Mereenie Oil and Gas Field

Environment Management Plan

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Disclaimer

This document has been prepared on behalf of the interest holders using the skill and care expected from persons who have professional qualifications, training, skills and experience on the subject matter of environment, safety, risk management and petroleum development and operations to provide factual and technical information and reasonable solutions to identified risks.

Whilst every care has been taken to prepare figures presented in this report, the interest holders make no representations or warranties about the accuracy, reliability, completeness or suitability for any particular purpose and does not accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the illustration being inaccurate, incomplete or unsuitable in any way and for any other reason. The figure is for informational purposes only and is subject to change.

Document ownership and revision

CP as the operator is the custodian of this EMP and has overall responsibility for its implementation, compliance, and revision. The operator will ensure that this EMP is reviewed and if necessary revised:

- When there is a significant change to normal operations for the activities covered by this EMP;
- When there is a significant change to the regulatory framework within which the activities under this EMP are carried out;
- When recommendations or comments from the government approval process are made;
- If there is a new environmental impact or environmental risk not provided for in the current plan for the activity or an increase, not provided for in the current plan for the activity; and
- In the event an incident causing significant environmental harm or loss occurs.

This document shall not be issued and / or revised without the express approval of the interest holders.

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Executive summary

Operated by Central Petroleum under petroleum titles Operating Licence 4 and Operating Licence 5, the Mereenie Field is an oil and gas field located west of Alice Springs in a remote part of the Northern Territory (Figure 1-1). The field has been operated by Central Petroleum since 2015.

This Environment Management Plan (EMP) relates to the continuation of production activities from existing wells using the gathering networks, processing facilities and associated infrastructure already established. In addition, it includes the ongoing workover program within the field, including the upgrade of above-ground infrastructure with new wellhead equipment, safety systems and gathering lines to be replaced or installed where none currently exist. All works covered under this EMP are within existing disturbance footprints. No drilling, hydraulic fracturing/stimulation or clearing of native vegetation outside of the existing disturbance footprint is proposed.

This EMP provides a detailed description of how operator proposes to manage the environmental impacts and risks associated with its activities including how it will:

- remain consistent with the principles of ecologically sustainable development
- comply with regulatory obligations including Northern Territory Well Integrity and Onshore Petroleum Activities in the Northern Territory 2025 (the Code)
- reduce impacts and risks to as low as reasonably practicable and acceptable levels.

Key contacts

Central Petroleum is the operator of the Mereenie Field, and the nominated liaison is the Chief Operating Officer who can be contacted via mail: 7/369 Ann Street, Brisbane QLD 4000, phone: +61 (07) 3181 3800 or e-mail: info@centralpetroleum.com.au.

Table 0-1: Activities proposed under this EMP

Activity	Brief Description
Drill cutting / sump remediation	Includes removing, treating and rehabilitating drilling waste and sump areas to minimise environmental impacts and restore landform stability
Civil and project activities	Includes maintenance of firebreaks, well pads, roads and access tracks, and repair of ESC devices. Also includes installation of new equipment within existing disturbance footprint.
Well operations	All activities required to produce the resource from the reserves below ground and process the product for transport and sale.
Production facilities	All activities associated with the gathering and processing of hydrocarbons for processing to sales point.
Well workovers	Well maintenance to ensure production of the wells can be operated safely and the integrity well is maintained.
Wellhead equipment, safety systems and gathering line replacement	Installation of upgraded wellhead equipment, safety systems and infield flowlines to improve safety and operability controls systems.
Progressive rehabilitation	Rehabilitation of previously disturbed areas and removal of/or make safe infrastructure no longer required for production operations.
Support activities	Includes the activities required to support all operator activities at the Mereenie Field, including accommodation, waste and wastewater handling, power generation, water supply and chemical storage and handling.
Mereenie Alice Springs Pipeline	Care and maintenance activities associated with the suspended pipeline.

Activity	Brief Description
Brewer Estate Crude Oil Terminal Yard	Care and maintenance activities associated with the non-operational site.
Activities not within scope	Exploration and development (drilling) Hydraulic fracturing Planned venting Native vegetation clearing outside of existing cleared / disturbed areas

Description of the environment

A summary of the physical and social environment for the field is provided in Table 0-2.

Table 0-2: Summary of the environment

Attribute	Description
Climate	Semi-arid to arid, influence from monsoonal wet season occurring November to March with highest mean rainfall occurring in January (45.7mm) and a 30-year annual total average of ~310mm. Annual total evaporation average is 2910mm.
Geology	Located within the Amadeus Basin, an east-west trending sedimentary basin extending across the southern part of the Northern Territory and into Western Australia. The basin covers an area of approximately 170,000km2 and a maximum sediment thickness of 14,000m. Existing wells and workovers target the Pacoota Sandstone and Stairway Sandstone formations.
Regional soils	AB31 – Chief soils are red earthy sands on the plains and swales. Red siliceous sands on the sand rises. Small areas of sandy red earths occur on the plains, in the swales and on the alluvial flats. Other soils include shallow stony on the stone covered ridge. AB62 – Chief soils are red earthy sands. BA28 – Chief soils are shallow stony sands.
Land systems	Simpson (covers 45% of Mereenie Field) – Extensive dune fields with hard spinifex pastures. Red sands to red clayey sands and locally red earths. Low erosion hazard. Gillen (covers 45% of Mereenie Field) – Sandstone mountains with mulga or witchetty bush country. Shallow stony or gravelly soils and some red sands or red clayey sands. Moderate erosion hazard. Krichauff (covers 10% Mereenie Field) – Flat lying sandstone, siltstone, and conglomerate. Shallow stony or gravelly soils and some red sands or red clayey sands. Moderate erosion hazard.
Groundwater	The field includes a series of stack regional scale formations that have groundwater potential supply, including the Hermannsburg Sandstone, Mereenie Sandstone and Pacoota Sandstone. The Hermannsburg Sandstone is eroded at the well sites and is not penetrated by the wells. Mereenie Sandstone is a regionally extensive formation and a significant groundwater supply source. At the Mereenie wells, the Mereenie Sandstone occurs at a depth of 0-286 m TVD and has a thickness ranging from 320-649m. Groundwater was observed at depths of 86-384 mTVD at the Mereenie wells. The Pacoota Sandstone is an oil and gas reservoir with saline groundwater and is a target formation for the Mereenie wells. Mereenie well completions include two strings of steel casing, conductor casing and two cement columns as barrier protection around the Mereenie Sandstone.
Groundwater bores	Groundwater for operations and workovers is to be sourced from RN017898, RN017657, RN004620, RN013861, and/or RN018955, all of which access the Mereenie Sandstone. A groundwater extraction licence (M10001) has been

Attribute	Description
	granted allowing 52.8ML per annum for use throughout the field which includes groundwater for workovers. Baseline assessments conducted and results were below drinking water and stock watering guidelines with no detection of hydrocarbon gases or products.
Surface water	Streams in the Mereenie Field are ephemeral and subject to short flow duration and high turbidity. No perennial surface water occurs. In OL4 the lack of a drainage pattern indicates that runoff seldom, if ever, occurs although some ponding may occur in inter-dunal swales where small areas of clayey soils and red earths may be present. This is in contrast to the majority of OL5 where infiltration is slow, and a dendritic drainage pattern is evident. Streams in OL5 and small section of OL4 eventually connect into Parke Creek.
Bioregion	OL4 is located within the MacDonnell Ranges and Great Sandy Desert Interim Biogeographical Regionalisation for Australia, while OL5 is within the MacDonnell Ranges bioregion.
Sites of Conservation Significance/Sites of Botanical Significance	No Sites of Conservation Significance within the Mereenie Field though George Gill Range and Surrounds is located approximately 6 km to the south and Greater MacDonnell Ranges approximately 14 km north at closest point. Field located within the Laycock Sandplain and Mereenie Site of Botanical Significance
Conservation Significant Fauna	46 conservation significant fauna species identified as potentially occurring within the Mereenie Field, eight of which have been confirmed during site surveys.
Conservation Significant Flora	45 conservation significant flora species identified as potentially occurring within the Mereenie field, 15 of which have been confirmed during site surveys.
Weeds/Pests	No declared or Weeds of National Significance found within the Mereenie Field. Buffel grass, a priority weed under the Alice Springs Regional Weed Strategy 2021-2026 detected during 2021 site survey, along with three other environmental weeds.
National Parks and Reserves	No National Parks or Indigenous Protected Areas within or immediately adjacent to the Mereenie Field.
Fire history	Typically, low fire fuel load however majority of OL4 was burnt extensively in 2011 due to a high fuel load following high rainfall season. The Meerenie Field is not within a declared fire protection zone but is within the Alice Springs Fire Management Zone.
Surrounding land tenure/Use	Haasts Bluff Aboriginal Land Trust/Aboriginal land and petroleum activities. The interest holder leases OL4 and OL5 under the Mereenie Agreement 2013 with the Central Land Council as representatives of the site's Indigenous Traditional Owners. The conditions applied to the operator's activities are outlined in the Agreement and the Mereenie Sacred Sites Clearance Certificate (SSCC) (SSCC C2013-046, renewed April 2022). The proposed activities are consistent with current land use of the field and will not impact on Aboriginal land use (authorised under the Mereenie Agreement 2003) beyond the existing day-to-day operations at Mereenie.
Surrounding populated places	Mereenie Field located in a remote location of the Northern Territory. Alice Springs located approximately 280 km west and Hermannsburg approximately 110 km east. Seven Aboriginal communities near to, or who have ties to, the Mereenie Field – Kulpidjara, Areyonga, Underana, Undandita, Haasts Bluff, Papunya, Ipolera
Roads/Traffic	Access to Mereenie Field from Alice Springs is via network of sealed and unsealed public and private roads: head west from Alice Springs along Larapinta Drive/Red Centre Way to Hermannsburg; continuing towards Kings

Attribute	Description
	Canyon; turn off to the Mereenie Field is to the left off Red Centre Way; approximately 175 km past Hermannsburg.
Heritage Areas identified EPBC Protected Matters Search Report	No National Heritage Places identified within or surrounding the Mereenie Field.
Archaeological surveys	Activities limited to existing disturbance footprint which has been historically surveyed and assessed as part of the Mereenie SSCC (SSCC C2013-046, renewed April 2022) obtained under the Mereenie Agreement, 2003. The activities involve minor ground disturbance at the well lease sites (grading, if necessary, civil works for flare pit and small drain/trench around workover fluid tanks). No additional surveys are required as all activities within existing, surveyed distance area and there is no work in the cultural heritage exclusion or restricted zones.
CLC Sacred Sites Clearance Certificate	Central Petroeum operates the Mereenie Field under SSCC C2013-046. Activities in this plan do not trigger additional assessments as the SSCC permits installation of pipelines, flowlines and connections, use of existing laydown areas, building and maintenance of leases, and drilling and petroleum engineering operations. All activities to be conducted within SSCC assessed area and all works to be conducted in accordance with the SSCC conditions, including the restricted and exclusion zone areas, and liaison meetings and stakeholder engagement requirements. Protocol to be followed in event of a sacred sites discovery to meet Essential Condition 7 of the SSCC.
Aboriginal Areas Protection Authority (AAPA) Certificate	A new AAPA Certificate, covering the entire field and all the works described in this EMP is 202305946. Activities will comply with conditions of the approved certificate.

Risk assessment summary

The interest holder has undertaken a risk assessment that is consistent with the requirements of ISO 31000 for the activities under this EMP. The risk assessment has considered both the inherent and residual risk of an activity. For residual risks that have a risk score of 'Low' these are considered as low as reasonably practicable and acceptable. For residual risks that have a risk score that is not 'Low' the risk assessments have included discussions on whether these are as low as reasonably practicable. Table 0-3 provides a summary of the residual risks for activities under the environmental management plan. All risks are considered by the interest holder to be as low as reasonably practicable and are accepted.

Table 0-3: Risk Assessment Summary

	Residual Risk			
	Low	**Medium**	**High**	**Very High**
Count	35	5	0	0

The 'Medium' residual risks for activities under this environment management plan are:

- Injury or death of conservation significant fauna from civil works, vehicle movements and earthworks
- Increased occurrence of weeds (including weeds of national significance)

- Contamination of soil from release of hydrocarbons and formation water, including wastewater to ground
- Loss of places or items of cultural significance from fire as a result of activities under this EMP
- Subsurface loss of contaminants during workovers contaminating surface water and/or groundwater and reducing groundwater pressure.

Stakeholder consultation

Initial consultation with the Central Land Council who are the only stakeholders as per the stakeholder definition in the Petroleum (Environment) Regulations 2016 for the field operations and workover EMP was undertaken by the operator at the Liaison Committee Meetings held in September 2022.

Under the SSCC and Mereenie Agreement, Formal Liaison Committee Meetings are the method by which the Central Land Council and traditional owners are to be engaged.

Table of Contents

1. Introduction 14
1.1. Mereenie Oil and Gas Field 14
1.3. Purpose 17
1.4. Scope 17
2. Environmental Legislation and Other Requirements 18
2.1. Key legislation 18
2.2. Key Codes of Practice and Guidelines 18
2.3. Ecologically Sustainable Development 18
2.4. Central Land Council Agreement and Sacred Sites Certificates 19
3. Description of Activity 24
3.1. Introduction 24
3.2. Activities and Indicative Timetable 24
3.3. Civil and project activities 25
3.4. Well operations 26
3.4.2. Well barriers and aquifer protection 30
3.4.3. Well maintenance and integrity 30
3.5. Production facilities 31
3.5.1. Gathering and boosting systems 31
3.5.2. Oil and gas processing 32
3.5.3. Condensate and oil storage and load out 37
3.5.4. Venting and flaring 37
3.5.5. Flare Exclusion Zone 42
3.5.6. Plant and equipment maintenance and upgrade 43
3.6. Well workover 43
3.6.2. Well suspension 44
3.6.3. Well decommissioning 44
3.7. Wellhead equipment, safety systems and gathering line replacement 45
3.8. Progressive rehabilitation and closure planning 45
3.9. Support activities 45
3.9.1. Services 45
3.9.2. Chemical storage and use 47
3.9.3. Workover fluids 49
3.9.4. Wastewater management 51
3.9.5. Waste management 57
3.9.6. Greenhouse gas emissions 59
3.10. Mereenie to Alice Springs Pipeline 61
4. Existing environment 61
4.1. Physical environment 62

4.1.1. Climate 62
4.1.2. Land systems, geology and soil 63
4.1.3. Groundwater 69
4.1.4. Wetlands, springs and aquatic inflow dependent ecosystems 76
4.1.5. Surface water 76
4.1.6. Air and greenhouse gas emissions 80
4.2. Natural environment 80
4.2.1. Bioregions 80
4.2.2. Sites of Conservation Significance 81
4.2.3. Sites of Botanical Significance 81
4.2.4. Threatened Ecological Communities 84
4.2.5. Vegetation communities 84
4.2.6. Conservation significant flora 86
4.2.7. Conservation significant fauna 89
4.2.8. Introduced flora (weeds) 92
4.2.9. Introduced fauna (pests) 93
4.2.10. Fire history 93
4.3. Socio-economic Environment 96
4.3.1. Land tenure and use 96
4.3.2. Surrounding populated places 98
4.3.3. Noise 98
4.3.4. Cultural heritage 98
4.3.5. Aboriginal archaeological assessment 99
4.3.6. Sacred Sites 99
5. Engagement and Consultation 100
5.1. Stakeholder engagement 100
5.1.1. Traditional Owner(s) engagement 100
5.2. Assessment of merit of stakeholder objection or claim 100
5.3. Details of changes due to engagement 101
6. Environmental Impacts, Risks and Mitigation 102
6.1. Approach 102
6.1.1. Risk assessment methodology 102
6.1.2. ALARP and acceptability 102
6.1.3. Uncertainty 103
6.1.4. Risk assessment summary 104
6.1.5. Environmental management strategy 104
6.1.6. Risk Matrix 105
6.2. Biodiversity 106
6.3. Land 109

6.4. Surface Water 113
6.5. Groundwater 116
6.6. Air and noise 118
6.7. Hazards 122
6.8. Heritage 125
6.9. Community 126
6.10. Cumulative impacts 127
7. Management Plans 129
7.1. Wet Season Management Plan 129
7.2. Erosion and Sediment Control Plan 129
7.3. Weed Management Plan 129
7.4. Bushfire Management Plan 129
7.5. Rehabilitation Management Plan 129
7.6. Wastewater Management Plan 129
7.7. Spill Management Plan 129
7.8. Methane Emissions Management Plan 129
8. Implementation Strategy 154
8.1. Management system 154
8.2. Roles and responsibilities 154
8.3. Training and awareness 155
8.4. Emergency preparedness and response 155
8.5. Contractor management 156
8.6. Monitoring and reporting 156
8.6.1. Monitoring 156
8.6.2. Reporting 156
8.7. Records management 157
8.8. Management of change 157
8.9. Auditing and assurance 157
8.10. Corrective action, review and continuous improvement 157

9. References 159
10. Glossary and abbreviations 161
APPENDIX A. Environmental Risk Assessment 163
APPENDIX B. Stakeholder Engagement Register 181
APPENDIX C. Protected Matters Search Tool Report 184
APPENDIX D. Environmental Sensitivity Maps 185
APPENDIX E. Emergency Response Plan 186
APPENDIX F. Liquids Flare HAZOP Report 187
APPENDIX G. Mereenie condensate and crude oil flare line connection 188
APPENDIX H. Sampling at Mereenie Field – Implementation Strategy 189
APPENDIX I. Addendum 190
All references to 73 wells should now be read as 75 wells. 190
APPENDIX J. Extent of clearing for flare exclusion zone 191

Table of Tables

Table 0-1: Activities proposed under this EMP 4
Table 0-2: Summary of the environment 5
Table 0-3: Risk Assessment Summary 7
Table 1-1: Interest Holders 15
Table 2-1: Key legislation 20
Table 3-1: Indicative Timetable 24
Table 3-2: Potential civil and project activities 25
Table 3-3: Timeline leading to condensate flaring 38
Table 3-4: Cost Benefit Analysis of Flaring and Alternatives 40
Table 3-5: Cost Benefit Analysis cont. 41
Table 3-6: Services across the Mereenie Field 45
Table 3-7: Typical chemicals used during operations and workovers 48
Table 3-8: Potential workover fluid additives for each well 50
Table 3-9: Mereenie production wastewater facilities specifications and water analysis 54
Table 3-10: Waste management approaches 57
Table 3-11: Forecast emissions for Mereenie Field 60
Table 4-1: Mereenie soil units 65
Table 4-2: Description of land systems 65
Table 4-3: Stratigraphy and groundwater across the Mereenie Field 70
Table 4-4: Registered bores within Mereenie and 10km radius 74
Table 4-5: Bioregions of Mereenie Field 80
Table 4-6: Description of vegetation units 84
Table 4-7: Conservation significant flora of Mereenie Field 87
Table 4-8: Conservation significant fauna of Mereenie Field 90
Table 4-9: Introduced fauna 93
Table 6-1: Control effectiveness 102
Table 6-2: Risk Acceptance/Action Criteria 102
Table 6-3: Scientific uncertainty scoring 103
Table 6-4: Risk assessment summary 104

Table 7-1: Wet Season Management Plan 130
Table 7-2: Erosion and Sediment Control Plan 132
Table 7-3: Weed Management Plan 135
Table 7-4: Bushfire Management Plan 138
Table 7-5: Rehabilitation Management Plan 141
Table 7-6: Wastewater Management Plan 144
Table 7-7: Spill Management Plan 147
Table 7-8: Methane Emissions Management Plan 151
Table 8-1: Roles and Responsibilities 154

Table of Figures

Figure 1-1: Location of Mereenie oil and gas field 16
Figure 3-1: Arrangement of borrow pits within West Mereenie oil and gas field (OL4) 28
Figure 3-2: Arrangement of borrow pits within East Mereenie oil and gas field (OL5) 29
Figure 3-3: Typical Mereenie well barriers relative to stratigraphy 30
Figure 3-4: Aerial view of Central Treatment Plant 33
Figure 3-5: Aerial via of Eastern Satellite Station 34
Figure 3-6: Process Flow Diagram – Central Treatment Plan 35
Figure 3-7: Process Flow Diagram – Eastern Satellite Station 36
Figure 3-8: CTP Wastewater solar evaporation ponds 52
Figure 3-9: ESS Wastewater solar evaporation ponds 53
Figure 3-10: Grizzly pond Wastewater solar evaporation pond 54
Figure 3-11: 90-day total rainfall probability estimates for Mereenie based on Watarkka 1990 to 2022 (BOM Site 015652) 55
Figure 3-12: Forecast emissions aligned with Safeguard Mechanism threshold 60
Figure 3-13: Amadeus Basin Energy Pipelines (including MASP) 61
Figure 4-1: Climate indicators for Mereenie Field 63
Figure 4-2: Stratigraphy of Amadeus Basin 64
Figure 4-3: Soil types of the Mereenie Field 67
Figure 4-4: Land systems of the Mereenie Field 68
Figure 4-5: Surface geology and spring locations across Mereenie Field 71
Figure 4-6: Depth to groundwater (intersected during drilling) 72
Figure 4-7: Groundwater bores in and around the Mereenie Field 75
Figure 4-8: Hydrology of OL4 78
Figure 4-9: Hydrology of OL5 79
Figure 4-10: Bioregions of the Mereenie Field 82
Figure 4-11: Sites of conservation/botanical significance, conservation significant species and weeds 83
Figure 4-12: Vegetation communities 86
Figure 4-13: Mereenie fire history 95
Figure 4-14: National Parks and Reserves 97
Figure 8-1: Management Structure 154

1. Introduction

Central Petroleum Limited (Operator) operates on behalf of the interest holders under petroleum titles Operated by Central Petroleum Limited (the operator) under petroleum titles Operating Licence 4 and Operating Licence 5, the Mereenie Field is an oil and gas field located west of Alice Springs in a remote part of the Northern Territory (Figure 1-1). The field has been operated by Central Petroleum since 2015.

This Environment Management Plan (EMP) relates to the continuation of production activities from existing wells using the gathering networks, processing facilities and associated infrastructure already established. In addition, it includes the ongoing workover program within the field, including the upgrade of above-ground infrastructure with new wellhead equipment, safety systems and gathering lines to be replaced or installed where none currently exist. All works covered under this EMP are within existing disturbance footprints. No drilling, hydraulic fracturing/stimulation or clearing of native vegetation outside of the existing disturbance footprint is proposed.

This EMP provides a detailed description of how the operator proposes to manage the environmental impacts and risks associated with its activities including how it will address its regulatory obligation that underpin the relevant Code of Practice: Onshore Petroleum Activities in the Northern Territory 2025 (the Code).

1.1. Mereenie Oil and Gas Field

Mereenie was discovered in 1963 and commenced production in 1984. The field produces oil, condensate, and gas, with all oil and condensate produced onsite being trucked to interstate prior to export. Gas is processed on-site for supply to commercial markets in the Northern Territory and elsewhere.

The field is comprised of OL4 and OL5 tenement areas (123km2 and 158km2 respectively) and contains a fleet of multiple conventional wells. The active wells, produce both oil and gas with several wells being used for gas re-injection. Those wells not in production are classified as suspended or have been decommissioned. The principal oil and gas reservoirs are the P1 and P3 units of the Ordovician Pacoota Sandstone. The overlaying Horn Valley Siltstone is both the source and seal. Many flank wells deviate naturally (up to 45%) through the hard-abrasive rock to intersect the narrow oil rim which surrounds the gas cap. Reserves have also been identified in the Pacoota P4 unit and in the Stairway Sandstone.

There are approximately 210 km of infield gathering networks and flow lines connecting the field to the two processing facilities, the Central Treatment Plant (CTP) and Eastern Satellite Station (ESS). Sales gas is exported via a pipeline owned and managed by a third party. Crude oil and condensate produced in the field is transported via road tanker trucks to a third party for sale to customers. Formation water is a by-product of the oil and gas extraction. Formation water and gas are comingled and flowed via flowlines to the CTP and ESS where any produced fluids are separated into gas, formation water and oil. Oil and formation water are separated, and the formation water is piped to a solar evaporation pond treatment system for final precipitation. Oil is separated from the formation water and is collected to be stored with the oil and condensate prior to shipping out to the market.

1.2. Interest Holders

Table 1-1 provides details of the registered OL4 and OL5 titleholders and contacts details. The most up-to-date contact details are available on each company's website. As detailed in joint venture agreements, Central Petroleum is the designated operator.

Table 1-1: Interest Holders

OL4 / OL5 Titleholders	
Name: Central Petroleum Mereenie Pty Ltd **ABN**: 95 009 718 183 **Website:** www.centralpetroleum.com.au **Liaison:** General Manager Operations	**Name**: NZOG Mereenie Pty Ltd **ABN:** 72 650 386 360 **Website:** www.nzog.com **Liaison:** Amadeus Assets Manager
Name: Macquarie Mereenie Pty Ltd **ABN:** 36 616 486 974 **Email**: mereenie@macquarie.com **Liaison:** Associate Director, Energy Markets	**Name:** Cue Mereenie Pty Ltd **ABN:** 22 650 385 336 **Website**: www.cuenrg.com.au **Liaison:** Chief Executive Officer

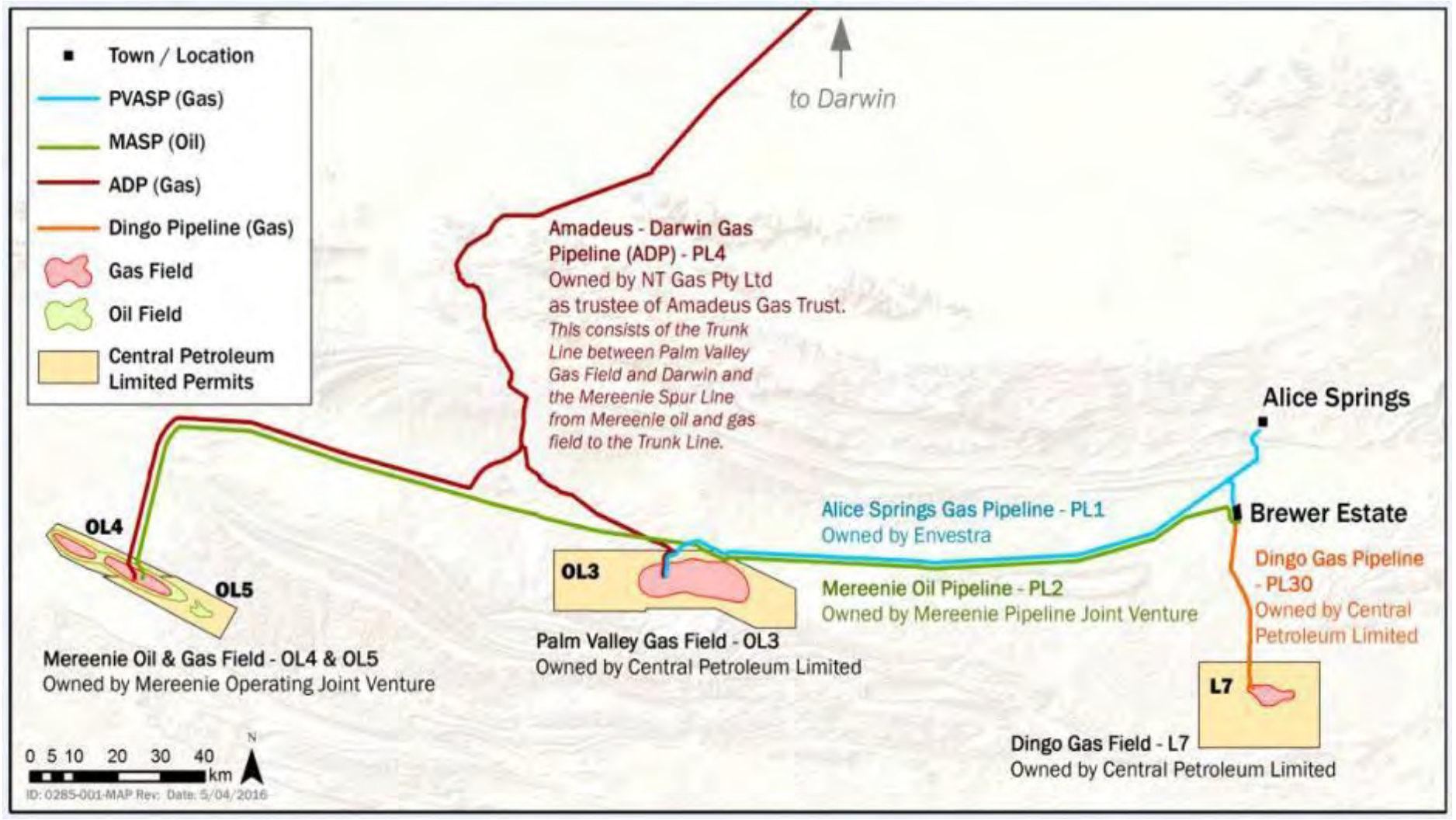


Figure 1-1: Location of Mereenie oil and gas field

1.3. Purpose

The purpose of this EMP is to demonstrate how the operator will conduct their scope of activities under the EMP in a manner consistent with the principles of ecologically sustainable development such that impacts and risks are reduced to as low as reasonably practicable and acceptable levels.

More specifically, this EMP aims to:

- Provide a framework for daily production operations across the wells and processing facilities in the Mereenie Field.
- Provide a framework for gas well workovers and wellhead equipment, safety systems and gathering line activities at existing production well sites.
- Address regulatory requirements.
- Provide impact management strategies to assist the operator and interest holders in maintaining a positive position in the local community throughout the activities.
- Provide a description of the existing environment (physical, biological and social).
- Be a practical and usable document, with environmental management principles that are easily implemented and effective.

1.4. Scope

This EMP covers all aspects directly associated with the day-to-day operations of the Mereenie Oil and Gas Field including campaign activities associated with well workover, upgrade of wellhead equipment, safety systems, additional flare firebreak clearing and gathering lines. The detailed ‘description of activities’ is listed in Section 3.

2. Environmental Legislation and Other Requirements

2.1. Key legislation

Legislation of relevance to the Mereenie Field operations activities and well intervention activities and its application in daily operations is provided in Table 2-1.

2.2. Key Codes of Practice and Guidelines

In addition to legislative requirements, the operator works to codes of practice, standards and guidelines in its production operations. These include, but are not limited to:

- *Code of Practice: Onshore Petroleum Activities in the Northern Territory (2025)*
- *Code of Practice: Well Integrity (2025)*
- *Schedule of Onshore Petroleum Exploration and Production Requirements (2021)*
- *Australian Pipeline Industry Association Code of Environmental Practice – Onshore Pipelines (2017)*
- *APPEA Code of Environmental Practice (2008)*
- *Best Practice Erosion and Sediment Control (2008)*
- *DLPE Onshore Petroleum Guidelines (various)*
- *ISO 31000 Risk Management – Principles and guidelines*
- *Australian and New Zealand Guidelines for Fresh and Marine Water Quality, 2000*
- *National Environment Protection (Assessment of Site Contamination) Measure, 1999*
- *Australian Standards*
- *Northern Territory Noise Management Framework Guidelines (2018)*

2.3. Ecologically Sustainable Development

Ecologically Sustainable Development (ESD) is a concept based on implementing practices and principles that meet the needs of ecological process and people today without impeding on future generations to meet theirs. There is no universally accepted definition of ESD, however the Commonwealth Government of Australia suggested the following:

‘Using, conserving and enhancing the community’s resources so that ecological processes, on which life depends, are maintained, and the total quality of life, now and in the future, can be increased’ (Ecological Development Steering Committee, 1992).

The aim of ESD for interest holders is to utilise the natural environment to meet the current needs without jeopardising the environment for future operations or other land managers. All aspects of environmental impacts have been assessed with appropriate preventative and mitigation measures implemented to ensure that all aspects of the OL areas are managed and developed in accordance with the ESD concepts and this EMP.

Forward planning and adaptation of ESD concepts from inception of development will ensure that the environmental impacts of daily operations activities are minimised. Further assessment of the consideration of ESD, the environmental values of Mereenie and the potential impacts is presented in Section 6.

2.4. Central Land Council Agreement and Sacred Sites Certificates

The interest holders have an agreement with the Central Land Council (CLC) for use of OL4 and OL5 land for petroleum activities under the Mereenie Agreement 2003. The CLC act as a representative of the Indigenous Traditional Owners. The Mereenie Agreement 2003 includes land access and other matters such as royalties, administration and Sacred Sites protection.

Under the Mereenie Agreement 2003, the interest holders have obtained a Sacred Sites Clearance Certificate from the CLC (SSCC C2013-046), which was renewed in April 2022. This certificate was issued following an assessment of the current and future activities to be conducted by the interest holders at Mereenie, a cultural heritage assessment and survey, and delineation of cultural heritage restricted work and exclusion zones.

Table 2-1: Key legislation

Legislation	Requirement	How the operator meets the requirement	Administered by
Commonwealth			
Environment Protection and Biodiversity Conservation Act 1999	Referral of proposed action/ ministerial approval	A self-assessment of the activities to be undertaken within this EMP has been conducted and determined that significant impacts to MNES are not likely to occur and a referral is not required at this stage.	Department of Climate Change, Energy, Environment and Water (DCCEEW)
National Greenhouse and Energy Reporting Act 2007 (NGER Act)	Reporting under National Greenhouse and Energy Reporting Scheme where thresholds are exceeded	The Mereenie facility energy consumption, production and greenhouse gas emissions are reported as one of the facilities under the Operational Control of Central Petroleum in accordance with the NGER Act.	Clean Energy Regulator
National Environment (National Pollution Inventory Protection) Measure 1998	Reporting under the National Pollution Inventory (NPI) where trigger thresholds are exceeded	The operator's operational and workover activities may contribute to triggering the threshold for NPI reporting. The operator reports usage against the potential 93 NPI substances where required.	DCCEEW
Native Title Act 1993		the operator works alongside Traditional Owners, represented by the Central Land Council regarding all activities undertaken on the Aboriginal Freehold Land on which the Mereenie Field is located. Mereenie Agreement 2003 in place.	Attorney General's Department
Northern Territory			
Bushfire Management Act 2016 / Bushfire Management Planning Guideline: Onshore Petroleum Projects	*Bushfire Management Plan/Permit to burn*	*The operator has included a Bushfire Management Plan consistent with the requirements of the Act and guideline.* *The Mereenie Field is not within a fire protection zone, though permits to burn may be required during a fire danger period where the fire danger area includes the Mereenie Field.*	*NT Fire and Emergency Services / Bushfires NT*
Petroleum Act 1984	*Petroleum titles*	*The operator has obtained the necessary petroleum titles (Operating Licence 4; Operating Licence 5) to undertake the activities listed in this EMP.*	*Department of Mining & Energy (DME)*
	Land Access and Compensation Agreements	*Land access agreements are in place with the Central Land Council for Mereenie as per the* *Mereenie Agreement, 2003.*	*Central Land Council (CLC)*

Legislation	Requirement	How the operator meets the requirement	Administered by
Petroleum (Environment) Regulations 2016 (PER)	*Approved FEMP*	*This EMP provides a revision and renewal of the Mereenie Field EMP (FEMP) previously approved in 2018 and incorporation of the Mereenie Field Workover and Wellhead Equipment, Safety Systems and Gathering Line Activities EMP, approved in 2020. The previous Mereenie FEMP was prepared prior to implementation of the Code in 2019. EMP activities seek to comply with requirements of the Code and Schedule 1 of the regulations.*	*DLPE*
Environmental Protection Act 2019 and associated Environment Protection Regulations 2020	*Referral of proposed action/ environmental approval*	*The activities within the scope of EMP do not constitute any material change of use. The EMP presented is a renewal of production operations and workover activities. No new development areas are proposed, and the operator is of the view that the continued operations activities covered by this EMP do not have a significant effect on the environment and that any new assessment under the Environment Protection Act 2019 is not required.*	*NT Environmental Protection Agency (EPA)*
Northern Territory Aboriginal Sacred Sites Act 1989	*Must not enter, damage or interfere with a Sacred Site (even if not registered)/Authority Certificate*	*The activities within the scope of EMP do not constitute any material change of use or extension of already disturbed areas. The operator is of the view that the activities covered by this EMP do not have a significant effect on the environment and that additional assessment under the Act is not required.* *Restricted work areas and no-go areas have been identified across the Mereenie Field. All personnel and visitors are educated about these areas, and they are clearly delineated on maps and with signage.* *Central Land Council Sacred Sites Clearance Certificate (SSCC C2013-046 (renewed April 2022); A new AAPA Certificate, covering the entire field and all the works described in this EMP is 202305946. Activities will comply with conditions of the approved certificate.*	*AAPA / CLC*
Heritage Act 2011	*Work approval (for removal or damage of archaeological sites)*	*All activities outlined in this EMP will be conducted within the exiting operational footprint of Mereenie Field therefore the operator does not anticipate an additional work approvals will be required.*	*NT Heritage*
Radiation Protection Act 2004	*Disposal of Naturally Occurring Radioactive Material (NORM)sources*	*The operator to undertake NORM testing. If limits specified in the act are exceeded, disposal of the material to be in accordance with the Act.*	*NT Health*

Legislation	Requirement	How the operator meets the requirement	Administered by
Territory Parks and Wildlife Conservation Act 1976	*Protects wildlife and listed threatened species in the NT* *Feral animal management*	*EMP activities to be conducted within existing Mereenie operational footprint and on existing disturbed areas so significant impacts to wildlife and listed threatened species are unlikely.* *The operator responds to feral animal management as required for those species identified at Mereenie.*	*DLPE*
Public Health and Environmental Act 2011	*Wastewater management*	*On-site systems meet requirements of Code of Practice for Onsite Wastewater Management.*	*NT Health*
Water Act 1992	*Groundwater extraction licence*	*The operator has a groundwater extraction licence in place (M10001) and approved until 30 June 2023. A renewal application will be prepared prior to expiration.*	*DLPE*
Waste Management and Pollution Control Act 1998	*General environmental duty*	*Where activities occur outside of OL4 and OL5 (e.g. during transportation), The operator and its operators must abide by the general environmental duty. An example of this would be following the NT Contaminated Land Guideline (2017) if a contamination event occurred.*	*NT EPA*
	Licensed waste contractors	*Any listed waste generated during operations or as part of workover and systems works is removed using a licensed waste transporter.*	*NT EPA*
Weeds Management Act 2001	*Weed declarations and statutory weed management plans*	*The operator ensures that its activities are consistent with statutory weed management plans and undertakes weed management activities consistent with weed declaration classes.*	*DLPE*
Transport of Dangerous Goods by Road and Rail (National Uniform Legislation) Regulations 2011	*Transport of dangerous goods by licensed persons within licensed vehicles*	*The operator ensures that any dangerous goods transportation that occurs above the trigger levels are done so by appropriately licensed transportation personnel (including vehicles)*	*NT Worksafe*
Code of Practice: Onshore Petroleum Activities in the	*Activities to be performed under an approved EMP are to be*	*The EMP activities are subject to Code of Practice (the Code) compliance and this EMP has*	*DLPE*

Legislation	Requirement	How the operator meets the requirement	Administered by
Northern Territory 2025	*consistent with the Code*	*been prepared to meet those requirements.* *In highlighting our commitment to complying with the Code, the majority of the Mereenie Field was developed, infrastructure installed, and has been in operation prior to the introduction of the Code. As a result, there are instances where some equipment and processes in place do not achieve the minimum standards of the Code.* *There are also instances of the Code not being applicable to the activities at the Mereenie Field namely section D. The scope of Section D, as defined in D.2 is specific to "onshore shale gas fields". The Mereenie Field is a conventional gas field.* *Where infrastructure and or processes are not aligned with the Code, the operator will ensure that any new facilities or upgrades are aligned with code requirements.*	
Energy Pipelines Act 1981	*Construction, operation, maintenance and abandonment of pipeline for energy-producing hydrocarbons.*	*The operator operates and maintains the Mereenie to Alice Springs Pipeline in accordance with the requirements of the Act.*	*DME*
Agricultural and Veterinary Chemicals (Control of Use) Act 2004	*Use of chemicals to control weed and pest species across operations*	*The operator ensures the application of weed control products is in alignment with the Act.*	*DME*
Work Health and Safety (National Uniform Legislation) Act 2011	*Activities to be performed under an approved EMP are to be compliant*	*The operator's field operations described in this EMP are subject to Work Health and Safety (National Uniform Legislation) Act 2011 and associated Regulations*	*NT WorkSafe*

3. Description of Activity

3.1. Introduction

A total of 75 wells have been drilled in the field and are maintained based on the needs of the field and the domestic market. Wells may be active, shut-in, converted to re-injection wells, suspended or decommissioned. All wells, regardless of status are included within this EMP. Safe and reliable production of the hydrocarbon resources present at Mereenie is facilitated via the following infrastructure:

- Permanent wellhead facilities for producing and suspending wells
- Approximately 200km of flowlines and pipelines
- Central Treatment Plant (CTP) and Eastern Satellite Station (ESS) for processing
- Separation, gas dehydration, compression, low temperature separation and liquid hydrocarbon stabilisation at the CTP and ESS
- Water treatment and evaporation ponds at the ESS and CTP
- Liquid hydrocarbon storage facilities at the CTP and ESS
- Gas reinjection facilities
- Roads, access track, water bores, camp, workshops, and an air strip
- Export sales receiver to APA gas transmission pipeline

Oil was previously exported through a 200mm diameter 270km pipeline (Mereenie to Alice Springs Pipeline (MASP)) to Brewer Estate, near Alice Springs but is currently being trucked from Mereenie to interstate. The MASP is suspended and under a care and maintenance program as future needs and options are ascertained.

3.2. Activities and Indicative Timetable

The Activities under this Field EMP relate to all aspects directly associated with the day-to-day operations of the Mereenie Oil and Gas Field. An indicative timetable for these activities is outlined in Table 3-1 and detailed in the sections further below. Operations occur 24 hours a day, 365 days per year including the wetter months of the year (October to April). Weather conditions are monitored daily to allow reassessment of operational needs to be addressed.

Table 3-1: Indicative Timetable

Activities	Indicative yearly timeable
Drill cutting / sump remediation	Early & late dry season is preferred timing for drill cutting / sump remediation works under this EMP for maintenance and rehabilitation however may occur year-round
Civil and project activities	Early & late dry season is preferred timing for civil related works under this EMP for maintenance and rehabilitation however may occur year-round
Well Operations	Monitoring and maintenance may occur year-round as scheduled in Well Operations Management Plans (WOMP) and the operator's Well Integrity Management System and on an as needs basis for producing wells
Production facilities	Monitoring and maintenance may occur year-round as scheduled in operator's pipeline and processing facility integrity maintenance systems and on an as needs basis for corrective active actions

Activities	Indicative yearly timeable
Well workovers	Maintenance activity used to restore well bore integrity in compliance with the Code and/or increase production rates on an as needs basis and in accordance with the operator's Well Integrity Management System annual scheduling and well decommissioning program schedule
Well head equipment	Wellhead equipment, safety systems and gathering lines works to allow tie in of new wells and replacement of equipment where required under the operator's pipeline and processing facility integrity maintenance systems schedule
Progressive rehabilitation	Progressive rehabilitation and closure of areas in the field will be conducted in accordance with the Rehabilitation Plan as outlined in Section 7.5
Supporting activities	Operational support activities occur year-round including workforce provision, power production, traffic & transport, product export, chemical storage and use, wastewater management, waste management & supporting field logistics
Mereenie to Alice Springs Pipeline	Suspended and in ongoing care and maintenance regime
~~Brewer Estate Crude Oil Terminal Yard~~	~~Suspended and in ongoing care and maintenance regime~~

3.3. Civil and project activities

Examples of the scope of work for civil and project activities are provided in Table 3-2 below. The scope of work will vary based on the forward planning for the field, along with capital expenditure availability.

Table 3-2: Potential civil and project activities

Activities	Indicative yearly timeable
Road and access track maintenance	▪ Grading of access tracks and roads to maintain 24-hour / 365-day access to all assets via light and heavy vehicles ▪ Installation of erosion and sediment controls
Well pad and operational area maintenance/ upgrade	▪ Re-instatement of hardstand ▪ Re-instatement of flare pits / installation of flare tanks ▪ Installation of trenches and diversion drains to support rig infrastructure/layout ▪ Installation and maintenance of containment, erosion and sediment controls
Land and vegetation management	▪ Maintenance of vegetation boundaries and fire breaks at least 4m. Firebreaks use previously disturbed areas, including former seismic lines and access tracks to provide a barrier around key infrastructure such as the CTP and camp facilities ▪ Erosion and sediment control works including repair of eroded areas, installation of diversion and dissipation devices, particularly after wet weather events ▪ Reinstatement of waterway crossings where erosion or sedimentation has occurred including from flooding or vehicle movements ▪ Vegetation clearing along existing gathering networks/pipelines to maintain flowline integrity ▪ Installation and maintenance of fencing /gates / grids to deter fauna interactions
Use of borrow pits	▪ Extraction of raw materials from existing pits (Figure 3-1) to support hardstand, access track and in-field road upgrades and maintenance ▪ There are currently 29 borrow pits across the Mereenie oil and gas field –

Activities	Indicative yearly timeable
	- 12 Active - 9 Inactive - 8 Under rehabilitation ▪ No new borrow pits will be established ▪ Rehabilitation activities from well pads reclaim hardstand material for future use, rather than using new material ▪ Volumes of new material use vary but will be limited where possible ▪ Stockpiling of raw or recovered materials for future use
Projects	▪ Activities to facilitate asset / plant upgrades or replacement of existing or installation of new infrastructure within the current disturbance footprint ▪ Progressive rehabilitation and closure of redundant facilities/infrastructure ▪ Environmental monitoring and groundwater monitoring
Site mobilisation and demobilisation	▪ Movement of rig and other heavy machinery, equipment and facilities to and from wells, operational areas of laydown in-field ▪ Installation of temporary mobile support services such as camp, office and power generation
Flare exclusion zone and fire break extension	▪ Clearing and preparation of the flare exclusion zone surrounding the evaporation pond (extent of vegetation clearing is outline in Appendix J). ▪ Extension and establishment of fire breaks to maintain the required separation distances around infrastructure. ▪ Removal and management of cleared vegetation in accordance with this EMP.

3.4. Well operations

Operational phase well activities include:

- Ongoing production activities
- Maintenance of surface well barriers
- Integrity testing of surface well barriers
- Integrity testing of subsurface well barriers
- Annular pressure monitoring
- Visual inspection and general well surveillance

3.4.1. Well operation activities

As of December 2022, a total of 73 wells have been drilled at the Mereenie Field, these well have been drilled at various times from the early 1960s. All the wells have been constructed in line with the requirements in effect at the time of drilling. There are approximately 39 wells that are active producers, approximately three gas injection wells, 17 shut-in wells, five cased and suspended wells and 11 plugged and abandoned wells. The arrangement of the Mereenie field is shown in Figure 3-2.

The production from the wells is mixed hydrocarbon – gas, liquefied petroleum gas (LPG), crude oil, and water. The relative amount of the constituents varies across the field and from well to well; some with a high gas to oil ratio, some with a low gas to oil ratio; others that that are high / low gas to water ratio. Some of the wells are gas injection wells to boost reservoir pressure, while others are gas injection for gas lift to increase crude oil production.

Most oil and gas wells in the Mereenie Field flow free to surface through natural reservoir drive mechanisms and are therefore considered “conventional” in terms of the Petroleum (Environment) Regulations 2016.

There are some gas-lifted wells and some monitoring (or observation) bores. The flow rate from wells is adjusted in line with production and sales market needs.

All of the wells in the field are operated in accordance with DME approved (WOMPs for each well across the Mereenie Field. The WOMPs detail all operational and intervention phases including well designs, subsurface information, construction, barriers in place, monitoring, maintenance, integrity, decommissioning, etc.

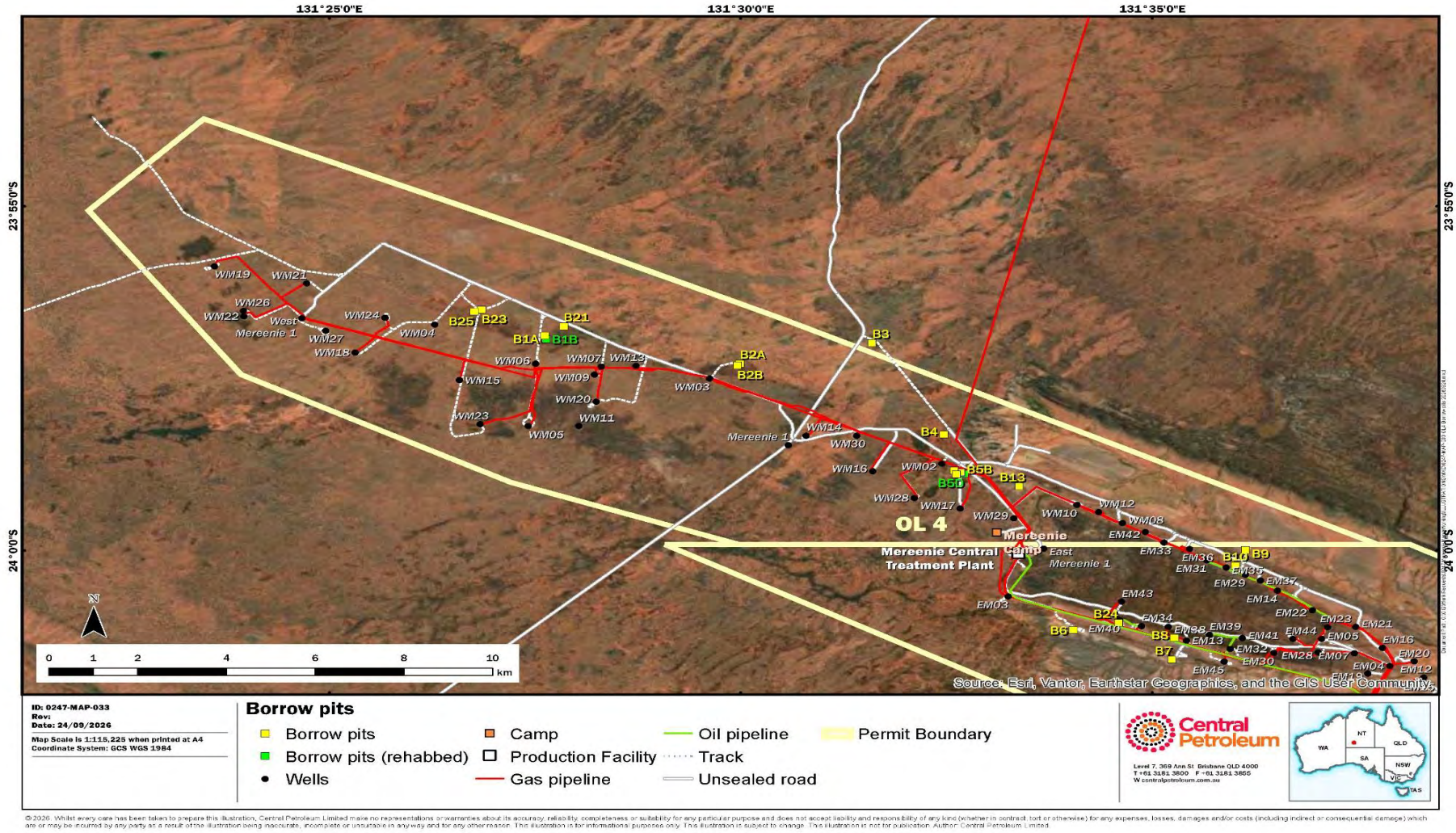


Figure 3-1: Arrangement of borrow pits within West Mereenie oil and gas field (OL4)

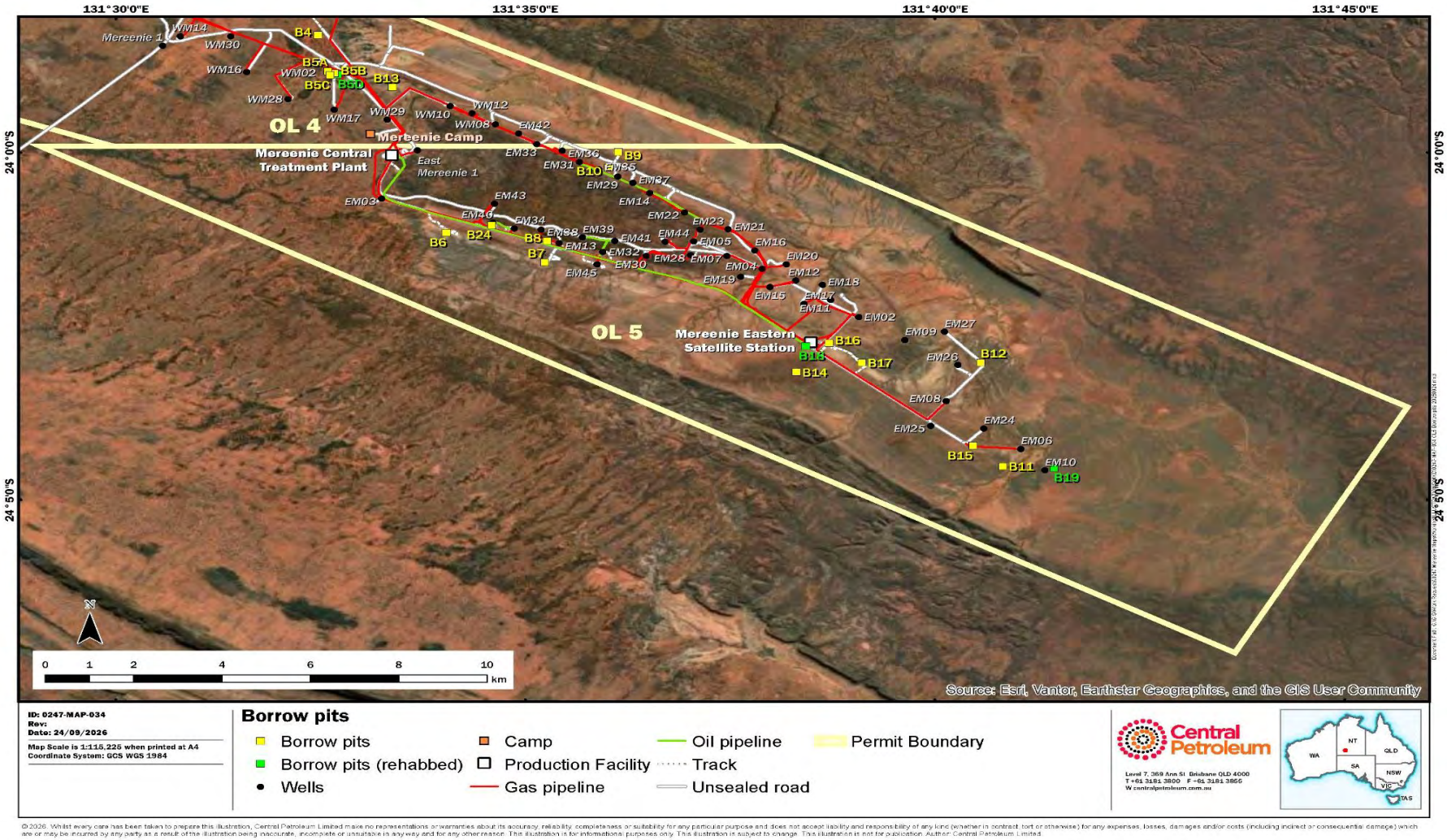


Figure 3-2: Arrangement of borrow pits within East Mereenie oil and gas field (OL5)

3.4.2. Well barriers and aquifer protection

An example of the typical well barriers that currently exist in the Mereenie Field (MRN) relative to stratigraphy is provided in Figure 3-3. It shows that there are two strings of steel casing, conductor casing and two cement columns installed over the Mereenie Sandstone and its associated groundwater to isolate and protect it from oil and gas migration from the target reservoirs. The Mereenie Sandstone is the only aquifer in the MRN as per the definition of aquifer under the Code. The Pacoota Sandstone, which contains saline water and is the target formation for oil and gas, and the other formations penetrated by the well contain very limited groundwater resources and are not defined as aquifers under the Code.

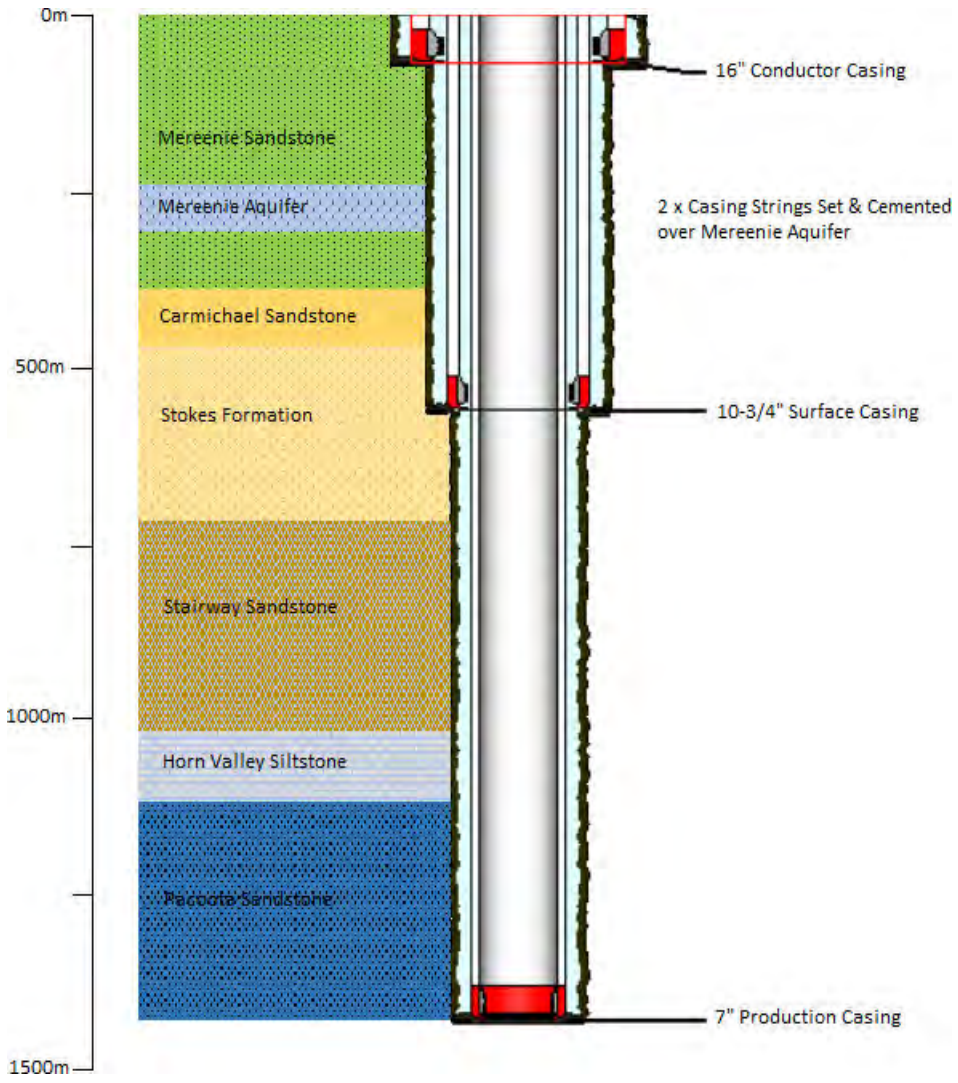


Figure 3-3: Typical Mereenie well barriers relative to stratigraphy

3.4.3. Well maintenance and integrity

Well integrity related maintenance and testing processes during the operational phase involves engaging specialist third party service providers to conduct servicing, maintenance, function testing, comprehensive bleed downs, top ups, pressure testing and data recording activities. Well maintenance and integrity testing will be carried out in accordance with DME approved WOMPs and the operator's Well Integrity Management System which in turn is based on ISO 16530-1:2017 Well Integrity Lifecycle Governance.

