

BR SIMPSON

Environmental Management Plan

Simpson Desert Seismic EP93, EP97 & EP107



DOCUMENT CONTROL RECORD

DOCUMENT DETAILS

Document name	BRS-EMP-2022
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Authors	Low Ecological Services P/L
Client	BR Simpson Pty Ltd
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DOCUMENT CONTROL

Status	Date	Approvals	Author	Signature
Draft 1	21/10/2022	Author	Low Ecological Services P/L	
Draft 2	1/12/2022	Reviewer	Low Ecological Services P/L	
	2/12/2022		KAG Enterprises P/L	
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Revision BRS1-2	23/2/2023	Author	Low Ecological Services P/L	
	27/2/2023	Reviewer	KAG Enterprises P/L	
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Revision BRS1-4	7/08/2023	Author	Low Ecological Services P/L	
		Reviewer	KAG Enterprises P/L	
		Approval	BR Simpson P/L	

REVISIONS

Date	Revision		Name
21/10/2022	Draft one	Initial draft	Low Ecological
21/10/2022		Corrections to site data and updated seismic line details	KAG
1/12/2022	Final	All EP's compiled into one EMP	KAG, Low Ecological
		Updated appendices A – M	KAG, Low Ecological
9/2/2023	BRS1-2	Addition of document number to reflect revisions updates	KAG
12/2/2023	BRS1-2	S 2.3.1 AAPA authority pg 11. Update to clarify authority areas where exploration is AAPA approved to take place	KAG, Low Ecological
		Table 3-1 Legislative requirements Aboriginal Sacred sites Act – requirements. Update to correct references to <i>Northern Territory Sacred Sites Act</i> sections references	
		Table 3-1 legislative requirements Petroleum (Environment) Regulations 2016 – How met. Update S2.3.1 to clarify BRS will comply with conditions of all three AAPA AC's.	
		Table 3-1 correct numbers of three AAPA AC 's issued.	
		Table 3-1 Aboriginal Sacred Act correct AAPA AC numbers.	
		Appendix G – Weed Mngmt Plan – clarify dedicated weeds officer location.	
12/22023	BRS1-2	Appendix G – Weed Mgmt. Plan - identify skills and experience of weeds officer	KAG, Low Ecological
		Appendix E- Risk assessment, mitigation measures– clarify reporting & weed training for personnel on site	
		Appendix G- Weed Mgmt. Plan Table 6-1 –Identify requirement for all vehicles, plant and equipment entering site to have weed hygiene declaration by qualified inspector	
		Table 3-1 legislation requirements - include requirement for permit to do works under <i>Water Act 1992</i>	
		Appendix B Cultural Heritage Assessment Report –Appendix B replaced with un redacted report	
		Appendix N Stakeholder engagement – correspondence replaced with un redacted stakeholder information	
		Appendix J – Spill Mgmt. Plan – removed references to activities not relevant to EMP purpose	
		Appendix L – Emergency Response Plan – removed references to activities not relevant to EMP purpose	
		Table 4-3 seismic line coordinates (UTM Zone 53J) – corrected EP93 line 1 start coordinates	
		Appendix K – Rehab plan – Correct interest holder	
		Appendix K – Rehab plan – clarify rehab timelines	
		Risk Assessment – clarify rehab timeline	
		Appendix K – Rehab plan – include author and qualifications	
		Table 4-1 - Description of Regulated Activity – clarify dust suppression	
		Appendix F – Erosion Sediment Control Plan (ESCP) clarify dust suppression control measures	
		Appendix F – ESCP – S.4.2 delete reference to wetting	
		S 7.11 Risk Assessment – update dust control	
		S 4.3.1 Camps and Camp locations – clarify fire break width and location within perimeter of camp area	
		S 7.6 Bushfire Management - clarify fire break width and location within perimeter of camp area	
		Appendix H Bushfire mgmt.. Plan – Infrastructure exclusion - clarify fire break width and location within perimeter of camp area	

		Appendix F – ESCP include name and qualifications of author	
		Appendix G – Weed Mgmt. Plan – clarify wash down/blowdown and location of wash down facility	
21/02/2023	BRS1-2	Spatial data and maps - updated maps to provide project footprint and disturbance and provide detailed spatial data.	Low Ecological,
23/02/2023		S 4.2 Seismic line field survey and site selection Table 4.2 Seismic line summary. Correct EP97 Line 1 interest holder.	KAG
18/04/2023	BRS1-3	Edits made in response to Reg. 11(2)(b) feedback	Low Ecological
9/5/2023	BRS1-3	Updated maps with track information and Plains Mouse Protection Area	Low Ecological
14/5/2023		Appendix N edits – in response to Reg 11(2) (b) <ul style="list-style-type: none"> • update copies of information provided to stakeholders • Clarify distribution of “on country meeting info pack” • Insert section 3.1 Notice of objection of claim and feedback response • Update stakeholder engagement with details of on country meetings and associated correspondence • Clarify camp location information and info to stakeholders 	KAG
14/5/2023		Item 1 of Reg 11(2)(b) traffic and cumulative impact S 7.3 and 7.3.4 <ul style="list-style-type: none"> • Peak number of vehicle movements updated at S.7.3.4 • S.7.3 3 updated to identify mining activity. No mining activity historical, current or planned within the BRS permits. 	KAG
18/5/2023		S 4.1.2 seismic line preparation <ul style="list-style-type: none"> • clarify survey used to keep seismic lines and tracks within AAPA approved corridor. 	KAG
		S 4.3.2.2 and S 4.3.2.3 clarify route between Blamore and Colson tracks	KAG
18/5/2023		S. 4.6.1. Emissions reporting <ul style="list-style-type: none"> • added information on monitoring and reporting of emissions as per the regulations. 	Low Ecological
19/5/2023		Appendix N updated to note indigenous consultation conducted and work approvals provided	KAG
25/5/2023		Appendix N updated to note consultation with station for aligning bushfire management plans	Low Ecological
29/5/2023		Appendix H updated to align with station bushfire management plan	
29/5/2023		EMP update sections 4.2 and 4.3.2 for impacts and avoidance	
29/05/2023	BRS1-3	S 4.2 Seismic line summaries updated to include mitigation of all Cultural Heritage Risk Areas (CHRA) identified in appendix B as per recommendations.	Low Ecological
		S 7.3.6 Implementation of Cultural Heritage Assessment Report recommendations reiterated.	
		S 7.14 Adherence to AAPA Authority Certificate Conditions and implementation of Cultural Heritage Assessment Report recommendations reiterated as management tasks.	
		Appendix E Risk assessment – Implementation of Cultural Heritage Assessment Report recommendations included as mitigation measure in cultural heritage section.	
		Edits made in response to Reg 11 feedback	
		Appendix H Bushfire Management Plan – inclusion of analysis of impacts against existing fire management plans; liaison with landholders; mitigation measures updated and implementation responsibilities aligned; fire management zone map added.	
		S 7.7 Bushfire management plan tasks updated.	

		S 5.6.4 Archaeological assessment updated to include AAPA Certificate C2021/012 sacred sites within RWAs on EP107. Figure 5.3 added to show RWAs.	
		Appendix F ESCP – addition of drainage line crossing avoidance and requirements.	
		Appendix A. Ecological Assessment – Figure 7-1 updated to include all clay pans and drainage lines identified in Appendix B.	
04/07/2023	BRS1-4 Reg 10 (4/7/23)	Update EMP to reflect current proposed activity timeframe	KAG
		Correct Table 4-3 seismic line coordinate (Zone UM53J) for EP93 line 1 start location	
		Update appendix F ESCP to include qualifications of author & timing of project updated	
		Update Appendix E for dust suppression	
		S.6.1 stakeholder identification updated to reflect identified stakeholders and other parties consulted with. Update appendix N	
		s.7.3.6. include summary of 'undiscovered heritage site' procedure.	
5/7/2023		Update and clarify 4.3.2.4.3. access to seismic line 5	
		Update and clarify 5.3 sites of conservation	
		Update S4.4 Maintenance and Rehab re Colson and Blamore line access	
		Update Appendix K S. 1.3 to clarify use of Madigan Line	
		Update Appendix K 2.5 pg. 4 to clarify use of Madigan Line	
11/7/2023	BRS1-4	Reg 11(3)(b)(i) Update appendix N to note notice to pastoralist of changed camp location	KAG
		Reg 11(3)(b)(i) Appendix N identifies all stakeholders including interest holders for adjacent petroleum titles	
		Reg 11(3)(b)(i) Appendix N Peak Helium correspondence is included	
		Reg 11(3)(b)(i) Appendix N Santos QNT correspondence included	
		Reg 11(3)(b)(i) S.2.4.d.iv stands of Coolabah trees in EMP will be 'avoided' as seismic lines and access can skirt around trees and seismic lines have been shortened to avoid (EMP pg. 34 S.4.2.1. and 4.2.2.)	
		Reg 11(3)(b)(i) S.2.4.d.iv area of blade down clearing required is detailed on pg. 8, in Table 4-2 pg. 32, and section 4.7 pg55.	
		Reg 11(3)(b)(i) S3 has been clarified for S.4.2.2 EP93 Line 2; S.4.2.3 EP93 Line 3; S.4.2.5 EP93 Line 5; S.4.2.8. EP107 line 2	
		Reg 11(3)(b)(i) S.3 Coolabah Trees the EMP has been updated to reflect these will be 'avoided'. wording 'where possible' has been deleted. Appendix A has been updated	
12/7/2023		Reg 11(3)(b)(i) S. 3 has been clarified with explanation of identification of threatened species and qualifications of responsible person	
		Reg 11(3)(b)(i) S. 3 – section 7.12 has been updated to reflect management procedures identified in Section 5.5	
3/8/2023		EMP seismic Line access and J line updated Reg 11 and EMP updated. GIS updated.	Low Ecological
4/8/2023		Update S4.6 Greenhouse Gas emissions	

Using information provided by BR Simpson Pty Ltd and Terrex Seismic, this document was prepared by: Low Ecological Services P/L; [REDACTED]

1 Executive Summary

BR Simpson is a private Australian company involved in exploration for oil and gas and for the development of Carbon geo-sequestration projects. BR Simpson proposes to undertake 643.8 km of two dimensional (2D) seismic survey across EP93, EP97 and EP107 from an AAPA approved clearance of 957 kms. The survey is proposed to take place between 15th October 2023 and September 30, 2024 subject to timing of receipt of regulatory approvals.

This Seismic Environment Management Plan (EMP) forms the basis of BR Simpson's application to the Northern Territory (NT) Minister for Environment and Natural Resources (DENR) for the proposed seismic exploration activities. The EMP has been prepared with reference to clauses in the *Schedule of Onshore Petroleum Exploration and Production Requirements 2019*, the *Code of Practice: Onshore Petroleum Activities in the NT (2019)*, *Section 67 of the NT Petroleum Act (1984)* and the *Petroleum Environment Regulations (2016)*.

The objective of this EMP is to provide documented strategies to minimise environmental impacts and the risk of any unintended adverse outcomes resulting from exploration activities. Specifically, the EMP provides:

- A description of the regulated activity.
- A description of the existing environment (physical, biological, social, cultural) including any values or sensitivities.
- An assessment of environmental impacts and environmental risks associated with the project.
- site-specific impact management strategies to minimise environment and heritage risks associated with the exploration activities, including ongoing monitoring and post-activity rehabilitation measures
- Environmental outcomes and environmental performance standards.
- An implementation strategy

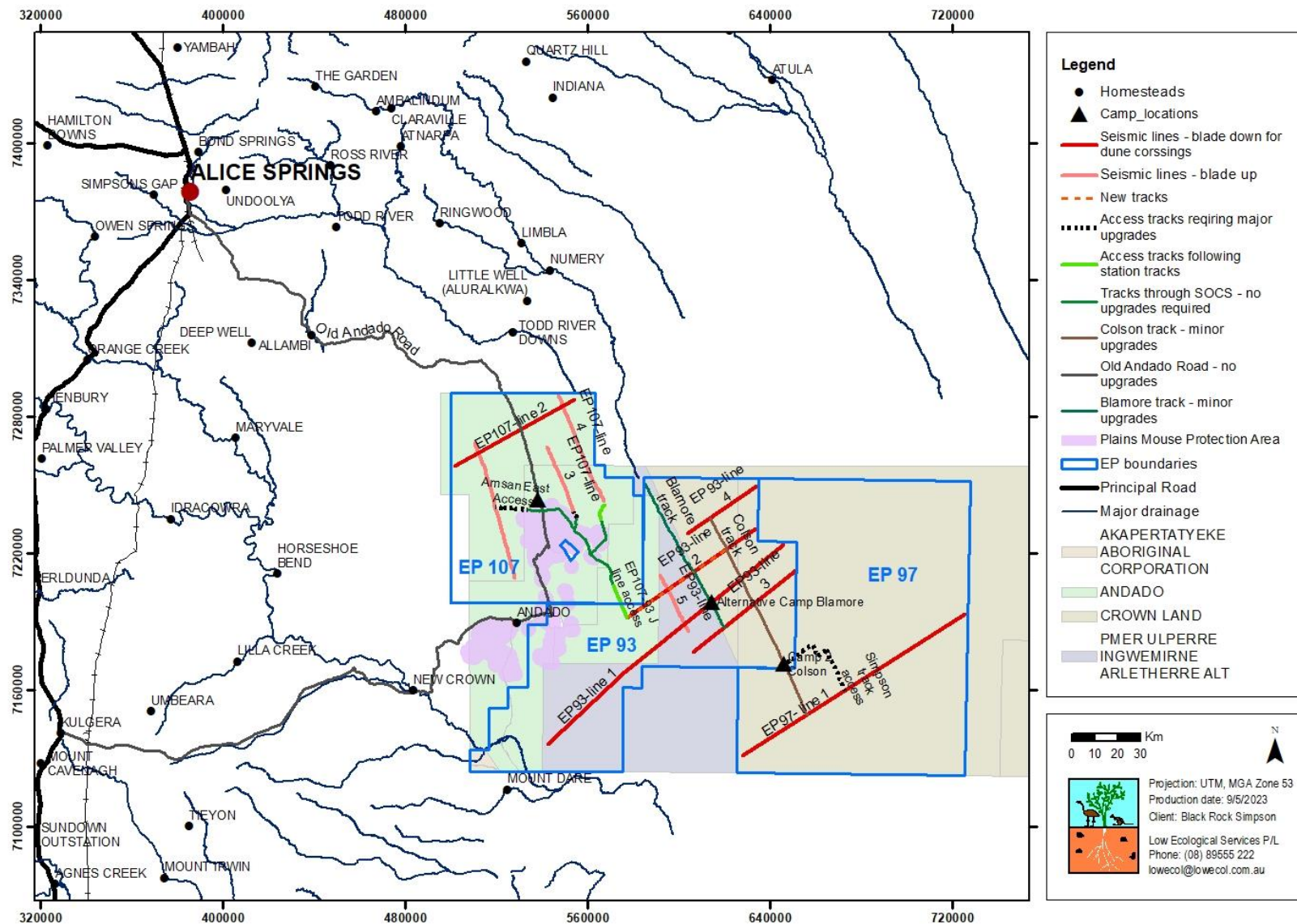


Figure 1-1. Location of proposed seismic activity

The table below provides a summary of the regulated activities.

Activity	Details
2D seismic survey	EP93, EP97 & EP107
2D vibroseis seismic survey	643.8 kms of seismic exploration. There are 10 seismic lines each of which will be 4.5 m wide.
Equipment and machinery	<ul style="list-style-type: none"> • 4WD vehicles • 2 Bulldozers • 2 Graders • source controller truck • generator trailer • vibrator technician service truck • 2 harvesting and spread trailers + prime mover
Civil activities	<ul style="list-style-type: none"> • 119.4 ha of vegetation clearing prior to survey. The area includes 59.32 ha of blade down clearing for seismic lines, 22.61 Ha for clearing reused seismic lines to be used as access lines, 25.47 ha of reused access lines, and 12 Ha of blade down clearing for construction of three mobile camp sites. • Vegetation stockpiled for rehabilitation use. • Waste processing for camp
Workforce	<p>Max 50 personnel on site with some continuation of personnel across different roles.</p> <ul style="list-style-type: none"> • line restoration crew – 7 • Advance crew – 9 • Line preparation crew – 10 • Survey crew – 5 • Recording crew – 38
Supporting infrastructure	
Campsite	<ul style="list-style-type: none"> • Office • accommodation • Laundry/shower/toilet • Kitchen • Diner • Cold room • Mechanic workshop • Vibe store • Sewage treatment system
Access Route options	<ul style="list-style-type: none"> • Access from Alice Springs via Santa Theresa and old Andado road, Station bore tracks, Madigan Line • Alternative access via Stuart highway to Finke and Old Andado road. • Pastoral property tracks will also be utilised to access the seismic lines. No widening of existing pastoral tracks.
Volumes diesel required for power supply, equipment, vehicles	<ul style="list-style-type: none"> • 250,000L for exploration of all three EP's. • Breakdown <ul style="list-style-type: none"> ○ EP107 – 80,750 L ○ EP93 – 125,205 L ○ EP97 – 44,045 L
Water source/s, demand (estimate with breakdown for dust suppression, construction, and amenities), volumes of onsite water	<ul style="list-style-type: none"> • Water supplied from Bravo bore (RN018519) and the Blamore Bore (RN018517). • Estimated total potable water usage at 30 litres per day = 71,160L (if water from the Bravo Bore is unsuitable for human consumption potable water will be sourced from Alice Springs on a commercial

storages, discharges.	basis). <ul style="list-style-type: none"> ● Estimated total camp water usage at 180 litres per day = 426,960L. ● 500,000 litres for seismic activity. ● Total water usage across the entire project is 998,120 litres
Rehabilitation	
Proposed methods	<ul style="list-style-type: none"> ● on completion cleared vegetation will be respread on the 2D seismic lines to promote regeneration and windrows removed ● Photo points will be established, and photos obtained by construction staff at regular intervals along the 2D seismic lines to monitor rehabilitation. ● All surface infrastructure will be removed

Wherever possible established roads (old Andado Road, Colson track and Blamore track) and existing pastoral tracks will be used during site activities. General maintenance of tracks may be required during and following project activities. This may include grading, and patching, and restoration of road when project completed. No widening of these access ways is to be undertaken.

1.1 Existing environment

The BR Simpson project footprint is wholly contained within the Simpson–Strzelecki Dune fields bioregion which covers an area of 277,800km² within the boundaries of NT, SA, QLD, and NSW (Baker, Price, Woinarski, Gold, Connors, Fisher and Hempel, 2005). The Simpson–Strzelecki Dune fields bioregion has an arid, subtropical climate and comprises long parallel sand dunes, fringing dune fields, extensive sand plains, dry watercourses, and salt pans. Vegetation is predominantly spinifex hummock grasslands with sparse acacia shrub lands and some narrow river red gum and coolabah riverine woodlands (Baker, Price, Woinarski, Gold, Connors, Fisher and Hempel, 2005). Land use comprises Aboriginal land, conservation reserves and pastoral leases (on the edges of the bioregion). The region experiences an arid to semi-arid climate, which is characterised by hot dry summers and cool dry winters, with a low average annual rainfall. Large variations in rainfall patterns occur between years and summer rainfall dominates with mean annual rainfall increasing progressively to the north.

1.2 Community and Culture

The local economy within the Simpson desert area is based predominately on pastoral activity and small amounts of tourism. The remoteness of the region and lack of infrastructure have hampered economic development in the region. There are no operating mines in the area although there is a relatively high level of historic interest and exploration in the broader area.

An archaeological survey was undertaken by EarthSea heritage in May 2022. The results of the survey recorded 11 archaeological sites and 14 isolated finds, all of which were stone artefact scatters or isolated stone artefacts. See Appendix B for the full archaeological survey report. All recommendations to avoid impacts have been implemented. No sacred sites or sites of significance have been identified within or near the areas of activity. All Access ways and proposed seismic routes have been assessed by the Aboriginal Areas Protection Authority (AAPA) and the relevant Authority Certificates issued (appendix D). The Central land Council (CLC) with Traditional owners of the land have also surveyed the work areas for sites of cultural and heritage significance and issued a Sacred Site Clearance certificate number C2021-143.

1.3 Rehabilitation

On completion of the project cleared vegetation will be respread on the 2D seismic lines to promote regeneration. Windrows will be removed to reduce erosion risks. All infrastructure and waste associated with the activities will be removed. Photo points will be established at regular intervals along the 2D seismic lines to monitor rehabilitation. As it is a short-term activity it is expected the area will rehabilitate naturally.

1.4 Stakeholders

BR Simpson has identified the following as the key relevant stakeholder groups for the project and have liaised accordingly.

- Traditional Owners
- Pastoral Leaseholders within the Location of the Regulated Activity.
- Other authorised land users within the Location of the Regulated Activity.

1.5 Risk Assessment

An environmental risk assessment (Appendix E) was undertaken for this EMP. The identification of potentially adverse impacts was informed by the regulated activity aspects outlined in Section 3 and the various technical studies prepared to support this EMP. The severity of the identified impacts was assessed based on the categories relating to the scale, intensity, and duration of the impact. For each potential environmental impact identified, the risk assessment considered the likelihood of the impact occurring and then the worst-possible consequence to the NT EPA environmental objectives.

The EMP has assessed that the regulated seismic activity and associated activities pose an acceptable risk through the implementation of control measures that allow all risks to be reduced to ALARP. Nonetheless, ALARP is not a final position over the life of the regulated activity. Ongoing monitoring will allow for the discovery of new mitigation measures that could be implemented, if required.

ACRONYMS

2D	two dimensional
AAPA	Aboriginal Areas Protection Authority
ALARP	As low as reasonably practicable
ALRA	Aboriginal Land Rights Act
AS	Australian Standard
BOM	Bureau of Meteorology
CPESC	Certified Professional in Erosion and Sediment Control
DAWE	Department of Agriculture, Water and the Environment (Commonwealth) - formerly DoEE
DEPWS	Department of Environment, Parks and Water Security (Northern Territory) – formerly DENR or DLRM
DOH	Department of Health
DPIR	Department of Primary Industry and Resources
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EP	Exploration Permit
EPA	Environmental Protection Authority (NT)
EPBC	Environment Protection and Biodiversity Conservation Act (1999) (Commonwealth)
ESCP	Erosion and Sediment Control Plan ESD Ecologically sustainable development
IECA	International Erosion Control Association
MNES	Matters of National Environmental Significance
NT	Northern Territory
NTG	Northern Territory Government
NVIS	National Vegetation Information System
OHS	Occupational Health and Safety
PMST	Protected Matters Search Tool
PPE	Personal Protective Equipment
SDS	Safety Data Sheet
SOBS	Sites of Botanical Significance
SOCS	Sites of Conservation Significance
SPM	Spill Management Plan
TO	Traditional Owner
TPWC Act	Territory Parks and Wildlife Conservation Act (Northern Territory)
WMP	Weed Management Plan
WoNS	Weed of National Significance

2 Introduction

BR Simpson is the registered title holder of 100% interest in EP93, EP97 and EP107 located in the Simpson desert. These three EPs are located approximately 250 kms southeast of Alice springs, extending across parts of Per Ulperre Aboriginal Land Trust, Andado Station and Simpson Desert Crown Land. BR Simpson is a private Australian company involved in the acquisition and exploration of oil and gas projects and in the potential for development of carbon geosequestration. While the *Code of Practice: Onshore Petroleum Activities in the Northern Territory* (2019) identifies the 'wet season' to be the period of October to April (inclusive), BR Simpson proposes to undertake the acquisition of 643.8 km (4.5 m wide) of two dimensional (2D) seismic survey between 15th October 2023 and September 30, 2024 across EP93, EP97 and EP107 subject to timing of receipt of appropriate regulatory approvals.

This Seismic Environment Management Plan (EMP) forms the basis of BR Simpson's application to the Northern Territory (NT) Minister for Environment and Natural Resources for approval for the proposed seismic program. The EMP has been written with reference to clauses in the Schedule of the *Onshore Petroleum Exploration and Production Requirements 2019*, the *Onshore Petroleum Activities in the NT Code of Practice (2019)*, *Section 58 of the NT Petroleum Act (1984)* and the *Petroleum Environment Regulations (2016)*.

The overall aim of this EMP is to ensure that exploration across EP93, EP97 and EP107 is conducted in a manner consistent with the principles of ecologically sustainable development. It also ensures that the impacts and risks associated with the activities are reduced to As Low As Reasonably Practical (ALARP). In line with these overall aims the objectives of this EMP are.

- To describe the seismic activities (regulated activity)
- Describe the site-specific existing environment, including physical, biological, social, and cultural characteristics
- An assessment of environmental impacts and environmental risks associated with the project.
- site-specific impact management strategies to minimise environment and heritage risks associated with the exploration activities, including ongoing monitoring and post-activity rehabilitation measures
- to align with the principles of ecologically sustainable development
- To ensure regulatory requirements are met.

1.6 Interest holder

The proponent for the project is BR Simpson Pty Ltd as Title Holder and Operator of EP107, EP93 and EP97. The contact details are provided below:

Company	BR Simpson Pty Ltd
ABN	47 614 132 624
EMP name	SIMPSON DESERT 2D SEISMIC PROGRAM – EP93, EP07 & EP107
Primary contact	David Lloyd
Phone	0419 133 855
Email	d.lloyd@onescope.com.au
Registered address	121 Green St. Cremorne, Vic. 3121. Australia

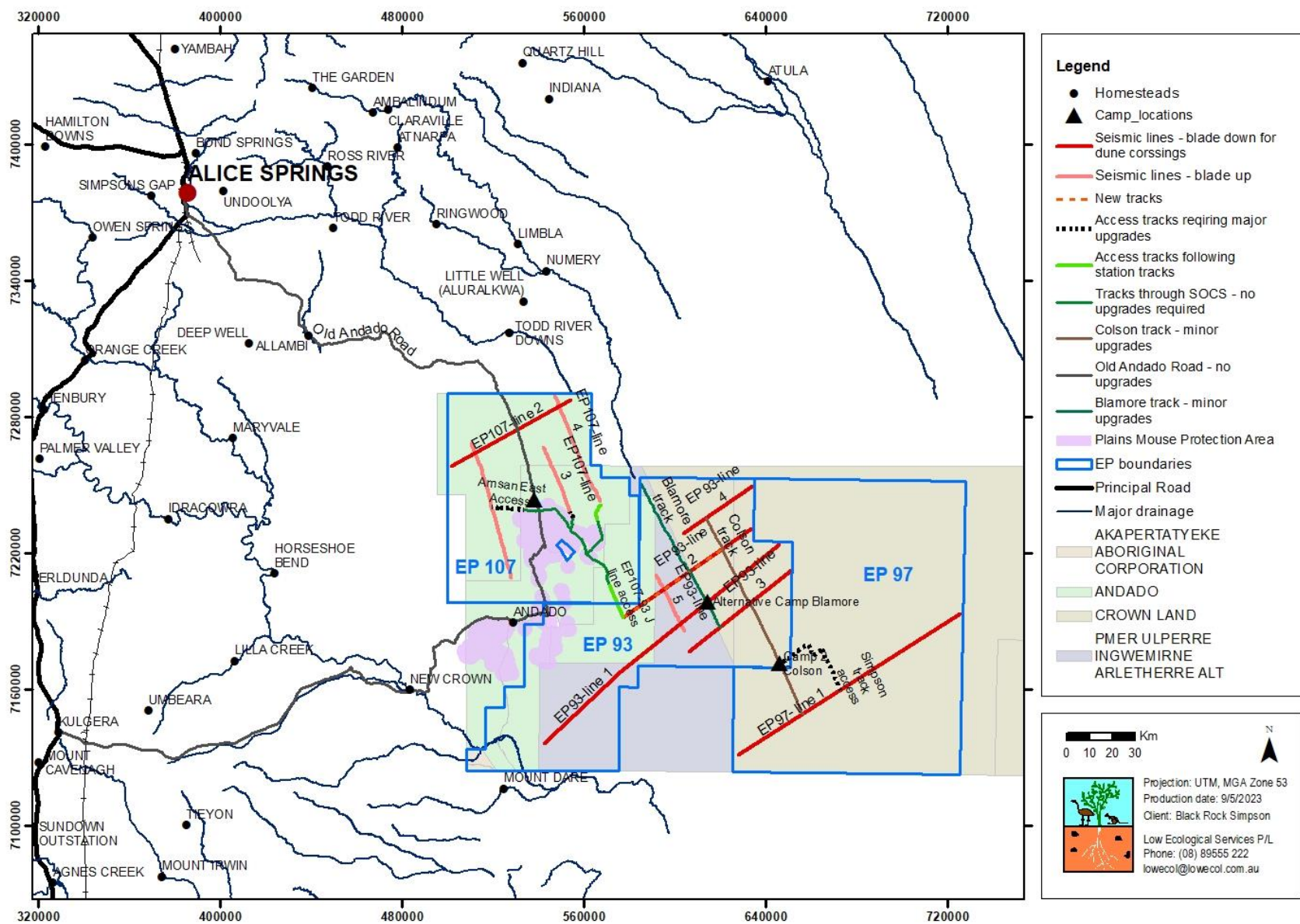


Figure 2-1. Location of the proposed seismic activity

1.7 Location of regulated activity in the NT

The proposed seismic activity is located within EP93, EP97 and EP107, approximately 250 km south-east of Alice Springs in the Simpson Desert. The proposed area of exploration is included in the Simpson–Strzelecki Dune fields bioregion which covers an area of 277,800km² within the boundaries of NT, SA, QLD, and NSW (Baker, Price, Woinarski, Gold, Connors, Fisher and Hempel, 2005). The Simpson–Strzelecki Dune fields bioregion has an arid environment and comprises long parallel sand dunes, fringing dune fields, extensive sand plains, dry watercourses, and saltpans (Baker, Price, Woinarski, Gold, Connors, Fisher and Hempel, 2005). Vegetation is predominantly spinifex hummock grasslands with sparse acacia shrublands and some narrow corridors of river red gum (*Eucalyptus camaldulensis*) and coolabah (*Eucalyptus coolabah*) riverine woodlands. Land use comprises Aboriginal land, conservation reserves and pastoral leases (on the edges of the bioregion). The Simpson Desert regional economy predominately relies on pastoralism, the remoteness of the area and lack of infrastructure hampering a diversity of economic development in the region. The closest aboriginal communities to the proposed seismic survey area are Finke, which is approximately 114 km west, and Santa Teresa, approximately 120 km northwest.

1.8 Tenure and access

The proposed seismic activity occurs across parts of Andado Station, Pmer Ulperre Aboriginal Land Trust and Simpson Desert Crown Land. BR Simpson ('BRS') has engaged with the relevant stakeholders of these land parcels in the development of this EMP. Currently, there are no operating mines in the region; however, there is a medium level of mineral and hydrocarbon exploration in surrounding leases and previous seismic and drilling activity has taken place within EP93, EP97 and EP107.

Proposed access to the site from Alice Springs is via the Santa Teresa Andado road and then via various existing station tracks, previous exploration tracks and the existing Colson and Blamore tracks. Access will utilise existing roads as well as pastoral tracks and a Pastoral Land Access Agreement (LAA) with the relevant leaseholders is in place. The appropriate approval processes will be undertaken before work activities commence. BRS has engaged with the relevant pastoral station owners or their representatives over the development of the EMP, to arrange access for work activities.

1.8.1 Aboriginal Areas Protection Authority

BRS has received AAPA certificates for the exploration activities proposed by this EMP, covering areas within the three EP's 93, 97 & 107 (Appendix D) where exploration activities are proposed to take place within the granted permits. BRS will comply with conditions of the three issued AAPA certificates.

3 Legislative requirements

The following section meets the specific requirements of Schedule 1, clause 10 of the Regulations, which states that an EMP must outline any legislative requirements applicable to the regulated activity that are relevant to the protection of the environment and demonstrate how those requirements will be met. The legislation relevant to the regulated activities and how the specifications have been met is detailed in the Table 3-1.

