23. On stand-down, ensure full decontamination procedures are adopted before terminating response; includes all equipment and clothing (other than disposable) <span style="float: right;"><input type="checkbox"/></span>
24. For spills into waterways, consider early mobilization of environmental monitoring team <span style="float: right;"><input type="checkbox"/></span>
25. Hand over response to relevant emergency service; provide all available information <span style="float: right;"><input type="checkbox"/></span>
<b>For Contractor Incident</b>
26. Liaise with contractor ERT regarding incident details and likely requirements <span style="float: right;"><input type="checkbox"/></span>
27. Refer to contractor spill response plan if available (either on-site or operations base) <span style="float: right;"><input type="checkbox"/></span>

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 4.10 Vehicle Accident

ACTION (for TRIDENT Personnel) ✓	
<b>1<sup>st</sup> Person at Incident Scene - Assume role of Incident Controller</b>	
1. Raise alarm to TRIDENT ERTL (report location, type and extent of incident)	<input type="checkbox"/>
2. Request assistance as required	<input type="checkbox"/>
3. Switch off vehicle ignition	<input type="checkbox"/>
4. Activate vehicle fire suppression (if fitted and safe to do so)	<input type="checkbox"/>
5. Assess vehicle and site damage; take necessary actions to secure/isolate accident scene	<input type="checkbox"/>
6. If vehicle is in contact with power lines, stay clear and advise occupants to stay in vehicle	<input type="checkbox"/>
7. Do not try to remove casualties from vehicle unless sure other dangers are not present	<input type="checkbox"/>
8. When possible, rescue trapped or injured personnel and provide medical aid if qualified	<input type="checkbox"/>
9. Cover any spilt petrol / diesel with sand or other available product	<input type="checkbox"/>
10. Ensure Police are notified (if necessary)	<input type="checkbox"/>
<b>If TRIDENT Driver:</b>	
11. Provide necessary information to Police or other vehicle driver (if applicable) – DO NOT ADMIT LIABILITY or make promises that TRIDENT may not be able to fulfill	<input type="checkbox"/>
12. If available, take photos of accident site and vehicles (consider ignition source issue)	<input type="checkbox"/>
13. Provide a report of your version of events to ERTL when possible	<input type="checkbox"/>
14. Take whatever precautions are necessary to minimize impact of damages and liability	<input type="checkbox"/>
15. Emergency Services to be informed if dangerous goods involved	<input type="checkbox"/>
16. Callout whatever local TRIDENT resources as necessary for tow assistance	<input type="checkbox"/>
17. Request TRIDENT ERT HSE attend site to initiate accident investigation	<input type="checkbox"/>
18. If TRIDENT vehicle; make arrangements for vehicle to be towed or moved for	<input type="checkbox"/>
19. Evaluate situation with regard to emergency management implications	<input type="checkbox"/>
20. Consider contact with TRIDENT Legal representative	<input type="checkbox"/>
21. Consider contact with TRIDENT Insurance Broker	<input type="checkbox"/>