Well integrity management terminates downstream of the production wing valve (PWV).

Wellhead maintenance includes testing and servicing of surface components of the wellhead and production tree which are collectively referred to as wellhead components. This process does not extend past the production wing valve (PWV) and covers both flow-wetted and non-flow wetted valves.

Subsurface Integrity Testing (SIT) encompasses a combination of annuli and wellhead seal testing of barrier envelope integrity for both downhole and surface barrier components.

3.5. Production facilities

3.5.1. Gathering and boosting systems

Wellhead equipment, safety systems and gathering lines works allow the well to be connected to the existing gas gathering line for processing before transfer to market. A gathering network of approximately 210km of above and below ground flow lines is in place across Mereenie.

Wells from the western area of the Mereenie Field (OL4) are connected to two spine lines terminating at the CTP. The eastern part of the Mereenie Field is subdivided into three areas:

- North flank wells are connected into one of two lines, with some wells capable of being switched to either the ESS or the CTP depending on operational requirements.
- South flank wells are connected into a line terminating at the ESS.
- Eastern wells are gathered into a test header at the ESS with some of the wells equipped with a dedicated flow line and the remaining wells sharing a flow line to the ESS.

Gas and water are separated at the ESS, the two streams are managed as described below:

- Infield flowlines transport gas to the injection wells in the eastern nose and the north flank to increase pressure in the reservoir. Gas not required for re-injection is transported to the CTP for processing and transport to market in the sales gas pipeline.
- The small volume of formation water that is removed from the gas is transported to the ESS pond for evaporation.

External corrosion of buried pipelines is controlled by cathodic protection systems which are regularly monitored and maintained. Spine line and flow line rights of way (ROW) are inspected in accordance with pipeline integrity and maintenance systems. All spine lines are equipped with biocide injection facilities and are pigged regularly to eliminate stagnate water pooling in low sections of the lines and subsequent corrosion and potential asset failure.

3.5.1.1. Flowline integrity

The integrity of all gathering lines and flowlines within the field is managed in accordance with the operator's Integrity Management System and associated plans and procedures and to comply with the requirements of AS2885. Integrity of the flowlines is via a program of monitoring, inspection and materials sampling of both internal and external components of the flowlines.

Pigging activities are conducted as part of maintenance of the flowlines. All material and debris from pigging is captured and directed to the evaporation ponds and via the processing facilities.

Corrosion inhibitors, biocide treatment and cathodic protection are used to maintain the integrity of flowlines.

The only above ground wastewater flow line within the field is between the CTP evaporation pond and the Grizzly pond. When wastewater transfers take place, the flow line is driven and inspected daily to ensure wastewater is passing between each pond without issue. All other underground wastewater lines (between CTP and the evaporation pond and between ESS and the evaporation pond) are

monitored by ensuring freeboard levels align with wastewater production shown on Daily Production Reports.

3.5.2. Oil and gas processing

3.5.2.1. Central Treatment Plant

The Central Treatment Plant (CTP), Figure 3-4, comprises:

- Oil processing: crude/water separation, condensate stabilisation, crude/condensate storage and crude pumping facilities.
- Gas processing: field compression, inlet slug catchers, gas dehydration and separation, hydrocarbon dew-point control and pipeline compression.
- The main functions of the CTP, shown in Figure 3-6, are as follows:
- Remove gas from various crude oil and condensate streams to produce a stabilised crude oil.
- Separate free water and liquid hydrocarbons from the raw gas stream. Water saturated in the gas is removed through glycol dehydration (mono-ethylene glycol (MEG) and triethylene glycol (TEG)). Hydrocarbon dew-point control is achieved by refrigeration and low-temperature separation using a series of heat exchangers, a propane refrigeration circuit and a low-temperature separator.
- Blend condensed hydrocarbon liquids from the gas stream with the crude oil for sale.
- Compress the sales-quality gas from a plant inlet pressure of ~700 kPa to the pipeline pressure of ~10,000 kPa. Excess or out-of-specification gas is reinjected into the main oil reservoir to maintain reservoir pressure.

To maintain operational flexibility during periods when liquid hydrocarbons cannot be readily purchased or transported from site, the CTP is also capable of controlled flaring of liquid hydrocarbons.

Liquid Hydrocarbons are defined as any hydrocarbon or hydrocarbon mixture that is in a liquid state at the point it is introduced to the flare system, including crude oil, condensate and other petroleum liquids (such as water).

Temporary contingency flaring will:

- only occur where necessary to maintain safe operations;
- cease once normal offtake resumes or alternative management measures become available;
- occur within existing approved flare infrastructure and disturbance areas;
- and is to be used only as an ongoing contingency measure if other liquid hydrocarbon management measures are not available (eg. Through offsite sales / transport or liquid reinjection into approved wells).

The CTP evaporation ponds receive discharge from the wash-down bay, the CTP, and from water/crude-oil mixes collected from the remote well facilities. The system comprises four ponds: an interceptor pond, two holding ponds and an evaporation pond. Further detail is provided in Section 3.9.2.



Source: Google Earth, 2022

Figure 3-4: Aerial view of Central Treatment Plant

3.5.2.2. Eastern Satellite Station

The ESS Figure 3-5) contains liquid gas separation and gas compression. It processes most of the crude oil production from the eastern part of the field. The separated crude oil is stabilised and either transferred either to the CTP or directly transported from ESS to trucks for export. The gas gathered at ESS is compressed and dehydrated and either used for gas reinjection/gas lift or transferred to the CTP where condensates are removed before compression to export pressure. Figure 3-7 shows the process flow through the ESS.

The ESS evaporation ponds receive water from the ESS process area. The system comprises a primary interceptor pond and an evaporation pond, with both ponds lined. Further details on the evaporation ponds are provided in Section 3.9.2.



Figure 3-5: Aerial via of Eastern Satellite Station

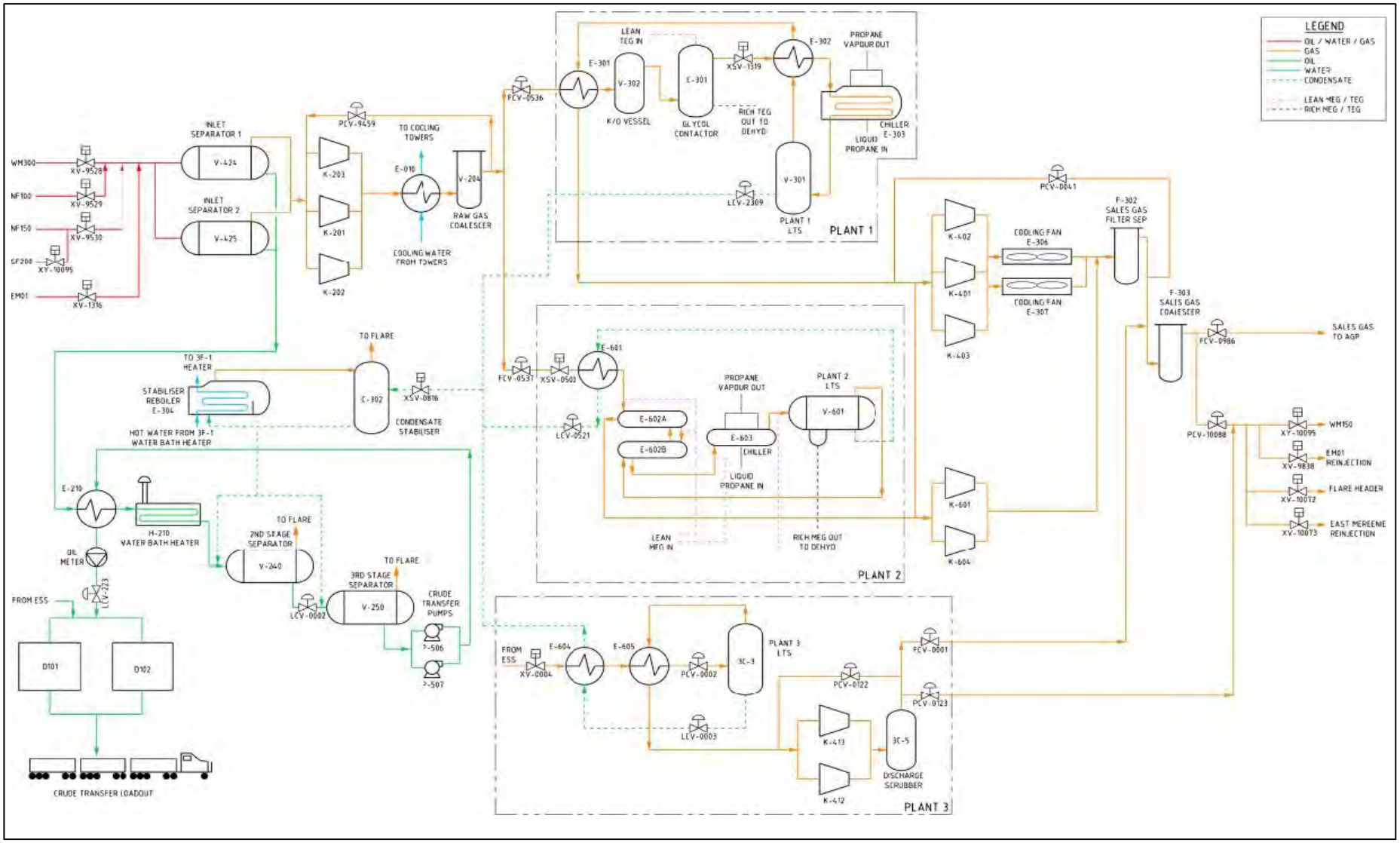


Figure 3-6: Process Flow Diagram – Central Treatment Plan

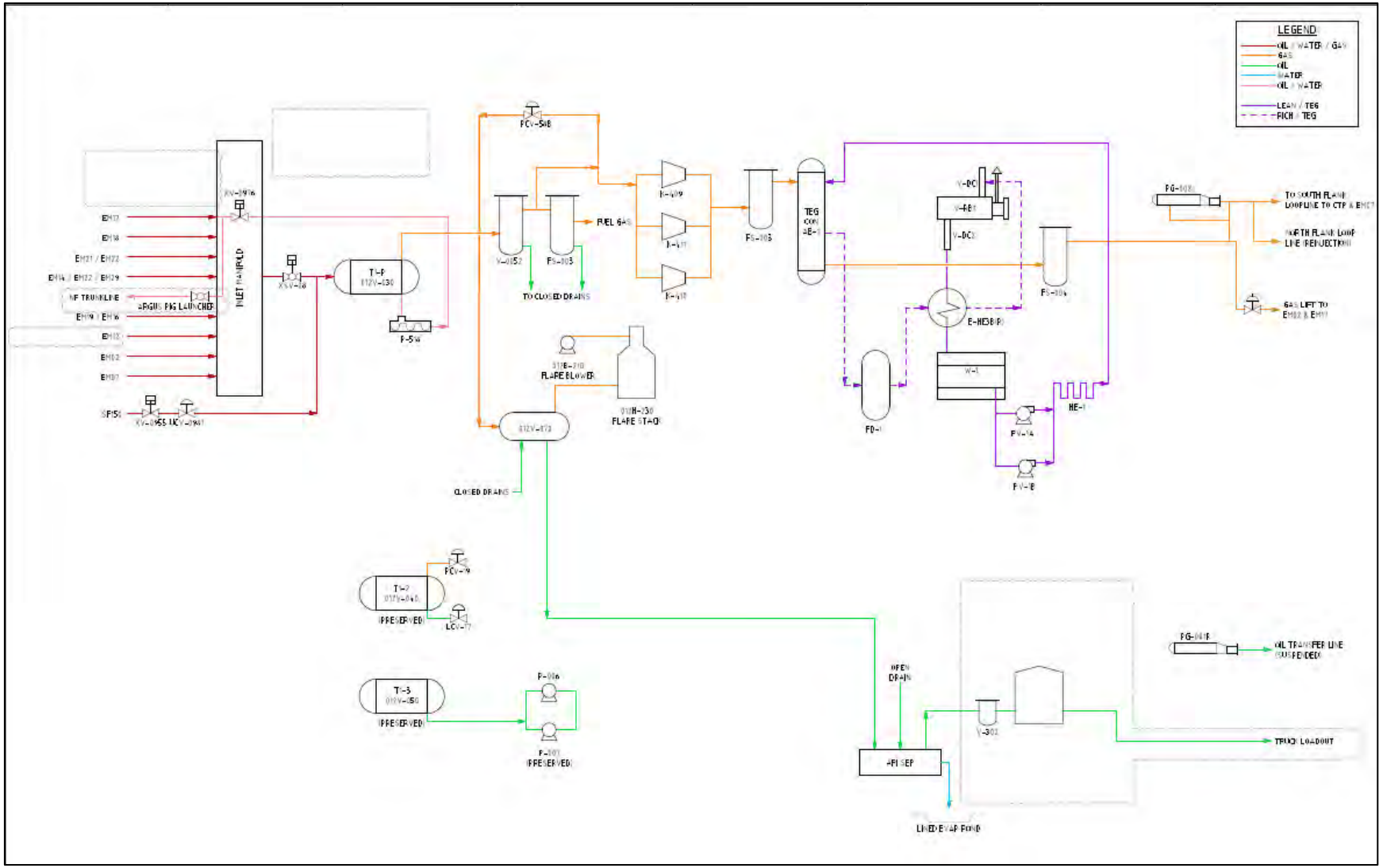


Figure 3-7: Process Flow Diagram – Eastern Satellite Station

3.5.3. Condensate and oil storage and load out

Two crude oil floating roof storage tanks of 1600m3 capacity each are located within the operational area of the CTP. The tanks are steel vessels with an epoxy coating across the floor and extending up the walls of the tank. The underfloor is bare steel, bedded on oil-soaked sand and maintained with an impressed current cathodic protection system to maintain the integrity of the tanks. The tanks sit within a large clay lined earthen bund.

A loadout facility is located adjacent to the tanks where quad trailer road trains are loaded with crude oil for transport interstate for processing.

3.5.4. Venting and flaring

The safe operation of the Mereenie production facilities requires routine flaring of gas at the CTP and ESS to maintain a positive purge and dispose of volatile ends generated during crude and condensate stabilisation. Recovery of volatile ends is not currently undertaken due to the relatively small volumes produced.

In addition to routine gas flaring, the CTP may temporarily flare liquid hydrocarbons at rates of up to 400 barrels per day during periods where verified liquid hydrocarbon offtake constraints limit available storage capacity. This contingency flaring is intended to maintain safe operations and avoid tank overfill scenarios during periods where transport, sales or processing pathways are unavailable or restricted.

Temporary contingency flaring will:

- only occur where necessary to maintain safe operations;
- cease once normal offtake resumes or alternative management measures become available;
- occur within existing approved flare infrastructure and disturbance areas;
- and is to be used only as an ongoing contingency measure if other liquid hydrocarbon management measures are not available (eg. Through offsite sales / transport, liquid reinjection into approved wells and or the use of adsorbents to remove arsenic).

Venting may occur during emergency shutdowns, loss of asset integrity, commissioning, maintenance activities or where infrastructure requires depressurisation and gas cannot reasonably be redirected to the processing or flare system.

The operator maintains records of all flaring and venting activities to support NGER reporting, operational reporting and regulatory obligations.

Routine flare and vent data is reported through existing monthly reporting processes. Additional fortnightly reporting to DLPE will be undertaken during periods of temporary contingency liquid hydrocarbon flaring. This is undertaken as a contingency to prevent tank top where liquid hydrocarbon cannot be exported and reinjection and adsorbents are not ready for full implementation. Reporting will include:

- daily flare volumes and flare duration;
- prevailing wind direction and speed;
- and confirmation where no flaring occurred during the reporting period.
- data from monitoring as described in Appendix H

DLPE will also be notified as soon as reasonably practicable where:

- temporary contingency flaring commences (this may occur when liquid hydrocarbon is unable to be exported and prior to disposal being achievable through reinjection and adsorbents described below);

- flare rates materially increase above forecast assumptions;
- or flaring is forecast to continue beyond the anticipated contingency period.

Flaring of liquid hydrocarbons is considered a temporary and contingent management measure where it is undertaken only when the material cannot be transported offsite and is necessary to prevent storage tanks from reaching their maximum safe operating capacity ("tank top"). The activity is temporary because it is not intended to form part of the long-term routine management of liquid hydrocarbons and will only continue while more sustainable management solutions - specifically reinjection and the use of adsorbent technology to remove arsenic – are being evaluated and implemented. It is contingent because flaring is triggered only by operational circumstances, namely when transport is unavailable or unsuitable and the available storage capacity is insufficient to safely contain continued production. Limiting flaring to these specific circumstances and ceasing it once transport, reinjection or arsenic-treatment options become available, demonstrates that it is a time-limited contingency rather than a routine, ongoing disposal method.

No modifications to the flare pit were proposed with the original plant modifications to re-direct light hydrocarbon liquids to flare.

The flare is a horizontal flare with the tip at a low point in the system. Being horizontal and positioned within a pit makes this design safer and more suitable for liquids flaring than a vertical design, which an create safety issues if rain-out is to occur. The system prior to modification, was designed to handle intermittent operational hydrocarbon liquid volumes from automated compressor scrubber drain systems where the liquids are not suitable for recovery.

The flare pit is understood to have been constructed from compacted soil and rock local to the area. The flare pit was remediated in 2023 for ongoing operation. Material in the area local to the flare is understood to be characterised as medium-dense to dense sand and sandstone which it commonly used for road-base in the area. A diversion bank was constructed around the flare pit in 2023 to direct overland water flows away from the flare pit to reduce erosion risk and water accumulation in the pit.

The flare exclusion zone has been sized based on radiation modelling results, combined with operational experience and conservatism to ensure personnel maintain a safe distance from the flare during normal site activities.

The flare system modifications do not change the immediate disturbance area of the flame / high radiation impacted areas. Flare pit rehabilitation is covered under current end-of-life rehabilitation commitments.

Consistent with the objective of minimising emissions and flaring volumes wherever practicable, the operator continues to assess operational efficiencies, infrastructure improvements and alternative liquid management pathways to reduce flaring requirements.

The operator will submit to DLPE an annual report on the anniversary of the EMP approval date assessing whether the continuation of flaring activities remains appropriate.

In 2025 there was a rapidly escalating constraint on liquid hydrocarbon (HC) offtake. The restriction created an immediate and material risk to the continuity of gas production for the Northern Territory. Recent and unforeseen reductions in third-party acceptance of Mereenie crude and condensate have resulted in accelerated liquid accumulation at site, with existing mitigation and optimisation measures now exhausted. Flaring of up to 400 barrels per day (bpd) of liquid hydrocarbons as a contingency measure ~~from December 2025 – May 2025~~, is required to avoid gas production from the Mereenie Field to be shut in, resulting in significant economic, energy-security and social impacts across the Northern Territory. A timeline outlining the current circumstances and alternative options are provided below in Table 3-3.

Table 3-3: Timeline leading to condensate flaring

Month	Action
December 2024	COPSA is re-negotiated with the commercial customer and an arsenic spec is introduced (testing for arsenic organised)
12 March 2025	Commercial customer introduced stringent arsenic specifications and - on limited notice - began significantly limiting its intake of Mereenie hydrocarbons. Commercial customer advises they will only accept 13 trucks per month.
2 April 2025	Regulation 22 submitted to flare up to 80 barrels of condensate per day
27 June 2025	Regulation 22 submitted to flare up to 100 barrels of condensate per day
July 2025	Commercial customer further limited its intake of Mereenie hydrocarbons – advises that they will only accept 11 trucks per month. Effective immediately
10 October 2025	Commercial customer advises that they will only accept 3 trucks per month, effective immediately
25 December 2025	Storage tanks projected to reach tank top flaring 100 barrels per day
January 2026 – March 2026	Removal of liquid hydrocarbon to an oil exporter is scheduled to be undertaken
~~May 2026~~	~~Flaring of up to 400 barrels of oil to cease (if not already done so)~~
May/June 2026	Field trial using adsorbents to remove arsenic from condensate likely to commence
June 2026	Consultation of Traditional Owners on flaring and reinjection subject to availability
March 2027	Re-injection activities expected to commence subject to regulatory approval
December 2031 2027	The completion timeframe to undertake tank relining of D102 in commenced in December 2031. The option would only provide a short-term reprieve to the excess liquid hydrocarbon issue. Relining of D102 will align with the inspection of D101, currently in use.

The socio-economic impacts of not temporarily flaring up to 400 barrels of liquid hydrocarbon are extensive. Mereenie supplies approximately 50% of the Northern Territory's domestic gas demand. If production shuts in, there is no alternative source capable of replacing this volume in the short term. This will directly affect industrial users, electricity generation, and regional energy security. Reduced gas supply threatens dispatchability for NT power generators. This may result in load-shedding, increased blackout risk, and greater reliance on high-cost diesel. Shutdown of Mereenie would lead to loss of revenue for the NT government through royalties, payroll tax, and indirect taxation. Regional economic activity—including transport contractors, local service providers, and Traditional Owner employment pathways—would be severely affected. Gas-dependent industries may be forced to curtail operations. Energy insecurity and potential electricity supply instability would affect households and community facilities. Reduction in gas supply may have serious and disproportionate impacts on vulnerable people, particularly those with health conditions, low incomes, disabilities or limited social support. Traditional Owners and community partners face reduced income streams and project funding linked to production.

The following quantitative data supports the statements outlined above:

- Central Petroleum and partners paid $11.6 million in royalties to the NT Government and Central Land Council in FY2025, plus $1.6 million in fees and levies
- Central Petroleum and partners spent over $4.9 million with local contractors and businesses in FY2025
- NT gas supply shortfall was estimated to cost $43.4 million in 2023-24 and was anticipated to cost another $24.3 million in 2024-25

With the development of gas resources being a primary objective of the current development plan, gas flaring has been evaluated with a focus on reducing any flaring to a minimum. To that end, the operator is examining opportunities to improve efficiency across the production facilities and reduce the volume of flaring undertaken. A supporting cost -benefit analysis is provided below in Table 3-4 and continued in Table 3-5.

Table 3-4: Cost Benefit Analysis of Flaring and Alternatives

Flaring of up to 400 barrels per day		**Relining of D102 Tank**		**Removal of liquid hydrocarbon to an oil exporter**	
Cost	**Benefit**	**Cost**	**Benefit**	**Cost**	**Benefit**
Loss of $40AUD sale price per barrel Increased emissions Approximate cost of EMP review following a Reg 17 - $80,000 Increased bushfire risk	Removes risk of territory-wide gas impacts, electricity system reliability risks, economic and social impacts as outlined below Reduced risk of truck and transporting spills	$1.4 million 8-month construction timeframe Between the time of reaching tank top and the time the second tank was relined, there would be territory-wide gas impacts, electricity system reliability risks, economic and social impacts as outlined below. Potential for leaks, resulting	Only provides a temporary reprieve. Challenge of offloading liquid hydrocarbon would still exist Reduced emissions compared to flaring Bulk storage reduces/defers the need for transportation (potentially reducing fuel consumption)	$32AUD ex GST per barrel $12,800 per day (plus a loss of $40 sale price – total $72AUD per barrel - $28,800 per day) Trucks can be unreliable due to weather and access constraints Increased risks of spills	Reduced risk of territory-wide gas impacts, electricity system reliability risks, economic and social impacts as outlined below. Reduced emissions compared to flaring

Flaring of up to 400 barrels per day		Relining of D102 Tank		Removal of liquid hydrocarbon to an oil exporter	
Cost	**Benefit**	**Cost**	**Benefit**	**Cost**	**Benefit**
		in spills and contamination VOCs evaporating from tanks Fire and explosion risk		Transport/fuel consumption emissions	
Comments: Short term the most reliable and cost-effective option		Comments: Long lead time – would result in gas supply impacts. Doesn't solve the problem just buys some time. Less emissions than flaring.		Comments: Less cost-effective than flaring. Weather dependent. Less emissions than flaring.	

Table 3-5: Cost Benefit Analysis cont.

Reinjection		Absorbents		Storage in preparation for transport to offshore refineries	
Cost	**Benefit**	**Cost**	**Benefit**	**Cost**	**Benefit**
Approximate cost of EMP review following a Reg 17 - $80,000 6-month preparation timeframe Potential contamination of groundwater	Removes risk of territory-wide gas impacts, electricity system reliability risks, economic and social impacts as outlined below. Liquid hydrocarbon can be used/sold later if a commercial agreement is reached. Significantly reduced emissions compared to flaring. Lower overall environmental risk than surface storage or flaring. No operational cost – uses existing	$250,000 has been committed to undertake field trial Full implementation would likely be between $2-4M Condensate-only solution Field trial will take 10 months to implement. A permanent solution would require an additional 6 months	Increases offloading options Reduced emissions compared to flaring	Cost of $40AUD - $50AUD ex GST per barrel Plus loss of sale price of $40AUD per barrel (approximately $36,000 per day) Plus ongoing costs associated with disposal/ultimate sale Increased risks of spills Transport/fuel consumption emissions	Reduced risk of territory-wide gas impacts, electricity system reliability risks, economic and social impacts as outlined below. Reduced emissions compared to flaring

Reinjection		Absorbents		Storage in preparation for transport to offshore refineries	
Cost	**Benefit**	**Cost**	**Benefit**	**Cost**	**Benefit**
	equipment and operators.				
Comments: Long lead time – would need interim short-term solution. Likely the most sustainable option.		Comments: Long lead time – would need interim short-term solution. Potentially less cost effective that reinjection. Fewer emissions than flaring.		Comments: More expensive than flaring and removal of liquid hydrocarbon. Dependent on an agreement being reached with an offshore refinery which has been unsuccessful so far.	

Flaring of liquid hydrocarbons as a contingency measure has been assessed as reducing environmental risks as low as reasonably practical (ALARP) through the implementation of multiple engineering, administrative and monitoring controls. The Spill Management Plan and the Rehabilitation Management Plan have been reviewed and revised to address specific environmental risks associated with the activity, ensuring appropriate prevention, response, remediation and closure measures are in place. A Hazard and Operability (HAZOP) study and a Memorandum of Change (MOC) process have been completed to systematically identify hazards, assess potential environmental impacts and verify that suitable controls have been incorporated into the operational design. Environmental sampling of soil and other relevant media has been undertaken to establish baseline conditions and assess the presence and extent of any contaminants, enabling informed decision-making and ongoing environmental monitoring. A detailed environmental risk assessment has also been completed with control measures implemented to minimize the likelihood and consequence of impacts including spill prevention and response measures, operational monitoring, inspection and maintenance programs and rehabilitation commitments. Collectively, these measures demonstrate that the residual environmental risks associated with flaring excess liquid hydrocarbons have been reduced to ALARP.

3.5.5. Flare Exclusion Zone

A maintained flare exclusion zone (see Figure x) is established around the CTP flare to minimise the risk of vegetation ignition, facilitate emergency access and reduce the potential for bushfire impacts associated with flare operation.

The exclusion zone is maintained through routine vegetation management and fire break maintenance to ensure vegetation does not encroach into the required separation distances around the flare.

The flare exclusion zone will be extended to maintain the required safety separation distances. Extent of vegetation clearing is outline in Appendix J.

Following construction, the flare exclusion zone will continue to be inspected and maintained as part of the routine field maintenance program.

The flare exclusion zone has been developed through consideration of radiation modelling/calculations as well as CLC boundaries.

3.5.6. Plant and equipment maintenance and upgrade

All assets are recorded in the maintenance management system and programmed to have a planned maintenance frequency. Work orders are created from the system which enables the operator personnel to undertake maintenance inspections of assets in a systemic manner.

Where the work order requires a test or inspection to be performed on an asset it is recorded on a proforma / checklist and retained in the operator's document management system for future reference. Corrective actions and additional work orders, along with Management of Change procedures are implemented where required.

Where plant and equipment has reached the end of its design life, a program of replacement and upgrade is implemented. Equipment is replaced like for like, or with newer technologies.

3.6. Well workover

Workover is a maintenance activity used to restore well bore integrity and / or increase production rates, although the term workover is also used to describe re-completion activities when an existing production well is being completed in a new zone or work is being carried out on an existing zone. Workovers can cover several activities depending on the nature of the well and the issue being addressed. Workovers are usually conducted at the respective existing well site (or well pad) which are established prior to construction of the well. Major workovers can include cleaning sand or other impurities such as wax or scale, fishing to recover original production equipment, installing equipment to prevent sand from entering the well, replacing liners, plugging the well, repairing casing, drilling or milling any obstructions in the well, stimulating intervals and re-perforating existing or new zones.

Some Mereenie wells have been subjected to varying degrees of minor integrity issues; therefore, workover activities at MRN have previously included casing inspection and repair activities. Some of the early wells drilled at MRN encountered difficulty with the primary cementing work, and so remedial cementing activities have been conducted.

Deterioration in wellbore condition is monitored through an established surveillance program that includes monitoring of annuli pressures and fluid contents; the results of which are critical for the performance of safety and environmental risk assessments that provide a basis for scheduling workover priorities.

For some workovers, limited equipment is required (for example, wireline equipment to lower tools into the hole to conduct operations), whilst others require rotation of the tubing or drill pipe, requiring a full workover rig. Pumps and storage tanks may be required for associated activities that involve circulation of workover fluids.

3.6.1.1. Barrier protection

Workover activities are an important measure to ensure well integrity during the operation of the well, especially given the age of the Mereenie Field. Workover activities will replace or repair casing strings and liners, and remedial cementing aims to maintain well barrier integrity at the aquifer (as defined by the Code) location and throughout the well.

The use and verification of well barriers that will be used and installed during workovers is prescribed by the Code. Given that final determination of wells undergoing workover has not been made for this EMP, the well barrier schematics are not yet developed, however the operator will ensure compliance with Section B.4.14 Workover and Intervention of the Code, which requires any workover or well modification to be designed to ensure the well is operated within the maximum expected pressures and load conditions until final decommissioning.

The operator will ensure that well integrity is maintained, as set out in section B.4.1 of the Code.

3.6.1.2. Fluid systems

In accordance with the code, the operator will aim to conduct workover activities in an underbalanced state (i.e. without the use of workover fluid). This will be achieved by using an air / mist fluid system to clean out the well and bring up debris (including sand, fill, fines and some metal from milling and fishing of down hole equipment).

The air / mist fluid system uses air compressors and a booster pump to inject air, and small amounts of foaming agent and water (mist), into the well. Debris, fill and other material attaches to the mist and is brought back to the surface, along with any encountered gas, and directed to the flare pit via the blooie line where gas is flared. Fluid evaporates from the flare pit and fill particles combust/settle to flare pit floor.

There are however situations in which workover fluid may be required including well cleaning, fishing and milling and well control.

In these instances, the operator will use a water-based workover fluid during workover. It will be separated from fill, milled / fished material and / or debris using separator equipment (shale shaker or separator) at the surface. The fill and material, along with any gas present, will be directed to the flare pit via the blooie line and workover fluid returned to the mud tank system for re-use where possible. Where it cannot be collected, workover fluid and any kill fluid will be directed to the flare pit and evaporated. To ensure all incidental debris / fill / material or residual fluids are contained and disposed of a flare tank will be attached to the end of the blooey line during routine[1] workovers. For larger workovers (ie. flow rate > 5TJ/day anticipated) a flare pit will be utilised which will be lined with an impervious clay material and hydrotested prior to operation. Only once the flare pit has passed a hydro test will workover activities be able to commence. In both cases, volume markers will be applied to the flare tank / pit to ensure visual inspections can accurately determine whether a leak has / is occurring. Visual inspections will be undertaken, at minimum, daily. Where utilised, flare pits will remain at the well site as permanent infrastructure. Fill, material and debris will be removed from the flare pit and disposed of at an approved waste facility. Metal waste generated will be tested for NORMs and recycled at an approved facility as scrap metal (provided no NORMs are identified).

3.6.2. Well suspension

Suspension activities are intended to be ‘temporary’, in that they are designed to secure conditions in a well so that any environmental or safety hazards are adequately controlled until the well undergoes either recompletion or final decommissioning. Suspension activities are closely dependent on the condition of the well and as a result, vary in their complexity.

The primary considerations for suspension of a petroleum well are to ensure that:

- Well integrity is maintained at all times as set out in section B.4.1 of the Code,
- Monitoring requirements can be met, and production can readily be resumed and
- All safety requirements are met.

3.6.3. Well decommissioning

Emergency decommissioning may be required in the event of unplanned circumstances (i.e. when safety tests/monitoring determine a well needs to be killed). All decommissioning activities will be conducted in accordance with the Code and DME approved WOMPs

Where a well is to be decommissioned, the activities will be done in accordance with the principles of the Code section B.4.15.1 and specifically the mandatory sections B.4.15.2 and B.4.15.3. The two-stage decommissioning process as per table 4 of section B.4.15.1 will be followed with well integrity maintained as per section B.4.1. All aquifers will be isolated from each other and the surface by a

[1] Routine workovers include all wells with a flow rate of less than or equal to 5TJ/day

minimum of one well barrier and from any permeable hydrocarbon bearing zones by a minimum of two well barriers.

Complete and accurate records of the entire decommissioning procedure will be kept and submitted as part of the legislative reporting requirements for the decommissioning of petroleum wells.

The potential for accumulation of NORMs in well equipment will be assessed and appropriate measures put in place to reduce risks to the health and safety of people and the environment.

3.7. Wellhead equipment, safety systems and gathering line replacement

Wellhead equipment, safety systems and gathering lines works allow the well to be connected to the existing gas gathering line for processing before transfer to market. Activities undertaken as part of the wellhead equipment, safety systems and gathering line replacement works include:

- Tie-in to the wellhead, installation of new well head equipment and safety systems such as metering instruments, control valves and/or shutdown skids within the existing well lease pad area.
- Installation of new pipelines to connect the wellhead equipment, safety systems and gathering lines and wellhead to existing pipelines. Pipelines will be above ground and installed within the existing disturbance footprint.
- Installation of pipework will be undertaken in accordance with *Australian Standard 2885.0:2018 Pipelines – Gas and liquid petroleum – General requirements*.

All wells have an existing wellhead located on a well lease which will be used as the work area during the installation. No ground disturbance will be required. No flaring or venting is required as the well is isolated, and gas bled into the existing field gathering network. Pipes are then isolated at the gathering line and there may be a very small amount of gas trapped residual gas released when handling pipework.

Installed wellhead equipment, safety systems and gathering lines will undergo hydrostatic testing as required (using freshwater) for integrity and leak detection during commissioning.

Leak detection monitoring will occur as per the Methane Emissions Monitoring Plan and Code on recommissioning of the well. Removed pipework will be tested for NORMs as per Section B.4.14.2. of the Code and recycled at an approved facility (provided no NORMs are present).

3.8. Progressive rehabilitation and closure planning

Progressive rehabilitation and closure of areas will be conducted in accordance with the Rehabilitation Plan as outlined in Section 7.5

3.9. Support activities

3.9.1. Services

Table 3-6 outlines the services that support the conduct of all activities at MRN.

Table 3-6: Services across the Mereenie Field

Activity	Description
Buildings: ▪ Administration ▪ Warehouse and Workshop	▪ Adjacent to CTP and houses main control room, meeting rooms, office and utilities ▪ North-east of CTP, houses storage areas, warehouse, workshop, washdown bay, diesel refueling bay, designated waste storage area, bunded chemical store.

<table>
<tr><th>Activity</th><th>Description</th></tr>
<tr><td>Workforce and facilities</td><td>

Permanent workforce of up to 20 personnel, using local Alice Springs region-based employees supplemented with fly-in fly out employees depending on required skills sets.
Workforce increases via contractor and visitors as required and approved via the operator’s internal approval processes to meet CLC permit requirements
Permanent camp

85-person camp incorporating accommodation, kitchen and mess, recreation areas, communications systems and water and wastewater systems

Temporary camps

Temporary facilities may be brought to the field to accommodate additional personnel during key projects and workover activities at wells and laydown areas.

</td></tr>
<tr><td>Procurement</td><td>Where available and economic, items / products used at site are sourced locally.</td></tr>
<tr><td>Laydown areas</td><td>Cleared areas, including former well pads, used to house materials, temporary camps or machinery</td></tr>
<tr><td>Power generation</td><td>

A combination of gas and diesel fuel generators located at both the CTP and ESS to power production and accommodation facilities.
Small scale diesel fuel generator sets are used for remote operations in the Mereenie Field when required, such as workover activities and groundwater bore pumps. In addition, telemetry systems for well infrastructure and flowlines are powered by individual solar systems with battery storage

</td></tr>
<tr><td>Water supply</td><td>
Water Extraction Licence (M10001):

extraction of 52.8ML/year
valid until 30 June 2023 (renewal application underway)

Water Bores
<table>
<tr><th></th><th></th><th></th></tr>
<tr><td>CTP</td><td>RN17657</td><td>Drinking water</td></tr>
<tr><td>Production Bore No2</td><td>RN017898</td><td>Camp facilities water; Raw water for CTP process, Fire water</td></tr>
<tr><td>EM2</td><td>RN004620</td><td>Raw water for ESS</td></tr>
<tr><td>ESS</td><td>RN13861</td><td>Stock water, Firewater ESS</td></tr>
<tr><td>WM15</td><td>RN018955</td><td>Stock water; exploration and development; civil works; dust control</td></tr>
</table>
</td></tr>
<tr><td>Air strip and helipad</td><td>

Fenced airstrip
Emergency helipad located adjacent to the Mereenie Field emergency vehicles
No aircraft refuelling facilities are provided at either of these locations

</td></tr>
<tr><td>Waste services</td><td>Waste services are provided by licensed waste transporters and disposers. Refer to Section
3.9.5 for further details</td></tr>
<tr><td>Traffic and transport</td><td>

Coordinated logistics activities including movement of crew and visitors to and from Alice Springs
The operator’s travel approval process in place for managing all visitors and contractors

</td></tr>
</table>

<table>
<tr><th>Activity</th><th>Description</th></tr>
<tr><td></td><td>

Light vehicles access along the sealed and unsealed Larapinta Drive via Hermannsburg
Heavy vehicles (and wet weather access) via Stuart Highway, Lasseter Highway and Luritja Road
Oversized loads are accompanied by an accredited pilot
Traffic management plans are developed for rig movements to and from the field in consultation with rig owner, the operator and authorities

<table>
<tr><th>Travel movements</th><th>Operations (avg per month)</th><th>Workovers</th></tr>
<tr><td>Light vehicles</td><td>Approx. 40</td><td><10</td></tr>
<tr><td>Heavy vehicles including fuel / oil, materials delivery, rig mobilisation and demobilisation, civil plant and machinery delivery</td><td>Approx. 20</td><td><5 mobilisation/ demobilisation
<2 during workovers</td></tr>
</table>
</td></tr>
<tr><td>Wet weather operations</td><td>Operations occur 365 days per year including the wetter months of the year (October to April). Weather conditions are monitored daily to allow reassessment of operational needs to be addressed.</td></tr>
<tr><td>Naturally Occurring Radioactive Materials</td><td>

The operator’s radiation licence (permit number 1902650L)
Previous surveys have indicated that site emits a negligible level radiation hazard
All works are conducted in accordance with the operator’s safe work standards including a NORMS (Radiation) Management Plan alongside a Job Hazard Analysis
Materials with the potential for NORMs exposure from operational activities are tested prior to storage or disposal via an appropriately licensed transporter

</td></tr>
</table>

3.9.2. Chemical storage and use

In addition to the requirements under this EMP, the storage, handling and use of chemicals is to comply with the NT’s workplace, health and safety legislation, relevant Australian Standards, the Code (including clause A.3.8) and the SDS for each chemical. All sites have been designed to minimise the risk of spills

With regards to secondary containment and the requirements of A 3.8.(g) of the Code, for all operational activities, chemicals are stored within designated bunded or enclosed chemical storage areas within the warehouse and production facilities until required for use. These areas and specific worksites such as the CTP and ESS use a combination of permanent concrete bunds, or temporary bunds where use is required at specific worksites / wells. All diesel is stored in double lined tanks at the workshop fuel facility.

During workovers, chemical use and storage on existing wellsite (lease) areas will maintain secondary containment requirements as per A.3.8(g) of the Code and use the following storage solutions depending on storage requirements:

- A compacted and impermeable High-Density Polyethylene (HDPE) lined hardstand bulk bag chemical storage area within the existing well site (lease), including bunding to contain 100% of the largest container stored plus 10%.

- A fully enclosed portable storage trailer stored in the bunded chemical storage area established at the well site. Absorbent spill mats will be used when the trailer is moved around the well site (lease).
- A fully enclosed workshop area that includes capacity to contain 100% of the volume of the largest container in the workshop plus 10%.
- All secondary containment (when in use) will be inspected weekly, unless being operated through the wet season during which period it will be monitored daily. Inspection and maintenance records will be kept on secondary containment areas in use.
- In the event materials escape from secondary containment or are otherwise spilled onto secondary containment they shall be recorded, removed as soon as possible, and reported as required.

In terms of lifecycle chemical handling, given the remoteness of the location, chemicals are transported from offsite locations in the volumes required for safe operation plus contingency within onsite storage capability to meet any operational requirements and road access limitations. The aim is to minimise the frequency of deliveries to reduce transportation risks while allowing the necessary quantities to be appropriately stored onsite for access as required. Table 3-7 shows the types of chemicals and quantities typically used or stored.

Table 3-7: Typical chemicals used during operations and workovers

Substance	Hazardous Material	Dangerous Good	Typical Quantity*
Anti-corrosives	Yes	Yes	200L
Adhesives/glues	Yes	No	500L
Acetone	Yes	Yes	100L
Thinners	Yes	Yes	200L
Acetylene	Yes	Yes	100L
Biocides	No	No	200L
Truck wash	Yes	No	100L
Priming fluids	Yes	Yes	200L
Diesel	Yes	Yes	25,000L
Pipe cement	Yes	Yes	100L
Degreaser	Yes	Yes	100L
Paint	Yes	Yes	100L
Soaps	No	No	50L
Sealant	No	No	200L
Herbicide	Yes	No	200L
Coolant	Yes	No	100L
Engine oil	No	No	20L–1,000L
Compressor oil	No	No	1,000L
Hydraulic oil	No	No	20L
Grease	No	No	100L
Nitrogen	Yes	Yes	100kg
Oxygen	Yes	Yes	100kg
Propane	Yes	Yes	50kg
Methanol/ethylene glycol	Yes	Yes	6,000L
Helium	Yes	Yes	100kg
Triple 7 Dust Suppression Plus	No	No	1000L
Triple 7 Dust Suppression Nova	No	No	1000L

Substance	Hazardous Material	Dangerous Good	Typical Quantity*
Polycom Compaction & Stabilisation Aid	No	No	1000L
Titan Liquid Polymer Pavement Stabiliser	No	No	1000L
Sodium Sulphate (Oxygen Scavenger)	No	No	350kg
Potassium Chloride Fine (Clay Inhibitor)	No	No	3250kg
Corrosion Inhibitor	No	Yes	150L
Fire and Vapour Suppressant (Fire Fighting foam concentrate)	No	No	2,000L
Stopaq Wrapping CZH	No	No	20 Rolls
Stopaq Outerwrap PVC	No	No	20 Rolls
ActiSorb 310 CDS Extr 1.5	Yes	No	140kg

** Quantities in stock will vary depending on the activities occurring at points in time.*

3.9.3. Workover fluids

The proposed workover fluid is comprised predominately of water (extracted groundwater) with the remaining made up of chloride salts and fluid additives. Water for workover fluid will be stored at the well site in the engineered steel mud tank system. There may be two to three mud tanks on site with a total volume of up to 650bbls, but only approximately 400bbls (0.063ML) of workover fluid is required.

The main chemicals added to the water to make up the workover fluid and the primary role of the additive is as follows:

- KCl (Potassium Chloride): a soluble salt that is an extremely efficient shale and clay stabiliser. If not used the clays swell with water and effectively block the reservoir and often permanently damage the well often severely impacting the well production ability. Inhibition is provided through ion exchange; the potassium ion enters between the individual clay platelets in the shale so that they are held together, thus eliminating entry of water from the completion fluid.
- AMC Resi Drill: a biodegradable micronized cellulose polymer that is added to the workover fluid to act like a skin on the wellbore to help minimise the fluid invasion into the surrounding formations. It reduces dynamic filtration loss, stabilises wellbores and protects reservoirs from damage. The product is formulated to reduce fluid loss and stabilise shale by preventing filtrate invasion into permeable structures. Filter cake and differential sticking are therefore minimised and weak formations are stabilised.
- AMC Biocide G: is a specifically designed biodegradable, broad spectrum biocide designed to reduce and prevent bacterial and fungal activity in water-based fluids. This is added to ensure that any surface bacteria are not transferred to the reservoir.
- AMC Xan Bore: when water is not viscous enough to carry reservoir or other debris to surface, Xan bore is added to the water to increase viscosity. This product is specifically used as it passes the Standards Australia Test AS4351 for biodegradability.
- Caustic soda/acid: used to alter the pH of the workover fluid.

The predicted quantities of chemicals used is provided in Table 3-8. The workover fluid chemicals are stored in an enclosed purpose-built portable trailer, which keeps chemicals isolated, dry and safe. The

portable trailer is located in a designated chemical storage area within the well lease which is bunded and can contain 100% of the largest container stored plus 10%.

Batch mixing of the fluid chemicals occur within steel mud tanks which will have temporary spill absorbent mats placed under them to capture any spills which may occur. Chemicals will be added to the workover fluid (water) using the mixing hopper and the ~100L batch of made-up workover fluid (water plus additives) returned to the mud tanks. Two options are proposed for secondary containment of mud tanks during workover activities.

Option 1 – A lined sump still exists on the well pad

In the event a lined sump exists on the work over well pad mud tanks will be positioned adjacent, and a lined drain and pipe will be put in place to direct any spills to the sump at which point it will be collected via vacuum truck / equipment which will be on standby during all workover activities. The sump in use will include capacity to contain 100% of the volume plus 10% of largest the mud tank.

Option 2 – A sump no longer exists on the well pad

Where the sump has been filled on or rehabilitated on the work over well pad, a propriety temporary bund product (e.g. plastic liner with foam bund) or HDPE lined bund will be installed to capture any unplanned spills from the mud tanks. Similarly, any secondary spill containment will be sized to contain 100% of the volume plus 10% of largest the mud tank. A vacuum truck / equipment which will be on standby during all workover activities.

In either scenario, additional controls will be implemented to control spill / leaks from the mud tanks including regular routine inspection of the tanks during the 12 or 24-hour shift, regular checks of tank fittings and valves, and installation of devices to control the flow of any potential spills / leaks away from water courses, drainage lines or vegetation.

As discussed further in Section 4.1.3 the depth of the groundwater and the presence of the impervious Parke Siltstone above the Mereenie Sandstone also provides additional aquifer protection against contamination from any potential significant surface level spills. In the event of spills occurring at a wellsite / workover area, the potential impact to soil will be assessed and any contaminated soils will be removed (and disposed of at an approved facility) or remediated according to the National Environment Protection (Assessment of Site Contamination) Measure 2013 (NEPM)contaminated soil guidelines. No workover fluid chemicals that are used in the workover process contain benzene, toluene, ethylbenzene and xylene (BTEX).

Table 3-8: Potential workover fluid additives for each well

Product name*	Dangerous good	Hazardous substance	Estimate quantity/well	Concentration	Container size	Storage location
AMC BIOCIDE G	No	Yes	35L	0.02	20L package	Portable storage trailer in the chemical storage area
AMC RESI DRILL	No	No	0-710kg	0-15kg/m3	25kg package	
AMC XAN BORE (Guar Gum)	No	No	142kg	1-3kg/m3	25kg package	
Potassium Chloride	No	No	2,066kg	7.1	25kg Package	
Caustic Soda	Yes	No	200–1000kg	pH adjustment	25kg	
Acid (Hydrochloric or Citric Acid)	Yes	No	50–500kg	pH adjustment	25kg	

**Similar products may be utilised in the event a suitable alternative is identified subject to an environmental and safety risk assessment against the applicable Material Safety Data Sheet (MSDS).*

At each workover, a small volume (80–150bbls) of completion brine (2% KCl solution with 0.2Ibs/bbl biocide) will be left above the topmost packer. Completion brine will be mixed on site using the bunded mixing hopper before use.

3.9.4. Wastewater management

3.9.4.1. Formation wastewater

Water produced at MRN is not defined as “produced water” for the purposes of the Regulation or the Onshore Petroleum Code of Practice as all the wells are conventionally developed and do not require hydraulic fracturing.

Formation water at MRN is high in salinity, which results in total dissolved solids too high for beneficial reuse. Therefore, the formation water is sent to an end-point treatment system using lined solar evaporation ponds and precipitation of chloride salts and trace levels of metals, similar to evaporated seawater, in the endpoint isolation pond (see Figure 3-8.). This in-field treatment system is characteristic of many onshore petroleum developments and has been the practice at Mereenie since the petroleum field inception in the early 1980s.

3.9.4.2. Water management system

The gathering network of in-field pipelines at MRN connects the fleet of petroleum wells to the Central (CTP) or Eastern (ESS) processing facilities. Separators at these facilities separate any water co-produced from the petroleum formation, flowing under pressure from each of the producing wells. The separated process wastewater is discharged to an end-point treatment and isolation system of solar evaporation ponds at these two facilities. The ponds are designed as above-ground turkey nests with engineered and compacted bunds approximately 1.5m in height that are lined with impervious 2mm thick welded HDPE geo-membrane. The Grizzly Pond is a demountable 6ML above ground pond with a similar HDPE liner located to the south of the CTP. This pond provides additional surplus containment for wastewater if it is ever required. The total amount of wastewater produced and evaporated annually from the field (<~16ML) is modest compared to shale gas exploration wells, which is the primary focus of the NT Code. Because of the aridity of the region, the predictable modest volumes of wastewater from the field and the existing surplus pond capacity to evaporate, means secondary covered ponds for wastewater are superfluous and have not been utilised over the past 35+ years of operation in the Mereenie field.

All formation water produced from operation is directed to one of three wastewater treatment systems at the:

The **CTP wastewater treatment system** receives discharge from the separators at the CTP along with other process and cleaning water from areas such as the wash down bay and warehouse. The system also receives water from workover activities and other remote activities across the field where fluids management is required. The CTP system comprises four ponds: an interceptor pond, two holding ponds and an endpoint precipitation pond, with a total surface area of 4,835m2 for the evaporation ponds and total volume of 7,250m3. The system receives between 20 to 30kL/day from the CTP inlets, depending on activities across the field. Additional water volumes enter from the washdown bay located between the treatment system and the warehouse / workshop area. A total of <10ML/annum wastewater enters the CTP system. Annual average precipitation into the CTP system is <2.5ML. The annual evaporative capacity of the CTP system is >20ML/annum in this arid environment.

The CTP ponds have been progressively upgraded and relined with a HDPE 2mm thick liner since 2009. The CTP wastewater treatment system was constructed prior to the enacting of the Code and as such no leak detection system is in place. Given the longevity of the infrastructure (decades) and the engineered and highly compacted impervious clay nature of the substrate, which gives an additional

high level of protection makes a long-term leak detection system reliant on electronic signal, in a hypersaline environment redundant from a risk perspective. The operator has a comprehensive ongoing inspection program of the CTP wastewater treatment system including inspection of liner integrity and the surrounding environment for evidence of leaks or seepage. The system is built as an engineered compacted earth (>30% clay) bunded pond system with impermeable liners and situated above natural surrounding ground level, so any leaks would be visible as seepage at the foot of the bund. The system is fully fenced and gated to prevent large fauna entry. Fauna matting is located in each section of the pond system to allow fauna egress. The final evaporation/ precipitation pond operates as a saturated hypersaline fluid (~350,000 mg/l TDS) in which ongoing precipitation of a mixture of chloride salts onto the floor of the containment system occurs, year-round. This is a similar process to that occurring as an “endpoint” in naturally occurring drainage salt pans which are frequent in the region.



Figure 3-8: CTP Wastewater solar evaporation ponds

The **ESS wastewater treatment system** receives water from the ESS process area. The system comprises a primary interceptor pond and an evaporation pond, with both ponds lined and an approximate holding capacity of 5ML. A total of <1ML/annum wastewater enters the ESS system. Recent changes to the arrangement of flowlines and processing at the ESS has meant that volumes entering the ESS have been decreasing in recent years. Annual average precipitation into the ESS system is <2.5ML. The annual evaporative capacity of the ESS system is >20ML/annum in this arid environment.

The ESS wastewater treatment system was constructed prior to the enacting of the Code and as such no leak detection system is in place. Although no electronic leak detection system is in place for reasons as discussed for CTP, the operator has a comprehensive ongoing inspection program of the ESS wastewater treatment system liner integrity and surrounding environment for evidence of leaks or seepages. The system is built as an engineered compacted earth bunded pond system with impermeable liners and situated above natural surrounding ground level, so any leaks would be visible as seepage at the foot of the bund. The system is fully fenced and gated to prevent large fauna entry. Fauna matting is located in each section of the pond system to allow fauna egress. The final evaporation/precipitation pond operates as a saturated hypersaline fluid (~350,000 mg/l TDS) in which ongoing precipitation of a mixture of chloride salts onto the floor of the containment system occurs,

year-round. This is a similar process to that occurring in naturally occurring drainage salt pans which are frequent in the region.



Figure 3-9: ESS Wastewater solar evaporation ponds

The **Grizzly Pond** is a surplus capacity evaporation pond located to the south of the CTP. The pond receives flows from the CTP evaporation pond and acts as a secondary containment and evaporation point when the capacity at the CTP pond needs to be increased. Transfer between the ponds is via pump and a series of surface flowlines. The Grizzly Pond has a total volume of approximately 5,500m^3.



Figure 3-10: Grizzly pond Wastewater solar evaporation pond

Table 3-9: Mereenie production wastewater facilities specifications and water analysis

Specification	CTP	ESS	Grizzly
Geo-membrane Liner Material	HDPE - 2000µ	HDPE - 2000µ	HDPE - 2000µ
Liner coefficient of Permeability	< 10-9 m/s	< 10-9 m/s	< 10-9 m/s
Resistance to tearing	>0.5kN	>0.5kN	>0.5kN
Static puncture	>0.5kN	>0.5kN	>0.5kN
Volume (m3)	7,250	5,000	5,500
Area (m2)	4,835	5,000	2,500
Capacity (m3) with 50cm freeboard	~5,000	~5,000	~5,000
Annual Input (m3)	<10,000	<1,000	Surplus
Annual average evaporation capacity (m3)	>20,000	>20,000	>10,000
Minimum freeboard_90 day (cm)	50	50	50
Total dissolved solids (mg/l)	330,000	384,000	
Chloride (mg/l)	147,000	167,000	
Calcium (mg/l)	43,100	47,400	
Sodium (mg/l)	50,200	45,000	
Potassium (mg/l)	8,780	21,600	
Total petroleum hydrocarbons (ug/l)	27,800	68,300	
Total PAH	N.D.	N.D.	
BTEX	N.D.	N.D.	

3.9.4.3. Freeboard management

The Code (C.7.1.1) requires an estimate of the 1 in 1000 ARI (0.1% Average Exceedance Probability (AEP)) rainfall rate using Australian Rainfall methodologies (Ball et al., 2019) to maintain a freeboard for wastewater storage for the critical period resulting in the highest risk of overtopping.

The 1 in 1000 (0.1%) year AEP for a 90-day cumulative rainfall event for MRN, based on available historical daily rainfall records at Watarrka covering a period from 1990 to 2022 (BOM Site 015652), is estimated to be approximately 500mm as shown in Figure 3-11. The equivalent highly conservative (P10%) evaporation estimate occurring over the same 90-day period is 340mm, resulting in a calculated freeboard requirement (maximum 90-day potential cumulative net depth increase) of 160mm, should such an extreme event occur.

The operator has implemented the maintenance of a conservative freeboard of 500mm across all the evaporation ponds at MRN. This is good practice to manage potential risk of overspray from pond wavelets during periods of high winds. This freeboard exceeds the Code requirements based on a 90-day 0.1%AEP for rainfall in the region.

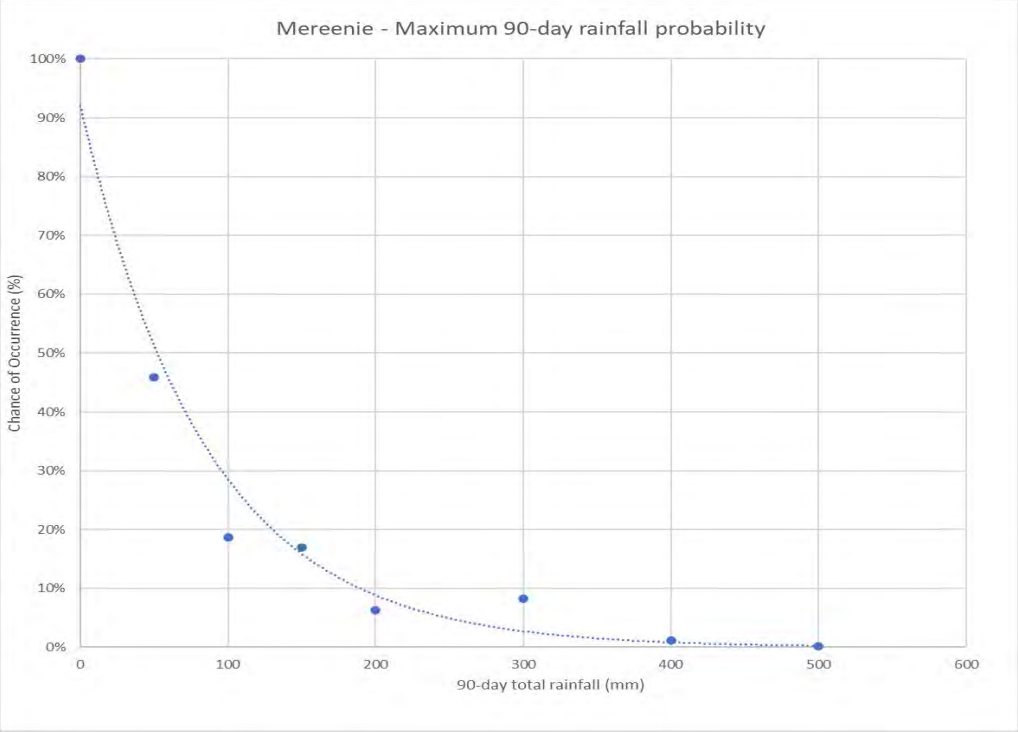


Figure 3-11: 90-day total rainfall probability estimates for Mereenie based on Watarkka 1990 to 2022 (BOM Site 015652).