Table 3-1. Legislative requirements

Legislative source	Requirement	Applicability	How met
Land tenure and access			
<i>Petroleum Act 1984</i>	s. 22 Term of exploration permit – Subject to s. 28(3), 30(3), 73 and 74, an exploration permit remains in force for 5 years commencing on the day on which it was granted or renewed. s. 18 Revision required at end of each 5-year period.	A petroleum exploration permit is required to explore for oil and gas in the Northern Territory.	BR Simpson is the registered holder of a 100% interest in Petroleum Exploration Permit EP93 EP97 and EP107
	s. 67 Drilling and seismic surveys – notice.	The proponent shall not commence operations for a seismic survey unless notice in accordance with this section is given to the Minister and Minister approves.	BR Simpson will issue a notice to the DITT Minister at least 28 days before commencing seismic operations in accordance with requirements of the section 1.5.
	Pastoral Land Access: s. 65 Access. s. 81 Compensation to owners. s. 82 Compensation for right of access.	Pastoral Land Access Agreements (LAA) with the relevant pastoral stations are required before access to exploration sites for activities approved by DITT.	BR Simpson has negotiated a LAA with the relevant pastoral station(s). BR Simpson has developed several mitigation measures to reduce the impact of seismic activity on pastoral activity (section 6 and 7).
	Stakeholder Engagement Guidelines Land Access 2016.	Reconnaissance activities require written notice to the pastoral leaseholder/manager with at least 14 days before any works can start.	BR Simpson conducted ecology surveys in 2022. 14 days' notice was provided to the pastoral leaseholder/manager before these activities were undertaken. BR Simpson will also provide adequate notice before any other future survey activity.
<i>Native Title Act 1993</i>	s. 25 Ensuring that the Right to Negotiate with native claimants and any Expedited procedure for consultation (s. 37 and s. 237) are complied with. s.57F Notification to native title holders etc.	BR Simpson must recognise native title in lands over which native title is established.	BR Simpson have exploration and ILUA agreements with Native Title Holders and compensation is paid for all activities under this EMP in accordance with the(se) Agreement. Representatives of the Native titleholders have issued approval certificate C2021-143.

Environment Management Plan			
<i>Petroleum (Environment) Regulations 2016</i>	Reg 9 s. 1(a), s. 1(b) and s. 1(c) Approval criteria for plan.	BR Simpson has an up-to-date plan for the regulated activity which includes all information by Schedule 1 and is appropriate to the nature and scale of the regulated activity	This EMP fulfils this requirement.
	Reg 6 Submission of plan for approval Reg 18 Revision required at end of each 5-year period	BR has an interest in EP93 EP97 & EP107, with regulated activity planned to commence in 2023 subject to approval of the EMP	The EMP is submitted for approval under Reg 6.
	Reg 4a The code of practice is the <i>Code of Practice: Onshore Petroleum Activities in the Northern Territory</i> Schedule 1 s. 10(2) legislative requirements include the requirement to comply with the code of practice.	This EMP identifies the regulated activities.	BR Simpson, consider they have provided sufficient detail throughout the EMP to determine the nature and scale of activities and believe they are ALARP and acceptable (refer section 6).
	Reg 4a The code of practice is the <i>Code of Practice: Onshore Petroleum Activities in the Northern Territory</i> Schedule 1 s. 10(2) legislative requirements include the requirement to comply with the code of practice.	This EMP identifies the regulated activities.	BR Simpson, consider they have provided sufficient detail throughout the EMP to determine the nature and scale of activities and believe they are ALARP and acceptable (refer section 6).
	Reg 5A decisions subject to the principles of ecologically sustainable development.		The EMP considers the principles of ecological sustainable development.
	Schedule 1 s. 3(2b) must be of the cumulative effects of those impacts and risks when considered with each other and in conjunction with any other activities or events that occurred or may occur in or near the permit area for the regulated activity.	Cumulative effects of seismic survey and ancillary activities are considered as they relate to the impacts and risks associated with implementation of BRS's activities.	Section 7.2 of the EMP addresses cumulative impacts of BRSs current and future work programs on water use, greenhouse gases, flora and fauna, traffic, and social and community aspects.
<i>Environment Protection Act 2019 and Environment Protection Regulations 2020</i>	s. 28 Declaration of environmental objectives. s. 29 Purpose and effect of referral triggers.	Under the Environment Protection Act 2019, proposed projects that may have a significant effect on the environment are to be referred to the NT EPA for assessment.	BR Simpson have assessed the activities outlined in this proposal and the potential impacts on the environment and have concluded that there will not be a significant impact as outlined by the Environment Protection Act 2019 (see section 7)
<i>Environment Protection and</i>	The protection of matters of national	If an MNES is significantly impacts, then	Following desk top and ground survey of the lease,

<i>Biodiversity Conservation Act</i>	environmental significance (MNES). Includes the potential need for approval for any activity that is likely to have significant impact on any matters of identified World Heritage (s.12), National Heritage (s.15B), wetlands of international importance (s.16), threatened species (s.18) and listed migratory species (s.20).	additional assessment under the EPBC Act is required.	it is considered that the proposed activities will not adversely impact MNES; therefore, the project has not been referred for assessment nor approval under the EPBC Act. It is considered that the proposed activities will not adversely impact MNES; therefore, the project has not been referred for assessment nor approval under the EPBC Act.
	The protection of matters of national environmental significance (MNES). Includes the potential need for approval for any activity that is likely to have significant impact on any matters of identified World Heritage (s.12), National Heritage (s.15B), wetlands of international importance (s.16), threatened species (s.18) and listed migratory species (s.20).	If an MNES is significantly impacts, then additional assessment under the EPBC Act is required.	Following desk top and ground survey of the lease, it is considered that the proposed activities will not adversely impact MNES; therefore, the project has not been referred for assessment nor approval under the EPBC Act. It is considered that the proposed activities will not adversely impact MNES; therefore, the project has not been referred for assessment nor approval under the EPBC Act.
Site Selection and planning			
<i>Code of Practice: Onshore Petroleum Activities in the Northern Territory</i>	COP A.2 Scope and application – Part A applies to all activities that cause disturbances to the surface of the land, including activities such as the preparation of well pads, seismic surveys, access tracks and other infrastructure.	BR Simpson plan on conducting seismic surveys in EP93, EP97 & EP107	Investigations have informed decisions relating to planning, design, and locations of the works.
Noise			
<i>Code of Practice: Onshore Petroleum Activities in the Northern Territory DENR and DPIR</i>	A.3.3. Noise assessment, planning and management associated with petroleum activities shall comply with the Northern Territory Noise Management Framework Guidelines.	BR Simpsons project activities including seismic exploration have the potential to create noise pollution.	Due to the nature of the activities and the isolated location there will be no noise impact. Considering the impact of noise from low flying helicopters on cattle behaviour on the Pastoral property, agreement has been reached to limit helicopter use over the property.
Erosion and sediment control			
<i>Code of Practice: Onshore Petroleum Activities in the Northern Territory</i>	A.3.4 An Erosion and Sediment Control Plan (ESCP) must be developed by a suitably qualified person	BR Simpson's activities have the potential to lead to erosion and land degradation.	An ESCP has been developed for the project.

	A.3.4 Land Clearing Guidelines as published by DEPWS must be complied with in relation to protection of natural waterways as a result of land disturbance.	Land clearing is subject to the provisions under the Petroleum (Environment) Regulations 2016. BR Simpson require some vegetation clearing for line preparation.	BR Simpson will comply with the Land Clearing Guidelines, see Risk Assessment (Section 7)
	A.3.4 Ensure the following: <ul style="list-style-type: none"> • appropriate buffers are implemented around natural waterways • disturbance in the wet season is minimised • the number of crossing points is minimised • crossings are constructed as close as practicable to right angles to the waterway • material changes in the shape of the waterway are avoided • material changes in the volume, speed or direction of flow or likely flow of water in the waterway are avoided • alteration to the stability of the bed or banks of the waterway (including by removal of vegetation) is avoided • erosion risk, sedimentation and pollution of waterways is minimised through the appropriate design and implementation of best practice erosion and sediment control measures. 	There will be clearing required and project activities have the potential to lead to erosion and land degradation.	BR Simpson will comply with the Land Clearing Guidelines and implement an ESCP.
<i>Water Act 1992 (NT), Water Act 1992, Water Legislation Amendment Act 2018</i>	s. 40 interfering with waterway without authorisation. s. 41 grant of permit to interfere with waterway	Line preparation activities which interfere with a waterway may require permit to interfere under the Water Act 1992.	BR Simpson has surveyed creek crossings (Appendix A). Waterways will be crossed when dry and crossing locations will be selected to reduce the amount of cutting/interference required. At completion the disturbance to the waterway will be progressively rehabilitated in accordance with the Rehabilitation Plan (Appendix K) and ESCP (appendix F).
	s.57 grant of bore work permit	The requirement to conduct bore work for the purpose of drilling a bore, cleaning or refitting a bore will require a permit under the Water Act 1992	No new bores will be drilled for the conduct of the proposed exploration work. A water extraction licence is not required for petroleum activity unless the amount of water

			<p>required is equal to or exceeds 5ML per annum. BR Simpson plans extraction under a general exemption made in Gazette S109 of 20 December 2018 which allows up to 5 ML per year to be taken. The intended groundwater bores to be used are detailed in Section 4.7.</p> <p>If the bores are found to require cleaning or refitting an application for a bore work permit will be made.</p>
<p><i>Land Clearing Guidelines 2020</i></p>	<p>The Land Clearing Guidelines identifies recommended buffers as follows:</p> <ul style="list-style-type: none"> • Section 4.3.3 recommended minimum 200 m buffer of native vegetation along property boundaries >100 ha. • Section 4.3.5.1 Road buffers – where land proposed for clearing is adjacent to a public road reserve...retain minimum 50 m wide native vegetation buffer. • Section 4.4.6 Sensitive or significant vegetation types retain 50 m buffer. • Section 4.4.7 Riparian areas related to the stream order classification of the waterway. • Drainage depressions 25 m buffer from outer edge <ul style="list-style-type: none"> ○ Intermittent streams (first order) 25 m buffer from outer edge of riparian vegetation or levee (whichever is greater) ○ Intermittent streams (second order) 50 m buffer from outer edge of riparian vegetation or levee (whichever is greater) ○ Creeks (third and fourth order) 100 m buffer from outer edge of riparian vegetation or levee (whichever is greater) 	<p>BR Simpson require some vegetation clearing for line preparation.</p>	<p>It is not anticipated that line preparation and data recording will cause any significant or long-term impact to the recommended vegetation buffers specified in the Land Clearing Guidelines. Where land clearing is required, these will not be located within the areas mentioned under the Land Clearing Guidelines.</p> <p>There will be some sections of the 2D seismic lines where the slope is greater than 2 and 3%. However, any clearing in that area will be through high blading or blade up so that the ground surface isn't impacted by the blade.</p>

	<ul style="list-style-type: none"> ○ Rivers (fifth or higher order) 250 m buffer from outer edge of riparian vegetation or levee (whichever is greater) <p>The NT Planning Scheme (2020) Overlays S 3.2.5 states that the clearing of native vegetation is to:</p> <p>(a) avoid impacts on environmentally significant or sensitive vegetation.</p> <p>(b) be based on land capability and suitability for the intended use.</p> <p>(c) avoid impacts on drainage areas, wetlands and waterways;</p> <p>(d) avoid habitat fragmentation and impacts on native wildlife corridors; and</p> <p>(e) avoid impacts on highly erodible soils.</p>		
Biodiversity protection			
<i>Code of Practice: Onshore Petroleum Activities in the Northern Territory</i>	COP A.3.5 Surface activities must be undertaken in a manner that avoids and minimises environmental risks and environmental impacts to flora and fauna, critical habitat and important habitat to ALARP and acceptable in accordance the Land Clearing Guidelines	The nature of works has the potential to impact on biodiversity values. An appropriate assessment of biodiversity values is required to ensure risks to these values are ALARP and acceptable.	BR Simpson considers that the EMP provides an appropriate assessment of the biodiversity values within EP93, EP97 & EP107. It is considered that the impacts and risks for seismic survey and associated activities will have low impact on flora, fauna and ecosystems and that the measures adopted have resulted in risks being ALARP and considered acceptable.
<i>Petroleum (Environment) Regulations 2016</i>	reg 9 1(c) demonstrates...activity will be conducted...which the environmental impacts and environmental risks are reduced...ALARP and acceptable.		
<i>Environment Protection Act 2019</i>	<p>s. 17 Principals of ecological sustainable development.</p> <p>s. 19 Precautionary principle.</p>		

<i>Territory Parks and Wildlife Conservation Act</i>	s. 3.3 Biodiversity s. 10.3 (2) an application for the clearing of native vegetation is to demonstrate consideration of... threatened wildlife, presence of sensitive vegetation communities, essential habitats etc.		
management			
<i>Weed Management Act 2001</i>	COP A.3.6 A project specific weed management plan must be developed as part of the EMP which meets the requirements of the NT Weed Management Planning Guide: Onshore Petroleum Projects.	Ensure that the risk of weed introduction and spread resulting from activities associated with this project are mitigated to protect the economic, community, industry, and environmental interests of the Territory.	A baseline weed survey was completed which identified some weeds on site. This informed the development of a weed management plan (Appendix G).
<i>Weed Management Planning Guide: Onshore Petroleum Projects 2019</i>	s. 3 Dedicated weed officer.	To ensure necessary weed management outcomes, the weed officer must have relevant skills and experience and availability to successfully manage weed related issues for the project	BR Simpson will have a dedicated weed officer (Appendix E & G)
	s. 8 Notification procedure.	48-hour notification timeframe upon discovery of a new weed species in the project footprint is incorporated into company policy, planning and procedure.	Project specific weed management plan (section 8.2 and Appendix G).
Fire management			
<i>s Management Act 2016</i>	s. 81 and s. 84 Property fire management plans.	Project activities have the potential to cause bushfires.	The Bushfire Management Plan (Appendix H) aims at ensuring the risk of bushfires caused by project activities remains nil or as low as possible
<i>Code of Practice: Onshore Petroleum Activities in the Northern Territory</i>	A.3.7 A fire management plan at a project level must be developed as part of the EMP. Site specific analysis of bushfire risks.		
<i>Bushfire Management Planning Guide: Onshore Petroleum Projects</i>			

Containment of contaminants			
<i>Petroleum Act 1984</i>	s. 117AAC (1) A person must not, during the conduct of an operation authorised under this Act, intentionally do an act, or fail to do an act, that causes the release of a contaminant or waste material.	During conduct of the regulated activity contaminants and waste will be generated, and some of these wastes will be listed waste.	Waste and Wastewater Management Plan (8.3).
<i>Code of Practice: Onshore Petroleum Activities in the Northern Territory</i>	A.3.8 Containment of contaminants: (a) Activities that involve wastewater or chemical storage must be carried out according to the wastewater management plan and spill management plan which are part of the EMP (which are further detailed in section C.7 of this Code).	BR Simpson will take all reasonable and practicable measures to prevent or minimise pollution or environmental harm.	Spill Prevention and Response Plan (8.4 and Appendix J). Emergency Response Plan (Appendix L). Risk Assessment (Section 7 and Appendix E). Reporting and Monitoring (Section 8.12 and Section 8.13).
Rehabilitation			
<i>Petroleum Act 1984</i>	57A 12(b)...the rehabilitation of the environment in the area to which the access authority applied and any other area that has been damaged by...operations authorised by the access authority.	Land disturbance activities will occur	BR Simpson have established a Rehabilitation Plan that details the progressive rehabilitation and ongoing monitoring that will be undertaken (Appendix K).
<i>Code of Practice: Onshore Petroleum Activities in the Northern Territory</i>	A. 3.9 (a) A Rehabilitation Plan must be included as part of an EMP.		
	A. 3.9 (b) Appropriate to scale and nature of activity.		
	A.3.9 (c) Progressive rehabilitation of significantly disturbed land which is not required for the ongoing conduct of the petroleum activities or future activities, must commence as soon as practicable, but not longer than 12 months following the cessation of activities on the land		
	A. 3.9 (d) All significantly disturbed land must be		

	<p>reinstated to its pre-disturbed condition. For areas that previously contained native vegetation, native vegetation must be re-established such that the corridors become ecologically integrated into the surrounding landscape</p> <p>A. 3.9 (e) Regular maintenance and at least yearly monitoring of rehabilitated areas must take place to measure compliance with the Rehabilitation Plan.</p> <p>A. 3.9 (f) If contamination is detected, remediation must commence immediately in accordance with the spill management plan and/or emergency contingency plan</p>		
Water and wastewater			
Waste Management and Pollution Control Act 1998 (NT) NT EPA	<p>s. 12 take all measures that are reasonable and practicable to prevent or minimise pollution or environmental harm and reduce the amount of waste.</p> <p>s. 14 Duty to notify of incidents causing or threatening to cause pollution.</p>	<p>When an activity is authorised under the Petroleum Act 1984, the WMPC Act only applies if a contaminant or waste is not confined within the authorised lease boundary. The WMPC Act should be considered due to transport of waste to and from the site.</p>	<p>BR Simpson have considered the requirements of the WMPC Act as relates to conducting the Regulated activities and included the following ways to manage impacts.</p> <p>Transport of any listed waste will be by a person licensed under the WMPC Act to a licensed facility.</p> <p>Relevant plans include:</p> <ul style="list-style-type: none"> • Waste and Wastewater Management Plan (Section 8.3, Appendix I). • Spill Prevention and Response Plan (Section 8.4 Appendix J). • Emergency Response Plan (L). • Reporting and Monitoring (Section 8.12 and Section 8.13).

<i>Water Act 1992 (NT), Water Legislation Amendment Act 2018 DENR – Water Resources Division</i>	Seismic only	<p>The use of up to 5 ML does not requires water licensing under the following conditions:</p> <ul style="list-style-type: none"> • Water can only be taken from bores in accordance with the bore owner’s consent. • Permission from the owners of any bores within 1 km of a bore being used for water extraction must also be sought. <p>Permission must be obtained from the Controller of Water Resources prior to extraction of water from a NTG bore.</p>	<p>A general exemption made in Gazette S109 allows up to 5 ML per year to be taken.</p> <p>Land Access Agreement will include permission from the land holder to use any required water bores controlled by the landholder within the EP.</p> <p>Water extraction will be measured and recorded to ensure extraction meets the stated requirements.</p>
	s. 60 Grant of licence to take groundwater	<p>The taking of water from a bore for employee use requires a water extraction licence for the beneficial use of petroleum. The Controller must not grant a licence unless:</p> <ul style="list-style-type: none"> • Owner of bore consents. • Hydrogeological investigations and modelling indicate no adverse effect on supply of water. • 1 km from designated bores. 	<p>A water extraction licence is not required for petroleum activity unless the amount of water required is equal to or exceeds 5ML per annum. BR Simpson plans extract under a general exemption made in Gazette S109 of 20 December 2018 which allows up to 5 ML per year to be taken. The intended groundwater bores to be used are detailed in Section 4.7.</p>
	s. 16 Prohibition of pollution. s. 7(2) Section 16 does not apply to that comes into contact with water, or water that is polluted, if... the...pollution occurs in the course of carrying out...or petroleum activity; and...is confined within the...petroleum site on which the activity is being carried out.	<p>BR Simpson are obligated to report pollution events within 24 hours where contaminant or waste leaves the regulated site.</p>	<p>Refer to BR Simpson’s Risk Assessment (Section 7).</p>
<i>Code of Practice: Onshore Petroleum Activities in the Northern Territory</i>	C.2.1 Water and wastewater (b) “waste material” and material containing “contaminants” as defined in s 117AAB of the Act; (c) wastewater meeting the definition of waste under the Waste	<p>During project activities, BR Simpson must take all reasonable and practicable measures to prevent or minimise pollution or environmental</p>	<p>BR Simpson have prepared the following plans:</p> <ul style="list-style-type: none"> • Spill Prevention and Response Plan (section 8.4, Appendix J).

	Management and Pollution Control Act 1998 (NT).	harm. Part C of the Code of Practice mainly applies to well site water management. However certain clauses within this apply to surface activities as relates to the wastewater management during the seismic survey and ancillary activities such as camp operations.	<ul style="list-style-type: none"> Emergency Response Plan (Appendix L). Risk Assessment (Section 7.0 and Appendix E), Reporting and Monitoring (Section 8.12 and 8.13)
	C.3.1 The waste hierarchy outlined in the National Waste Policy, 2018, must be implemented by interest holders when developing their WWMP		
	C.5.1 (a) Monitoring programs must be described in the WWMP and SMP and must address the requirements in this section C.5.		
	C.6.1 Water and wastewater tracking, and reporting requirements (b) Wastewater tracking must be documented in an auditable chain of custody system. Wastewater tracking must be in accordance with other legislative requirements such as those imposed under the Waste Management and Pollution Control Act 1998 (NT). (d) Wastewater tracking documentation must be reported to the Minister at least annually in accordance with the framework provided in the EMP.	Water and wastewater tracking is required to be reported to the Minister at completion of the exploration activity or annually, depending on which occurs first.	BR Simpson will retain a register of all onsite and offsite water use and wastewater disposal from the seismic survey operations. Refer to the following plans: <ul style="list-style-type: none"> Waste and Wastewater Management Plan (Appendix I) Risk Assessment (Section 7.0; Appendix E)
	A.3.8 During the wet season, the transport of chemicals and wastewater on unsealed roads must not be undertaken unless the risk of spills is demonstrated to be ALARP and acceptable. This assessment must be included in the EMP and established through a specific assessment of spillage risks in the circumstances. Where it has been determined that wet season transport is ALARP and acceptable and included in the EMP, the outcomes of the risk assessment must be reflected in an emergency contingency plan.	Risk assessments must be completed to determine risks are as low as reasonably practicable and acceptable.	Risk assessments have been completed in Appendix E. Emergency contingency plans have been created, Spill prevention and Response Plan (Appendix J) and Emergency Response Plan (Appendix L) which both reflect the risk assessment, mitigation measures and Residual Risk assessment.
<i>Public and Environmental Health Act 2011 and</i>	Reg 73 (1) On-site wastewater system Reg 74 Operation, maintenance, and servicing of a	Wastewater systems installed outside building control areas. Applies to small scale on-site	BR Simpson will ensure that the seismic contractor establishes temporary onsite wastewater treatment

<i>Regulations Department of Health – Public Health Directorate</i>	wastewater management system Reg 82 wastewater works design approval. 96 Notification of installation of wastewater management system	wastewater systems with a maximum design capacity of 8,000 litres per day. Before starting work on any on-site wastewater systems with a maximum hydraulic flow of 2,000 litres or under per day, a licensed plumber must fill in a notification of installation of an on-site wastewater system.	systems below the maximum design capacity of 8,000 L per day.
Spill management plan			
<i>Code of Practice: Onshore Petroleum Activities in the Northern Territory DENR and DPIR</i>	COP C.7.2 (a) An EMP for a petroleum activity must include a Spill Management Plan (SMP). Monitor, manage and report in accordance with the WWMP and SMP.	Spill Management Plan is required	BR Simpson have prepared a Spill Prevention and Response Plan (Appendix J), and a Waste and Wastewater Management Plan (Appendix I)
Stake holder engagement			
<i>Petroleum (Environment) Regulations 2016</i>	Reg 7(1) stakeholder engagement.	Stakeholder engagement must be conducted in accordance with this regulation during the EMP preparation and will be included within the submitted EMP.	BR Simpson has carried out extensive consultation with pastoral leaseholders and stakeholders who may be directly affected by the environmental impacts or environmental risks associated with the proposed activities.
	Reg 7 s. 2(2a) information provided. Reg 7 s. 2(2b) reasonable period.	BR Simpson must inform the stakeholders of the intended program during the EMP development.	Stakeholder engagement section of the EMP has been updated to reflect the ongoing engagement activities for the development of the EMP (Section 5).
	Reg 7 s. 3(a) Definition of a stakeholder means a person or body whose rights or activities may be directly affected by the environmental impacts or risks of the regulated activity, or their agent/representative. s.36 Records to be kept.	BR Simpson to identify the stakeholders who may be directly affected by the impacts or risks of the regulated activity.	Section 5 outlines the stakeholders that will be affected by the proposed work program. Records have been maintained and will be ongoing over the course of the project activities.
Sacred Site and Heritage Management			

<i>Northern Territory Aboriginal Sacred Sites Act 1989</i>	<p>Part III Site protection procedures, Div. 1A Application for Authority Certificate.</p> <p>s. 19B-19L, s. 5 Authority Certificate. The Legislation establishes a procedure for the protection and registration of sacred sites, through:</p> <ul style="list-style-type: none"> • s. 33 providing entry onto sacred sites and the conditions to which such entry is subject. • Part III of the Act procedures for avoidance of sacred sites when developing and using land. • s. 5 establishing an Authority for the purposes of the Act. <p>s. 30 procedures for the review of decisions of the Authority by the Minister, and for related purposes.</p>	BR Simpson is required to obtain AAPA certificates for all exploration activities. The Act also establishes a duty-of-care to notify AAPA of any potential disturbance to Aboriginal sacred sites.	<p>An Authority Certificate application has been made to the AAPA. BR Simpson understands that no regulated activities can commence until a valid Authority Certificate is obtained.</p> <p>Authority Certificates C2021/010, C2021/011 and C2021/012 have been obtained.</p> <p>BRS will comply with the conditions of the issued AAPA Authority Certificates</p>
<i>Aboriginal Land Rights (Northern Territory) Act</i>	s. 41(6) Application for consent to exploration licences.	Consent is required for ALRA land.	BR Simpson has consulted with Traditional Owners.
<i>Petroleum (Environment) Regulations 2016</i>	Reg 9 s. 1(d) Approval criteria for plan. Reg 7 stakeholder engagement.	Authority Certificate required under the regulations.	BR Simpson have received AAPA certificates C2021/010, C2021/011 and C2021/012 for all exploration activities proposed by this EMP, (Appendix D). BR Simpson will comply with conditions of the three issued AAPA certificates.
<i>Heritage Act 2011 and Heritage Regulation 2012</i>	Reg 3(c) exempt – the work does not detrimentally affect the heritage significance of the place or object. Part 3.3 s. 76(2) Work approval for removal or damage of archaeological place or object.	Activities have the potential to impact on Heritage.	Survey paths will be altered within 2D seismic acquisition corridors to avoid identified sites. Independent archaeological and heritage surveys have also been conducted by the CLC and Traditional owners and EarthSea Heritage Pty Ltd.
Social and community			
<i>Work Health and Safety (National Uniform Legislation) Act 2011 and</i>	Activities will comply with NT WorkSafe legislation.	Activities are required comply with NT WorkSafe legislation.	BR Simpson will ensure that the seismic contractor complies with the requirements of the Work Health and Safety (National Uniform Legislation) Act 2011

<i>Regulations 2011</i>			and Regulations 2011, in the provision of the project.
<i>Schedule of Onshore Petroleum Exploration and Production Requirements 2019</i>	Clause 220 - Reporting a potentially hazardous event.	As per Clause 220 reporting of potentially hazardous events is required.	BR Simpson has outlined reporting requirements in the EMP (refer Section 7.5)
<i>Dangerous Goods Act 1998 AS 1940:2004 (and amendments) Storage and handling of flammable and combustible liquids, 2004</i>	The legislation sets out the requirements and allowances for licensing, packaging, storage, transportation and use of dangerous goods. s.9 Persons involved in handling dangerous goods.	BR Simpson will be transporting fuel.	Fuel storage facilities will be constructed in accordance with AS1940 and considers requirement of the WHS(NUL) Act and WMPC Act. Transport over unsealed roads will only occur after an access way has been assessed as safe for use. Unsealed access ways will be reassessed on a regular basis and no transport will be permitted after a rainfall event of greater than 25mm in a 24 hour period until such time as the access way has been reassessed as safe of use.
<i>Public and Environmental Health Act 2011 and Public and Environmental Health Regulations 2014</i>	The construction and operation of the camp must not create a public health nuisance. Including: <ul style="list-style-type: none">• Food Act 2004• Australian Drinking Water Guidelines (2011)• National Construction Code• Code of Practice for On-site Wastewater Management (2014).	Activities of BR Simpson should be managed in a way that will not cause a public health nuisance as defined under the Act.	BR Simpson will ensure contractors comply with the requirements of the Public and Environmental Health Act 2011 and Regulations, in the provision of the project.

4 Description of the regulated activity

This section describes the regulated activity proposed by BR Simpson including the location, construction and facility layout details, and outline of the proposed operational details. It is designed to address Part 1 of Schedule 1 of The Regulations.

Table 4-1. Description of the regulated activity

Activity	Details
2D seismic survey	
Total area of exploration permits	27, 600 square kilometres
2D vibroseis seismic survey	643.8 km of seismic survey comprising of 10 survey lines.
Activity duration	75 days
Activity commencement date	15th October 2023 (subject to approvals)
Equipment and machinery	<ul style="list-style-type: none"> ● 4WD vehicles ● 2 Bulldozers ● 2 Graders ● source controller truck ● generator trailer ● vibrator technician service truck ● 2 harvesting and spread trailers + prime mover
Civil activities	<ul style="list-style-type: none"> ● 119.4 ha hectares of vegetation clearing prior to survey. ● Three mobile camps proposed for the project. ● Clearing of up to 4 hectares for each mobile camp. ● Waste processing for camp Vegetation stockpiled for rehabilitation use
Workforce	<ul style="list-style-type: none"> ● 50 personnel at peak on site with some continuation of personal across different roles. ● line restoration crew – 7 ● Advance crew – 9 ● Line preparation crew – 10 ● Survey crew – 5 ● Recording crew – 38
Supporting infrastructure	
Campsite	<ul style="list-style-type: none"> ● Three camps for the whole project ● Office ● accommodation ● Laundry/shower/toilet ● Kitchen ● Diner ● Cold room ● Mechanic workshop ● Vibe store ● Sewage treatment system
Access Route options	<ul style="list-style-type: none"> ● Access from Alice Springs via Santa Teresa and Santa Teresa Andado road

	<ul style="list-style-type: none"> ● Alternative access via Stuart highway to Finke and Santa Teresa Andado road ● Pastoral property tracks and previous exploration tracks will also be utilised to access the seismic lines. No widening of existing tracks/roads required.
Volumes diesel required for power supply, equipment, vehicles	<ul style="list-style-type: none"> ● 250,000L for exploration of all three EP's.
Water source/s, demand (estimate with breakdown for dust suppression, construction, and amenities), volumes of onsite water storages, discharges.	<ul style="list-style-type: none"> ● Water supplied from Bravo bore (RN018519) and the Blamore Bore (RN018517). ● Estimated total potable water usage at 30 litres per day = 71,160L (if water from the Bravo Bore is unsuitable for human consumption potable water will be sourced from Alice Springs on a commercial basis). ● Estimated total camp water usage at 180 litres per day = 426,960L. ● 500,000 litres for seismic activity. ● No water uses for vehicle wash down or dust control. ● Total water usage across the entire project is 998,120 litres
Rehabilitation	
Proposed methods	<ul style="list-style-type: none"> ● on completion cleared vegetation will be respread on the 2D seismic lines to promote regeneration and windrows feathered back over track. ● Photo points will be established by construction contractors at appropriate intervals along the 2D seismic lines to monitor rehabilitation. ● All surface infrastructure will be removed

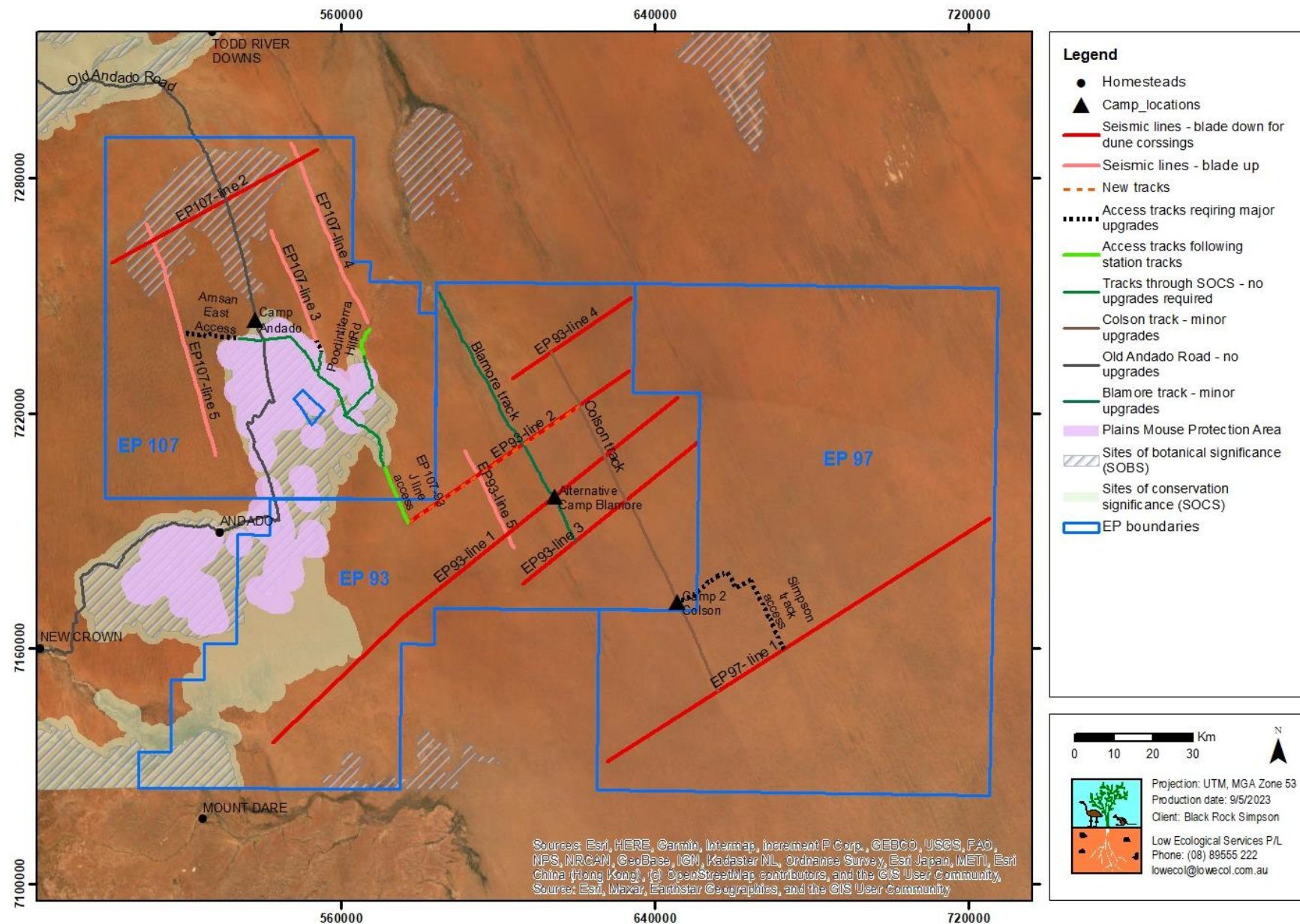


Figure 4-1. Proposed seismic lines, access roads and camp locations

4.1 2D seismic activity

4.1.1 Overview

The 2D seismic survey aims to produce detailed images of the various geological formations and their location beneath the earth's surface. The method uses sound waves to create an image of the earth's subsurface structure. The sound waves are generated by Vibroseis (Figure 4-2) trucks which use steel plates to vibrate the ground and send the signal into the subsurface. An array of geophones (receivers) at the surface measures the time for the reflections from the subsurface geology to arrive back at the surface. These reflections are recorded in a digital format and relayed to a seismic data processing centre to produce a 'cross-section' of the layers of the earth's crust.