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 4.11 Bush/Wild Fire

ACTION (for TRIDENT Personnel) <span style="float: right;">✓</span>
<b>1<sup>st</sup> Person at Incident Scene - Assume role of Incident Controller</b>
<ol style="list-style-type: none"> <li>1. Raise alarm to all field personnel (report location and direction of bushfire) and activate any facility specific bushfire response procedures <span style="float: right;"><input type="checkbox"/></span></li> <li>2. Advise ERTL of situation and likely response and requirements <span style="float: right;"><input type="checkbox"/></span></li> <li>3. If necessary, call 000 and notify fire and emergency services of the fire <span style="float: right;"><input type="checkbox"/></span></li> <li>4. Test all forms of communications equipment, radio's and TV's <span style="float: right;"><input type="checkbox"/></span></li> <li>5. Notify any neighboring facilities of approaching bush fire <span style="float: right;"><input type="checkbox"/></span></li> <li>6. Consider suspension of all site/facility operations and securing of equipment <span style="float: right;"><input type="checkbox"/></span></li> <li>7. Decide <b>EARLY</b> if the plan is to evacuate or to stay and defend the facility/location <span style="float: right;"><input type="checkbox"/></span></li> </ol>
<b>Early Evacuation</b>
<ol style="list-style-type: none"> <li>8. Clearly determine and communicate the trigger for when to leave early <span style="float: right;"><input type="checkbox"/></span></li> <li>9. Nominate the route of evacuation and communicate to ERTL <span style="float: right;"><input type="checkbox"/></span></li> <li>10. On completion of evacuation advise ERTL of arrival location/head count <span style="float: right;"><input type="checkbox"/></span></li> </ol>
<b>Defend Site Facilities</b>
<ol style="list-style-type: none"> <li>11. Initiate all site specific firefighting procedures and equipment <span style="float: right;"><input type="checkbox"/></span></li> <li>12. Request assistance from emergency services if available, provide location specific information that might assist emergency services <span style="float: right;"><input type="checkbox"/></span></li> <li>13. Close all windows, vents and doors of facility buildings and vehicles <span style="float: right;"><input type="checkbox"/></span></li> <li>14. All non-essential personnel to evacuate to a central EAA including visitors <span style="float: right;"><input type="checkbox"/></span></li> <li>15. Wear all appropriate PPE at all times while fighting bushfire <span style="float: right;"><input type="checkbox"/></span></li> <li>16. Mobilise Operations firefighting team (if available) <span style="float: right;"><input type="checkbox"/></span></li> <li>17. Test all available firefighting equipment <span style="float: right;"><input type="checkbox"/></span></li> <li>18. Move any vehicles/equipment out of the oncoming path of the bushfire <span style="float: right;"><input type="checkbox"/></span></li> <li>19. Ensure vehicles/equipment are parked in clear ground during a bushfire <span style="float: right;"><input type="checkbox"/></span></li> <li>20. Check secondary exits from the location if primary exit is likely to be impacted by fire <span style="float: right;"><input type="checkbox"/></span></li> <li>21. Check for any exposures that are likely to escalate the incident (fuel drums, chemicals, oxy-acetylene bottles, petrol, kerosene, gas bottles, tires etc.) <span style="float: right;"><input type="checkbox"/></span></li> <li>22. Any fire breaks to be checked, consider controlled back burning options <span style="float: right;"><input type="checkbox"/></span></li> <li>23. Once the fire has passed, ensure all previously threatened areas are inspected for any mop-up firefighting required <span style="float: right;"><input type="checkbox"/></span></li> <li>24. Provide support to emergency services as situation allows <span style="float: right;"><input type="checkbox"/></span></li> <li>25. When feasible log all events and actions and provide to the ERTL <span style="float: right;"><input type="checkbox"/></span></li> </ol>

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 4.12 Natural Disaster Incident (Flooding)

This procedure is to be referred to in the likely event that flash flooding or flood waters are approaching a TRIDENT facility, which can occur after 2-6 hours of rainfall occurring in an area therefore, it is important to implement the flood procedure as soon as possible.

<b>ACTION (for TRIDENT Personnel)</b>	✓
<b>1<sup>st</sup> TRIDENT Person at Accident Scene - Assume role of Incident Controller</b>	
<b>Flood Warning/Impending</b>	
1. Raise the alarm (report specific location and direction of flood waters)	<input type="checkbox"/>
2. Raise alarm to all site personnel and activate flooding response protocols	<input type="checkbox"/>
3. Install flood proofing devices (e.g. sand bags, droop boards across doorways, block off toilet and shower traps to prevent backflow)	<input type="checkbox"/>
4. Notify TRIDENT ERTL of incident details and advise incident status/likely	<input type="checkbox"/>
5. Account for personnel, notify neighboring facilities of approaching flood waters	<input type="checkbox"/>
6. Consider or initiate suspension of all facility operations	<input type="checkbox"/>
7. If appropriate and time allows, relocate chemicals to a higher area	<input type="checkbox"/>
8. Relocate computers, printers, fax machine, etc. to a higher level	<input type="checkbox"/>
9. Monitor BOM weather in particular warnings of storm activity, from <a href="http://www.bom.gov.au">www.bom.gov.au</a> ;	<input type="checkbox"/>
10. Inform ERTL/EMTL of situation, evacuation timeline and response requirements	<input type="checkbox"/>
11. Check emergency kit supplies (water, food, 1st aid, spare batteries, radio, torch);	<input type="checkbox"/>
12. Clearly determine and communicate to all personnel the trigger for when to evacuate	<input type="checkbox"/>
13. Switch off power, gas, plant and equipment, shut down facility operations	<input type="checkbox"/>
<b>Flood Evacuation</b>	
14. Ensure all site personnel are informed of evacuation timetable and location	<input type="checkbox"/>
15. Commence evacuation, ensure emergency kit is taken when evacuating	<input type="checkbox"/>
16. Remain in regular contact with ERTL/EMTL	<input type="checkbox"/>
17. If Emergency Services notified, ensure they are advised of your evacuation location	<input type="checkbox"/>
18. On completion of evacuation, advise ERTL/EMTL of arrival and personnel head count	<input type="checkbox"/>
<b>Post Flood</b>	
19. Assess risk of entering a flood damaged site, consider venomous snakes, spiders etc.	<input type="checkbox"/>
20. Ensure all personnel involved in clean up wear appropriate PPE and abide by site rules	<input type="checkbox"/>
21. Re-entry is best performed in daylight hours only, with full consideration given to potential flash flooding recurring if heavy weather persists	<input type="checkbox"/>
22. Only enter flood damaged parts of the site after floodwaters have completely subsided and Authorities advise it is safe to do so	<input type="checkbox"/>
23. Survey structural safety of the site and prepare a remediation action list	<input type="checkbox"/>
24. Determine safety of site electrical, gas supplies, plant/equipment, technical repairs	<input type="checkbox"/>
25. Survey site contamination, arrange for specialised clean-up	<input type="checkbox"/>
26. Arrange for technical teams to perform maintenance/repairs prior to start up	<input type="checkbox"/>