3.9.4.4. Monitoring of Process Wastewater Systems

The formation water that is extracted from the reservoir together with petroleum at MRN is not defined as “produced water” for the purposes of the Regulation of the Onshore Petroleum Code of Practice. The Code specifically requires all *“produced water and flowback fluid” from hydraulic fracturing operations to be held in above-ground enclosed tanks*. The monitoring required in the Code is also aligned with wastewater arising specifically from hydraulic fracturing. This clause is not relevant at MRN where all the petroleum wells are conventionally developed and do not require hydraulic fracturing.

A general characterisation of the proximate analysis of the formation water in the treatment systems, prior to precipitation of salt, is provided in Table 3-9. As noted, it is a saturated chloride salt solution with trace hydrocarbons. There are no elevated metals or other contaminants of potential concern. Given that the endpoint in the MRN process wastewater treatment systems is isolation of in-situ

precipitated salts, ongoing analysis of this wastewater will provide no new information. The quality of the salt is most unlikely to vary significantly.

As noted previously, daily inspections of system integrity, fauna interaction and freeboard levels are taken at each wastewater treatment system. Anomalies are logged in the operator's HSE system for corrective action if required. Wastewater tracking will be provided annually with required environmental reporting.

3.9.4.5. Workovers

Workover fluids are likely to be the only wastewater produced during workovers at existing well sites. DME requires the operator to ensure enough workover fluid and a weighting agent at the wellsite is available to "kill" the well in the event of an emergency/loss of containment during workovers.

the operator will use water sourced from onsite bores for use in workover fluid, along with a small amount of biodegradable biocide and potassium chloride (KCl). Workover fluid will not be mixed with any oil or BTEX based additives.

If the work over fluid is not required at a particular well site, the unused water will be used at another well site in the mud tank or disposed of in one of the field evaporation ponds. The anticipated total volume of workover fluid required is approximately 400bbls (0.063ML) per annum.

While undertaking routine[2] air/mist workovers at a well site, retrieved debris/fill/materials will be discharged into a flare tank (via the blooie line) at the well site. Once flaring commences any incidental small volumes of liquid within the flare pit is vaporised (not expecting water to be discharged as little water is present in gas cap at MRN). For larger workovers (i.e. flow rate > 5TJ/day anticipated) a flare pit will be utilised which will be lined with an impervious clay material and hydrotested prior to operation. Only once the flare pit has passed a hydrotest will workover activities be able to commence. Upon completion of the workover, discharged materials can be removed from the flare tank / pit and disposed or recycled at an approved facility. In both cases, volume markers will be applied to the flare tank / pit to ensure visual inspections can accurately determine whether a leak has / is occurring. Visual inspections will be undertaken, at minimum, daily.

When drilling and associated activities have been completed on the site, the lined sumps (drill sump) and flare pit are left to dry out. The dried cuttings from the flare pit are transferred to the lined drill sump before both the sump and flare pit are backfilled, capped with soil from the site and rehabilitated with vegetation regrowth.

This management system for on-site burial is based on analyses and reporting from Mereenie development wells drilled in previous years at WM27 and WM28 and provided to DLPE. The drilling waste report was prepared in compliance with the Code by suitably qualified third-party assessors. The report confirmed the classification of the Mereenie drilling sump material, which includes cuttings and residual drilling fluid, as General Solid Waste (inert) with no elevated Contaminants of Potential Concern (CoPC).

The Mereenie drilling waste is classified as suitable for unconfined burial, i.e., landfill. Given the remoteness of Mereenie and the inert nature of the material, in situ burial of the drilling waste material, capping with topsoil and revegetation at the well site is both the most practicable and ALARP.

Treatment options for drilling wastes/cuttings include mix, bury, cover or remediation through the application of suitable ameliorants as determined through analytical testing and assessment of the material.

[2] Routine workovers include all wells with a flow rate of less than or equal to 5TJ/day

3.9.5. Waste management

3.9.5.1. Solid waste

Typical wastes and the approach to their management are outlined in Table 3-10.

Table 3-10: Waste management approaches

Typical Waste	Waste Management Approach
Comingled waste/general waste (including food, paper, plastics)	**Dispose** Skip bins contain comingled waste for disposal via licensed waste contractor to Alice Springs disposal facility.
Chemical storage containers	**Dispose** ▪ Dispose via licensed waste contractor to disposal facility ▪ Return to suppliers for re-use where suitable
Contaminated soil	**Treatment** Dispose to bio-remediation pit for landfarming
Drink containers (glass, aluminium, plastic)	**Recycle/Donate** Plastic drink containers are donated to social enterprises within the Alice Springs area under the Container Deposit Scheme
Glass and cans	**Recycle** Store in recycling bins for transport to approved recycling facility
Integrated Bulk Containers (IBC)	**Reuse/Dispose** ▪ Re-used/re-purposed where possible as storage containers for other waste materials ▪ Return to suppliers or disposed at approved facility
Oily rags, oil contaminated material, filters, greases and any other hydrocarbon containing material	**Recycle/Dispose** Stored in a secure area for collection and transport to an approved recycling facility or disposal facility
Scrap metal	**Recycle/Reuse** ▪ Stored in recycling bins or designated laydown areas for collection and transport to an approved recycling facility ▪ Transported off-site for re-use where vendors are identified ▪ Re-used/re-purposed within the field where possible
Sewage, grey water	**Treat / Dispose** ▪ Greywater and sewage are treated using an on-site wastewater system to secondary level prior to disposal of treated effluent to a small pond for evaporation/dust suppression. ▪ Temporary facilities may be installed at well facilities. ▪ Biosolids are removed by a licensed waste contractor and disposed of at an approved facility. ▪ Any portable greywater and sewage treatment systems and disposal of treated effluent (via irrigation or evaporation) will be as per the Department of Health's Code of Practice for onsite wastewater management.
Timber (including pallets)	**Recycle / Dispose** Hardwood pallets to be stored in a secure area and either re-used on site, returned to supplier where possible, or transported and disposed at an approved disposal facility. Pallets that are damaged or made from light-grade timber may be burned in a designated burn pit under controlled conditions. A valid fire permit is required, weather and site conditions must be suitable, a fire

Typical Waste	Waste Management Approach
	truck must be on standby during burning operations and burning must be done in accordance with the Bushfire Management Plan
Vegetation and Wood Waste	May be burned in a designated burn pit under controlled conditions. A valid fire permit is required, weather and site conditions must be suitable, a fire truck must be on standby during burning operations and burning must be done in accordance with the Bushfire Management Plan.
Used production tubing, well lines, pipes, wellhead equipment, safety systems	**Dispose** Storage (e.g. pipe racks) and containment (e.g. skip bins) facilities for replaced production tubing, well liners and other wastes from the activity
Used spill kit materials	**Dispose** Stored in a secure waste disposal area/container for collection and transport to an approved disposal facility
Workover fill/cuttings/ Drilling currings	**Recycle/Treat/ Dispose** Remaining fluids stored in lined sump/flare pit and evaporated. Solids disposed either off site at an approved facility. When drilling and associated activities have been completed on the site, the lined sumps (drill sump) and flare pit are left to dry out. The dried cuttings from the flare pit are transferred to the lined drill sump before both the sump and flare pit are backfilled, capped with soil from the site and rehabilitated with vegetation regrowth. Treatment options for drilling wastes/cuttings include mix, bury, cover or remediation through the application of suitable ameliorants as determined through analytical testing and assessment of the material.

3.9.5.2. Waste laydown area

A waste laydown area is located to the south of the CTP. This area is used for the storage of scrap metal, timber and redundant plant and infrastructure for re-use or until bulk removal can occur.

3.9.5.3. Bioremediation (landfarm)

Approximately 2.6km south-east of the CTP are the bio-remediation pits ('bio-pits'). This facility comprises three cells of approximate dimensions 60m x 6m, with a depth of 1 to 2m (one active, one suspended from new material, one closed). The bio-pits are used for the rotation of potentially contaminated soil (including those which are contaminated with hydrocarbons from spills) and some liquid wastes such as cooking fats. Cell contents are periodically worked. Where appropriate, nutrients (fertiliser) and kitchen wastes are mixed into the soils to assist in the bio-remediation process.

3.9.5.4. Sewage / grey water

Grey and black water from the camp is directed to an on-site wastewater system. Wastewater is treated to a secondary level. The treated effluent is then transferred to a small dam for evaporation/irrigation/dust suppression, or if required, excess wastewater is transported for off-site disposal by an approved waste contractor. Grey and black water from the CTP and ESS areas are treated by individual septic systems, with excess water released through underground rock drainage irrigation fields.

Temporary facilities may be established as required for workovers at well locations. Any portable greywater and sewage treatment systems installed at the workover wellsite office facilities will be operated as per the Department of Health's Code of Practice for onsite wastewater management.

3.9.5.5. Waste tracking

Any listed wastes or by-products from on-site wastewater systems that require disposal off site are transported and disposed of in accordance with the requirements of the Waste Management and Pollution Control Act 1998 and the Radiation Protection Act 2004.

3.9.6. Greenhouse gas emissions

The worst-case forecast emissions from operations and workovers at Mereenie over the next five years, incorporating the proposed temporary flaring of up to 400 barrels per day of liquid hydrocarbons, is 643,200 tCO_2-e.. This updated forecast reflects the inclusion of liquids flaring as a contingency measure required to maintain gas production during periods where off-site hydrocarbon offtake is constrained.

Under the 2025/26 NGERs reporting period, Central Petroleum recorded 55,486tCO_2-e attributable to Mereenie (Scope 1)

The proposed allowance to flare up to 400 bpd of liquid hydrocarbons results in an additional 56 ktCO_2-e per annum above current operating conditions at Mereenie, increasing annual Scope 1 emissions to approximately 116 ktCO_2-e per year during a worst case flaring scenario.

Actual flaring has historically remained well below forecast, with only 21 days in FY2024/25, 22 days in July 2025, and 18 days in August 2025 requiring flaring activity. Once alternative offtake arrangements, reinjection, or arsenic-removal solutions are implemented, emissions are expected to return to baseline operational levels with flaring only proposed as a last resort should alternative options unexpectedly not be available.

All emissions estimates have been calculated using NGERs Measurement Determination requirements and validated by an independent third-party consultant for accuracy in annual NGERs submissions (reported 31 October).

Updated forecast emissions for Mereenie by year—including revised flaring values of 67,200 tCO_2-e for FY27 and 67,200 tCO_2-e for FY29—are presented in Table 3-11 of this EMP revision

Table 3-11: Forecast emissions for Mereenie Field

Mereenie emissions	Forecast volume t CO2e					Methodology and assumptions
	FY27	FY28	FY29	FY30	FY31	
Fuel gas	35,000	35,000	35,000	35,000	35,500	Steady state
Diesel usage	1,200	1,200	1,200	1,200	1,200	Steady state
Development wells including associated activities	10,000	-		-	-	Dev wells 31/32 Anticipated CY27
Fugitive	300	300	300	300	300	Steady state
Workovers	1,800	1,800	1,800	1,800	1,800	Diesel + flaring approx.. 900tCO2 per well
Wells	300	300	300	300	300	Steady state
Gathering	2,500	2,500	2,500	2,500	2,500	Steady state
Flaring	67,200	67,200	67,200	67,200	11,200	Includes liquids flaring up to 400 bpd, forecast additional 56ktCO2e emissions a year
Total	118,300	108,300	108,300	108,300	50,500	

As displayed in Figure 3-12, it is possible that under worst-case forecast emissions the operator may breach the threshold as a large emitter.

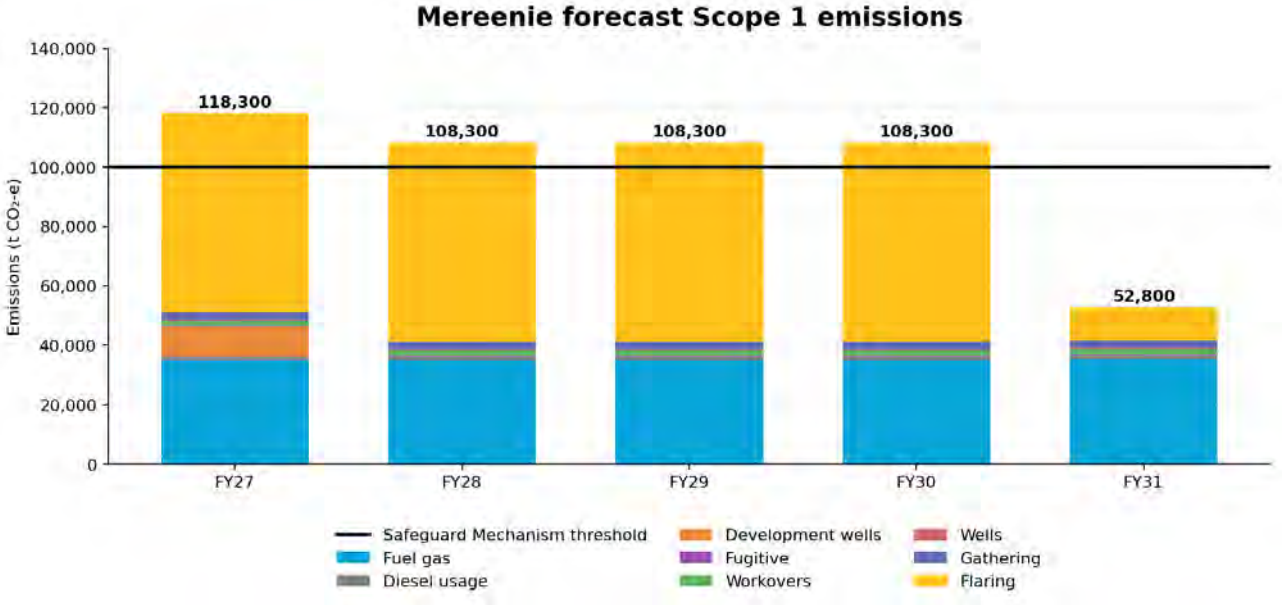


Figure 3-12: Forecast emissions aligned with Safeguard Mechanism threshold

Greenhouse gas emissions generation will be mitigated through adoption of the Code requirements as required and implementation of a Methane Emission Management Plan (MEMP) (Section 7.8).

3.10. Mereenie to Alice Springs Pipeline

The Mereenie to Alice Springs Pipeline (MASP) was used to transfer the produced crude oil from Mereenie to the Brewer Estate Crude Oil Terminal at Alice Springs for on-shipment by road or rail to refineries. The pipeline was commissioned in 1986.

The MASP is a 269km 8” nominal diameter steel pipe coated with a protective tape wrap. The MASP facilities consisted of a pumping station at the Mereenie CTP, a scraper station midway along the pipe, automatic isolation valves at river crossings, and a back-pressure control system at the pipeline terminal at Brewer Estate Crude Oil Terminal. The pipe has cathodic protection, powered by three solar impressed current units located along the length of the pipeline.

The MASP was hydro-suspended in 2009 and is currently in a state of care and maintenance. All oil was previously flushed from the MASP and replaced with a mix of groundwater, biocide and corrosion inhibitor. The pipeline is managed in accordance with the Pipeline Management Plan – Mereenie to Alice Springs Pipeline (9940-200-PLN-0001).

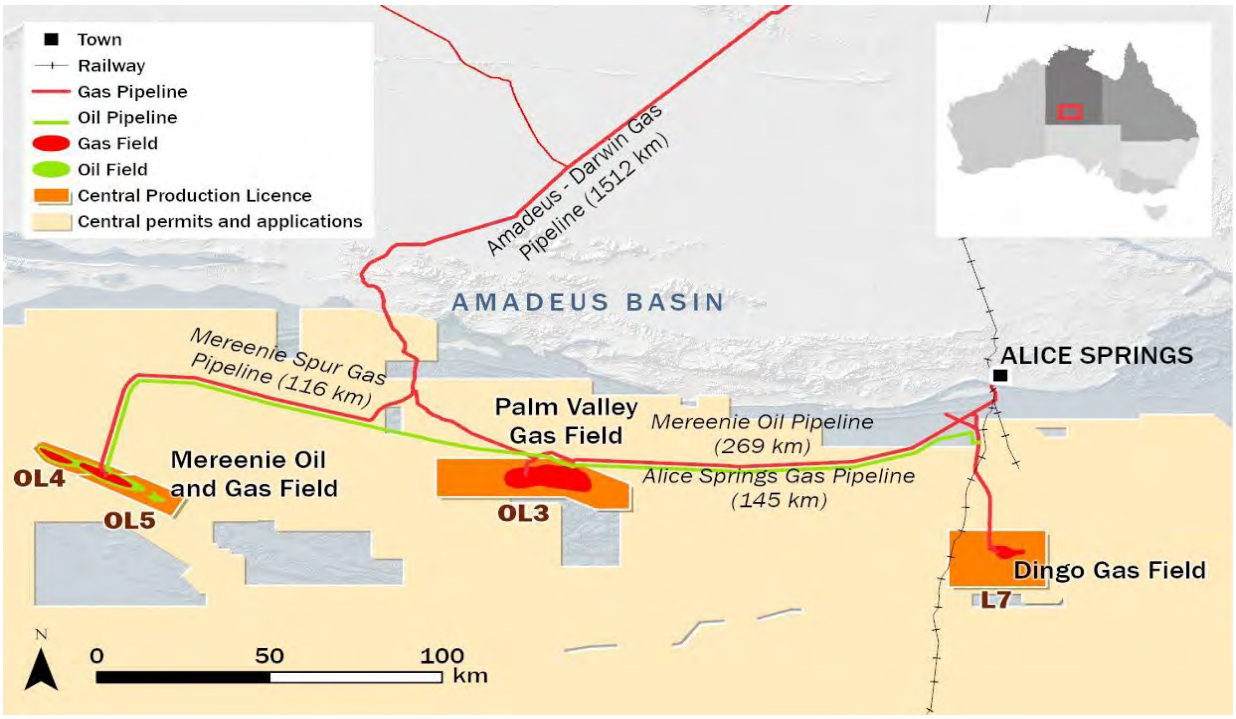


Figure 3-13: Amadeus Basin Energy Pipelines (including MASP)

4. Existing environment

A description of the physical, natural, and socio-economic environment across the Mereenie Field is provided in the following sections. A combination of desktop and baseline historical understanding from the long-term exploration and production across the field to develop a description of the current environment to provide context for the environmental management of the activities conducted under this EMP. Where changes to the existing environment arise for the duration of the EMP, these will be reviewed in conjunction with environmental risk assessment and addressed in accordance with the Petroleum (Environment) Regulations 2016.

Previous identification of the existing environment and the potential for impact from the development of the Mereenie Field has been completed as the field has been developed. The area has been subject environmental assessment since the 1980s, with the most recent assessment conducted in 2020 for

assessment of the West Mereenie 27 and West Mereenie 28 wells (NT Drilling Campaign EMP, Central Petroleum, 2020).

Environmental Sensitivity Maps have been prepared (Appendix D) for each of the wells showing the environmental values of importance around each well and to assist in interpretation of the risks posed and the management controls being implemented across the field.

4.1. Physical environment

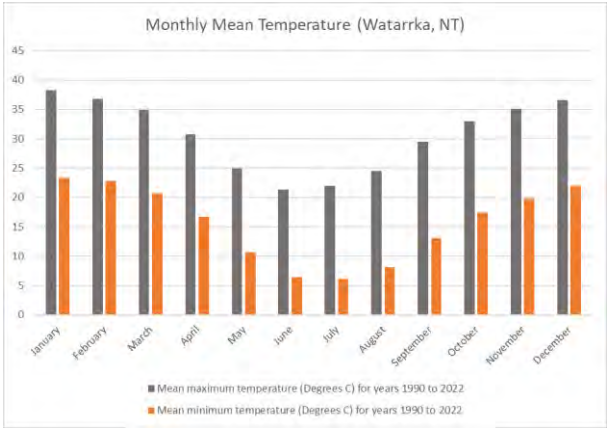
4.1.1. Climate

Climate data (Figure 4-1) has been summarised using the available data from the nearest Bureau of Meteorology (BOM) weather station at Watarrka covering a period from 1990 to 2022 (BOM Site 015652) and supplemented by the Alice Springs Airport station (BOM Site 015590) where a verified data set is available.

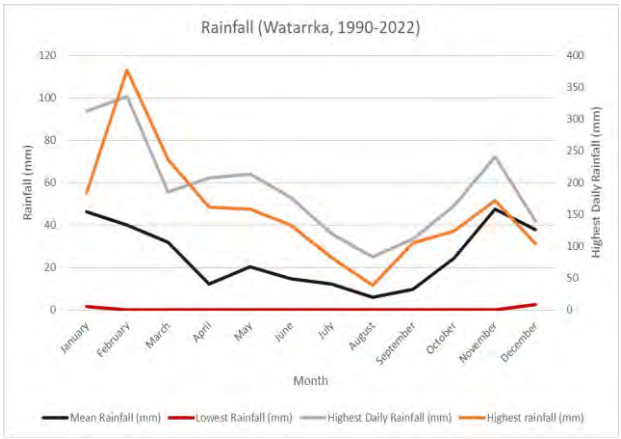
The Mereenie Field experiences an arid to semi-arid climate which is characterised by hot dry summers and cool dry winters with low average total annual rainfall of approximately 310mm during the last 3 decades.

Typically, more rainfall occurs in the summer months associated with monsoonal influences from the north, however the amount of rainfall in the central arid zone has a history of being highly variable as it is influenced by several continental weather systems. Wind direction tends to be from south-easterly direction in the afternoons, with westerly winds evident in late winter and into spring.

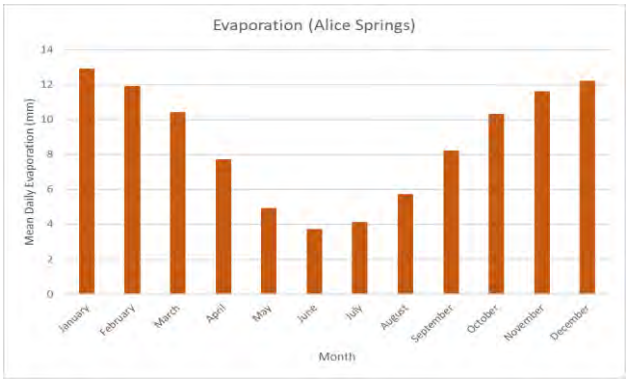
The high variability in climatic conditions has the potential to influence rehabilitation and the occurrence and recovery from bushfire. Long term periods with low rainfall have also been shown to impact biodiversity in the Mereenie Field. In addition, periods of high intense rainfall can impact exposed areas and increase the potential for erosion and sedimentation impacts on the surrounding land and watercourses.



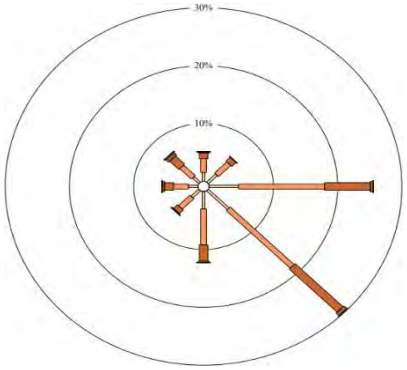
Mereenie average temperatures



Mereenie average rainfall



Mereenie average evaporation rates



Mereenie prevailing wind conditions

(Source: BOM, 2022)

Figure 4-1: Climate indicators for Mereenie Field

4.1.2. Land systems, geology and soil

4.1.2.1. Geology

Mereenie is located within the Amadeus Basin, an east-west trending sedimentary basin extending across the southern part of the Northern Territory and into Western Australia and a known hydrocarbon and groundwater resource, hence the presence of the Mereenie Oil and Gas Field. The basin covers approximately 170,000km3 and a maximum sediment thickness of 14,000m with several major depocenters including the Idirriki, Carmicheal and Ooraminna Sub-basins and Missionary Plain Trough along the northern margin and the Mount Currie and Seymour Sub-basins in the south (Geoscience Australia, 2020). It is bound in the north by the Arunta complex and in the south by the Musgrave-Mann complex, both containing granite, gneiss and schists, with amphibolite and quartzite. The general stratigraphy of the Amadeus Basin is shown Figure 4-2.

Rocks within the Mereenie Field tend to be sandstones with some siltstones covered by superficial soils. Hydrocarbons occur in the sandstones at depths ranging between 1200 and 1500m in this area.

MASP and Brewer Estate Oil Yard

The majority of the MASP has been constructed on quaternary undifferentiated sediments of aeolian sand and thin deposits of alluvium. Brewer Estate overlies an area characterised by quaternary sediments and conglomerates, sandstones and siltstones.

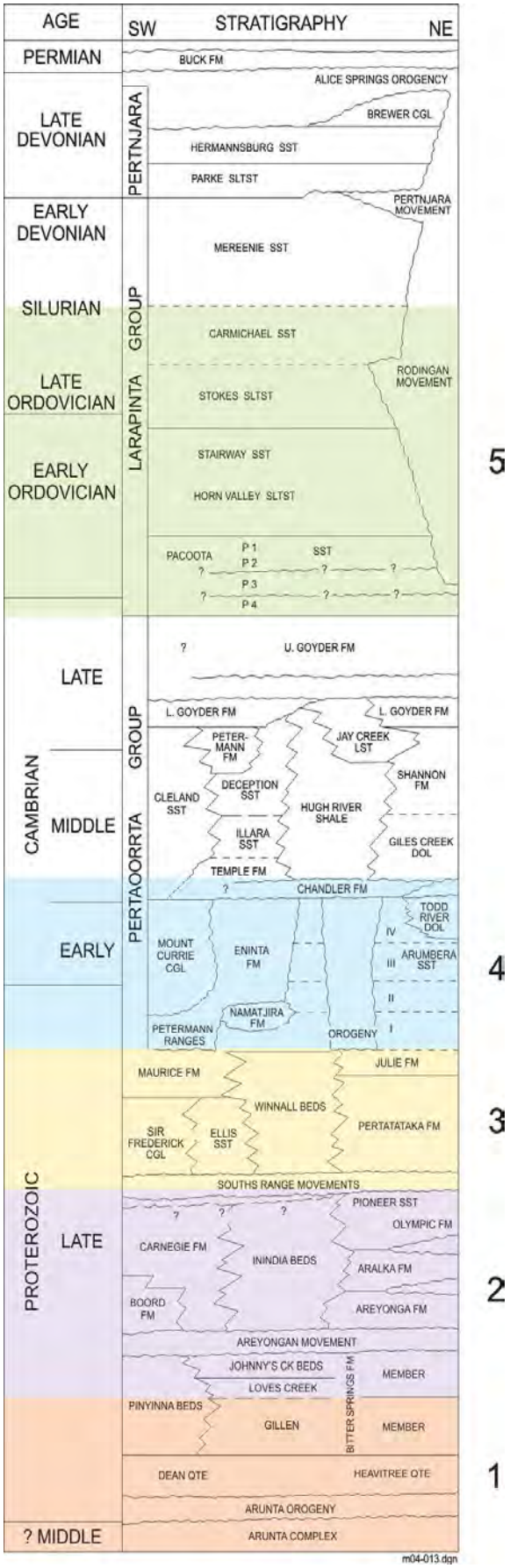


Figure 4-2: Stratigraphy of Amadeus Basin

4.1.2.2. Regional soils

Three soil types, as mapped using data from the Digital Atlas of Australian Soils, (based on Northcote, et al. 1960-1968) dominate across the Mereenie field. Table 4-1 provides a description of these soil types with Figure 4-3 showing the location of Mereenie relative to soil types.

Table 4-1: Mereenie soil units

Soil Type	Landform	Soils
AB31	Flat to gently undulating sand plains with some low broad sand rises and intervening swales; some small alluvial flats, some clay pans; and some stone – covered	Chief soils are red earthy sands on the plains and swales. Red siliceous sands on the sand rises. Small areas of sandy red earths occur on the plains, in the swales and on the alluvial flats. Other soils include shallow stony on the stone covered ridge.
AB62	Sandy plains with alluvial areas along waterways; occasional dunes	Chief soils are red earthy sands
BA28	Bold ranges, ridges, cuestas and hills on sandstones and quartzites	Chief soils are shallow stony sands

MASP and Brewer Estate Oil Yard

Soils across the length of the MASP have been mapped previously through desktop research and verified through on-ground surveys. The three principal soils identified along the pipeline are red earths, siliceous sands and alluvial soil. Brewer Estate is dominated by calcareous earths.

4.1.2.3. Land systems

A land system is an area or group of areas where a recurring pattern of topography, soil and vegetation occurs (Christian and Stewart, 1968). Land system descriptions provide a general and consistent basis for determining potential habitat types within the region and provide a guide for erosion hazard in the area. The majority of the western section of the Mereenie Field (aligning closely with OL4) is located within the Simpson land system and is characterised by spinifex covered sand dunes where the erosion hazard tends to be low. The eastern field is located predominantly within the Gillen land system which combined with extensive drainage lines results in known areas of moderate erosion potential which continue to be monitored and maintained as part of operational civil activities.

The land systems within Mereenie include the Simpson, Krichauff and Gillen as described in Table 4-2 and shown in Figure 4-4.

Table 4-2: Description of land systems

Extent	Land System	Description	Geology	Topography	Soils	Erosion Hazard
10%	Krichauff	Sand plains with dunes, occupying the northwest part of the Mereenie Field	Flat lying sandstone, siltstone and conglomerate. Upper Proterozoic age, Amadeus trough (Heavitree quartzite)	Partially dissected erosional weathered land surface; relief up to 500ft	Shallow stony or gravelly soils and some red sands or red clayey sands	Moderate erosion hazard

Extent	Land System	Description	Geology	Topography	Soils	Erosion Hazard
45%	Simpson	Sandstone plateaus, eroded and dissected, forming margins to the southeast part of the Mereenie Field	Extensive dune fields with hard spinifex pastures	Sand dunes of varying height and alignment, up to a maximum of 70ft in the Simpson Desert section	Red sands to red clayey sands and locally red earths	Low erosion hazard
45%	Gillen	Sandstone strike ridges and intervening valleys in the southern part of the Mereenie Field	Sandstone mountains with mulga or witchetty bush country	Partially dissected erosional weathered land surface; relief up to 500ft	Shallow stony or gravelly soils and some red sands or red clayey sands	Moderate erosion hazard

Source: Perry, et al., 1962

MASP and Brewer Estate Oil Yard

The MASP crosses the three land systems associated with the Mereenie Field, but also crosses the Singleton, Stokes, Deering, Muller and Finke land systems. Closer to Alice Springs it crosses the Muller and Ewaninga land systems before entering the Brewer Estate Oil Yard.

Threatening processes on the land systems along the MASP include co-location of pastoral activities, recurring fires, grazing from feral pest species including horses and camels and the need to maintain a ROW clear of vegetation to meet industry pipeline integrity standards. These activities combine to increase erosion and sedimentation potential.

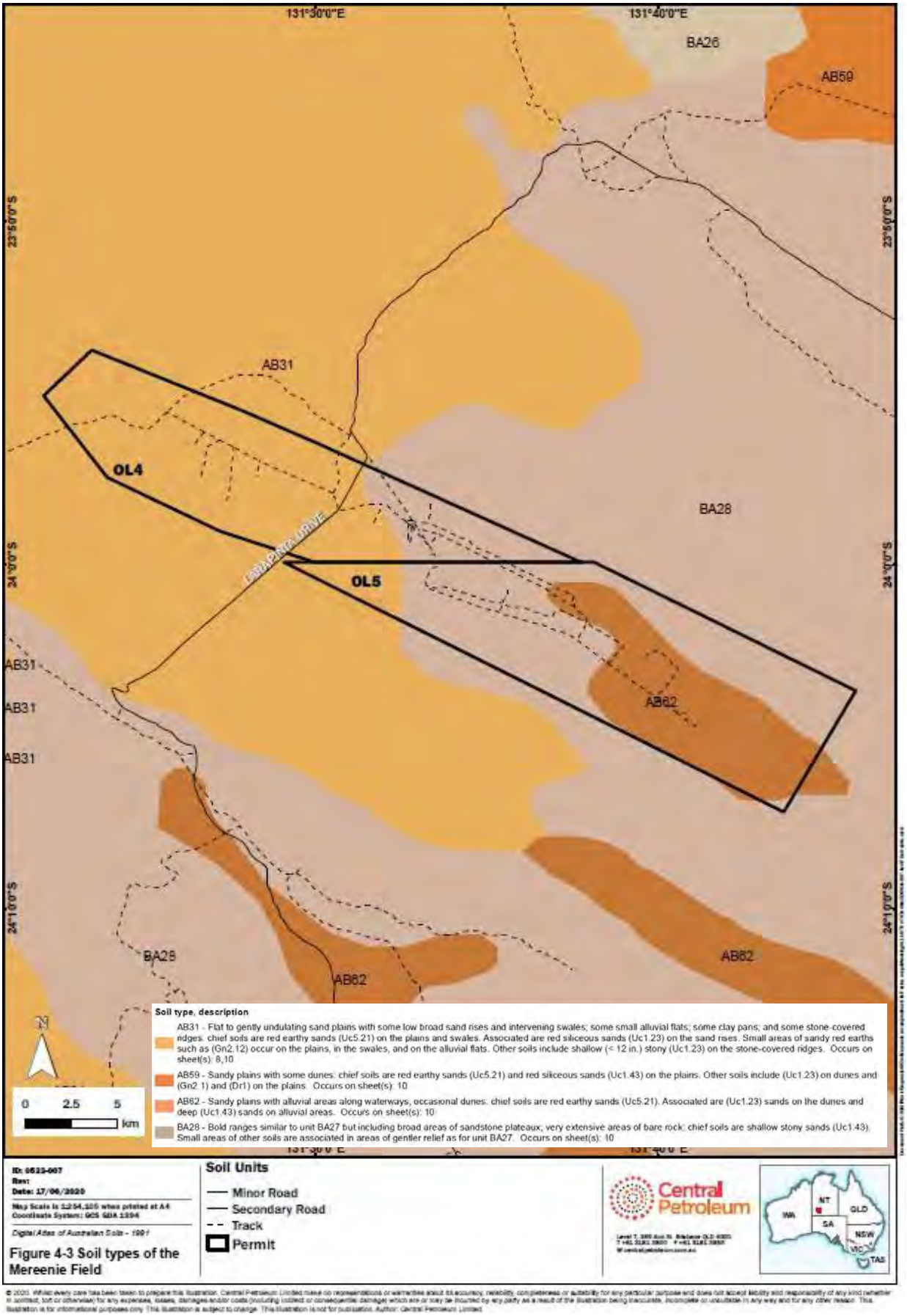


Figure 4-3: Soil types of the Mereenie Field

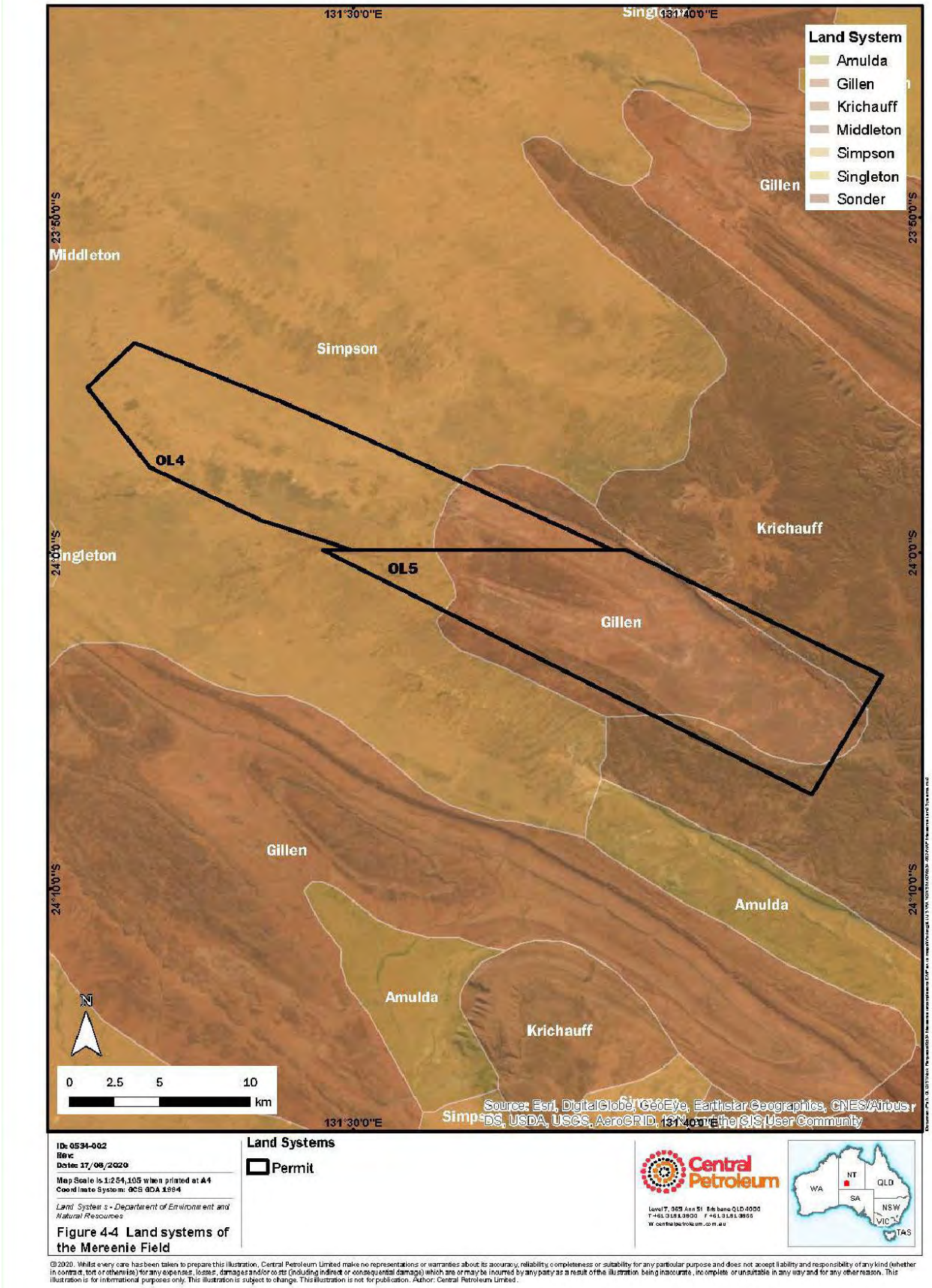


Figure 4-4: Land systems of the Mereenie Field

4.1.3. Groundwater

Mereenie is located in the north-central area of the Amadeus Basin, which is described by Lloyd and Jacobson (1987) as including a series of stacked regional scale formations that have good groundwater supply potential. These formations include the Hermannsburg Sandstone, Mereenie Sandstone and the Pacoota Sandstone, which are shown in the context of the Amadeus Basin stratigraphy in Figure 4-2.

The local surface geology of Mereenie is shown in Figure 4-5. The Hermannsburg Sandstone has been eroded at Mereenie well locations, so it is not penetrated by any of the wells but based upon the elevation of the ridge line on the eastern margin of Mereenie, the Hermannsburg Sandstone is approximately 120m thick.

The Parke Siltstone, which underlies the Hermannsburg Sandstone, has limited thickness and low groundwater potential, however it does provide a low permeable barrier to vertical infiltration to the underlying Mereenie Sandstone (Water Studies, 2001).

The most significant groundwater resource in the area is the Mereenie Sandstone, a loose, fine to very coarse-grained quartz sandstone that reaches a thickness of 320 to 649m in Mereenie and forms the water table beneath the well sites. Groundwater within the Mereenie Sandstone was found to occur at an average measured depth of greater than 200m below ground level at Mereenie wells (see Figure 4-6, which shows the wells which intersected the Mereenie Sandstone groundwater during drilling. Wells not shown (EM10, EM23, EM24, EM41, WM26) did not present any groundwater and therefore are not shown on the map). The generalised flow of the Mereenie Sandstone groundwater resource is in a south-easterly direction, though local features affect this pattern (Water Studies, 2001).

The Mereenie Sandstone is a regionally extensive groundwater resource and is of significance in the north-east of the Amadeus Basin where it provides the water supply for Alice Springs. The Mereenie Sandstone is the only aquifer in Mereenie as defined by the Code. Bore yields of up to 100L/s have been recorded in the aquifer at Roe Creek (Alice Springs), though this is attributed to very high secondary permeability (Macqueen and Knott, 1982) and is not representative of the aquifer regionally.

Locally, Jameison and Wischusen (1998) class the formation as having moderate bore yields (1–5L/s) while Read (2007) reports on range of 1.5–10L/s from 15 bores. Water quality of the Mereenie Sandstone is variable but in Mereenie is generally of good potable drinking water quality. Read (2007) suggests that diffuse recharge accounts for the majority of active recharge to aquifer and estimated rates are in order of 1 mm/year. Aquifer transmissivities of up to 4,000m2/day have been observed in the Mereenie Sandstone though 600m2/day is considered representative at a regional scale (Macqueen and Knott, 1982).

The Mereenie Sandstone overlies and is in limited hydraulic connection with the Carmichael Sandstone (Lloyd and Jacobson, 1987), which comprises interbedded sandstone, siltstone and mudstone. The formation contains limited groundwater resources and is of notably lower permeability than the overlying Mereenie Sandstone. Underlying the Carmichael Sandstone is the Stokes Siltstone, which locally is more than 300m thick. Groundwater in the Stokes Siltstone is low yielding and is not commonly used as a water resource. The Stokes Siltstone forms a reservoir seal that isolates gas resources in the underlying Stairway Sandstone from the Mereenie Sandstone.

The Pacoota Sandstone underlies the Horn Siltstone, which separates it from the overlying Stairway Sandstone. The Pacoota Sandstone is both a gas and oil reservoir within Mereenie. Lloyd and Jacobson (1987) report that saline and overpressure groundwater underlies the oil resource in the Pacoota Sandstone. Local flow directions in the vicinity of Mereenie are complex, as a result of compartmentalisation of the aquifer due to cross faulting (Lloyd and Jacobson, 1987).

The potential for groundwater recharge from localised rainfall/runoff events is considered low, and the majority of recharge to aquifer systems is from localised fracture zones, areas of enhanced permeability susceptible to floods or from palaeowater recharged during the late Pleistocene (Water Studies, 2001).

Table 4-3 provides a summary of the formation depth, thickness and groundwater potential of formations beneath Mereenie wells from the Parke Siltstone to the Pacoota Sandstone. In terms of

potential impacts to groundwater, the depth of the groundwater (86-384 mTVD but typically >200mTVD) and the presence of the impervious Parke Siltstone above the Mereenie Sandstone provides some protection against contamination from surface level spills.

Table 4-3: Stratigraphy and groundwater across the Mereenie Field

Formation	Depth min/ max (mTVD)*	Thickness Min-max (m)+	Lithology	Groundwater availability	Water quality^
Parke Siltstone	0	5/285	Micaceous siltstone with minor thin interbeds of litho-feldspathic quartz sandstone	Poor	Not known
Mereenie Sandstone	0/285	320/649	Porous quartz sandstone	Regional aquifer	Fresh
Carmichael Sandstone	337/777	58/106	Interbedded sandstone, siltstone and mudstone	Limited	Not known
Stokes Siltstone	418/865	298/379	Claystone, siltstone	Poor (Aquitard)#	Not known
Stairway Sandstone	740/11,184	211/286	Silty sandstone with interbedded siltstone	Gas reservoir	Not known
Horn Valley Siltstone	1001/1,426	58/89	Claystone with interbedded marl and limestone	Poor (Aquitard)#	Not known
Pacoota Sandstone	1076/1,489	278/332	Quartz sandstone with minor claystone	Oil/Gas reservoir	Saline

** TVD = True Vertical Depth, the absolute distance from the top of the borehole at ground elevation to the top of the formation. TVD is always less than measured depth unless the bore is drilled perfectly vertical.*

+ Thickness and depth values taken from existing well penetrations across the field

^ Water quality assessment is based on existing bore data and the regional sources

 # Designation of aquitard based on dominant lithology

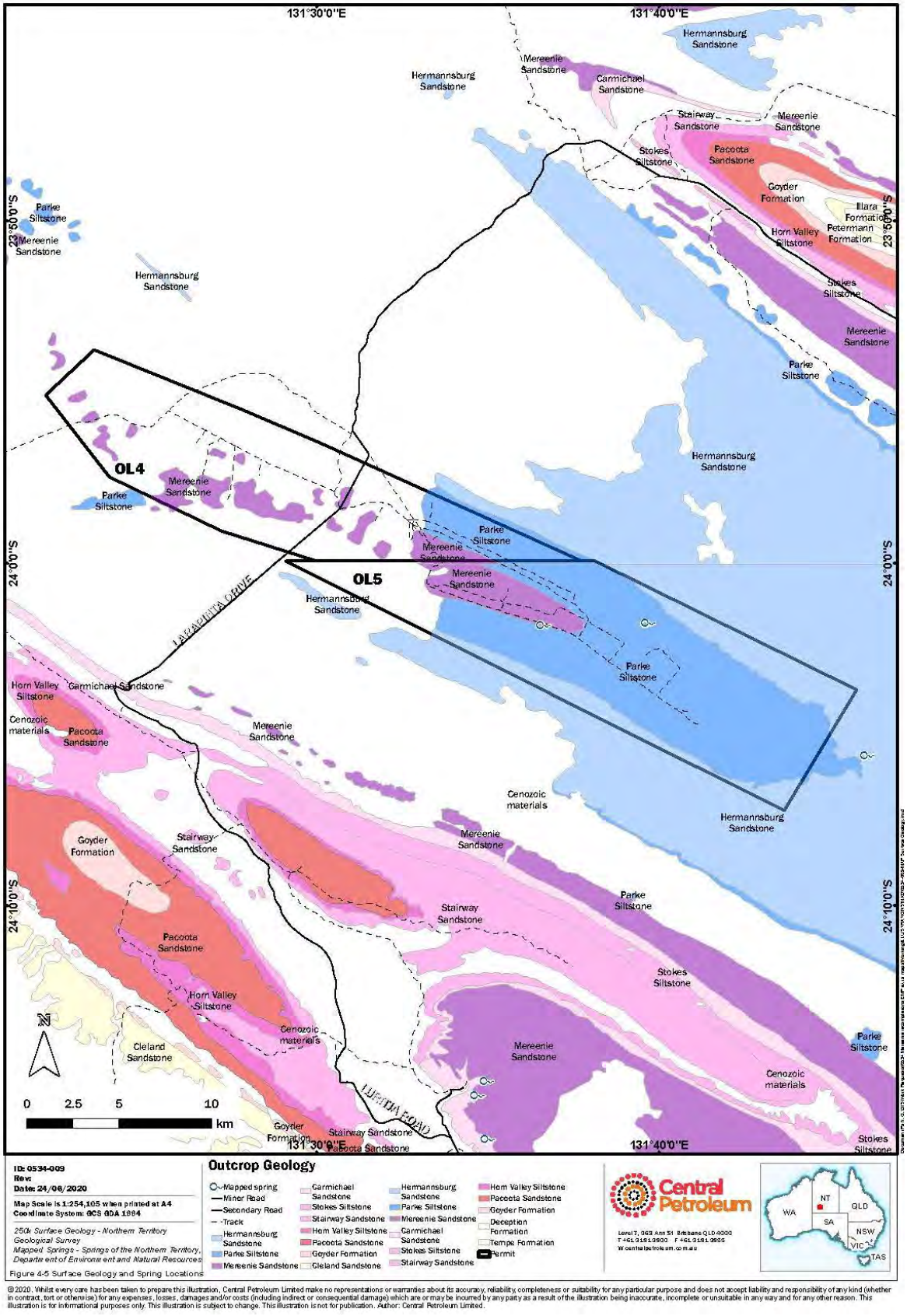


Figure 4-5 Surface Geology and Spring Locations

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Figure 4-5: Surface geology and spring locations across Mereenie Field

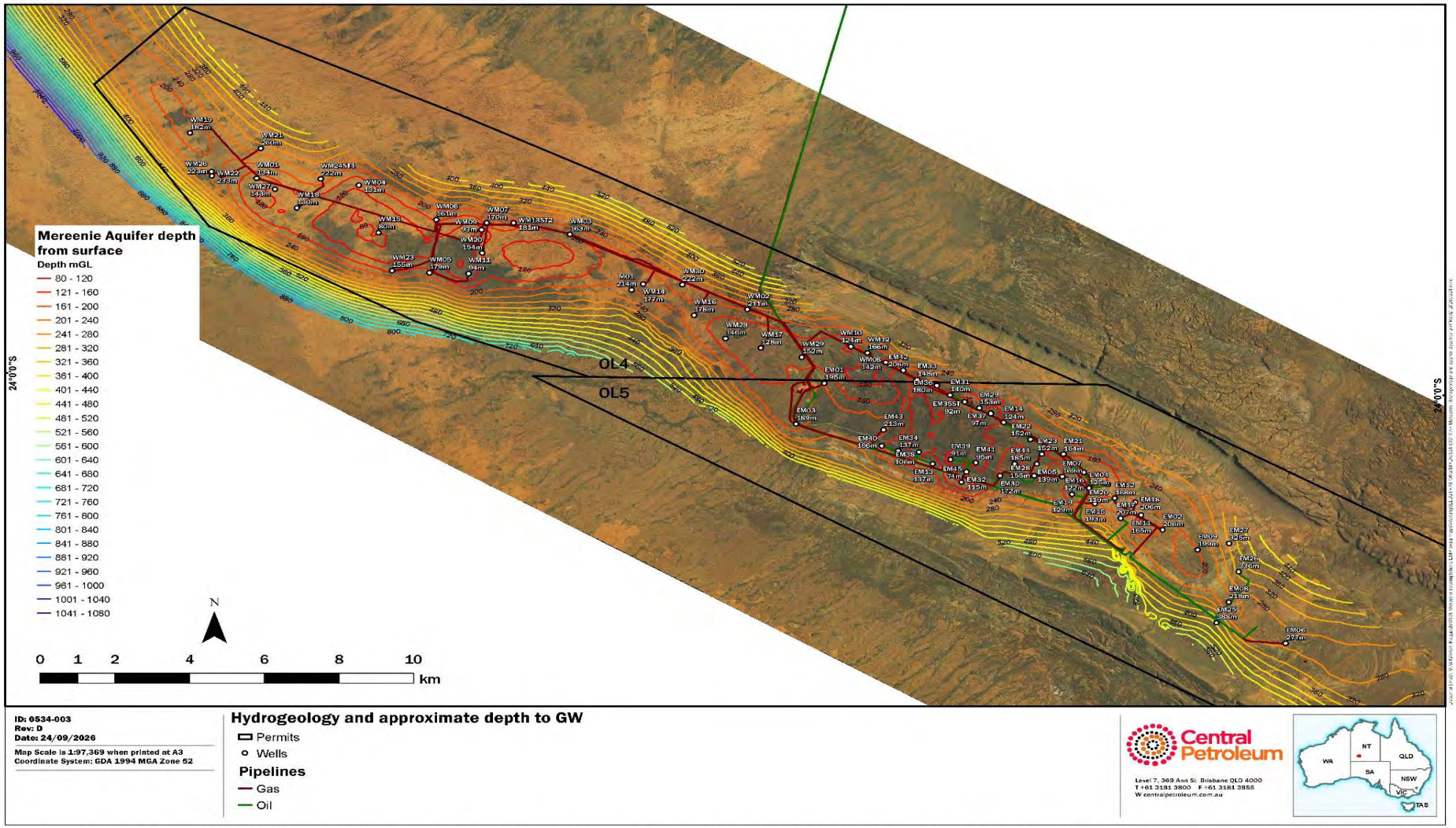

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Figure 4-6: Depth to groundwater (intersected during drilling)

MASP and Brewer Estate Oil Yard

Water Studies (2001, 2002) examined the operations of the MASP and Oil Yard and the potential for impact on the surface and ground water environment as part of a wider assessment of the Mereenie Field operations in the early 2000s.

At Brewer Estate Crude Oil Terminal, the geology is dominantly comprised of Brewer Conglomerate, which is characterised by very low permeability, and hence low potential for deep infiltration of fluids released from the site to groundwater. The Roe Creek borefield is located 8km north-west of Brewer Estate. In addition, all suspended oil storage infrastructure is bunded to reduce risk of off-site discharge and impact on groundwater. Given that this facility is currently in care and maintenance the impacts on groundwater values are deemed low.

4.1.3.1. Groundwater bores

A search of water bore data from DLPE identified 24 registered existing groundwater bores within Mereenie and six groundwater bores within a 10km radius of Mereenie. Figure 4-7 shows the locations of the identified bores.

Table 4-4 provides an overview of each of the existing registered groundwater bores using information taken from the DLPE water bore data set and associated water bore drilling logs. The current status of the six bores identified within 10km of Mereenie has been taken from the DENR water bore dataset and the operator has provided the current status of the water bores located within Mereenie. The operator is not proposing any changes to the status of the bores identified in Table 4-4. As outlined in Section 3.9, a licence (M10001) to extract groundwater from the following bores, RN017898, RN017657, RN004620, RN013861 and RN018955, is active for the Mereenie Field.

There are no Beneficial Use Declarations (BUDs) in the Mereenie project area under the NT Water Act 1992 and the bores identified as being within 10km of Mereenie boundary have either been backfilled, abandoned or there was no water interaction was detected during drilling and so the operator considers that they are unlikely to be in use.

There are no other water extraction licences within the immediate area surrounding Mereenie.

4.1.3.2. Groundwater quality

Groundwater quality assessments have been conducted by Golder Associates (2013, 2014 and 2015). A Groundwater Management Plan has been prepared for the Mereenie Field with an associated monitoring program commencing in May 2021. Groundwater quality samples were collected from the approved extraction licence bores: RN017898, RN017657, RN004620, RN013861 and RN018955. Parameters analysed include physical chemistry, major ions, alkalinity, nutrients, silica, dissolved and total metals, dissolved hydrocarbon gases, Polynuclear Aromatic Hydrocarbons (PAH), Total Petroleum Hydrocarbons (TPH), Total Recoverable Hydrocarbons (TRH) and BTEX, along with Gross Alpha/Beta activity.

The results to date (provided to DLPE) have shown minor exceedances of Gross Alpha and Beta within the Mereenie field and also an exceedance of sulphate levels. Exceedances of Gross Alpha and Beta are not uncommon in the Northern Territory as reported by Power and Water Corporation (2018) and DLPE (2019). The annual monitoring program results will be reported and published on DLPE website as part of ongoing monitoring commitments under the Groundwater Management Plan and this EMP.

Table 4-4: Registered bores within Mereenie and 10km radius

Bore ID	Location	Registered to the Operator	Formation screened	Drilled depth (mBGL)	Groundwater		Status
					EC (mS/cm)	Depth to water (mBGL)	
RN018955	OL4	Yes	Mereenie Sandstone	192	360^	159	Extraction Licence: M10001
RN004619	OL4	Yes	Mereenie Sandstone	148	960^	52	Not in use
RN016361	OL4	No	Mereenie Sandstone	277	450	169	Northern Territory government roads bore
RN011189	OL4	Yes	-	1214	-	-	Not in use (abandoned oil well)
RN004167	OL4	Yes	No water intersection	274	-	-	Not in use (abandoned)
RN004168	OL4	Yes	-	226	126	113	Not in use (abandoned)
RN041809	OL4	Yes	Mereenie Sandstone	227	800	190	Extraction Licence: M10001
RN013862	OL5	Yes	No water intersection	-	-	-	Not in use (abandoned, not cased)
RN013863	OL5	Yes	No water intersection	-	-	-	Not in use (abandoned, not cased)
RN017898	OL5	Yes	Mereenie Sandstone	236	440^	164	Extraction Licence: M10001
RN013864	OL5	Yes	Mereenie Sandstone	281	850	183	Not in use
RN005220	OL5	Yes	-	951	-	-	East Mereenie 3 well (oil bore)
RN013389	OL5	Yes	-	-	-		East Mereenie 5 well
RN004620	OL5	Yes	Mereenie Sandstone	152	TDS 840	-	Extraction Licence: M10001
RN013861	OL5	Yes	Mereenie Sandstone	277	445	-	Extraction Licence: M10001
RN016888	OL5	Yes	-	72	-	-	Operator observation bore
RN016889	OL5	Yes	-	72	-	-	Operator observation bore
RN013417	OL5	Yes	Mereenie Sandstone	691	126	-	Not in use
RN004868	Within 10km	No	No water interaction	107		-	Records state the status of the bore is not known, though unlikely to be in use as water was not encountered during drilling
RN004869	Within 10km	No	No water interaction	128			Records state the status of the bore is not known, though unlikely to be in use as water was not encountered during drilling
RN013066	Within 10km	No	-	21	-	-	Records state the bore has been backfilled
RN013064	Within 10km	No	No water interaction	47.2			Records state the status of the bore is not known, though unlikely to be in use as water was not encountered during drilling
RN013065	Within 10km	No	-	37	-	-	Records state the bore has been backfilled
RN006982	Within 10km	No	Pacoota Sandstone	2000	-	-	Records state the bore is abandoned

^ EC based on TDS using a conversion factor of 0.65
- indicates no data

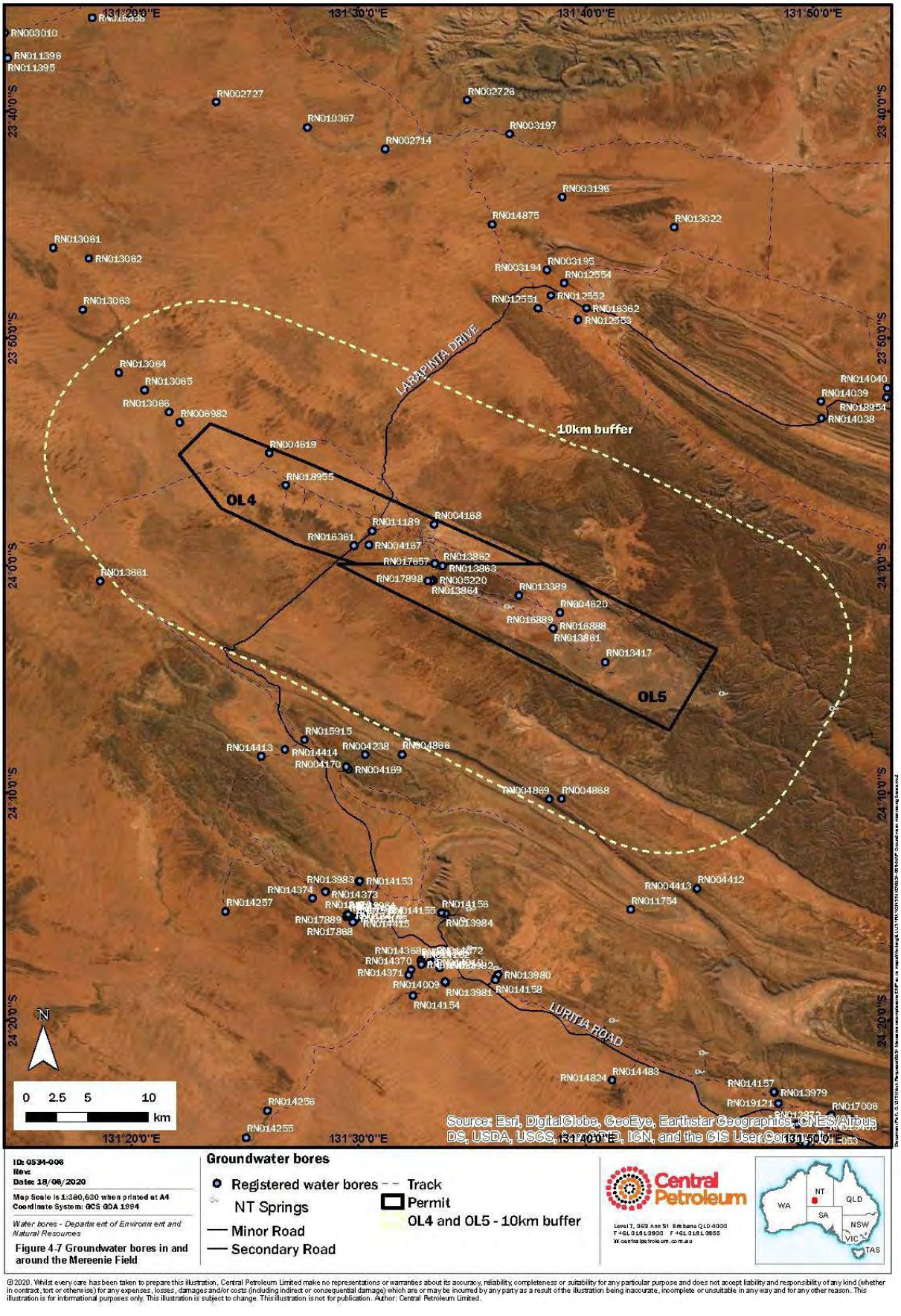

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Figure 4-7: Groundwater bores in and around the Mereenie Field

4.1.4. Wetlands, springs and aquatic inflow dependent ecosystems

Two springs are recorded on the DLPE Springs data in the general vicinity of Mereenie (NR Maps, 2022). The springs are located on OL5 on the south-eastern and north-eastern margin of Mereenie and are positioned on drainage lines that feed into Parke Creek.