Figure 4-2. Example of vibroseis trucks

4.1.2 Line preparation

Seismic survey lines require a narrow linear corridor (4.5 m wide) and if constructed appropriately may not require any formal drainage or rehabilitation works. Across all EP's seismic line will be 4.5 metres wide, however different clearing techniques will be used to achieve this access corridor. Vegetation clearing may be required depending on the specific terrain and vegetation type. This activity has the potential to be the greatest source of environmental impact due to loss of vegetation, loss of habitats and the possibility of soil destabilisation, creating increased risk of erosion and sedimentation.

BR Simpson is committed to clearing the minimum amount of vegetation required to allow for the passage and operation of the vibroseis trucks and crew. Line clearing will be carried out by a bulldozer or grader and the majority of the access ways and 2D seismic lines will be traversed 'blade up' utilising the dozer tracks to compress stakes, flatten low vegetation and small rocks to minimise environmental impact, however due to the nature of the environment the blade may be needed for short sections. Sections requiring the use of the blade down technique include areas with dense vegetation or areas with uneven and steep ground. The use of wireless geophones negates the need to remove large vegetation.

Seismic lines and tracks will be kept within the corridor covered by the AAPA Authority Certificate as all lines and tracks are surveyed prior to work and clearly flag marked to display route and line to match spatial data.

4.1.3 Seismic survey

Once the seismic lines have been prepared the survey crew, including geophone laying trucks, line crews, Vibroseis trucks and a recording truck will commence surveying each line. The Vibroseis trucks each have a vibrator pad that is lowered to the ground at each energy source position and vibrated with a range of low to medium frequencies (5 Hz to 80 Hz). Wireless Geophones, which

detect the seismic signal, are placed along the receiver lines. The electrical signals generated by the geophones are converted to digital signals and transmitted to the recording truck. No cables are required for this purpose hence a direct straight line is not required permitting the Vibroseis trucks to manoeuvre around larger objects and or vegetation. The geophones are progressively moved along the seismic line. Once all the data has been recorded all the equipment will be removed from the line. Landowners will be contacted at the end of the survey and once requirements are satisfied, BRS will notify the landowner either by writing or by phone.

4.2 Seismic line field survey summaries and site selection

This section summarises land types and other key environmental aspects relevant to each proposed seismic line. This is based on environmental survey observations and data that is presented in Appendix A. This section also details site selection recommendations and modifications that have been made to reduce environmental impacts associated with the proposed seismic activity.

Land clearing to reduce fire risk as well as risk of damage to tyres and equipment may be required before 2D Seismic survey begins. To estimate area of clearing required, a reconnaissance survey was completed as well as aerial image research which identified the length of sand dunes and built up vegetation along all proposed seismic and access tracks which would require clearing of any type, blade up or blade down, based on the needs of the vibroseis trucks.

From this calculation the total length of track requiring clearing was acquired and multiplied by 4.5 meters which is the width required for all equipment (total ha of clearing=total length of clearing (km) x 0.0045(km)).

Total area of blade down clearing was then calculated by identifying areas in which environmental factors such as dense vegetation, uneven or steep ground or other obstacles occurred which could compromise or damage the vibroseis trucks and would need to be adapted. This total length of area was again multiplied by 4.5metres to obtain the total area, as above.

From this review the blade down clearing to construct seismic lines (Table 4-2) is estimated at 131.83km at 4.5m width equal to 59.32 ha. Total cleared area (blade down) is estimated at 126.786 Ha (Table 4-4) including allowance for construction of three mobile camps of 4ha each.,

Table 4-2. Seismic line summaries

Line	Total length	Length requiring blade down clearing	Drainage lines	Clay pans	Dune crossings	Dune fields	Hills	Sand plains	Interest Holder
EP97 line 1	115.3 kms	28.75 kms	0	9	168	115 kms	0	0	Crown Land
EP93 line 1	135.6 kms	34 kms	0	7	467	136 kms	0	0 kms	Andado Station, Pmer Ulperre Ingwemirne Arletherre Aboriginal Land Trust and Crown land
EP93 line 2	68.5 kms	17.25 km	1	4	264	69 kms	0 s	0 kms	Andado Station, Pmer Ulperre Ingwemirne Arletherre

									Aboriginal Land Trust and Crown land
EP93 line 3	57.4 kms	14.35 km	0	0	180	57 kms	0	0 kms	Pmer Ulperre Ingwemirne Arletherre Aboriginal Land Trust and Crown land
EP93 line 4	36.6 kms	9.15 kms	0	0	163	43 kms	0	0 kms	Pmer Ulperre Ingwemirne Arletherre Aboriginal Land Trust and Crown land
EP93 line 5	27.7 kms	0km	0	0	0	27.7 kms	0	0 kms	Andado Station, Pmer Ulperre Ingwemirne Arletherre Aboriginal Land Trust
EP107 line 2	59.8 kms	15.7 kms	6	5	130	110	18	2	Andado Station
EP107 line 3	30.6 kms	0 kms	0	0	1	49.5	6	5.5	Andado Station
EP107 line 4	50.5 kms	12.63 kms	0	0	1	77	3	5	Andado Station
EP107 line 5	61.8 kms	0 kms	0	1	0	91	4	0	Andado Station

Table 4-3. Seismic line coordinates (Zone UTM 53J)

Line	Start		End	
	Easting	Northing	Easting	Northing
EP93 1	645786.69 m E	7223993.64 m E	542642.32 m E	7136201.47 m S
EP93 2	633578.35 m E	7230840.66 m S	577158.96 m E	7191944.31 m S
EP93 3	650948.46 m E	7212744.35 m S	606375.36 m E	7176655.68 m S
EP93 4	633989.97 m E	7249400.29 m S	603701.31 m E	7228927.23 m S
EP93 5	591599.25 m E	7210399.35 m S	604126.54 m E	7185760.97 m S
EP97 1	725191.57 m E	7193214.9 m S	628025.36 m E	7131231.83 m S
EP107 2	554146.33 m E	7287270.15 m S	501841.52 m E	7258321.5 m S
EP107 3	542211.56 m E	7266720.07 m S	553794.08 m E	7238476.49 m S
EP107 4	547229.05 m E	7289042.83 m S	566970.08 m E	7243068.69 m S
EP107 5	510553.59 m E	7268303.5 m S	528144.38 m E	7209122.96 m S

Table 4-4. cleared area summary

Blade down clearing	New Seismic lines (Km)	Reused seismic lines - for access (km)	New access lines (Km)	Reused access lines (km)	
EP97 - Line 1	28.75				
EP93 - line 1	34				
EP93 - Line 2	17.25				
EP93 - line 3	14.35				
EP93 - line 4	9.15				
EP93 - line5	0				
Ep107 - Line 2	15.7				
EP107 - line 3	0				
EP 107 - line 4	12.63				
EP107 - line 5	0				
Madigan track				7.5	
J line				4	
Blamore track		20.25			
Colson				43	
Access to EP107-line 5		10			
South access to EP107-line 3				2.1	
Access between East Bore and Old Andado Rd.				0	
Simpsons track access		20			
Total km Blade down	131.83	50.25		56.6	
Total Ha Blade Down	59.3235	22.61		25.47	107.4
Total Camp area (Ha)					12
Total area (Ha) blade down clearing					119.4

4.2.1 EP93 line 1

- EL93 line 1 is approximately 135.6 kilometres long and intersects dune and dune swales associated with the Simpson desert dune fields. No other land systems intersect the seismic line and the dune system is uniform throughout.
- There are 7 small claypans which intersect the line, concentrated in the western section of the proposed line. Spatial data is provided which shows these claypans and they are also displayed in the map in appendix A. (Figure7-1).
- Appendix B Cultural Heritage Assessment Report identifies several claypans as Cultural Heritage Risk Areas (CHRA) having low-medium risk of isolated stone artefacts and low-density scatters of stone artefacts (EP93 Line 1 CHRA01, appendix B, Table 8). Claypans are to be blade up traversed during construction as per recommendations in appendix B.
- There are three drainage lines which intersect the seismic line. The most easterly line is associated with the Hale river flood out and the recorded claypans. This site was inspected during the survey. It is recommended to avoid large trees associated with clay pans and drainage systems. The two western drainage lines are stream order three and four respectively. These streams were surveyed and do not present erosion issues as they are

non-perennial and are associated with broad dune swales and clay pans. Clay pans can be skirted around, and large trees easily avoided.

- The drainage lines are non-perennial and are predicted to be dry during the completion of the survey.
- The following measures are recommended for crossing these areas during the survey.
 - Existing topography to remain unaltered.
 - Blade up 'walk over' of drainage lines and riparian buffers (25 meters) with no use of grader or dozers.
 - Temporary stockpiling of soil, equipment, and materials within watercourses, or on adjacent banks and floodplains, is to be avoided (unless integral to drainage control requirements).
 - Select crossing where bank is lowest, avoiding trees and dense vegetation
 - Where possible, crossings should be constructed at right angles in locations where the stream is straight.
 - Seismic line runoff is to be prevented from directly entering the watercourse by construction of flow diversion banks (rollovers) immediately upslope to divert flow.
 - Monitoring points at each drainage line to detect any signs of erosion.
 - Vehicles utilised for surveying shall be customised for sandy off-road driving (i.e. broad sand terrain tyres, low tyre pressure, high clearance etc.)
- At the western end of the line there are several Coolabah (*Eucalyptus coolabah*) stands, these mature trees will be avoided as they are uncommon in the area and provide important habitat for species in this land system. The seismic line can easily skirt around these stands of trees. Spatial data for locations of large trees provided and shown in Appendix A

4.2.2 EP93 Line 2

- EP93 line 2 is approximately 68.5 kilometres long and intersects dune and dune swales associated with the Simpson desert dune fields.
- There are four clay pans which intersect the seismic line, two of which are associated with the bottom end of the Hale River Flood out and contain several stands of large Coolabah trees (*Eucalyptus coolabah*) which will be avoided. These trees can be avoided by diverting the line slightly to the south. The use of cordless geophones allows for large trees to be avoided. Spatial data of claypans and large trees provided in Appendix A.
- This seismic line has been shortened to avoid intersecting with the southern end of the Hale River flood-out and associated clay pans. The clay pans and drainage channels associated with the Hale River flood-out contain several stands of large Coolabah trees (*Eucalyptus coolabah*) and is considered a sensitive vegetation community.
- In the middle section of the line several stands of White wood (*Atalaya hemiglauca*) occur on dune slopes and crests. These stands of mature tree will be avoided via the use of cordless geophones facilitating easy manoeuvring around trees to reduce disturbance to the site (shown in appendix A). The use of cordless geophones negates the need for straight line travel and mature trees can be easily avoided.
- Dunes are larger in the Eastern section of the line and may present some challenges for vehicle access.
- One drainage line associated with the Hale river flood out intersects the western end of the line. This area was surveyed and was deemed to be a low-risk area due to the non-perennial nature of the flood out. The flood out occupies a wide dune swale with low erosion risk and any large trees or clay pans can be avoided during seismic line construction.

- The drainage lines are non-perennial and are predicted to be dry during the completion of the survey.
- Appendix B Cultural Heritage Assessment Report identified a water course as a CHRA (EP93 Line 2 CHRA01, appendix B, Table 8). Watercourse to be blade up traversed during construction as per recommendations in appendix B.
- The following measures are recommended for crossing these areas during the survey.
 - Existing topography to remain unaltered.
 - Blade up 'walk over' of drainage lines and riparian buffers (25 meters) with no use of grader or dozers.
 - Temporary stockpiling of soil, equipment, and materials within watercourses, or on adjacent banks and floodplains, is to be avoided (unless integral to drainage control requirements).
 - Select crossing where bank is lowest, avoiding trees and dense vegetation.
 - Where possible, crossings should be constructed at right angles in locations where the stream is straight.
 - Seismic line runoff is to be prevented from directly entering the watercourse by construction of flow diversion banks (rollovers) immediately upslope to divert flow.
 - Monitoring points at each drainage line to detect any signs of erosion.
 - Vehicles utilised for surveying should be customised for sandy off-road driving (i.e. broad sand terrain tyres, low tyre pressure, high clearance etc.)

4.2.3 EP93 Line 3

- EP93 line 3 is approximately 57.4 kilometres long and predominately intersects dune and dune swales associated with the Simpson desert dune fields.
- Weeds (paddy melon) were identified at one location along the line (shown in Appendix and spatial data provided)
- Local erosion was noted at one site along the line in an area with low dunes.
- Patches of *Grevillea juncifolia* occurred in some interdunal swales and on dune flanks. These larger trees will be avoided during line construction. The seismic line can easily skirt around these trees. Locations are shown in appendix A and associated spatial data.
- No drainage crossings or clay pans on this line

4.2.4 EP93 line 4

- EP93 line 4 is approximately 36.6 kilometres long and predominately intersects dune and dune swales associated with the Simpson desert dune fields.
- The Hale River flood out-area is a sensitive land unit which provides important habitat and may present increased erosion risks. The previous extent of this line has been modified to avoid this area and associated vegetation and habitat for threatened species.
- There are no clay pans on this line.

4.2.5 EP93 Line 5

- EP93 line 5 is approximately 27.7 kilometres long and predominately intersects dune and dune swales associated with the Simpson desert dune fields. This seismic line runs along an interdune swale, minimising the amount of clearing and track development required to allow access. This also reduces erosion risk and damage to vegetation.
- This line partially intersects with Andado station. The helicopter could therefore not be used to survey the entire length of the seismic line. The land system classification remains the

same for the entire line, so the surveyed portion has been used to generalise for the entire length.

- Some stands of *Grevilea juncifolia* occur and these will be avoided. The dune swale is wide with a relatively flat base so this will not present difficulties. Appendix A shows the locations of these stands and contains associated spatial data.
- No drainage crossings or clay pans on this line

4.2.6 EP97 Line 1

- Seismic line 1 in EP97 is approximately 115.3 kilometres long and intersects dune and dune swales associated with the Simpson desert dune fields.
- 9 clay pans were noted during the survey of this line and three artefacts were identified adjacent to the seismic line in one of these areas. See appendix A for clay pan locations and Archaeology report attached for artefact information.
- Appendix B Cultural Heritage Assessment Report identifies several clay pans as CHRA (EP97 Line 1 CHRA01-03, appendix B, Table 8). Clay pans are to be blade up traversed during construction as per recommendations in appendix B.
- Weeds (paddy melon) were identified at two locations along the line and camels were sighted at one location with droppings and tracks located at other sites, all records presented in Appendix A and associated spatial data.
- The dunes in the east section of this line are very steep and high (up to ten to 15 metres). Line could be moved either north or south to optimise areas where dune crossings are lower. The 300m AAPA approved easement width allows for this movement if required.
- Ideally, dune crossing points should aim to occur at a low point, or break, in the dune to minimise cut requirement on its crest.
- No drainage crossings on this line

4.2.7 EP107 line 1

- EP07 line 1 is approximately 38 kilometres long intersecting dunes and open sand plains in the north.
- No drainage crossings on this line
- This seismic line has been removed from the proposed seismic survey to avoid potential impact on cultural heritage values. This decision was made after the completion of the field survey and reviewing recommendations of Cultural Heritage Assessment Report (appendix B).

4.2.8 EP107 line 2

- EP107 line 2 is approximately 59.8 kms long and intersects low sprawling hills and gravelly foot slopes as well as open sandy dune fields.
- The far eastern end of the line has been shortened to avoid intersecting the alluvial plains and drainage systems associated with the Todd River flood out which provides critical habitat and can be considered as sensitive vegetation.
- There are 9 drainage lines which intersect the seismic line. Eight (8) are stream order 1 and one is stream order 4 and all are listed as non-perennial. These points are detailed in appendix A. By following the protocol with work to be carried out when these areas are dry it is predicted that there will be minimal impacts associated with drainage line crossings.
- In the western section of the line on the southwestern side of the Old Andado road there is a rocky outcrop which should be avoided, the line could be moved either south or north. See the archaeological report for further details and realignment.

- The eastern section of this area is likely to contain vegetation suitable for threatened species habitat such as the Grey falcon and would require extensive land clearing and earth works to allow access. As a consequence the eastern section of the line has been shortened to avoid intersecting with the drainage systems, alluvial plains, large trees and clay pans associated with the Todd River flood out.
- Appendix B Cultural Heritage Assessment Report identified the Todd River palaeo-drainage system in the east of the original line as a CHRA (EP107 Line 2 CHRA07, appendix B, Table 8). The eastern section of the line has been shortened to avoid this CHRA as per recommendations in appendix B.
- Several clay pans, drainage lines and rocky rises were identified in Appendix B Cultural Heritage Assessment Report as CHRA (EP107 Line 2 CHRA01-06, appendix B, Table 8). Seismic line to be realigned to avoid all CHRAs as per recommendations in appendix B. This includes a 100-meter buffer around rocky rises and line movement of up to 150 meters to avoid drainage depressions. Blade up traverse to be used in construction over claypans identified as EP107 Line 2 CHRA03. As per recommendations in appendix B the area has been reviewed by cultural heritage monitors appointed by the CLC and the area has been given sacred site clearance approval.
- The following measures are to be implemented for crossing these areas during the survey.
 - Existing topography to remain unaltered.
 - Blade up 'walk over' of drainage lines and riparian buffers (25 meters) with no use of grader or dozers.
 - Temporary stockpiling of soil, equipment, and materials within watercourses, or on adjacent banks and floodplains, is to be avoided (unless integral to drainage control requirements).
 - Select crossing where bank is lowest, avoiding trees and dense vegetation (if possible).
 - Where possible, crossings should be constructed at right angles in locations where the stream is straight.
 - Seismic line runoff is to be prevented from directly entering the watercourse by construction of flow diversion banks (rollovers) immediately upslope to divert flow.
 - Monitoring points at each drainage line to detect any signs of erosion.
 - Vehicles utilised for surveying should be customised for sandy off-road driving (i.e. broad sand terrain tyres, low tyre pressure, high clearance etc.)

4.2.9 EP107 line 3

- EL107 line 3 is approximately 30.6 kms long and predominately intersects with wide interdunal fields and sand plains. The line follows a wide interdunal swale with relatively dense shrubs and few trees. The interdunal swale presents few erosion risks.
- This seismic line has been significantly shortened from previous proposed work. This will reduce the risk of erosion and impact to vegetation in the old Todd River flood-out site of botanical significance which occurs in this northern section of EP107.
- Drainage depressions, claypans and stony rises in the north of original EP107 line 3 identified in Appendix B Cultural Heritage Assessment Report as CHRA (EP107 Line 3 CHRA01-03, appendix B, Table 8). All CHRAs avoided by shortening of seismic line.
- This seismic line has been carefully selected to avoid the Andado and Snake creek SOBs and SOC's which lie to the south of the line and contain nationally significant flora and fauna.
- Cattle tracking in the area is relatively high.
- No drainage crossings on this line

4.2.10 EP107 Line 4

- EP107 line 4 seismic line is approximately 50.5 kms long and is entirely within Andado station.
- The line crosses a broad alluvial plain with several localised drainage systems before re-entering the dune fields. In the dune fields the seismic line traverses an interdunal swale, reducing the risk of erosion and presenting minimal disturbance to vegetation.
- This seismic line has been shortened to avoid the rocky escarpment in the southern section of the previously proposed line. This land system has been avoided for the acquisition of seismic to minimise risk of erosion and avoid potential habitat of localised populations of *Acacia peuce*. A close cluster of several small groups of artefacts were also found in the hill and rocky rises land unit.
- Shortening southern section of the proposed line avoids drainage and landforms identified as CHRA (EP107 Line 4 CHRA03, appendix B, Table 8) in Appendix B Cultural Heritage Assessment Report, as per recommendation.
- Blade up traverse will be used in construction in claypan and drainage depression identified as CHRA (EP107 Line 4 CHRA01-02, appendix B, Table 8) as per recommendations in Appendix B Cultural Heritage Assessment Report.
- No drainage crossings on this line

4.2.11 EP107 line 5

- EP107 line 5 is approximately 61.8 kms long. The Southern section of the line begins in the open sand plain before following a wide interdunal swale for much of its length.
- This seismic line has been shortened to avoid the low hills and gravelly slopes in the north of the previously proposed line.
- Drainage depressions in north of previously proposed line identified as CHRA (EP107 Line 5 CHRA01-03, appendix B, Table 8) in Cultural Heritage Assessment Report has been avoided with line shortening.
- This line intersects with claypans, which can easily be diverted around. See Appendix A for spatial imagery.
- A single stone axe artefact was found the southern part of the line in the interdunal swale. The southernmost 8km of the line has been removed from the planned seismic.
- The southern section of the line is easily traversable, the wide stable dune swale does not present any challenges and is easily trafficable. Large trees in the dune swale can be avoided by use of cordless geophones.
- Drainage systems, rocky rises and claypans identified as CHRA (EP107 Line 5 CHRA04-05, appendix B, Table 8) in Cultural Heritage Assessment Report to be avoided via realignment of seismic line as per recommendations in appendix B.
- Access via the existing station track to Corkwood bore should be minimised to reduce disturbance to cattle.
- No drainage crossings on this line

4.3 Support facilities for the Program

4.3.1 Camps and camp locations

Three temporary accommodation camps will be established during the project. Each camp will be utilised for a planned 23 days with peak accommodation numbers at 50 personnel. The field camps will be configured to satisfy Department of Health guidelines and will require the use of a lay-down area situated close to the seismic lines and road access. Whilst the exact configuration is still to be

determined, each camp will include accommodation units, kitchen and dining facilities, ablutions, site office, waste treatment and storage, Mechanic workshop and Vibe store as well as potable water storage (Figure 4-3, Figure 4-4). Water use for the activities is proposed to be extracted from existing exploration bores with the permission of the owner under the general exemption made in Gazette S109 of 20 December 2018 which allows up to 5 ML per year to be taken.

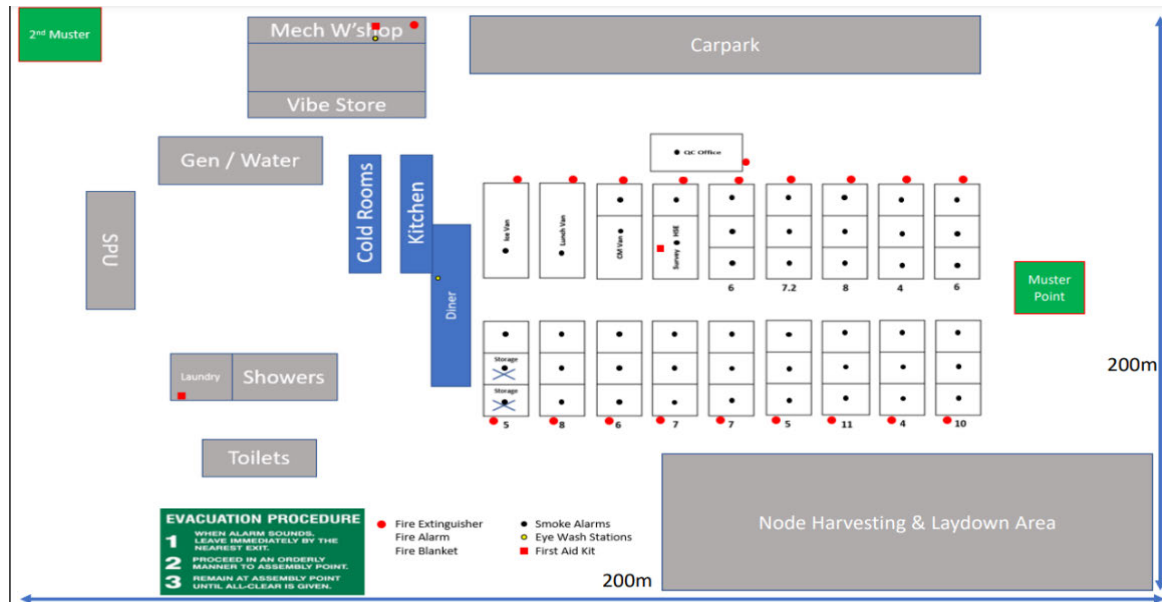


Figure 4-3. Generalised layout for proposed camp.



Figure 4-4. Representative example of the proposed camp layout

The locations for the mobile camps have been selected with consideration given to existing vegetation, level of ground, proximity to re-supply and access routes in/out and location of water courses/sources and or sensitive ecological environments. Clearing of up to 4 hectares will be required for each mobile camp. Bushfire protection measures will also be incorporated into the camp layout, including 4 m fire breaks around facility within the 4ha boundary and vegetation management. All locations are within the AAPA approved clearance area and away from any

sensitive receptors such as water courses, threatened or sensitive ecological communities or land systems or on steep slopes.

Site and soil evaluation will be completed prior to using campsites in accordance with AS 1547 and NT Code of Practice for Wastewater Management 2020. Camp grey and black water waste will be managed through mobile onsite Sewerage Treatment Plants (STP), all camp generated wastewater is piped from camp to the STP units to undergo the micro-bacteria treatment process to breakdown solids and treat the liquid waste to permitted classification prior to irrigating to ground. Erosion potential and the spread of weeds are two important considerations in selecting irrigation locations. Camp locations have been chosen in areas of low erosion potential, avoiding steep slopes, water courses and areas with highly erodible soil. Wash down of vehicles prior to entry to the work area and regular weed inspections as per the Weed Management Plan will ensure that invasive species do not colonise the irrigation area.

4.3.1.1 *Camp Blamore*

Camp Blamore is located within a wide interdunal swale dominated by Spinifex (*Triodia pungens*) and other short grass forb community species. There are relatively few shrubs and no large trees in the immediate vicinity of the proposed camp location. The wide dune swale with red sands poses a low erosion risk with minor slope. This land system is unsuitable habitat for the plains mouse and threatened plant species in the region (*Acacia peuce* and *Acacia pickardii*). This is the dominant land system and vegetation community within the region and is therefore unlikely to pose significant risks to other listed threatened or migratory species.

4.3.1.2 *Camp Andado*

Camp Andado is located in the north of the project area on a sandy plain with low open grassland. Scattered Mulga (*acacia aneura*) occur across the area. These sandy plains present low erosion risk and will not require significant clearing of vegetation or earth works. Note this camp location has been moved from its previous location adjacent the Andado and Snake creek SOCs. Open plains with sandy soils are unlikely to provide critical habitat for threatened species such as the plains mouse which prefers the cracking clay soils present within the SOCS area.

4.3.1.3 *Camp Colson*

Camp Colson is located within a wide interdunal swale dominated by Spinifex (*Triodia pungens*) and other short grass forb community species. Scattered *Acacia ligulata* and other small shrubs with no large trees. The wide dune swale with red sands poses a low erosion risk with minor slope. This land system is unsuitable habitat for the plains mouse and threatened plant species in the region (*Acacia peuce* and *Acacia pickardii*). This is the dominant land system and vegetation community within the region and is therefore unlikely to pose significant risks to other listed threatened or migratory species.