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 4.13 End of Emergency Guidelines

All emergencies will be investigated in accordance with the TRIDENT Incident Reporting Procedure.

### ERT Incident Controller (infield)

The ERT IC is responsible for declaring the end of a Category '1' emergency and will declare the emergency is over when:

- Operation and/or supporting facilities have been returned to a safe condition
- All personnel have been accounted for
- Injured persons have been stabilized and/or evacuated

### ERT Leader

For other than Category '1', the ERTL will declare an end of emergency once:

- Operations or supporting facilities have been returned to a safe condition as advised by the ERT IC
- All people have been accounted for
- Injured persons have been stabilized and/or evacuated
- All authorities, organizations and/or support services contacted during the emergency have been advised the emergency is over.

### End of Emergency Checklist

**On standing down from an emergency, the following issues must be considered:**

1. On-going resources for incident control and post incident recovery (if required)
2. Final information release and/or notification to some, or all, of the following: 
  - All ERT and support personnel
  - Contractor Management
  - Emergency Services/Mutual aid
  - Employees families and friends
  - Suppliers and/or contractors
  - Media
  - All EMT and support personnel
  - Regulatory authorities
  - Employees (off/on duty)
  - Third Parties, JVP's and customers
  - Government support agencies
  - Environmental agencies
3. Debrief of all personnel (including people currently relieved or stood down)
4. Close down any additional security arrangements
5. Commence/continue counseling for those involved in the incident (as required)
6. Compile and file all documents relating to the response
7. Initiate full incident investigation and analysis
8. Approve/comment on incident debriefing reports and recommended actions;
9. Carry out follow-up review to ascertain effectiveness of 
  - Incident callout
  - Overall emergency response
  - Site and/or ERT functions
  - Interface with all ERT members
10. Recommend revision of ERP, activities and operations as required

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 4.14 Post Emergency Recovery Actions

### INITIAL ACTIONS (1<sup>ST</sup> HOURS AFTER END OF EMERGENCY (for TRIDENT



#### Recovery/Clean-Up Considerations

1. Ensure areas requiring preservation for incident/evidence/investigation are left untouched
2. Inspect the operational area for any lingering danger and provide a report to the ERTL
3. Check plant/equipment for structural, physical, electrical/instrumentation integrity
4. Determine extent of damage to NT area(s) of responsibility or facilities
5. Inspect and test affected equipment and isolate equipment where necessary
6. Develop plan for the repair or replacement of damaged equipment and/or infrastructure
7. Assess potential decontamination needs (i.e. removal of chemicals/oil/foam from plant or equipment, contaminated soil, bioremediation considerations etc.)
8. Ensure all contaminated material is stored in approved containers, pending offsite disposal by licensed hazardous waste contractors
9. ERTL: Ensure all available data is gathered to assess possible long-term effects on facilities, personnel, local community and environment
10. Determine likely requirements and recovery arrangements
11. Determine what interim and/or long-term provisions need to be implemented to prevent a recurrence of the incident
12. Consider need for landowner consultation post emergency
13. Attend to commissioning and site reinstatement
14. When feasible log all events and actions