DLPE Springs data identifies the springs as discharge features from the Hermannsburg Sandstone, however, the surface geology and structure suggest they are more likely associated with the Parke Siltstone, as the Hermannsburg Sandstone has been eroded and is not present at their mapped locations. As Mereenie groundwater extraction bores access the Mereenie Sandstone and the closest groundwater bore is approximately 2km or more from Parke Creek, groundwater extraction for activities across the Mereenie Field is not likely to impact on the identified springs.

An assessment of satellite derived datasets –The National Atlas of Groundwater Dependent Ecosystems (GDE) and Geoscience Australia Water Observations from Space (WOFS) – was undertaken to assess regional potential for springs and groundwater dependent receptors. The GDE atlas maps Parke Creek, which runs to the north-east of the Mereenie Field, as having a low potential to support aquatic GDEs. The Geoscience Australia Water Observations from Space (WoFS) product displays the percentage of observations in which surface water was detected and is derived from satellite imagery from 1987 to the present day (GA, 2019).

The WOFS provides an indication of surface water presence, with permanence an indication of groundwater discharge. The only permanent water in the vicinity of the site is associated with water storages/dams used for the operation of the field. All other surface water is ephemeral and is present in a low percentage of images (< 20%).

Due to depth to water in the Mereenie Sandstone in Mereenie there is limited potential for surface water-groundwater interaction and GDEs.

Mereenie is not located within a Northern Territory Government groundwater management area and does not contain any Nationally Important Wetlands or Key Ecological Features (Marine) according to the EPBC Protected Matters Search Report (PMST) (APPENDIX C).

4.1.5. Surface water

The surface water hydrology of the Mereenie Field is defined by the ephemeral streams within two regional catchments of OL4 and OL5:

- The majority of OL4 (West Mereenie) is located within the Victoria River – Wiso regional catchment and is devoid of defined drainage lines (Figure 4-8). OL4 is predominantly desert dunefields and sand plains, located in the Great Sandy Desert Bioregion. Water falling in the OL4 area is quickly infiltrated, although some ponding may occur in interdunal swales where small areas of clayey soils and red earths may be present.
- The OL5 area is located within the Diamantina – Georgina Rivers regional catchment and has a dendritic drainage pattern. The series of streams which cover the immediate area eventually drain into Parke Creek, a major drainage line located in OL5 draining to the south-east of the field (Figure 4-9). All creeks in OL5 are ephemeral and responsive to rainfall due to the sandstone strike ridges and intervening of the MacDonnell Ranges Bioregion.

There are a number of well located within approximately 50m to 150m of a creek/drainage line in OL5 (EM11, EM12, EM13, EM14, EM15, EM18, EM19, EM21, EM23, EM26, EM28, EM31, EM36, EM43,

EM44, EM45) (refer environmental sensitivity maps, Appendix D). In addition, there are roads, access tracks and flowlines that intersect with these ephemeral watercourses within this eastern field. The ESS is also located within the eastern field, adjacent to the ephemeral drainage line leading into Parke Creek.

There are no surface water extraction licences within the immediate surrounding area of Mereenie.

MASP

The MASP traverses a range of hydrological features from sand dunes, streams, drainage depressions and major ephemeral systems including the Finke River, Ellery Creek and the Hugh River. The MASP is located predominantly sub-surface and interaction with surface hydrology is limited to watercourse crossings where flooding and erosion have the potential to expose the pipeline in significant flooding events.

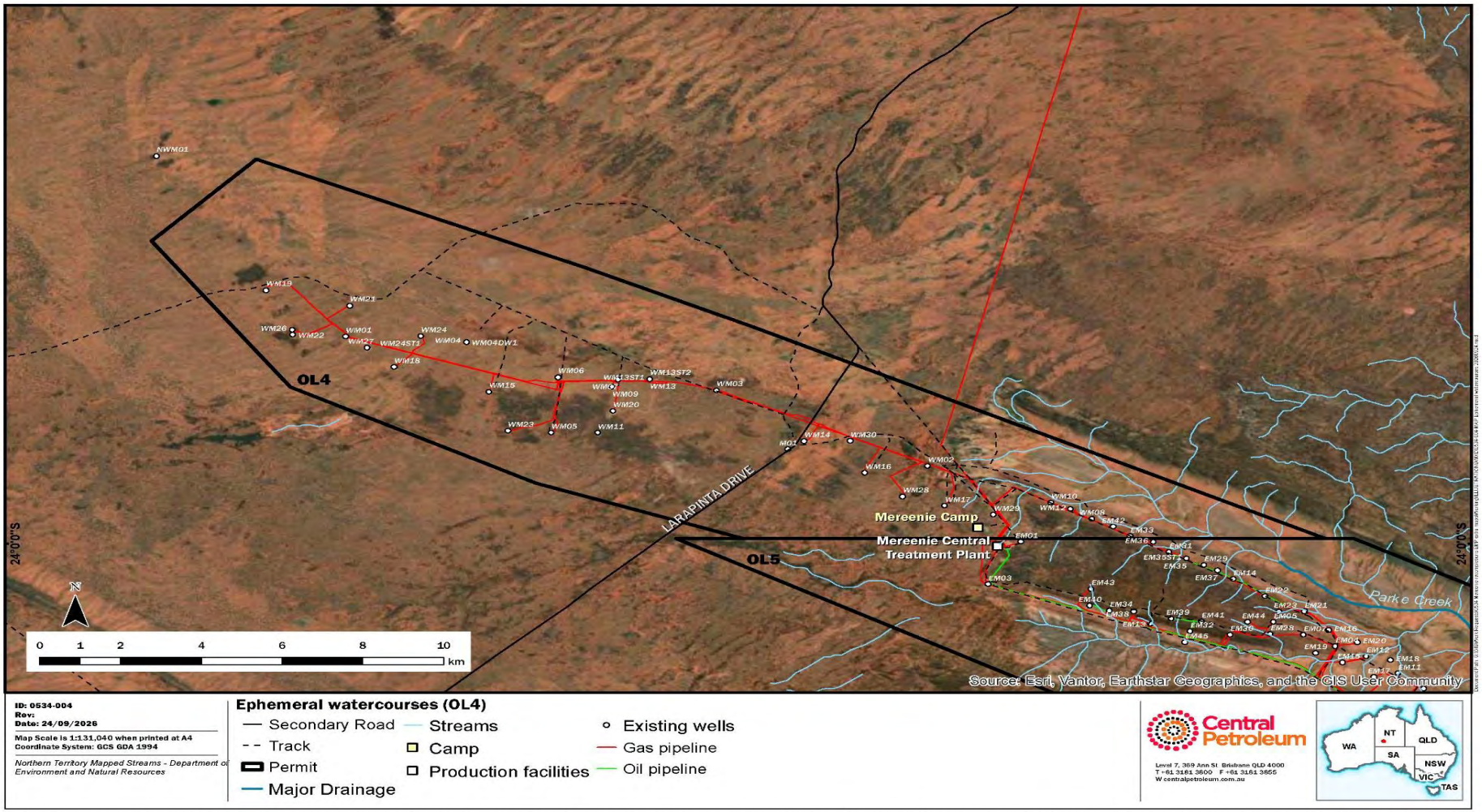

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Figure 4-8: Hydrology of OL4

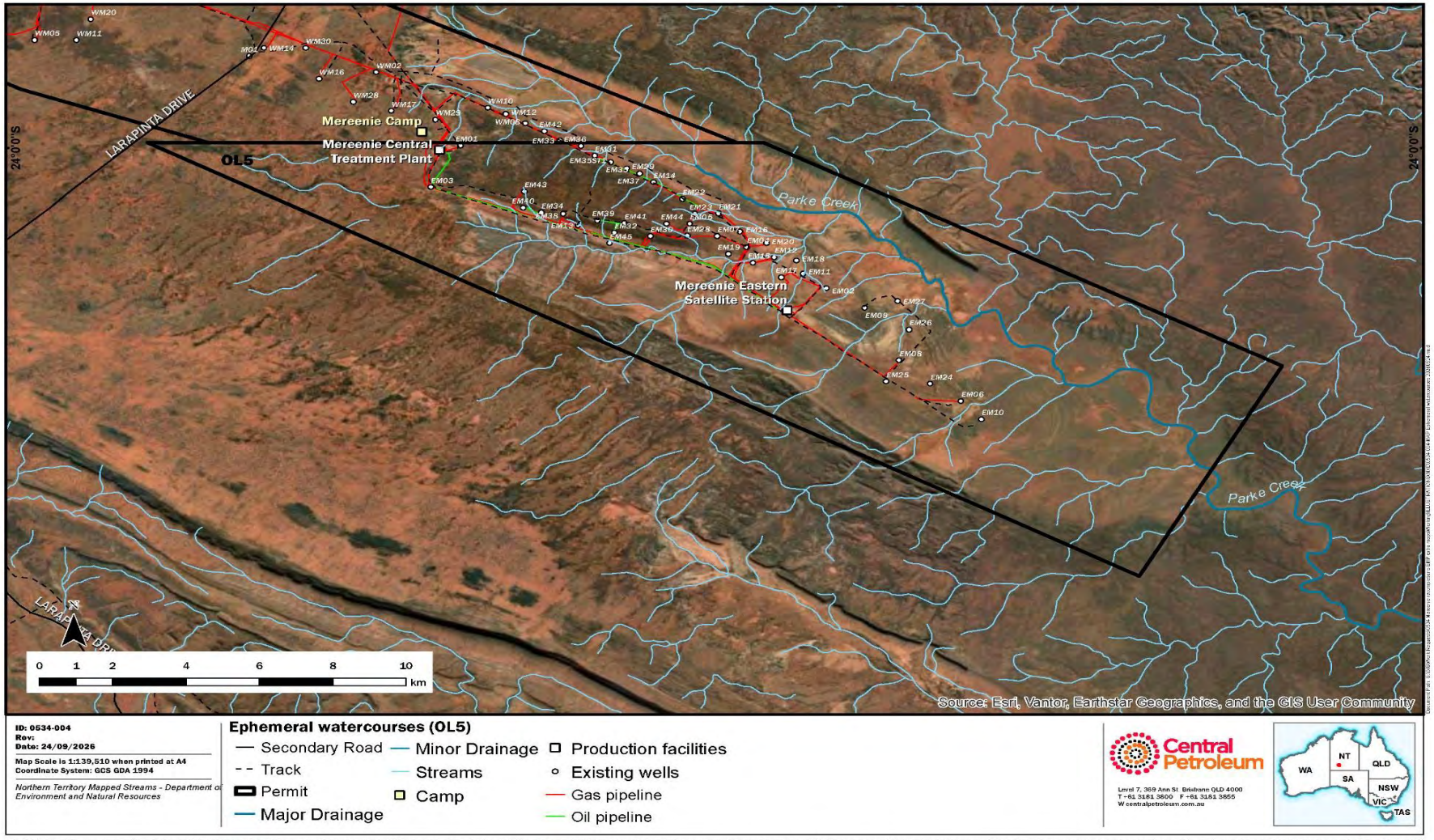

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Figure 4-9: Hydrology of OL5

4.1.6. Air and greenhouse gas emissions

The region is pastoral land and nearby national park/conservation areas. Emissions of interest include dust generation, particulate and greenhouse gas emissions. No other industrial land uses contributing to the air environment.

The greenhouse gas emissions of the Mereenie Field are calculated and reported on an annual basis in accordance with the National Greenhouse and Energy Reporting Act 2007. In addition, reporting of substance use and emissions from the 93 substances recognised under the NEPM (NPI) is conducted for a limited range of air emissions.

NGER calculations for the FY22 reporting period (July 2021 to June 2022) identified that the activities conducted in the Mereenie Field (including development of the WM27 and WM28 wells) generated 56,743 tCO2e. This is less than the NT threshold outlined in the Federal Safeguard Mechanism.

Flaring from the CTP can present a visible particulate matter emission from the field however, completed projects such as the installation of the flare gas compressor aim to reduce these amenity and air emission impacts.

The Brewer Estate Oil Yard is located in an industrial area adjacent to gas processing and power station facilities. No greenhouse gas emissions are accounted for at this site, nor for the MASP. Particulate emissions are limited to dust.

4.2. Natural environment

The Mereenie Field required the clearing of vegetation to accommodate the exploration and production programs. Land clearing commenced in the 1960s with the first exploration wells and seismic programs. This clearing has been limited to development areas such as well pads, flowlines, processing areas and support activity areas. Historical records available have indicated that rehabilitation activities have been undertaken across the life of the field, to the standards and best practice at the time of rehabilitation.

Assessment of the natural environment is based on available desktop information and is supported by previous field surveys. No new disturbance is proposed beyond existing areas, therefore no additional field surveys have been conducted.

4.2.1. Bioregions

The OL area is in two Interim Biogeographical Regionalisation for Australia (IBRA), split by the OL4 and OL5 boundary. OL5 is located entirely within the MacDonnell Ranges Bioregion, as classified by Baker, et al., 2005 and described in Table 4-5. 10-15% of the bioregion is protected within Reserves, none of which occur within the Mereenie Field.

A proportion of OL4 extends into the MacDonnell Ranges bioregion with the remainder located in the Great Sandy Desert IBRA as classified Baker, et al., 2005 and described in Table 4-5. The locations of the bioregions relative to Mereenie are shown in Figure 4-10.

Table 4-5: Bioregions of Mereenie Field

Bioregion	Topography	Geology	Soils	Vegetation
Great Sandy Desert	The area is generally flat and arid with few watercourses, although there are several low ranges	Large expanse of horizontally bedded Mereenie Sandstone and associated Cambrian marine sediments – calcareous	Predominantly shallow sands and are influenced by the presence of saline lakes, where mostly saline loams occur	Dominated by hummock grassland with areas of tall-shrubland or low open woodland, Mulga tall open-shrubland and Samphire low open-shrubland fringing salt pans

Bioregion	Topography	Geology	Soils	Vegetation
MacDonnell Ranges	High relief ranges and foothills enclose some broad plains and watercourses	Mostly sedimentary rocks in the Amadeus Basin and crystalline metamorphic rocks in the Arunta Block	Generally skeletal or shallow sands on the rocky hills with earthy sands and deep loamy alluvium on the lowlands	Dominant vegetation spinifex hummock grassland, sparse acacia shrub lands and woodlands along watercourses

4.2.2. Sites of Conservation Significance

Sites of Conservation Significance are areas defined by the Northern Territory government as important sites for biodiversity conservation that need further protecting.

The OL area is not located within a Site of Conservation Significance, but the George Gill Range and surrounds are located approximately 6km to the south and the Greater MacDonnell Ranges are approximately 14km north at their closest points (Figure 4-11).

No impacts on the environmental values of these SOCS are expected given the distance between Mereenie and the SOCS.

4.2.3. Sites of Botanical Significance

A Site of Botanical Significance (SOBS) is an area that has been defined by White et al. (2000) to hold important and/or unique botanical assemblage that requires protection. SOBS are designated as either nationally significant, bioregionally significant, or of undetermined significance. Currently there is no specific legislation attached to SOBS, although protection of the SOBS is administered through other pieces of legislation (e.g., TPWC Act).

The Mereenie Field is located within the Laycock Sandplain SOBS and the Mereenie SOBS (Figure 4-11). Both SOBS are designated as bioregionally significant based on their importance to the evolution of Australian flora, fauna, landscape or climate, geographically and/or ecologically disjunct populations (White et al. 2000)

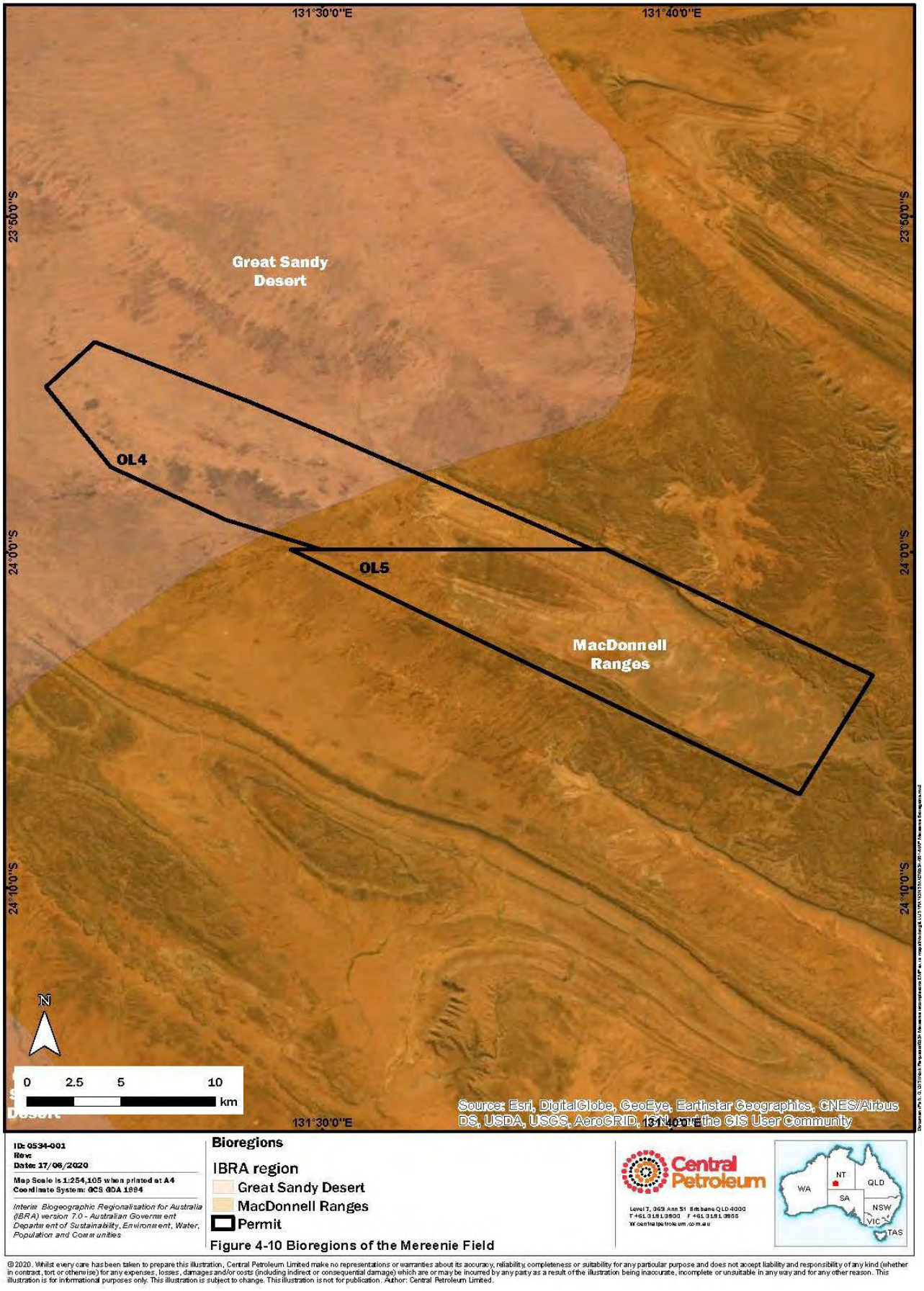

Figure 4-10 Bioregions of the Mereenie Field

Figure 4-10: Bioregions of the Mereenie Field

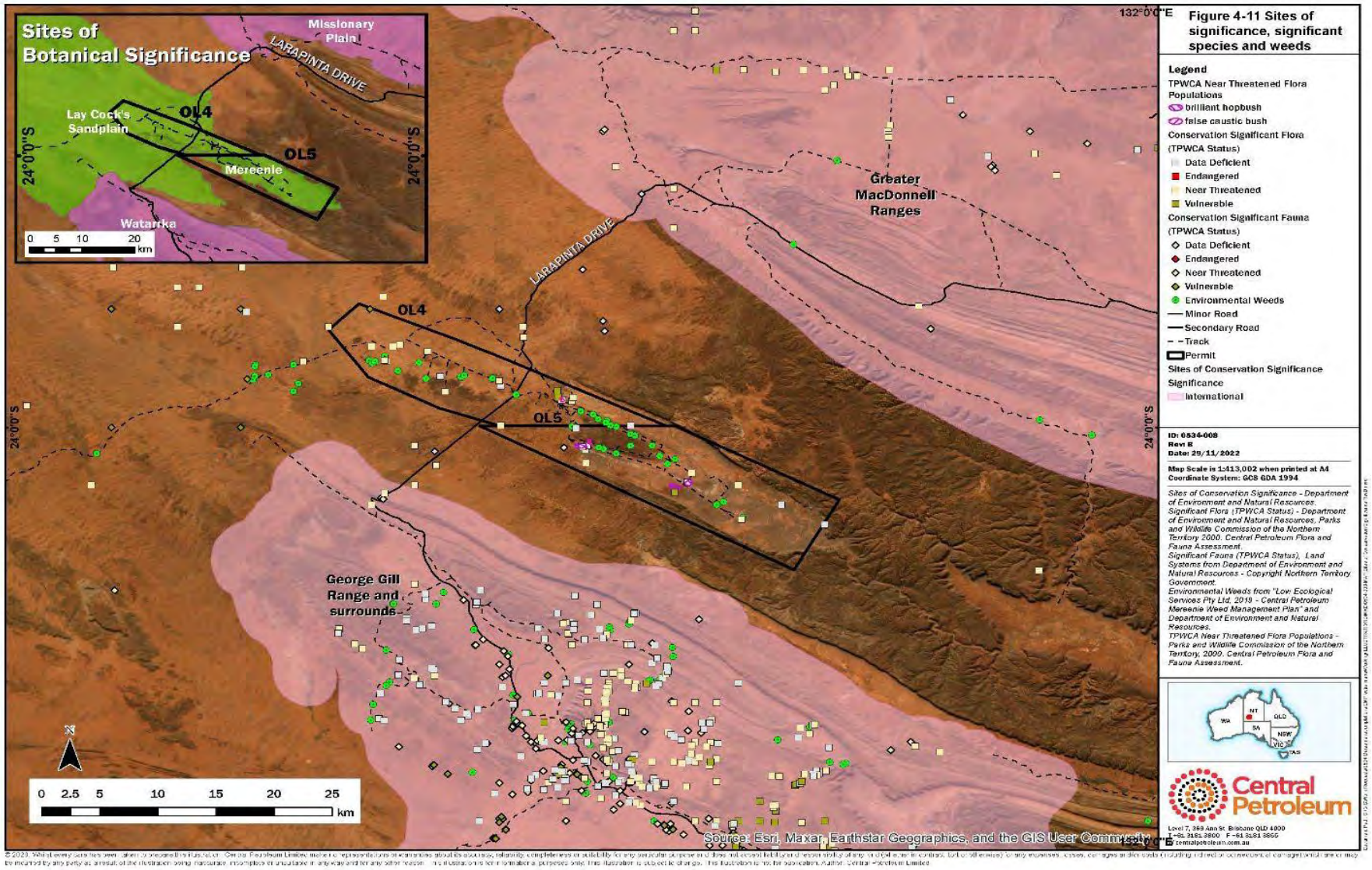

Figure 4-11: Sites of conservation/botanical significance, conservation significant species and weeds

4.2.4. Threatened Ecological Communities

No Threatened Ecological Communities (TEC) have previously been identified within the Mereenie Field across its operating life. A review of the EPBC Protected Matters Search Tool (PMST) Report (Appendix C) (DCCEEW, 2022) has confirmed no new TECs being listed since the previous EMP was prepared.

4.2.5. Vegetation communities

The vegetation is closely related to the three land systems, outlined in Section 4.1.2, each of which contains characteristic plant associations:

- Simpson land system: distinctive associations characterised by desert oak trees, various myrtaceous and proteaceous shrubs, and grasses including spinifex. Thickets of mulga are common in this land system.
- Krichauff land system: a variable assemblage of plants with relatively few species. Two species of mulga occur among the shrubs.
- Gillen land system: a mosaic of short bunch grass savannah and spinifex steppe with few trees or shrubs; this system also contains extensive bare areas.

The following vegetation communities have been identified within the Mereenie Field:

- *Eucalyptus camaldulensis* (river red gum) – Eucalyptus microtheca (coolabah) fringing woodland
- *Eucalyptus intertexta* (gum coolibah) open woodland/tree savannah
- *Allocasuarina decaisneana* (desert oak) open woodland/tree steppe/tree savannah
- *Acacia estrophiolata* (ironwood) open woodland/tree savannah over various tussock grasses and short grasses
- *Acacia aneura* (mulga) tall open shrubland with short grasses
- *Acacia aneura* – Acacia macdonelliensis tall open shrub land
- *Acacia kempeana* (witchetty bush) tall open shrub land
- *Triodia clelandii* (weeping spinifex) hummock grassland
- *Triodia basedowii* (hard spinifex) hummock grassland/shrub land
- *Zygochloa paradoxa* (sandhill cane grass) hummock grassland/shrub land
- *Eragrostis eriopoda* (woolly butt) tussock grassland
- *Aristida holathera* (kerosene grass) tussock grassland

Table 4-6: Description of vegetation units

Broad vegetation class	Fine vegetation class	Fine vegetation class description	Structural formation
Low open woodlands	93	*Triodia basedowii* (hard spinifex) hummock grassland with *Allocasuarina decaisneana* (desert oak) open-woodland overstorey between dunes	L1H3 Mixed species low open wood lands

Broad vegetation class	Fine vegetation class	Fine vegetation class description	Structural formation
Sparse shrublands	73	*A. tetragonophylla* (dead finish), *A. kempeana* (witchetty bush) sparse-shrubland with herb/grassland understorey	Z1F3 Shrubs < 3m, 1-9%; Forbs 30-69%
Sparse shrublands	71	*A. aneura* (Mulga) tall sparse-shrubland with grassland understory	S1G3: Shrubs >2m tall less than 9% and tussock grass 30-69%
Tall shrubland	87	*Triodia* (Spinifex) open-hummock grassland with *A. aneura* tall sparse-shrubland over-story	S1H2: Shrubs >2m tall less than 9% and hummock grass 10-29%
Open woodlands	30	*E. gongylocarpa* (Marble Gum) open-woodland with open-hummock grassland understory	M1H2: Trees >10m tall <9% and hummock grass 10-29%

MASP and Brewer Estate Oil Yard

Only one of the species is listed as being near threatened (TPWC Act), the grass tree (Xantho*rrhoea thorntonii*) and was found during a site survey along the MASP route during previous surveys. There are a few small, disjunct populations of this species in the western section of the pipeline corridor on either side of Deering Creek. A few plants of the *X. thorntonii* grow at the edge of a seismic line that is now the pipeline route.

Within the Brewer Estate Oil Yard, the vegetation consists of ironwood (*A. estrophiolata*) open woodland and mulga tall open shrub land with a variety of other, smaller acacias, lower shrubs and grasses. The area is interspersed with highly disturbed and cleared areas (e.g. firebreaks) and some retention of vegetation.

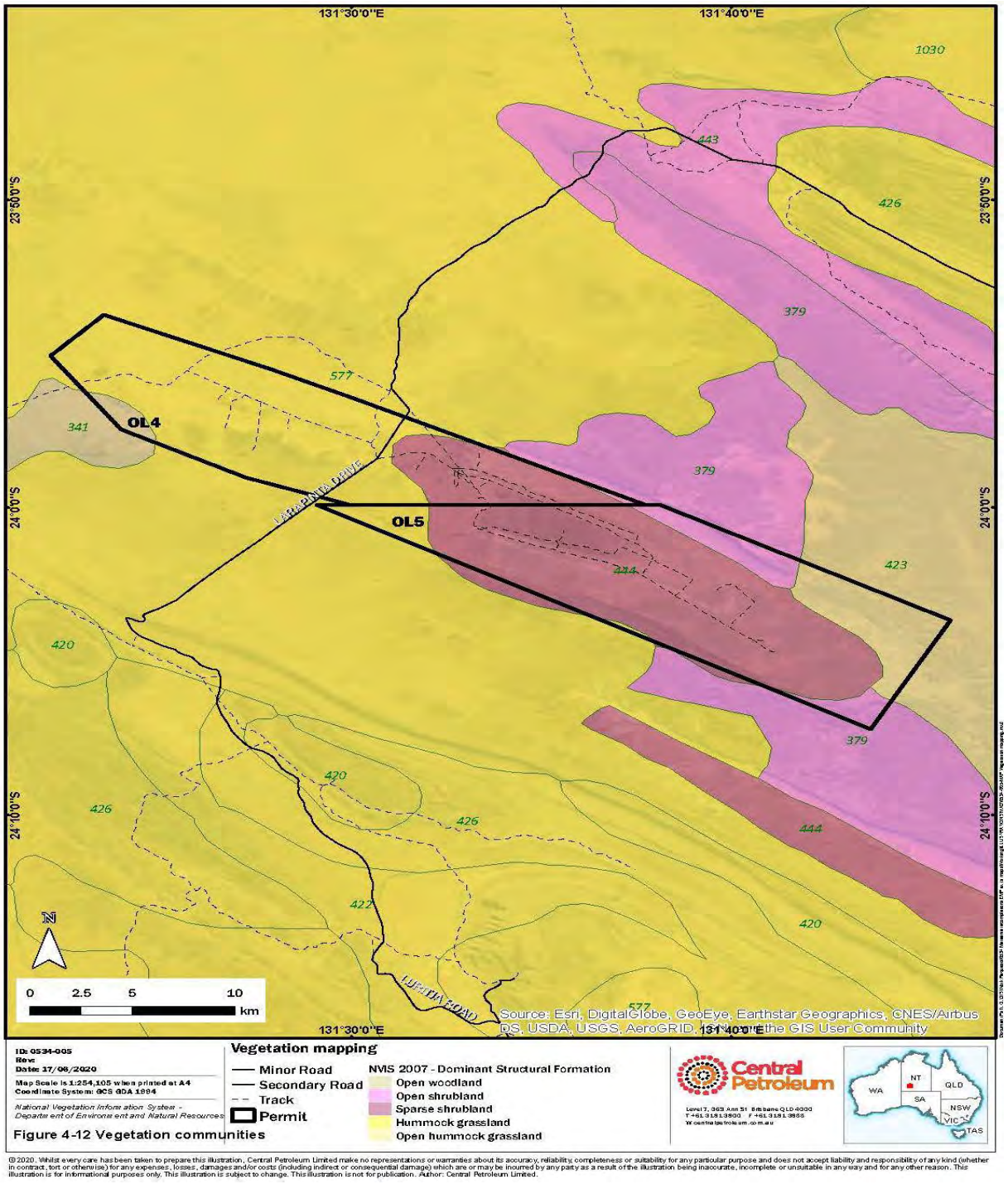

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Figure 4-12: Vegetation communities

4.2.6. Conservation significant flora

A flora species is considered in this EMP to be of conservation significance if it is:

- Listed as threatened species3 under the TPWC Act and is either:
  - recorded in the NT Flora Atlas as being within Mereenie or within 25km of the site boundary, or
  - recorded during field surveys of the NRM.

- Listed as threatened species4 under the EPBC Act and is either:
  - identified by a PMST report within Mereenie or within 25km of the site boundary, or
  - recorded during field surveys of Mereenie.

There have been several flora field surveys of Mereenie, including:

- Flora and Fauna Assessment, Stage 2 Field Survey by Parks and Wildlife Commission of the Northern Territory ((PWCNT), 2000):
  - Site-wide survey which assessed flora at 17 survey sites representative of the major habitats within Mereenie. The survey found a total of 461 plant species including 13 conservation significant flora under the TPWC Act (none under the EPBC Act); one vulnerable species (Santalum acuminatum), two data deficient (DD) species (Acacia nyssophlyllai and Comesperma viscidulum), with the remaining of near threatened status.
  - The study notes that the development at Mereenie is having little impact on the flora of the area and that most habitats that have been affected by the development are relatively robust and well represented in the region.
- Flora and Fauna Assessment by Low Ecological Pty Ltd (2017): Survey conducted at WM25 and WM26 locations (noting that these were exploration wells and WM25 was never drilled). No conservation significant flora was identified in the project area.
- Ecological Assessment by EcOz Pty Ltd (2020): Survey conducted at the locations of WM27 and WM28 (wells developed in 2021). *Laxmannia arida* (NT under the TPWC Act) was found during the survey, along with 74 species of Least Concern under the TPWC Act.

Based on results of the EPBC PMST, a NT Flora Atlas desktop search and previous flora field surveys, Table 4-7 provides a summary of the conservation significant flora that may be present within MRN. Figure 4-12 Vegetation communities shows the locations of conservation significant flora within and around Mereenie as recorded on the NT Flora Atlas and identified during the 2000 site survey by Parks and Wildlife

Commission of the Northern Territory. No conservation significant flora was recorded on or directly adjacent (within 50m) of MRN well pads, although a brilliant hopbush population is located along the access road to EM03 (refer environmental sensitivity maps, Appendix D).

There are no state or territory recovery plans for any of the conservation significant species identified on-site.

Table 4-7: Conservation significant flora of Mereenie Field

Scientific name	Common name	TPWC Status[1]	EPBC Status[2]	EPBC Presence[3]	Flora Atlas Records[4]	Ecological survey result
Acacia incurvaneura	Mulga	DD	-	-	11	No
Accacia mconochieana	Salt Wattle	DD	-	-	2	No
Acacia nyssophylla	Wattle	DD	-	-	-	Yes
Acacia so. Blue mulga	Wattle	DD	-	-	1	Yes
Amyema miraculosa subsp. Boormanii	Amyema, Fleshy Mistletoe	DD	-	-	5	No
Aristida strigosa	*Rough Wiregrass*	*DD*	-	-	*6*	*No*
Atriplex vesicaria subs. Calcicola	*Bladder Saltbush*	*DD*	-	-	*1*	*No*
Austrostipacentralis	*Austrostipa*	*NTD*	-	-	*1*	*No*
Austrostipa trichophylla	*Austrostipa*	*DD*	-	-	*2*	*No*
Brachyscomeciliaris	*Variable Daisy*	*DD*	-	-	*63*	*No*
Bulbostylis pyriformis	*Bulbostylis*	*NTD*	-	-	*2*	*No*

Scientific name	Common name	TPWC Status[1]	EPBC Status[2]	EPBC Presence[3]	Flora Atlas Records[4]	Ecological survey result
Calotis cuneifolia	*Blue Burr-daisy, Purple Burr-daisy*	*DD*	-	-	*1*	*No*
Chthonocephalus pseudevax	*Ground-heads*	*NTD*	-	-	*1*	*No*
Comesperma viscidulum	*Comesperma*	*DD*	-	-	*10*	*Yes*
Commicarpus australis	*Commicarpus*	*NTD*	-	-	-	*Yes*
Corynotheca licrota	*Club-fruit Lilly*	*NTD*	-	-	*1*	*Yes*
Cuphonotus andraeanus	*Downy Mother-of-Misery*	*NTD*	-	-	*1*	*No*
Dodonaeamicrozyga var. microzyga	*Brilliant Hopbush*	*NTD*	-	-	*5*	*Yes*
Dysphania rhadinostachya subsp. Inflata	*Dysphania, Rats Tail*	*DD*	-	-	*2*	*Yes*
Einadia nutans subsp. Nutans	*Einadia*	*NTD*	-	-	*1*	*Yes*
Eragrostis sterilis	*Lovegrass*	*NTD*	-	-	*1*	*No*
Euphorbia sarcostemmoides	*False Caustic Bush*	*NTD*	-	-	*20*	*Yes*
Glischrocaryon aureum	*Yellow Popflower*	*NTD*	-	-	-	*Yes*
Glischrocaryon aureum var. angustifolium	-	*NTD*	-	-	*5*	*No*
Goodenia occidentalis	*Goodenia*	*NTD*	-	-	*1*	*Yes*
Grevillea pterosperma	*Desert Grevillea*	*NTD*	-	-	*11*	*Yes*
Gunniopsisseptifraga	*Gunniopsis*	*NTD*	-	-	*1*	*No*
Hakea grammatophylla	*Hakea*	*NTD*	-	-	*3*	*No*
Haloragis odontocarpa f. octoforma	-	*DD*	-	-	*12*	*No*
Haloragis odontocarpa f. rugosa	-	*DD*	-	-	*2*	*No*
Histiopteris incisa	*Bats Wing Fern, Oak Fern*	*NTD*	-	-	*1*	*No*
Hydrocotyle sp. Watarrka	*Hydrocotyle*	*NTD*	-	-	*1*	*No*
Juncuscontinuus	*Juncus*	*NTD*	-	-	*9*	*No*
Laxmannia arida	*Laxmannia*	*NTD*	-	-	-	*Yes*
Macrozamia macdonnellii	*MacDonnell Ranges Cycad*	*NTD*	*VU*	*Known to occur*	*10*	*No*
Melaleuca faucicola	*Desert Bottlebrush*	*NTD*	-	-	*7*	*No*
Ophioglossum lusitanicum	*Austral Adders Tongue*	*NTD*	-	-	*1*	*No*
Persicaria decipiens	*Slender Knotweed*	*NTD*	-	-	*1*	*No*
Phyllanthus lacunellus	*Lagoon Spurge, Caraweena Clover*	*DD*	-	-	*4*	*No*
Santalum acuminatum	*Desert Quandong*	*VU*	-	-	*9*	*Yes*
Sclerolaena parallelicuspis	*Western Copper Burr*	*NTD*	-	-	*6*	*No*
Sennaartemisioides subsp. Kuyunba	*Cassia*	*DD*	-	-	*13*	*No*
Stenanthemum petraeum	*Stenanthemum*	*NTD*	-	-	*11*	*No*

Scientific name	Common name	TPWC Status[1]	EPBC Status[2]	EPBC Presence[3]	Flora Atlas Records[4]	Ecological survey result
Vittadinia pterochaeta	*Rough Fuzzweed*	*NTD*	*-*	*-*	*-*	*Yes*
Xanthorrhoea thorntonii	*Desert Grass Tree*	*NTD*	*-*	*-*	*1*	*No*

1 TPWC Status: CR, Critical Endangered; EN, Endangered; VU, Vulnerable; NTD, Near Threatened; DD, Data Deficient as listed under the TPWC Act.

2 EPBC Status: CR, Critical Endangered; EN, Endangered; VU, Vulnerable as listed under the EPBC Act

3 Listed on the EPBC PMSR report retrieved for the field and 25km buffer

4Number of records on the NT Flora Atlas for the field and 25km buffer

- indicates no record

4.2.7. Conservation significant fauna

A fauna species is considered in this EMP to be of conservation significance if it is:

- Listed as a threatened species under the EPBC Act and is either:
  - identified by a PMST report within Mereenie or within 25km of the site boundary, or
  - recorded during an ecological assessment of Mereenie.
- Listed as a threatened spec under the TPWC Act and has been either:
  - recorded in the NT Fauna Atlas as being within Mereenie or within 25km of the site boundary
  - recorded during an ecological assessment of MRN.

There have been several fauna field surveys of Mereenie, including:

- Flora and Fauna Assessment, Stage 2 Field Survey by Parks and Wildlife Commission of the Northern Territory (2000):
  - Site-wide survey which assessed fauna at 12 survey sites representative of the major habitats within Mereenie. The survey recorded seven frogs, 15 mammals, 53 reptile species and 96 birds.
  - The only threatened fauna species recorded was the black-footed rock wallaby, classed as NT under the TPWC Act and VU under the EPBC Act. The extent of the population in Mereenie was not determined as most of the suitable habitat fell within the cultural heritage exclusion zone. The exclusion zone is also noted to be preferred habitat for the Centralian rockrat (Zyzomys pendunculatus), long-tailed dunnart (Sminthopsis longicaudata) and common brushtail possum (Trichosurus vulpecula vulpecula) which were suggested as possibly occurring within Mereenie.
  - Four NT species under the TPWC Act as well as two MIG/MAR species were noted as being found at Mereenie during previous surveys.
  - The study notes that the development at Mereenie is having little impact on the fauna of the area and that most habitats that have been affected by the development are relatively robust and well represented in the region.
- Mereenie Expansion Fauna Management Report by Resource Environment Strategies (2014):
  - Report from fauna spotter/catchers during installation of new flow lines for Mereenie expansion project. A total of 98 species encountered and relocated including EPBC listed black-footed rock wallaby (vulnerable; NT: near threatened) and TPWC listed crest-tailed mulgara (Dasycercus cristicauda)) (vulnerable).
- Ecological Assessment by EcOz Pty Ltd (2020):

- Survey conducted at the proposed locations of WM27 and WM28 (recently developed wells now covered under this EMP). No conservation significant fauna was detected during the survey.

Based on results of the EPBC PMST, a NR Fauna Map search and previous flora fauna surveys, Table 4-8 provides a summary of the conservation significant fauna that may be present in Mereenie. Figure 4-11 shows the locations of conservation significant fauna within and around Mereenie as recorded on the NT Fauna Atlas and identified during the 2000 site survey by Parks and Wildlife Commission of the Northern Territory. No conservation significant fauna was recorded on or directly adjacent (within 50m) of Mereenie well pads (refer environmental sensitivity maps, Appendix D).

The black-footed rock wallaby is covered by the national "Recovery plan for five species of rock wallabies: Black-footed rock wallaby (Petrogale lateralis), Rothschild rock wallaby (Petrogale rothschildi), Short-eared rock wallaby (Petrogale brachyotis), Monjon (Petrogale burbidgei) and Nabarlek (Petrogale concinna) 2012-2022".

Table 4-8: Conservation significant fauna of Mereenie Field

Scientific name	Common name	TPWC Status[1]	EPBC Status[2]	EPBC Presence[3]	Flora Atlas Records[4]	Ecological survey result
Actitis hypoleucos	*Common Sandpiper*	-	*MIG MAR*	*May occur*	-	*No*
Amytornis modestus	*Thick-billed Grasswren*	-	*VU*	-	*1*	*No*
Amytornis modestus modestus	*Thick-billed Grasswren (MacDonnell Ranges)*	*EX*	*VU*	-	*1*	*No*
Amytornis striatus	*Striated Grasswren*	*NTD*	-	-	*6*	*No*
Apus pacificus	*Fork-tailed Swift*	-	*MIG MAR*	*Likely to occur*	-	*No*
Ardeotis australis	*Australian Bustard*	*NTD*	-	-	*28*	*Yes*
Ardea alba	*Great Egret*	-	*MIG MAR*	*Likely to occur*	-	*No*
Ardea ibis	*Cattle Egret*	-	*MIG MAR*	*May occur*	-	*No*
Burhinus grallarius	*Bush Stone-curlew*	*NTD*	-	-	*5*	*No*
Calyptorhy nchus banksii samueli	*Red-tailed Black-cockatoo (central Australia)*	*NTD*	-	-	*76*	*Yes*
Calidris acuminata	*Sharp-tailed Sandpiper*	-	*MIG MAR*	*May occur*	-	*Yes*
Celidris melanotos	*Pectoral Sandpiper*	-	*MIG MAR*	*May occur*	-	*No*
Charadrius veredus	*Oriental Plover*	-	*MIG MAR*	*May occur*	-	*No*
Chrysococc yx osculans	*Black-eared Cuckoo*	-	*MAR*	*Known to occur*	-	*No*
Calidris ferruginea	*Curlew Sandpiper*	-	*CE*	*May occur*	-	*No*
Conopophi la white	*Grey Honeyeater*	*DD*	-	-	*6*	*No*
Croitana aestiva	*Desert Sand-skipper*	*EN*	*EN*	-	-	*No*
Dasycercus cristicauda	*Crest-tailed mulgara*	*VU*	-	-	-	*Yes*
Dromaius novaeholla ndiae	*Emu*	*NTD*	-	-	*31*	*Yes*
Erythrotrio rchis radiatus	*Red Goshawk*	*VU*	*VU*	*May occur*		*No*
Falco hypoleucos	*Grey Falcon*	*VU*	-	-	*5*	*No*
Glareola maldivaru m	*Oriental Pratincole*	-	*MIG MAR*	*May occur*		*No*

Scientific name	Common name	TPWC Status[1]	EPBC Status[2]	EPBC Presence[3]	Flora Atlas Records[4]	Ecological survey result
Haploscap anes barbarossa	*Spectacular Elephant Beetle*	*DD*	*-*	*-*	*2*	*No*
Lagorchest es conspicillat us	*Spectacled Hare-wallaby*	*NTD*	*-*	*-*	*1*	*No*
Lagorchest es hirsutus	*Mala*	*EW*	*EN*	*Likely to occur*	*2*	*No*
Liopholis kintorei	*Great Desert Skink*	*VU*	*VU*	*May occur*	*2*	*No*
Liopholis slateri slateri	*Slater's Skink*	*EN*	*EN*	*May occur*		*No*
Lophoictinia isura	*Square-tailed Kite*	*NTD*	*-*	*-*	*1*	*No*
Macrotis lagotis	*Greater Bilby*	*VU*	*VU*	*-*	*2*	*No*
Motacilla cinerea	*Grey Wagtail*	*-*	*MIG MAR*	*May occur*		*No*
Motacilla flava	*Yellow Wagtail*	*-*	*MIG MAR*	*May occur*		*No*
Merops ornatus	*Rainbow Bee- eater*	*LC*	*MIG MAR*	*May occur*	*169*	*Yes*
Notoryctes typhlops	*Itjaritjari*	*VU*	*-*	*-*	*6*	*No*
Pseudechis australis	*King Brown Snake*	*NTD*	*-*	*-*		*Yes*
Petrogale lateralis	*Black-footed Rock-wallaby*	*NTD*	*VU*	*Known to occur*	*109*	*Yes*
Polytelis alexandrae	*Princess Parrot*	*VU*	*VU*	*Known to occur*	*31*	*No*
Porzana fluminea	*Australian Spotted Crake*	*DD*	*-*	*-*	*1*	*No*
Pseudechis australis	*King Brown Snake*	*NTD*	*-*	*-*	*11*	*No*
Pyrrholaemus brunneus	*Redthroat*	*NTD*	*-*	*-*	*6*	*No*
Pezoporus occidentalis	*Night Parrot*	*CR*	*EN*	*May Occur*	*-*	*No*
Rostratula australis	*Australian Painted Snipe*	*VU*	*EN*	*May Occur*	*-*	*No*
Semotrachia euzyga	*-*	*EN*	*-*	*-*	*2*	*No*
Sinumelon bednalli	*Bednall's Land Snail*	*NTD*	*-*	*-*	*2*	*No*
Tateropa aemula	*-*	*VU*		*-*	*9*	*No*
Trichosurus vulpecula vulpecula	*Common Brushtail Possum (Southern N.T.)*	*EN*	*-*	*-*	*2*	*No*
Zyzomys pedunculatus	*Central Rock- rat*	*EN*	*EN*	*May occur*	*0*	*No*

1. TPWC Status: CR, Critical Endangered; EN, Endangered; EX, Extinct; VU, Vulnerable; NTD, Near Threatened; DD, Data Deficient; LC, Least Concern as listed under the Territory Parks and Wildlife Conservation Act (TPWC).

2. EPBC Status: CR, Critical Endangered; EN, Endangered; VU, Vulnerable; MIG, Migratory; MAR, Marine; as listed under the Environmental Protection and Biodiversity Act (EPBC).

3. Listed on the EPBC PMSR report retrieved for the area for the MRN and 25km buffer

4. Number of records on the NT Flora Atlas for the MRN and 25km buffer

- indicates no record

4.2.8. Introduced flora (weeds)

Weeds are an ongoing threatening process to the natural environment and operations at the Mereenie Field. Weeds managed under this EMP can be categorised via the following:

- Weeds of National Significance (WoNS) – nationally agreed priority flora species for control and management. Weed species are determined based on rankings for invasiveness, potential to spread, and impact on socio-economic and environmental assets.
- Declared Weeds – species which have been identified for control, eradication, or prevention of entry in all or part of the Northern Territory under the Weeds Management Act 2001. Declared weeds can be of the following classes:
  - Class A – to be eradicated
  - Class B – growth and spread to be controlled
  - Class C – not to be introduced into the Northern Territory
- Priority weeds – species which have been identified as a priority or alert weed species within the Alice Springs Regional Weed Strategy 2021-2026 (DLPE, 2021) as follows:
  - Category 1 – priority weeds for eradication: Mesquite (Prosopis spp.), Rope Cactus (Cylindropuntia spp) and Prickly pears (Opuntia spp.)
  - Category 2 – priority weeds for strategic control: Athel pine (Tamarix aphylla), Parkinsonia (Parkinsonia aculeata), Rubber bush (Calotropis procera), and Buffel Grass (Cenchrus cillaris)

No declared weeds or WoNS were reported in the EPBC PMST in and around (25km radius) Mereenie, nor have they been identified during annual weed surveys. There were no NT Declared Weeds or Priority or Alert weeds under the Alice Springs Regional Weed Strategy identified in the NT Flora Atlas as being in or within 25km buffer of Mereenie.

Site wide weed monitoring occurs on an annual basis under the Mereenie Weed Management Plan (Low Ecological Services Pty Ltd, 2019) as per the Code, and the survey provides the basis for weed control, which aims to occur during periods of active weed growth (i.e. usually after the wet season/large rain events). The most recent survey was conducted in 2021 (2022 survey was not complete for inclusion here) by the dedicated weeds officer for Mereenie (Low Ecological Services, 2020). Environmentally invasive weeds (but not of Declared/listed status) found on-site include Paddy melon (Citrullus lanatus), Feathertop rhodes grass (Chloris virgata) and Spiked Malvastrum (Malvastrum americanum). These environmental weeds were found in disturbed soils such as roadsides, building and around operational infrastructure such as Mereenie camp.

Buffel grass

The previous surveys have confirmed the presence of Buffel grass throughout the Mereenie Field, which, while not declared under state or federal legislation, is covered by an EPBC Threat Abatement Advice (DoE, 2015) and as Category 2 Priority Weed under the Alice Springs Regional Weed Strategy 2021-2026.

Surveys are conducted on an annual basis at Mereenie to monitor the presence of Buffel grass and other weed species. In addition, the operator has sought the advice of DPEWS Officers in Alice Springs to review the presence of this invasive species across field operations. Advice from officers (pers comm, Chris Brown DLPE) was that future eradication and control should focus on no new outbreaks in newer developed area

(particularly OL4/western field) whilst conducting limited control of wider areas to direct operational areas where the Buffel grass appears to have naturalised.

Weed mapping

The location of the environmental weeds found during the 2021 survey as well as environmental weeds recorded on the NT Flora Atlas is shown in Figure 4-11. Environmental weeds have been recorded in

and around well pads and infrastructure across the eastern (OL5) and western sections (OL4) of the Mereenie Field (refer environmental sensitivity maps, Appendix D). An ongoing eradication and control program is in place, particularly following rainfall events, when buffel grass and other environmental weeds have a flourish of growth. In addition, discussions are maintained with DLPE Officers to identify new methods for the treatment and control of buffel grass in the Alice Springs region.

Regular lease inspections are conducted to monitor spread of weeds after rainfall events and to target physical and chemical weed control activities.

MASP and Brewer Estate Oil Yard

Regular weed eradication and control is conducted along the MASP and within the Brewer Estate Oil Yard. As with the Mereenie Field, Buffel grass is prevalent along the MASP and also within Brewer Estate. Regular ROW inspections monitor and control weed and vegetation growth the ensure pipeline standards are maintained.

4.2.9. Introduced fauna (pests)

Introduced pest species are a threatening process to the natural environment and the rehabilitation efforts implemented at the Mereenie Field. In addition, they can cause damage to infrastructure and the safety of personnel. An introduced fauna species is considered in this EMP to be of management concern if it is:

- listed in the NT Fauna Atlas as “Introduced” and has been recorded at or within a 25km buffer of Mereenie or;
- identified as an invasive species/threatening process by under the EPBC Act, or;
- has been recorded during ecological surveys of the area.

Based on results of previous EPBC PMST records, a NT Fauna Atlas desktop search and previous fauna surveys (Low Ecological, EcOz) or by Parks and Wildlife Commission of the Northern Territory (2000), Table 4-9 provides an overview of the introduced fauna located at or within 25km of the field.

Table 4-9: Introduced fauna

Common name	Scientific name	Common name	Scientific name
Camel	*Camelus dromedarius*	Fox	*Vulpes*
Cat	*Felis catus*	Horse	*Equuscaballus*
Cattle	*Bos taurus*	House Mouse	*Mus musculus*
Donkey	*Equus asinus*	Rabbit	*Oryctolaguscuniculus*
Dog	*Canis lupus familiaris*		

4.2.10. Fire history

The North Australia and Rangelands Fire Information (NAFI, 2022) data base shows that a large part of OL4 was affected by a large-scale fire in 2002 and then again in 2011. Both fire events followed several years of above average rainfall. Since then, there have been no major fire events although a small section of OL5 was affected in 2019. Figure 4-13 shows the fire frequency at Mereenie.

Recent fire activity in September and October 2022 (and not yet recorded on long term mapping, NAFI, 2022) has occurred in areas to the north and south of the Mereenie Field. These fires did not cross into the Operating Licence areas but were monitored.

Fire breaks are maintained around infrastructure to assist in the management of fires that may occur within the Mereenie Field. In addition, vegetation is managed around wells, flowlines and processing plants to reduce fuel loads should fire occur in the Mereenie Field.

The MASP ROW is maintained to ensure no large vegetation provides a fuel load for bushfires. The MASP ROW is cleared and acts as a firebreak. No bushfires have been recorded at the Brewer Estate Oil Yard. Extensive fire breaks are maintained along the fence line boundary of the yard.

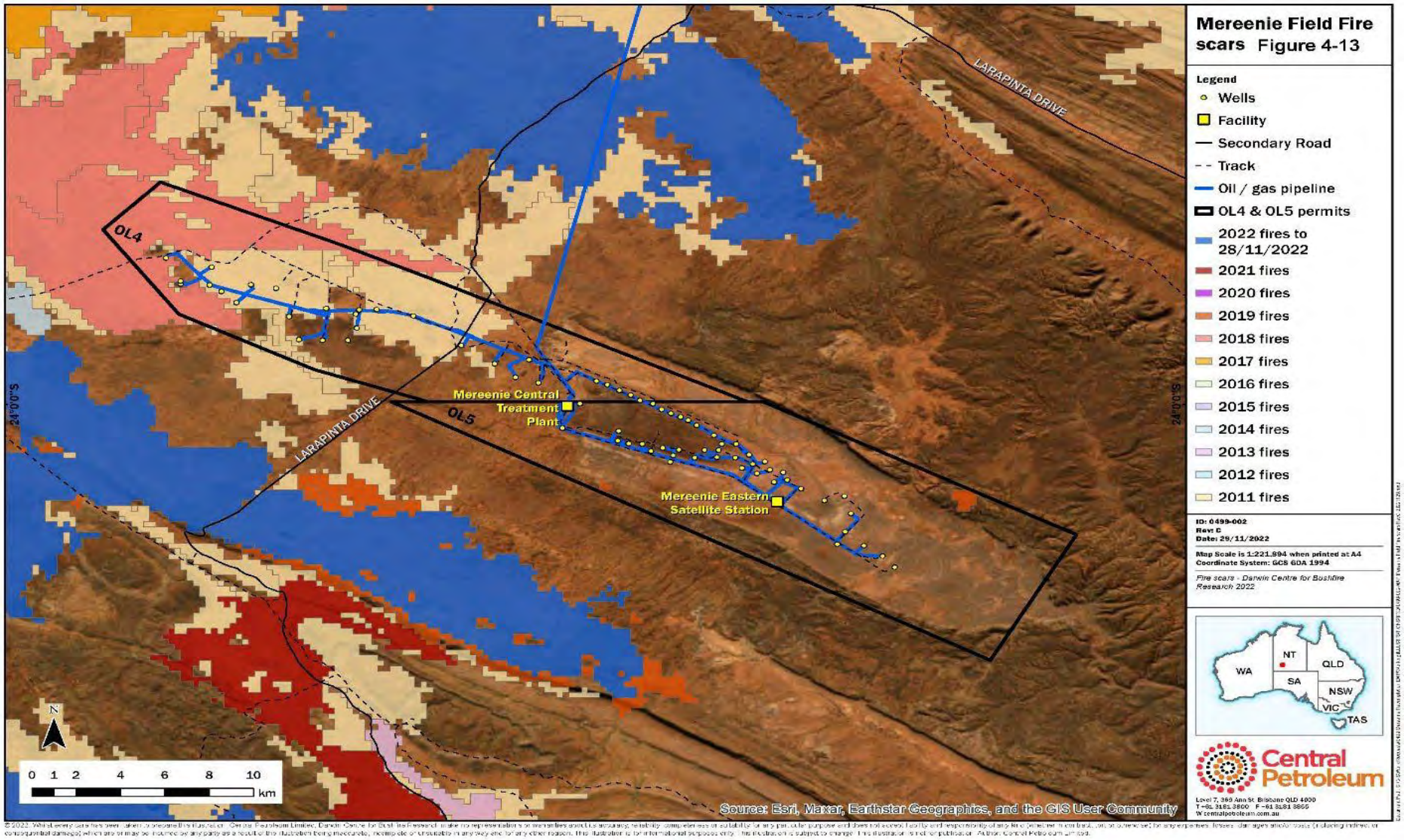


Figure 4-13: Mereenie fire history

4.3. Socio-economic Environment

4.3.1. Land tenure and use

Land on which Mereenie operates is Aboriginal freehold land belonging to the Haasts Bluff Aboriginal Land Trust. Undertakings have been given in the Mereenie Land Use Agreement to maintain the right of the Traditional Owners to move freely throughout Mereenie and use non-operational land within Mereenie for pastoral grazing activities and conservation purposes.