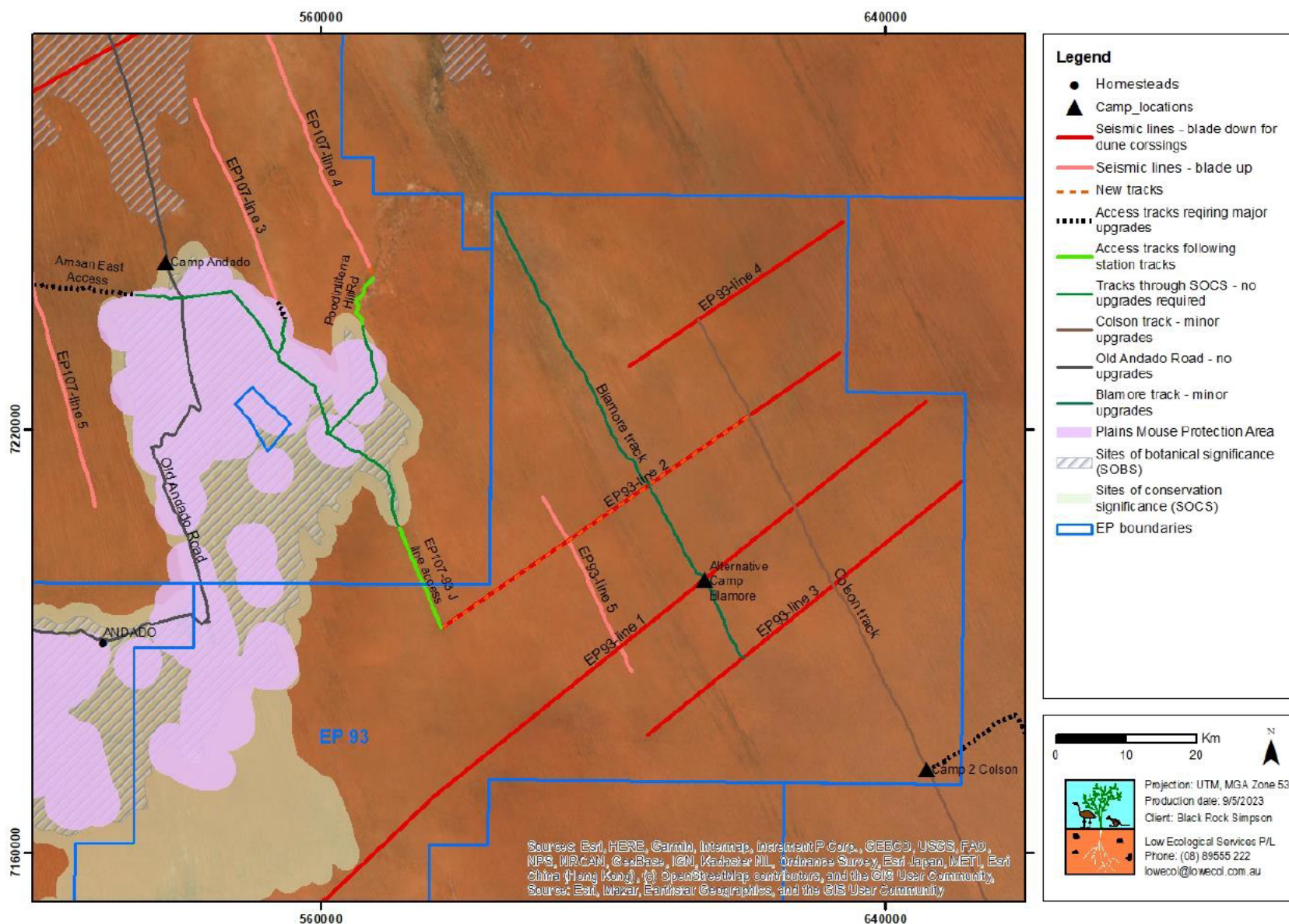


Figure 4-5. Proposed camp locations

4.3.2 Access tracks

To minimise the environmental impacts of the project existing roads and tracks will be used wherever possible to access seismic lines. The Santa Teresa Andado road will be used during the seismic survey to gain access to the general project area. This is a formed and well used road which does not present any environmental risks from use during the project. Existing station tracks and previously established exploration tracks will also be used to access different areas of the project footprint. Some of these tracks will require minor grading and other improvement to allow access for heavy machinery and equipment and safe dune crossings. Previous exploration tracks established by Santos and Central Petroleum have been rehabilitated and will therefore require more extensive work to re-establish for use by BR Simpson, however this will require less intrusive work and will have a less significant impact than establishing new tracks in previously undisturbed areas. Some clearing may be required in areas of thick vegetation where it is not possible to gain access without vegetation removal. This will be achieved with the use of a dozer which will provide access for the grader and subsequent field crew vehicles (i.e., light vehicles, vibrator truck and service trucks). No widening of these access ways is required. In some cases, new access tracks will need to be established to connect seismic lines with existing tracks. These occur in interdunal swales and will require minimal clearing. The majority of clearing will be blade up walk over of low shrubs and grasses.

The project footprint surrounds, but does not occur within, the Andado and Snake Creek Site of Conservation Significance which is listed as nationally significant. In this area only existing tracks which require minimal improvement have been selected wherever possible. Original access routes have been modified to avoid the Mac Clark Conservation reserve to minimise the impacts on the endangered *Acacia peuce*. General maintenance of tracks outside the SOCS may be required during and following project activities, undertaken in agreement with Station owner. This may include grading, and patching. However, within the SOCS area any maintenance to existing access tracks will be only undertaken to reduce potential impacts of the vehicles transiting the site. To minimise damage to access tracks works will cease if there is a forecast for 25mm of rain as a single event or 50 mm of rain or more within the following 48 hours, or if there are landholder concerns. Within the SOCS area two old exploration tracks which have been rehabilitated will need to be reinstated however these tracks do not intersect with threatened species records and the associated critical habitat land units associated with these species. It is considered that reinstating these tracks is unlikely to have a significant negative impact on the area and the alternative of establishing extensive new track networks is likely to be more disruptive and detrimental to threatened species in the area.

4.3.2.1 Santa Teresa Andado road

- The Santa Teresa Andado road is proposed for general access to the project area from Alice Springs.
- The length of the road from Alice Springs via Santa Theresa is 313 kms and 266 km via the Stuart highway and Finke community to the Old Andado Homestead located at the southern end of EP107 adjacent EP93.
- Access via both the northern or southern sections of the Santa Teresa Road is proposed depending on road conditions and access requirements.
- This is a formed and well used road that is regularly maintained for pastoral use in the region and will not require upgrades to allow site access and mobile camp movement.
- The road crosses a large section of the Andado and Snake Creek SOCS, however impacts will be minimal because this road will only be used for site access and all vehicle movement will

be kept to the existing road. These factors coupled with vehicle weed inspections mean that potential risks are ALARP.

4.3.2.2 *Blamore track*

- The Blamore track is an already existing access track which runs south from Bravo bore within the interdunal swale.
- 65 kms of the Blamore track will be used during BR Simpsons seismic program.
- No track widening will be required for this access route although some grading and patching may be required for heavy vehicle access. Overall minimal work will be carried out on this section of the access tracks.
- The route between Blamore and Colson tracks is the seismic line and will be maintained for ongoing access following seismic work.

4.3.2.3 *The Colson Track*

- The Colson track is an already existing access track within the interdunal swale which runs south to the Colson water bore.
- 96 kms of the Colson track will be used during BR Simpsons seismic program.
- No track widening will be required for this access route although some grading and patching may be required for heavy vehicle access. Overall minimal work will be carried out on this section of the access tracks.
- The route between Colson and Blamore tracks is the seismic line and will be maintained for ongoing access following seismic work.

4.3.2.4 *Station and exploration tracks*

Several different stations track, and previous exploration tracks will be used to access different section of the three EP's. Some of these tracks will require some level of maintenance or improvement to allow access to the proposed seismic lines. Where an existing track is available and provides access to the required seismic line location these routes will be those utilized. Any existing access way that may lie within a stream bed will be avoided.

Labelled tracks are shown in Figure 4-6. Areas of clearance are detailed in Table 4-4 (pg. 35) and areas of non-clearance (walk over blade up) are detailed in Table 4-5 below. Northern access for EP107 line 5

- The northerly east west access route also follows an existing access created by Santos for seismic, currently unmaintained. This section of track traverses dune swales, sandplains and low dune ridges
- A review of aerial imagery indicates that the track has moderate to high levels of vegetation regrowth, so it is expected that track maintenance will likely require removal of regrown shrubs and small trees. No large trees will be removed. Risk to the SOCS values is negligible due to large absence of cracking clay soil land units, clay pans and gibber plains in the surrounding area which are associated with threatened species. The majority of clearing will be blade up walk over to crush stakes to prevent soft tyre damage.
- The western 16 km of this track occurs within dune fields, which are not considered to hold special ecological significance. Dune crossings at the westerly end of the route may require earth works to stabilise dune crests and allow access for heavy vehicles. There are 12 dune crossings in this route.
- This access route is 22 kms long.
- Improvements will be kept to a minimum in the easterly end of the route which intersects with the Andado and Snake creek site of conservation significance, there are minimal dune

crossings in this section which means that no improvements will be required in the SOCS section to re-establish access.

4.3.2.4.1 Station tracks within Andado and Snake Creek SOCS

- Station tracks in this area are well formed and established.
- The total length of access tracks which occur within the Andado and Snake Creek SOCS, including the J line, is approximately 102 kms.
- No track widening will occur in this area to reduce possible negative impacts to the Andado and Snake Creek SOCs which overlies this section of the EP.
- Station tracks used for site access have been selected to avoid the Mac Clark Conservation reserve and the *Acacia peuce* that occur there.
- The track from Old Andado road to East bore follows an existing station track which runs parallel to the fence line and then connects Malcolm's bore with the stock bore on the route down to east bore.
- There are several non-perennial stream order one drainage lines along this route. As this is an existing formed track it is not predicted that these drainage lines will be impacted however diversion banks and whoa boys should be implemented to ensure that increased traffic does not have a negative impact on the sensitive SOCS area.

4.3.2.4.2 Access from East bore to EP107 seismic line 4.

- This access route follows existing station tracks from east bore north to Andado stock bore and then continues towards Bravo bore (RN015819). This access route is also an established part of the Madigan line which is relatively well maintained. Occasional tourist activity is noted on this route. The existing Madigan line continues past the connection with seismic line 4. The continuing part of the Madigan line does not form part of the access for the work program.
- This access route is 30 kms long and follows an old Central Petroleum access route for previous seismic work.
- These tracks are well established and will not require widening or substantial earthworks. Grading and patching may be required in some areas to reduce the risk of erosion.
- No track widening will occur within the SOCS and only work to reduce erosion risk will be carried out in these areas.
- There are several small drainage lines along this route, however as this is an established track only minor improvements will be carried out to ensure that the temporary increased traffic as a result of the seismic project does not contribute to increased erosion or damage to riparian areas.

4.3.2.4.3 J line access

- This access route follows an existing Station track and Central Petroleum access track south from East bore.
- The northern section of this track was established at least 24 years ago to check and service bore RN017396 and heard cattle. The southern sections, below the SOCS area may have been established by Central Petroleum approximately 15 years ago and is currently a used track which can be seen from satellite imagery.
- This track has been shortened to 33.8 kms to avoid the need to create new track. It accesses BR Simpson EP93 seismic lines which can then be used to access EP97 seismic lines via EP93-Line 5 and the Blamore and Colson tracks.

- The track follows and, in several areas, crosses a stream which does not contain water unless large rain events occur. It is believed the use of this track will result in the least ecological impact to the area due to the use of a current track will require little to no blade down clearing or manipulation of stream banks.
- A review of aerial imagery indicates that the track is in a maintained condition, so it is expected that no track maintenance will be required.
- Risk to the SOCS values is negligible due to large absence of clay pans, cracking clay soil land units and listed threatened species in the immediate vicinity. It is considered that re-establishing and realigning small sections of this track with a small section in the SOCS area will have a less significant impact than establishing a new access track which avoids the SOCS but which would involve significantly longer routes, possibly more vegetation clearing and earth works.
- Rehabilitation of this area may result in improved health to the area than before BR Simpson actions began.
- The following measures will be implemented during the use of this access track.
 - This access route will not be used if rainfall has occurred in the preceding week or until the route has dried out completely.
 - Diversion banks will be established to ensure that erosion and runoff does not occur.
 - Whoa boys will be used to slow water runoff.
 - Regular monitoring of access route for erosion and runoff.
- The southern section of this access route predominately follows the wide interdunal swale and will not require significant levels of vegetation clearing as this area is relatively flat with minimal vegetation in the swale. The access track can avoid any large trees that do occur within the interdunal area.

4.3.2.4.4 The Simpson access track

- This access route follows an existing Central Petroleum Pty Ltd access track.
- 19.6 kms of this route will be used for access to seismic lines in EP93.
- This route has not been maintained and work will be required to re-establish the route and allow for heavy vehicle movement.
- This access route predominately follows the wide interdunal swale and will not require significant levels of vegetation clearing as this area is relatively flat with minimal vegetation in the swale. The access track can avoid any large trees that do occur within the interdunal area.

4.3.2.4.5 Simpson Bore to EP97 line 1.

- Central Petroleum established access to the Simpson Bore however this will need to be re-established during the proposed seismic program.
- This access route is 24.3 kms long.
- This access route follows a dune swale and will not require land clearing to reform.

Table 4-5 – summary of access and seismic lines walk over (blade up)with no clearance required

Blade up - Walk over - no clearing	New Seismic lines	Reused seismic lines - to be access lines	New access lines	Reused access lines	Total line length
EP97 - Line 1	86.55				115.3
EP93 - line 1	101.6				135.6
EP93 - Line 2	51.25				68.5
EP93 - line 3	43.05				57.4
EP93 - line 4	27.45				36.6
EP93 - line 5	27.7				27.7
Ep107 - Line 2	44.1				59.8
EP 107 - line 3	30.6				30.6
EP 107 - line 4	37.87				50.5
EP 107 - line 5	61.8				61.8
Madigan track				22.5	30
J line				13.4	33.8
Blamore track		44.75			65
Colson Track				53	96
Access to EP107-line 5		12			22
South access to EP107-line 3				3.4	5.5
Access between East Bore and Old Andado Rd.				32.5	32.5
Simpsons track access		25			45
Total km Blade up	511.97	81.75		124.8	
Total Ha Blade up	230.38	36.79		56.16	323.33

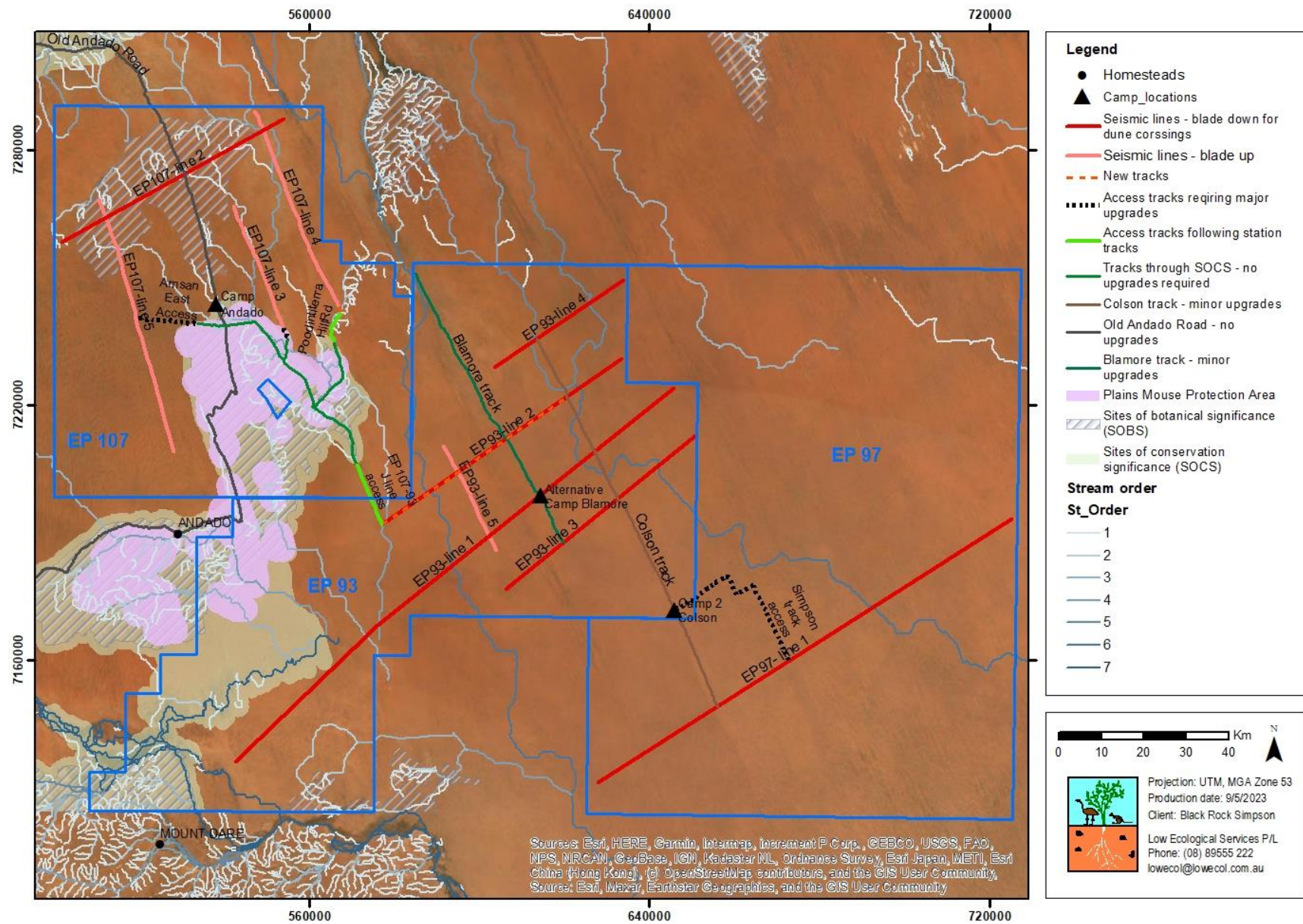


Figure 4-6. Access routes and track improvement

4.3.3 Waste management

During the regulated activity, waste will be managed with the objective of achieving optimal environmental outcomes. Waste will be managed in accordance with the following hierarchy principals:

1. Avoid: eliminate the generation of wastes through design modification
2. Reduce: reduce unnecessary resource use or substitute a less resource intensive product or service.
3. Re-use: reuse a waste without further processing.
4. Recycle: recover resources from a waste.
5. Treatment: treat the waste to reduce the hazard of the waste prior to disposal.
6. Disposal: disposal of waste if there is no viable alternative.

All hazardous materials and wastes associated with the proposed seismic survey will be clearly labelled and stored separately in a designated area for the duration of the seismic survey. Hazardous inventory items such as hydraulic fluid, solvents and battery acid will be stored in accordance with Australian Standard AS 1940 – 1993. The primary hazardous material stored will be diesel fuel. The storage of fuel will be contained within tankers utilising safety features such as double-skins, safety cut-off valves, top accessing or transportable bunding to minimise or eliminate the potential for spills.

Camp grey and black water waste will be managed through mobile onsite Sewerage Treatment Plants (STP) (Figure 4-7). Camp generated wastewater is piped from camp to the STP units to undergo a micro-bacteria treatment process to breakdown solids and treat the liquid waste to permitted classification prior to irrigating to ground. BR Simpson and appropriate contractors will engage hydraulic engineering consultants to conduct desktop assessments, design drawings for wastewater disposal and report of the soil landscape conditions for temporary camps in accordance with the NT Dep't of Environmental Health. This is to demonstrate compliance with AS 1547 and *NT Code of Practice for Wastewater Management 2020*. The designated irrigation areas will be setback from bores, natural water courses and wetlands and will consider erosion risk and weed spread potential in site selection. Camp locations all occur within interdunal swales or open sand plain in areas with minimal slope and with little vegetation, reducing the potential impacts of wastewater disposal to the surrounding environment. Wash down of vehicles prior to entry to the work area and regular weed inspections as per the Weed Management Plan (Appendix G) will ensure that invasive species do not colonise the irrigation area.



Figure 4-7. Example of wastewater treatment used at mobile camps

4.3.4 Weed management.

Impacts from the potential introduction of weeds to the permit area will be managed through the project specific Weed Management Plan (Appendix G). The focus of this Weed Management Plan is to ensure that existing weed infestations with the potential to spread during the proposed activity are controlled and that vehicle hygiene requirements are implemented to minimise the risk of importing weeds. All vehicles, plant and equipment entering the project footprint will be subject to a weed inspection and a weed hygiene declaration form will be completed to meet the requirements of the legislation. Ongoing monitoring of weeds across the project area will be undertaken by BR Simpson.

4.3.5 Erosion and sediment control

The dry and arid climate of this region during the proposed survey period, provides a low risk of erosion from rainfall throughout these months, although wind erosion potential (dust) is significant. Avoidance is the major measure used for a seismic program. A light footprint is essential. ESCP control measures are addressed in detail in Appendix F. ESCP measures will be required for:

- Roads and tracks
- Stockpiles
- Waterway crossings

A summary of erosion and sediment control mitigation measures that are to be implemented on site for the various activities is presented in Table 4-6.

Table 4-6. erosion and sediment control

Risk	Mitigation measures
Erosion	<ul style="list-style-type: none"> ● Development and implementation of an Erosion and Sediment control plan (ESCP) (Appendix F) ● Minimise disturbance of riparian buffers and vegetation along drainage lines. ● Use existing roads and access tracks. ● Undertake selective clearing, using the blade up technique where possible ● Using lighter machinery such as graders or smaller bulldozers, taking care not to overwork tracks. ● Minimise number of creek/drainage line crossings to reduce erosion risk and management required.

4.4 Maintenance and Rehabilitation

General maintenance of tracks may be required during and following project activities. This may include grading and patching. To minimise environmental impacts, only existing roads and tracks where available will be used for accessing the seismic lines. This includes within the SOCS, however, to further reduce impacts minimal track preparation or maintenance will occur within the SOCS areas.

The access route between the East Bore and EP107-line 4 is the Madigan line tourist route. This route is currently well maintained by the station for ongoing access between the East bore and Bravo bore. This access may need minimal grading periodically to allow heavy vehicle access. General maintenance will be carried out as required and may include grading and patching. No widening of the access way is to be undertaken.

Access to the Blamore and Colson Tracks will be via the EP93 seismic lines. The Blamore and Colson tracks are established tracks used occasionally by 4WD adventure tourists. The Blamore and Colson tracks may need minimal general maintenance grading periodically to allow heavy vehicle access. On completion of the project, cleared vegetation will be respread on the 2D seismic lines to promote regeneration. Photo points will be established at regular intervals along the access routes and 2D seismic lines to monitor rehabilitation. All infrastructure and waste associated with the activities will be removed. Any listed waste will be disposed of via companies licensed for the purpose. As it is a short-term activity it is expected the area will rehabilitate naturally. The type and extent of rehabilitation will vary depending on the extent of disturbance, location, soil type and slope.

Rehabilitation efforts as part of the project have the following objectives.

- To return cleared lines to a safe, stable landform that blends with the surrounding landscape. Rehabilitation will commence progressively as the seismic acquisition moves through the work area and will be completed within 1 weeks of the completion of seismic activities, depending on weather conditions and contractor/equipment availability.
- The vegetation composition and structure of the rehabilitation is recognisable as or is trending towards the target plant community. BR Simpson will ensure that if rehabilitation is not adequately achieved through passive methods (e.g., vegetation re-spread) then active seeding with local provenance seed will be undertaken.
- Access tracks and/seismic lines are indistinguishable from the surrounding vegetation.
- No adverse erosion
- Landforms are stable and support appropriate vegetation.
- To ensure final landform is stable and an acceptable final land-use for the disturbance area is achieved.
- The seismic survey does not leave any future management liability for the land manager (if applicable).

4.4.1 Rehabilitation Monitoring and Successful rehabilitation criteria.

The Rehabilitation Monitoring Program will assess the rehabilitation against the relevant criteria (Table 4-8) and will assess environmental characteristics across the Project area. The key strategy for measuring success criteria over time will involve the establishment of photo monitoring points along the seismic lines and associated analogue sites within the same land system and reflecting similar vegetation and landform composition (aspect, slope, soils, vegetation etc.). Photo-points will be selected at approximately 10-20km along each seismic line and monitored as per the Rehabilitation plan (Appendix K). Successful rehabilitation will be 70% or more of dominant species present compared against analogue sites.

Rehabilitation success and timeframe will be affected and heavily dependent on climatic conditions, rain events and fire.

The rehabilitation monitoring program will be conducted using the schedule outlined in appendix K and in Table 4-7.

Table 4-7. Rehabilitation monitoring schedule

Preliminary assessment (Six to nine months)	between six- and nine-months post rehabilitation works
Early rehabilitation (Years 1 to 3)	Annual inspections preferably during April or May, yearly for the first three years post rehabilitation works
Long-term rehabilitation (Years 4 onwards)	Annual inspections preferably during April or May until successful rehabilitation criteria have been met and signed off by the Project Manager

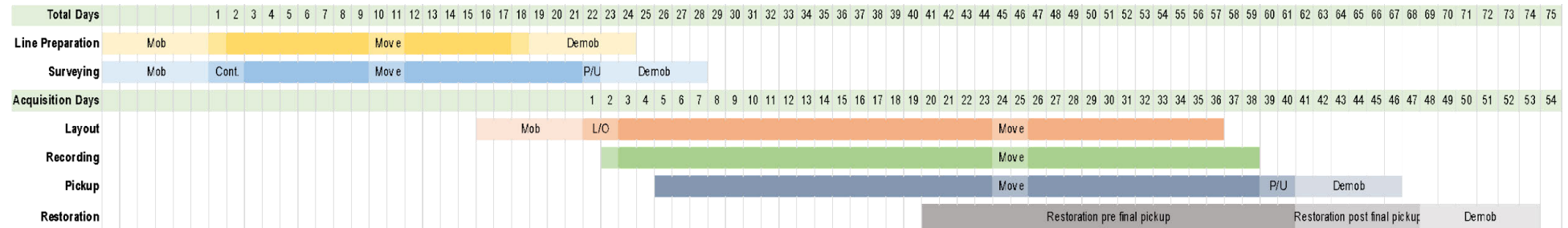
Table 4-8- Rehabilitation objectives and measurement criteria

Objectives	Endpoints	Measurement criteria
<ul style="list-style-type: none"> The vegetation composition of the rehabilitation is recognisable as the target vegetation community and indistinguishable from the surroundings. The vegetation structure of the rehabilitation is recognisable as or is trending towards the target plant community. Access tracks and/seismic lines are indistinguishable from the surrounding vegetation. No adverse erosion Landforms are stable and support appropriate vegetation 	<ul style="list-style-type: none"> Establishment of 70% of the dominant species per hectare. Community structure (trees, shrubs, groundcover) established. Vegetation is established and stabilising erosion risks. Access tracks and seismic lines reflect the surrounding landform and are stable. 70% establishment of the dominant species present per hectare (ha) after three years of monitored sites compared to analogue sites. 	<ul style="list-style-type: none"> Site stability using Landscape Function Analysis (LFA) Establish permanent photo monitoring points and analogue sites. Measurable attributes compared with analogue sites for: <ul style="list-style-type: none"> Indication of seed germination and plant establishment rates. Vegetation cover (dominant species and abundance). Land condition (e.g. erosion, canopy cover, ground cover, habitat quality). Weed presence/absence (species and density). Disturbance (fire frequency and intensity, evidence of feral animal/cattle) Incidental observations from surrounding area. A minimum of 10% ground foliage cover with 10 -15% of surrounding species diversity evident within the first year and maintained for a subsequent three years. Success will be dependent on minimised stock movements as well as rainfall and fire events. Minimum 15% ground cover using locally available material including reserved topsoil/ cleared vegetation before the onset of the first wet season. Less than 5 % erosion should be evident after the first 12 months and no subsidence or erosion should be evident for at least 5 years after completion. Monitoring including photos and reporting of all erosion occurrences. Establishment of the dominant species per hectare (ha). No establishment of weed species declared under the Northern Territory Weeds Management Act. Indication of seed germination and plant establishment rates

4.5 Proposed timeline.

BR Simpson proposes the following schedule for the project activities.

Figure 4-8. Proposed timeline (all seismic across EP107, 93 & 97)



4.6 Greenhouse Gas Emissions

The greenhouse gas (GHG) emissions estimate for the seismic program are provided in Table 4-4. Vegetation clearing, fuel consumption and emissions resulting from the seismic survey program have been included in the GHG estimate. Given that few materials are to be transported, and machinery sourced locally where available, GHG emissions have been based solely on fuel consumption related to seismic activity.

GHG emissions calculations have adopted the formula specified in the National Greenhouse Accounts Factors (DEE, 2017) as follows; $E_{ij} = (Q_i \times EC_i \times EF_{ijoxec}) \div 1,000$. As such, GHG emissions related to diesel fuel consumption is $E_{ij} = (\text{kilolitres diesel} \times 38.6 \times 69.9) \div 1,000$. Assumptions and estimates are as follows:

- Line preparation is carried out by a Caterpillar D6 (or equivalent) dozer equipped with 160 kW engine. Fuel consumption averages 28L/hr. Line preparation carried out over 18 days (max 20 days).
- Vibroseis truck is equipped with a 317-kW engine. Fuel consumption averages 30 L/hr. Seismic line exploration carried out using 5 trucks for 38 days (max 42 days).
- Rehabilitation is using a 12H grader (or equivalent) with 123 kW engine. Fuel consumption averages 20 L/hr. Rehabilitation carried out over 28 days (max 30 days).
- Camp operations using 220 kVA. Fuel consumption averages 34 L/hr. Camp operations carried out over 60 days (includes Line Prep/Recording/Restoration) (max 65 days).
- Seismic line preparation and rehabilitation carried out 12 hours per day.

GHG emissions from land clearing have been calculated using the 2020 Full Carbon Accounting Model (FullCAM). FullCAM is a fully integrated Carbon Accounting Model (CAM) for approximation and predicting all biomass, litter and soil carbon pools in forest and agricultural systems and accounts for changes in major GHGs and human-induced land use practices. FullCAM is the model used to construct Australia's national GHG emissions account for the land sector and is appropriate for the assessment of emissions from land clearing for the seismic survey. All cleared areas will be rehabilitated to their previous state resulting in minimal long-term reduction in carbon sequestration. The GHG calculations are shown below in Table 4-9. This includes the expected GHG emissions and the maximum GHG emissions under a worst-case scenario.

Table 4-9. GHG emission estimates

Source of GHG Emissions	Fuel consumption (kL)	Emissions (tonnes)	Max Fuel consumption (kL)	Max GHG Emissions (tonnes)
Seismic line preparation	6.05	16.32	6.72	18.13
2D Seismic exploration	45.6	123.03	68.4	184.55
Camp operations	48.96	132.10	53.04	143.10
Line rehabilitation	6.72	18.13	7.2	19.4
Land clearing (119.4ha)	-	1,298.47	-	1,298.47
Total	107.33	1,588.06	135.68	1,663.66

4.6.1 Emission measurement and records

In line with clause D.6.2 of the Code of Practice: Onshore Petroleum Activities in the Northern Territory, BR Simpson will provide an annual emissions report to DEPWS which summarises actual annual greenhouse gas emissions versus predicted emissions in the EMP. Emissions will be measured

using methods consistent those specified under the National Greenhouse and Energy Reporting (Measurement) Determination 2008. The emissions report will include a list of the activities which have caused emissions and summary table which explains any differences between predicted and actual yearly emissions.

4.7 Land clearing requirements.

An assessment of each seismic line is presented above in section 3.2. It identifies a total of approximately 126.786 hectares being cleared for the preparation of the seismic lines and 12 hectares for camp construction. Land clearing for seismic lines requires a narrow 4.5 metre corridor for each line to allow access for seismic equipment and personnel. For this assessment blade up removal of above ground vegetation is not regarded as land clearing. It is not anticipated that line preparation and data recording will cause any significant or long-term impact to the recommended vegetation buffers specified in the Land Clearing Guidelines.

The Seismic lines in the project area all occur within the Simpson, and Wilyumpa Land Systems which are characterised by dune fields with open grassland and sparse shrub land and low rocky hills with sparse shrub land respectively. This vegetation does not require blade down clearing techniques. The disturbance will avoid trees by skirting around them. Minor disturbance of the grass and shrub cover may occur, but the progressive rehabilitation outlined in the Rehabilitation plan (Appendix K) are likely to minimise ongoing impacts. For the Seismic lines which run parallel to the dunes no blade down clearing is required. For areas with dune crossings and rocky hills blade down clearing will be required in some areas. Therefore, based on dune crossings and land system assessment it is predicted that 75% percent of the seismic lines can be carried out using blade up clearing techniques. It is predicted that 25 percent of seismic lines which run perpendicular to the dune systems will require blade down techniques and earth works for dune crossings and dune slopes.

4.8 Water supply and use

The water supply for the exploration program will be sourced from Bravo bore (RN018519) and the Blamore Bore (RN018517), under the exemption made by Gazette S109 which allows up to 5 ML per year to be taken. Water extraction from the bores will be undertaken with a pump fitted with a flow metre. The flow metre will be used to monitor water use and will be calibrated prior to installation and every six months thereafter.

The water from existing bores will only be extracted under the following conditions:

- Water will only be extracted from bores in accordance with the bore owner's consent.
- Any bores within 1 km of a bore used for water extraction will also have permission from the owner of the bore within 1km.
- Permission obtained from the Controller of Water Resources prior to taking water from any NT Government bore.

Planning for the seismic exploration program has identified that non-potable water use for camp is estimated as follows.