#### Recovery Considerations

15. Prior to resuming operations, the following is also to be considered: 
  - Ensure all active fire protection measures are restored (e.g. foam replaced etc.)
  - Replenish emergency response equipment/consumables as required
  - Replace or return any third party emergency equipment/consumables
16. In addition, consider the following points: 
  - Personnel who were involved (particularly victims) may require counselling depending on the nature of the incident and the level of their involvement
  - Initiate medical checks for those personnel involved (as appropriate)
  - ERP and/or other protocols and training may need to be revised prior to resuming normal operational activities

# **WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN**

## **APPENDICES**

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## APPENDIX A: EMERGENCY PROFORMAS

### 1. Telephone Log Sheet

(One Page Per Call)

<b>Call Taken/Made By:</b>				Call In: <input type="checkbox"/>	Call Out: <input type="checkbox"/>
<b>Caller Details:</b>	Extn. No:	Date:	Time:		
<b>Phone Number:</b>					
Name:					
Title:					
Organisation:			Department:		
Mobile:			Fax/Email:		
Message For:			Return Call By:		
<b>Call Source:</b>	EPA <input type="checkbox"/>	DOT <input type="checkbox"/>	OSHA <input type="checkbox"/>	Mutual Aid <input type="checkbox"/>	RRC <input type="checkbox"/>
Media <input type="checkbox"/>	Landowner <input type="checkbox"/>	Employee <input type="checkbox"/>	Employee Family <input type="checkbox"/>	Community <input type="checkbox"/>	
Other:					
<b>Message/Response:</b>					
<b>Comments:</b>					
<b>Action Required:</b>	Call Them Back <input type="checkbox"/>		Meeting Required <input type="checkbox"/>		
	Send Fax/Email <input type="checkbox"/>		Will Call Back <input type="checkbox"/>		
<b>Other:</b>					
<b>Actioned by:</b>				Date:	Time:

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 2. Situation Report (Sitrep)

Information for internal TRIDENT use only

Emergency @			Report No:
Date:		Time:	
Incident Type:	Injury	Release	Other
Release Details:			
Injury Details	Number Of Fatalities	Number Of Serious Injuries	Number Of Minor Injuries

**<sup>1</sup>Do Not List Names on This Sheet<sup>1</sup>**

Have names of fatalities and/or serious injuries been reported verbally to EMT?			
Give details of cause(s):			
Give details of injuries:			
General:	Weather:	Dry	Wet
			Windy
			Wind Direction/Speed
Impact on facilities:		Facilities Damaged:	
Facilities Shutdown:		Production Impact:	
External Assistance Requested: Police Ambulance Fire Service OSRO Well Control			
Other Information:			

### Response Forward Plan

Next 60 Minutes:
Next 6 Hours:
Next 12 Hours:

### Last External Contact

Agency	Contact Name	Time	By Whom	Agency	Contact Name	Time	By Whom

### ERR Room Personnel (Role And Person)


Update Prepared By:	Update Approved By:
Distribution:	
1. ERT Leader	
2. EMT Leader	
3. CMT Leader	

## WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

### 3. Fatality Checklist

ACTION	DETAILS	✓
Contact ERTL immediately - provide details:		
Advise HSE Manager - provide details:		
Call 000 and provide all relevant details:		
Ensure dignity of deceased is preserved:		
Ensure Police/Coroner are notified:		
Ensure WorkSafe are notified:		
Have access barred to fatality area until investigation has been concluded:		
Ensure all non-essential personnel are moved away from the incident area:		
Check for relatives working on Site:		
Log date and time of incident:		
Log incident location details:		
Have photographs taken of incident area:		
Log details of any First Aid given:		
Advise employer of fatality (if contractor):		
Ensure casualty transfer arranged:		
Arrange notification to Next of Kin with Police (confirm certification of death first):		
Advise Trauma Counsellor(s):		
Obtain statement from initial witness or first person on the scene:		
Initiate incident investigation:		
Authorise Supervisor to collect deceased personal effects:		
Log who itemised personal effects:		
Witness to itemising of personal effects:		
Log who personal effects passed to:		
Log who Fatality checklist sent to:		
Comments:		
Signature:	Date:	Time:







# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## 7. Incident Status Board

Resource Type	Status	Time/Date	Location Required
Personnel			
Transport			
Materials			
Hand Equipment			
Mobile Equipment			
Other			

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## APPENDIX B INITIAL EMERGENCY CONTACTS