There are a number of national parks and reserves in the wider Alice Springs/Central Australia region including Finke Gorge National Park, Owen Springs Reserve, Watarrka National Park and the West MacDonnell National Park (Figure 4-14). Mereenie is not within or directly adjacent to any Indigenous Protected Areas which form part of the Australian Reserve System (Figure 4-14) Tourism is notable in the surrounding areas however, Mereenie operations do not directly overlap with tourist areas.

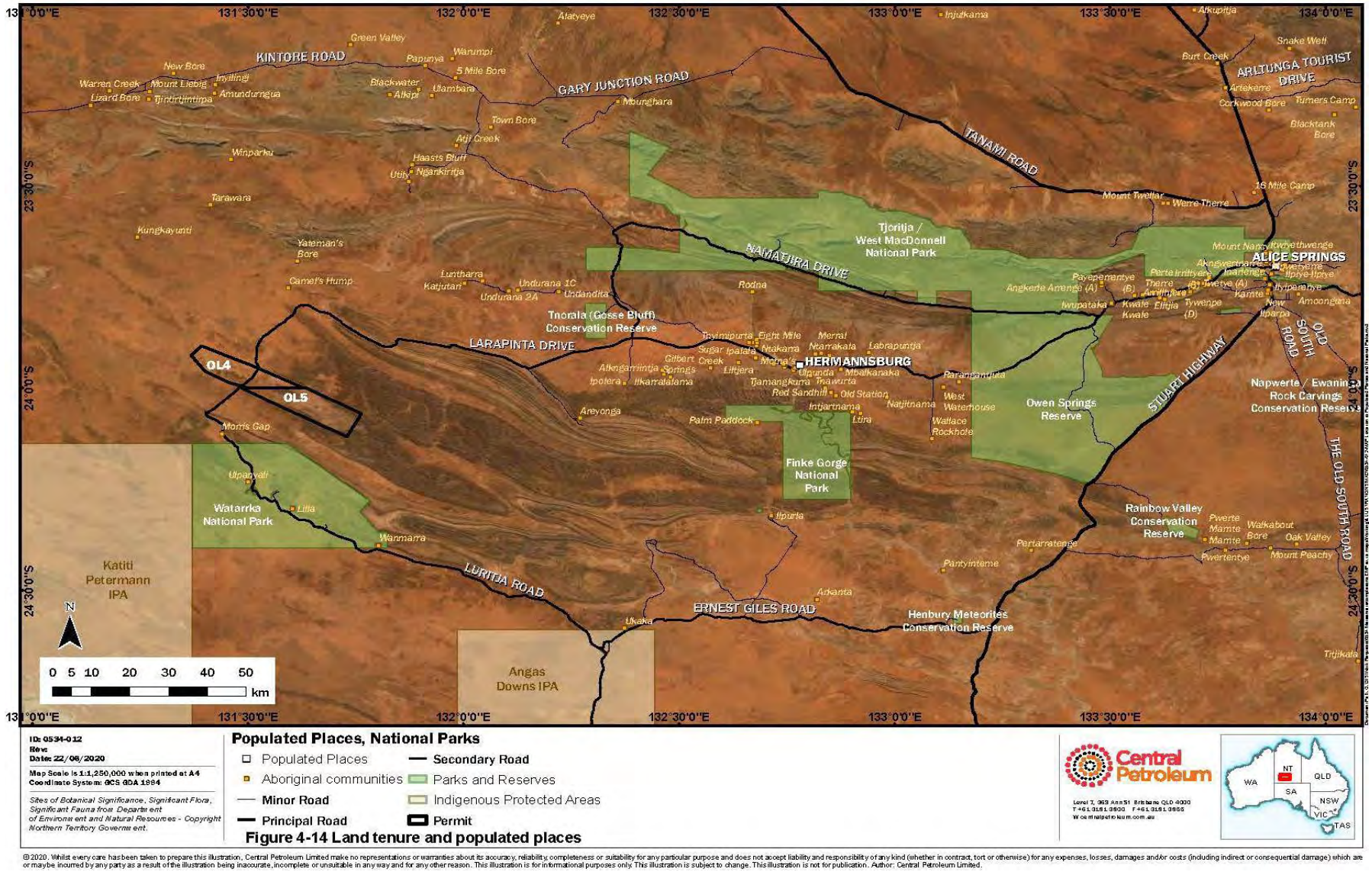
Mereenie is not within any NT petroleum reserved blocks, which are areas designated free of petroleum exploration.

MASP and Brewer Estate Oil Yard

The MASP route passes through the Haasts Bluff Aboriginal Land Trust, the Hermannsburg Special Purpose Lease (which has been divided into five Land Trusts), through the Owen Springs Reserve, and into Brewer Estate Crude Oil Terminal. The pastoral grazing activities (cattle and horses) on the MASP are managed by Aboriginal interests and undertaken by outstation communities.

Land use along the MASP is predominantly pastoral. Since the original approval of the MASP in the mid-1980s, an area of the alignment is now within the Owen Springs Reserve (acquired by NT Government in 2000).

The Brewer Estate Oil Yard is located in an industrial zoned area and use of this land is consistent with that zoning.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KINTORE ROAD
GARY JUNCTION ROAD
TANAMI ROAD
NAMATJIRA DRIVE
LARAPINTA DRIVE
LURITJA ROAD
ERNEST GILES ROAD
ARLUNGA TOURIST DRIVE
STUART HIGHWAY
OLD SOUTH ROAD
THE OLD SOUTH ROAD
Tjoritja / West MacDonnell National Park
Tnorala (Gosse Bluff) Conservation Reserve
Owen Springs Reserve
Finke Gorge National Park
Watarrka National Park
Rainbow Valley Conservation Reserve
Henbury Meteorites Conservation Reserve
Napwerte / Ewaninga Rock Carvings Conservation Reserve
Katiti Petermann IPA
Angas Downs IPA
HERMANNSBURG
ALICE SPRINGS
OL4
OL5
Green Valley
New Bore
Warren Creek
Mount Liebig
Lizard Bore
Tjintirtintipa
Inyilingi
Amundurngua
Papunya
Warumpi
5 Mile Bore
Blackwater
Alkipir
Ulambara
Town Bore
Atji Creek
Haasts Bluff
Ngankirritja
Utilla
Winparku
Tarawara
Kungkayunti
Yateman's Bore
Camel's Hump
Mount Conner
Mount Ebenezer
Mount Sonder
Mount Zeil
Mount Razorback
Mount Gillen
Mount Nancy
Mount Twellar
Mount Peachy
Mount Peachy
Mount Peachy

4.3.2. Surrounding populated places

Mereenie is located in a remote and sparsely populated region, though there are several small Aboriginal communities within proximity, or that have strong traditional ties with the surrounding land, including Kulpidjara, Areyonga, Underana, Undandita, Haasts Bluff, Papunya, and Ipolera.

There is also a community of 600-800 people at Hermannsburg, located 110km east of Mereenie. The nearest major centre is Alice Springs, with a population of approximately 26,000, located 250km by road from Mereenie. The locations of the surrounding communities are shown in Figure 4-14.

As part of stakeholder consultation and requirements under the Mereenie Agreement and Central Land Council (CLC) Sacred Sites Clearance Certificate (SSCC), the operator has and will continue to engage with surrounding stakeholders regarding the workover and wellhead equipment, safety systems and gathering line works.

The Mereenie Field has a positive impact on the social and economic values of these communities through increased workforce participation opportunities and development of infrastructure such as water supply and roads/tracks to support Traditional Owners pastoral land use activities.

4.3.3. Noise

As noted in Section 4.3.2 above, Mereenie is located within a sparsely populated region. There are no communities within the area bounded by OL4/OL5 and the nearest sensitive receptor is located approximately 25km from the noise sources located across the field.

Northern Territory Noise Management Framework Guideline 2018 refers to offensive noise that may cause an environmental nuisance. The offensive noise test described in the NT framework is not relevant given the nearest sensitive receptors for noise to the Mereenie Field are at Watarrka (Kings Canyon) National Park, approximately 25km south of the CTP at Mereenie. This is a conservation area with tourist traffic peaking from April to October. No impacts on sensitive receptors are considered likely given the remote and isolated location of the field. Noise sources at the Mereenie Field are centred on the CTP and ESS processing facilities. The operation of compressors and power generation units at these industrial facilities occurs 24-hours/day. In the first instance, these facilities must comply with exposure standards for noise defined in the *Work Health and Safety Regulation 2011* which provide a much stricter threshold for noise sources, thereby mitigating any potential off-site nuisance noise. The facilities have been in operation for 40 years, as such impacts on the natural environment would be minimal as fauna has avoided or adapted. The operator will monitor any complaints regarding noise as part of its stakeholder engagement process.

Given the distance to the nearest receptor and that noise generated within the Operating Licence area does not plausibly exceed “nuisance noise tests”, an assessment described under Section 3.2 of the *Northern Territory Noise Management Framework Guideline 2018* has not been conducted.

4.3.4. Cultural heritage

4.3.4.1. Historic and natural heritage

Mereenie is located within the MacDonnell Shire. An online search of the Northern Territory heritage register showed 18 publicly listed heritage sites in the MacDonnell Shire, none of which are within nor adjacent to Mereenie. No non-public sites were found by the online search.

Advice provided by the Heritage Branch (Ref No.: HCD2022/0038, dated April 11, 2023) indicate that the Puritjarra Rockshelter, a declared heritage site, is located within proximity to the subject site. This Puritjarra Rockshelter is a non-public site.

EPBC PMST for Mereenie and 25km buffer wells did not identify any World Heritage Properties, National Heritage Places, Commonwealth Heritage Places or Places on the Register of National Estate.

4.3.5. Aboriginal archaeological assessment

No new areas of disturbance are proposed for consideration with this EMP as no new archaeological assessment has been conducted.

Known Aboriginal areas of value have been identified and are protected under provisions contained in approved sacred sites certificates and the Heritage Act 2011. These areas are identified via mapping and where practicable signage across the Mereenie Field, and all personnel and contractors are made aware as part of site inductions.

4.3.6. Sacred Sites

Due to the duplicative nature of sacred site clearances process in the NT, The operator has the follow clearances:

Central Land Council

A current SSCC for operations at Mereenie (SSCC C2013-046, renewed April 2022). All regulated activities in this plan are covered under this clearance. All activities are to be conducted within SSCC assessed areas and in accordance with the SSCC conditions.

Aboriginal Areas Protection Authority

A new AAPA Authority Certificate for the works described in this EMP is 202305946. The operator commits to complying with the requirement of the Authority.

5. Engagement and Consultation

5.1. Stakeholder engagement

The operator is committed to proactively engaging with a range of stakeholders and other interested parties. We aim to establish and maintain enduring and mutually beneficial relationships with the communities of which we operate; ensuring that our activities generate positive economic and social benefits for and in partnership with these communities.

The stakeholders in relation to this EMP are the Indigenous Traditional Owners represented by the CLC as per the Mereenie Agreement 2003. All of the EMP activities are defined as ongoing production enhancement activities and included under the existing CLC agreements.

No consultation with the Commonwealth Government was required as it has been determined that the works are unlikely to cause a significant impact on MNES. Therefore, the EPBC Act will not be triggered.

A record of all engagements undertaken with stakeholders is captured in a stakeholder engagement register (outlined in APPENDIX B).

5.1.1. Traditional Owner(s) engagement

The operator undertakes regular consultation with Traditional Owners primarily through annual community liaison meetings. As outlined in the Mereenie agreement, these liaison committee meetings will take place annually into the future. At these meetings the operator provides an overview of its ongoing production operations, anticipated field workover programs and other development activities. At these meetings we discuss:

- The activities to be undertaken on country and proposed locations.
- The understanding of the nature and purpose of activities, which is to be executed by the CLC in accordance with the Land Rights Act.
- The planned Aboriginal sacred site surveys to be completed as part of this EMP and future planning.
- Planning and execution of on country meetings to discuss the exploration and drilling program also occurring and complete the Sacred Site Clearance and avoidance surveys of land with the CLC.

5.2. Assessment of merit of stakeholder objection or claim

The process that the operator will undertake in assessing any stakeholder objection/claim that it receives includes:

- All stakeholder objections/claims are to be provided to the Chief Operating Officer (COO) who will appoint a person to confirm that the objection/claim relates to the activities under this EMP.
- The COO to notify the stakeholder:
  - If the objection/claim is not related to the operator and that no additional action is required; or
  - If the results confirm that the objection/claim is related to the operator an investigation will commence.
- In relation to the investigation:
  - The COO will appoint a person to investigate the objection/claim
  - The appointed person is to investigate and provide a written report of their findings to the COO
  - Once the report is accepted, a discussion with the stakeholder will take place to communicate the outcomes of the investigation including any actions that the operator has/will undertake to address the objection/claim – if required. Following the discussion, a written response will be provided.

5.3. Details of changes due to engagement

Any proposed changes in operations, policy or procedures because of stakeholder consultation or other engagement will be considered by operational Management. If any changes for merit are deemed necessary, these changes will follow the approved the operator's management of change process and captured in a register.

6. Environmental Impacts, Risks and Mitigation

6.1. Approach

6.1.1. Risk assessment methodology

The operator's risk management approach is aligned with all material aspects of ISO 31000 and all environmental risks associated with operations have been:

- Identified, analysed and evaluated including the assessment of critical controls and their effectiveness (Table 6-1)
- Recorded in a risk register
- Treated in a manner commensurate with the level of risk
- Communicated to key stakeholders
- Monitored and reviewed in a manner commensurate with the level of risk.

Assessment of risk is completed using the operator's Risk Matrix (section 6.1.5) to assess and rate risks by assessing the combination of likelihood of occurrence and the severity of the impact/outcome of an event. This allows quantification of the risk and determination can then be made about whether the risk is ALARP and acceptable or whether further mitigation is required.

Table 6-1: Control effectiveness

Assessment	Description
Effective	Controls are well designed and are operating effectively, and management monitoring and review of controls are established.
Satisfactory	Controls are reasonably well designed, and most aspects are operating effectively with some minor areas for improvement.
Needs Attention	Certain control/s are not well designed and/or are systematically not operating effectively.
Ineffective	Significant gaps in the design and operation of controls. No confidence that any degree of control is being achieved.

6.1.2. ALARP and acceptability

As part of the operator's risk assessment process, each risk is mitigated to ALARP. The operator considerers risks having been reduced to ALARP when all reasonably practicable control measures have been identified and implemented. ALARP involves making a judgement about whether all reasonably practicable measures are in place to control a potential risk or impact considering the level of consequence and cost, time and resources involved to mitigate it.

To determine whether potential environmental risks and inputs are 'acceptable' is a matter of judgement that depends on issues such as the nature and scale of impacts and the social or economic benefits. The operator's risk tolerance/acceptance process (Table 6-2) is utilised to determine whether to accept the assessed residual risk or implement improvement actions.

Table 6-2: Risk Acceptance/Action Criteria

	Low	Medium	High	Very High
Risk owner/ acceptance	Activity owner	Direct reports to Managers	Managers	CEO/ExCo
Improvement actions identified	Within a reasonable timeframe	3 months	1 month	As soon as practicable

In addition to the requirements detailed above, for the purposes of petroleum activities, impacts and risk to the environment are considered broadly acceptable if:

- The residual risk is determined to be 'Low' the controls are determined to be effective, and the scientific uncertainty score is A (low) or
- The residual risk is determined to be either 'High' or 'Medium', the controls are determined to be effective, and the scientific uncertainty score is A (low) as well as ALARP being demonstrated through:
  - Alignment with legislative requirements, regulator guidance, stakeholder expectations
  - Adoption of regional strategies and plans
  - Not compromising ESD Principles, and
  - Limiting the nature and scale of the effect on the environment.

6.1.3. Uncertainty

To enable an accurate assessment of the potential impact and risk of the activities, the risk assessment process considers scientific uncertainty regarding the information available to assess the risk. Uncertainty is high where confidence in the available information is low in identifying risk or the effectiveness of a management control. Additional baseline studies or other safeguards may be required to increase the accuracy of an assessment to determine the acceptability of a risk.

Scientific uncertainty is qualitatively assessed using a generic means of ranking the data available in accordance with the criteria assigned in Table 6-3. Considerations of scientific uncertainty have been included in the risk assessment.

Table 6-3: Scientific uncertainty scoring

Category	Description	Decision Making Tools
A (low)	Control/mitigation measures are well understood and established within the industry to ensure the risk is effectively controlled Information available to assess the risk is current	Legislation, codes and standards exist to regulate the activity Good industry practice includes additional controls beyond legislation, codes and standards
B (moderate)	Control/mitigation measures exist and have been demonstrated as effective in other industries Information used to assess the risk is still valid but is either starting to date or there are information gaps	Risk based assessment tools are available for use (e.g. modelling, quantitative risk assessment, cost benefit analysis etc)
C (high)	Scarce or no data available to support the assessment of the risk	No guidance material available. The precautionary approach to management of the risk is required.

6.1.4. Risk assessment summary

The outcomes of the environmental risk assessment are presented in Appendix A. Table 6-4provides a summary of the residual risks for activities under the environmental management plan. All risks are considered by the operator to be as low as reasonably practicable and are accepted.

Table 6-4: Risk assessment summary

	Residual Risk			
	Low	Medium	High	Very High
Count	35	5	0	0

The 'Medium' residual risks for activities under this environment management plan are:

- Injury or death of conservation significant fauna from civil works, vehicle movements and earthworks
- Increased occurrence of weeds (including weeds of national significance)
- Contamination of soil from release of hydrocarbons and formation water, including wastewater to ground
- Loss of places or items of cultural significance from fire as a result of activities under this EMP

Subsurface loss of contaminants during workovers contaminating surface water and/or groundwater and reducing groundwater pressure

6.1.5. Environmental management strategy

Based on the results of the risk assessments conducted and the identification of critical controls as detailed in Appendix A. The operator has categorised the environmental outcomes and developed performance standards and measurement criteria aligned with the identified critical controls. The environmental outcomes, performance standards and measurement criteria are outlined in Sections 6.2 to 6.10.

6.1.6. Risk Matrix

Risk Matrix

Impact Level	Health and Safety	Environment	Community	Legal	Reputation	Financial AUD$	Remote Conceivable, but only in extreme circumstances <1% chance of occurring within the next year.	Unlikely Event is unlikely to occur during the life-span of a project >1% chance of occurring within the next year	Possible Event may occur during the life-span of a project >10% chance of occurring within the next year	Likely Event likely to occur during the life-span of a project >30% chance of occurring within the next year	Frequent Recurring event during the life-span of a project >60% chance of occurring within the next year
Extreme	5 or more fatalities or life-threatening injury / illness or total permanent disability.	Extensive permanent impact on / off site or damage to critically endangered species, habitats, ecosystems.	Extensive irreversible impacts to the community or social wellbeing. Long term social unrest. Permanent damage to area/s of cultural significance.	Charges against any director or senior executive involving jail, substantial fine or loss of right to manage the company. Public inquiry – requiring considerable resources and senior executive time. Loss of an asset or loss of licence to operate an asset. Permanent non-voluntary suspension of trading CTP securities on the ASX.	Multiple stakeholder groups confirming coordinated action, as reflected in media channels with significant reach and influence. Negative international or prolonged national media (e.g. 2 weeks).	Loss of value in excess of $20m Cashflow impact in excess of $5m	High	Very High	Very High	Very High	Very High
Critical	1-4 fatalities or life-threatening injury / illness or total permanent or partial disability.	Extensive long term partially reversible impact on / off site or damage to endangered species, habitats, ecosystems.	Extensive reversible impacts to the community or social wellbeing. Prolonged community outrage. Extensive long term partially reversible damage to area/s of cultural significance.	Charges against any director, senior executive or senior manager involving fines, jail or the loss of right to manage the company. Prolonged major litigation – exposure to significant damages, fines or costs. Suspension or restrictions to the benefit of an asset or operate an asset. Prolonged non-voluntary suspension of trading CTP securities on the ASX.	Multiple stakeholder groups mobilising and encouraging other to act, as reflected in media channels with significant reach and influence. Negative media national for 2 days or more.	Loss of value >$10m to $20m Cashflow impact >$1m to $5m	High	High	High	Very High	Very High
Serious	Injury or illness resulting in partial disability, lost time or alternative / restricted duties.	Long term reversible impacts on / off site or to vulnerable or near threatened species, habitats, ecosystems.	Impacts to the community or social wellbeing. High levels of community tension. Long / medium term partially reversible damage to area/s of cultural significance.	Charges against any employee (not described above). Non-compliance with conditions of licence to own or operate an asset or to conduct an activity. Litigation - exposure to damages, fines or costs. Short-term non-voluntary suspension of trading CTP securities on the ASX.	More than one stakeholder group's opinion or view influencing other stakeholders, reported through media channels with some reach and influence. Negative national / state media for 1 day.	Loss of value >$2.5m to $10m Cashflow impact >$500k to $1m	Medium	Medium	High	High	High
Moderate	Injury or illness to 1 or more people resulting in medical treatment.	Medium / short-term impact on / off site or to low risk / least concern / common regional species, habitats, ecosystems.	Small scale impacts to the community or social wellbeing. Isolated examples of community tension. Moderate short-term impact to areas of cultural significance.	Moderate non-compliance with external mandatory obligations or breach of contractual or other legal obligations (not described above). Litigation possible. Non-compliance with internal controls with a moderate impact	A single stakeholder group drawing attention to an incident, issue, or approach conveyed through local media channels.	Loss of value >$500k to $2.5m Cashflow impact >$250k to $500k	Low	Medium	Medium	Medium	Medium
Minor	Injury or illness requiring first aid to 1 or more people, or no treatment recorded.	Minor near source impact on / off site – readily dealt with.	Minor community impact / short-term impact to areas of cultural significance – readily dealt with.	Minor non-compliance with external mandatory obligations or breach of contractual or other legal obligations. Non-compliance with internal controls with a minor impact.	A person or organisation within a stakeholder group signalling an interest in an incident, event or approach, using channels with limited reach or influence. Public concern restricted to local complaints.	Loss of value >$250 to $500K Cashflow impact >$50 to $250k	Low	Low	Low	Medium	Medium

6.2. Biodiversity

<table>
<tr><th colspan="6">Environmental performance measures: Biodiversity</th></tr>
<tr><td>Activities</td><td colspan="5">▪ Civil and project activities – earthworks, land and vegetation management
▪ Well operations – surface infrastructure
▪ Production facilities – gathering and boosting, oil and gas processing,
▪ Well workover – fluid systems
▪ Rehabilitation
▪ Support activities – chemical storage, workover fluids, waste and wastewater management</td></tr>
<tr><td>Residual risk</td><td>Medium</td><td>Code of Practice</td><td>A.3.1; A.3.5; A.3.6; A.3.7, A.3.9</td><td>Uncertainty</td><td>A (Low)</td></tr>
<tr><td rowspan="2">Risk</td><td colspan="3">Consequences</td><td colspan="2">Critical controls</td></tr>
<tr><td colspan="3">▪ Loss of vegetation / fauna habitat values from:
- loss of containment, including spills and leaks, of hydrocarbons, chemicals, workover fluids, drilling cuttings, wastewater, including in wet weather
- storage, handling, use and disposal of fuels, oils and chemicals
- uncontrolled fires from an ignition source
- movement of vehicles and heavy machinery outside of disturbance areas
- spread of weed species
▪ Encouragement of native and pest fauna from poor waste handling and storage
▪ Loss of fauna habitat from lack/failure of rehabilitation
▪ Loss of fauna from:
- vehicle movements and human interaction
- injury or death from access to ponds, pits, sumps or trenches or similar
▪ Fauna displacement or attraction due to heat/light emissions from flaring activities</td><td colspan="2">▪ Weed Management Plan
▪ Progressive Rehabilitation and Closure Plan
▪ Fire Management Plan
▪ Wastewater Management Plan
▪ Spill Management Plan
▪ Erosion and Sediment Control Plan
▪ Maintain flaring exclusion zone (vegetation clear zone around flare to avoid unplanned ignition of vegetation).
▪ Schedule flaring during daylight where practicable
▪ Ensure minimal night flaring duration
▪ Enter any fauna incidents into the CTP incident management system</td></tr>
<tr><td>ALARP And Acceptability</td><td colspan="5">The residual risk remains medium based on moderate impacts of loss of conservation significant fauna. The operator considers that the risk has been reduced to APLARP and acceptable based on the following:
▪ Vehicle movements are a necessary part of operations controls are aligned with industry practice and consistent with ESD principles to co-exist without any long-term impacts to the local environment.
▪ Drill cuttings are remediated and disposed of in accordance with 3.9.4.5 and Table 3-10
▪ No WoNS or declared weeds in Mereenie so risk of weed spread between well sites minimised. Best practice weed management in place and the operator seeks to achieve the requirements of key legislation and strategies as outlined in Section 2.</td></tr>
</table>

Environmental outcome	Environmental performance standard	Measurement criteria	Records
No significant impact to threatened fauna,	No unauthorised clearing of vegetation or loss of	▪ Area of known threatened fauna will be sign posted to avoid impacts to threatened fauna or their habitat	▪ Incident Records ▪ Environmental Sensitivity Maps

Environmental performance measures: Biodiversity			
their habitat and sites of conservation significance	fauna habitat	▪ Permit to work specifies area authorised cleared work areas ▪ The incident management system shows no incidents of unauthorised clearing ▪ The incident management system indicates no releases from the re-use, recycling, treatment, handling, storage and evaporation of wastewater	
	No introduction of new or spread of existing Weeds of National Significance, weed listed under NT legislation or locally significant weed species	▪ Annual weed survey ▪ No new WONS, NT listed weed species or locally significant weed species identified ▪ Weed certifications from vehicles, equipment and machinery entering from known weed infestation areas ▪ Weed hygiene training provided within field inductions	▪ Weed survey report ▪ Incident Records ▪ Weed declaration certificates ▪ Induction and register of participants
	Death or injury of conservation significant fauna will be minimised	▪ Inductions present requirements around protection of fauna, flora, their habitat and reporting fauna interactions ▪ No incidents recorded in incident management system of driving off designated roads, access tracks and well pads ▪ No incidents within incident management system involving vehicle related fauna strikes with speeds above 70km/hr	▪ Incident records ▪ Induction and register of participants
	No uncontrolled fires from the operator's activities	▪ The incident management system shows no recorded incidents of uncontrolled fires starting because of the operator's activities	▪ Incident records
	The operator's activities will not encourage pest species	▪ The incident management system shows no records of pest species interactions with waste or inappropriate waste storage and handling that encourages vermin access.	▪ Incident records ▪ Inspection records

Environmental monitoring and reporting	▪ Rehabilitation success monitoring as per Rehabilitation Plan, including visual inspection and photo point monitoring (Annual) ▪ Weed survey (annual) ▪ Lease area monitoring and inspections (fauna interactions/fencing) (various, based on activities) ▪ Fire break monitoring (annual) ▪ Fire fuel load review (annual) ▪ Fire mapping review (annual) ▪ Fauna interactions (as required)
Corrective actions	▪ Reinstatement of firebreaks ▪ Reinstatement of fencing, fauna matting or escape points for protection of fauna ▪ Reinstatement of disturbed areas ▪ Removal of new weed infestations

6.3. Land

<table>
<tr><th colspan="6">Environmental management strategy: Land</th></tr>
<tr><td>Activities</td><td colspan="5">▪ Civil and project activities – earthworks, land and vegetation management
▪ Well operations –surface infrastructure
▪ Production facilities – gathering and boosting, oil and gas processing,
▪ Well workover – fluid systems
▪ Wellhead equipment, safety systems and gathering network replacement
▪ Rehabilitation
▪ Support activities – services, chemical storage, workover fluids, waste and wastewater management
▪ Mereenie to Alice Springs Pipeline/Brewer Estate Oil Yard</td></tr>
<tr><td>Residual risk</td><td>Medium</td><td>Code of Practice</td><td>A.3.1, A.3.4, C.7.1, C.7.2</td><td>Uncertainty</td><td>A (Low)</td></tr>
<tr><td rowspan="2">Risk</td><td colspan="3">Consequences</td><td colspan="2">Critical controls</td></tr>
<tr><td colspan="3">▪ Soil/land contamination from:
- loss of containment, including spills and leaks, of hydrocarbons, chemicals, workover fluids, drilling cuttings, wastewater, including during wet weather
- storage, handling, use of fuels, oils, condensate and chemicals
- wastewater handling, storage and treatment/disposal
- waste generation, segregation and disposal
▪ Land disturbance and exposure of soils increasing erosion hazard from movement and use of heavy machinery/earthworks
- wet weather including flooding and high rainfall events resulting in erosion
- Loss of soil viability and productivity from soil stockpiling or compaction
- Failure of rehabilitation</td><td colspan="2">▪ Implementation of asset management system
▪ Spill Management Plan
▪ Wastewater Management Plan
▪ Wet Season Management Plan
▪ Erosion and Sediment Control Plan
▪ Rehabilitation Management Plan
▪ Waste segregation and implementation of waste management hierarchy
▪ Job Hazard Analysis/ Permit to work systems
▪ Sample and test soil from flare area for hydrocarbons and arsenic during decommissioning phase
▪ Remediate or dispose of contaminated soil during flare pit decommissioning to a licensed facility
▪ 3-monthly soil testing for heavy metals (including arsenic) around the flare pit and control sites while flaring of liquid hydrocarbon is taking place</td></tr>
<tr><td>ALARP and Acceptability</td><td colspan="5">The operator considers that the risks have been reduced to ALARP and no further risk reduction is warranted as:
▪ A strong historical knowledge of the field and the environmental response to land disturbance, erosion and contamination events presents a low level of uncertainty.
▪ Drill cuttings are remediated and disposed of in accordance with 3.9.4.5 and Table 3-10Table 3-10: Waste management approaches
▪ Operation of flowlines in accordance with legislative and best practice guides/codes (refer Section 2)
▪ Operation of wastewater storage and disposal as per the Code. The ponds were developed prior to the implementation of the Code, no leak detection is in place but a program of regular inspections as part of the Asset Management System has been successfully implemented.
▪ Secondary containment (when in use) will be inspected weekly, unless being operated through the wet season during which period it will be monitored daily. Operation and maintenance of the gathering network and the MASP in accordance legislative and with best practice industry</td></tr>
</table>

	standards (refer Section 2).

Environmental management strategy: Land			
Environmental outcome	**Environmental performance standards**	**Measurement criteria**	**Records**
No significant long-term impacts on soil stability, soil quality and land formations from the operator's activities	Erosion and sediment controls in place, including wet weather response.	▪ Records show the erosion and sediment control measures are being implemented ▪ Records show inspections of erosion and sedimentation issues after significant rainfall events ▪ Records show all active work sites inspected for evidence of erosion and sedimentation, including after significant rain events, and that where erosion/sedimentation is identified, remedial actions are taken ▪ The incident management system shows no incidents relating to the failure of ESCP controls (within the design parameters) ▪ Records show restricted use of roads and tracks to operational safety activities across the field after significant rainfall event (>10mm in 24 hours)	▪ Inspection records ▪ Incident records ▪ Weather records
	Disturbance of land remains within existing cleared and operational areas.	▪ Records show that earthworks and upgrade/project activities remain within previously disturbed areas ▪ Records show vehicles and machinery remain within designated areas ▪ Records show that personnel, visitors and contractors are aware of designated work areas	▪ Incident records ▪ Induction records ▪ Permit to work records
	No releases of contaminants (including wastes, wastewater, chemicals, hydrocarbons, drilling cuttings or workover fluids) resulting in long-	▪ Records show all spills remediated immediately on discovery, and where necessary contamination assessment undertaken ▪ Drill cuttings are remediated and disposed of in accordance with 3.9.4.5 and Table 3-10 ▪ The incident management system indicates no releases of contaminants incidents related to wet weather operations	▪ Incident records ▪ Soil monitoring results ▪ Inspection records ▪ Wet weather records

	term contamination of the soil	▪ The incident management system indicates no releases of contaminants incidents related to flaring. ▪ The incident management system indicates no releases from the re-use, recycling, treatment, handling, storage of wastewater ▪ The incident management system indicates no release of contaminant incidents related to a control failure of the Wastewater Management Plan ▪ The incident management system indicates no Level 3 spills as per the Spill Management Plan ▪ The incident management system indicates no releases of contaminants from the flare pit in association with flaring activities ▪ Records show emergency response plan implemented in the event of a Level 3 spill or leak ▪ Soil samples collected around the flare pit are to be assessed against previous results and against two background reference samples.	
	Land no longer required for active operations is stabilised and progressively rehabilitated	▪ Records show full rehabilitation has been initiated for areas no longer required for the operator's activities ▪ Records show progressive rehabilitation has been initiated to reinstate/reduce areas no longer required ▪ Drill cuttings are remediated and disposed of in accordance with 3.9.4.5and Table Table 3-10 ▪	▪ Rehabilitation success monitoring ▪ Incident records

Environmental management strategy: Land	
Environmental monitoring and reporting	▪ Visual site inspection to ensure appropriate erosion and sediment control measures implemented (Civil activities and workovers: Daily; Operational areas: Monthly, Field: within five days of significant rainfall) ▪ Soil contamination assessment incorporating sampling following any Level 3 spills or spills outside of lease areas (as required) ▪ Rehabilitation success monitoring – land stabilisation (annual) ▪ Weather and road conditions (daily) ▪ Chemical and waste storage areas/tanks or similar (daily) ▪ Secondary containment (when in use) will be inspected weekly, unless being operated through the wet season during which period it will be monitored daily.

Corrective actions	▪ Revisit rehabilitation strategy where revegetation does not meet specified criteria ▪ Revegetate areas where natural revegetation is not occurring ▪ Reinstate eroded areas, particularly following wet weather events

6.4. Surface Water

<table>
<tr><th colspan="6">Environmental performance measures: Surface water</th></tr>
<tr><td>Activities</td><td colspan="5">▪ Civil and project activities – earthworks, land and vegetation management, project, borrow pits, mobilisation/demobilisation
▪ Well operations – surface infrastructure, well maintenance and integrity
▪ Production facilities – gathering and boosting, oil and gas processing, condensate and oil storage and loadout
▪ Well workover – fluid systems
▪ Wellhead equipment, safety systems and gathering network replacement
▪ Rehabilitation
▪ Support activities – chemical storage, workover fluids, waste and wastewater management</td></tr>
<tr><td>Residual risk</td><td>Medium</td><td>Code of Practice</td><td>A.3.4, A.3.8, C.3, C.4.1, C.4.2, C.5, C.7.1, C.7.2</td><td>Uncertainty</td><td>A (Low)</td></tr>
<tr><td rowspan="2">Risk</td><td colspan="3">Consequences</td><td colspan="2">Critical controls</td></tr>
<tr><td colspan="3">▪ Surface water contamination from:
- loss of containment, including spills and leaks, of hydrocarbons, workover fluids, drilling cuttings wastewater from assets, including during wet weather
- spill or leak from the storage, handling, use of fuels, oils and chemicals
- flooding from significant rainfall events
- earthworks/civil activities including heavy machinery use
- poor waste handling and disposal</td><td colspan="2">▪ Asset Management System
▪ Wastewater Management Plan
▪ Spill Management Plan
▪ Wet Season Management Plan</td></tr>
<tr><td>ALARP and Acceptability</td><td colspan="5">The operator considers that the risks have been reduced to ALRA and no further risk reduction is warranted as:
▪ Operation of flowlines in accordance with legislative and best practice guides/codes (refer Section 2)
▪ Drill cuttings are remediated and disposed of in accordance with 3.9.4.5 and Table 3-10
▪ Operation of wastewater storage and disposal as per the Code. The ponds were developed prior to the implementation of the Code, no leak detection is in place but a program of regular inspections as part of the Asset Management System has been successfully implemented.
▪ Secondary containment (when in use) will be inspected weekly, unless being operated through the wet season during which period it will be monitored daily.
▪ Operation and maintenance of the gathering network and the MASP in accordance legislative and with best practice industry standards (refer Section 2).</td></tr>
<tr><td>Environmental outcome</td><td>Environmental performance standards</td><td colspan="3">Measurement criteria</td><td>Records</td></tr>
</table>

No significant impact on surface water quality from the operator's activities	No release of contaminants resulting in long term contamination of surface waters, including during wet	▪ Records show all spills remediated immediately on discovery, and where necessary contamination assessment undertaken ▪ The incident management system indicates no release of contaminant incidents related to storage, handling, use or disposal of chemicals, fuels, wastes ▪ Wastewater samples are analysed with a human health risk assessment undertaken annually in accordance with Section 37B(2). Exposure parameters are sourced from the Australian exposure factors guidance document, as well as being informed by site specific considerations and publicly available literature.	▪ Inspection records ▪ Incident Records ▪ Chemical Register

Environmental performance measures: Surface water			
	weather operations	▪ The incident management system indicates no release of contaminant incidents related to wet weather operations ▪ The incident management system indicates no releases from the re-use, recycling, treatment, handling, storage of wastewater ▪ The incident management system indicates no release of contaminant incidents related to a control failure of the Wastewater Management Plan ▪ The incident management system indicates no Level 3 spills as per the Spill Management Plan ▪ Records show emergency response plan implemented in the event of a Level 3 spill or leak	
	Erosion and sediment controls in place	▪ Records show the erosion and sediment control plan is implemented ▪ Records show all active work site inspected for evidence of erosion and sedimentation, including after significant rain events, and that where erosion/sedimentation is identified, remedial actions are taken ▪ The incident management system shows no incidents relating to the failure of ESCP controls (within the design parameters)	▪ Inspection records ▪ Incident records ▪ Job hazard analysis
	No long-term impacts on surface water from operation of evaporation ponds	▪ Records show freeboard is maintained ▪ No incidents of overtopping from evaporation ponds recorded within the incident management system ▪ Records show inspections of integrity are maintained ▪ Records show production needs consider available holding capacity within evaporation ponds, particularly during wet weather	▪ Inspection records ▪ Daily production reports ▪ Incident records

Environmental monitoring	▪ Water sampling, where available following a Level 3 spill, to determine extent of contamination of surface water and following removal of contamination source (as required as part of Level 3 spill response) ▪ Secondary containment (when in use) will be inspected weekly, unless being operated through the wet season during which period it will be monitored daily. ▪ Evaporation ponds: freeboard levels and fauna interactions (daily) ▪ Visual monitoring of erosion and sediment controls: - Civil activities and workovers: Daily - Operational areas: Monthly - Field: within 5 days of significant rainfall
Corrective actions	▪ Soil remediation where spills occur to reduce impact to nearby surface water ▪ Drill cuttings are remediated and disposed of in accordance with 3.9.4.5 and Table 3-10 ▪ Review of wet weather procedures and response ▪ Review of storage and handling practices of contaminants ▪ Increased awareness and training

6.5. Groundwater

<table>
<tr><th colspan="6">Environmental performance measures: Groundwater</th></tr>
<tr><td>Activities</td><td colspan="5">▪ Well operations – well barriers, maintenance and integrity
▪ Production facilities – gathering and boosting, flaring, oil and gas processing
▪ Well workover – barrier protection, fluid systems, suspension, decommissioning
▪ Support activities – services, chemical storage, workover fluids, waste and wastewater management</td></tr>
<tr><td>Residual Risk</td><td>Medium</td><td>Code of Practice</td><td>B.4.1, B.4.2, B.4.17</td><td>Uncertainty</td><td>A (Low)</td></tr>
<tr><td rowspan="2">Risk</td><td colspan="3">Consequences</td><td colspan="2">Critical controls</td></tr>
<tr><td colspan="3">▪ Contamination of groundwater resources from:
- Subsurface loss of contaminants during workovers
- Groundwater inflow from workover activities
- Well integrity
- Spill or leak from the use, transportation, flaring of condensates treatment, handling and storage of, workover fluids, drill cuttings wastewater, and, diesel, fuel, oils and chemicals, including during wet season
- Loss of containment from wastewater ponds
- Loss of containment from flaring infrastructure
▪ Reduced groundwater availability for wider community from use of groundwater resources to support the operator’s activities</td><td colspan="2">▪ Groundwater extraction licence (M10001)
▪ Asset Management System
▪ Wells managed in accordance with DME approved WOMPs
▪ Implement Emergency Response Plan
▪ Wastewater Management Plan
▪ Spill Management Plan
▪ Groundwater Management Plan
▪ 6-monthly groundwater monitoring
▪ Inspect and document bund condition of flare pit quarterly (repair immediately if signs of leakage)</td></tr>
<tr><td>ALARP and Acceptability</td><td colspan="5">▪ The operator considers that this risk has been reduced to ALARP and no further risk reduction is warranted based on:
▪ Well operations and workovers will be conducted using extensive best practice controls as outlined in the DME approved WOMPs for each well. The subsurface loss of containment risks of operations and workovers are generally lower than drilling a new well because cement casing is already in place and there are no open zones, which provides some protection against hydrocarbon migration. Multiple well barriers are used across aquifers to minimise interaction.
▪ The residual risk has been reduced to the greatest extent possible due to the consequence of impacts on groundwater from subsurface losses remaining as serious if an event did occur. We consider that this risk has been reduced to ALARP and no further risk reduction is warranted.
▪ We also note that part of the rationale for conducting the workover activities is to improve well integrity in an aging field. Workovers will ensure well barriers are in-tact so that subsurface loss of containment risks are reduced during the operation of the well.
▪ Drill cuttings are remediated and disposed of in accordance with 3.9.4.5 and Table 3-10</td></tr>
</table>

Environmental performance measures: Groundwater			
Environmental outcome	**Environmental performance standards**	**Measurement criteria**	**Records**
No significant impact on groundwater quality, levels and availability as a result of activities	No releases of contaminants (wastewater, wastes, chemicals, hydrocarbons or workover fluids) resulting in long-term contamination of groundwater resources	▪ Records show all spills remediated immediately on discovery, and where necessary contamination assessment undertaken ▪ The incident management system indicates no releases of contaminants incidents related to wet weather operations ▪ The incident management system indicates no releases from the re-use, recycling, treatment, handling, storage of wastewater ▪ The incident management system indicates no releases of contaminant incidents related to a control failure of the Wastewater Management Plan ▪ The incident management system indicates no Level 3 spills as per the Spill Management Plan ▪ Records show Emergency Response Plan implemented in the event of a Level 3 spill or leak ▪ Groundwater Management Plan will be implemented ▪ Groundwater results are currently assessed by a hydrogeologist against ANZECC Guidelines. Site Specific Performance Standards for Mereenie Field are currently being developed by a specialist consultant and will be assessed and reported against in the near future.	▪ Groundwater monitoring results ▪ Incident records
	Groundwater extraction does not reduce groundwater availability to surrounding users	▪ Records indicate only existing operator bores used to extract groundwater as per the approved groundwater extraction licence (M10001) ▪ Records indicate the operator does not exceed the groundwater extraction volume approved in the groundwater extraction licence	▪ Water extraction records
	Wells are managed under a Well Operations Management Plan to monitor integrity and potential for impact on groundwater	▪ Records show that a DME approved WOMP is implemented for each well ▪ Records indicate that BOPs and well control equipment is installed, maintained and routinely tested on workover rigs ▪ Records of ongoing maintenance, monitoring and testing processes as specified in WOMPs	▪ Well Barrier Integrity Verification reports ▪ Inspection records ▪ Incident records
Environmental monitoring and reporting	▪ Groundwater monitoring program (baseline bi-annual, wet/dry season transition)* with results reported annually. ▪ Groundwater extraction volumes as per extraction licence M10001 (quarterly) ▪ Well monitoring, surveillance and reporting as per DME approved WOMPs ▪ Calibration of in-situ water meter at least once prior to use within the Mereenie field as per the operator's Standard Operating Procedures		

Corrective actions	▪ Remediate spills and leaks where possible to reduce groundwater impact ▪ Conduct workover to improve integrity of wells, thereby reducing potential for groundwater interaction ▪ Review opportunities for water reduction across field operations and subsequent groundwater extraction reduction.

6.6. Air and noise

Environmental performance measures: Air and noise					
Activities	▪ Civil and project activities – earthworks, land and vegetation management, borrow pits, wastewater evaporation systems ▪ Well operations – operations, maintenance and integrity ▪ Workovers – well interaction, suspension, decommissioning ▪ Wellhead equipment, safety systems and gathering network replacement ▪ Production facilities –, gathering and boosting, oil and gas processing, venting and flaring, maintenance ▪ Support activities – waste, chemical storage, greenhouse gas emissions				
Residual risk	Medium	**Code of Practice**	A.3.3, B.4.8, B.4.9, B.4.14 D.5*	**Uncertainty**	A (Low)
Risks	**Consequences**			**Critical controls**	
	▪ Release of contaminants to air environment through: - loss of containment (gas) - fugitive emissions/leaks from wells, flowlines and processing equipment - air emissions from combustion of fuel/gas - flaring and venting of gas and processing by-products (including increased CO_2, VOC, Nox and CO and visible flare emissions during temporary flaring period) - emission from release of chemicals, hazardous substances to atmosphere - vehicle and heavy machinery movements - explosion or fire from the operator's activities - elevated noise during flaring events and from associated compressors and transfer pumps - increased atmospheric arsenic due to temporary increased flaring			▪ Asset integrity and maintenance systems ▪ Emergency Response Plan ▪ Methane Emissions Plan/leak detection program ▪ Well Operation Management Plan ▪ Job Hazard Analysis and Permit to Work systems ▪ Flaring in designated and restricted areas ▪ Flare metering – taken from SCADA data and the on-site weather station (condensate volumes to flare, wind direction and speed) ▪ Limit flaring to periods where condensate offtake from the field is limited (ie. Inability to sell, reinject condensates – notification to DLPE will be provided when flaring of liquid hydrocarbons commences or ceases) ▪ Report emissions via NGERs and NPI ▪ Maintain vegetation exclusion zone around flare pit ▪ Undertake atmospheric monitoring of arsenic through dust deposition monitoring – installed Jan/Feb 2026 and assessed against the background sample (location 4 – see Appendix H). Results recorded through field data sheet and analysis spreadsheets from lab. Data can be provided to DLPE on	

		request. Dust Deposition monitoring only to be undertaken during periods of increased flaring. See Appendix H for Implementation Strategy for Environmental Sampling at Mereenie Field ▪ No nearby sensitive receptors other than staff who wear personal gas monitors at all times when working in proximity to the flare pit	
ALARP and Acceptability	The Code dictates methane emissions for onshore shale gas fields (Clause D.2). Mereenie is a conventional gas operation but adheres to these requirements as far as practical as outlined in the Methane Emissions Management Plan. The residual risk has been reduced to the greatest extent possible therefore, we consider this risk ALARP and acceptable.		
Environmental outcome	**Environmental performance standards**	**Measurement criteria**	**Records**
The operator's activities do not create a measurable decrease in air quality at sensitive receptors	No release of air contaminants resulting in long term impact to sensitive receptors	▪ Records indicate regular inspections are conducted in line with Well Operations Management Plan and asset maintenance systems ▪ Records indicate that weekly inspections are undertaken on the flare pit ▪ Records indicate the NGERs and NPI reports are submitted annually ▪ Records indicate that fortnightly reporting on contingency flaring is undertaken ▪ All flaring emission data is reported in annual emissions reports and NGERs reporting ▪ Records of inspection identify asset integrity system and processes are being implemented ▪ Records show that safety critical processes and procedures are in place ▪ Dust deposition samples collected around the flare pit and office are to be assessed against previous results and against background reference samples. A performance standard of 4ug/m2/day for Arsenic should be maintained.	▪ Inspection records ▪ Process/metering records ▪ Incident records ▪ Calibration records
Environmental performance measures: Air and noise			

	No uncontrolled fire or explosion from the operator's activities	▪ Records show that safety critical processes and procedures are in place as per Integrity Management System ▪ Incident management system shows that emergency response plan is implemented	▪ Inspection records ▪ Incident records
Greenhouse gas emissions are minimised	Venting to be eliminated as far as reasonably practicable.	▪ Incident management system records unplanned venting of gas not related to safety or emergency situations. ▪ Daily reports confirm all technically recovered hydrocarbons sent to the flare is metered and recorded ▪ Calculation of greenhouse gas emissions in accordance with the NGER Measurement Determination	▪ Incident records ▪ NGER Report ▪ Venting and flaring records
	All leaks detected and repaired as per the Code	▪ Records show methane emissions management plan implemented ▪ The incident management system shows a log of all reported leaks ▪ Fugitive emissions are accounted for in NGER calculations and reporting	▪ Incident records ▪ Leak detection records ▪ NGER Report
Environmental monitoring and reporting	▪ Routine testing, inspection and maintenance for assets including wells, flowlines, processing plant equipment (as per Asset Management System) ▪ Leak detection monitoring program (annual) ▪ Recording of unplanned venting events (as required) ▪ Pressure monitoring of flowlines and MASP (continuous) ▪ Hydrotest monitoring of assets prior to re-commissioning (as required) ▪ Well head pressure (monthly) ▪ Flaring volumes: - Workovers (wells): daily - Production facilities (CTP/ESS): continuous ▪ Calibration records for plant/well metering and measurement as per Asset Management System/Measurement Scheme ▪ Calibration of meters used for leak detection prior to use within Mereenie field as per the operator's Standard Operating Procedures ▪ Clean Energy Regulator – National Greenhouse and Energy Reporting scheme (NGERs) ▪ Supply of NGERs outcomes to the Northern Territory Government		
Corrective actions	▪ Repair of leaks ▪ Implement corrective maintenance via incident and maintenance systems where regular inspections identify potential asset failure		

** The scope of Section D applies only to "onshore shale gasfields" as specified in Clause D.2 of the Code, the operator is working to meet the requirements of Section D of the Code where relevant to our operations*

6.7. Hazards

<table>
<tr><th colspan="6">Environmental performance measures: Hazards</th></tr>
<tr><td>Activities</td><td colspan="5">▪ Civil and project activities – earthworks, land and vegetation management, site mobilisation/demobilisation
▪ Well operations -surface infrastructure
▪ Production facilities – gathering and boosting, oil and gas processing, venting and flaring, oil loadout
▪ Well workover – fluid systems
▪ Wellhead equipment, safety systems and gathering network replacement
▪ Rehabilitation
▪ Support activities –chemical storage, workover fluids, waste and wastewater management
▪ Mereenie to Alice Springs Pipeline/Brewer Estate Oil Yard</td></tr>
<tr><td>Residual Risk</td><td>Low</td><td>Code of Practice</td><td>B.4.16</td><td>Uncertainty</td><td>A (Low)</td></tr>
<tr><td rowspan="2">Risk</td><td colspan="3">Consequences</td><td colspan="2">Critical controls</td></tr>
<tr><td colspan="3">▪ Ignition sources present from the operator’s activities causing fire and loss of areas/items of cultural significance
▪ Daily operations activities during or following intense weather events (flooding, wind, lightning)
▪ Naturally Occurring Radioactive Materials (NORMS)
▪ Atmospheric arsenic exposure due to temporary increase in flaring</td><td colspan="2">▪ Wastewater Management Plan
▪ Spill Management Plan
▪ Erosion and Sediment Control Plan
▪ Bushfire Management Plan
▪ Methane Emissions Management Plan
▪ Wet Season Management Plan
▪ Asset Management System
▪ Waste management hierarchy implementation
▪ Flare metering – taken from SCADA data and the on-site weather station (condensate volumes to flare, wind direction and speed)
▪ Flare pit visual monitoring
▪ Atmospheric monitoring of arsenic has been completed and assessed against background samples. Results were non-detections. Data can be provided to DLPE on request. Dust deposition monitoring to only be undertaken during periods of increased flaring. All results to date have been non-detections. Therefore the risk is low and has been reduced to ALARP. See Appendix H for Implementation Strategy for Environmental Sampling at Mereenie Field.</td></tr>
<tr><td>ALARP and Acceptability</td><td colspan="5">Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and ‘acceptable’
The activities under this EMP have been occurring for over 40 years and the operator is experienced with operating in the climatic and environmental conditions. Systems and controls are in place to effectively manage operations in the event of natural hazards such as bushfire, wet weather and the occurrence of NORMS.</td></tr>
</table>

Environmental outcome	Environmental performance standard	Measurement criteria	Records
Bushfires are not started from conduct of the regulated activity and infrastructure is protected from fires started outside of the OL areas	No uncontrolled bushfires caused by the operator's activities	▪ The Incident Management System shows no fires resulting from the operator's activities ▪ Records show annual fire scar mapping, annual fire load estimates and maintenance of firebreaks are undertaken ▪ Records show emergency response plan implemented in the event of a fire ▪ Records show weather conditions, including current fire danger are reviewed as part of pre-start/toolbox/Job Hazard Analysis/Permit to Work processes ▪ Records show NAFI fire tracking maps are reviewed daily as part of operations where a high fire danger is present ▪ Records show emergency response drills are conducted	▪ Incident records ▪ JHA records ▪ Daily reports
Environmental performance measures: Hazards			
No significant impact on the natural environment from the operator's activities in association with weather events	No releases of contaminants resulting in long-term contamination of surface waters	▪ The incident management system indicates no releases of contaminant incidents related to wet weather operations ▪ Incident management system indicates no incidents relating to the failure of ESCP controls (within design parameters)	▪ Incident records ▪ Post wet weather inspection records ▪ Daily reports ▪ Inspection records
	Erosion and sediment controls in place where required and working as designed	▪ Records show Erosion and Sediment Control Plan is being implemented. ▪ Incident management system indicates no incidents relating to the failure of ESCP controls (within design parameters) ▪ Weather conditions, including current fire danger are reviewed as part of pre-start/toolbox/Job Hazard Analysis/Permit to Work processes	▪ Incident records ▪ Post wet weather inspection records ▪ Inspection records
The extraction of subsurface equipment, hydrocarbons and water does not result in human health impacts	No impacts from presence of NORMs on environment or human health	▪ Records indicate that NORMS levels are within acceptable limits prior to handling and disposal ▪ Records show licensed waste contractors are used for movement of waste materials. ▪	▪ NORMS testing records ▪ Incident records ▪ Waste tracking records

Environmental monitoring and reporting	▪ Monitor long-term and short-term weather forecast (daily) ▪ Measure rainfall (daily) ▪ Inspect firebreaks (annual) ▪ Inspect fire equipment functionality (bi-annual, prior to high fire danger season) ▪ Monitor freeboard on evaporation ponds (daily) ▪ Secondary containment (when in use) inspected weekly, unless being operated through the wet season during which period it will be monitored daily. ▪ Monitor water volumes entering evaporation ponds from CTP/ESS processes (daily) ▪ Testing of NORMs (as required during workovers; as per the operator's NORMs plan during operations) ▪ Inspect chemical, fuel and oil storage areas (monthly) ▪ Emergency Response Drills (monthly) ▪ Waste tracking (monthly) ▪ Arsenic will be monitored in accordance with Appendix H – Implementation Strategy and Environmental Sampling at Mereenie Field – to ensure no impacts to the environment or human health from arsenic from flaring. ▪ Staff are to wear personal gas detectors at all times when working in proximity to the flare pit
Corrective actions	▪ Maintain capacity in bunds/secondary containment devices ▪ Manage freeboard within wastewater storage ▪ Replace defective fire equipment ▪ Reinstate fire breaks ▪ Reinstate/repair erosion and sediment control devices

6.8. Heritage

<table>
<tr><th colspan="6">Environmental performance measures: Heritage</th></tr>
<tr><td>Activities</td><td colspan="5">▪ Civil and project activities – earthworks, land and vegetation management, site mobilisation/demobilisation, borrow pits
▪ Rehabilitation</td></tr>
<tr><td>Residual risk</td><td>Medium</td><td>Code of Practice</td><td>A.3.1, A.3.7, A.3.5, A.3.8</td><td>Uncertainty</td><td>A (Low)</td></tr>
<tr><td rowspan="2">Risk</td><td colspan="2">Consequences</td><td colspan="3">Critical controls</td></tr>
<tr><td colspan="2">▪ Loss of heritage values or items of significance from:
- Disturbance/exposure of heritage sites/artefacts of cultural significance
- Ignition sources present from the operator’s activities causing fire and loss of areas/items of cultural significance
- Unauthorised access to the field by public
- Unauthorised access to restricted work areas/no-go zones
- Disturbance/inadvertent impact if additional laydown or access areas are required for flare maintenance</td><td colspan="3">▪ SSCC Certificates/CLC permits in place
▪ Site inductions (cultural awareness)
▪ Access to site pre-approved under CLC permit
▪ Activities remain within previously disturbed areas
▪ Implement Bushfire Management Plan
▪ Implement Emergency Response Plan/actions
▪ Ensure any clearing of vegetation for laydowns or flare maintenance are only carried out in previously disturbed (regrowth vegetation) areas only
▪ Brief personnel on unexpected find cultural heritage obligations before any ground disturbance linked to approved regulated activities proximate to known heritage areas.</td></tr>
<tr><td>ALARP and Acceptability</td><td colspan="5">▪ Activities are not being conducted in the cultural heritage sensitive areas (exclusion zones), though there is a remote likelihood of disturbance to items or places of significance from operational activities ranking this as a low risk. Works are remaining within previously disturbed areas and under permits from CLC (SSCC C2013-046) and A new AAPA Certificate, covering the entire field and all the works described in this EMP is 202305946. Activities will comply with conditions of the approved certificate.
▪ Fire could spread to culturally significant areas if started by the operator’s activities. This presents a risk of a serious nature for the loss of culturally significant areas, but through the implementation of control measures outlined within the Bushfire Management Plan the operator considers that this risk has been reduced to lowest possible and is ALARP and acceptable.</td></tr>
<tr><td>Environmental outcome</td><td colspan="2">Environmental performance standard</td><td colspan="2">Measurement criteria/monitoring</td><td>Records</td></tr>
<tr><td>No significant impact to indigenous and non-indigenous artefacts, Aboriginal Sacred Sites, and non-indigenous</td><td colspan="2">No non-compliance with AAPA Sacred Site Certificates or CLC permits</td><td colspan="2">▪ The Incident Management System shows no recorded incidents involving non-compliance with AAPA and CLC permits.
▪ Personnel inductions include cultural and heritage awareness including exclusion zones and unexpected finds procedures.</td><td>▪ Incident Records
▪ Induction (Heritage and Cultural Awareness)</td></tr>
</table>

6.9. Community

<table>
<tr><th colspan="6">Environmental performance measures: Community values</th></tr>
<tr><td>Activities</td><td colspan="5">▪ Civil and project activities – site mobilisation/demobilisation
▪ Well operations -surface infrastructure
▪ Production facilities – gathering and boosting, oil and gas processing, venting and flaring, oil loadout
▪ Well workover – fluid systems
▪ Mereenie to Alice Springs Pipeline/Brewer Estate Oil Yard</td></tr>
<tr><td>Residual risk</td><td>Low</td><td>Code of Practice</td><td></td><td>Uncertainty</td><td>Low</td></tr>
<tr><td rowspan="2">Risk</td><td colspan="2">Consequences</td><td colspan="3">Critical controls</td></tr>
<tr><td colspan="2">▪ Ignition sources present from the operator’s activities causing fire and loss of areas/items of cultural significance
▪ Increased traffic during works programs
▪ Increased waste generation impacts regional landfill capacity and disposal of listed wastes</td><td colspan="3">▪ All activities remain within approved SSCC and APPA areas
▪ Site Induction
▪ Bushfire Management Plan
▪ Methane Emissions Management Plan
▪ Emergency Response Plan
▪ Traffic management plan and logistics coordination
▪ Implementation of waste hierarchy in operations and program planning</td></tr>
<tr><td>ALARP and Acceptability</td><td colspan="5">Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and ‘acceptable’
The activities under this EMP have been occurring alongside the owners of the land under agreement for over 40 years. The operator is maintaining relationships with the community to ensure that the risk of operations remains low and that the protection of social and economic sustainability values remains.</td></tr>
<tr><td>Environmental outcome</td><td>Environmental performance standard</td><td colspan="2">Measurement criteria</td><td colspan="2">Records</td></tr>
<tr><td>The operator’s activities minimise the following:
▪ Reduction in capacity of road infrastructure up to and within Mereenie</td><td>No complaints from stakeholders</td><td colspan="2">▪ Records of the operator’s approved journey management plans
▪ Records show Traditional Owners able to access field in liaison with Production Supervisor/Person in Charge
▪ Contact information provided to local communities and stakeholder to facilitate communication
▪ No recorded incidents of work being conducted beyond approved operational areas</td><td colspan="2">▪ Stakeholder Communication Log
▪ Journey Management System
▪ Incident records</td></tr>
</table>

6.10. Cumulative impacts

The cumulative impacts associated with the ongoing operation and well integrity and intervention campaigns have been assessed as low. The Mereenie Field has been part of the local community since the mid-1980s and has supported the Traditional Owners through the provision of infrastructure to support their pastoralist activities.