- Potable, washing and ablutions = 180L per person per day
- Potable only = 30L per person per day.
- 500,000 litres for seismic activity.

Estimated total water usage is therefore 998,120 litres.

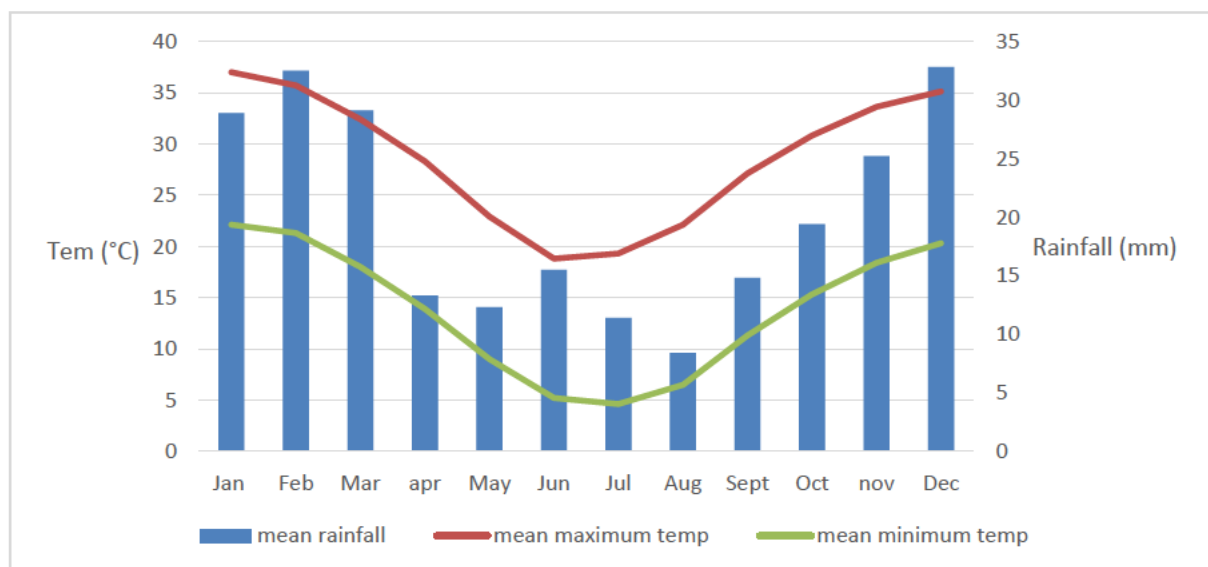
5 Description of the existing environment

This section provides a summary of the key findings of the Ecological Assessment Report (Appendix B). An ecological assessment of the project footprint was undertaken using available desktop information and the results of a field-based survey. This section presents a summary of that report.

5.1 Physical environment

5.1.1 Climate

In general, the Simpson Desert is classified as a 'hot desert' and experiences marked seasonal fluctuations in temperature. Most of the region lies within the 200 mm rainfall isohyet, although the area becomes progressively more arid towards the south-east with the central Simpson Desert lying within the 75 mm isohyet. Large variations in rainfall patterns occur between years and summer rainfall dominates with average rainfall increasing progressively to the north.



Data sourced from the Bureau of Meteorology. Data collected between 1980 and 2022 for temperature and 1969 and 2022 for rainfall.

Figure 5-1. Graph of mean rainfall and mean maximum and minimum temperatures

5.1.2 Bioregion

Bioregions are relatively large land areas characterised by broad, landscape-scale natural features and environmental processes that influence the functions of entire ecosystems. They capture the large-scale geophysical patterns across Australia. These patterns in the landscape are linked to fauna and flora assemblages and processes at the ecosystem scale and provide a useful means for simplifying and reporting on more complex patterns of biodiversity (NSW 2003). The proposed area of exploration is included in the Simpson–Strzelecki Dune fields bioregion which covers an area of 277,800km² within the boundaries of NT, SA, QLD, and NSW (Baker, Price, Woinarski, Gold, Connors, Fisher and Hempel, 2005). The Northern Territory portion of the Simpson–Strzelecki Dune fields bioregion consists of 105,900km² (White, Albrecht, Duguid, Latz, & Hamilton, 2000). The Simpson–Strzelecki Dune fields bioregion has an arid, subtropical climate and includes the driest area of Australia and comprises long parallel sand dunes, fringing dune fields, extensive sand plains, dry watercourses, and salt pans. Vegetation is predominantly spinifex hummock grasslands with sparse acacia shrublands and some narrow river red gum and coolabah riverine woodlands. Land use comprises Aboriginal land, conservation reserves and pastoral leases (on the edges of the bioregion).

5.1.3 Land Systems

Land Systems are defined as an area or group of areas throughout which there is a recurring pattern of topography, soils, and vegetation that are described at a finer scale than Bioregions. The geomorphology and land systems of the Alice Springs District including parts of the Simpson Desert area have been mapped and described by Perry et al. (1962) and Purdie (1984). Perry describes 6 land systems within EP93, EP97 and EP107 (Simpson, Wilyunpa, Peebles, McDills, Endinda and Rumbalara).

Table 5-1. land Systems in the project area

Land system name	Landform description	Soil
Simpson	Dunefields with parallel linear dunes, reticulate dunes and irregular or aligned short dunes	Red sands
Wilyunpa	low hills, hills and stony plateaux on sandstone, siltstone, quartzite and conglomerate (deeply weathered in places);	outcrop with shallow stony soils
Endinda	Plains and rises associated with deeply weathered profiles (laterite) including sand sheets and other depositional products	Sandy and earth soils
McDills	alluvial floodplains, swamps, drainage depressions and alluvial fans	sandy, silty and clay soils on Quaternary alluvium
Peebles	outcrop with shallow stony soils	low hills, hills and stony plateaux on sandstone, siltstone, quartzite and conglomerate (deeply weathered in places);
Rumbalara	Low hills, hills and stony plateaux on sandstone, siltstone, quartzite, and conglomerate (deeply weathered in places)	Outcrop with shallow stony soils

5.1.4 Soils

The Digital Atlas of Australian Soils (Bureau of Rural Sciences, 1991) indicates that the proposed seismic lines are within soil class B43. B43 is described as encompassing dune fields with dunes generally trending northwest to southeast; dune crests are inclined to drift readily; narrow interdune swales and corridor plains.

5.1.5 Surface water

The project footprint lies within the Diamantina-Georgina Rivers region and within the Todd and Hale River basins. There are numerous smaller drainages, tributaries, and drainage gullies across the project footprint. The major watercourse in proximity to the project footprint is the Hale River. All watercourses in the region only flow after heavy rainfall events and drainage is towards Lake Eyre. The proposed seismic activity has been selected to avoid large drainage systems within the area. There are 6 order one streams that intersect the seismic lines, however these are not perennial and are predicted to be dry during the completion of the work. The appropriate buffers and stream crossing practices will be implemented as per the regulations and outlined in Appendix A.

5.1.6 Bushfires

Fire is an intrinsic part of the Australian environment and has shaped the evolution of most natural ecosystems within it, however since European settlement, fire regimes have changed within pastoral managed areas leading to corresponding changes in vegetation structure, composition, and flammability. Significant portions of EP107 burnt in 2021 and previously large fires occurred across all three EPs in 2011 and 2012. Large fire events such as the 2011 and 2012 fires are often associated with periods of above average rainfall. A bushfire management plan has been developed (Appendix H) to manage fire risk.

5.2 Natural Environment

5.2.1 Vegetation

Vegetation in the Simpson-Strzelecki Dune fields bioregion is influenced by the topography of sand dunes, which are up to 35m in height (Baker, et al., 2005). Vegetation is predominantly *Triodia basedowii* hummock grasslands with *Acacia* tall sparse-shrublands and *Acacia georginae* low open woodland (Baker, et al., 2005). There are also some narrow River Red Gum (*Eucalyptus camaldulensis*) and Coolabah (*Eucalyptus coolabah*) riverine woodlands (Department of Sustainability, Environment, Water, Population and Communities, 2008). Vegetation consists of open-hummock grassland on dune crests and *Triodia* hummock grasslands with tall shrubland between dunes (Baker, et al., 2005). Vegetation of fringing bare salt pans is samphire low open-shrubland (Baker, et al., 2005).

5.3 Sites of Conservation Significance (SOCS)

Other than for access through the SOC the project footprint surrounds, but does not occur within, the Andado and Snake Creek Site of Conservation Significance which is listed as nationally significant. It encompasses the low hills and rises, gibber plains and other significant habitats on Andado Station, the Snake Creek interdune flood out lakes, and the surrounding sandplains and dune fields. The floodout lakes occur between tall sand dunes in the south of the Site and comprise a network of intermittently flooded freshwater lakes and swamps. Vegetation communities within the Site include acacia and eucalypt open woodland, acacia and saltbush shrubland and spinifex grassland.

The varied habitats of Andado and the Snake Creek lakes support a rich fauna and flora. 11 threatened species are found in the site including three plant species (*Acacia peuce*, *Acacia pickardii* and *Eleocharis papillosa*). Eight threatened vertebrate species have been recorded within the Site, including Crest-tailed Mulgara, Brush-tailed Mulgara, Southern Marsupial Mole, Plains Mouse and Dusky Hopping Mouse. The Snake Creek flood out lakes are unusually long-lasting and can support many thousands of waterbirds. The Simpson Desert and the Mac Clark Conservation Reserve are listed on the Register of the National Estate for their natural values (Australian Heritage Council). The Mac Clark (*Acacia peuce*) Conservation Reserve is also listed on the NT Heritage Register (Heritage Advisory Council). Snake Creek Interdune Flood out Lakes are identified as significant for biodiversity conservation by Duguid et al. (2005). The acacia and eucalypt open woodland within the site, especially in the vicinity of Mac Clark Conservation Reserve, provides roosting and breeding opportunities for a variety of bird species, especially raptors and owls (Pavey et al. 2008). The site is in the only region of Australia where the two mulgara species co-occur.

Due to the national significance of the Andado and Snake Creek SOCS specific care has been taken to ensure that the proposed seismic activity does not have any negative impact on the area. Seismic line and camp locations have been selected to avoid interfering with the SOCS area. Where possible existing station tracks have been selected for use within this area to reduce the impact of constructing new tracks. These tracks will be minimally changed to avoid any disruption to the area.

Existing tracks occur between Old Andado road, East bore and the eastern areas of EP107 along the Madigan line tourist route and are well maintained by the station to allow access to East bore and to the east of the SOCS area. The Blamore and Colson tracks are also well established and while not well maintained these are occasionally used by 4WD tourists. These are formed tracks which may need minimal grading to allow heavy vehicle access however erosion is a minor risk given the lack of significant slope and strategies which do not create windrows.

There are four proposed access tracks which follow old seismic lines and associated access tracks. These are discussed in section 4.3.2 in detail. Assessing aerial photography indicates that these tracks may require some clearing of vegetation to re-establish, which can be considered as disturbance with the SOCS area. However, the location of the two tracks within the SOCS does not intersect with land units critical for threatened species habitat (cracking clay soils for plains mouse. A buffer of 3k m has been placed around the habitat area of the plains mouse) and are not in the vicinity of any known *Acacia peuce* occurrences. It is considered that re-establishing these access tracks will have significantly less impact than establishing extensive new access tracks which avoid the SOCS area and which may require further vegetation clearing and earth works.

5.4 Sites of Botanical Significance (SOBS)

There are two SOBS within the survey area, the Andado SOBS which is enclosed within the Andado and Snake Creek SOCS and the Old Todd River flood out SOBS out in the northern section of the project footprint. The Andado SOBS is of national significance and the Old Todd River Flood out is of bioregional significance. No seismic activity is planned within the Andado SOBS due to the national significance of the area.

The Andado and Snake Creek site incorporates the major area for the conservation of *Acacia peuce* in the Northern Territory. It also supports many interesting disjunctions of plant taxa with arido-temperate distributions, which are more common and widespread in similar land systems in South Australia and also has several disjunctions of plant taxa with arido-tropical distributions. As such, this is an important site for the conservation of species at or near the edge of their continental range. The site also contains several important ephemeral swamps including Indemina Swamp, Indinna Swamp, Andado swamp and Casuarina Swamp. Also of note is a disjunct occurrence of *Acacia stowardii* dominated shrubland, which is more prevalent in the Channel Country bioregion. This vegetation type is uncommon in both the study area and the NT portion of the Simpson-Strzelecki Dunefields bioregion. See section 5.3 above for a discussion on impacts to the Andado and Snake Creek SOCS and SOBS area.

The Old Todd River Flood out site approximates the extent of an old floodout (presumed) of the Todd River, which now empties into the Simpson Desert to the northeast. The site is primarily recent aeolian sands, alluvium and lenses of river gravels. There are numerous interdune claypans and more extensive systems of playas where past flooding has broken through the NNW oriented parallel dunes. Running through the site roughly oriented NE-SW are a series of low outcrops of sandstone, mudstone and conglomerate, which once impeded the floodwaters of the Todd River from draining to the south. The site still receives some subsurface drainage and supports a diversity of habitats and plant communities. The Old Todd River flood out SOB does intersect with proposed seismic line activity in the northern portion of the project footprint.

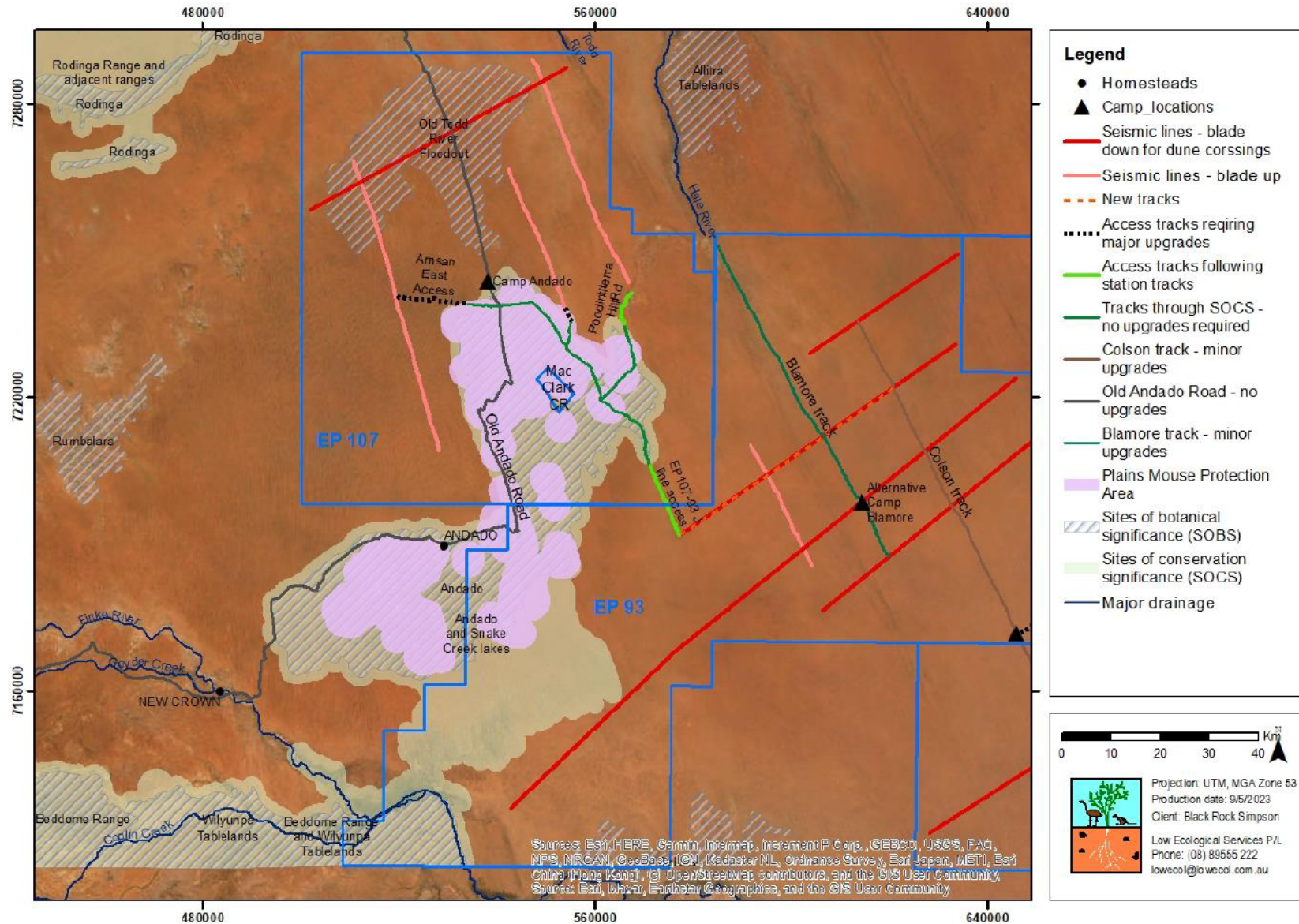


Figure 5-2. SOBS & SOCS

5.5 Significant flora and fauna

The Commonwealth Government Department of the Environment and Energy (DoEE) Protected Matters Search Tool (PMST) results identified 17 listed threatened species and 9 listed migratory species as possibly occurring within the project footprint. The likelihood of species occurrence was based on desktop information that relates to habitat requirements, distribution, and number of records and the results of a field survey conducted by Dr W. Low PhD Zoology, Biology and Ecology. Dr Low has extensive experience in arid land ecology and management and the identification of threatened species and/or habitats. Dr Low is also very experienced in the area of the Simpson desert having conducted multiple significant studies through the area.

The field survey was divided into two sections. For the survey outside of Andado station a helicopter was used due to the low number of existing access tracks within the project footprint. The helicopter flight path was centred on the proposed 2D seismic lines and immediate surrounds. Observations were made during the flight time and the helicopter stopped approximately every 25 kms to allow for more detailed ground surveys to be conducted. Within Andado Station no helicopters were used at the request of the pastoralists to avoid unnecessary disturbance to cattle. Ground vehicles were used for this section of the survey and observations recorded for each seismic line. For both section of the survey the following data was collected at each survey location.

- Landform/ vegetation. This included a description of general landform, soil type and dominant vegetation structure and species.
- Sensitive or Important habitat. Presence of sensitive vegetation or ecologically important habitat types.
- Threatened species. The presence of threatened species and communities.
- Weeds. Presence of weeds and priority weed infestations.
- Erosion. Presence of existing erosion within the project footprint.
- Pastoral impacts. At each survey site, the current level of pastoral impacts was assessed.
- Fire / drought. General observations were made within the project footprint to determine level of impacts from fire and drought.

The results of a reconnaissance survey to verify desktop assessment of flora and fauna species present and habitat availability for conservation significant species within the project has provided a high level of confidence of the impact of exploration activities on biodiversity values that may occur in the disturbance area. This level of confidence is subject to climatic variation such as extreme rain events and bush fires which can be unpredictable. If recommendations are adhered to and activity is avoided after heavy rain and fire management is followed, confidence will remain high.

As a consequence of the findings of the desk top studies and infield survey and the implementation of the management tasks developed (identified in section 7.12) the presence of Dr Low will not be required on site.

Likelihood ratings are as follows.

- High – It is expected that this species occurs within the project footprint because there is core habitat and knowledge that the species occurs in the local area.
- Medium – Species may occur within the project footprint because there is suitable habitat; however, there is evidence that lowers its likelihood of occurrence.
- Low - Species may occur within the project footprint; only marginally suitable habitat is expected.
- None - There is strong evidence that this species will not occur within the project footprint.

Table 5-2. Significant Flora and Fauna

Scientific name	Common name	Threatened category	Class	Likelihood of occurrence
<i>Amytornis modestus</i>	Thick-billed Grasswren	Vulnerable	Bird	Low
<i>Calidris ferruginea</i>	Curlew Sandpiper	Critically Endangered	Bird	None
<i>Erythrotriorchis radiatus</i>	Red Goshawk	Vulnerable	Bird	Low
<i>Falco hypoleucos</i>	Grey Falcon	Vulnerable	Bird	Low
<i>Pedionomus torquatus</i>	Plains-wanderer	Critically Endangered	Bird	None
<i>Pezoporus occidentalis</i>	Night Parrot	Endangered	Bird	Low
<i>Polytelis alexandrae</i>	Princess Parrot	Vulnerable	Bird	Low
<i>Rostratula australis</i>	Australian Painted Snipe	Endangered	Bird	Low
<i>Macrotis lagotis</i>	Greater Bilby	Vulnerable	Mammal	Low
<i>Macroderma gigas</i>	Ghost bat	Vulnerable	Mammal	Low
<i>Notomys fuscus</i>	Dusky Hopping-mouse	Vulnerable	Mammal	Low
<i>Pseudomys australis</i>	Plains Mouse	Vulnerable	Mammal	High
<i>Zyzomys pedunculatus</i>	Central Rock-rat	Critically endangered	Mammal	low
<i>Acacia peuce</i>	Waddy, Waddi, Waddywood	Vulnerable	Plant	High
<i>Acacia pickardii</i>	Birds Nest Wattle	Vulnerable	Plant	High
<i>Eleocharis papillosa</i>	Dwarf Desert Spike-rush	Vulnerable	Plant	None
<i>Frankenia plicata</i>		Endangered	Plant	Low
<i>Minuria tridens</i>	Minnie daisy	Vulnerable	Plant	Low
<i>Liopholis kintorei</i>	Great Desert Skink, Tjakura, Warrarna	Vulnerable	Reptile	Low
<i>Liopholis slateri slateri</i>	Slater's Skink, Floodplain Skink	Endangered	Reptile	Low
<i>Ophidiocephalus taeniatus</i>	Bronzeback Snake-lizard	Vulnerable	Reptile	Low

5.5.1 Species likely to occur in the project footprint.

5.5.1.1 *Acacia peuce*

Acacia peuce is a long lived, tall tree to c. 15-18 m with short horizontal branches, pendulous branchlets and Sheoak-like phyllodes. *Acacia peuce* is known from three disjunct sites on the western and eastern edges of the Simpson Desert in arid inland Australia: Andado Station (230 km south-east of Alice Springs) in the Northern Territory (NT); and Birdsville and Boulia in Queensland. *Acacia peuce* is listed as endangered under the TPWC Act and is known to occur within and outside the fenced areas of the Mac Clark Conservation Reserve. At Andado and Birdsville, *A. peuce* is associated with shallow sand aprons overlaying clayey and gibber slopes and plains. No seismic acquisition and no new access routes are proposed within the vicinity of the Mac Clark Conservation Reserve. Hence, there will be no disturbance to *Acacia peuce* on a local scale. To minimise any potential impact on the species the following measures will be followed.

- The land units associated with the known occurrences and habitat requirements for the species have been avoided during the site selection for seismic activity.
- If any unrecorded occurrences of the species are identified a 300 metre buffer will be placed around each tree to ensure that the seismic activity has no negative impacts.

5.5.1.2 *Acacia pickardii*

Acacia pickardii is a shrub or small tree 3-5 m high. The stipules are spinose and the inflorescence globular. It is distinguishable from other species of the *A. victoriae* group by its sharp cylindrical foliage (phyllodes). *Acacia pickardii* typically grows on gibber-covered sandplains and stony rises and low hills, including mesas and tablelands, and adjacent flats. In the Northern Territory (NT), *Acacia pickardii* is known from two small, and one larger, populations on the edge of the Simpson Desert. *Acacia pickardii* is listed as vulnerable under the TPWC Act and is known to occur in the Allitra Tableland and in north eastern Andado Station. The species usually forms a shrubland or low open woodland with an understorey of sparse chenopod subshrubs or tussock grasses. *Acacia pickardii* typically grows on gibber-covered sandplains and stony rises and low hills, including mesas and tablelands, and adjacent flats. To minimise any potential impact on the species the following measures will be followed.

- The land units associated with the known occurrences and habitat requirements for the species have been avoided during the site selection for seismic activity.
- If any unrecorded occurrences of the species are identified a 300 metre buffer will be placed around each tree to ensure that the seismic activity has no negative impacts.

5.5.1.3 *Plains Mouse*

The Plains Mouse (*Pseudomys australis*) is a moderately sized rodent, with a stocky build, rounded snout and long ears. It is one of the largest rodents still present in the arid zone with a body mass up to 50 g. Once widespread across arid and semi-arid Australia, *P. australis* is now known only from the stony deserts of South Australia, the southern Northern Territory (NT) and was recently recorded in western New South Wales. The plains mouse (*Pseudomys australis*) is listed as endangered under the TPWC Act and has been recorded within a 50 km radius of the proposed seismic lines. The Plains Mouse lives on plains, especially stony plains (gibber), and prefers areas of cracking clay soil associated with minor drainage features. These run-on areas are generally more productive than the surrounding landscape because they receive water and nutrients even after relatively minor rainfall events. It occurs in colonies that are usually small in size and difficult to locate. However, numbers increase dramatically following rainfall. Rainfall triggers an increase in available resources in the animal's habitat that results in high levels of reproduction. They are known to occur on gibber plains at two locations within the NT, one of which is within the eastern section of Andado Station including the Mac Clark Conservation Reserve.

The Plains Mouse occupies the cracking clay soils present within the Andado and Snake Creek SOCS area. There are current records of the species in this area, spatial data shown in Appendix A. A Plains Mouse Protection Area was supplied by the NT Department of Environment, Parks and Water Security. As communicated by DEPWS (April 2023), no work will be undertaken within the Plains Mouse Protection Area. The road through the Plains Mouse Protection Area will be used for daytime travel only. No set-downs, turning circles, or off-track driving will be undertaken within the Plains Mouse Protection Area.

The two proposed new or re-established access tracks - within the Plains Mouse Protection Area - have been selected to avoid these critical cracking clay habitat areas wherever possible. However it is possible that these tracks overlap with Plains Mouse refuge habitat (burrow systems). The potential impact of track construction includes immediate destruction of burrows, noise disturbance, water run off and an increase in feral animal predation due to increased human activity and food availability.

To minimize the potential impact to the Plains Mouse the following measures will be implemented:

- adherence to the no work protection area shown in the maps of the seismic program and discussed further in appendix A to avoid impacts on important habitat for a significant Plains Mouse population. A buffer of 3km has been place around the known habitat area

- Access through this area will be during daytime hours only at reduced speeds to minimize the likelihood of traffic encounters. No set-downs, turning circles or off-track driving will be permitted.
- Retaining key habitat requirements for the species. Land units which contain cracking clay soils will be avoided.
- Indirect impacts such as weed invasion and feral predators will be mitigated by strict adherence to the waste management plan and adherence to the weed management plan.
- Staging the timing of works to avoid impact to habitat during times at which there is a higher likelihood of occupancy. In this case populations are likely to increase following rainfall events. Work will cease if there is a significant rainfall event (>25 mm)

5.5.1.4 *Thick billed grass wren*

This thick-billed grass-wren is a small bird (length 15-20 cm) with a long tail. The upperparts are dull brown in colour with the underparts being paler fawn. Feathers are streaked with white. The north-western subspecies of the thick billed grass wren inhabits the chenopod shrublands of inland Australia, particularly those dominated by saltbush *Atriplex* and bluebush *Maireana*. The subspecies is sedentary, and pairs usually occupy a home range of 20-40 ha. Birds feed on the ground where seeds and invertebrates are obtained. Breeding takes place in spring or summer. During the survey of seismic lines, the required habitat for the species was not identified, with most seismic lines occurring within spinifex dominated dune systems. Possible habitat occurs within the Andado and Snake creek SOCS. This area will be disturbed as minimally as possible, and no seismic activity occurs within the SOCS. If suitable vegetation is encountered during seismic line establishment the following measures will be implemented.

- Buffer of 300 metres around any suitable vegetation identified during seismic line construction.
- Avoidance of construction during the breeding season
- Construction restricted to daytime hours.
- If the species is identified seismic activity will be redirected.
- Adherence to the weed and waste management plans to mitigate the potential increase in feral animals such as cats.

5.5.1.5 *Bronzeback*

The Bronzeback is a small species of legless lizard with a snout-vent length of up to 102 mm and an even longer tail. The upper body is bronze or rich fawn, which contrasts with the pale grey head and a broad dark-brown lateral band that runs from the snout to the tail tip. The Bronzeback typically occurs in Acacia dominated open woodlands with a low open shrub understory. In the NT, the species is closely associated with ephemeral drainage channels that dissect stony gibber plains, areas of shale and siltstone mesas. Bronzebacks are fossorial and inhabit deep leaf litter underlain with loose sandy loam soil at the base of a tree or shrub. In the NT, the species has been recorded under the litter mats of four shrub species: *Acacia aneura*, *A. cambagei*, *A. latzii* and *A. sibirica*. Recent and historical records for the species all occur to the west (between 30 to 130 km) of the tenements. Review of satellite imagery indicates that this habitat type may occur across the southern extent of the tenements. Assessment of seismic line placement indicates that this habitat is unlikely to be encountered however if it does intersect seismic line establishment the following measures will be implemented.

- Buffer of 300 metres around any suitable vegetation identified during seismic line construction.
- Diversion of seismic line to avoid any of the preferred acacia species and associated leaf litter.

- Construction restricted to daytime hours.
- If the species is identified seismic activity will be redirected.

5.5.1.6 *Grey Falcon*

The Grey Falcon is a medium-sized, compact, pale falcon. The head and upperparts are light blue-grey. The cheeks and chin are whitish, except for a faint grey 'tear mark' under each eye, and the underparts are pale grey with fine darker streaks. The wingtips are blackish above and the flight and tail feathers are barred. Grey Falcons live in areas of sparsely timbered lowland plains, typically on inland drainage systems, where the average annual rainfall is less than 500 mm. The species occurs in low densities and usually only one or two individuals are seen. Grey Falcons use nests built by other bird species and prefer those in the tallest trees along watercourses. Nesting has been recorded from June to November, but in any one area may occur only in years with above-average rainfall. Grey Falcon was not observed during the survey, however there are several areas of potential nesting habitat associated with drainage lines and watercourses. Watercourses have been avoided in the survey apart from small ephemeral stream bed which are not associated with large trees. If encountered these trees are scattered to sparse and can be easily avoided by the 2D seismic line establishment. As such, none of these trees will be removed so minimal impacts to this species are expected from the 2D seismic program. The following mitigation measures will be implemented throughout the project to reduce the risk of impacting the species.

- If any active nests are detected near the seismic exploration area then a 300 m radius no work zone should be applied to reduce disturbance to the nest.
- Seismic lines have been designed to avoid areas with large trees such as riparian zones.
- Construction restricted to daytime hours.

5.5.1.7 *Brush Tail Mulgara*

The Brush tail Mulgara is a medium sized carnivorous Australian marsupial species weighing approximately 100 g. Their body length is 12 to 17 cm and tail length is 6–10 cm with a distinctive fin-like crest of black hairs on the tail. The coat is tan to ginger above and creamy white on the belly. The Brush Tail Mulgara is widely distributed having been observed in the north-western, central, and south-western areas of the arid zone of Australia. Populations often occur as scattered with relatively low population densities while still being locally abundant. Populations decline consistently during the winter and spring, possibly due to decreased food during the winter season, reducing available food for potentially pregnant females that would need to feed their young, and reduction of available males due to aggressive competition for access to females earlier in the year. Notably, dramatic increases in population can be observed after large rainfall events, which are thought to come from competition with small rodent population explosions following such events. Their primary habitat is associated with spinifex grasses. The Brush tail Mulgara dig deep burrows up to 0.5m deep. The diet is an opportunistic one consisting of a wide range of invertebrates including frogs, reptiles and small mammals as well as beetles. It is a mostly nocturnal marsupial and during the day it shelters in complicated extensive burrow systems which are typically located at the base of large clumps of spinifex grasses occupying sand and gibber plains. Scats of this species are readily identifiable. The distribution of this species is not known to overlap with any EPBC Act-listed threatened ecological community so minimal impacts to this species are expected from the 2D seismic program. The species is highly mobile and will quickly leave the area if disturbed by the action of graders, bulldozers or Vibroseis trucks. The species is also known to be very inquisitive therefore individuals may get closer to the machinery or the cleared lines without risk of harm to them. The following mitigation measures will be implemented throughout the project to reduce the risk of impacting the species.