<b>INCIDENT CONTROLLER</b>	<i>#1 The role may be assumed by the first person on the scene and then assumed when a more senior person (Site Supervisor) as Emergency escalates.</i>	
<b>ERT LEADER</b>	#1: [REDACTED]	
24 HR CONTACT NO.	Mobile: [REDACTED]	[REDACTED]
<b>EMT LEADER</b>	#1: [REDACTED]	
24 HR CONTACT NO.	Mobile: [REDACTED]	
<b>KEY REGULATOR</b>	<b>SafeWork NT -</b>	
24 HR CONTACT NO.	1800 019 115 ntworksafe@nt.gov.au	

Service		Contact Details	Response Time
<b>Police / Fire / Ambulance (Emergency)</b>		<b>000</b>	
Medical	Remote Health & Royal Flying Doctors Service <sup>1</sup>	08 89517840 / 08 8951 7777 (24/7)	
	RFDS Port Augusta Communications centre	1800 630 784 for plane's ETA's	
	OccuMED Doctor (24/7)	0438 423 906 (details below)	Immediate
	Alice Springs Hospital (24/7)	08 8951 7777	3hrs 30 min drive
	Kings Canyon Medical Clinic <sup>2</sup>	08 8956 7807	2hr drive
	St John Ambulance - Alice Springs Office	08 8959 6600	Potential to meet IP halfway to Site
Police	Police - Alice Springs Station	08 8951 8822	
	Police (non-emergency)	131 444	
Fire	Fire and Rescue (non-emergency)	08 8999 3473	
Emergency	Emergency Services (flood, storms, etc)	132 500	

<sup>1</sup> Doctor on call for all Medical Evacuations via Alice Springs

<sup>2</sup> Clinic can be dispatched by 000 if required

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## Trident Emergency Contacts

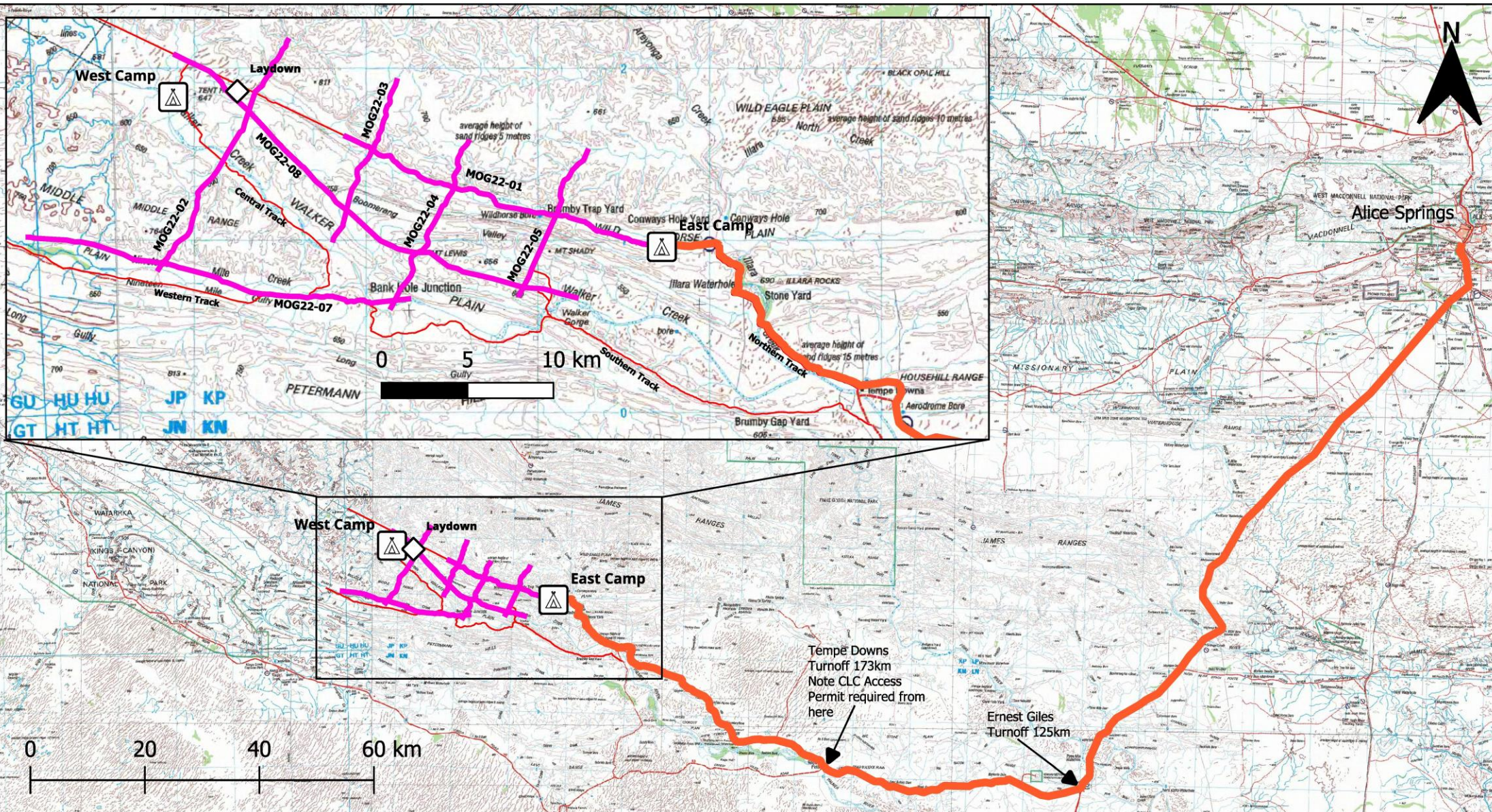
Name	Position	Contact Details
██████████	████	██████████
██████████	██████████	██████████
██████████	██████████	██████████
██████████	██████████	██████████
Brisbane emergency phone	To be used whilst emergencies are in progress	TBC