Aspect	Risk Rating	Summary
Water (groundwater)	Low	No impacts identified on surrounding users. Traditional Owners have full access to water supplies via stock dams and water storage across Mereenie Field. Water managed under licence M100001.
Surface water	Low	No surface water will be taken and no surface water extraction licences exist for the area. No release to surface water proposed.
Greenhouse Gas Emissions	Low	No emissions from land clearing activities. For the 2022 NGER reporting period, greenhouse gas emissions were 56,743 tCO_2e. This included a two well drilling program that occurred under the NT Drilling Program EMP (EMP CTP3-4). Production and metering improvements in addition to leak detection and repair programs are showing an improvement in emissions. Completed projects such as the installation of the flare gas compressor will see continued reductions in emissions..
Air Pollutants	Low	Flaring of liquid hydrocarbons may marginally increase CO2, CO, VOC, visible flare emissions, atmospheric arsenic, NOX and particulate matter emissions. Emissions will be monitored and reported annually through NPI reporting, NGERs reporting and DLPE Emissions Reports. Dust deposition monitoring will be undertaken during contingency flaring to monitor atmospheric arsenic. Gas monitors are worn by personnel at all times when working in proximity to the flare pit
Community – traffic	Low	An additional 20 vehicles per day accessing Mereenie are anticipated during specific work programs such as the well integrity and intervention programs. This is above the current traffic volumes that have been ongoing accessing the Mereenie Field for the last 40 years. Journey Management Planning and personnel awareness through daily pre-start meetings of increased traffic during peak tourist periods and maintaining safety for the operational crews and tourists alike is a priority.
Community – tourism	Low	Tourism activities have worked nearby to Mereenie for the life of the field. With the isolated location of the wells and supporting infrastructure and no other resource or industrial projects in the area the operator considers the impacts of ongoing activities to be low.
Community – amenity/visual impact	Low	The majority of infrastructure for Mereenie is not visible or accessible. The MASP ROW is evident along sections of Larapinta Drive through cleared areas and signage. Limited visual impact exists from the flare facility due to the open terrain.

Aspect	Risk Rating	Summary
Rehabilitation – final land use	Low	Successful rehabilitation is dependent on the vegetation type, soil type and moisture content in the soil which, in turn, is dependent on the timing and amount of rainfall in the region after earth work restoration commences.

7. Management Plans

7.1. Wet Season Management Plan

All activities conducted at the Mereenie Field are conducted on a continuing daily basis, 365 days per year, 24 hours per day. This means that works occur during the wet season.

A Wet Season Management Plan has been developed and presented below in Table 7-1 to address the risks and management measures put in place to ensure operations can continue with little impact on gas production or impact on the environment.

7.2. Erosion and Sediment Control Plan

The Code requires an Erosion and Sediment Control Plan (ESCP) for the activities to be developed by a suitable qualified person in accordance with the relevant guidelines including IECA Best Practice Guidelines. Table 7-2 presents the ESCP for Mereenie.

7.3. Weed Management Plan

The Code requires a Weed Management Plan (WMP) that is developed in accordance with the requirements of the NT Weed Management Planning Guide: Onshore Petroleum Projects. The Weed Management Plan is provided below in Table 7-3.

7.4. Bushfire Management Plan

The Bushfire Management Plan for the Mereenie Field is provided in Table 7-4 and has been based on the Bushfire Management Planning Guide: Onshore Petroleum Projects (DENR, 2020) and the Code.

7.5. Rehabilitation Management Plan

The Rehabilitation Management Plan, Table 7-5 addresses both rehabilitation of decommissioned areas/wells and also the progressive rehabilitation of areas where the disturbance footprint can be reduced without impacting the daily operations of the area.

7.6. Wastewater Management Plan

The Wastewater Management Plan (WWMP) is provided in Table 7-6. The Wastewater Management Plan focuses only on wastewater as per the definition in the Code. The management of sewage and grey water from camp and administration facilities is not covered in the WWMP.

7.7. Spill Management Plan

The Code requires a Spill Management Plan (SMP) that assesses and manages the risks posed by potential spills of waste, wastewater, produced oil or condensate, fluids and any chemicals used or stored as part of petroleum activities and addresses the requirements of the Code is presented in Table 7-7.

7.8. Methane Emissions Management Plan

The Methane Emissions Management Plan (MEMP) aims to reduce emissions via emissions detection and management in the gas field. Monitoring and measurement is undertaken to quantify and reduce fugitive methane emissions from the activities. The Plan is presented in Table 7-8.

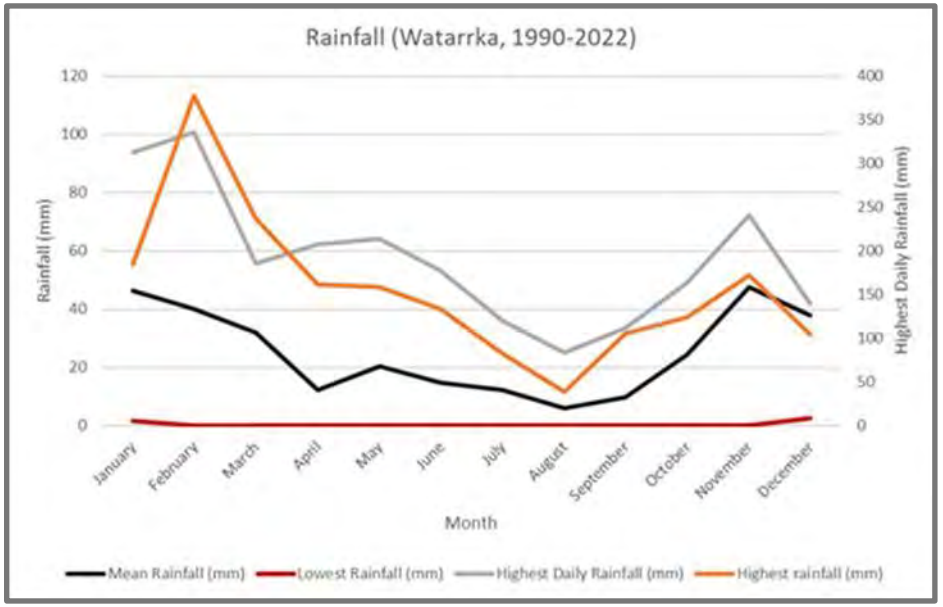
Table 7-1: Wet Season Management Plan

Mereenie OL4 and OL5—Field/CTP/ESS/Camp Wet Season Management Plan 2022

CENTRAL PETROLEUM MEREENIE FIELD	
Property land uses	CP operates the MRN under OL4 and OL5 issued under the *Petroleum Act 1984*
Site Description	The Mereenie field is an oil and gas field located west of Alice Springs in a remote part of the Northern Territory. The field commenced production in the 1980's and contains 73 wells, out of which only 43 are active.
Wet Season Management Plan	
Purpose	To respond to the risks associated with wet weather on daily operations.
Objectives	Ensure that all operational and workover activities can continue to be undertaken safely and with minimal risk to the environment during the wet season . Have the ability to main 365 day operational activities through provision of goods and services, including fuel, oil, chemicals and materials.

WET SEASON RISKS	
Key Risks	**Controls**
• Transport and storage of oil, fuels ,chemicals, wastewater and materials to support CP activities	• Sufficient materials required for ongoing operations will be stored onsite in the event of wet weather. This includes 10 days allowance of required fuel. • Access to field operations is limited to safety critical activities during significant wet weather or flooding • Systems and equipment will be reviewed following significant rainfall events to ensure safety and environmental risks are minimised • Chemical storage areas are bunded with covers, where possible, to prevent water ingress • Bunding and secondary containment is inspected and emptied to suitable location following rainfall events • During workovers, wastewater tanks at well sites have available freeboard to meet 1:1000y ARI • Evaporation ponds are maintained with available freeboard to contain a 1:1000y ARI event
• Flooding and erosion/damage to access tracks and roads	• Roads and access tracks are inspected following significant rainfall to identify and prevent further erosion and sedimentation • Civil equipment is available to assist with emergency response • Earthworks will be minimised during the wet season where possible. • Alternative access via predominantly sealed roads of Stuart and Lasseter Highways used during significant rainfall events.

	Plan Owner	Implementation
Groundwater contact	Risk and HSE Manager	Production Supervisor



WET SEASON MONITORING		
Monitoring	**Information location/Action**	**Frequency**
Weather forecast	http://www.bom.gov.au/nt/	Daily
Road conditions	https://roadreport.nt.gov.au/home	After significant rainfall event
Containment areas and sumps, evaporation	Visual monitoring for overflows	After rainfall event
Internal roads and access tracks	Visual monitoring for erosion	After significant rainfall event
Evaporation Ponds	Freeboard levels	Daily

Table 7-2: Erosion and Sediment Control Plan

Mereenie

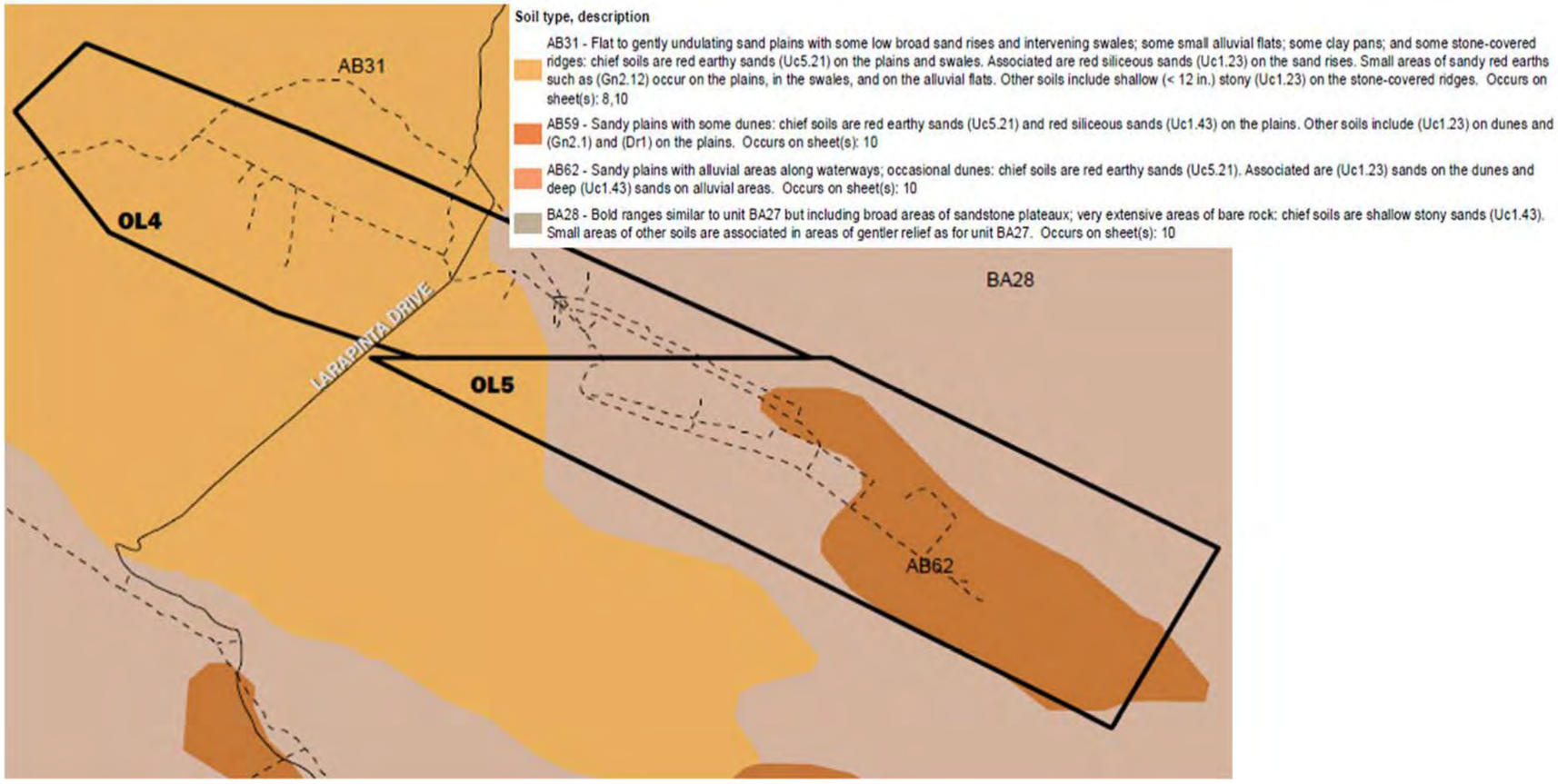
Erosion and Sedimentation Control Plan 202

	Owner	Field Implementaton
ESCP	Risk and HSE Manager	Production Supervisor

Central Petroleum Mereenie Field	
Property land uses	CP operates the MRN under OL4 and OL5 issued under the *Petroleum Act 1984*
Objectives	To reduce the risks of erosion and sedimentation on the land, soil and surface waters in the OL area

EROSION AND SEDIMENTATION RISKS	
Key Risks	**Controls**
Annual estimated soil loss is considered very low. Average monthly rainfall risk ranges from very low (April—October) to moderate (December).	
Earthworks in relaton to operatonal maintenance and minor earthworks for workovers and pipeline connectons	• Install erosion and sediment control structures (e.g. berms, sediment fences) using best practice guidelines by DEPWS and IECA where required • Clear vegetation only within approved and existing disturbance areas • Stockpile top soil separately in low profile mounds • Conduct Job Hazard Analysis for any new task or new use of equipment to identify correct control measures • Encourage surface vegetation where possible • Avoid driving after significant rainfall events • Conduct works during daylight hours • Keep construction operation and level of final constructed surface above 1 in 100 year flooding events • Inspect flowline/pipeline easements regularly for erosion and repair where detected • Plan operational activities to minimise new land disturbance • Carry out earthworks in accordance with CP standards and procedures • Monitor integrity of installed control devices after every significant rainfall events
Movement of heavy machinery and vehicles	• Avoid driving after significant rainfall events • No driving beyond access tracks/well pads • Personnel access to the facility and any site/area by permit approved by the CLC
Flooding and rainfall erosivity	• Install erosion and sediment control structures (e.g. berms, sediment fences) using best practice guidelines by DEPWS and IECA • Inspect integrity of installed control devices after every significant rainfall event • Remediate in accordance with IECA and DEPWS best practice principles

LIKELY IMPACTED AREAS	
Disturbance areas	• Pads • Roads • Plant • Flowlines/pipelines • MASP
Watercourse crossings	• Strutt Creek (tributary of Parke Creek)



EROSION AND SEDIMENTATION MONITORING PROGRAM			
Mitgaton Measure	**Measurement Criteria**	**Monitoring frequency**	**Record**
No unauthorised clearing	• Clearance from DPIR, CLC and/or AAPA before any new clearing works undertaken.	Prior to any new works	Job hazard analysis
No unauthorised third-party access	• Travel to Mereenie requires pre-approval for all visitors • Visitor to report to camp on arrival	As required	Journey Management Plan Visitor and staff inductions
Limit vehicle access	• Any off-road driving to be reported to the supervisor and investigated • No vehicle access to rehabilitated areas • Avoid driving where possible after significant rainfall	As required	Visitor and staff inductions
All erosion and sedimentaton control devices compliant with DEPWS and IECA best practse guidelines	• Install erosion and sediment control devices in accordance with DEPWS and IECA guidelines to: – Slow surface water on slopes greater than 3%; • Divert water into the surrounding environment to encourage natural sheet flow: – Sediment catch drains installed (to stop sediment flowing into water courses) – Reference the DEPWS or IECA guidelines for a full list or control devices and how to install	Annual or after a significant rainfall (>10mm in 24 hours)	Site inspection form
No windrows or concentraton points	• Inspect all access tracks, roads and cleared areas within the OL area to ensure no windrows or concentration points • All erosion gully heads removed and flattened to encourage laminar flow and reduce further development of erosion.	Post earthworks	Site inspection form
Rehabilitaton	• Progressively rehabilitate non-operational areas to encourage vegetation growth for stabilisation • Install erosion and sediment control structures (e.g. berms, sediment fences) using best practice guidelines by DEPWS and IECA until rehabilitation is stabilised	As per Rehabilitation Management Plan	Refer to the Rehabilitation Management Plan

TYPICAL EROSION AND SEDIMENTATION CONTROL DEVICES*		
Type	**Use**	**Example**
Fibre rolls	• Fibre rolls consist of small-diameter, biodegradable straw/ coir-filled logs. • Can be used as check dams in wide, shallow drains so long as the logs can be anchored to prevent movement. • Best used in locations where it is desirable to allow the log to integrate into the vegetation, such as in vegetated channels.	
Check dams	• Sandbag check dams are typically used in drains less than 500 mm deep, with a gradient less than 10%. • These check dams are typically small (in height) and therefore less likely to divert water out of the drain compared to rock check dams. • Can also be used as a temporary (supplementary) sediment trap. • Can be used for velocity control	
Cross ban (whoa boy) drainage	• Divert water off tracks • Collect and divert sheet flow off roads and tracks	
Sediment fence	• Sediment fences formed from a composite (non-woven) fabric are generally preferred down-slope of stockpiles containing clayey material instead of the traditional, woven sediment fence fabric. • Woven fabric sediment fences (left) are best used for sandy soils and stockpiles located up-slope of a suitably grassed buffer zone that will allow for the infiltration of stormwater runoff from the stockpile.	

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

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

Land Systems						
Extent	**Land System**	**Descripton**	**Geology**	**Topography**	**Soils**	**Erosion Hazard**
10%	Krichauff	Sand plains with dunes, occupying the northwest part of the Mereenie Field	Flat lying sandstone, siltstone and conglomerate. Upper Proterozoic age, Amadeus trough (Heavitree quartzite)	Partially dissected erosional weathered land surface; relief up to 500 ft	Shallow stony or gravelly soils and some red sands or red clayey sands	Moderate erosion hazard
45%	Simpson	Sandstone plateaus, eroded and dissected, forming margins to the southeast part of the Mereenie Field	Extensive dune fields with hard spinifex pastures	Sand dunes of varying height and alignment, up to a maximum of 70ft in the Simpson Desert section	Red sands to red clayey sands and locally red earths	Low erosion hazard
45%	Gillen	Sandstone strike ridges and intervening valleys in the southern part of the Mereenie Field	Sandstone mountains with mulga or witchetty bush country	Partially dissected erosional weathered land surface; relief up to 500 ft	Shallow stony or gravelly soils and some red sands or red clayey sands	Moderate erosion hazard

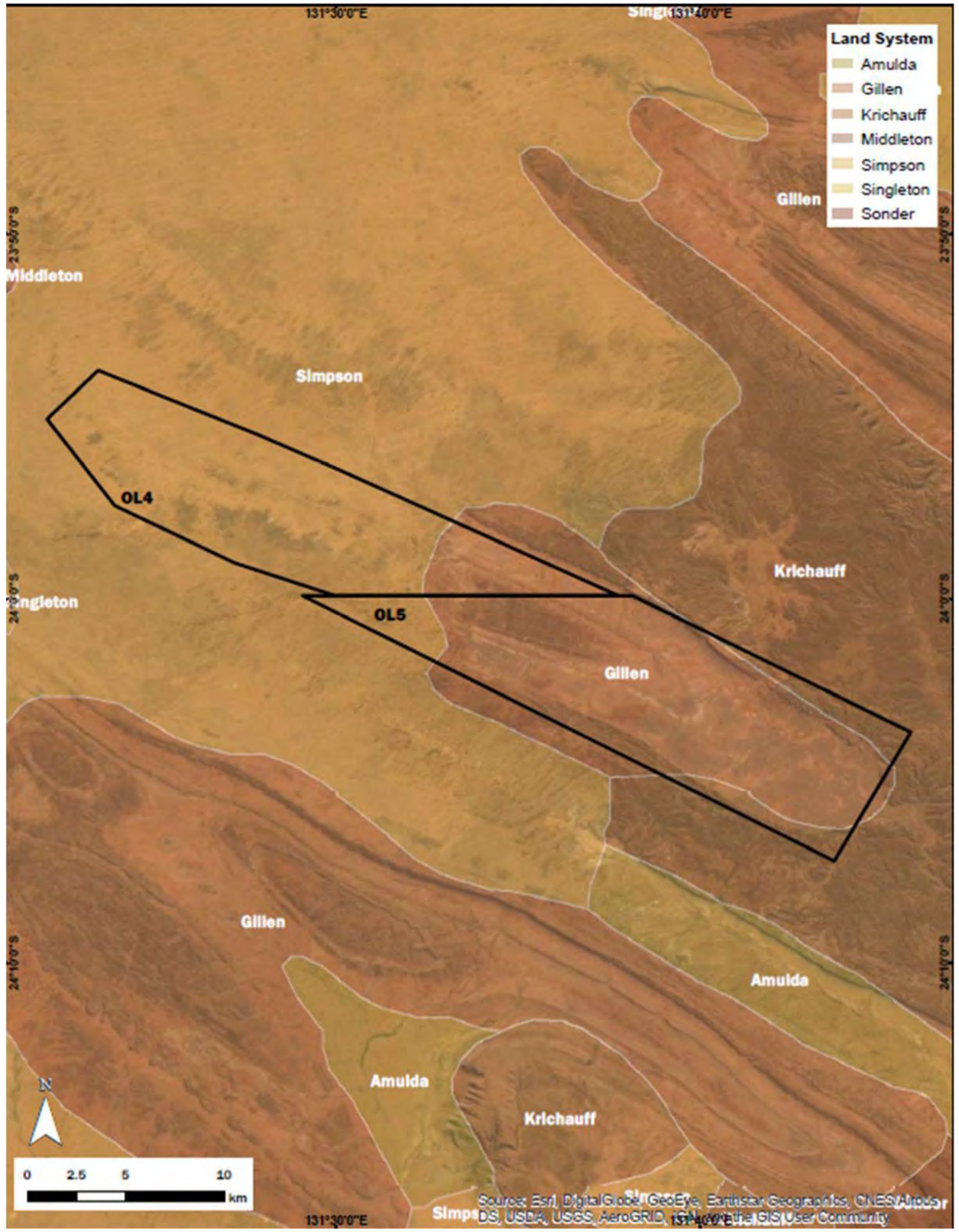


Table 7-3: Weed Management Plan

Mereenie (MRN) OL4 & OL5— Field/CTP/ESS/Camp

Weed Management Plan 2022

Contact Details Name	Contact Details	NameContact Details Name
	Low Ecological Services, on behalf of CP	Bill Low

CENTRAL PETROLEUM MEREENIE FIELD	
Property land uses	CP operates the MRN under OL4 and OL5 issued under the *Petroleum Act 1984*
Site Description	The Mereenie field is an oil and gas field located west of Alice Springs in a remote part of the Northern Territory. The field commenced production in the 1980's and contains 73 wells, out of which only 43 are active.

CENTRAL PETROLEUM MEREENIE FIELD	
Property land uses	CP operates the MRN under OL4 and OL5 issued under the *Petroleum Act 1984*
Site Description	The Mereenie field is an oil and gas field located west of Alice Springs in a remote part of the Northern Territory. The field commenced production in the 1980's and contains 73 wells, out of which only 43 are active.

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

MEASUREMENT CRITERIA		
Performance Standard	Measurement Criteria	Records
No weeds in areas where fill has been used	All fill sourced from approved borrow pits on site; weed free. Routine site inspection to look for emergence of weeds and remove or spray accordingly.	Weed free certificate
No new infestations of weeds	Disturbed areas checked for emergence of weeds, and removed or dealt with in accordance with DENR and WoNS guidelines	Six-month inspection report

RISKS AND MANAGEMENT CONTROLS		
Project Stage	Key Risks	Management Controls
Exploration	• Machinery and equipment sourced from weed-infested locations – potential for introduction and spread of weeds not currently existing on-site.	• Machinery wash down plans agreed with Production Supervisor/ Project Manager prior to entering site • If coming from known weed-infested areas or interstate, vehicles should have a weed-free certificate, issued by appropriately qualified personnel before entering the site. • Compulsory site inductions provided to all personnel, contractors, and visitors prior to entering the site
Ongoing activities on-site	• Spread of weeds due to driving on tracks or well-pads. • Spread of weeds from areas of high infestation (e.g. east field to low infestation west field)	• Use wash-down bay • If coming from known weed-infested areas or interstate, vehicles should have a weed-free certificate, issued by appropriately qualified personnel before entering the site • Photos and/or GPS locations of Declared Weeds reported to Weeds Officer when observed by on-site staff • Avoid driving between areas of high infestation to areas of low infestation whenever possible • If sand, soil or gravel is brought on site such as for hardstand areas and pipe bedding, is to be sourced from material that does not contain declared weed seeds or plants
Well abandonment	• Well pads not frequented by CP staff allowing existing weeds to spread without being noticed.	• Staff to be made aware of risks of weed spread • Abandoned/suspended wells to be included in weed surveys and annual audits
Weed control	• Weeds not adequately controlled/ insufficient effort or poor timing of weed control. • Weeds not removed/stacked during weed control efforts, resulting in further spread.	• Monitor areas that have been treated annually. Seeds can remain viable for more than five years. • Remove weed seedlings before they flower and produce seed. Use weed attribute table to record activities, progress, and observations
Weed survey	• Insufficient survey effort • Weeds present on site not identified during survey	• Submit weed survey results to DEPWS annually • Use of NTG spatial data sets to find areas of weed infestations within close proximity to the site

WEED CONTROL METHODS	
Method	Description
Physical/manual control	• Hand-pulling: Labour intensive for large outbreaks but effective method for controlling weed seedlings prior to seed set. Useful method for hard to reach areas e.g. around the pipes at CTP- Fresh water tank • Use of tools and equipment such as shovels, brush cutters, slashers and axes to physically remove the species: effective for larger areas of infestation • To prevent further infestations or spread: – Use this method before weeds begin seeding. If weeds have begun seeding, it needs to be buried, burnt or stacked in a pile to ensure seed material do not result in reinfestation – Alternatively transport weeds off-site via a waste contractor. For any Declared Weeds that may occur in the future, transport restrictions may apply – After weed removal, monitor the site for any new infestation
Chemical control	• Foliar spraying: Spray diluted herbicide over the foliage of the plant until it is wet (but not dripping). Use spray dye as a visual cue to ensure evenness of coverage. Should only be used when plants are actively growing so the chemical is circulated through the plant down to the roots. It is most effective on new growth a few days to weeks after a rain event. Best undertaken in the early morning and late evening when the Delta T (the relationship between temperature and humidity) is within the range of 2-10 • Foliar spraying with Glyphosate: Glyphosate is a common broad-spectrum herbicide that can be sprayed on both broad leaf plants and grasses. It must be applied to a plant while it is actively growing to be effective. Depending on geographical location, the periods of effective Glyphosate use can be restricted. For higher effectiveness first slash the invasive grasses then spray the regrowth. Combine with Flupropanate, a residual herbicide, which will control both mature tussocks and the germination of residual seed banks for up to two years • Adjusting water quality: Hard water (water with 150-300 mg/L $CaCO^3$) reduces the effectiveness of herbicides such as glyphosate, 2,4-D amine, MPA amine and Dicamba. Where necessary, add softening agents and adjust the pH of the water in spray applicators • Residual herbicides: Residual (long-acting) herbicide pellets e.g. Flupropanate and Graslan remains effective in the ground for a period of up to two years but is only activated after rainfall. When using residual herbicides, it is important to ensure all pellets are raked just into the surface to avoid off-site migration. Residual

MANAGEMENT PROCESS			
Process Step	**Objective**	**Actions**	**Frequency**
Weed Identification	Weed species and area of infestation are identified and monitored	• Weed surveys undertaken annually by dedicated weeds officer • Photograph weed species identified (and/or areas of infestation recorded with GIS and mapped) • Report to the CP HSE Team and included within weed survey report • Weed survey findings used to determine control programs in consultation with CP or suitable contractors • CP site staff to be trained in identification of weeds, particularly Declared Weeds and WoNS. CP staff should familiarise themselves with declared weeds that have potential to enter the site (e.g. Athel pine)	• Annual external annual audit • For ongoing operations – e.g quarterly internal and annual external audits
Weed prevention	No new declared weeds, WoNS or environmental weed individuals or infestations.	• Vehicles and/or equipment coming from an area with Declared Weeds should be cleaned and obtain a weed free certificate before entry • Vehicles entering from outside the MRN must be weed free. If coming from known weed-infested areas or interstate, vehicles should have a weed-free certificate, issued by appropriately qualified personnel before entering the site • If areas containing weeds are accessed, clean all equipment and machinery. Wash or blow down vehicles to prevent transfer of weeds to uncontaminated areas • Source fill brought onto site from weed free area • No unnecessary clearing to minimise ground disturbance • Road grading in areas of weeds should start from the outside of the infestation towards the centre of the infestation • No off-road driving • Monitor operational areas and 'hotspots' continually • Report weed sightings to the Weeds Officer	Ongoing as part of operational procedures
Weed Control	Existing weeds are controlled using effective methods Personnel and infrastructure are protected from increased fire risk due to weed infestations No spread of weeds No new weed species present	• Use the correct control and/or removal method selected by trained personnel/contractor based on species present and extent of infestation • Maintain a 4m fire break around infrastructure • Plan a rapid response to seasonal changes to maximise the effectiveness of control activities • Engage local traditional owners, rangers or contractors to assist with mechanical and chemical control of weed species at the site • CP staff will also undertake weed control when they are available during normal operations • Shapefiles/maps from previous weed surveys inform the weed control activities and control activities are mapped using the same methods. This will enable the Weeds Officer to be more aware of the spread or containment of existing weeds and the effectiveness of weed control.	Control/removal scheduled to occur prior to weed seeding where practicable - timing with seasons and predicted rainfall (Usually Nov-March)
	Weed control methods result in no environmental harm	• Only suitably trained personnel will use chemicals and herbicides, in accordance with CP's chemical handling and storage procedures • Relevant stakeholders will be consulted prior to chemical herbicide being used • Assess areas outside of operational areas prior to weed control to identify conservation-listed flora. • Ensure non-target conservation-listed species are not impacted by weed control • Minimise drift by spraying on low-wind days • No use of residual herbicide pellets within 2-3 canopy diameters of trees or shrubs • Follow-up surveys will refine the impacts of weed removal of the potential for future vegetation re-growth	During weed control activities as part of operational procedures Prior to weed control in areas outside of operational area.
Disposal of weeds and chemicals	Weeds disposed of in environmentally friendly manner No further weed spread from disposal Correct disposal of chemical containers	• Weed plant material (leaves, seeds, flowers, branches etc.) that are physically removed will be burnt in a burn pit or removed from site (e.g. via waste bins) • It is illegal to transport declared weeds. If declared weeds enter the site, these should be burnt and then buried on site at a depth sufficient to prevent emergence of seeds or seedlings • Chemical containers disposed of correctly	On completion of weed control activities
Reporting	Compliance with NTG requirements	• Annual update provided to DEPWS to include weed control activities, updated locations of weed spread.	Annual survey report provided to DEPWS

IDENTIFIED WEEDS SPECIES			
Common Name	**Scientific Name**	**Image**	**Control Method**
Buffel grass	*Cenchrus ciliaris*		• November—December • Foliar spray with Glyphosate (360g/L) Roundup Biactive® or other aquatic-sensitive Glyphosate product. At least two treatments within a growing season • Residual herbicide: Foliar spraying with Flupropanate at an application rate of 1000L/ha or 1L/10m².
Feathertop rhodes grass	*Chloris virgata*		• August—October • Physical/manual control • Foliar spray with Glyphosate (360g/L). Seed set must be stopped or minimised to break the life cycle. Spray small seedlings as soon as possible after rain for best control. A double-knock tactic using two different control means within a short amount duration (7 to 10 days) is most effective.
Paddy melon	*Cucumis myriocarpus*		• September—November • Physical/manual control • Foliar spray : Garlon + Antievap spray adjuvant 1% or mixture of triclopyr, 2,4-D and metsulfuron • Paddy melons have hairy and waxy leaf surfaces that are hard to wet and penetrate when applying herbicide
Mimosa bush	*Vachellia farnesiana*		• March—May • Basal spray – spray around base of plant to 30cm with Triclopyr 240 g/L + Picloram 120 g/L (Access™). Rate: 1.0 L per 60 L of diesel • Residual herbicide: Graslan granules: (7 g) for every 1 m height of plant applied at the base
Spiked Malvastrum	*Malvastrum americanum*		• Physical/manual control • Foliar spray with Glyphosate (360g/L)
Wild lettuce	*Lactuca seriola*		• June—August • Foliar spray with Glyphosate at early growth or rosette stages in spring, summer or autumn

Table 7-4: Bushfire Management Plan

Mereenie (MRN) OL4—Field/CTP/ESS/Camp Bushfire Management Plan 2025

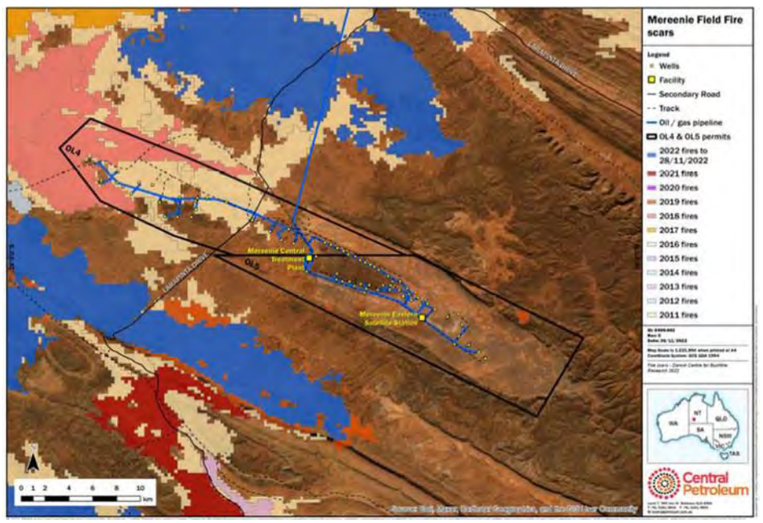
Central Petroleum Mereenie Field	
Property land uses	CP operates the Mereenie under OL4 and OL5 issued un-der the *Petroleum Act 1984*
NT Fire Management Zone	Alice Springs (NT Portion 1635 (8555 Kintore Road, Lake Mackay)
NT Fire Protection Zone	OL4 is not located within a NT Fire Protection Zone
Aim	To minimise the potential and impact of fires from CPs activities to people, environment, culturally significant sites, public infrastructure and community lands
Objectives	Minimise the risk of causing bushfires from CP's activities and to prevent accidental fire risk and ensure safe storage of chemicals
Plan Owner	Risk and HSE Manager

	Contact Details	Name
Bushfire Officer	Site Supervisor	David Bushell / Jason Schroder

Stakeholders	Contact Details
Emergency	000 0r 112 from mobile
Bushfire NT	08 8922 0844 (head office) 08 8951 9266 (Alice Spring) Bushfires.nt@nt.gov.au
NAFI	www.firenorth.org.au/nafi3/
Bureau of Meteorology	www.bom.gov.au
NT Fire Incident Map	www.pfes.nt.gov.au/incidentmap/
Secure NT	securent.nt.gov.au/alerts
Central Land Council	08 8951 6211
Haasts Bluff Aboriginal Land Trust	08 8962 2343

SEASONAL BUSHFIRE WORKS CALENDAR

Month	Bushfire risk	Activities	Month	Bushfire risk	Activities
Jan	**High**	• Monitor conditions • Fire Danger Period actions • Fire Ban Day actions	**Jul**	**Low**	• Map critical functions • Identify threats • Assess risks
Feb	**High**	• Monitor conditions • Fire Danger Period actions • Fire Ban Day actions	**Aug**	**Low**	• Update plans • Check fire fighting capabilities • Reduce hazard—start
Mar	**Medium**	• Monitor conditions • Fire Danger Period actions • Fire Ban Day actions	**Sep**	**Medium**	• Reduce hazard—end • Test emergency plans
Apr	**Low**	• Monitor conditions • Fire Danger Period actions • Fire Ban Day actions	**Oct**	**Medium**	• Monitor conditions • Fire Danger Period actions • Fire Ban Day actions
May	**Low**	• Repair and replace assets	**Nov**	**High**	• Monitor conditions • Fire Danger Period actions • Fire Ban Day actions
June	**Low**	• Improve resilience	**Dec**	**High**	• Monitor conditions • Fire Danger Period actions • Fire Ban Day actions



Fire Management Zones	Actions
Low Fuel Zone (4m)	• Remove fire fuel load if bushfire risk is high • Use manual/mechanical removal, burns are not the preferred option
Fire Break Zone (4m)	• Only diesel vehicles to be used • Store chemicals in designated areas • Sufficient fire fighting water is available during projects activities • No open flames or fires outside of designated areas (inclusive of flare pits) • Remove vegetation from bare earth fire break area • Use manual/mechanical removal, burns are not the preferred option
Cleared Access Track	• Remove vegetation from bare earth tracks • Maintain 4m exclusion zone
Flare (CTP/ESS/wells)	• Flare is operational 24hrs

Bushfire Management Plan	
Map Critical Functions	• Review emergency management structure • Contact and collaborate with neighbours
Identify Threats	• Identify local site conditions and fuel loads • Identify bushfire threats to operations and assets
Assess Risk	• Conduct fire mapping (annual) • Develop fire fuel load reduction program • Proper storage of flammable chemicals • Vegetation stockpiles are placed at safe distances from potential ignition sources • Update risk assessment
Update Plans	• Update Bushfire Management Plan and Emergency Response Plan
Prepare	
Check Fire Fighting Capability	• Inspect and test critical equipment • Identify staging areas for emergency equipment • Fire fighting equipment located in every vehicle. • Train staff
Reduce Hazard	• Fire fuel load reduction manual/mechanical removal • Controlled burns is not the preferred option • Maintenance of fire breaks and fire access tracks (as required)
Test Emergency Plans	• Conduct fire drills (desktop/physical) • Conduct incident and emergency training with partners
Respond	
Monitor Conditions	• Check NAFI (daily) • Monitor sources of ignition (daily)
Fire Danger Period	• Permit to burn required • Check fire danger status (daily)
Fire Ban Day	• No burns • Site supervisor to liaise with NT Chief Fire Control Officer regarding flare operation on Fire Ban Days
Recovery	
Repair and Replace Assets	• Repair and replace damaged assets
Improve Resilience	• Review and improve asset standards for buildings and infrastructure • Review incident responses
BUSHFIRE RESPONSE—ERP	
Actions	
Move Away	• Move yourself and others away from danger
Raise Alarm	• Raise alarm on field radio *UHF Channel 1* /SOS alarm on tracker/ phone • Notify emergency services • Activate alarms and muster, as required
Gather Information	• Fire location • Wind direction • Wind strength • Size of fire • Type of fire • Any injured/missing personnel
Mobilise SERT	• Mobilise Site Emergency Response Team (SERT) if additional resources are needed • The control of a bushfire rests with the Rural Fire Brigade until the fire reaches the site boundaries • If fire breaks are crossed, the SERT leader shall review what plant must be shut down or additional fire breaks be prepared
Notify	• Neighbours in surrounding properties
Monitor	• Weather information • Wind direction • Local fire information/NAFI • Road condition reports

BUSHFIRE MANAGEMENT CONTROLS		
Site Activity	**Key Risks**	**Management Controls**
Daily Site Operations	• AFDRS Fire Danger Rating: Extreme	• Site Manager to review planned flaring and other hot work activities before commencement. Daily fire risk assessment to be completed and documented. Confirm fire suppression resources, water availability, communications and access tracks/firebreaks are serviceable. Non-essential hot work, vegetation works and ignition-risk activities to be deferred where practicable.
	• AFDRS Fire Danger Rating: Catastrophic	• Suspend all non-essential ignition-risk activities. Site Manager to review whether ongoing flaring is necessary for process safety. If flaring is not required for immediate process safety, cease or defer flaring. Confirm emergency response readiness and monitor Secure NT / Bushfires NT alerts throughout the day.
	• Declared Fire Ban Day	• No burning or flaring to occur unless specifically authorised and necessary for immediate process safety. Site supervisor to liaise with NT Chief Fire Control Officer regarding flare operation on Fire Ban Days.
	• Fire Danger Period declared for the area	• Permit to burn requirements to be confirmed with Bushfires NT. Flaring risk assessment to be completed before flaring and reviewed daily for the duration of the activity.
Civil activities/earthworks Vehicle and equipment movement	• Ignition sources	• Conduct bushfire related risk assessment before flaring and on each day during a flaring event. • Store flammable and combustible liquids according to the relevant Australian Standards • All infrastructure, plant and equipment designed, constructed and operated and maintained to minimise risks of ignition • Appropriate fire management and control equipment available in every vehicle and at each facility (e.g. fire extinguishers, water supply etc) • Train onsite personnel in use of fire control equipment • Conduct Job Hazard Analysis for any new task or new use of equipment to ensure appropriate control measures are identified and to take account of variation in fire danger ratings • Prior to attending site, each day obtain information on current fire danger, presence of fire in the area and current weather condition from the North Australia & Rangelands Fire Information (NAFI) and bureau of meteorology websites • Flammable material to be stored on the well lease according to SDS and Code requirements. 4m clearance area between flammable material storage and well lease boundary. • Bare earth roads and laydown areas • Only diesel vehicles to be used • No open flames or fires outside of designated areas • Place stockpiles away from ignition sources and in low profile mounds • Maintain fire access trails • Sufficient water to be available on site to enable CP to provide an initial response to an accidental fire at the well lease • Inductions to include fire risks, hazardous zones, controls and emergency response procedures • If fire detected, implement emergency response plan • Follow directions given by Operations under the Emergency Response Plan • Fire breaks are maintained across the field to prevent fire spread to other land and to protect key infrastructure. • Roads and access tracks also act as fire breaks as most are more than 4m wide • The well leases at Mereenie are large and will not be fully occupied by equipment. The well lease itself therefore forms a fire break.
Flaring and emergency venting	• Ignition sources	• Permit to burn is required during the Fire Danger Period (generally November to March for Southern NT). Obtain permit from Bushfires NT. • Conduct bushfire related risk assessment before flaring and on each day during a flaring event. • Sufficient water to be available on site to enable CP to provide an initial response to an accidental fire at the well lease
• Burning of vegetation and wood	• Ignition Sources	• Permit to burn is required during the Fire Danger Period (generally November to March for Southern NT). Obtain permit from Bushfires NT. • A fire truck must be on standby with an operator to watch the fire for the duration of the burn • Conduct bushfire related risk assessment before burning of vegetation and wood and on each day during a burning event. • Sufficient water to be available on site to enable Central Petroleum to provide an initial response to an accidental fire. • Assess fire fuel load and local site conditions (eg current weather, seasonal rainfall, fuel load, grazing, high fuel exotic grasses (eg buffel) at nominated burn pit for EMP activities and remove fire fuel load if bushfire risk exists. • Place stockpiles away from ignition sources and in low profile mounds. • Train onsite personnel in use of fire control equipment. • Prior to commencing burning of vegetation and wood, obtain information on current fire danger, presence of fire in the area and current weather condition from the North Australia & Rangelands Fire Information (NAFI) and bureau of meteorology websites.

Table 7-5: Rehabilitation Management Plan

Mereenie Field—Rehabilitation Management Plan 2026

CP Rehabilitation Officer	Position
	Environmental Specialist

Location of the Mereenie Field	
Property land uses	Gas exploration, production and pastoral activities
Climate	In general, Mereenie OL4 experience an arid to semi-arid climate, which is characterised by hot dry summers and cool dry winters with a low average annual rainfall. Typically, more rainfall occurs in the summer months associated with monsoonal influences; however, the amount of rainfall in the arid zone has a history of being highly variable.
Site Description (pre-disturbance)	The Mereenie Field has the following three land systems: • Simpson (covers 45% of Mereenie Field)–. Extensive dune fields with hard spinifex pastures. Red sands to red clayey sands and locally red earths. Low erosion hazard. • Gillen (covers 45% of Mereenie Field) – Sandstone mountains with mulga or witchetty bush country. Shallow stony or gravelly soils and some red sands or red clayey sands. Moderate erosion hazard. • Krichauff (covers 10% Mereenie Field) - Flat lying sandstone, silt-stone, and conglomerate. Shallow stony or gravelly soils and some red sands or red clayey sands. Moderate erosion hazard.

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

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

Environmental Strategies and Timing		
Activity	Strategies	Timing
Analogue sites	Identify appropriate analogue sites for each of the disturbance areas	After the first wet season in conjunction with the first monitoring event
Post Decommissioning	● Remove above ground infrastructure ● Remove rubbish ● Backfill sumps / pits to ground level ● Re-spread vegetation previously cleared	Commence within 12 months of well being decommissioned
Land use	The final land use options will be determined in consultation with the landowners and other relevant stakeholders and may include: ● Pre-disturbance land use ● Pastoral activities ● Tourism related activities ● Conservation (reserve or park)	Commence within 12 months of well being decommissioned
Soil Stability	Remove any flow concentration points that may block overland sheet flow Re-instate natural drainage channels (i.e. removal of bunds and structures that temporarily altered flow paths) Diversion drainage may be used to remediate erosion. Return soil profile with topsoil replaced as final layer where possible Deep ripping and contouring of access roads, well leases and camps to as close to natural landform as possible Ensure all cleared areas have a rough surface to aid in water, seed and litter catchment Erosion and sedimentation devices installed and maintained as per the ESC Plan	Commence within 12 months of well being decommissioned
Contaminated soil	Undertake remediation of contaminated soil in accordance with spill management plan / emergency response plan	Remediation of contamination to be undertaken immediately.
Revegetation	Revegetation of decommissioned areas is undertaken post soil stability. Where possible natural regeneration of areas will be promoted. If there are limited materials to promote regeneration then seeding a cover crop may be used to assist in soil stability until pioneer species emerge. Where natural regeneration requires assistance seeding of native plants will be undertaken.	Leases commence within 12 months of case / suspend or decommissioned Facilities commence within 12 month of the equipment being decommissioned Camps / access tracks commence within 12 months of infrastructure no longer being required
Monitoring	All monitoring to be undertaken by a suitably qualified person and in accordance with this Plan	Refer to the rehabilitation measurement criteria and monitoring program

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

Decommissioning and Rehabilitation Process		
Asset	Specific activities to the asset	General activities across all assets
Lease pad and wellhead	● All decommissioning activities will be conducted in accordance with the Code compliant and accepted WIMP and WOMPs for each well. ● The wellhead is removed, the casing cut per the Code of Practice: Surface cement plug detailed in B.4.15.3: Cement plug requirements and validation methods. A steel marker plate installed to identify the well and details per the Code of Practice	● Any imported gravel material is removed and returned to the source quarry or utilised elsewhere on CP operational sites ● The site is re-contoured as close as possible to the pre-existing natural landscape excluding erosion control mitigation measures such as diversion drains ● Hardstand is deep ripped to relieve compaction, encourage infiltration and water retention ● Topsoil (where available) is respread evenly over the lease area and lightly scarified to encourage moisture retention and seed capture ● Vegetation is respread over the lease, this acts as erosion control, provides habitat and promotes natural revegetation ● Any weeds or invasive species are managed per the weed management plan during the rehabilitation process ● ~~Temporary E~~rosion and sediment controls to support the rehabilitation designed and installed where required ● All waste removed from site ● If natural revegetation success is low, seeding may be required, this will be assessed through the monitoring program.
Ponds and dams	● Remove the contents of the dam to a licenced facility (on-site or offsite) ● Remove the liners from the Dam and dispose of appropriately ● Test for any contamination of soils beneath the liner systems (remove any contaminated material) ● Fill in the void utilising stockpiled materials	
Facilities (compressors, inlet facilities, metering facilities, warehouses and offices)	● Recycle building materials where possible ● Look for re-use options or sale option for equipment ● Cement foundations are beneficially re-used or disposed of properly ● All services are blinded and left safe or removed	
Pipelines (aboveground)	● Aboveground steel pipelines are recycled ● Cement pilings for aboveground pipelines are recycled or disposed of properly	
Camp	● All services are blinded and left safe or removed ● Sewage treatment facility is removed for re-use or sold on ● Camp units are removed re-used or sold on.	
Flare pits	● Test for any contamination of soils and assess against NEPM guidelines ● Remove or ameliorate any contaminated material ● Fill the void using recycled material from pads or borrow pit material	

Acceptability Criteria				Annual Monitoring Program			Corrective Actions
Rehabilitation Outcome	Endpoints(s)/Performance Standards	Measurement Criteria	Rational	Frequency	Proposed Methodology (adaptive depending on seasonal conditions)	Rational	
●The vegetation composition (e.g. type, density and maturity) 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. ●No adverse erosion	●Dominant species in analogue sites are represented in rehabilitated areas ●Community structure is substantially the same as the analogue site/s groundcover, shrubs and trees. ●Perennials have established, stabilising soils and reducing erosion potential ●Habitat structures and habitat quality are substantially similar to analogue sites, creating connection to the adjacent landform and vegetation allowing for fauna re-use of the site. Completely stable (or in dynamic systems such as dunal landforms, same degree of stability as surrounding terrain)	● Ground cover – 75% foliage cover and density of the analogue site ●Perennial Cover – recruitment of woody perennial species achieves 75% of the analogue site ●Plant species richness and abundance achieves 75% of the analogue site ●Weed species richness and abundance is consistent with the analogue site/s ●50% of the organic litter and coarse woody debris of the analogue site ●No evidence of soil subsidence and <2% erosions across the site (qualitative – photo evidence of scarring, rill/sheet erosion)	●Cover equivalent to 75% of the analogue site/s is likely to self-sustain over time and rehabilitated areas become ecologically integrated with surrounding areas ●Species richness shows the rehabilitation site is able to support the full complement of species from analogue sites, even if not all species are yet at the same abundance, noting that in an arid environment, species such as spinifex and mulga grow extremely slowly ●In arid regions soil stability is critical for the success of rehabilitation	●Annually, commencing after the first wet season and noting the following: ●The Amadeus Basin is located in an arid region and establishment of vegetation generally is slower than areas with higher rainfall. Therefore, it is unlikely that quantitative assessments will provide meaningful data to determine rehabilitation success in years 1, 2 and 3 ●In year 1 the analogue sites will be set up, the photo monitoring points will be established and the permanent woody species transect will be established. The site will be assessed for stability and any weed issues. ●2 and 3, if there is no evidence of vegetation regeneration but the sites appear to be stable and free from erosive forces of fire effects, a visual assessment only of cover and structure will be made ●In year 4 and year 5 monitoring against endpoints will be undertaken. An adaptive approach will be taken year on year for the monitoring based on the seasonal conditions (i.e. the wet season). This will be documented in the annual rehabilitation report.	**Year 1** ●2 or more analogue sites in nearby undisturbed vegetation community and landforms as per the analogue definition and selected by a suitably qualified person ●Establish permanent 100x4m woody species transects ●Establish photo monitoring and collect photos ●Record any weather events during the period ●Check for subsidence across the rehabilitated area ●Assess the % of erosion across the rehabilitated area ●Check for any loss of topsoil through erosion and map areas of concern Check for soil inversion issues and map area of concern ●Weed survey **Year 2 and 3** ●Check for integrity of works and ability for future rehabilitation success ●Record any weather events during the period ●Photo monitoring ●Check for subsidence across the rehabilitated area ●Assess the % of erosion across the rehabilitated area ●Check for any loss of topsoil through erosion and map areas of concern ●Check for soil inversion issues and map areas of concern ●Weed survey **Year 4** ●Woody species transects from the permanent 100x4m ●Collect 1x1m ground cover quadrants every 10m along a transect. Transects to be randomly selected ●Photo monitoring collected ●Record any weather events during the period ●Check for subsidence across the rehabilitated area ●Assess the % of erosion across the rehabilitated area ●Check for any loss of topsoil through erosion and map areas of concern ●Check for soil inversion issues and map areas of concern ●Weed survey **Year 5** ●Woody species transects from the permanent 100x4m Collect 1x1m ground cover quadrants every 10m along a transect. Transect to be randomly selected ●Photo monitoring collected ●Record any weather events during the period ●Check for subsidence across the rehabilitated area ●Assess the % of erosion across the rehabilitation area ●Check for any loss of topsoil through erosion and map areas of concern ●Check for soil inversion issues and map areas of concern ●Weed survey	●As per the Code of Practice A3.9 (b) the rehabilitation plan should be appropriate to the scale and nature of the activity. In CPs experience operating in the Amadeus Basin, which is an arid region the establishment of vegetation takes time. In CP experience it takes 10+ years for sites to reach the rehabilitation outcomes. The rehabilitation plan has been developed to meet the scale and nature of the rehabilitation (i.e. the size of the disturbance and the time to rehabilitation) ●As per the Code of Practice A3.9(e) Regular maintenance and at least yearly monitoring of rehabilitated areas must take place to measure compliance with the Rehabilitation Plan. Rehabilitation success relies on good site preparation and rainfall and an adaptive approach for monitoring is required to take in the seasonal conditions. This will rely on a suitably qualified person to assess the seasonal variations and match the appropriate monitoring to undertake each year. This could include the use of technical advances like drones, satellites, remote sensing and lidar to assess the site stability and vegetation cover. ●The quantitative data is of significant value as the rehabilitation matures and reaches the acceptability criteria. In addition, the year on year growth in an arid environment is slow and therefore yearly monitoring of all parameters is not necessary. The key is to assess if the site is on the right trajectory to achieve the acceptability criteria which aligns with the adaptive management approach	●Weeds impacting revegetation success – implement the weed management plan ●Pest species impacting the rehabilitation success – identify the pest species and put in place measures to protect the rehabilitated area. ●Poor vegetation germination/re-growth is limited in richness/or community structure inconsistent with the analogue site – infill seeding and/or top dress with a soil additive/topsoil or fertilise ●Erosion and sediment control remediation of failed erosion and sediment controls. Mitigation measures may include diversion drains, rock, coir logs, sediment fences, silt bags and geo mesh/fabric. ●Review the re-profiling of the site to address any stabilisation issues. Undertake earthworks for reprofiling and erosion control as necessary.

Table 7-6: Wastewater Management Plan

Mereenie Field—Wastewater Management Plan

WWMP Owner	Operations Manager

CENTRAL PETROLEUM MEREENIE FIELD	
Property land uses	CP operates the MRN under OL4 and OL5 issued under the *Petroleum Act 1984*
Site Description	The Mereenie field is an oil and gas field located west of Alice Springs in a remote part of the Northern Territory. The field commenced production in the 1980's and contains 73 wells, out of which only 43 are active.
Wastewater Management Plan	
Purpose	To manage the wastewater to minimise environmental risks and impacts
Objectives	To manage wastewater in the following hierarchy: 1. Avoid: Eliminate or substitute an activity that results in wastewater 2. Reduce: lower the generation of wastewater as part of a process or activity 3. Reuse: beneficial re-use of wastewater for another purpose without treatment, or with minimal treatment 4. Treat: bring wastewater back into use through treatment to improve water quality or to make quality suitable for disposal 5. Dispose

WASTEWATER STORAGE/TRANSFER/TREATMENT	
Facility	**Contents**
Transfer lines	• Oily water • Oil
CTP evaporation pond	• Production water • Process water • Interceptor pond
ESS evaporation pond	• Production water from plant • Process water
Grizzly pond	• Production water from CTP pond
Workover tanks (wells)	• Flare pit

WASTEWATER SOURCES				
Activity	**Type**	**Quantity**	**Target Quality**	**Management Method**
Workover fluid (Groundwater mixed with KCl and biocide)	Workover fluid	0.1 ML/well	• pH: 6-10.5 • KCl: 2-5% • Biocide: 0.02% • Conductivity: 8-30 mS/cm	During workover program: • Store onsite in tanks • Re-use After workover program: • Dispose in evaporation pond or offsite facility
Pigging/ flowline maintenance	Produced water Oily water/oil/ condensate	20kL/event	N/A	Dispose in ESS/CTP evaporation pond via ESS/CTP separation systems
Hydrostatic test water	Hydrostatic test water	2,000 L	As per source water quality (commercially supplied freshwater)	Dispose in ESS/CTP evaporation pond
Processing plant	• Oily water • Produced water	• CTP: ~8-12ML/yr • ESS: ~0.4-1 ML/yr	N/A	Dispose in ESS/CTP evaporation pond , via interceptor systems
Vehicle washdown	• Oily water • Silt	Est. 100 kL/year	N/A	Dispose in CTP evaporation pond via interceptor systems for evaporation

WASTEWATER RISKS	
Key Risks	**Controls**
Subsurface loss of contaminants during workovers	• Wells are designed with multiple barriers in place • Groundwater monitoring program to detect potential loss of containment
Spill or leak from the use, transportation, treatment, handling and storage of, workover fluids and wastewater	• Store liquid wastes (other than workover fluid) in a secured container within a bunded area • Monitor workover tanks daily or once per 12 hour shift • Promptly repair drips and leaks • Transport hazardous material within the NT by a licensed NT EPA contractor • Where applicable, place pumps, tanks and transfer lines within suitably bunded areas
Loss of containment (including spills, leaks or seepage), including during wet season	• Maintain freeboard of 500mm • Asset integrity management system which includes: – Leaks/spills inspections and repairs when detected – Check and maintain fitngs and equipment – Report spills, leaks or points of excessive wear, for maintenance and repairs • Provide portable spill containment equipment and response (e.g. spill trays) where appropriate
Loss of containment from evaporation pond	• Lined pond • Asset integrity assessment • Daily monitoring of minimum freeboard—500mm • Daily monitoring of inflows from processing plants
Fauna death or injury	• Limit fauna interaction through installation of fencing to prevent large fauna access • Fauna egress matng provided for each pond • Visual monitoring for evidence of fauna access

WASTEWATER MONITORING PROGRAM AND RECORDS				
Type	**Requirements**	**Frequency**	**Parameters**	**Records**
Baseline soils	0.6m deep soil cores from 2 locations across the well site, adjacent to: • Storage / mixing tanks • Flare pit	Prior to civil works for the well lease occurring	• Permeability • Particle size • Total chlorides • Exchangeable sodium • Emmerson aggregate test	• Soil analysis data
Stored water	• Measure groundwater volume extracted from bores via flowmeter • Measure groundwater quality from bores • Third party supplied water – volume and quality to be supplied by provider	**From Bore** • Volume – as extracted • Quality – minimum one sample prior to use **Third party supplied** • Prior to delivery	**From Bore** • Volume • Quality – as per Table 6 of the Code **Third party supplied** • As required by supplier	• Groundwater volume extracted • Groundwater quality analysis data • Third party supplied water – volume and quality
Workover formation water	• Measure quantity (estimate based on actual workover data) • Measure quality	• Every time wastewater is treated and used • Prior to disposal	• Volume	• Wastewater volumes treated for re-use (equivalent to 'water usage tracking – produced water') • Wastewater volumes generated during workovers If wastewater to be transported and disposed of offsite • Wastewater volume spilled
Rig tanks capacity / integrity	• Analysis of available freeboard within the tank • Visual inspection of integrity of tank	• Every time wastewater is transferred • Daily during workovers • Monthly or after significant rainfall event until rehabilitated • Weekly inspections when in use unless during wet season whereby the frequency is daily	• Volume	• Wastewater volumes transferred to tanks • Tank integrity visual inspections including freeboard availability
Production* evaporation ponds	• Analysis of available freeboard • Integrity inspections • Volume of produced water entering ponds	• Freeboard of production pond inspected daily • Pond integrity monthly • Daily for volume	• Volume • Potential leakage	• Produced water volume entering the evaporations ponds • Wastewater volume spilled
Wildlife / stock / human interactions	• Inspect control measures at tanks and evaporation ponds	• Workovers daily • Other times - Monthly	• Evaporation ponds have fauna egress escapes • Flare pit – temporary fencing intact or fauna egress escapes	• Number of wildlife/stock interactions

* produced water from field is mixed with process water CTP/ESS and from washdown bay etc.