- Blade up clearing in proximity to identified habitats.
- Construction restricted to daytime hours.
- If the species is identified by burrow or scat presence, seismic activity will be redirected.

- Adherence to the weed and waste management plans to mitigate the potential increase in feral animals such as cats.

5.5.2 Weeds

The Weeds of National Significance (WoNS) list is compiled by the federal government and provides a national standard for ranking the impact of individual pest weed species. The Weeds Management Act 2013 (Weeds Act) is the relevant law in the NT which describes the procedures involved with weed control. Under the Weeds Act, weeds can be declared as:

- Class A – To be eradicated.
- Class B – Growth and spread to be controlled.
- Class C – Not to be introduced into the NT (All declared weeds are automatically a class C weed)

Regional Weed Management Plans (RWMP) have been developed for areas of the NT, with the Alice Springs Regional Weeds planning area (DEPWS 2021). This strategy focusses on weeds that are most important to the region, categorising them as either:

- Category 1 - Priority weeds (present in the Region, widely considered feasible to eradicate from the Region, typically evaluated as very high risk and have isolated and restricted distributions)
- Category 2 – Priority weeds or strategic control – including the eradication of outliers (species warranting strategic control across the landscape due to the high impact they have on land managers and on broader economic and environmental values)
- Category 3 – Weeds of concern (assessed by the weed risk management system as a medium to high risk, or have not been assessed, but have been identified by stakeholders as posing a threat to the values of the Region)
- Category 4 – Hygiene and biosecurity weeds (it is important for landholders to implement weed hygiene and other biosecurity measures to prevent the spread of weeds into clean areas, and to control these species where the opportunity arises)
- Category 5 – Alert weeds (have the potential to have a high level of impact to the region should it become established, the likelihood of the species naturalising and spreading in the region is perceived to be high).

All such weeds are listed below. Buffel Grass (*Cenchrus ciliaris*) is described in the plan as a significant threat but, because of its value to pastoralists, is not a declared weed.

Table 5-3. Weed species relevant to the project area

Common Name	Botanical name	Class	WoNS	Status in management plan
Rope Cactus	<i>Cylindropuntia</i> spp. including <i>C. imbricata</i> , <i>C. fulgida</i>	A		Category 1, very high
Prickly Pears	<i>Opuntia</i> spp. including <i>Opuntia stricta</i>	A		Category 1, very high
Parkinsonia	<i>Parkinsonia aculeata</i>	B	Yes	Category 2, very high
Buffel Grass	<i>Cenchrus ciliaris</i>	Not declared		Category 2, very high
African Lovegrasses	<i>Eragrostis</i> spp. including <i>E. cilianensis</i> , <i>E. barreleri</i> , <i>E. cylindriflora</i> , <i>E. minor</i>	Not declared		Class 3, *medium
Mexican Poppy	<i>Argemone ochroleuca</i>	B		Class 3, medium

Kapok	<i>Aerva javanica</i>	Not declared		Class 3, N/A
Ruby Dock	<i>Acetosa vesicaria</i>	Not declared		Class 3, low
Saffron Thistle	<i>Carthamus lanatus</i>	B		Class 3, medium
Mossman River Grass	<i>Cenchrus echinatus</i>	B		Category 4, medium

During the environmental survey of the project area in 2022 no WoNS were identified. Buffel grass (*Cenchrus ciliaris*) and Paddy Melon (*Cucumis myriocarpus*) were identified across the project area. Weeds were most prevalent on land under pastoral lease, with infestations generally concentrated around infrastructure such as water points, fence lines and tracks, and along the banks of watercourses where cattle and feral animals tend to congregate.

5.5.3 Feral Animals

Six introduced species were reported as either present, or likely to occur in state and commonwealth databases for the project area. These include Dromedary Camels, Horses, Dogs, Cats, Foxes and House Mice. Cattle are not included in this classification. High numbers of feral animals are present within the project area as this site occurs within or adjacent to active pastoral stations. During the survey camels were sighted along with tracks and scats from foxes, cats, and house mice. Tracks and scats of feral cats were observed in several areas throughout the project area. Cat tracks were observed following vehicle tracks indicating that cats utilise these clear areas to move around in the landscape.

5.6 Social and Cultural Environment

This section provides an overview of the surrounding social, economic, cultural, and human health values in relation the project area, which may be affected by the regulated activity.

5.6.1 Social and economic

The regional economy is generally reliant on pastoralism and some tourism. The remoteness of the region, lack of infrastructure and strong seasonality has hampered a diversity of economic development. Current tourism in the region centres around either the 4WD Bins track, those wishing to see the Mac Clark Conservation reserve and those interested in visiting Australian pioneering pastoral history. Currently, there are no operating mines in the region; however, there is a medium level of mineral and hydrocarbon exploration conducted through the broader region in the South East quadrant of the Northern Territory between Alice Springs, the South Australian and the Queensland Border area. No mineral exploration or mining activity presently occurs within the company petroleum exploration permits and stakeholder engagement indicates none is currently planned. No historical mineral exploration has occurred within the company petroleum permits.

5.6.2 Native Title

Native Title determinations have been finalised within the proposed seismic exploration area as follows:

- NTD20/2014 Doolan on behalf of the Andado, Pmere Ulperre, New Crown and Therreyererte Family Groups v Northern Territory of Australia [2018]. Native title exists in parts of the determination area.

5.6.3 Registered heritage sites

Based on a search of the NT Heritage Register and Commonwealth Heritage List, there are no registered or protected sites under the NT Heritage Act and Environmental Protection Biodiversity and Conservation Act in the proposed project footprint.

5.6.4 Archaeological assessment

An archaeological assessment, comprising searches of the NT Heritage Register and Australia Heritage Database, review of archaeological survey reports, and a targeted field inspection (Appendix B) using predictive modelling for the area of proposed works, was carried out by EarthSea Heritage Pty Ltd.

The Aboriginal Areas Protection Authority (AAPA) has issued Authority Certificates for the proposed work areas and access ways. The AAPA certificate C2021/012 identifies Restricted Work Areas (RWAs) within EP107 (Appendix B). The RWAs are in the vicinity of existing tracks to be used for access only. Track use will not include entrance into RWAs. A proposed track near RWA 4 was removed from the project. Figure 5.3 shows locations of RWAs within EP107.

The Central Land Council ((CLC) conducted an independent survey for sites and artefacts of significance and consulted with the traditional Aboriginal owners and custodians of the land and they consent to the proposed works being carried out. The CLC certificate C2021-143 identifies three restricted work areas in the vicinity of existing access tracks and the Casuarina Swamp. Vehicle access is permitted through these areas but no work is to be done. There are also three exclusion zones . The exclusions zones include the special area designated as the Mac Clarke (Acacia Peuce) Conservation Reserve. Track use does not include entrance into exclusion zones. The remaining exclusions zones are not approached by any work areas and are associated within the SOCS area of the Andado Lakes and Snake Creek.

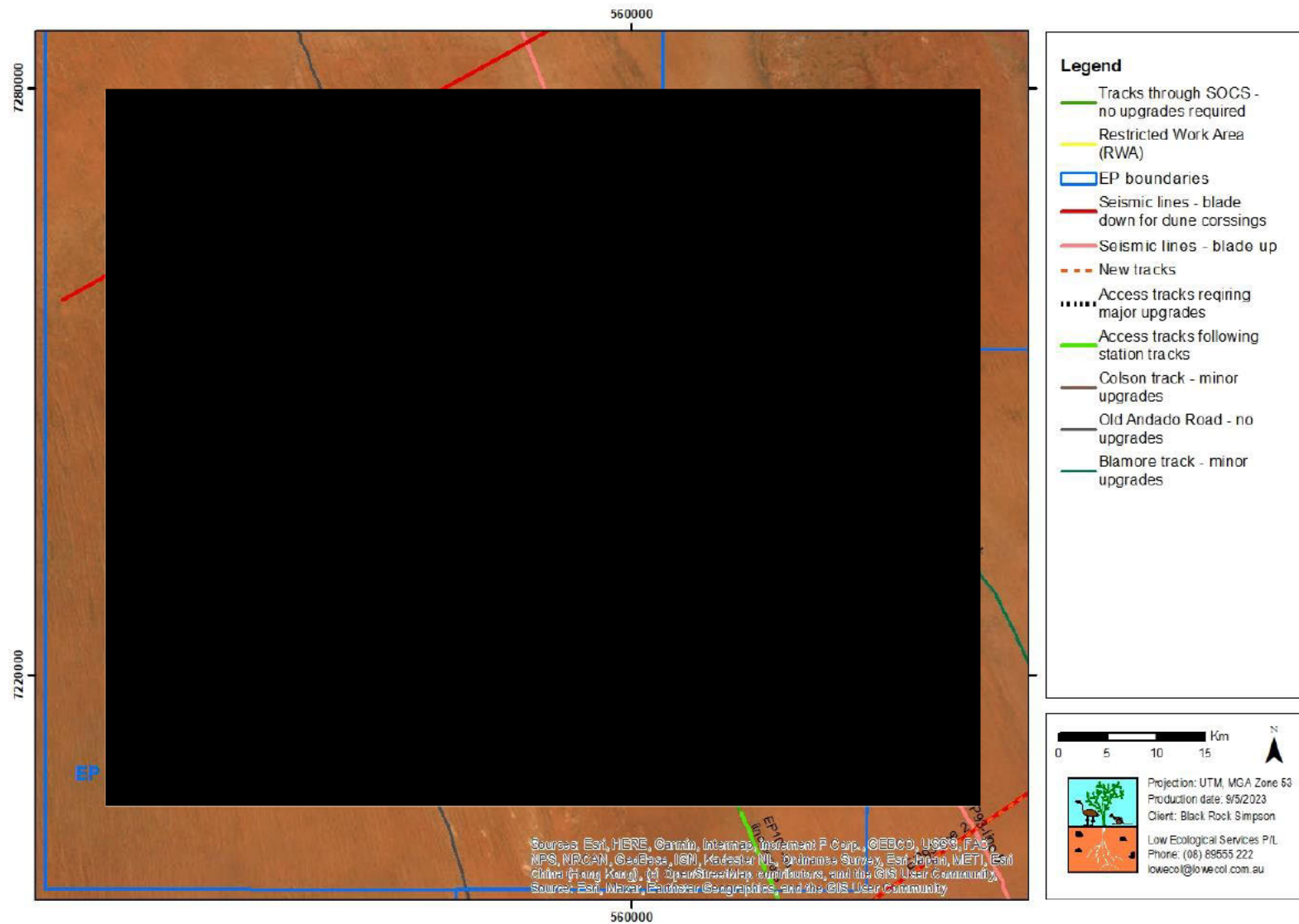


Figure 5-3. RWAs EP107

6 Stakeholder engagement

BR Simpsons stakeholder engagement is focused on building respectful relationships with key stakeholders to ensure that all stakeholders are informed of proposed activity and can voice any concerns or questions with the project development process. BR Simpson seeks to establish enduring relationships to ensure that activities generate positive economic and social benefits.

A stakeholder communications log is attached as Appendix N.

6.1 Identification of stakeholders

The identified stakeholders, as defined by Reg 7(3)(a) definition of a stakeholder, directly affected by the proposed 2023 exploration work program activities include:

- The perpetual pastoral lease owners and their delegates for Andado Station
- The Traditional Owners and Aboriginal People who represent the area on which the regulated activities will occur. These people are represented by the Central land Council
- Crown Lands Office as the owner of the Crown land portion of the work area
- Northern Territory Government departments including:
 - Transport and Civil Services Division of DIPL for access to road corridor permits and if intend to extract from NTG road bores.
 - DITT for access authority to areas outside the permit, specifically to allow access to supporting infrastructures, accommodation camp and use of access tracks.
 - Water Resources Division of DEPWS as relates to water extraction licence.
 - Aboriginal Areas Protection Authority as relates to the conditions and restricted work areas within EP107
 - Mineral license holders within the granted petroleum exploration permits

Table 6-1. Stakeholder contact details

Stakeholder	Contact Details
Costello Holdings & Panache Pty Ltd as Trustees for the Andado Property Trust	Leila Creek Station PMB 32 via Alice Springs NT 0872
Pmer Ulperre Aboriginal Land Trust	Central Land Council. 27 Stuart Highway, Alice Springs NT 0870
Crown Land Estate	Southern Region, Department of Infrastructure, Planning and Logistics Northern Territory Government Floor 1, Green Well Building, 50 Bath Street PO Box 2130, Alice Springs, NT 0871
Mineral Title Holders that coincide with the permit area	
Pedirka Basin Pty Ltd	Hexagon Energy Materials Pty Ltd 3/7 Kintail Rd, Applecross WA 6153
Norman McCleary	P O Box 2232 Bunbury WA 6230
Tri-Star Energy Company	Riverside Centre Level 35, Suite 1808 123 Eagle Street, Brisbane Qld. 4000
Other parties consulted with	
Ecos Aus Ltd	c/o Minerva Corporate, Level 8/99 St Georges Terrace Perth, Western Australia 6005
Core Uranium Ltd	c/- Peak Helium Suite 2 Level 6, 12 Creek Street Brisbane QLD 4000
Peak Helium Pty Ltd	Suite 2 Level 6, 12 Creek Street Brisbane Qld. 4000
Merlin Energy Pty Ltd	C/- Central Petroleum Pty Ltd, Level 7, 369 Anne Street Brisbane Qld 4000
Santos QNT Pty Ltd	GPO Box 1247 Adelaide SA 5000

7 Assessment of environmental impacts and risks

Various potential risks have been identified as part of the seismic exploration program. This chapter describes the approach and methods used to assess environmental risks and impacts associated with the project. The purpose of the assessment is to demonstrate that BR Simpson have considered all potential risks associated with the project and demonstrated how these will be reduced to a level that is ALARP. The risk assessment was reviewed to ensure that controls adopted followed the hierarchy of controls. This assessment process is outlined below

7.1 Site selection

The location of the project has been chosen to avoid the Andado and Snake creek SOCS area which is a nationally listed area of significance containing sensitive environmental values. No seismic activity is proposed for within this area and no access tracks will be developed within the SOCS to reduce environmental impacts. The seismic lines have also been shortened from the initial proposed length to avoid steep rocky slopes and escarpments with high erosion risks, areas of cultural heritage value and areas of sensitive vegetation. The location of the 2D seismic lines will also move within the 2D seismic acquisition corridors to avoid areas such as archaeological artefacts, large trees, areas of erosion as well as to use the least sensitive path for dune crossings.

7.2 Risk assessment

For each potential environmental impact identified, 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 severity analysis described in the previous section, and the importance/sensitivity of environmental values. The likelihood and consequence categories adopted in the environmental risk assessment are provided in Table 7-1 and Table 7-2. The likelihood and consequence ratings were combined to derive an overall risk rating using the matrix in Table 7-3.

7.2.1 Hazard Identification and inherent risk

Hazard identification involves identifying the sources of risk; those activities or incidents that could result in an environmental impact. Inherent risk ratings were assigned for each hazard based on the likelihood and consequences of the event occurring if no controls are in place. The inherent risk rating incorporates the project location and design, existing environmental conditions, impact sources and pathways, and the presence/absence of important and/or sensitive communities or environments.

7.2.2 Risk evaluation

Each inherent risk rating was evaluated with reference to the risk level and target action matrix in Table 7-4 to establish the level of management action and hazard reduction strategies required during the project. Within this process it is understood that the higher the inherent risk rating, the less acceptable the risk is, and therefore greater the requirement for avoidance and mitigation.

7.2.3 Residual risk

Once all practicable mitigation and management measures were identified, 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 element of the regulated activity poses to the environment.

Table 7-1. Likelihood categories adopted in risk assessment.

Likelihood category	Description
Almost certain	The event/impact will occur or is expected to occur. The impact occurs regularly in association with similar projects and/or in similar environments.
Likely	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.
Possible	The impact could occur in some circumstances. The impact has occurred infrequently on similar projects and/or in similar environments.
Unlikely	The impact is not expected to occur. The impact occurs very infrequently on similar projects and/or in similar environments.
Rare	The impact is very unlikely to occur. The impact has not occurred on similar projects and/or in similar environments.

Table 7-2. Consequence categories adopted in risk assessment.

Consequence or severity of Impacts	Score	Terrestrial Flora & Fauna	Terrestrial Environmental Quality	Water quality and hydrology	Stakeholder perception	Social, Economic & Cultural Surrounds	Community Health & Safety
<p>A SEVERE impact has two or more of the following characteristics:</p> <ul style="list-style-type: none"> • Extensive • High intensity • Permanent – values will never recover. 	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 landholder infrastructure.	Catchment-wide reduction in surface water flow volumes that permanently alters ecosystems or permanent damage to water quality in water courses or catchments.	Multiple stakeholder groups mobilising and encouraging others to act as reflected in media channels with significant reach and influence	Permanent impact that is felt by most of the regional population. Unauthorised destruction of Aboriginal Sacred Sites and/or heritage sites.	One or more fatalities or illness or total permanent disability to a large, exposed group
<p>A MAJOR impact has two or more of the following characteristics:</p> <ul style="list-style-type: none"> • Widespread • Moderate to high intensity • Long-term – felt for many years. 	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.	Long-term major exceedance of water quality criteria for waterways and catchments or a reduction in surface water flow volumes and groundwater levels for many years.	More than one stakeholder group's opinion or view influencing other stakeholders, reported through media channels with some reach and influence	Long-term impact that is felt by some of the regional population. Unauthorised damage/desecration of Aboriginal Sacred Sites and/or heritage sites such that site integrity is lost.	Injury or illness to one or more persons, resulting in permanent partial disability
<p>A MODERATE impact has two or more of the following characteristics:</p> <ul style="list-style-type: none"> • Localised • Low intensity • Medium-term – felt for months. 	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 medium-term, but has no measurable	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 within a single sub-catchment or Localised reduction in surface water flow volumes. Localised drawdown of groundwater.	More than one stakeholder group offering an opinion or view, reported through media channels with some reach and influence	Medium-term impact, or one that is felt by a small number of people. Unauthorised entry to a Restricted Works established for protection of Aboriginal Sacred Sites but with no physical impact to the site. Unauthorised	Serious injury or illness to one or more persons resulting in hospitalisation and lost time

		impact to biodiversity and/or ecological integrity.				access to protected heritage sites but with no physical impact to the site.	
<p>A MINOR impact has two or more of the following characteristics:</p> <ul style="list-style-type: none"> Limited Very low intensity Short-term – felt for days or a few weeks only 	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	<p>Minor short-term exceedances of water quality criteria within a single drainage line.</p> <p>Limited reduction in surface water flow volumes and groundwater levels in the immediate sub catchment area.</p>	A single stakeholder group drawing attention to an incident, issue or approach, conveyed through media channels with potential reach and influence.	Short-term disruption/ nuisance that is felt by a small number of people. No impact to Aboriginal Sacred Sites and/or heritage sites.	Injury or illness resulting in medical treatment and first aid injuries and lost time
An INSIGNIFICANT 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 water quality conditions or changes to hydrological regimes.	A person or organisation within stakeholder group signalling an interest in an incident, event or approach, using channels with limited reach or influence.	No noticeable impact to stakeholder and/or community values. No impact to Aboriginal Sacred Sites and/or heritage sites.	Minor illness or injury requiring first aid

Table 7-3. Risk matrix adopted in risk assessment.

			Consequence				
			1	2	3	4	5
			Insignificant	Minor	Moderate	Major	Severe
Likelihood	E	Almost Certain	Moderate	High	High	Very high	Very high
	D	Likely	low	Moderate	High	Very high	Very high
	C	Possible	low	moderate	High	High	Very high
	B	Unlikely	low	low	Moderate	High	High
	A	Rare	low	low	Low	Moderate	High

Table 7-4. Risk level and target action matrix used to evaluate risks

Risk level	Target action
Very high	Potentially unacceptable, modification of proposal required
High	Major mitigation (including offsets) may be required – assessment required of factors and aspects.
Moderate	Substantial mitigation required – assessment required of factors and aspects. Proactive action is required to reduce risk to ALARP.
Low	Some mitigation may be required – no detailed assessment of factors and aspects required but addressed in EMP as routine controls

7.2.4 Level of scientific uncertainty

The risk assessment prepared for the exploration activities has considered the scientific uncertainty in relation to the information available to assess the risk. The scientific uncertainty has been qualitatively assessed using the following scoring system:

- LOW (1) – Existing controls and mitigation measures exist and demonstrated as effective in previous activities and other industries. Decision tool includes Legislation, codes and standards exist to regulate the activity and good industry practice.
- MODERATE (2) – Existing controls and mitigation measures exist and demonstrated as effective in previous activities and other industries, although information used is dated or information gaps. Decision tool uses a risk-based assessment tool to assess (i.e., modelling, quantitative risk assessment and cost benefit analysis).
- HIGH (3) – Limited or no data available to support risk assessment, including no guidance material. The precautionary approach is taken to management the risk.

7.2.5 Residual risk

For each environmental factor a second iteration of the risk assessment was undertaken to account for the potential effect of the adopted measures to control the likelihood and consequence of each risk. This process identified residual impacts of the regulated activities. These were considered in relation to the sensitivity/importance of the environmental values that are present.

7.2.6 ALARP and Acceptable

Section 8 considers the outcome of the risk assessment process and the hierarchy of controls to determine if all reasonably practicable control measures have been identified and implemented and that the risk to environmental factors/aspects has been reduced to ALARP as result of the proposed activities.

7.3 Cumulative impacts and risks

Cumulative impacts refer to the potential cumulative effects of other projects and activities in the region and increased environmental impacts because of different components of the regulated activity. These include cumulative impacts associated with groundwater extraction, flora and fauna, greenhouse gas generation, traffic, and social impacts. In accordance with Section 3b of the *NT Petroleum (Environment) Regulations* the cumulative impacts of a project need to be assessed.

Two (2) mineral exploration licenses (EL's); two (2) mining authorities (MA's) and five (5) EL applications (ELA's) exist wholly or in part within the BR Simpson granted petroleum exploration permits. Stakeholder engagement (Appendix N) has identified that there are no mining or petroleum activities occurring or currently planned within these EL, ELA or MA within the BR Simpson EP proposed work area. No historical mining has occurred within the BR Simpson granted EP's.

Two Petroleum permits EP105 and EP134 are located with common boundary to the BRS EP017 and EP93 in part or in whole. EP105 has Santos QNT as the listed interest holder (as manager) with Merlin Energy (subsidiary of Central Petroleum and Peak Helium (Amadeus Basin Pty Ltd). Santos QNT did not respond to either phone or email correspondence for discussion of the proposed BR Simpson work program. Consequently BR Simpson did consult with Central Petroleum on behalf of Merlin Energy Pty Ltd and with Peak Helium (Amadeus Basin) Pty Ltd. These interest holders confirm that at the time of this EMP there are no other planned exploration or mining activities within their EP or within 50 km of BR Simpsons project area. There is currently no mineral or hydrocarbon exploration in surrounding leases. Table 7-5 provides a summary of the cumulative impacts associated with the project activities. Given the footprint of the seismic survey area, the small and temporary nature of the project and the level of activities in surrounding areas, cumulative impacts are expected to be negligible. No cumulative impacts from mining stakeholders within the BR Simpson EP's or from the interest holders of neighbouring EP's, MA's or EL's exist.

Table 7-5. Cumulative impacts and risks

Aspect	Summary
Water supply	Water will be required during the seismic survey for camp operations, line preparation and rehabilitation activities. Water is proposed to be extracted under a general exemption made in Gazette S109 of 20 December 2018 which allows up to 5 ML per year to be taken (from either the nearby pastoral or government bore). All groundwater taken will be recorded using an approved flow meter and records reported to DENR. Groundwater uses for the seismic survey is not expected to impact on other

	current and future water users due to the remote location and because future domestic demand is unlikely to change significantly. If existing Mineral titles are developed which overly BR Simpsons EP's water demand may change and may lead to more significant impacts on available water. No mining or mineral exploration is currently planned for these Mineral Titles.
Flora and Fauna	BR Simpson has designed the seismic survey to maximise the use, where possible, of existing roads and pastoral tracks to conduct the seismic survey. Preparation and clearing for the 2D seismic lines are proposed under this EMP. The tread lightly approach to line preparation will minimise the impact to the native flora and fauna by meandering around trees and utilising a blade up approach leaving groundcover intact as much as possible. Following completion of data recording, the lines will be rehabilitated back to the current state. Impacts associated with weed introduction will be managed through the weed management plan. If existing Mineral titles are developed which overly BR Simpsons EP's and further mineral and hydrocarbon exploration is carried out in adjacent leases Impacts to local Flora and Fauna may be more significant. However, avoidance of the SOCS area and the adherence to land clearing guidelines will reduce the risk of impacting threatened species. Other exploration is also likely to be short term and is unlikely to require extensive vegetation clearing.
Greenhouse gas emissions	The cumulative emissions from the proposed exploration activities are considered minor given that materials transported to site will be kept to as minimal as possible and machinery will be sourced locally where available. Also, most of the clearing will be rehabilitated immediately after the 2D seismic survey program is complete. Currently there are no other active exploration projects in the area. However if mineral titles are developed or exploration activity is conducted in adjacent leases emissions levels may increase significantly and require adaption for the region.
Traffic	Impacts of traffic are anticipated to be minor considering the low traffic volumes associated with the project and the management practices that will be implemented during the seismic survey. If other projects, e.g., mineral exploration are developed in the area, traffic flows may increase however given the management practices implemented and the current very low volume of traffic this is not considered to be a significant impact.
Social and community	The 2D seismic survey activities are in a remote area on private pastoral leases, land held by Aboriginal land trust and vacant Crown land and personnel will be accommodated in self-sufficient temporary camps for the duration of the activities. These factors couple with the temporary nature of the operation means that cumulative impacts are expected to be minor.

7.3.1 Water use

The water supply for the exploration program will be sourced from either the Bravo bore (RN018519) or the Blamore Bore (RN018517), under the exemption made by Gazette S109 which allows up to 5 ML per year to be taken. The volume of water intended for use is less than 5ML

annually. Water extraction from the bores will be undertaken with a pump fitted with a flow metre. These bores are remotely located and were drilled solely to support previous exploration programs, therefore there will be no impact to bores used to support the regional pastoral activity. The water extracted will be used for ablution facilities and as such the recharge to the bores is expected to be greater than the volume of draw, meaning that there is not predicted to be any detrimental impact to the aquifer.

Groundwater use for the seismic survey is therefore not expected to impact on other current and future water users due to the remote location and because future domestic demand is unlikely to change significantly. If existing Mineral titles are developed which overly BR Simpsons EP's water demand may change and may lead to more significant impacts on available water.

7.3.2 Flora and Fauna

BR Simpson have designed the seismic survey to maximise the use, where possible, of existing roads and pastoral tracks and to avoid the Andado and Snake Creek SOCS area and other sensitive receptors such as land systems prone to erosion. The total length of seismic lines across all three EPs is 643.8 kms of which it is estimated that 119.4 hectares will require some level of vegetation clearance (seismic lines are 4.5 m wide). Following completion of data recording, rehabilitation of the seismic lines will commence. The tread lightly approach to line preparation will also minimise the impact to the native flora and fauna by meandering around large trees or patches of dense vegetation. This will improve future rehabilitation success and retain habitat features for the wildlife in the area. Impacts from the potential introduction of weeds to the permit area will be managed through the project specific Weed Management Plan (Appendix G). To access pastoral properties, all visitors must sign a Weed Declaration which certifies the equipment and machinery are weed free. . If existing Mineral titles are developed which overly BR Simpsons EP's and further mineral and hydrocarbon exploration is carried out in adjacent leases Impacts to local Flora and Fauna may be more significant. However, avoidance of the SOCS area and the adherence to land clearing guidelines will reduce the risk of impacting threatened species. Other exploration is also likely to be short term and is unlikely to require extensive vegetation clearing.

7.3.3 Greenhouse Gas Emissions

GHG emissions from the seismic survey are based on estimated fuel consumption for the project (see section 4.5). The GHG emissions from land clearing was calculated using the 2020 FullCAM. While approximately 119.4 ha of land clearing is required for the project, this area will be progressively rehabilitated to their previous state resulting in minimal long-term reduction in carbon sequestration. The cumulative emissions from the proposed exploration activities is considered minor given that few materials are to be transported to site and machinery will be sourced locally where available and that majority of the clearing will be rehabilitated immediately after data collection.

7.3.4 Traffic

An assessment of potential traffic impacts shows that the planned acquisition of the 2D seismic program including relevant equipment and vehicles will cross the Santa Teresa Andado Road easement at two locations. The coordinates for the road crossing are: (GDA94)

-24.645072	135.304321
-24.545975	135.258597

The annual traffic report 2020 (dated June 2021) from the Department of Infrastructure, Planning and Logistics (DIPL), Transport and Civil Services, identifies no count stations exist in relative proximity to the road use at these locations. Therefore, for the purpose of this request data has

been captured from the count stations RACVD069 located 10Km east of the Stuart Highway on the Finke Road and from the station RAVDC050 on the Santa Teresa Road 16km south of the Maryvale Road Turn off. The vehicle counts for these stations are reported in the table below.

Figure 7-1. vehicle count for Santa Teresa and Finke Road

Road Name / Location	ADT Station	Direction	Units	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Santa Teresa Road 16km South of Maryvale Turn Off	RAVDC050	Inbound	Veh	68	60		59		76		70		119
		Outbound	Veh	65	60		58		76		71		119
		Both	Veh	133	120		117		152		141		238
Finke Road 10km East of Stuart Highway	RAVDC069	Inbound	Veh		13		8		15		12		9
		Outbound	Veh		9		12		12		20		8
		Both	Veh		22		20		27		32		17

The table above identifies that there has been an average of 128 vehicle movements in total through the annual count period of 2020 across the two identified count stations between Finke and Santa Teresa. The average of 128 vehicles suggests a daily movement in the order of an average of one vehicle movement approximately each three days.

The peak number of heavy and light vehicle movements along the access road will occur during the mobilisation and demobilization of the equipment and personnel to site. Due to the nature of seismic acquisition a small crew mobilizes first to survey the seismic lines route. This initial vehicle movement occurs 14 days prior to peak vehicle movement and comprises six (6) light vehicles and two (2) heavy vehicles . The peak mobilization event comprises 16 light vehicles, and six (6) heavy vehicle and occurs over a single day period.

Consequently, it is anticipated that little to no impact to traffic flow will be created by the transient nature of the equipment utilizing the road. It is concluded that with the low traffic volumes and management practices that will be implemented during the seismic survey the movement of survey vehicles will have minor cumulative impact on existing traffic movements, with no reduction in level of service of the Santa Teresa and Finke roads.

7.3.5 Social and community

The seismic survey activities proposed are remote and located on private Pastoral leases, vacant Crown land and Aboriginal trust land. The Australian Bureau of Statistics (ABS, 2007) estimated the population of the area, which encompasses the Pedirka subregion, to be 2975 with a population density of less than 0.02 people per square kilometre. The Finke Community is the largest settlement with an estimated population of 240 people, with the remaining population spread between pastoral homesteads and Indigenous outstations. Due to the transient nature of the activity, there is little impact to the economy of the region. The program is a transient one and an activity which requires specialist equipment and capability to undertake, as such there is no opportunity for local employment benefit to be had from the program. Tourism in the region will not be impacted as the project will not impact on tourist areas such as the Old Andado Homestead and the Strzelecki track and will only briefly utilise the Colson track which sees limited 4WD tourism.

7.3.6 Cultural heritage and Indigenous land use.

BRS has in place deeds of exploration and indigenous land use agreements negotiated with the traditional owners of the land. The rights and interests of the traditional owners are represented by the Central Land Council. The company has consulted with the CLC on the project and through the CLC has consulted with the indigenous stakeholders of the area.

An independent heritage archaeological survey has been conducted of the work areas and a report on the work done lodged with the heritage branch of the NT Gov't. All recommendations of the heritage archaeological survey have been incorporated into project design. The AAPA has consulted with the relevant traditional owners of the land and undertaken the appropriate surveys and issued the required Authority Certificates for the planned work. The Central Land Council has consulted with the Traditional Owners of the land and as the representative of these stakeholders has issued work program approvals.