## Site Contact Information

Role / Detail	Contact Details
Production Supervisor	
Logistics and Administration Coordinators	
Kitchen / Ambulance (Satellite Phone)	
Response Room (Satellite Phone)	
<b>Emergency Alert Number</b>	
<b>Mereenie Emergency Number</b>	

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

## APPENDIX E Site Map



East Camp Location	West Camp Location	Laydown Location
24° 13' 08.3294" S	24° 13' 08.3294" S	24° 13' 08.3294" S
132° 02' 03.1537" E	132° 02' 03.1537" E	132° 02' 03.1537" E

Directions from Alice Springs to East Camp  
 Set speed to 0. Drive south on Stuart Highway for 125km.  
 Turn west onto Ernest Giles Road, continue until 173km.  
 Turn north on Tempe Downs Track, continue until 220km.  
 Turn west from Tempe Downs Ruins to East Camp 237km.

# Wild Horse 2D Seismic

Regional Project Access

# WILD HORSE 2D SEISMIC EMERGENCY RESPONSE PLAN

The following report is to be prepared and submitted to the Helicopter Service Provider for inclusion in the HLP Files.

**Contact Phone Numbers;**

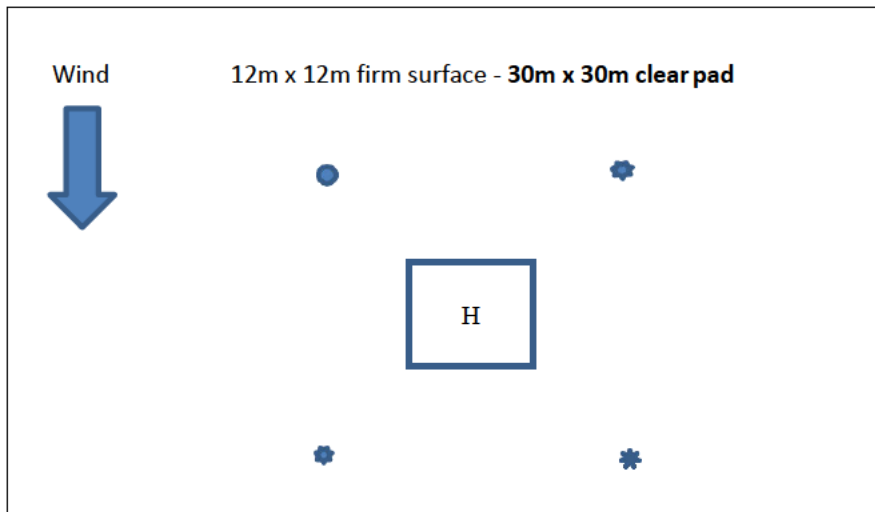
**Helicopter Company Contact Number -**

**TRIDENT Field Operations –**

A HLP Report is to be prepared for each identified location including:

- CASEVAC Locations
- Camps

Location Name:	
Location Lat Long:	
Contact Phone Number:	
Contact Email Address:	
Contact Radio Channel:	
List of Obstructions:	
Towers or Masts:	



The above map is to show all construction including buildings, Towers, Power Lines, water obstacles, roads, trees etc.