Table 7-7: Spill Management Plan

Mereenie (MRN) OL4 / OL5 — Field/CTP/ESS/Camp

Spill Management Plan 2026

CENTRAL PETROLEUM MEREENIE FIELD	
Property land uses	CP operates the MRN under OL4 and OL5 issued under the *Petroleum Act 1984*
Aim	To minimise the potential impact of spills from CPs activities to people, environment, culturally significant sites, public infrastructure and community lands.
Objectives	Operate with due care to prevent loss of containment, ensure safe storage and handling of potentially contaminating substances and undertaking effective spill clean- up
Communications	Operations Manager

SPILL SCENARIOS AND MANAGEMENT

Type	Activity	Activity duration	Mechanism	Location	Quality	Approximate Quantity	Key Management Control
Operations	Storage of chemicals in the chemical storage areas (e.g. at the CTP/ESS, workshop, waste storage areas, well sites)	Operations: ongoing	Container rupture Lids / taps not fitted Spill during chemical handling and mixing	Chemical storage Area Portable chemical storage trailer Temporary storage	General use chemicals (e.g. oil, diesel, hydraulic oils degreasers) as per SDS Workover and well suspension fluids	IBCs: 1,000L	• Daily visual checks of the chemical storage area • Secondary containment / bunding • Spill kits available • Minimise quantity of chemicals at well site / temporary locations
	Handling / mixing of chemicals Pigging	Operations: ongoing	Poor handling / mixing practices Poor transfer into tanks Overtopping of tanks	Chemical storage area Chemical loading areas (wells, CTP/ESS, camp)	General use chemicals (e.g. oil, diesel, hydraulic oils degreasers, pesticides, biocide and corrosion inhibitors) as per SDS Workover and well suspension fluids	IBCs: 1,000L	• Handling / mixing performed by a competent person • Visual assessment during mixing / transfers • Daily visual checks of the chemical storage, mixing and loading areas • Mixing within bunded areas • Compacted lease and work areas • Temporary absorbent mats used, where possible • Spill kits available
	Flaring of condensates (Flaring equipment includes air assist for liquid flaring system, flare main lines, flare liquid line, liquid nozzles, main flare purge line and flare gas compressor)	Operations: Ongoing as required for contingency management of oil and condensate	Leaks of piping joints and/or leaks from pump seals Unburnt condensate enters flare pit bund Leaks of condensate/oil storage tank Spill of arsenic-containing materials through flow-line or storage leaks or entering flare pit bund	Mereenie CTP CTP Flare pit	Separated condensate from gas processing process. Stabilised light natural gas crude oil and hydrocarbon condensate blend as per SDS.	400 Barrels per day (63,600L)	• Flare tip and condensate nozzle monitoring to ensure all condensates introduced into the flare are being flared accordingly. • Quarterly checks of flare bunds to ensure integrity is maintained. • Quarterly visual inspections of oil/condensate storage tank and 10-yearly full integrity inspection.
	Truck/rig/vehicle refuelling	Operations: ongoing	Incorrect refuelling set-up Poor refuelling practices	Operations equipment	As per fuel SDS	100L	• Operators maintain visual contact whilst re-fuelling • Spill kits available
	Oil loadout/ Diesel delivery	Operations: ongoing (up to 5x/week)	Fittings failure	Oil loadout	Crude oil and condensate	30,000L	• Operators maintain visual contact whilst re-fuelling. • Spill kits available
	Chemical transportation to / from location outside of OL4 and OL5	Operations: ongoing	Incorrect storage Incorrect loading / unloading technique Traffic incident	Vehicle	As per SDS	200-100L Traffic incident—up to 20,000kg	• Visual assessment during loading and unloading • Spill kits available • Emergency response in the event of a traffic incident
	Operation of flowlines and gathering network across field	Operations: ongoing	Flowline failure	All of field flowlines	Oil, oily water, process and produced water	>1,000L	• Visual assessment of flowlines • Integrity checks as per Asset Management Systems and pipeline integrity programs
	Transfer of waste fluids via truck	Operations: ongoing as required	Traffic incident Fitting failure Tank failure	Vehicle	Oily water, process water, grey water/sewage	300L	• Handling by a competent person • Visual inspections of equipment and fittings • Operators maintain visual contact
	Dust suppression on roads	Operations: ongoing	Incorrect application	Access Roads	As per SDS	1000L	• Handling by a competent person • Visual assessment during suppression
Workover/ Drill cuttings	Chemical transfers between tanks and rigs on the well lease	Workovers 10-20 days	Coupling, hosing and pipe failures	Chemical loading area Pipework	General use chemicals (e.g. oil, diesel, hydraulic oils degreasers) as per SDS Workover and well suspension fluids	100L	• Real time monitoring of tank volumes • Daily visual checks during workovers • Well lease compacted • Spill kits available
	Storage of workover fluid in tanks on the well lease	Workovers 10—20 days	Container rupture Lids / taps not fitted correctly	Workover fluid tanks Flare tank / pit[3] Lined pits	Workover and well suspension fluids	Up to 0.10 ML	• Flare pit / tank to have volume markers included to allow quick identification of spills / loss of containment as small as 500L. • Daily visual checks of storage tanks and flare tank / pit during workovers. • Spill kits available • Compacted well lease • Flare pit to be hydro tested before works commence (if required).
	Handling / mixing of chemicals (biocides at wells)	Workovers 10—20 days	Poor handling / mixing practices Poor transfer into tanks Overtopping of tanks	Chemical storage area Chemical loading areas	General use chemicals (e.g. oil, diesel, hydraulic oils degreasers, pesticides) as per SDS Workover and well suspension fluids	100L	• Handling / mixing performed by a competent person • Visual assessment during mixing / transfers • Minimum daily visual checks of the chemical storage and loading areas • Compacted lease and work areas • Temporary absorbent mats used • Spill kits available
	Storage of chemicals in the chemical storage areas (e.g. well sites)	Workovers 10—20 days	Container rupture Lids/taps not fitted Spill during chemical handling and mixing	Chemical storage area Portable chemical storage trailer	General use chemicals (e.g. oil, diesel, hydraulic oils degreasers) as per SDS Workover and well suspension fluids	25L	• Daily visual checks of the chemical storage area • Secondary containment / bunding • Spill kits available • Minimise quantity of chemicals at well site / temporary locations
	Transfer of produced formation water from the wellhead to evaporation ponds via CTP	Workovers 10—20 days	Coupling, hosing and pipe failures	Truck	Produced formation water	10,000L	• Operator monitor transfer from tank to truck • Spill kits available • Compacted well lease

[3] Flare tank to be utilised for routine workovers (ie. < 5TJ/day) and hydrotested flare pit to be utilised for any workovers on wells with over 5TJ/day flow rate

	Remediation of drilling waste/cuttings	Ongoing	• Containment failure • Spill during handling/transport	Well pad	Workover/Drill cuttings	Up to 0.10 ML	▪ Handling/transfer performed by a competent person ▪ Visual assessment during transfers •

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

LEVEL 1	• Spills can be contained within the disturbance foot print & cleaned up by site personnel with no external involvement • Spills < 200L • Clean-up time generally < 1 day • Examples: diesel spills during fuel transfer, oil spillage during routine maintenance, chemical spills during mixing, and storage, small wastewater spills • ERP not triggered • **Recordable incident**—record internally and notify DEPWS as per *Petroleum (Environment) Regulations 2016*
LEVEL 2	• Spill that may not be completely contained within the site boundary and/or may require additional resources to clean-up • Has not entered sensitive environment or cultural feature • ERP not triggered • Clean-up time <1 week • ERP not triggered • **Reportable incident**—notify DEPWS ASAP but no later than 2 hours after the first occurrence of the incident or after the time the interest holder becomes aware of the incident. DEPWS can be noted via 1800 413 567. Any verbal report to DEPWS must be followed up by a written report from the Project Manager within three days
LEVEL 3	• Spills cannot be contained and require substantial additional resources to clean up or the spill has entered a sensitive environment or cultural feature • Clean-up time > 1 week • ERP triggered • **Reportable incident**—notify DEPWS ASAP but no later than 2 hours after the first occurrence of the incident or after the time the interest holder becomes aware of the incident. DEPWS can be notified via 1800 413 567. Any verbal report to DEPWS must be followed up by a written report from the Project Manager within three days • **Offsite incident—**EPA must be notified of any incident outside of the OL that is causing or threatening to cause pollution as soon as practicable, but no less than 24 hours after becoming aware of the incident. NT EPA Pollution Hotline 1800 064 567.

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

Table 7-8: Methane Emissions Management Plan

Mereenie (MRN) OL4 & OL5

Methane Management Plan 2026

MEMP Owner	Operations Manager

MEREENIE FIELD	
Property land uses	CP operates the MRN under OL4 and OL5 issued under the *Petroleum Act 1984*
Site Description	The Mereenie field is an oil and gas field located west of Alice Springs in a remote part of the Northern Territory. The field commenced production in the 1980's and contains 73 wells, out of which only 43 are active.
Methane Management Plan	
Purpose	To monitor and reduce fugitive methane emissions from oil and gas activities.
Objectives	To reduce fugitive methane emissions through effective detection and management practices across operations activities.

LEAK MONITORING

Inspecton Frequency	Leak Detecton Instruments
• If a leak is detected at a particular asset the frequency of inspections for the asset will be re-assessed and may be increased based on a risk assessment • Field Operator leak detection: as required as per Asset Management System and Permit to Work requirements (varies from daily to monthly) • Specialist technician inspection of systems for leaks as follows: – Well pad equipment: annually – Low pressure pipelines and fittings: annually – Plant including compressors: annually • Leak detection is only undertaken by appropriately trained and competent personnel • All gas containing equipment will be inspected for leaks within 48 hours of recommissioning / commissioning	Field: Dräger X - am 2500 detector, which features: • Detection of flammable gases and vapours, as well as O2, CO, NO2, SO2 and H2S; and • Detection of methane as low as 500ppm (1% of the lower explosive limit (LEL)). • Calibration as per CP Standard Operating Procedure (bump test prior to use (daily)) Specialist Technician: • Monitored following USEPA Method 21. Monitoring and analysis of leaks conducted using flame ionization (FID) technology and where possible Optical Gas Image (OGI) • Calibration annually by manufacturer and daily by specialist technician

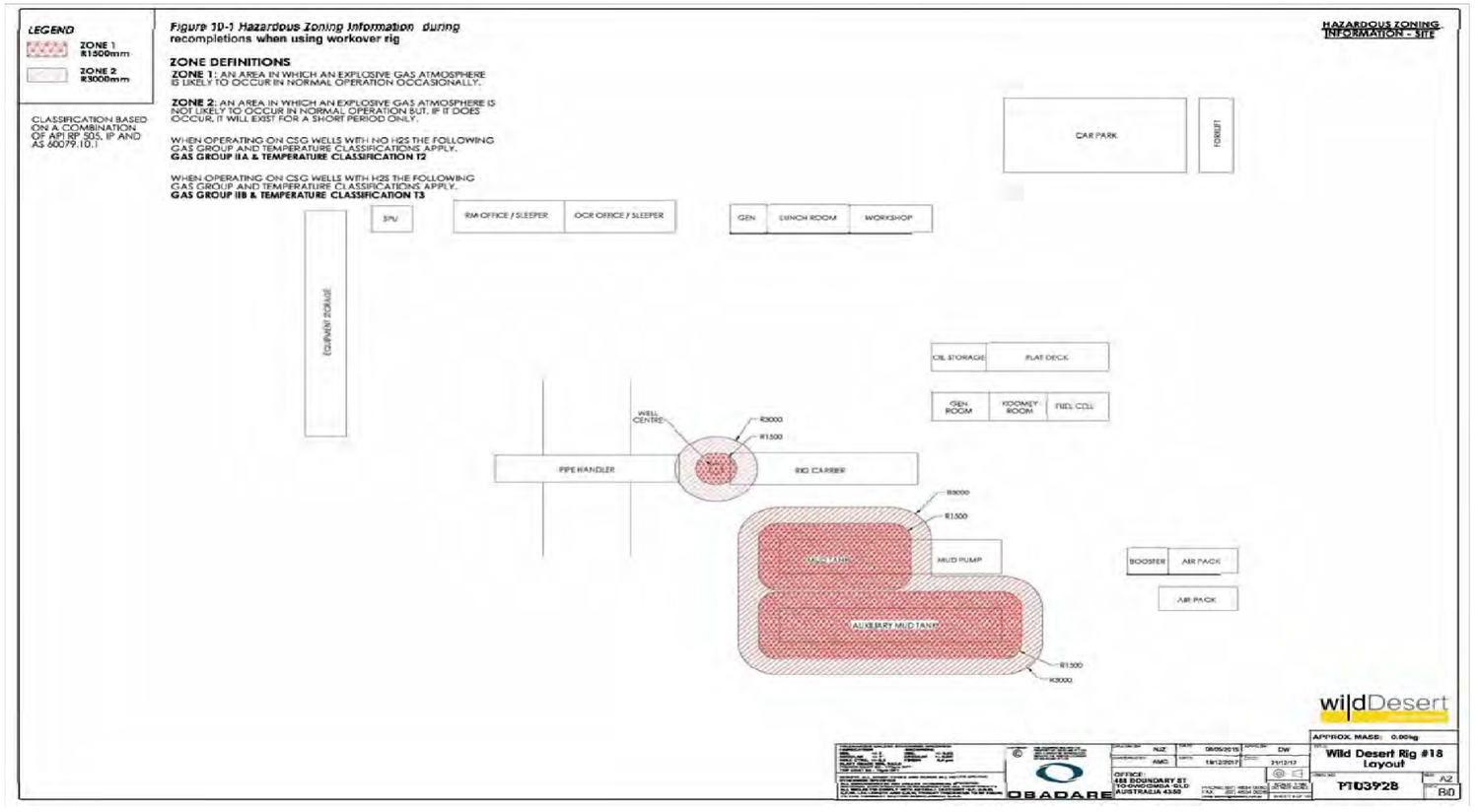
Leak Detecton Procedure

Leak detection is undertaken in accordance with the USEPA Method 21. The procedure is as follows:

- Prior to commencing monitoring, calibrate and bump test the gas detector according to manufacturer's recommendation
- Monitoring is carried out at each well site, along the gathering system (vents, drains, metering instruments, manifolds) and within CTP/ESS:
  - Place the probe at the surface of the component interface where leakage could occur
  - Move the probe along the interface periphery while observing the instrument readout
  - Locate the maximum reading by moving the probe around the interface (note that where a leak is detected the operator is to make a determination as to whether it is safe to remain in the area to continue monitoring
  - Keep the probe at the location of the maximum reading for 2 times the response factor
  - Record the reading and source of the leak (if a leak is detected)
- If a leak is detected also record whether it is a minor or significant leak and implement corrective actions
- If a liquid petroleum leak is detected and it is safe to do so, record the estimated volume of leaked liquid and the source of the leak.

RISKS AND MANAGEMENT CONTROLS

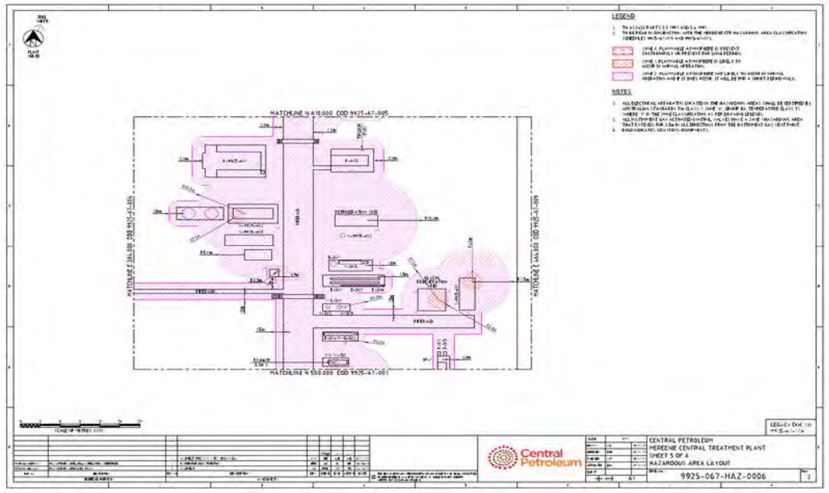
Key Risks	Management Controls	Actons
Fugitive methane emissions during workovers leading to health and safety hazard including adverse environmental impacts	• Wells and associated surface infrastructure is designed to mitigate leaks in accordance with the following standards: – ISO 16530-1-2017 Petroleum and natural gas industries - Well Integrity - Life cycle governance – API SPEC 5CT 2016 Casing and Tubing – API RP 59 2012 Well control operations – API SPEC 6A 2016 Wellhead and Christmas Tree equipment – NORSOK Standard D-010, Well integrity in drilling and well operations – Leak detection implemented consistent with the Code of Practice. – Ongoing well maintenance as per the Well Operations Management Plan.	During workovers, gas will be flared at the wellsite at a maximum rate of approximately 5 TJ per well per day over three days. All residual gas is to be flared and no planned venting is to occur during workovers. There is no planned flaring or venting needed during surface facility activities as gas will bleed to into the gathering lines. Planned and emergency flaring and emergency venting is recorded in the Daily Production Report, which is then included in the Monthly Production report submitted to DPIR .
Fugitive methane emissions during operations leading to health and safety hazard including adverse environmental impacts	• All assets to be managed in accordance with the following to mitigate and response to fugitive emissions and leaks: – Permit to work procedure – Asset maintenance system – Pipeline Integrity System – Standard Operating Procedure (Isolations) – Monitoring as per Code of Practice	No entry to hazardous areas without portable gas detector Specialist monitoring of assets on annual basis including: • Valves, flanges and connectors >10mm ND • Pumps, pressure safety valve (PSV) • Except where inaccessible due to work safety



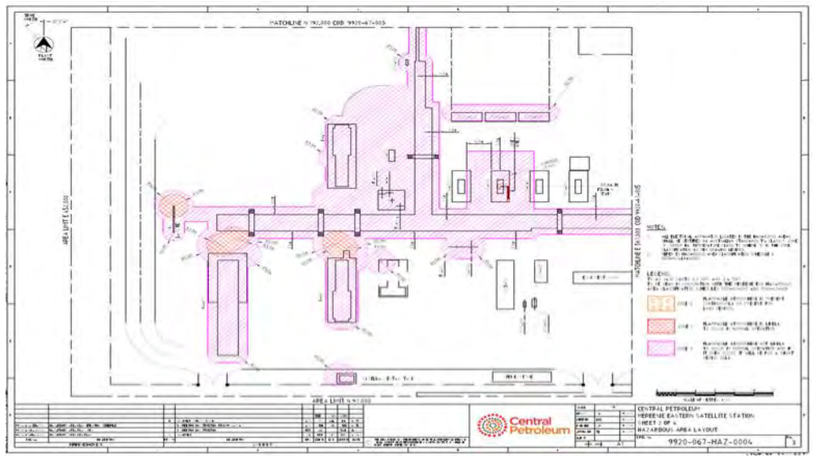
EMERGENCY RESPONSE		
Actons	**Gas Leak (Minor)**	**Gas Leak (Major)**
Move Away	• Move yourself and others away from danger • Establish a perimeter around the affected area, evacuate or restrict access • Arrange for the safe shutdown of plant, equipment, vehicles in the affected area	• Move yourself and others away from danger • Establish a perimeter around the affected area, evacuate or restrict access • Arrange for the safe shutdown of plant, equipment, vehicles in the affected area • The ESD systems provide the main control mechanism for all gas escapes. Do not attempt to disperse or extinguish a gas cloud or fire
Raise Alarm	• Raise alarm on via radio, SOS tracker, phone or in person • Activate alarms and muster, as required	• Raise alarm on via radio, SOS tracker, phone or in person • Activate alarms and muster, as required
Gather Information	• Identify the location of the leak and isolate the affected section of the pipeline, suspend operations if necessary • If a liquid petroleum leak is detected and it is safe to do so, record the estimated volume of leaked liquid and the source of the leak • Establish gas or other testing protocols prior to entering the area or introducing any potential ignition sources e.g. equipment	• Identify the location of the failure and isolate the affected section of the leak, suspend operations if necessary • If a liquid petroleum leak is detected and it is safe to do so, record the estimated volume of leaked liquid and the source of the leak
Mobilise Site Emergency Response Team (SERT)	• Mobilise SERT if additional resources are needed • Determine if any outside assistance is required	• Mobilise SERT if additional resources are needed • Determine if any outside assistance is required
Notify	• Land owner or occupier of the property must be notified if the leak cannot be repaired immediately (from CoP)	• Department of Primary Industry and Resources' emergency hotline number 1 300 935 250 within 24 hours (from COP) • Land owner or occupier of the property must be notified if the leak cannot be repaired immediately (from COP)
Monitor	• Weather information • Wind direction • If safe to do so, monitor the concentration of methane at the surface of the component for a sustained period of approximately twice the response time of the instrument in accordance with USEPA Method 21 (from CoP)	• Weather information • Wind direction • If safe to do so, monitor the concentration of methane at the surface of the component for a sustained period of approximately twice the response time of the instrument in accordance with USEPA Method 21 (from COP)
Repair leak	• Make emergency repairs to eliminate gas escaping from the affected area • Prepare a Permit and work order to finalise after immediate repairs undertaken • All minor leaks must be documented and repaired as soon as practicable, but in any event within 30 days of identification. (CoP)	• If repairs are possible – undertake using caution • The gas leak must be isolated, repaired if possible, contained or otherwise made safe within 72 hours of detection of the leak (from COP) • if the risks of immediately repairing a leak exceed the risk posed by the leak, an extension of the 72-hour deadline may be sought if provided that other measures to mitigate the risk are undertaken (from CoP) • If finalising the remediation is delayed more than 7 business days from the identification of the leak an update must be submitted on that day. The final close out report shall be provided when all work is completed (from CoP)
Incident report	• Prepare and enter information to Incident Management System • Estimate the likely amount of release • If the 30 day deadline being unachievable, the Minister must be notified within the 30 days and provided with the reason for the delay and a target date for completion of the work (from CoP)	• Assign a team member to gather and record information about the leak and the incident timeline • Determine the likely leak volume • A written close-out report must be submitted within 5 business days of the remediation of the leak, specifying the date of identification, nature and level of leak, location and name of the operating plant, and the rectification actions taken (from COP) • CP will cooperate fully with the relevant regulators (from CoP)

EXAMPLES OF HAZARDOUS AREAS FOR OPERATOR LEAK DETECTION

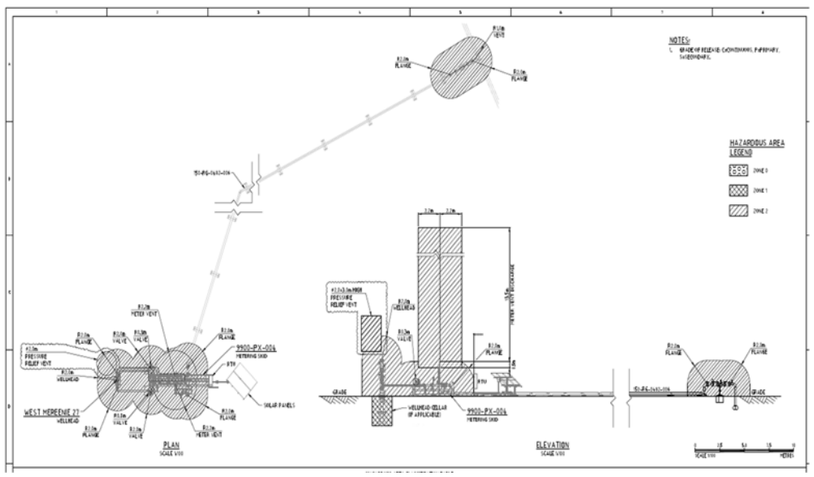
Central Treatment Plant



Eastern Satellite Station



Well



8. Implementation Strategy

This section covers the wider context of the EMP implementation and the requirements common across all environmental and operational aspects of the Mereenie Field. Consistent with our values, The operator is committed to conducting its operations in an environmentally responsible and sustainable manner aligned with community/social expectations. We believe that achieving and maintaining good environmental outcomes is critical to the success of our business.

Details regarding the implementation of environmental management aspects, including specific monitoring and records management are provided in Section 6.2 to 6.9.

8.1. Management system

The operator works under a HSE Management System which contains the policies, procedures, standards and plans which are in place to manage and minimise the impact from its activities. In addition to meeting legal requirements, The operator's activities are also governed by several additional risk focused policies and procedures designed to ensure appropriate industry standards are in place.

8.2. Roles and responsibilities

The Mereenie Field is operated utilising the following management structure, with responsibilities aligned with specific roles detailed in Table 8-1. However, all personnel have a responsibility to operate in a safe and environmentally responsible manner.

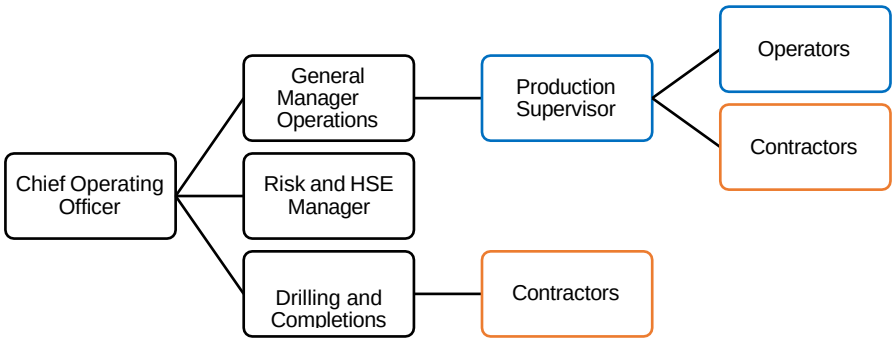


Figure 8-1: Management Structure

Table 8-1: Roles and Responsibilities

Role	Responsibilities	Activities
Chief Operating Officer	Overall operation of the operator's activities	All
General Manager Operations	Nominated Liaison Officer	Production operations, civil and project activities, support, workovers
Drilling and Completions Manager	Project managing workovers activities	Workovers/Civil and project activities
Risk and HSE Manager	Providing systems, processes and advice to site personnel on the management of risk and the environment.	All

Role	Responsibilities	Activities
Production Supervisor	Person in charge on-site to operate facilities in a safe responsible manner	All
Operators	Safe operating of the field and infrastructure	Production operations
Contractors	Deliver projects in line with scope and requirements.	Production operations, civil and project, support, workovers

8.3. Training and awareness

The operator's policies and procedures outlines the training and competency requirements of all personnel (staff, contractors and visitors) to ensure they can fulfil their obligations under this EMP. This enables the operator to work effectively in developing and promoting measures to ensure a high level of HSE knowledge and compliance. The key systems and processes to manage compliance with our standards are:

- Compulsory site and HSE inductions
- Contractor pre-qualification processes
- Contractor management system and processes
- Task-specific work instructions and competency requirements

A register of training and competencies for the operator personnel, contractors and visitors is maintained for compliance with the operator's management system.

Key requirements of the EMP are included in the training and induction materials. A copy of the EMP is available on site and online to all employees, contractors, and visitors.

A toolbox meeting will be held daily, these are designed for the operator's personnel and contractors to discuss tasks the HSE controls and specific requirements for the day's operations. In addition, given ongoing operations, the operator has implemented a suitable handover procedure for shift changes and crew changes to ensure that relieving personnel are fully aware of their responsibilities and work status. Shift change handovers include the completion of checklists and other specified documentation.

8.4. Emergency preparedness and response

An Emergency Response Plan (ERP) is in place covering the proposed activities within the EMP. The ERP provides a broad framework for managing potential emergency incidents to minimise the potential risk to human safety and the environment, and includes:

- Decision trees and escalation points
- Emergency contacts
- Emergency action guides
- Details of emergency response personnel, equipment and facilities

When conducting workovers, the development of a program specific ERP is completed in conjunction with the workover contractor, however all minimum standards from the field ERP are carried over.

The operator will ensure all personnel, contractors and visitors are aware of the emergency response framework and are trained in emergency response procedures relevant to their role/position.

The operator's emergency management framework is reviewed and updated as part of continuous improvements processes to incorporate the latest information arising from incidents, near misses and emergency simulation training sessions.

8.5. Contractor management

Most of the work undertaken under this EMP will be performed by the operator's personnel using standard work instructions. However, some scopes of work will be undertaken by contractors. Efforts are therefore focused on effective contractor management, to ensure third parties are compliant with the relevant EMP commitment and contractual requirements.

The contract and scope of work are the key mechanisms the operator uses to manage contractors and outline compliance requirements for the contracted activity. Contractors are also provided with:

Key compliance and system documents

- A list of compliance commitments and responsible person for a specific activity
- A list of inspections, procedures and other tools required to implement the content of the EMP
- Monitoring and reporting requirements
- Hold Points which require a deliverable to be completed prior to entry into a new activity phase (i.e. prior to mobilisation, operation and demobilisation)
- Maps illustrating the approved work zones and any restricted areas

Assurance over contractor performance is undertaken prior to, during and post the scope or activities.

8.6. Monitoring and reporting

8.6.1. Monitoring

Environmental monitoring conducted specific to each environmental aspect is outlined in Sections 6.2 to 6.9.

Any incident identified from our monitoring activities will be captured in incident reporting system and actions will be taken to rectify the incident and prevent its reoccurrence. If incident thresholds are reached a more formal investigation will be undertaken. All personnel are required to proactively report all incidents, and identification of potential hazards not matter how minor to act as an alert and to maintain a program of continual improvement.

All sampling and analyses carried out to meet the requirements of the EMP and the Code will be conducted by suitably qualified and competent persons. Instruments and measuring and metering devices will be maintained and calibrated in accordance with manufacturer's specifications in readiness for use. Calibration of equipment will be prompted and managed via our asset management system with records and evidence, or currency maintained. In addition, and as per the Code, laboratory analyses will be conducted by a laboratory that has National Association of Testing Authorities (NATA) accreditation for such analyses and tests where available or using duplicate samples across independent laboratories where not available and in accordance with Code.

8.6.2. Reporting

All reporting under the CoP, Petroleum (Environment) Regulations, NT Waste Management and Pollution Control (WMPC) Act 1998, the schedule and other relevant legislation as they relate to this EMP will be provided as per requirements. Any ad hoc reporting such as reportable incidents, and requests for prescribed documents will be provide as per Petroleum (Environment) Regulations 2016.

In addition, reporting is prepared to support national reporting requirements that also support the EMP and the Code requirements, including National Greenhouse and Energy Reporting Act and the National Environmental Protection Measure (National Pollutant Inventory).

MASP and Brewer Estate

In additional to reporting under the above requirements, reporting of incidents associated with the operation of the MASP will also be accordance with the requirements of the:

- *Energy Pipelines Act 2015, and*
- *Energy Pipelines Regulations 2015.*

8.7. Records management

As per the operator's standard practice, all prescribed environmental records required under this EMP will be maintained in accordance with the Petroleum (Environment) Regulations 2016 and other relevant legislation. Details of specific records captured to address environmental risks and performance standards are presented in Sections 6.2 to 6.9.

8.8. Management of change

A Management of Change (MoC) process is in place to ensure any changes to activities are appropriately accessed and communicated to ensure no additional unintended risks or impacts are introduced.

The MoC process will only be used when optimising environmental outcomes or to improve operational efficiency where no new regulated activity, risk (including risk level) or impact is introduced. Where a new regulated activity, risk (including risk level) or impact is introduced, then a modification revision of the EMP is required under the Regulations.

8.9. Auditing and assurance

In addition to regular monitoring as set out in this document, audits assessing compliance with this

EMP will be undertaken by the operator or third parties prior to, during and upon completion of the activity and at least annually. Any non-compliances arising from regulated activities will be recorded and corrective actions undertaken to address the gaps. These non-conformances and corrective actions will be recorded, tracked, and reported. Any non-compliance with approved conditions will be reported in the AEPR.

8.10. Corrective action, review and continuous improvement

Corrective Actions

The operator's incident management procedures and systems are part of our HSE management systems and are designed to:

- Ensure all incidents and hazards are reported in a standard format so that consistency and accuracy of the process is maintained
- Identify the underlying and basic causes of all incidents and hazards
- Implement corrective/improvement actions to prevent the recurrence of similar incidents and hazards
- Provide information to prepare the incidents and hazards statistics and identify potential trends
- Identify potential suitable corrective actions.

All corrective/improvement associated with incident, hazards, and assurance activities are recorded, tracked and reported. Any overdue actions are followed up and escalated as required.

Review and Continuous Improvement

Implementation of this EMP will be continually assessed and revised as required based on monitoring and assurance results, feedback, change to the proposed work program or a material increase in risk level.

A formal review and resubmission of this EMP will be undertaken every five years.

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10. Glossary and abbreviations

Abbreviation	Details
2D	2 Dimensional (Seismic Survey)
AAPA	Aboriginal Areas Protection Authority
ALARP	As Low As Reasonably Practicable
APPEA	Australia Petroleum Production and Exploration Association
CD	Conservation Dependent
CE	Critically Endangered
CLC	Central Land Council
Competent person	Means a person who has the necessary ability, knowledge, and the relevant experience to conduct the task or activity
The Operator	Central Petroleum Limited
CSA	Chemical Storage Area
DAWE	Department of Agriculture, Water, and the Environment (Federal), now DCCEEW
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DD	Data Deficient
DLPE	Department of Environment, Parks and Water Security
DME	Department of Industry, Tourism and Trade
DotE	Department of the Environment (Federal), now DCCEEW
ESCP	Erosion and Sediment Control Plan
EMP	Environment Management Plan
EMS	Environmental Management System
EN	Endangered
EOPSMC	Environmental Outcome, Performance Standard, Measurement Criteria
EP 115	Exploration Permit 115
EPA	NT Environment Protection Authority
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
ESD	Ecologically Sustainable Development
GIS	Geographic Information System
Ha	Hectare
HSE	Health, Safety and Environment
HSE MS	Health, Safety and Environmental Management System
ISO	International Standards Organisation
Kg	Kilogram
m	Metre
mm	Millimetre
MCA	Multi Criteria Analysis
MNES	Matters of National Environmental Significance
NAFI	Northern Australia Fire Information
NTD	Near Threatened
NT	Northern Territory
OL3	Operating Licence 3
OL4	Operating Licence 4
OL5	Operating Licence 5
PMST	Protected Matters Search Tool
PPE	Personal Protective Equipment
PSV	Pressure Safety Valve
SDS	Safety Data Sheet

Abbreviation	Details
Significant Rainfall	Any rainfall event over 15 mm in 24 hours
SIMOPS	Simultaneous Operations
SOBS	Site of Botanical Significance
SOCS	Site of Conservation Significance
SSCC	Sacred Sites Clearance Certificate
Suitably Qualified Person	A person who has the professional qualifications, training or skills or experience relevant to the nominated subject matter or task and can give authoritative assessment, advice, and analysis about performance relevant to the subject matter using relevant protocols, standards, methods, literature or conduct tasks in accordance with requirements
TPWC Act	Territory Parks and Wildlife Conservation Act
Vu	Vulnerable
WoNS	Weeds of National Significance

APPENDIX A. Environmental Risk Assessment

Table A-1: Risk Assessment

Potential Impact	Causes	Consequence	Inherent Risk			Existing Control Measures (Control Type)	Controls Rating	Residual Risk			Uncertainty Level	Code of Practice	ALARP / Acceptability Rationale
			I	L	R			I	L	R			
Flora and Fauna													
Activities adversely affect Conservation Significant flora and fauna	Civil works, vehicle movements and heavy equipment / rig mobilisation including: Earthworks to re-establish flare pit and construct tank trench/drain Rehabilitation (as it applies to this EMP scope) Unintended introduction and / or spread of weeds and invasive species	Injury or death of conservation significant fauna	Moderate	Possible	Medium	▪ Limit speed on unsealed access roads (administrative) ▪ All personnel attending MRN for operations or workovers will be inducted on speed limits and times to avoid driving (administrative) ▪ Vehicle movements will be planned to minimise the number of trips undertaken e.g., car-pooling for personnel movements (administrative) ▪ Any oversized loads will be accompanied by an accredited pilot (administrative)	Effective	Moderate	Unlikely	Medium	A	Clause A.3.5	Movements take place on in field access tracks, with controls established and operating successfully under a site-based traffic management plan. Consideration was given to reducing the speed limit however the site has been operating with the current limits without any adverse effect recorded. There will only be a small increase in vehicle movements for a short period on-site during work over activities on top of additional operations activities. The controls implemented are aligned with industry practice and are consistent with the Code and ESD principles with activities able to co-exist without any long-term impacts to the local environment. The residual risk has been reduced to the greatest extent possible due to the consequence remaining as moderate if an event did occur. Therefore, we consider this risk ALARP and acceptable in accordance with the rationale provided in Section 6, with no further risk reduction warranted.
		Loss of conservation significant vegetation and fauna habitat	Moderate	Unlikely	Medium	▪ Work conducted in pre-disturbed operational areas only ▪ Permit to work to specify that no clearing of previously undisturbed vegetation to occur (elimination) ▪ Conduct earthworks in accordance with the permit to work (administrative) ▪ Drive on designated vehicle access tracks only (administrative)	Effective	Moderate	Remote	Low	A	Clause A.3.1 A.3.5	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and acceptable in accordance with the rationale provided in Section 6, with no further risk reduction possible.
		Increased occurrence of weeds (including WoNs	Serious	Possible	Medium	▪ All vehicles, equipment and machinery from known weed infested areas are to be cleaned and inspected for weeds prior to attending either the MRN (engineering) ▪ Bulk materials imported to site to be declared weed seed free (engineering, administrative) ▪ Implement the Weed Management Plan (elimination, engineering, administrative)	Effective	Serious	Unlikely	Medium	A	Clause A.3.1 A.3.6	No WoNS or declared weeds in MRN so risk of weed spread between well sites minimised. Operational vehicles not exposed to weed zones as most remain on site or southern NT. All vehicles from known weed zones are cleaned prior to site entry and materials inspected & declared weed seed free. Field-wide weed management occurs regularly as part of ongoing operations. The residual risk has been reduced to the greatest extent possible due to the consequence remaining as serious if an event did occur. Therefore, we consider this risk ALARP and acceptable in accordance with the rationale provided in Section 6, with no further risk reduction warranted.

Potential Impact	Causes	Consequence	Inherent Risk			Existing Control Measures (Control Type)	Controls Rating	Residual Risk			Uncertainty Level	Code of Practice	ALARP / Acceptability Rationale
			I	L	R			I	L	R			
	Uncontrolled fires as a result of CTP's activities via: Spill and ignition of flammable substances Loss of containment from the well Uncontrolled ignition source	▪ Injury or death of conservation significant fauna ▪ Loss of conservation significant vegetation and fauna habitat	Serious	Likely	High	▪ Fire breaks around well lease and infrastructure (engineering) ▪ Smoking is only permitted in designated smoking areas (engineering) ▪ Implement methane emission management plan (administrative) ▪ Implement emergency response plan (administrative) ▪ Conduct Job Hazard Analysis for any new task or new use of equipment to ensure appropriate control measures are identified and to take account of variation in fire danger ratings (administrative) ▪ When attending a site conduct daily toolbox meetings to advise on current fire danger, presence of fire in the area and current vegetation condition (administrative) ▪ Inductions to include information on the emergency response plan, designated smoking areas fire extinguisher locations (administrative) ▪ Fire extinguishers available in all MRN vehicles (PPE)	Effective	Minor	Unlikely	Low	A	Clause A.3.5 A.3.7 D.5.1	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.
	Storage and transportation of domestic wastes	Scavenging by native and pest species Pest outbreaks	Moderate	Unlikely	Medium	▪ Suitable waste containers for waste storage are to be available (engineering) ▪ Waste containers to be fauna and vermin proof (engineering) ▪ Waste storage areas are inside fenced areas to minimise fauna access (engineering) ▪ Each facility is maintained free of rubbish outside waste disposal receptacles (administrative) ▪ All waste is to be stored in waste containers (administrative)	Effective	Minor	Unlikely	Low	A		Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.
	Storage of wastewater at evaporation ponds	Fauna entrapment	Moderate	Possible	Medium	▪ All lined water storages are within a fenced compound (engineering) ▪ Water storages outside the fenced compound are shallow with low gradient bunds (engineering) ▪ Fauna egress matting provided in lined ponds	Effective	Moderate	Remote	Low	A		Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.

Potential Impact	Causes	Consequence	Inherent Risk			Existing Control Measures (Control Type)	Controls Rating	Residual Risk			Uncertainty Level	Code of Practice	ALARP / Acceptability Rationale
			I	L	R			I	L	R			
Land													
Activities adversely affect soils and topography	Movement and use of heavy machinery and vehicles, including during wet season Earthworks for re-establishment of flare pit and workover fluid tank drain/trench, including during wet season Earthworks in relation to civil maintenance activities including during the wet season	▪ Inversion of soil profile ▪ Soil erosion and siltation of watercourses ▪ Soil compaction	Moderate	Unlikely	Medium	▪ Implement erosion and sediment control plan (administrative) ▪ Requirement for erosion and sediment control structures (e.g. berms, sediment fences) is determined during site audits. Where determined from the audit that they are necessary they will be in line with best practice guidelines by DENR and IECA (engineering) ▪ Conduct Job Hazard Analysis for any new task or new use of equipment to ensure appropriate control measures are identified (administrative) ▪ Avoid driving on access tracks for 24 hours following significant rainfall events (i.e. >10mm in 24 hours) (administration) ▪ Site inspections to be undertaken within 5 business days of a significant rainfall event to assess erosion issues (administrative) ▪ Drive on designated vehicle access tracks only (administrative) ▪ Implement Rehabilitation Plan (administrative) ▪ Implement Wet Season Management Plan (administrative)	Effective	Minor	Unlikely	Low	A	Clause A.3.4 A.3.9	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.
	Loss of containment (including spills or leaks), including during wet season	Contamination of soils	Moderate	Likely	Medium	▪ Asset integrity management system which includes: - Undertake inspection for leaks/spills and rectify where detected (administrative, engineering) - Ensure all fittings and equipment are checked and maintained (administrative, engineering) - Ensure that any spills, leaks or points of excessive wear are appropriately reported, and the necessary maintenance work and control measures undertaken (administrative, engineering) ▪ Provide portable spill containment equipment (e.g. spill trays) at each wellsite (engineering) ▪ Provide spill response kits appropriate for the types of spills possible (engineering) ▪ Implement Spill Management Plan (administrative) ▪ Implement Wastewater Management Plan (administrative) ▪ Implement Wet Season Management Plan (administrative)	Effective	Moderate	Remote	Low	A	Clause A.3.8 C.7.1 C.7.2	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.

Potential Impact	Causes	Consequence	Inherent Risk			Existing Control Measures (Control Type)	Controls Rating	Residual Risk			Uncertainty Level	Code of Practice	ALARP / Acceptability Rationale
			I	L	R			I	L	R			
	Spill or leak from the use, transportation, treatment, handling and storage of diesel, fuel, oils, drill cuttingsm wastewater, workover fluids including during wet season	Contamination of soil	Moderate	Possible	Medium	▪ Asset integrity management system which includes: - Store minimal volumes of fuels, oils and other chemicals on site while the site is not operational (administrative) - Ensure appropriate measures are in place (e.g. lining, bunding) to prevent fluids or other waste chemical and/or hydrocarbon fluids from contaminating water or land not specifically designated for waste disposal (engineering) - Ensure that where drips and leaks occur, corrective actions are raised, and repairs are undertaken in a timeframe commensurate with the risk of environmental harm escalating if not repaired (administrative) ▪ Implement fuel and chemical handling and storage procedure (administrative) ▪ Site specific risk assessment of road conditions for heavy vehicle transport will be conducted prior to mobilisation on unsealed roads using detailed weather forecasting (administrative) ▪ Provide spill response kits appropriate for the types of spills possible at each facility (engineering) ▪ Follow the appropriate Australian Standards and Code for the fuel / chemical being stored and used at the facility (engineering, administrative) ▪ On-site SDS and handling procedures for fuel / chemicals to be available at each facility (administrative) ▪ Secondary containment of chemicals and hazardous materials as per Code ▪ The required volumes of chemicals plus contingency will be transported to site from offsite locations at the minimum frequency possible to minimise transportation risks while allowing the necessary quantities to be appropriately stored onsite for access as required ▪ Implement Spill Management Plan (administrative) ▪ Implement Wet Season Management Plan (administrative)	Effective	Minor	Unlikely	Low	A	Clause A.3.8 C7.1(b) C.7.2	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and ‘acceptable’ in accordance with the rationale provided in Section 6, with no further risk reduction possible.

Potential Impact	Causes	Consequence	Inherent Risk			Existing Control Measures (Control Type)	Controls Rating	Residual Risk			Uncertainty Level	Code of Practice	ALARP / Acceptability Rationale
			I	L	R			I	L	R			
	Release of oily and or saline water, including waste water, to ground, including during wet season	Contamination of soil	Serious	Remote	Medium	**General** ▪ Liquid wastes (other than workover fluid) to be stored in a secured container in a bunded area (engineering) ▪ Ensure appropriate measures are in place (e.g. lining, bunding) to prevent fluids or other waste chemical and/or hydrocarbon fluids from contaminating water or land not specifically designated for waste disposal (engineering) ▪ Ensure that where drips and leaks occur, corrective actions are raised, and repairs are undertaken in a timeframe commensurate with the risk of environmental harm escalating if not repaired (administrative) ▪ Transport of hazardous material within the NT by a licensed NT EPA contractor (administrative) ▪ Any transport across State or Territory borders to abide by the NEPM 2013 guidelines (administrative) ▪ Handle, store and otherwise manage all hazardous goods in accordance with relevant Australian Standards and Codes of Practice (administrative) ▪ Where applicable, ensure pumps, tanks and transfer lines are located within suitably bunded areas (engineering) ▪ Implement Spill Management Plan (administrative) ▪ Implement Wet Season Management Plan (administrative) ▪ Implement Wastewater Management Plan (administrative) **Workovers and drill cuttings** ▪ Workover fluid stored in steel tanks surrounded by trench/drain to flare pit. Spills of workover fluid contained to the disturbed operational areas using bunding and immediately managed (engineering). ▪ Drill cuttings are remediated and disposed of in accordance with 3.9.4.5 and Table 3-10 ▪ Minimising handling/transfer activities during rainfall or high wind conditions **Aboveground Flowlines** ▪ West Mereenie wells - the flowlines are not co-located with the access track to decrease likelihood of accidental vehicle damage (engineering) ▪ Flowlines have asset protection along the route (fencing, bollards and traffic controls) (engineering) ▪ Site inductions includes information on the location of aboveground flowlines and safe driving conditions to be applied (administrative) **All Flowlines** ▪ Flowline to be constructed in accordance with Australian Standard 2885 (engineering) ▪ Flowline to be pressure tested prior to becoming operational (engineering) ▪ Flowline pressure monitored continuously to detect any failures as they occur (administrative) ▪ Flowline integrity inspections to be undertaken (engineering) **Evaporation ponds** ▪ Minimum 500mm freeboard to be available (administrative) ▪ Pond level to be inspected each quarter and after a significant rainfall event. Where the freeboard is less than 500mm, it is to be reduced by offsite transportation and disposal by a licensed waste transporter (engineering) ▪ Evaporation ponds have a clay liner and a HDPE liner	Effective	Serious	Remote	Medium	A	Clause A.3.8 C.7.1 C.7.2	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.

	Incorrect waste segregation, storage, handling and disposal (including hazardous	Loss of recyclable resources adding to landfill	Minor	Likely	Medium	▪ Segregate waste to maximise recycling and ensure other wastes are appropriately disposed of (administrative) ▪ Site inductions to include information on correct waste segregation and disposal (administrative)	Effective	Minor	Unlikely	Low	A		Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.

Potential Impact	Causes	Consequence	Inherent Risk			Existing Control Measures (Control Type)	Controls Rating	Residual Risk			Uncertainty Level	Code of Practice	ALARP / Acceptability Rationale
			I	L	R			I	L	R			
	waste), including during wet season					▪ Removal of listed wastes for off-site disposal to be checked and signed by NT EPA approved and licensed contractor (administrative)							
		Soil contamination				▪ Wastes stored in secured containers (engineering) ▪ Liquid wastes to be stored in a bunded area (aside from workover fluid waste which is to be returned to the storage tank) (engineering) ▪ Implement Spill Management Plan (administrative) ▪ Implement Wet Season Management Plan (administrative)	Effective				A	Clause C.7.2	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.
	Waste generation	Increase waste to landfill and other treatment and or disposal facilities	Minor	Likely	Medium	▪ Wastewater disposed in existing evaporation pond ▪ Segregate waste to maximise recycling and ensure other wastes are appropriately disposed of (administrative) ▪ Site inductions to include information on correct waste segregation and disposal (administrative) ▪ Removal of listed wastes for off-site disposal to be checked and signed by NT EPA approved and licensed contractor (administrative) ▪ Ensure disposal facilities have capacity to accept quantities of waste r	Effective	Minor	Unlikely	Low	A	Clause C7.1(b)	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6 with no further risk reduction possible.
Cultural Heritage													
Activities adversely affect cultural heritage sites	Earthworks required to re-established flare pit / tank trench/drain Movement of heavy machinery and vehicles within each site Earthworks in relation to civil maintenance activities	Disturbance to cultural heritage sites	Moderate	Unlikely	Medium	▪ SSCC certificates in place and cultural heritage survey of work area previously undertaken (administrative) ▪ Site inductions to include information on location of known cultural and heritage sites and protocol for unexpected finds (administrative) ▪ No earthworks to be conducted after sunset or before sunrise (administrative) ▪ Journey management plan filled in and approved by CP (administrative) ▪ Personnel access to the facility and any site/area by permit approved by the CLC and CP (administrative) ▪ Ensure any clearing of vegetation for laydowns or flare maintenance are only carried out in previously disturbed (regrowth vegetation) areas only	Effective	Moderate	Remote	Low	A	Clause A.3.1	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.

	Fire as a result of CP's activities	Disturbance to cultural heritage sites	Serious	Possible	High	▪ If fire detected, implement emergency response plan (administrative) ▪ Conduct Job Hazard Analysis for any new task or new use of equipment to ensure appropriate control measures are identified and to take account of variation in fire danger ratings (administrative) ▪ Prior to attending site, each day obtain information on current fire danger, presence of fire in the area and current weather condition from government websites (administrative) ▪ Implement fire management plan (administrative)	Effective	Serious	Remote	Medium	A	Clause A.3.7	Activities are not being conducted in the cultural heritage sensitive areas (exclusion zones), though fire could spread to these areas if fire is out of control. The control measures have reduced the likelihood of the hazard to the greatest extent possible. The residual risk has been reduced to the greatest extent possible due to the consequence remaining as serious if an event did occur. Therefore, we consider this risk ALARP and acceptable in accordance with the rationale provided in Section 6, with no further risk reduction warranted.

Potential Impact	Causes	Consequence	Inherent Risk			Existing Control Measures (Control Type)	Controls Rating	Residual Risk			Uncertainty Level	Code of Practice	ALARP / Acceptability Rationale
			I	L	R			I	L	R			
Water													
Activities adversely affect surface water and ground water	Earthworks required to re-establish flare pit and tank drain/trench, including during wet season Earthworks in relation to civil maintenance activities including during the wet season	Disturbance to natural drainage patterns	Minor	Unlikely	Low	▪ Activities are being performed within the existing footprint of established well leases with no changes to flow patterns ▪ Permit to work to restrict activities to existing well leases (administrative) ▪ Well leases are not located within watercourses or drainage lines ▪ Upon demobilisation from site, drain/trench to be backfilled to produce landform consistent with pre-disturbed state and surrounding environment (engineering) ▪ Implement erosion and sediment control plan (administrative) ▪ Implement wet season management plan (administrative)	Effective	Minor	Remote	Low	A	Clause A.3.1	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.
		Erosion and siltation of watercourses	Moderate	Unlikely	Medium	▪ Implement erosion and sediment control plan (administrative) ▪ Install erosion and sediment control structures (e.g. berms, sediment fences) where necessary in accordance with best practice principles and guidelines by DENR and IECA (engineering) ▪ Conduct Job Hazard Analysis for any new task or new use of equipment to ensure appropriate control measures are identified (administrative) ▪ Site inspections to be undertaken within 5 business days of a significant rainfall event to assess erosion issues (administrative)	Effective	Moderate	Remote	Low	A	Clause A.3.4	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.
	Use of groundwater resources	Depletion of groundwater resources	Moderate	Unlikely	Medium	▪ Groundwater use remains within the volume allocated to the site (58.2ML/year) under Groundwater Extraction Licence M10001	Effective	Moderate	Remote	Low	A	NA	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.

	Subsurface loss of contaminants during workovers	Contamination of watercourses Contamination of groundwater Reduction of groundwater pressure	Critical	Remote	High	▪ Wells have multiple barriers in place (e.g. cementing, minimum two casing strings) ▪ Well to be managed in accordance with a Code compliant and accepted Well Operation Management Plan (WOMP) and Well Barrier Integrity Verification (WBIV) Reports (engineering, administrative), which will include procedures for: - Ensuring wells are suitable for workover prior to workovers - Ensuring all fittings and equipment are checked and maintained - Monitoring facility pressure for quick identification of any source of leak or rupture (administrative) - Ensuring that any spills, leaks or points of excessive wear are reported, and the necessary maintenance work and control measures undertaken (administrative) - Install, maintaining and routinely test blow-out preventers (BOPs) and related well control equipment on all rigs (administrative) - Kill (workover) fluid to be on site to kill the well - If contamination detected, implement emergency response plan (administrative). ▪ Groundwater monitoring program implemented to detect potential loss of containment	Effective	Serious	Remote	Medium	A	Clause A.3.8 A.4.9 A.4.10 B.4.14 C.7.1 C.7.2	Workovers will be conducted using extensive best practice controls to be outlined in an accepted WOMP and WIMP. The subsurface loss of containment risks of workovers are generally lower than drilling a new well because cement casing is already in place and there are no open zones, which provides some protection against hydrocarbon migration. The residual risk has been reduced to the greatest extent possible due to the consequence remaining as serious if an event did occur. We consider that this risk has been reduced to ALARP and no further risk reduction is warranted. We also note that part of the rationale for conducting the workover activities is to improve well integrity in an aging field. Workovers will ensure well barriers are in-tact so that subsurface loss of containment risks are reduced during the operation of the well. Because the workover activity may reduce subsurface loss of containment risks during operations and because the risks during workover activities can be reduced to ALARP, we consider this risk 'acceptable' in accordance with the rationale provided in Section 6

	Spill or leak from the use, transportation, flaring of condensates treatment, handling and storage of, workover fluids, wastewater, and, diesel, fuel, oils and chemicals, including during wet season	Contamination of surface water Contamination of groundwater	Moderate	Unlikely	Medium	**General** ▪ Liquid wastes (other than workover fluid) to be stored in a secured container in a bunded area (engineering) ▪ Ensure appropriate measures are in place (e.g. lining, bunding) to prevent fluids or other waste chemical and/or hydrocarbon fluids from contaminating water or land not specifically designated for waste disposal (engineering) ▪ Ensure that where drips and leaks occur, corrective actions are raised, and repairs are undertaken in a timeframe commensurate with the risk of environmental harm escalating if not repaired (administrative) ▪ Transport of hazardous material within the NT by a licensed NT EPA contractor (administrative) ▪ Any transport across State or Territory borders to abide by the NEPM 2013 guidelines (administrative) ▪ Handle, store and otherwise manage all hazardous goods in accordance with relevant Australian Standards and Codes of Practice (administrative) ▪ Where applicable, ensure pumps, tanks and transfer lines are located within suitably bunded areas (engineering) ▪ 6-monthly groundwater monitoring ▪ Inspect and document bund condition of flare pit quarterly (repair immediately as required) ▪ Implement Spill Management Plan (administrative) ▪ Implement Wet Season Management Plan (administrative) ▪ Implement Wastewater Management Plan (administrative) **Workovers** ▪ Trench/drain to be constructed around workover fluid tanks to direct overflow to flare pit (engineering) and tanks to be monitored hourly during shift (administrative) **Aboveground Flowlines** ▪ Flowlines are not co-located with the access track across majority of field to decrease likelihood of accidental vehicle damage (engineering) ▪ Flowlines have asset protection along the route (fencing, bollards and traffic controls) (engineering) ▪ Site inductions includes information on the location of aboveground flowlines and safe driving conditions to be applied (administrative) **All Flowlines** ▪ Flowline to be constructed in accordance with Australian Standard 2885 (engineering) ▪ Flowline to be pressure tested prior to becoming operational (engineering) ▪ Flowline pressure monitored continuously to detect any failures as they occur (administrative) ▪ Flowline integrity inspections to be undertaken (engineering) **Evaporation ponds** ▪ Minimum 500mm freeboard to be available (administrative) ▪ Pond level to be inspected each quarter and after a significant rainfall event. Where the freeboard is less than 500mm, it is to be reduced by offsite transportation and disposal by a licensed waste transporter (engineering) ▪ Evaporation ponds have a compacted clay base and a HDPE liner **Oil storage and loadout** ▪ Storage tanks sit within clay lined bund. Tanks are steel plate floors with an internal expoy layer (engineering)	Effective	Moderate	Remote	Low	A	Clause A.3.8 C.7.1 C.7.2	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.