No sites of cultural, heritage or archaeological significance will be impacted. No restriction on access to the indigenous for access are imposed and there is no infringement on their rights of access or enjoyment of the area.

To provide further protection BR Simpson has implemented an 'Unexpected Finds Procedure' for the protection of any sites of cultural or heritage significance previously unidentified by the CLC, AAPA, and independent heritage archaeological surveys conducted. As a consequence of the three surveys it has been concluded that the probability of further 'finds' is low in the areas of exploration operation. Section 7.1.3 of appendix B Cultural Heritage Assessment has identified that in the *"areas away from water resources or suitable outcropping geology there is considered to be a very low residual risk of unrecorded/unidentified archaeological features"*.

In the event of a previously 'undiscovered' find this will be reported to the NT Heritage Branch of the Parks, Wildlife and Heritage Division of the Department of Tourism Sport and Culture. Heritage branch will provide a suitable qualified person to review the 'find' and make the appropriate assessment. The Individual will not be on-site.

As per the recommendations of the Appendix B all staff on site will be provided training on the identification of Aboriginal objects and the undiscovered heritage sites procedure as part of the site induction process. The following summarises the procedure.

7.3.6.1 Undiscovered heritage sites procedure

A comprehensive archaeological and heritage scientific investigation of the proposed work program has been conducted. The investigation includes a clearance survey conducted by the Aboriginal Areas Protection Authority (AAPA) with involvement of Traditional Owners of the land subject of the planned work program. This investigation was followed by an independent survey for heritage sites of historical and cultural significance conducted by qualified and experienced archaeologists from EarthSea Pty Ltd. A third investigation was conducted over the same area by the Central Land Council (CLC) with the support of traditional owners of the land.

Scope: This procedure assumes that an appropriate level of Aboriginal and non-Aboriginal heritage assessment has been completed before work commences on site. In some cases, such as exempt development, detailed heritage assessment may not be required. Despite appropriate and adequate investigation, though considered unlikely by the Cultural Heritage Assessment report (Appendix B), the potential continues to exist that unexpected heritage items may still be discovered during maintenance and construction works. When this happens, this procedure must be followed. This

procedure provides direction on when to stop work, where to seek technical advice and how to notify the regulator if required.

This procedure applies to:

- The discovery of any unexpected heritage item (usually during construction), where the company does not have approval to disturb the item or where safeguards for managing the disturbance (apart from this procedure) are not contained in the environmental impact assessment.

This procedure applies to staff performing work for BR Simpson. 'Staff' includes all permanent, temporary and casual staff, staff seconded from another organisation and contingent workers including labour hire, professional services contractors and consultants.

An 'unexpected heritage item' means any unanticipated discovery of an actual or potential heritage item, for which the company does not have approval to disturb or does not have a safeguard in place (apart from this procedure) to manage the disturbance.

These discoveries are categorised as either:

- Aboriginal objects.
- Historic (non-Aboriginal) heritage items.
- Human skeletal remains.

Aboriginal Objects: are defined as: *"any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains"*.

Examples of Aboriginal objects include stone tool artefacts, shell middens, axe grinding grooves, pigment or engraved rock art, burials and scarred trees.

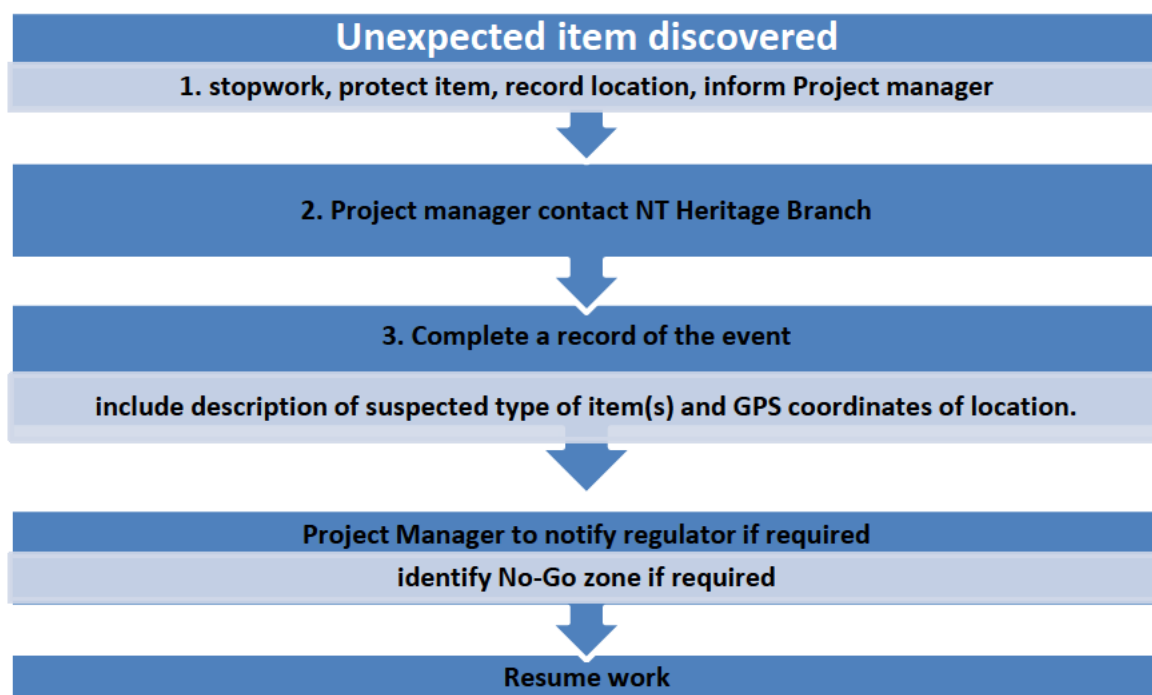
Human skeletal remains: can be classed as:

- Reportable deaths.
- Aboriginal objects.
- Relics.

If Human remains are found a person must report the death to a police officer as soon as possible. This applies to all human remains less than 100 years old regardless of ancestry. Where remains are suspected of being more than 100 years old, they are considered to be either Aboriginal objects or non-Aboriginal relics depending on the ancestry of the individual.

Procedure overview: Employees will be briefed on potential cultural heritage items that may be encountered and any No-Go Zones. On discovering something that could be an unexpected heritage item ('the item'), the following procedure must be followed.

- A stop works order will be implemented if artefacts are located during activities on site.
- The Project Manager will be notified immediately, who will then liaise with the NT Heritage Branch, for further instructions.



7.4 Potential risks, management, and implementation strategies.

The assessment of potential impacts and management aims to avoid and or minimise environmental impacts at all stages of the exploration project. The Australian Petroleum Production and Exploration Association Limited (APPEA) Code of Environmental Practice (APPEA, 2008) and previous exploration environment management plans written by Low et al have been used to develop the management strategies for each of the identified impacts associated with the project.

The key exploration activities associated with this EMP are as follows:

- preparation of seismic lines for data recording
- seismic data recording
- progressive rehabilitation of seismic lines after data recording
- establishment and operation of three temporary field camps.

The following summary tables detail risk mitigation measures, ALARP rationales, environmental outcomes, performance measures, monitoring and records, reporting and responsibility. A total of 26 risks were identified (within appendix C) of those risks there are a total of 3 moderate and 23 low residual risk ratings. The 3 moderate residual risks are related to erosion, clearing of habitat, direct impact, or mortality of fauna. A summary of the outcome of the risk assessment process is documented below, with the full risk assessment outlined in Appendix E.

7.5 Land management plan / erosion

Land management tasks and responsibilities			
Environmental values	<ul style="list-style-type: none">● Suitability and stability of land for existing uses (erosion and sediment controls implemented).● Stability of land to preserve existing water quality, landscapes, and ecosystems.		
Environmental risks	<ul style="list-style-type: none">● Soil erosion and sedimentation resulting from ground disturbance activities.● Loss of topsoil and land suitability and capability● Damage to existing road and track infrastructure● Damage to creek bed at crossing points● Dust generation during seismic survey activities		
Environmental outcomes	<ul style="list-style-type: none">● No soil erosion and discharge of sediment or soil into waterways or established drainage systems.● No new instances of erosion and sedimentation.● No instances of residual soil contamination resulting from the regulated activity		
Overall residual risk	Consequence 2 – moderate	Likelihood C – possible	Residual risk – Moderate
Scientific uncertainty	Baseline Survey data is current (Appendix A). The measures to be implemented to manage risk to the land (erosion, sediment, soil, and waterways) are well understood and established within industry to ensure risk effectively controlled.		
Activities	Management tasks		Responsibility
Project management	<ul style="list-style-type: none">● Use existing road and tracks where practicable.● Seismic survey planned to commence in October 2023 when average rainfall is low.● No work when rainfall of >25mm is expected● Site environmental inductions for all site personnel and contractors in relation to land management tasks.● Development and implementation of an Erosion and Sediment control plan (ESCP) (Appendix F)		Operations Manager Project Manager Onsite Company Representative
Seismic Line Preparation, Seismic Operations	<ul style="list-style-type: none">● All vegetation clearing must be in accordance with the Federal, Territory and local government vegetation clearing requirements.● Minimise disturbance of riparian buffers and vegetation along drainage lines.● Use existing roads and access tracks.● Minimise vehicle movements to those necessary in the camp area.● Seismic lines and access tracks will be kept within existing access infrastructure and the approved corridor covered by the AAPA Authority Certificate(s) with lines and tracks surveyed to match spatial data prior to work and clearly flag marked to display route and line.● Conduct 2D seismic line clearing during the approved period.		Seismic Contractor Project Manager Field Crew Cultural Monitors

	<ul style="list-style-type: none"> • Undertake selective clearing (blade up as much as possible), such as only clearing when an alternative route is unavailable and avoiding trees. • Ensure site environmental inductions for all site personnel and contractors include protective measures to minimise dust evolution. • Allow sufficient area to stockpile materials alongside seismic lines to be used for rehabilitation at completion of activities on site. • Topsoil and vegetation to be placed alongside seismic line. • Stockpiles are to be removed at completion of activity as part of the rehabilitation plan (Appendix K). • A total of 6 ephemeral creeks and drainage lines (stream order 1) will be crossed in the northern exploration area. No construction works are to be undertaken to disturb either the creek bank or bed. As per the land clearing guidelines a riparian buffer of 25 metres will be implemented around all (stream order 1) drainage lines. • Cross waterways on straight sections, avoiding bends and trees. • Ongoing monitoring of creek and drainage crossing condition prior to, during and at completion of rehabilitation will be required. • Reinstall the original topography of the creek or drainage bed following seismic acquisition. 	
Camp operations	<ul style="list-style-type: none"> • Ensure site environmental inductions for all site personnel are carried out, including communication of measures to reduce the risk of soil compaction, erosion and sedimentation, and available protective measures to control erosion and sediment discharge into waterways and drainage systems. • Install erosion and sediment control measures around the perimeter of camp and on slopes subject to runoff. • Monitor public road conditions to ensure deterioration does not occur. • Assist in the maintenance and repair work on roads and tracks used. • Avoid camp construction in the vicinity of drainage lines. 	Seismic Contractor Project Manager Field Crew
Rehabilitation	<ul style="list-style-type: none"> • Undertake progressive rehabilitation of disturbed areas as soon as practicable following completion of data recording to reduce exposed soils and minimise runoff from first flush events. • All compacted areas will be ripped and scarified to promote regeneration of vegetation. • All disturbed areas will be allowed to naturally regenerate or be revegetated on completion of use. • Stabilise disturbed areas quickly to reduce the potential for erosion. • Previously removed vegetation and topsoil will be uniformly re-spread over disturbed area to assist with rehabilitation process through agencies of increased infiltration and return of seed-bearing topsoil. 	Seismic Contractor Project Manager Field Crew

	<ul style="list-style-type: none"> • Windrows to be removed as soon as practicable 	
Environmental performance standards	<ul style="list-style-type: none"> • No erosion or sedimentation occurring within the project area due to seismic or camp activity. • No contamination of soil/sediment resulting from seismic or camp activities 	
Measurement criteria	<ul style="list-style-type: none"> • Project records show that no contamination has occurred or has been recorded and dealt with appropriately. • Records show that any potential sites of erosion are being monitored and appropriate action taken. • No evidence of active erosion within 12 months of works completion. • No contaminated soil because of the project upon works completion 	
Monitoring and records	<ul style="list-style-type: none"> • Spatial data of vehicle route supplied to DEWPS • All creek crossings documented by georeferenced photographs (refer Appendix A and Appendix J). • As per monitoring program in section 8.12, visual inspection and monitoring of existing tracks, seismic lines and waterway crossings conditions. These will occur: <ul style="list-style-type: none"> ○ During siting of seismic lines (baseline assessment) ○ After completion of a key phases of activity ○ After the wet season to look for signs of erosion ○ Annually (post wet) for up to 5 years. 	
Reporting	Annual environmental performance report will be submitted to DPEWS	
ALARP statement	<ul style="list-style-type: none"> • Minimal and selective clearing will ensure that the minimum area of vegetation will be cleared to complete the activities. Light machinery will lessen the impact on the areas that are cleared, and rehabilitation efforts will ensure cleared locations return to pre-clearing status. • Implementing an ESCP that outlines industry standard controls will ensure risks are limited to ALARP. 	
Acceptable	The risk mitigation measures outlined in the EMP and ESCP (Appendix F) meet the industry best practice requirements of the environmental performance standards (IECA, 2008) and BR Simpsons environmental policies that make up this EMP.	

7.6 Weed management plan.

Weeds and pest species			
Environmental values	<ul style="list-style-type: none">● Maintain the integrity of significant ecosystems and agricultural productivity		
Environmental risks	<ul style="list-style-type: none">● Introduction and Spread of Weeds can have a range of deleterious impacts including:<ul style="list-style-type: none">○ altering fire regimes○ displacing native flora○ poisoning of stock○ increase cost for control for pastoral leaseholder		
Environmental outcomes	<ul style="list-style-type: none">● The risk of exotic species and plant diseases being imported into or exported from the exploration permit area is avoided.● The risk of spreading weeds within the seismic survey area is avoided.		
Overall residual risk	Consequence – Minor (2)	Likelihood – Unlikely (B)	Residual risk Low
Scientific uncertainty	The baseline survey report (appendix A) provides current data to assess and manage weeds during the program (appendix G). The measures to be implemented to manage risk of introduction and spread of weeds in the exploration permit can be implemented easily to ensure the risk effectively controlled.		
Activities	Management tasks		Responsibility
Project management	<ul style="list-style-type: none">● Source machinery locally if available.● Ensure contractual requirements specify vehicle hygiene requirements.● All staff to be trained in weed identification and reporting.		Operations Manager Project Manager Onsite Company Representative Seismic Contractor Project Manager
Seismic Line Preparation and Seismic Operations	<ul style="list-style-type: none">● Weed surveys are to be conducted in all activity areas to establish a baseline, inform weed control activities and compare post-activity vegetation with the baseline (Appendix A)● A Weed Management Plan will be implemented (Appendix G).● If an outbreak of a declared weed occurs during exploration activities weed treatment is to be undertaken as soon as possible to control and eradicate the infestation, with treatment undertaken according to guidelines on the DEWPS website. The Northern Territory Weed Control Handbook (DENR, 2018) will also serve as a reference (DENR, 2018) (refer Appendix G).● All plant and machine operators to monitoring for weeds while conducting line preparation, including routine checks along each seismic line and change in vegetation community.● All vehicles, plant, and equipment to be checked and cleaned prior to mobilization into the work area and on demobilisation from exploration area to avoid the spread of weeds off the EP.		Project Manager Onsite Company Representative Seismic Contractor Project Manager Field Crew

	<ul style="list-style-type: none"> • All rubbish, including food packaging, is to be disposed of in an appropriate container as soon as possible, to be transported off site. • A post-exploration weed control program is to be undertaken within the exploration area if NT Weed Management Act declared weed is identified. 	
Rehabilitation	<ul style="list-style-type: none"> • Ongoing monitoring of rehabilitated areas in accordance with the rehabilitation approach to ensure declared weed species become established interfering with the rehabilitation success (refer Section 9.0 and Appendix K). • A post-exploration weed control program is to be undertaken within the exploration area if NT Weed Management Act declared weed is identified. 	Operations Manager Project Manager
Environmental performance standards	<ul style="list-style-type: none"> • No weeds have been introduced to the project area because of the project. • Existing weeds across the site have not been spread into new areas. • Effective weed management has been carried out to address any weed infestations 	
Measurement criteria	<ul style="list-style-type: none"> • No exotic species and plant diseases imported into or exported from the exploration area. • No further spreading of declared weeds within the exploration area 	
Monitoring and records	<ul style="list-style-type: none"> • Weed monitoring is to be carried out in all disturbance areas to determine the extent of existing weed infestations within the exploration area, inform weed control requirements and assess any changes in the number, size and species of weed infestations as a result of the project following its completion. • All plant and machine operators to monitoring for weeds while conducting line preparation, including routine checks along each seismic line and change in vegetation community. • As per monitoring program in Table 7-1, a post wet season weed survey will be conducted of seismic lines and access tracks. All weed monitoring and survey activities will be recorded in accordance with the NT Weed Data Collection Guidelines. 	
Reporting	<ul style="list-style-type: none"> • Annual environmental performance report will be submitted to DPEWS • The Regional Weed Officer – Onshore Shale Oil Gas Development at the Weed Management Branch of DEPWS will be notified within 48 hours of the discovery of a new weed species in the seismic survey area • Initial notification may be verbal, with follow-up written notification provided within seven working days. The notification should include a preliminary species identification and location information. The Regional Weed Officer will advise what further action is required. 	
ALARP statement	<ul style="list-style-type: none"> • Controls are industry standard for weed management. • 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. • Weed management plan is in place and is guided by the Regional Weed management plan for Alice Springs. This management plan outlines standard practice management techniques for the NT, that are proven. 	
Acceptable	Weed survey in 2022 indicated a low concentration of weeds across the exploration area. Based on the controls to be implemented, the residual risk is assessed as acceptable. Controls above best practice are unlikely to reduce the risk of the introduction and spread of weeds into the permit area any further.	

7.7 Bushfire management plan

Bushfire management			
Environmental values	<ul style="list-style-type: none">● Maintain a natural fire regime of the region.● Protection of public, private infrastructure, and equipment.		
Environmental risks	<ul style="list-style-type: none">● Vegetation degradation and habitat modification● Damage to or loss of infrastructure● Damage to culturally significant sites● Delay to rehabilitation success as result of bushfire		
Environmental outcomes	<ul style="list-style-type: none">● No risk of bushfires as result of regulated activity.● No impact to environmental habitat and fauna, culturally significant sites, public infrastructure, and pastoral activities.● Prevent accidental fire risk and ensure safe storage of chemicals to prevent fire damage.		
Overall residual risk	Consequence – minor	Likelihood – unlikely	Residual risk Low
Scientific uncertainty	Historical records of fire in the area show that fire frequency within the exploration area over the past 12 years is low ranging between 0 and 2 times (NAFI, 2022).		
Activities	Management tasks		Responsibility
Project management and design	<ul style="list-style-type: none">● Fire breaks (minimum of 4 m) to be incorporated into temporary camp layout.● Ensure adequate firefighting equipment is available and sufficient training and familiarisation carried out by personnel.● An emergency response plan that includes actions to be carried out in the event of a bushfire is presented in Appendix H		Senior Site Works Supervisor Site Safety Manager
Seismic Line Preparation and Seismic Operations	<ul style="list-style-type: none">● A Bushfire Management Plan (BMP) (Appendix H) has been developed that includes the following information:<ul style="list-style-type: none">○ Analysis of baseline fire information (at least 10 years)○ Analysis of impacts of the proposed activities on the existing fire management regime○ Coordination with the landholder and consistency with the landholder’s fire management obligations and strategies○ Fire management zone map○ Fire management zone mitigation actions● No hot works are permitted on total fire ban days without written approval from a fire control officer or fire warden		Operating manager Operating Company Representative
	<ul style="list-style-type: none">● Implementation of the interest holder’s appropriate fire mitigation measures such as:<ul style="list-style-type: none">○ Monitoring of seasonal conditions and fuel loads		Site Safety Manager

	<ul style="list-style-type: none"> ○ Maintenance of access trails and fire breaks around infrastructure ○ Communication system for monitoring bushfire alerts in the area ● Annual fire mapping to monitor changes to fire frequency in the relevant area ● Monitor the NAFI website and adhere to total fire ban days. Updates provided at daily toolbox meetings. ● Fire extinguishers fitted to all vehicles ● Clean out vehicle engine bay regularly, with special attention paid on red alert days, to prevent grass igniting on the hot vehicle components ● Smoking only allowed in designated smoking areas. ● Drive on designated access tracks and seismic lines only. Driving through long dry grass is to be avoided, wherever possible. Line preparation in grassed areas will be flattened to reduce the build up of fuel within the vehicle's engine bays. ● Ensure that vehicles and equipment are fitted with spark arrestors. ● Ensure appropriate storage of fuel and other flammable and combustible liquids in accordance with AS1940:2004 The storage and handling of flammable and combustible liquids (refer Section 7.6). <ul style="list-style-type: none"> ○ Any rubbish, debris or oil refuse that could constitute a fire hazard shall be removed to a safe distance away from camp facilities, existing water bores and other infrastructure. 	
Environmental performance standards	<ul style="list-style-type: none"> ● The project has not caused or contributed to significant risk of bushfire within the project area. ● No accidental fires occur within the project area. ● There are no impacts to environmental habitat and fauna, culturally significant sites, public infrastructure, and pastoral activities caused by fires. ● Fuel is stored safely to reduce the risk of wildfire ignition at the site. 	
Measurement criteria	No uncontrolled fires occurring because of exploration activities.	
Monitoring and records	As per monitoring program in section 8.12, daily monitoring for bushfire alerts (primarily via the https://secure.nt.gov.au/alerts and https://www.bushfires.nt.gov.au/incidentmap/ websites and notifying all site personnel of the risks of fire during toolbox meetings	
Reporting	Annual environmental performance report will be submitted to DPEWS	
ALARP statement	The BMP outlines the industry standard controls that will be implemented to reduce the risk of fire. Fire extinguishing devices will be available at all work sites to control fires as needed. Equipment controls and safety mechanisms, as well as regular checking of fire danger will ensure this risk has been reduced to ALARP.	
Acceptable	Based on the understanding of bushfire risk in the area, time of year and the additional controls to be implemented during the exploration activity, the risk of Bushfire is as low as reasonably practicable (ALARP) and acceptable.	

7.8 Waste and wastewater management plan

Waste and wastewater management				
Environmental values	<ul style="list-style-type: none">● Maintain the integrity of ecosystems and agricultural productivity.● Minimise the amount of waste generated on-site and disposed off-site			
Environmental risks	<ul style="list-style-type: none">● Release of detergents into natural systems negatively impacting the ecosystem● Pollution of water through release of wastewater into nearby creeks● Contamination of soil through inappropriate waste management● Attraction of pest species due to inappropriate organic waste management			
Environmental outcomes	<ul style="list-style-type: none">● No impacts to soil, surface water, groundwater, sensitive habitats, and air quality.● No attraction of pest species from waste storage.● Waste generation to be reduced through the implementation of recycling.			
Overall residual risk	Consequence – Minor		Likelihood – Unlikely	Residual risk Low
Scientific uncertainty	Waste will be managed in accordance waste management hierarchy principals. There are a range of legislation, codes, and standards available to ensure risk of waste and wastewater management effectively mitigates the risk to the environment.			
Activities	Management tasks			Responsibility
Project management	<ul style="list-style-type: none">● Designated waste storage and handling area to be planned for and provided onsite at the construction camp.● Ensure provision for appropriate animal-proof waste storage containers at the camp.● All waste will be removed from site following completion of exploration activities.● Removal and disposal of hazardous wastes to be in accordance with NT hazardous waste disposal requirements.			Project Manager Operating Company Representative Seismic Operations Project Manager
Seismic Line Preparation and Seismic Operations	<ul style="list-style-type: none">● A Waste Management Plan will be implemented (Appendix I).● Sufficient waste receptacles will be provided on site and any work areas.● A waste register to be maintained for the duration of the exploration program.● Ensure contractual requirement to remove all waste and dispose of in licensed facility are met● Waste will be segregated for ease of disposal.● All staff to be informed of the waste management plan and regular inspections will ensure compliance.● Visual inspections of the waste and wastewater management systems will be undertaken regularly or if an unseasonal significant rainfall event occurs (i.e., greater than 20 mm in a 24-hour period).			Project Manager Operating Company Representative Seismic Operations Project Manager HSE Manager Field Crew

Rehabilitation	<ul style="list-style-type: none"> At completion of seismic survey, all evidence of waste is removed from the permit area. 	Company Representative Seismic Operations Project Manager
Environmental performance standards	<ul style="list-style-type: none"> Recycling effectively reducing the amount of waste generated Waste stored and transported safely and does no impact soil, surface water, groundwater, sensitive habitats, and air quality. No spills or contamination to the surrounding environment occurs. No pest species are attracted by waste storage facilities. 	
Measurement criteria	<ul style="list-style-type: none"> All waste volumes tracked whilst on-site and in transport. Waste transport certificates available for all wastes generated. No off-site releases of wastewater or waste products. Zero wastewater tank overtopping events. Zero onsite spills of wastewater. Zero wastewater transport spills 	
Monitoring and records	<ul style="list-style-type: none"> As per monitoring program in Table 7-1, weekly inspections of waste storage Maintain waste register, including receipts to verify waste has been properly disposed of. Waste disposal records (tracking and disposal certificates) to be maintained and kept for audit purposes and provided to DPIR/DENR. 	
Reporting	Annual environmental performance report will be submitted to DPEWS	
ALARP statement	<ul style="list-style-type: none"> 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. Wastewater 	
Acceptable	Based on waste and wastewater requirements during the exploration activities primarily to support camp operations, the risk is as low as reasonably practicable (ALARP) and acceptable. Controls are easily implemented, and no further input is required to reduce the risk any further.	

7.9 Spill prevention and response

Spill prevention and response			
Environmental values	<ul style="list-style-type: none">● Maintain the integrity of ecosystems and agricultural productivity.● Minimise the amount of waste generated on-site and disposed of off-site		
Environmental risks	<ul style="list-style-type: none">● Spills into natural systems negatively impacting the ecosystem● Pollution of water through spill of hydrocarbon and/or chemicals into nearby creeks and groundwater● Contamination of soil through hydrocarbon or chemical spills		
Environmental outcomes	<ul style="list-style-type: none">● No impacts on soil, surface water, groundwater, sensitive habitat, and air quality.● No ground surface contamination or spill incidents.		
Overall residual risk	Consequence – Minor	Likelihood – unlikely	Residual risk Low
Scientific uncertainty	There are a range of legislation, codes, and standards available to ensure risk of spills during the exploration activity can effectively mitigate the risk to the environment from accidental release, leaks, and spills.		
Activities	Management tasks		Responsibility
Project management	<ul style="list-style-type: none">● Plan logistics to minimise the quantity of fuel stored on site.● Plan for designated waste storage and handling areas located away from creeks or flammable vegetation.● Plan for removal and disposal of hazardous wastes to be in accordance with NT hazardous waste disposal requirements.● Transport of fuel and hazardous chemicals will not occur via access ways after a rain fall event of 25mm or more until such time as the access way has been assessed as safe to do so.		Operations Manager Project Manager Operating Company Representative Seismic Operations Project Manager
Seismic Line Preparation and Seismic Operations,	<ul style="list-style-type: none">● Use, storage and handling of fuel, chemicals, and oils on site:<ul style="list-style-type: none">○ must comply with WHS legislation○ be in accordance with their approved safety data sheet○ must be stored to prevent release to the environment and to contain any spills○ 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● Any hazardous chemicals or those that may cause environmental harm are to be stored within secondary containment.● Secondary containment must meet all the following:<ul style="list-style-type: none">○ sufficient capacity to hold 100% of the volume of the largest container stored in the area plus 10%, unless the container is equipped with individual secondary		Project Manager Operating Company Representative Seismic Operations Project Manager HSE Representative Field Crew

	<p>containment</p> <ul style="list-style-type: none"> ○ permeability able to contain materials or waste until it can be removed or treated ○ provide for separation of clean and dirty water ○ be compatible with the material or waste stored or used within the containment ○ be resistant to physical, chemical, and other failure during handling, installation, and use ○ be always maintained in good order ○ secondary containment requirements can be met with double-lined or double walled storage tanks. <ul style="list-style-type: none"> ● 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. ● Materials that escape from primary containment or are otherwise spilled onto secondary containment shall be removed as soon as possible. ● Inspection reports and maintenance records of secondary containment shall be kept. ● A spills management plan has been developed that outlines spill prevention, response procedure and spill clean-up processes (Appendix J). 	
Rehabilitation	<ul style="list-style-type: none"> ● Upon completion of project all hazardous liquids and containers are to be removed from the permit area and disposed of in a licensed facility. ● Identify and remediate the affected area where applicable in accordance with the National Environmental Protection Measure (NEPM) requirements. ● Any contaminated soil removed is to be disposed of appropriately in a licensed facility. 	<p>Project Manager Operating Company Representative Seismic Operations Project Manager HSE Representative</p>
Environmental performance standards	<ul style="list-style-type: none"> ● Practices and processes in place to reduce the risk of spills. ● No ground surface contamination or spill incidents ● No spills impact soil, surface water, groundwater, sensitive habitat, and air quality because of the project. ● Any spills are effectively dealt with to reduce contamination risk to the surrounding environment. 	
Measurement criteria	<ul style="list-style-type: none"> ● No off-site releases of chemicals or hydrocarbons. ● No accidental on-site release of chemicals or hydrocarbons ● 100% of spills cleaned up immediately on discovery. ● Incident reports are indicative of effective remediation or removal and safe disposal of contaminated material/soil ● Incident reporting to DEPWS is to comply with the requirements in Regs 33 and 35 – reportable and recordable incidents. 	

Monitoring and records	<ul style="list-style-type: none"> As per monitoring program in section 8.12, daily inspection of fuel and chemical storage areas, including containment areas and structures, containers and spill kits Incident reporting to DENR is to comply with the requirements in Regs 33 and 35 – reportable and recordable incidents.
Reporting	<ul style="list-style-type: none"> Spills reporting as needed Annual environmental performance report will be submitted to DEPWS
ALARP statement	<ul style="list-style-type: none"> Chemicals and hazardous materials will be stored and per industry best practice. Appropriate spill kits and spill response procedures and materials will be available on site minimising the risk consequence
Acceptable	Controls to prevent the accidental release, leak, or spill of chemicals (primarily associated with fuel and hydraulic oils) are easily implemented, and no further input is required to reduce the risk any further

7.10 Noise, vibration, and light emissions

Noise, Vibration, and Lighting emissions management			
Environmental values	<ul style="list-style-type: none">● An acoustic, lighting, vibration, and visual amenity environment conducive to the wellbeing of the community, including its social and economic amenity, and an individual, including the opportunity to have sleep, relaxation, and conversation without unreasonable interference from seismic survey activities.		
Environmental risks	<ul style="list-style-type: none">● Noise, vibration, or lighting impacts on surrounding communities● Disruption to wildlife through noise, vibration, and lighting from mechanical equipment● Disturbance to stock through noise, vibration, and lighting from mechanical equipment.		
Environmental outcomes	<ul style="list-style-type: none">● Manage activities in accordance with occupational health and safety guidelines for noise, vibration, and light exposure.● Minimise nuisance noise and vibration impact on surrounding communities or exploration workers.● Minimise disruption to fauna and stock.		
Overall residual risk	Consequence – insignificant	Likelihood – Rare	Residual risk Low
Scientific uncertainty	EP93, EP97 and EP107 are considered remote. Activities are located away from populated areas. Timing of activities will be restricted to daytime hours where possible.		
Activities	Management tasks		Responsibly
Project management	<ul style="list-style-type: none">● Ensure operating hours for the seismic line clearance and seismic operations are established and communicated to personnel and contractors.● Consult with pastoral leaseholders prior to scheduling of activities to take into consideration stock movements.● Provide at least two weeks notification to households and businesses if operations are to be		Operations Manager Project Manager Onsite Company Representative Seismic Contractor Project

	<p>conducted within 10 km of their premises.</p> <ul style="list-style-type: none"> • All nuisance-related complaints from sensitive receptors investigated and reported upon 	Manager
Seismic Line Preparation and Seismic Operations	<ul style="list-style-type: none"> • Noise management and levels must comply with the Northern Territory Noise Management Framework Guideline (NT EPA 2018). • Slow vehicles when passing cattle, people, or sensitive receptors (administrative). • Use directional lighting to limit light spread and emissions outside of the zone required. • Lights will be turned off when no longer required once activity has been completed. • Work conducted in a progressive line allowing wildlife to avoid the area. • Ensure site inductions for all site personnel include noise, vibration and lighting requirements. • Ensure vehicles, plant and equipment are maintained and in good order. • Ongoing consultation with pastoral station manager and other relevant parties. 	Onsite Company Representative Seismic Contractor Project Manager HSE Manager Field Crew
Environmental performance standards	<ul style="list-style-type: none"> • Pastoral stock are not disturbed by noise, vibration, and lighting from mechanical equipment. • Surrounding communities and pastoral homesteads are not disturbed by noise, vibration, and lighting from mechanical equipment. • Wildlife are not disturbed by noise, vibration, and lighting from mechanical equipment. 	
Measurement criteria	<ul style="list-style-type: none"> • Nuisance-related complaints investigated immediately. • Corrective action(s) recorded and taken where appropriate • Ongoing consultation with landholders. 	
Monitoring and records	<ul style="list-style-type: none"> • All complaints and subsequent actions are to be recorded 	
Reporting	Annual environmental performance report will be submitted to DPEWS	
ALARP statement	<ul style="list-style-type: none"> • Remote location • Landholders will be able to ensure cattle are located away from work fronts • Vehicles well maintained and speed will be limited when within proximity to receptors. • Wildlife will be able to avoid the area of influence due to progressive work activities. • Lighting will only be utilised when necessary, and when used will be directional and used for the minimum time required. 	
Acceptable	The residual risk is considered acceptable for noise, vibration, and lighting emissions. The remote location of the activity area and the measures to be implemented during survey do not warrant further risk reduction.	

7.11 Air quality and emissions management

Air quality and emissions management			
Environmental values	<ul style="list-style-type: none">Rural air environment with qualities conducive to suitability for the life, health and wellbeing of humans, stock and wildlife.		
Environmental risks	<ul style="list-style-type: none">Increase in dust during site preparation resulting from vehicular traffic during line preparation and data recording		
Environmental outcomes	<ul style="list-style-type: none">Minimise environmental nuisance at sensitive receptors.Minimise greenhouse gas emissions.		
Overall residual risk	Consequence – Minor	Likelihood – Unlikely	Residual risk Low
Scientific uncertainty	Activities across the project area are not within proximity to sensitive receptors, such as high conservation areas, communities or homesteads, roads. Seismic lines have been selected so as not to intersect with the Andado and Snake creek SOCS.		
Activities	Management tasks		Responsibility
Project management	<ul style="list-style-type: none">Ensure dust minimisation and suppression requirements are communicated to personnel including contractors.		Project Manager Onsite Company Representative Seismic Contractor Project Manager
Seismic Line Preparation and Seismic Operations	<ul style="list-style-type: none">Use existing road and tracks and ensure tracks are suitable for the intended purpose and volume of traffic required.Site environmental inductions for all site personnel and contractors in relation to land management tasksAll vegetation clearing must be in accordance with the Federal, Territory and local government vegetation clearing requirements.Disturbed areas will be stabilised in accordance with the Rehabilitation Plan.Vehicle speed restrictions apply when travelling in permit (60 km/hr on station access tracks)		Onsite Company Representative Seismic Contractor Project Manager HSE Manager Field Crew

	<ul style="list-style-type: none"> and signed limit on gazetted roads) or drive to conditions. manage dust emissions via slow vehicle movement on the site Undertake selective clearing, such as only clearing when an alternative route is unavailable and avoiding trees. In line with clause D.6.2 of the Code of Practice: Onshore Petroleum Activities in the Northern Territory, BR Simpson will provide an annual emissions report to DEPWS which summarises actual annual greenhouse gas emissions versus predicted emissions in the EMP. 	
Rehabilitation	<ul style="list-style-type: none"> Rehabilitate the ground surface as soon as practicable following disturbance. Uniformly re-spread previously removed vegetation and topsoil over disturbed area to assist with rehabilitation process through agencies of increased infiltration and return of seed-bearing topsoil. 	Operating Company Representative Seismic Contractor Project Manager
Environmental performance standards	<ul style="list-style-type: none"> Greenhouse gas emissions are as low as reasonably possible. The project does not cause environmental nuisance at sensitive receptors. SOCS area is not impacted by environmental nuisance as a result of the project. 	
Measurement criteria	<ul style="list-style-type: none"> No nuisance-related complaints regarding dust / air quality resulting from exploration activities. All complaints responded to and, where appropriate, corrective action taken immediately. 	
Monitoring and records	<ul style="list-style-type: none"> Monitor road conditions to ensure deterioration with possible increase in dust creation, does not occur and undertake road rehabilitation If required. All complaints and subsequent actions are to be recorded 	
Reporting	Annual environmental performance report will be submitted to DPEWS	
ALARP statement	<ul style="list-style-type: none"> Minor clearing taking place. Mostly blade up preparation will take place. 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. 	
Acceptable	The residual risk is considered acceptable for dust and emissions. The remote location of the activity area and the measures to be implemented during survey do not warrant further risk reduction.	

7.12 Vegetation, Flora, Fauna, and Habitat Management

Vegetation, Flora, fauna, and habitat management			
Environmental values	<ul style="list-style-type: none">● No clearing outside the proposed seismic survey area.● No disturbance to high conservation areas.● Reduce impact to significant vegetation.● Minimised fauna deaths.		
Environmental risks	<ul style="list-style-type: none">● Disturbance to native vegetation and flora and potential to change of vegetation structure.● Removal of threatened fauna habitat● Risk of injury or death to native fauna and livestock● Disturbance to and loss of habitat and native vegetation extent● Loss or endangerment of threatened species.		
Environmental outcomes	<ul style="list-style-type: none">● No clearing outside the proposed seismic survey area● No disturbance to high conservation areas.● No significant impact to flora and fauna, including stock as result of the activities.		
Overall residual risk	Consequence – moderate	Likelihood – Unlikely	Residual risk Moderate
Scientific uncertainty	The design of the survey has considered the impact from clearing of vegetation and has a range of measures to minimise extent of disturbance by using where possible existing access tracks, fence lines and clearings (camp).		
Activities	Management tasks		Responsibility

Project management	<ul style="list-style-type: none"> ● Minimise vegetation clearance by using existing access tracks as much as possible. ● 3km No Go zone buffer around Plains Mouse No work Zone. ● Ensure Plains mouse No work zone is adhered to and implement specific control measures for access tracks within the SOCS area. ● 300m buffer around other identified vulnerable/critical species habitat where previous unrecorded habitat may be identified ● Align access tracks and seismic lines to avoid mature trees. ● no trees to be removed ● reroute access and seismic lines within approved easement to avoid trees, sensitive habitat ● 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. ● Adherence to the weed and waste management plans to mitigate the potential increase in feral animals such as cats. ● Access and construction restricted to daytime hours other than in event of emergency ● Work will cease if there is a significant rainfall event (>25 mm) Stockpiling any cleared vegetation and topsoil for rehabilitation purposes. ● daylight operation only ● Blade up clearing preferred, blade down only in authorised areas ● If signs of significant fauna are identified seismic activity will be redirected. ● Transport of fuel and hazardous chemicals will not occur via access ways after a rain fall event of 25mm or more until such time as the access way has been assessed as safe to do so. 	Operations Manager Project Manager Onsite Company Representative Seismic Contractor Project Manager
Seismic line preparation and Seismic operations	<ul style="list-style-type: none"> ● Use existing road and tracks and ensure tracks are suitable for the intended purpose and volume of traffic required. ● Seismic lines and access tracks will be kept within the corridor covered by the AAPA Authority Certificate with lines and tracks surveyed to match spatial data prior to work and clearly flag marked to display route and line. ● Seismic line selection and access tracks have been selected to avoid riparian vegetation and creek crossings as these are relatively rare within the area. ● Small ephemeral water sources such as dry claypans will be avoided in the establishment of seismic lines. This is relatively easy to achieve as these are small features within the landscape and can be diverted around. Riparian vegetation surrounding claypans will also be avoided. 	Onsite Company Representative Seismic Contractor

	<ul style="list-style-type: none"> • Minimise disturbance in the riparian buffers in accordance with the stream order of the encountered drainage line in accordance with ESCP management plan. • All vegetation clearing must be in accordance with the Federal, Territory and local government vegetation clearing requirements. • Undertake selective clearing, such as only clearing when an alternative route is unavailable and avoiding trees. Blade up clearing in proximity to identified habitats • Stands of Coolibah (<i>Eucalyptus coolabah</i>), white wood (<i>Atalaya hemiglauca</i>) and <i>Grevillea juncifolia</i> have been identified and seismic lines will avoid these stands of trees. • Land units which contain cracking clay soils are avoided. • Disturbed areas will be stabilised in accordance with the Rehabilitation Plan. • Clearing will be conducted in a single direction, allowing any fauna to move out of way of clearing activities. • If fauna is spotted in immediate clearing area and are in danger, clearing will be stopped until safe to continue. • Areas of known fauna habitat will be avoided and buffer zones placed as much as possible. • Work will cease if there is a significant rainfall event (>25 mm) Stockpiling any cleared vegetation and topsoil for rehabilitation purposes. • Slow vehicles when passing cattle or other wildlife. • Vehicle movement will be restricted to existing access tracks and 2D seismic lines. • 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. • Driving on site will be restricted to daytime hours, wherever possible. • Transport of fuel and hazardous chemicals will not occur via access ways after a rain fall event of 25mm or more until such time as the access way has been assessed as safe to do so. 	
Rehabilitation	<ul style="list-style-type: none"> • Progressively rehabilitating cleared areas once works have been completed. • Retain topsoil, scrub and vegetation cleared to facilitate rehabilitation. • Rehabilitate the ground surface to near-natural condition. • Uniformly re-spread previously removed vegetation and topsoil over disturbed area to assist with rehabilitation process through agencies of increased infiltration and return of seed-bearing topsoil. 	Operating Company Representative Seismic Contractor Project Manager
Environmental performance standards	<ul style="list-style-type: none"> • No disturbance to SOCS occurs. • No disturbance to listed threatened species occurs. • The project does not have a significant impact to flora and fauna, including stock as result of the activities. • Clearing is restricted to the specified seismic survey area. 	

Measurement criteria	<ul style="list-style-type: none"> • No unauthorised clearing of vegetation within exploration area • No riparian vegetation impacted when access creek and stream crossings. • No introduction of weed species as result of exploration activities • No native fauna or stock impacts (injury or fatality) reported. • Weekly inspection of temporary camp area does not indicate presence pest species • Activity audits will be undertaken weekly, and results recorded, along with any photographs. • Record any fauna encounters, injuries, or death as result of seismic survey on fauna register for the duration of works.
Monitoring and records	<ul style="list-style-type: none"> • Record of pre-disturbance condition • Records of observed presence, with identification of weeds and pest species. • All weed and pest outbreak incidents will be reported • Record any fauna or stock deaths as result of exploration activity. • Rehabilitation monitoring and weed monitoring reports to establish condition post seismic survey.
Reporting	Annual environmental performance report will be submitted to DEPWS
ALARP statement	<ul style="list-style-type: none"> • All areas of sensitive habitat have been identified and avoided during site selection. • Clearing methodology will limit impacts on threatened species, which has resulted in a low residual risk. • Vegetation clearing will be conducted in a way to minimise disturbance to shrubs and trees by weaving around areas. • Existing tracks and roads will be used, which results in no new impacts • Clearing methodology will limit direct fauna mortality • Speed limits will be reduced, and track placement will limit direct mortality to ALARP. There will be no significant impact to species populations in the case of some direct mortality of fauna
Acceptable	The remote location of the activity area and the measures to be implemented during survey do not warrant further risk reduction.

7.13 Social Environment and Access

Social environment and access	
Environmental values	<ul style="list-style-type: none"> • Maintain and enhance the livelihood and well-being of local communities and towns. • Maintain the level of amenity and experience for tourists and local community members. • Allow pastoral operations to continue, including access to groundwater.
Environmental risks	<ul style="list-style-type: none"> • Restriction of access to pastoral operations and Traditional Owners during the works • Poor relations with pastoral leaseholders and other stakeholders • Negatively impact on existing road infrastructure and increased traffic

	<ul style="list-style-type: none"> Unwanted facilitation of public access (trespass) to lease areas through the creation, improvement or use of access tracks 		
Environmental outcomes	<ul style="list-style-type: none"> Ensure ongoing stakeholder and other regional engagement indicate no concerns regarding access to pastoral properties or impact on pastoral leaseholders' activities. No formal complaint from local businesses or community resulting from the regulated activity. No reports of trespass because of the works. No safety incidents occurring involving the public and other third parties. 		
Overall residual risk	Consequence – Minor	Likelihood – unlikely	Residual risk
Scientific uncertainty	BR Simpson has established relationships with key stakeholders that will be directly impacted by the activities and will continue engaging with the stakeholders, including Traditional Owners, pastoral lease holders and Government to ensure activities are completed in accordance with the Code of Practice.		Low
Activities	Management tasks		Responsibilities
	<ul style="list-style-type: none"> Site inductions are to ensure that all personnel are aware of and understand social constraints of working with in the permit area, including conditions specified in the Land Access Agreement with the host pastoral leaseholder. All workers will be required to attend cultural awareness training and code of conduct. Work instruction to be issued to all contractors relating to access constraints. Consult with other relevant land users and public interest groups, such as pastoral leaseholders, Aboriginal communities, natural resource managers, conservation groups, tourism operators and other affected parties, to exchange information and facilitate good working relationships as required. Prior to commencement onsite, communicate with pastoral leaseholders for access permission. 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 showing pastoral infrastructure. LAA to be in place with each station prior to commencement of the regulated activity in the permit area. 		Operations Manager Project Manager Onsite Company Representative Seismic Contractor Project Manager
Rehabilitation	<ul style="list-style-type: none"> On completion of data recording rehabilitation of seismic lines will commence in accordance with the Rehabilitation Plan and monitoring instigated to ensure successful restoration of the activity areas. Engage with pastoral leaseholders on the rehabilitation areas to determine potential 		Operations Manager Project Manager Onsite Company Representative

	interaction with pastoral operations with the rehabilitation success.	
Environmental performance standards	<ul style="list-style-type: none"> ● The project does not have any negative impacts on the surrounding pastoral properties. ● The project does not have a negative impact on nearby communities. ● No safety incidents occurring involving the public and other third parties. ● The project does not have any negative impact on Native Title holders. 	
Measurement criteria	<ul style="list-style-type: none"> ● All complaints are responded to immediately and closed out. ● Attendance records of members present at training workshops. ● Employee register. ● Records of service hiring and goods purchases. ● Community engagement records ● Access report 	
Monitoring and records	<ul style="list-style-type: none"> ● Record and respond immediately to any public or pastoral leaseholder complaint. ● A register to be kept of all incidences relating to access issues, unauthorised access and pastoral leaseholder requirements and expectations. ● Water extraction to be metered to ensure do not exceed the quantities identified in Section 4.7 	
Reporting	Annual environmental performance report will be submitted to DPEWS	
ALARP statement	<ul style="list-style-type: none"> ● Land access agreements and stakeholder consultation will ensure all parties are aware of access requirements and informed of activities. ● Regular contact with landholders will ensure land use isn't significantly affected by work activities. 	
Acceptable	Risk to the community from the regulated activity is considered 'acceptable'. No further risk reduction warranted. Land Access and Compensatory Agreement will be in place with the host pastoral property. All groundwater taken will be metered during operations.	

7.14 Cultural Heritage and Sacred Site

Cultural heritage and sacred sites		
Environmental values	<ul style="list-style-type: none"> ● Maintain both Indigenous and non-Indigenous cultural heritage values of the region. 	
Environmental risks	<ul style="list-style-type: none"> ● Damage to or loss of culturally significant artefacts, areas, or species ● Inappropriate access to Sacred Sites or culturally significant places 	

Environmental outcomes	<ul style="list-style-type: none">● No prohibited access to, or disturbance of, cultural heritage, inclusive of Sacred Sites, and Indigenous and non-Indigenous heritage sites.● No impact or disruption to activities of Indigenous stakeholders in culturally significant areas.● Adequate background information and training provided to employees and contractors working in culturally significant areas.● The health and safety of employees, contractors and the community is not compromised through management of cultural and environmental awareness.		
Overall residual risk	Consequence – moderate	Likelihood – rare	Residual risk Low
Scientific uncertainty	The baseline cultural heritage assessment (Appendix B) and provision of an AAPA certificate will guide the implementation of the activities and minimise impact on Cultural Heritage. EMP will not be approved without AAPA certificate being issued.		
Activities	Management tasks		Responsibilities
Project management	<ul style="list-style-type: none">● Prior to the commencement of any on-ground activities, an Authority Certificate is to be obtained from the Aboriginal Areas Protection Authority (AAPA) and conditions adhered to.● Identify location of culturally sensitive areas and ensure planning and design avoids these areas● Recommendations of cultural heritage assessment (Appendix B) and conditions of all AAPA Authority Certificates implemented and adhered to. No seismic activity within identified sensitive areas or in Restricted Work Areas (RWAs). Project planning avoidance of seismic activity or mitigation of impacts in CHRAs including shortening, repositioning or removal of seismic lines prior to footprint finalisation. Blade up traverse to be used as per recommendations.		Operations Manager
Seismic Line Preparation and Seismic Operations	<ul style="list-style-type: none">● A stop works order will be implemented if artefacts are located during activities on site.● The Project Manager will be notified immediately, who will then liaise with the NT Heritage Branch, for further instructions.● Employees will be briefed on potential cultural heritage items that may be encountered and any No-Go Zones.● Although a detailed survey has been undertaken, seismic lines will be moved to avoid archaeological sites and artefacts that are located during activities on site.● Seismic lines and access tracks will be kept within the corridor covered by the AAPA		Operations Manager Project Manager Onsite Company Representative Seismic Contractor Project Manager

	Authority Certificate with lines and tracks surveyed to match spatial data prior to work and clearly flag marked to display route and line.	
Environmental performance standards	<ul style="list-style-type: none"> • The project does not impact Sacred Sites, and Indigenous and non-Indigenous heritage sites. • No impact or disruption to activities of Indigenous stakeholders in culturally significant areas. • The health and safety of employees, contractors and the community is not compromised through management of cultural and environmental awareness. 	
Measurement criteria	<ul style="list-style-type: none"> • No unauthorised activities within or access to a Restricted Work Area or Sacred Sites. • No non-compliances with AAPA certificate conditions. • No unapproved impact to known archaeological sites. • Heritage register maintained. 	
Monitoring and records	<ul style="list-style-type: none"> • The Unexpected Finds Procedure will be implemented during the program to manage cultural heritage finds. • A project register will be kept of all occurrences of any archaeological sites identified during the Project. • Updated data will be supplied to relevant agencies as required by law and/or agreement. 	
Reporting	<ul style="list-style-type: none"> • Reporting to NT Heritage Branch if new finds are made. • Annual environmental performance report will be submitted to DPEWS 	
ALARP statement	<ul style="list-style-type: none"> • surveys have been conducted • AAPA Certificate granted (Appendix D), and the relevant stakeholders have been consulted with • operational staff will be educated on sacred site/heritage identification to reduce risk of impact if these sites/items are present. 	
Acceptable	The risk to cultural heritage, including Sacred Sites from the regulated activity is 'acceptable'. No further risk reduction warranted considering program has an AAPA clearance certificate for the activities with cultural monitors as part of the survey team, a CLC work program approval after clearance of proposed work sites with Traditional Aboriginal Owners of the land as part of the survey team and an independent cultural heritage assessment conducted with Traditional Aboriginal Owners of the land as part of the survey team.	

8 Management systems, practices, and procedures

BR Simpson maintains a Health, Safety and Environment Management System (HSEMS) underpinned by its Health and Safety Policy and Environment Policy (Appendix C). Management of potential impacts associated with the project aligns with BR Simpson's HSEMS. Other management plans developed to work alongside the HSEMS are detailed below.

8.1 Management plans

The following management plans (Table 8-1) have been developed to reduce the impact of project activities on the surrounding environment and community.

Table 8-1. Management plans

Plan	Objective
This EMP	
The erosion and sediment control plan (Appendix F)	An erosion and sediment control plan has been developed to outline how the site will be operated to minimise the risk of erosion and sediment releases to the surrounding environment. The ESCP is provided in Appendix F
Weed Management Plan (Appendix G)	A project specific weed management plan must be developed as part of the EMP which meets the requirements of the NT Weed Management Planning Guide: Onshore Petroleum Projects (DEPWS 2019).
Bushfire Management Plan (Appendix H)	The focus of this Bushfire Management Plan is to ensure that the risk of bushfires resulting from activities associated with BR Simpson's seismic survey are mitigated to protect public and private infrastructure and equipment, environmental and cultural values of the seismic survey area, and ensure the health and safety of operational personnel. Specific objectives of this Bushfire Management Plan are: <ul style="list-style-type: none"> ● minimise the risk of fire resulting from the planned activity ● minimise the risk to its operations from bushfires which may occur from elsewhere in the region.
Waste Management Plan (Appendix I)	The Waste Management Plan has been prepared to detail the potential negative impacts from proposed works, and present management and monitoring strategies to limit these impacts, as well as assigning responsibilities to ensure these strategies are implemented. The objective of the WMP is to: <ul style="list-style-type: none"> ● maintain water quality in nearby creeks and streams ● prevent contamination of soil ● manage waste and wastewater appropriately.
Spill Response Plan (Appendix J)	The Spill Response Management Plan outlines appropriate procedures for reducing the likelihood of spills and the severity of impact from spills.
Rehabilitation Plan (Appendix K)	The Rehabilitation Plan details rehabilitation methods, monitoring procedures and defines rehabilitation success criteria.
Emergency Response Plan (Appendix L)	The Emergency Response Plan describes processes to be followed by BR Simpson in the event of an emergency during exploration activities.

8.2 Measurement criteria

Measurement criteria have been identified for the project activities and risks. The criteria have been outlined in Section 8 above, and in the Risk Assessment table (Appendix E).

8.3 Monitoring

The project manager, operating company representative and the seismic operations manager shall ensure each element of the seismic survey activities are monitored to ensure that appropriate environmental protection/procedures are in place. BR Simpson will undertake a suite of monitoring to implement this EMP and to deliver on the obligations described in the Risk Assessment table (Appendix E). Monitoring requirements are detailed below in Table 8-2.

Table 8-2. monitoring requirements

Monitoring program	Description	Frequency	Responsibility
General monitoring	Monitoring local weather, climate information (BOM) and bushfire (NAFI)	Daily	Construction manager
	Monitoring of the 7-day forecast to determine the seismic works program around the forecasts		
Induction monitoring	Ensure induction records are kept demonstrating what was covered in the induction and who was inducted	After every induction	Construction manager
Erosion and Sediment Control	Visual inspection and monitoring of existing tracks, seismic lines and waterway crossings conditions	Weekly or following a rainfall event (greater than 25 mm in a 24-hour period)	Construction manager
Weeds	A post rainfall weed survey will be conducted of seismic lines and access tracks. All weed monitoring and survey activities will be recorded in accordance with the NT Weed Data Collection Guidelines	Annual to coincide with the end of the wet season	Project manager
Bushfire	Monitoring for bushfire alerts (primarily via the https://secure.nt.gov.au/alerts and https://www.bushfires.nt.gov.au/incident-map/ websites and notifying all site personnel of the risks of fire during toolbox meetings	Daily	Construction manager
Waste	Inspect waste storage	fortnightly (or twice weekly during wet weather)	Construction manager
	Maintain waste register, including receipts to verify waste has been properly disposed of	As occurs and record in the waste registers and waste disposal records	
Spill response	Regular inspection of fuel and chemical storage areas, including containment	Daily	Construction manager

	areas and structures, containers, and spill kits, and access ways used for transport		
Complaints register	Complaints reported to BR Simpson and followed up.	Immediately on receipt of complaint	Construction manager
Communications log	Communications log with station manager and Station Personnel to monitor any potential (but unlikely) disturbance to cattle and jointly arrive at reasonable solutions to mitigate any observed effects	Duration of works	Construction manager
Air quality and emissions	Visual monitoring will be carried out to ensure that visibility for moving equipment and vehicles is not obscured. In this event, management activities including reducing vehicle speeds will need to be applied to reduce dust.	Daily	Construction manager
Vegetation clearing	Record any fauna encounters, injuries, or death as result of seismic survey on fauna register	Duration of works	Construction manager
Rehabilitation monitoring	Rehabilitation success to be monitored in accordance with Rehabilitation Plan (Appendix K)	approximately between six- and nine-months post rehabilitation works, yearly for the first three years post rehabilitation works and annually until successful rehabilitation criteria have been met and signed off by the Project Manager	Project Manager
Groundwater usage	Record groundwater take using an approved flow meter.	Weekly	Construction manager
Heritage	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 of activities are updated on databases.	Duration of works	Construction manager
Non-compliance reporting	Non-conformances reported as soon as possible, but within 24 hours at a minimum	Duration of works	Construction manager

8.3.1 Environmental Auditing

BR Simpson will also ensure that the following environmental auditing processes are adhered to.

Frequency	Audit
Pre-start	<ul style="list-style-type: none"> ● Pre-start checks are undertaken prior to the commencement of all activities. ● Pre-start/Toolbox/Safety briefings (review of input and administration of).
Daily	<ul style="list-style-type: none"> ● Permit to Work audits commensurate with the volume of permits issued. It is not anticipated that there will be a requirement for this daily. ● Site safety inspections: weekly and others as required or identified (joint walk around). ● Major hazard work / tasks. ● Safety critical equipment (i.e. fire extinguisher, communication Devices and vehicles). ● Daily reports. ● Safety and regulatory equipment, procedures and requirements.
Weekly	<ul style="list-style-type: none"> ● Weekly audit of procedural compliance ● Site inspections including but not limited to dust, noise, Sacred Sites and cultural heritage sensitive areas, vehicle speed limits, access ways, complaints, fauna encounter. ● Camp inspections. ● Food safety and hygiene inspections
Monthly	<ul style="list-style-type: none"> ● Site inspections: daily, weekly and others as required or identified
End of project	<ul style="list-style-type: none"> ● End of project report summary and analysis. ● End of activity aggregated analysis of performance as a means of continuous improvement.
Mobilisation	<ul style="list-style-type: none"> ● Post mobilisation audit of seismic exploration contractor. ● Pre-move surveys.
Trigger reviews	<ul style="list-style-type: none"> ● Changes in safety codes, standards. ● An event or incident on site or via a shared learning (Bulletin/Alert). ● Performance / output. ● Incidents
Emergency drill	<ul style="list-style-type: none"> ● Pre start operations ● Monthly at times to be agreed at site.
Competencies	<ul style="list-style-type: none"> ● Ongoing performance of personnel on site – assuring their competencies.
HSEMP audit	<p>Review of EMP performance and environmental approval compliance:</p> <ul style="list-style-type: none"> ● Prior to commencement of activities. ● At least one audit per annum, and preferably undertaken within one month of commencement of activities.

8.4 Reporting

Reports on the performance standards will be produced by BR Simpsons' authorised representative and provided to the BR Simpson management team and the DEPWS Petroleum Operations. The reporting frequency is outlined in Table 8-3.

Table 8-3. reporting requirements

Report	External submission	Recipient
Annual Environmental Performance Report	Annually	BR Simpson management team and the DEPWS Petroleum Operations
Reportable Incident Report	2 hours following the incident OR Within 2 hours of becoming aware of the incident. An interim report will follow no more than 3 days after the incident, with a final report submitted 30 days after incident clean up or rehabilitation.	BR Simpson management team and the DEPWS Petroleum Operations
Quarterly Recordable Incident Report	Quarterly	BR Simpson management team and the DEPWS Petroleum Operations
A commencement of activity notification	Prior to the commencement of regulated activities	The minister for Environment and the occupier and owner of the land on which the activity is carried out

8.4.1 Annual Environmental Performance Report

BR Simpson will prepare an annual environment performance report (AEPR) and submit to DEPWS annually to show that BR Simpsons activities are meeting the environmental outcomes and environmental performance standards committed to in their EMP.

The contents of the AEPR will include:

1. A summary of activities conducted
2. An evaluation of BR Simpson's compliance with the Ministerial approval conditions of the EMP.
3. An evaluation of each environmental outcome and environmental performance standard within the approved EMP.
4. An evaluation of reporting requirements in accordance with the Code and Regulations.
5. Provision of all recordable and reportable incidents, including root cause analysis and related corrective actions to prevent re-occurrence.
6. Findings of all regulatory inspections and audits and related action to address the findings.

8.4.2 Incident Reporting

8.4.2.1 Reportable incident

In accordance with the *Petroleum (Environment) Regulations 2016*, BR Simpson must give the Minister notice of a reportable incident. A reportable incident is defined as an incident, arising from a regulated activity, that has caused or has the potential to cause material environmental harm or serious environmental harm.

In the event of a reportable incident, BR Simpson will notify the Minister in writing or oral as soon as practicable but no later than 2 hours after the incident first occurred or if the incident was not

detected at the time, it first occurred, then within 2 hours (if orally notified a written notification must be provided within 24 hours. The notification report must outline the following:

- the contact details of the interest holder
- all material facts and circumstances
- information about any action taken to avoid or mitigate material environmental harm or serious environmental harm
- information about the corrective action that has been taken or is proposed to be taken.

Once the reportable incident is confirmed, a written report is to be provided to the Minister within three days following the first occurrence of the incident. The written report will include details on the assessment of the incident, the controls that were in place, the nature and extent of environmental harm, actions taken and a root cause analysis.

8.4.2.2 Recordable incident

A recordable incident is a breach of an environmental objective of performance standard of this EMP but is not a reportable incident. Recordable incidents must be reported to DEPWS no greater than 15 days following the end of the reporting period (agreed period or each 90-day period after the day on which the EMP is approved).

8.5 Records

BR Simpson will ensure that records are kept for the longer of the following periods: 5 years following the period during which the petroleum interest for the activity is in force or 15 years after the record comes into existence. Records will also be recorded in a manner that makes retrieval of them reasonably practicable.

8.6 EMP management and change process

BR Simpson management shall review the EMP as required to ensure that they meet operational requirements and relevant environmental legislation and standards. The EMP will be reviewed after each work program and updated only if the change does not change the risk/impacts assessed on the Minister approved EMP.

Additional reviews of the EMP may occur because of the following:

- identification of opportunities for improvement
- following recommendations from audits
- changes to operations or activities within the permit areas
- changes to legislation.

Implementation of the EMP will be continually monitored and the EMP reviewed with regards to monitoring and audit results, complaints, employee, and stakeholder feedback and change to the program. A formal management review will be undertaken annually. Should changes to the risk/impact due to the audit and reviews, then an assessment must be undertaken to re-evaluate risk and impact.

1. If no change in risk or impact occurs, then no revision to the plan is required and only notice is to be given to the Minister.
2. If there is a change in risk or impact or a new risk or impact occurs due to activity change that is not covered in the plan, then a new revised plan must be submitted to the minister within 30 days for re-approval.

8.7 Notice of commencement

BR Simpson will notify the Minister and the key Stakeholders (Pastoral Properties, Traditional Owners, and neighbouring EP holders) of the proposed date of commencement of seismic surveys through the submission of a letter. The timing of the submission will be in accordance with the Code of Practice. A notice of commencement to the DITT will be issued to the petroleum operations team prior to commencement of surveying being undertaken.

8.8 Rehabilitation

Rehabilitation will be completed as per the rehabilitation plan (Appendix K).

9 References

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