						▪ Non-destructive vessel integrity inspections (engineering) ▪ Loadout pumps within bunded area (engineering)						

Potential Impact	Causes	Consequence	Inherent Risk			Existing Control Measures (Control Type)	Controls Rating	Residual Risk			Uncertainty Level	Code of Practice	ALARP / Acceptability Rationale
			I	L	R			I	L	R			
	Flooding, particularly during wet season	Sedimentation of watercourses	Minor	Unlikely	Low	▪ Implement erosion and sediment control plan (administrative) ▪ Separation distance from major watercourses (no major watercourses) (engineering) ▪ If flooding occurs, implement emergency response plan (administrative) ▪ Requirement for erosion and sediment control structures (e.g. berms, sediment fences) is determined during site audits. Where determined from the audit that they are necessary they will be in line with best practice guidelines by DENR and IECA ▪ Inspect job site areas following flood events to determine extent of sedimentation and remedial actions taken as required ▪ Implement wet season management plan (administrative)	Effective	Minor	Unlikely	Low	A	Clause A.3.1 A.3.4	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.
		Contamination of watercourses	Minor	Unlikely	Low	▪ Separation distance from major watercourses (no major watercourses in MRN) (engineering) ▪ Store minimal volumes of fuels, oils and other chemicals at the job site (administrative) ▪ When stored onsite, fuels, oils and other chemicals to be stored in a bunded area ▪ Bunded area to not be located in a flood prone area (engineering) ▪ If flooding occurs, implement emergency response plan (administrative) ▪ Implement wet season management plan (administrative)	Effective	Minor	Unlikely	Low	A	Clause A.3.1 A.3.4	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.
	Incorrect hazardous waste segregation and disposal, including during wet season	Contamination of surface watercourse Radiation	Minor	Likely	Med	▪ Separation distance from major watercourses (no major watercourses in MRN) (engineering) ▪ Liquid wastes to be stored in a secured container in a bunded area (engineering) ▪ Ensure appropriate measures are in place (e.g. lining, bunding) to prevent fluids or other waste chemical and/or hydrocarbon fluids from contaminating water or land not specifically designated for waste disposal (engineering) ▪ Workover fluid to be stored in tanks and recirculated and reused where possible (engineering) ▪ Ensure that where drips and leaks occur, corrective actions are raised, and repairs are undertaken in a timeframe commensurate with the risk of environmental harm escalating if not repaired (administrative) ▪ Transport of hazardous material within the NT by a licensed NT EPA contractor (administrative) ▪ Any transport across State or Territory borders to abide by the NEPM 2013 guidelines (administrative) ▪ Handle, store and otherwise manage all hazardous goods in accordance with relevant Australian Standards and Codes of Practice (administrative) ▪ Where applicable, ensure pumps, tanks and transfer lines are located within suitably bunded areas (engineering) ▪ NORMs (Radiation) Management Plan to be implemented (administrative) ▪ Implement Spill Management Plan (administrative) ▪ Implement Wet Season Management Plan (administrative)	Effective	Minor	Unlikely	Low	A	Clause A.3.1	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.

Potential Impact	Causes	Consequence	Inherent Risk			Existing Control Measures (Control Type)	Controls Rating	Residual Risk			Uncertainty Level	Code of Practice	ALARP / Acceptability Rationale
			I	L	R			I	L	R			
	General use of roads and access tracks, including during wet season	Sedimentation of surface watercourses	Moderate	Unlikely	Med	▪ Stick to designated speed limits (administrative) ▪ Monitor access tracks for signs of erosion or sedimentation occurring (administrative) ▪ Implement erosion and sediment control plan (administrative) ▪ Implement wet season management plan (administrative)	Effective	Moderate	Remote	Low	A	Clause A.3.1 A.3.4	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.
Community													
Activities adversely affect sensitive receptors	Bushfire as a result of EMP activities Bushfire spreads to the EMP activity locations as a result of accidental ignition either within the MRN or offsite	Danger to health and safety of employees, contractors and possibly the public	Serious	Unlikely	Med	▪ Implement methane emissions management plan (administrative) ▪ Fire extinguishers to be available (engineering) ▪ Use of non-intrinsically safe material only if accompanied by a gas detector and the appropriate permit (administrative) ▪ All staff and visitors accessing the MRN must be inducted into the emergency response plan (administrative) ▪ Implement fire management plan (administrative) ▪ Chemicals, dangerous goods etc stored in secured containers and bunded areas (engineering) ▪ Hazardous zones for each well determined in accordance with the relevant Australian Standard (administrative) ▪ Only authorised equipment is allowed to be used within the hazardous zone Ignition sources to be kept outside designated hazardous zones (administrative) ▪ If fire occurs, implement emergency response plan (administrative) ▪ Fire fuel loads cleared from well leases (engineering) ▪ Horizontal in-ground flare system used within flare pit which is designed to minimise risk of ignition (engineering) ▪ Designated smoking areas (administrative)	Effective	Moderate	Remote	Low	A	Clause A.3.7	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.
	Lack of consultation with stakeholders Adverse Community perception to activities	Local community and landowners' discontent and activism Disturbance or impedance of surrounding stakeholder's regular activities.	Moderate	Unlikely	Med	▪ All activities to stay within the approved SSCC and AAPA area (administrative) ▪ A full stakeholder consultation log will be maintained by CP (administrative) ▪ Early and ongoing community consultation and engagement approach (administrative) ▪ Local communities and stakeholders advised of CP contact number through multiple channels (administrative) ▪ Where possible, local and/or Indigenous people employed (administrative) ▪ All personnel and site visitors to have appropriate CLC approval and complete the appropriate inductions (administrative)	Effective	Moderate	Remote	Low	A	Clause A.3.1	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.

Potential Impact	Causes	Consequence	Inherent Risk			Existing Control Measures (Control Type)	Controls Rating	Residual Risk			Uncertainty Level	Code of Practice	ALARP / Acceptability Rationale
			I	L	R			I	L	R			
	Traffic increase due to activities	▪ Local community and landowners' discontent and activism ▪ Increased potential for vehicle accidents and damage to infrastructure ▪ Increased occurrence and diversity of weed species ▪ Disturbance or impedance of surrounding stakeholder's regular activities	Moderate	Unlikely	Med	▪ Consult with surrounding stakeholders when major operations will occur (administrative) ▪ Approved Traffic Management Plan. Transportation of over-width or over-dimension loads under DPIL approved permit with pilot (administrative) ▪ No unauthorised third-party access to the site (administrative) ▪ Zero alcohol and/or drugs policy with routine testing (administrative) ▪ Ensure vehicles are inspected and maintained regularly and have working lights and/or spotlights ▪ No deviation from access tracks and roads (administrative) ▪ Well lease access track signed to prevent unauthorised access (administrative) ▪ All turnoffs and turn onto NT controlled roads are suitable for petroleum activities (engineering) ▪ On unsealed roads if dust is created, reduce speed (administrative) ▪ CP has paramedics and ambulance on site and field hospital facilities ▪ Staff and contractors are appropriately licensed and manage journeys in accordance with a Journey Management Plan. Journeys are planned to minimise number of vehicle movements where possible (administrative) ▪ Limited driving at dawn and dusk (administrative) ▪ Refer to "Chemical Management Procedure" for transport of chemicals ▪ Contractor vehicles to comply with local area weed control measures	Effective	Moderate	Remote	Low	A	Clause A.3.1 A.3.6	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.
	Noise from activities	Local community complaints	Minor	Possible	Low	▪ Distance to sensitive receptors is approximately 40km via road (elimination)	Effective	Minor	Unlikely	Low	A	Clause A.3.3	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.
Air													
Activities adversely affect air quality and climate	Movement of heavy machinery and vehicles	Dust generation	Minor	Likely	Med	▪ Implement dust control measures where appropriate including water trucks ▪ Remote location unlikely to impact on surrounding users ▪ Vegetation in no-use area to be left undisturbed ▪ Site activities restricted to specific times (refer fire management plan) ▪ Machinery and vehicles to stick to designated speed limits	Effective	Minor	Unlikely	Low	A	Clause A.3	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.

Potential Impact	Causes	Consequence	Inherent Risk			Existing Control Measures (Control Type)	Controls Rating	Residual Risk			Uncertainty Level	Code of Practice	ALARP / Acceptability Rationale
			I	L	R			I	L	R			
	Fire as a result of CP's activities	Release of particulate emissions to the atmosphere	Critical	Unlikely	High	▪ Implement methane emissions management plan (administrative) ▪ If fire / explosion detected, implement emergency response plan (administrative) ▪ Conduct Job Hazard Analysis for any new task or new use of equipment to ensure appropriate control measures are identified and to take account of variation in fire danger ratings (administrative) ▪ Prior to attending site, each day obtain information on current fire danger, presence of fire in the area and current weather condition from government websites (administrative) ▪ Implement fire management plan (administrative) ▪ Fire management and control equipment available at each site, with personnel trained in its use (administrative) ▪ Use of non-intrinsically safe material only allowed if accompanied by a gas detector and the appropriate permit (administrative) ▪ Chemicals, dangerous goods etc stored in secured containers and bunded areas (engineering) ▪ Hazardous zones for each well determined in accordance with the relevant Australian Standard (administrative) ▪ Only CP authorised equipment allowed within the hazardous zone ▪ Limit flaring to periods where liquid hydrocarbon offtake from the field is limited (ie. Inability to sell, reinject liquid hydrocarbons – notification to DLPE will be provided when flaring of liquid hydrocarbons commences or ceases.	Effective	Moderate	Remote	Low	A	Clause A.3.7 D.5.1	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.
	Unplanned venting of gas	Contribution to greenhouse gas emissions	Minor	Frequent	Medium	▪ Flare will be used during workovers with no planned venting to be conducted ▪ No planned venting or flaring during wellhead equipment, safety systems and gathering line installation	Effective	Minor	Remote	Low	A	Clause D.5.9	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.
	Loss of containment of gas and / or oil	Atmospheric pollution	Serios	Remote	Medium	▪ Asset integrity management system which includes: - Install, maintain and test blow-out preventers (BOPs) and related well control equipment on all rigs (administrative) - Well inspections to include tubing and annulus pressures checks and evidence of communication (administrative) - Well will be managed in accordance with a Well Operation Management Plan and Well Integrity Management Plan, which includes annular pressure checks (administrative) ▪ Implement methane emissions management plan (administrative)	Effective	Moderate	Remote	Low	A	Clause D.5.1	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.

	Gas leaks from well infrastructure and gathering and processing equipment					▪ Asset integrity management system which includes: - Undertake inspection for leaks and rectify where detected (administrative) - Inspect fittings and equipment are routinely checked for excessive wear and the necessary maintenance work is undertaken (administrative) - Monitor facility pressure for quick identification of any source of leak or rupture (administrative) ▪ Implement methane emissions management plan (administrative) ▪ If gas leak detected, implement emergency response plan (administrative)	Effective				A	Clause D.5.1	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and ‘acceptable’ in accordance with the rationale provided in Section 6, with no further risk reduction possible.

Potential Impact	Causes	Consequence	Inherent Risk			Existing Control Measures (Control Type)	Controls Rating	Residual Risk			Uncertainty Level	Code of Practice	ALARP / Acceptability Rationale
			I	L	R			I	L	R			
Greenhouse Gas Emissions													
Greenhouse gas emission contribution	Combustion of fuel during activities	Contribution to greenhouse gas emissions	Minor	Frequent	Medium	▪ Diesel fuel is to be used for all vehicles and the rig ▪ All diesel used onsite is to be compliant with the Federal Government's Fuel Quality Standards (Automotive Diesel) Determination 2019 (administrative) ▪ All equipment / machinery to be maintained in accordance with manufacturer specifications ▪ Processing facilities and generation use fuel gas as the energy source, with diesel back up where required	Effective	Minor	Likely	Low	A	NA	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.
	Unplanned venting of gas		Minor	Frequent	Medium	▪ Flare will be used during workovers with no planned venting to be conducted ▪ No planned venting or flaring during wellhead equipment, safety systems and gathering line installation, all gas bled to existing network prior to works ▪ Flares are utilised at the CTP and ESS no unplanned venting to be conducted	Effective	Minor	Remote	Low	A	Clause D.5.9	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.
	Leakage of gas from wells		Minor	Likely	Medium	▪ Well design and barrier integrity validation reports submitted to DPIR as part of accepted WOMP ▪ Routine well integrity and well barrier verification processes in place for the entire life of the well ▪ As part of the accepted WOMP an inspection criterion will be defined ▪ Methane emission detection to be undertaken in accordance with the Methane Emission Management Plan ▪ Well decommissioning / case and suspended includes multiple steel casing and cement barriers between hydrocarbon bearing zone and surface	Effective	Minor	Remote	Low	A	Clause D.5.1 D.5.2 D.5.3 D.5.4 D.5.5 D.5.6	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.
Cumulative Impacts													
Cumulative impacts on groundwater	Groundwater taken for activities combined with other known groundwater extraction	Groundwater taken for the project results in the natural recharge rate of groundwater being exceeded	Minor	Unlikely	Low	▪ Groundwater extraction will not be occurring within a Water Control District ▪ Groundwater extraction licence in place (52.8ML/y limit)	Effective	Minor	Remote	Low	A	NA	There are no water extraction licences within the immediate surrounding area of the Mereenie Field. Water extraction licences for the Mereenie aquifer totalling over 11,400 ML/yr1F[1] have been granted by the NT Government. The 52.8ML is a small fraction of the total water approved for extraction in this aquifer Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.
	Potential infiltration at CTP flare pit through degraded bund or contaminated structures over time	Degraded or contaminated groundwater	Serious	Unlikely	Medium	▪ Inspect and document liner and bund condition quarterly ▪ Immediately repair any signs of leakage ▪ Ongoing 6-monthly groundwater monitoring	Effective	Moderate	Remote	Low	A	NA	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.

Potential Impact	Causes	Consequence	Inherent Risk I	Inherent Risk L	Inherent Risk R	Existing Control Measures (Control Type)	Controls Rating	Residual Risk I	Residual Risk L	Residual Risk R	Uncertainty Level	Code of Practice	ALARP / Acceptability Rationale
Cumulative impacts on surface water	Take of surface water for activities combined with other known surface water take Discharges to surface water	▪ Reduction in available surface water ▪ Contamination of surface water	Minor	Unlikely	Low	▪ No take of surface water proposed ▪ No NT government granted surface water take licences2F[2] in the area ▪ No surface water releases proposed ▪ Spills and leaks to be actioned in accordance with the Spill Management Plan	Effective	Minor	Remote	Low	A	NA	CP is not proposing to take surface water or undertake any releases to surface waters. Control measures are designed to reduce potential impacts to surface waters. Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.
Cumulative impacts on conservation significant flora and fauna	Clearing for activities combined with other known clearing activities in the area	Clearing results in unsustainable impacts to conservation significant flora and fauna	Minor	Unlikely	Low	▪ Activities restricted to previously disturbed locations ▪ No publicly known clearing activities within the local area	Effective	Minor	Remote	Low	A	NA	Activities under the EMP will not result in any cumulative impact on conservation significant flora and fauna. Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.
Cumulative impacts on amenity	Traffic, visual, noise and lighting impacts from the activities combined with other developments in the area	Further reduction in the amenity of the local area	Minor	Unlikely	Low	▪ Activity is away from major transportation routes and is not visible from public roads ▪ All wells are existing wells – some wells will have new / replaced wellhead equipment, safety systems and gathering line, again this will not be visible from public roads ▪ Traffic to be managed under a DIPL approved traffic management plan	Effective	Minor	Remote	Low	A	NA	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.
Cumulative impacts on waste	Generation of waste during activities combined with other waste generating activities in the area	Reduction in capacity of waste disposal facilities to appropriately dispose of waste	Minor	Unlikely	Low	▪ Small volumes of general and listed waste to be generated ▪ The main waste will be steel pipe and tubing which can be recycled as scrap metal (provided no NORMs). Approximately 14 tonne steel to be recycled per well. ▪ Waste is managed by a nation-wide licenced waste contractor with access to various disposal facilities around the state ▪ Many destinations for scrap metal recycling	Effective	Minor	Remote	Low	A	NA	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.
Cumulative impacts on traffic	Increased traffic volume due to EMP activities	Pressure on the public road network and reduced availability for other road users	Minor	Unlikely	Low	▪ The field is located in a remote region. ▪ There will be no additional impact on traffic from wellhead equipment, safety systems and gathering line activities above and beyond the impacts of the MRN FEMP, with any additional potential impacts restricted to the workover activities. ▪ Anticipated peak project vehicle movement is <20 vehicles/day in addition the existing peak dry season traffic volumes ▪ Total volume of traffic is considerably lower than the capacity of Larapinta Drive ▪ Movement of heavy loads (e.g. workover rigs) through regional centres will be avoided ▪ Approved traffic management plan will be in place prior to commencement of activities ▪ Implement wet season management plan (administrative)		Minor	Remote	Low	A	NA	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable' in accordance with the rationale provided in Section 6, with no further risk reduction possible.

[1] Based on available groundwater extraction licences on the Water Act Licensing and Permit portal at http://www.ntlis.nt.gov.au/walaps-portal/report/current/gwel

[2] Based on available surface water extraction licences on the Water Act Licensing and Permit portal at http://www.ntlis.nt.gov.au/walaps-portal/report/current/swel

APPENDIX B. Stakeholder Engagement Register

Outlined below is a record of engagement undertaken in relation to the Mereenie Field operations and workovers activities over the past 5 years.

Date	Topics	Engagement	The Operator's Representative	Stakeholders	Information Provided	Outcome	Objections / Claims	Response to Objections / Claims
2 Jun 2026	Operations and future plans	Face to face on-site at the LCM	Chief Operations Officer, Drilling Manager, Health, Safety and Environment Manager	Traditional Owners, CLC representatives – see note 3	LCM presentation see note 4	The T/O's and CLC were satisfied that sufficient information was provided. No additional clarifications were requested.	Nil	N/A
23 Jan 2025	Operations and future plans	Face to face on-site at the LCM	Drilling Manager, Health, Safety and Environment Manager, General Manager and Explorations Manager	Traditional Owners and CLC Representatives – see note 5	LCM presentation see note 6	The T/O's and CLC were satisfied that sufficient information was provided. No additional clarifications were requested.	Nil	N/A
21 Sept 2023	Operations, future plans, Mereenie agreement	Face to face on-site at the LCM	Chief Operations Officer, Drilling Manager	Traditional Owners and CLC Representatives – see note 7	LCM presentation see note 8	The T/O's and CLC were satisfied that sufficient information was provided.	Nil	N/A

						No additional clarifications were requested.		
15 Sept 2022	Operations, future plans, Mereenie agreement	Face to face on site at the LDM	Chief Operations Office, Drilling Manager	Traditional Owners, CLC representatives – see note 1	LCM presentation - see note 2	The T/O's and CLC were satisfied that sufficient information was provided. No additional clarifications were requested.	Nil	N/A

Note 1 –

Central Land Council

27 Stuart Highway Alice Springs, NT, 0870; [redacted]

[redacted]

Traditional Owners -

Contact details: via Central Land Council

In attendance [redacted]

Note 2 –

See below an extract of the relevant pages from a presentation provided at the Mereenie LCM – 15/9/2022 CENTRAL PETROLEUM LIMITED (ASX: CTP)

Note 3 –

Contact details: via Central Land Council

[redacted]

Note 4 -

See below an extract of the relevant pages from a presentation provided at the Mereenie LCM – 2/6/2026 CENTRAL PETROLEUM LIMITED (ASX: CTP)

Note 5 –

[redacted]

Note 6 -

See below an extract of the relevant pages from a presentation provided at the Mereenie LCM – 23/01/2025 CENTRAL PETROLEUM LIMITED (ASX: CTP)

Note 7 –

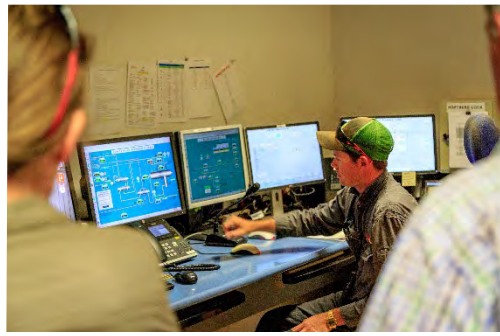
[redacted].

Note 8 - See below an extract of the relevant pages from a presentation provided at the Mereenie LCM 21/09/2023 CENTRAL PETROLEUM LIMITED (ASX: CTP)









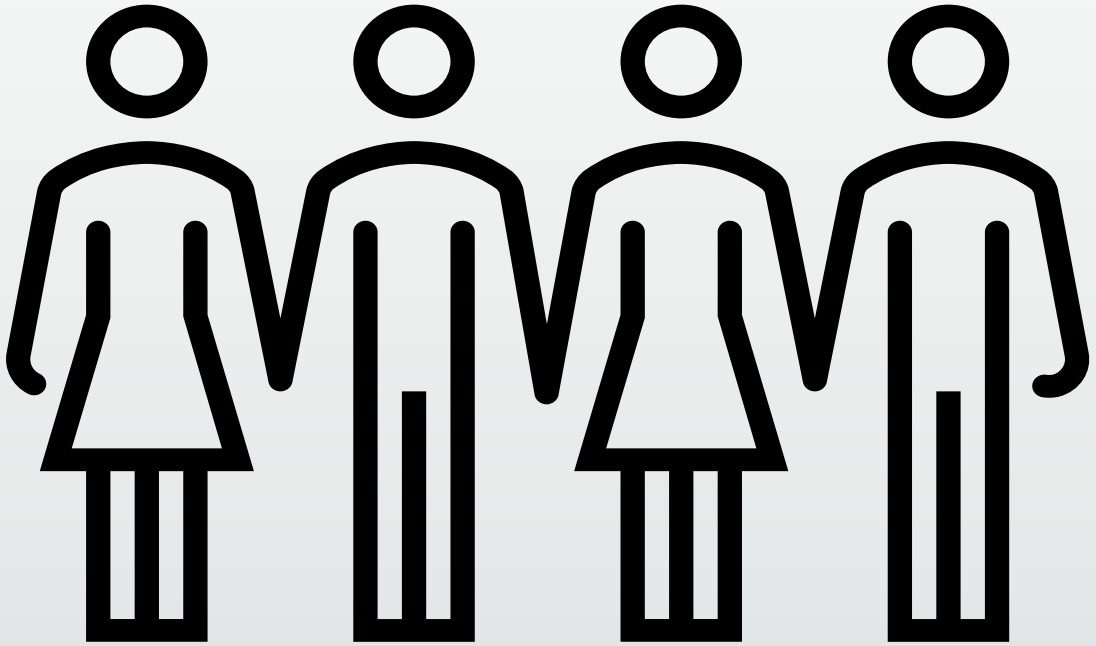
Mereenie LCM
15 September 2022

Central Petroleum

Agenda

1. Introductions / Welcome
2. CLC – LCM process and procedures
3. Central / Mereenie Performance
4. HSE Performance
5. Environmental Management
6. Social Management
7. Development Activities undertaken
8. Future Development Activities
9. Indigenous / Local Employment
10. Community Engagement / Sponsorships
11. Mereenie Agreement Negotiation
12. Any Other business / Close

Introduction / Welcome



FY22 Mereenie Operating Performance

- Strong demand for energy but limited by the capacity as the field continues its natural decline
- Implemented projects and monitoring to improve reliability of wells, pipelines and facilities
- Drilled 2 new wells WM 27 and WM 28
- Recompleted (changing the downhole set up) on 4 older wells. Results were encouraging
- We continue to upskill our TO’s with more of our operator / maintainers completed their Certificate III in operations
- Signed up 2 of our TO’s for mechanical apprenticeships (Barry Abbott and Jason Bloomfield)
- Potential vacancies for new recruits in 2023

Health, Safety & Environmental Performance

- Central has operated the Mereenie Field since September 2015 (over 7 years):
- Operated for over 2 years over 736 days, 220,000 hours worked across Mereenie without an injury requiring medical treatment or time off
  - This is a great record in the industry to operate without hurting anyone in the work place
  - Safety no.1 priority – making sure people go home safe
- Central have operated the field without a significant environmental incident which is an outstanding result.
  - Proven environmental performance
  - Implemented comprehensive groundwater monitoring program
  - Annual weed surveys
  - Developed and progressive rehabilitation and closure plans and commenced surface rehabilitation activities (reducing well pad size, closing non-operational areas)
  - Reducing greenhouse gas emissions – new equipment, etc.

Environmental Management

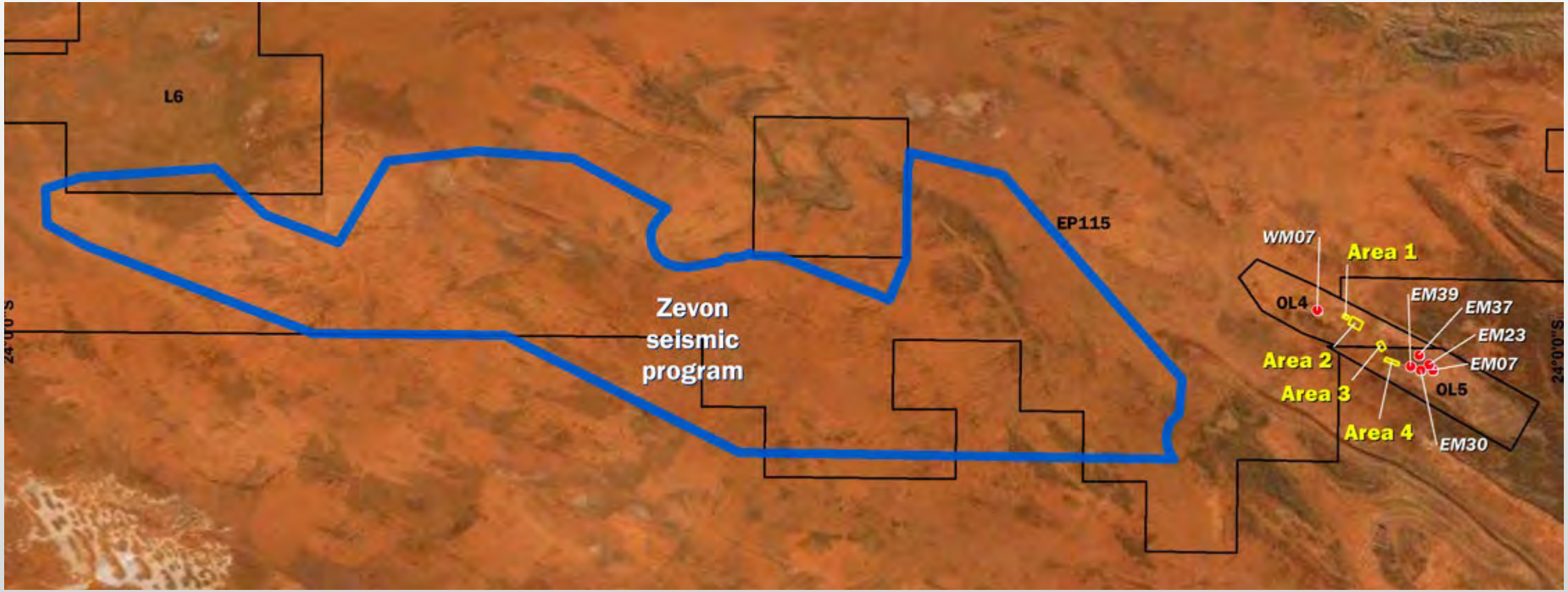
- Ongoing activities
  - Quarterly environmental inspections across all areas
  - Annual audits recently - 98% compliance with environmental outcomes and performance standards with only minor administrative opportunities identified
  - Only minor incidents
- Water management
  - Quarterly monitoring of water bores to ensure aquifer is protected including measuring usage rates, water quality, standing water levels
  - Water extraction licence granted caps water usage / no planned increase
- Environmental Management Plans (EMP)
  - All activities approved and conducted under an EMP which aims to protect and minimal impacts on ground water, flora and fauna, soils, weeds, etc. as well protect any sacred / historical sites.
  - All new activities require an EMP

Social Management

- COVID management
  - Continuing to operating under a COVID management plan e.g. negative test required prior to travel to site
  - Limiting face to face engagement to keep communities safe
- Providing safe working conditions and a positive inclusive culture
- Promote diversity
  - gender, ethnicity, background, etc
- Positive impact on communities
  - Job opportunities, supporting local business
- Ethical sourcing of equipment and supplies used across our business
- Working with CLC and AAPA to protection heritage and sacred sites
- Work with NT government to protect environment

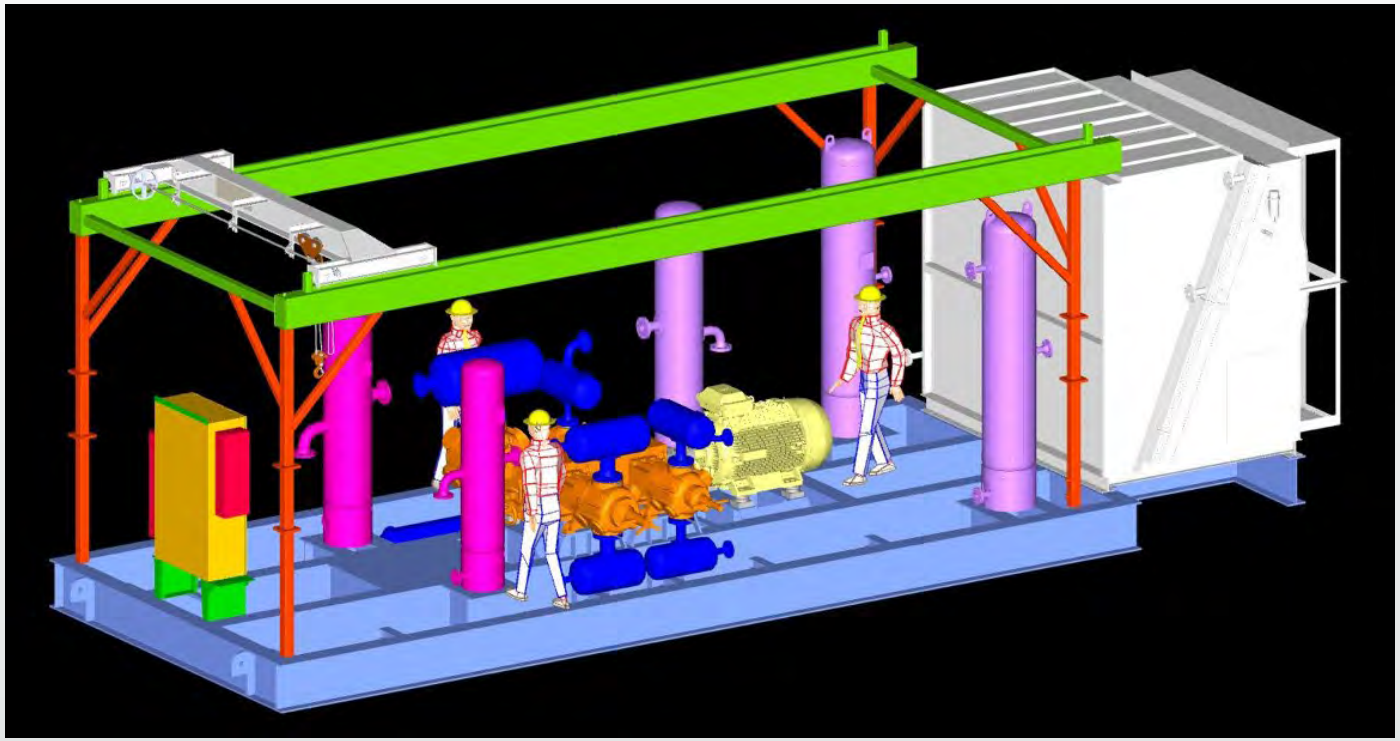
Future Development Activities

- Next 12 months – Flare Gas Compressor / Six recompletions / Two new wells / One seismic survey



Process Improvement - Flare Gas Compressor

- The flare gas compressor will sit within the existing Mereenie Central Treatment Plant
- Gas that is currently flared will be captured and re-processed – some of the gas will be re-blended back into our sales gas
- We expect that the installation of this compressor will reduce flared gas volumes by two-thirds
- The unit should be online in Q2-2023 after the plant maintenance shutdown



Recompletions

- Planned recompletion* of 6 wells – EM-7,23,30,37,39 and WM-7
- All re-completion work is done on existing cleared well pads. No additional land clearing required.
- Minimal additional environmental impacts.
- Recompletions involved:
  - Small rig is moved onto existing well pad and set up.
  - Safety and Environmental checks done
  - Tubing is removed and replaced
  - Well is modified with perforations into new zones and cleaned up
  - Well is commissioned and handed over to production operations.



*does not involve any fracking

New Development Wells

- Two New Wells
  - All natural reservoirs decline over time. The oil and gas is not an infinite resource at Mereenie
  - To maintain production – additional wells and development needs to occur to continue operations
- No Fracking
  - No plans for any fracking!
  - Mereenie wells will utilise reservoir pressure and natural fractures to extract gas and oil to surface



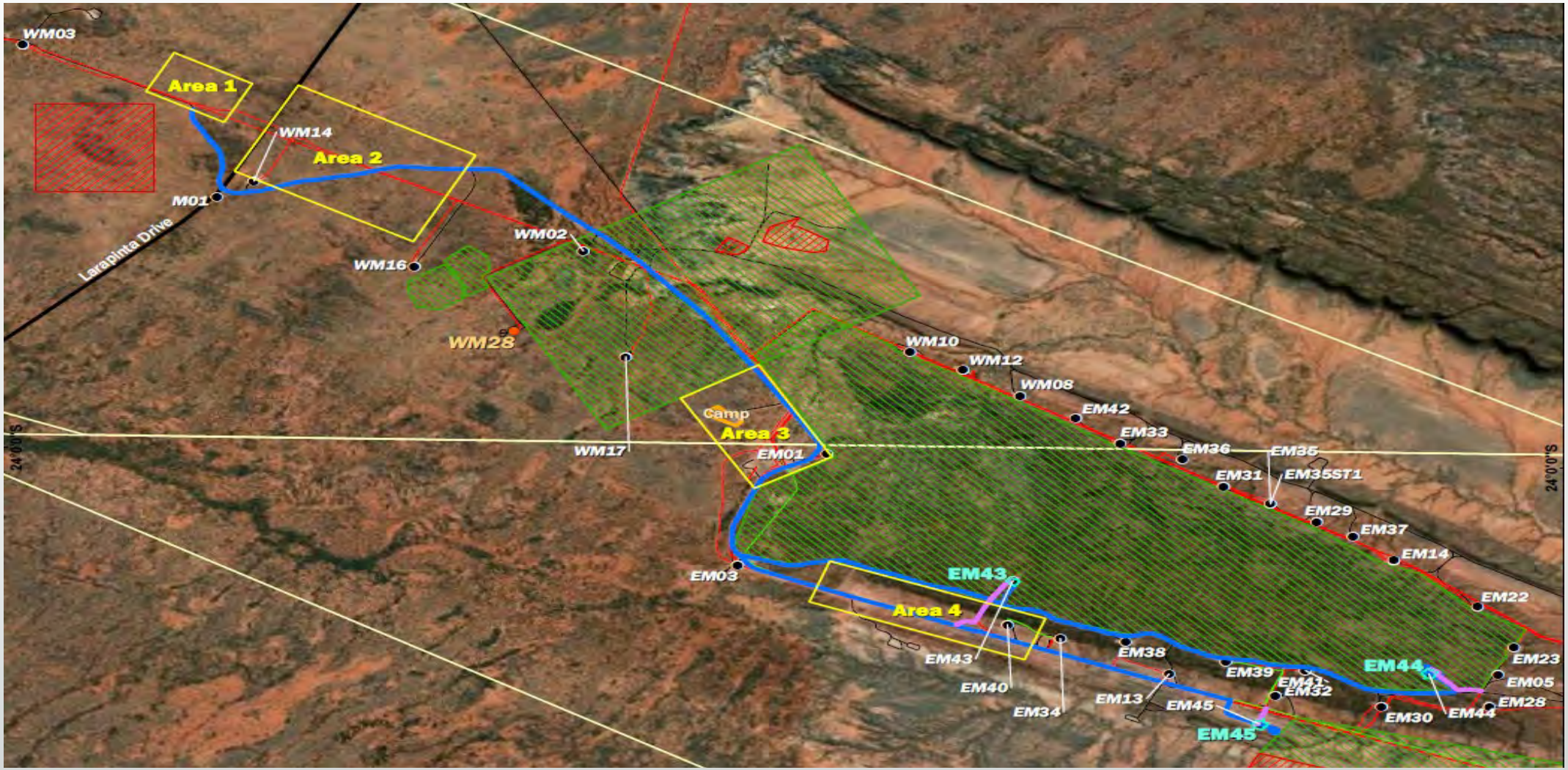
Typical fractures observed at surface can be also found deep underground. These fractures occur naturally and therefore we don't need to frack at this point in time. – Photo from East Mereenie.

New Development Wells

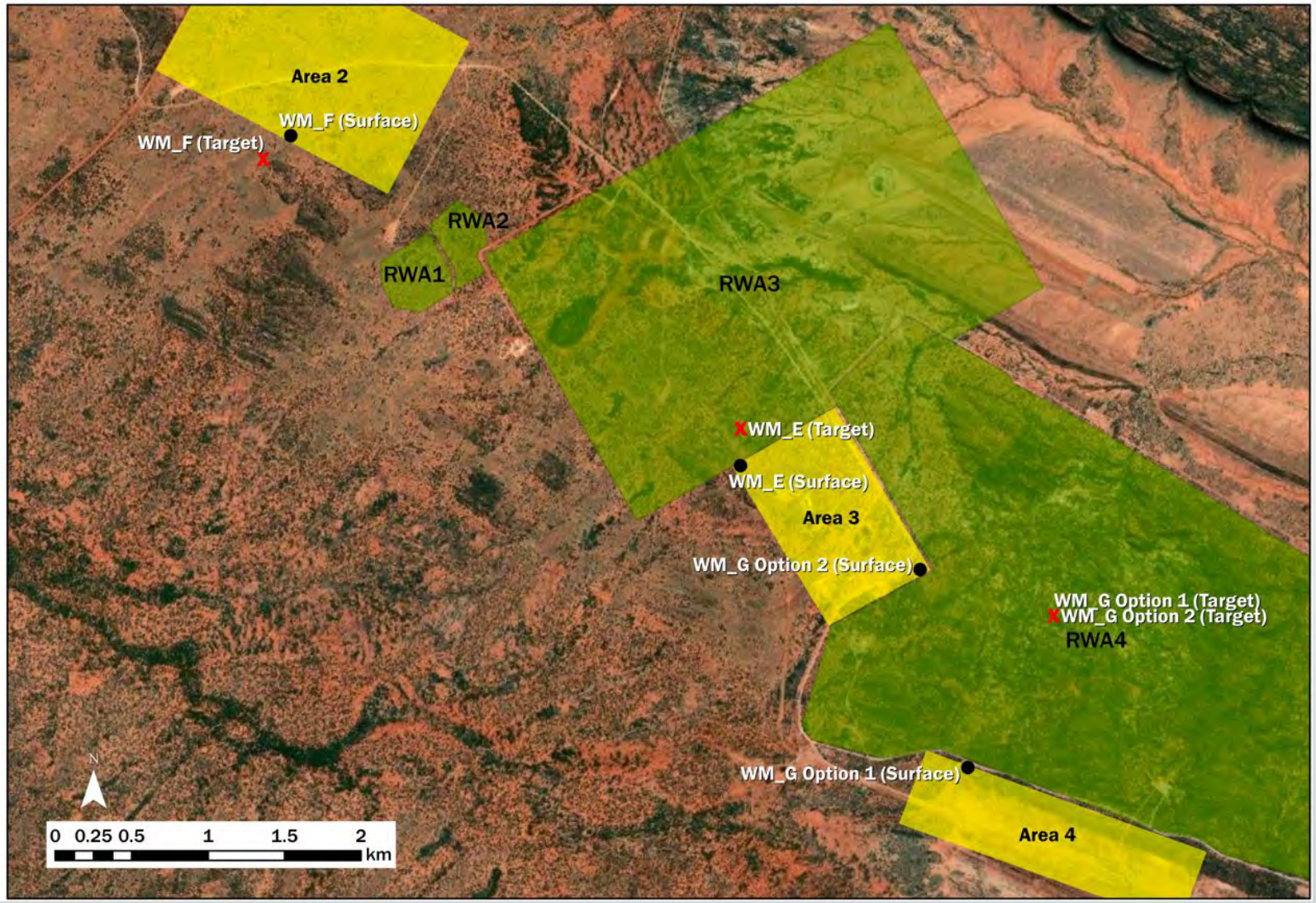
- Locations will be chosen based on the best compromise between down hole targets and surface constraints.
- Drilling of new wells is done in phases.
  - Site Clearances (AAPA and CLC) Ecology surveys
  - Environmental Management Plan
  - Civil Construction of well pad and access tracks
  - Mobilisation of drilling rig, equipment, mobile camp and personnel
  - Drilling of the well
  - Construct new pipe line from well to existing field gathering network
  - Hand well over to production operations if oil or gas is present.



New Development Wells

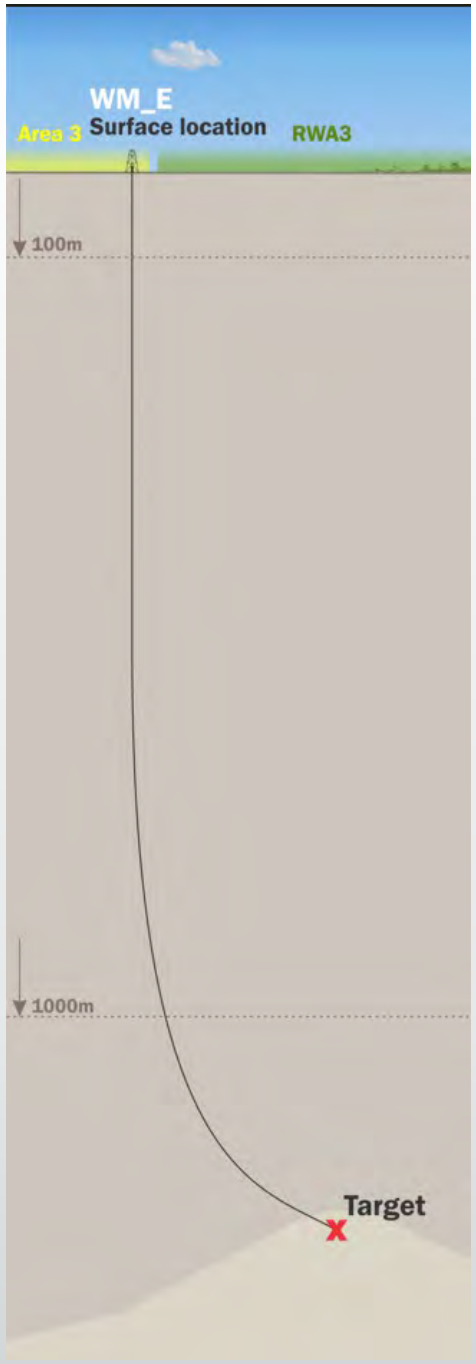


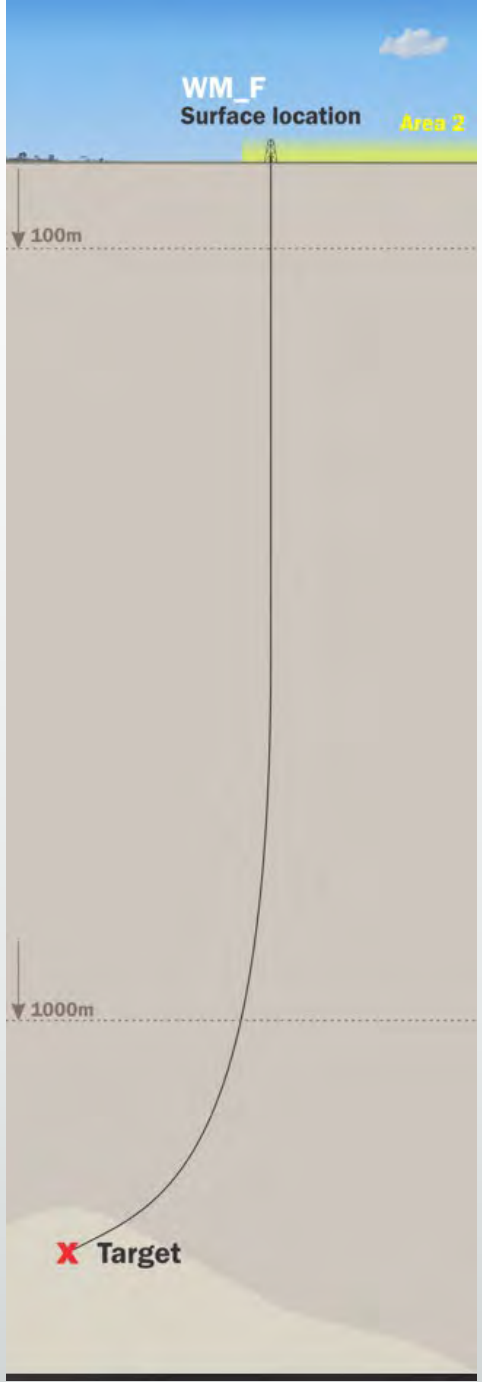
New Development Wells



New Development Wells

- Wells will be drilled vertically initially then directionally at the lower gas targets.
- Surface location is located outside any areas of concern
- Targets 1500m below ground level





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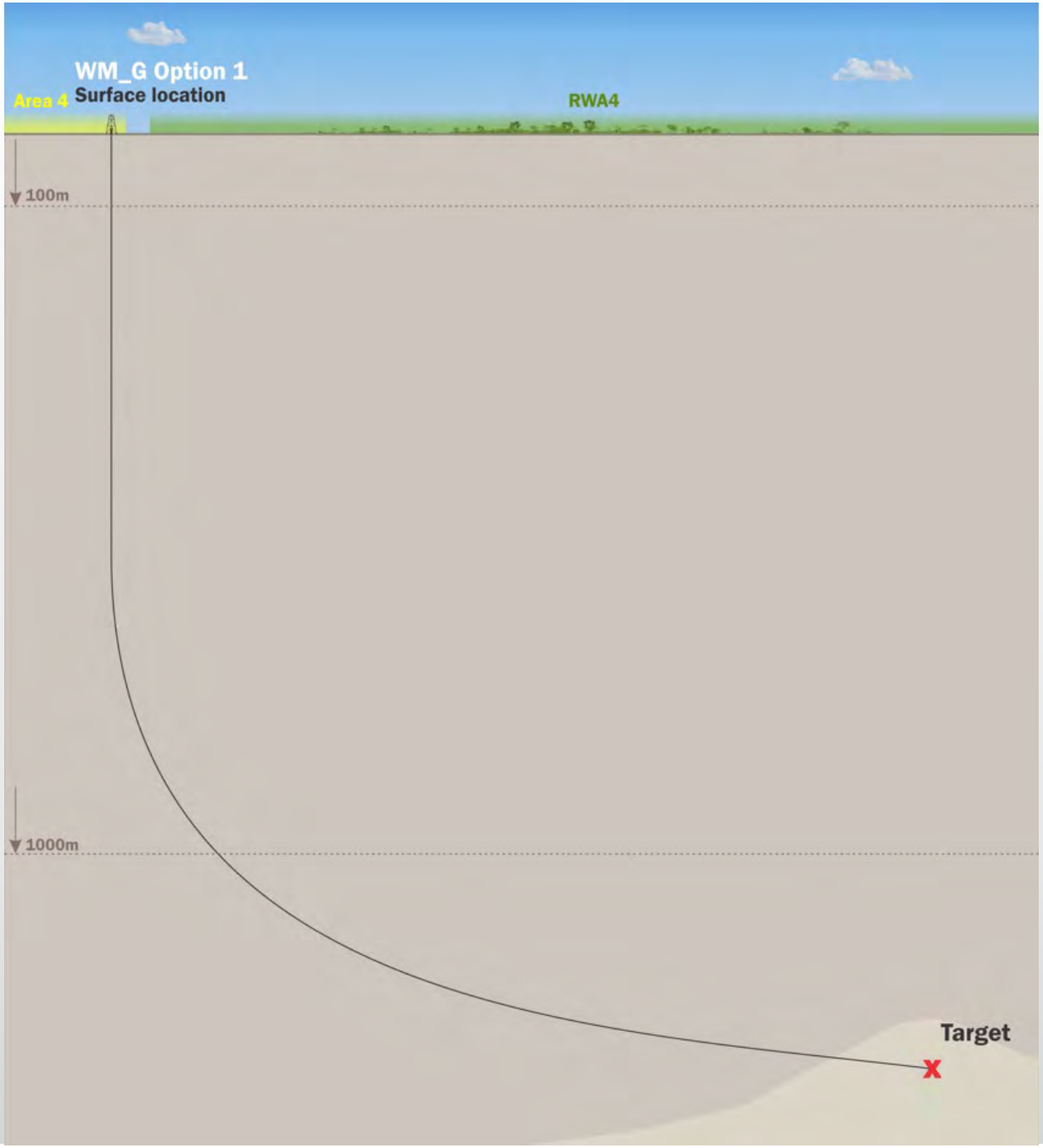
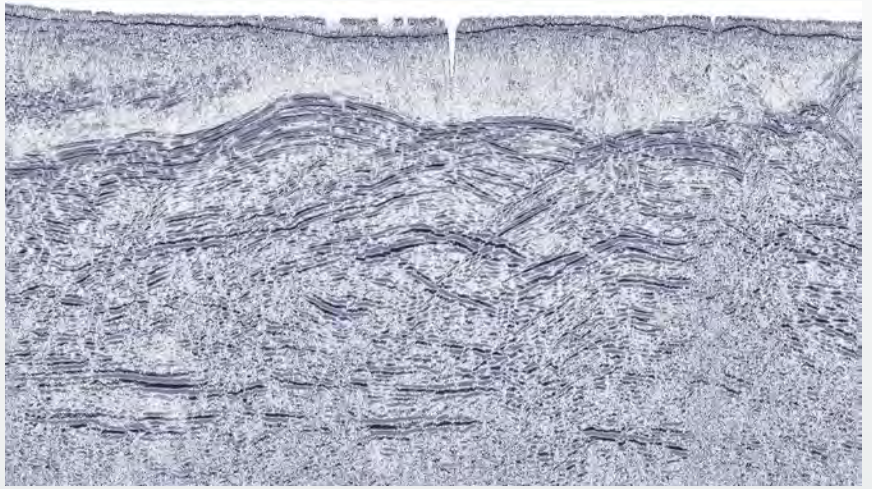


Seismic Survey

- Seismic Activity on EP115 (located West of Mereenie
  - Full program 700km
- What is seismic?
  - The purpose of seismic exploration is to create an image of the subsurface
  - Seismic acquisition is the process of collecting subsurface data
  - This involves using an energy source such as a vibrator truck to identify where rock properties change
  - Data processed to produce an image that contains geological information about the subsurface
  - Determine if there is potential for oil or gas to be present and highlights potential areas to drill





Seismic Activity

- Survey
  - Marking out the lines
- Line Preparation / Restoration
  - Minimal Ground Disturbance
  - Minimal to no blade work through grasslands, dunes spinifex area’s
  - Minimal vehicle impacts produced
  - Root stock left behind for regrowth







Before



After

Seismic Activity

- Layout
  - Sensors are planted at the required intervals, firm to the ground to ensure good coupling.
- Seismic Activity
  - Trucks drive up the (source) lines – the vibrator pad lowers to the ground and vibrates.
  - Data captured and interrupted after fieldwork.

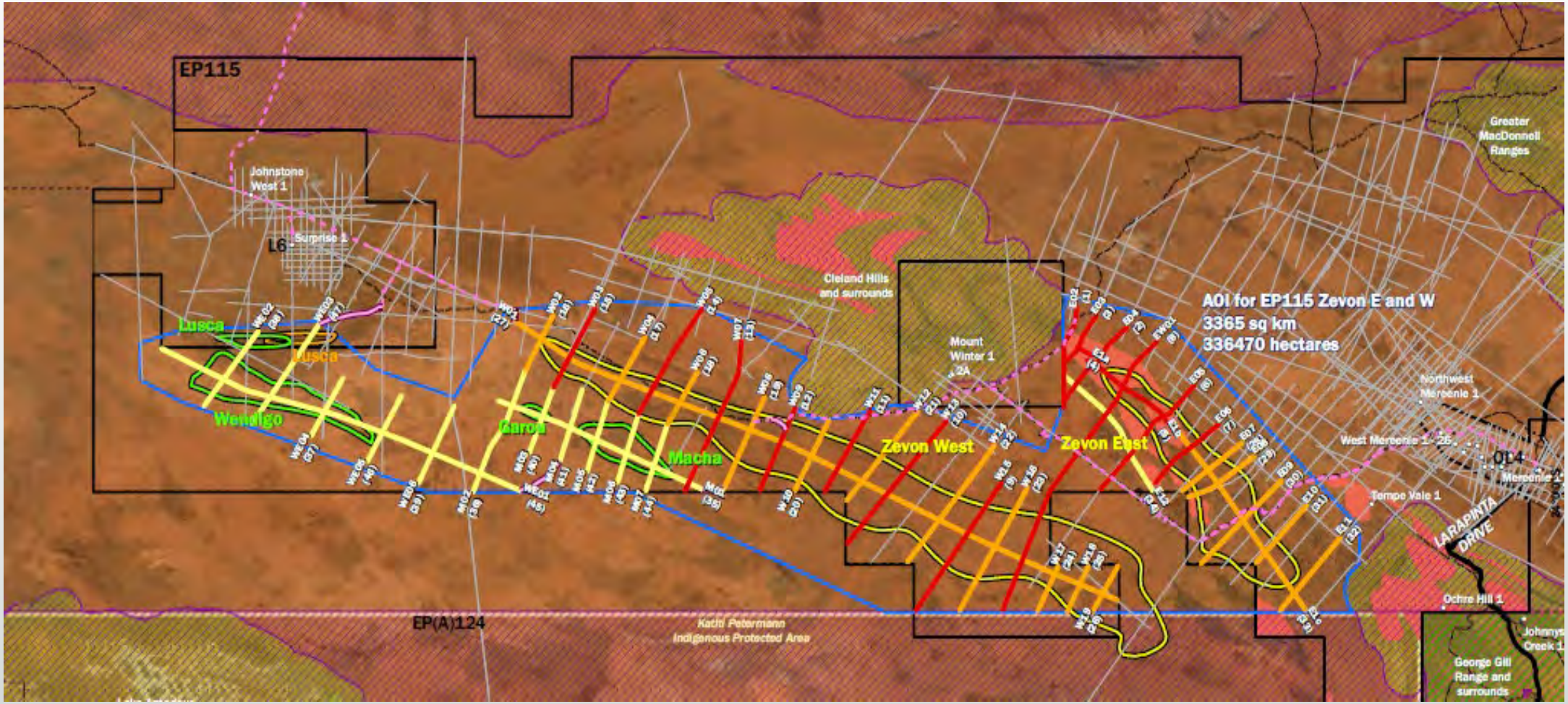








EP115 Proposed Program – Seismic



Community Engagement / Sponsorships

- Central Petroleum continues to support communities with donations and sponsorships.
- Support provided in the past:
  - Brumby Week
  - PA system for community centres
  - Children's Charity Network
  - Literacy programs
  - Local sporting clubs – men’s and women’s teams (fees, jerseys, travel)
  - Diesel for remote communities
  - Christmas party food
  - Donations



Indigenous / Local Employment

- Focus on supporting local jobs and communities
- Central Petroleum works closely with the CLC to identify employment opportunities
- Maintained consistent levels of local and indigenous roles
- Offered indigenous trade apprenticeships
- There may be opportunities in the proposed works over the coming year.

Indigenous Employee Company Profile by Location				
	Indigenous		Total	Indigenous
Location	Female	Male	Employees	%
Mereenie	o	5	29	17%
Palm Valley	0	2	7	29%
BECGS	0	3	7	43%
Northern Territory	0	10	43	23%
Brisbane	0	0	48	0%
Total	0	10	91	11%

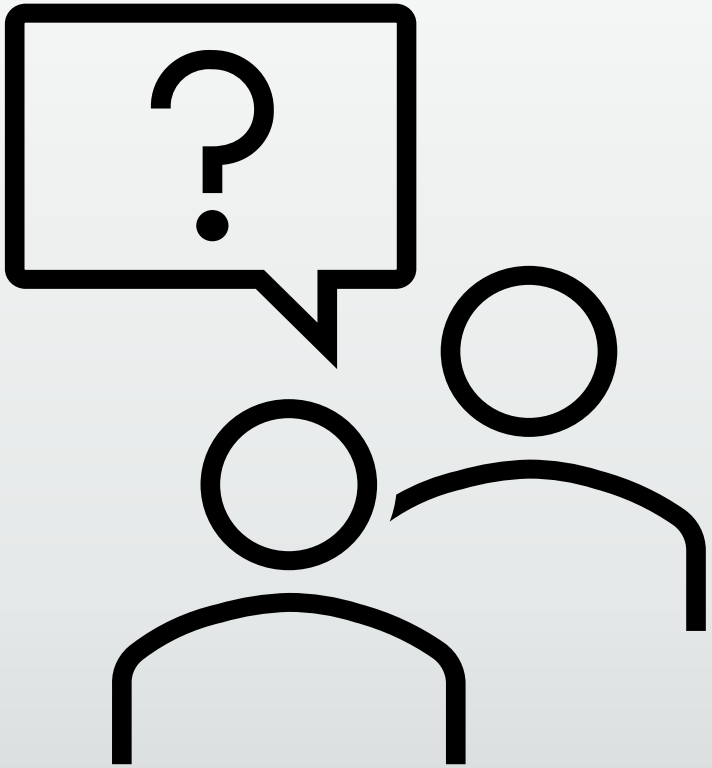
NT All Local Employee Company Profile by work site				
	Local		Total	
Location	Female	Male	Employees	Local %
Mereenie	1	11	29	41%
Palm Valley	1	4	7	71%
BECGS	1	5	7	86%
Northern Territory	3	20	43	54%

Community Engagement / Sponsorships

- All groups and community organisations can apply for support using the application forms.
- Central will consider the following types of support:
  - A financial contribution made to a non-profit organisation, charity or private foundation;
  - A financial contribution in support of an event, activity, or organisation. Central branding or verbal, written and visual acknowledgement may be required; or
  - A contribution by Central or Central personnel in the form of services or materials.
- Additional governance has been implemented. Applications will be considered on their merit and in the context of approved budgets. It is unlikely that there will be adequate budget for all requests, so unfortunately some applications will not be accepted. Priority will be given to activities or initiatives that are closely aligned with our operations.
- All applications can be emailed to: [redacted]

Mereenie Agreement Negotiation

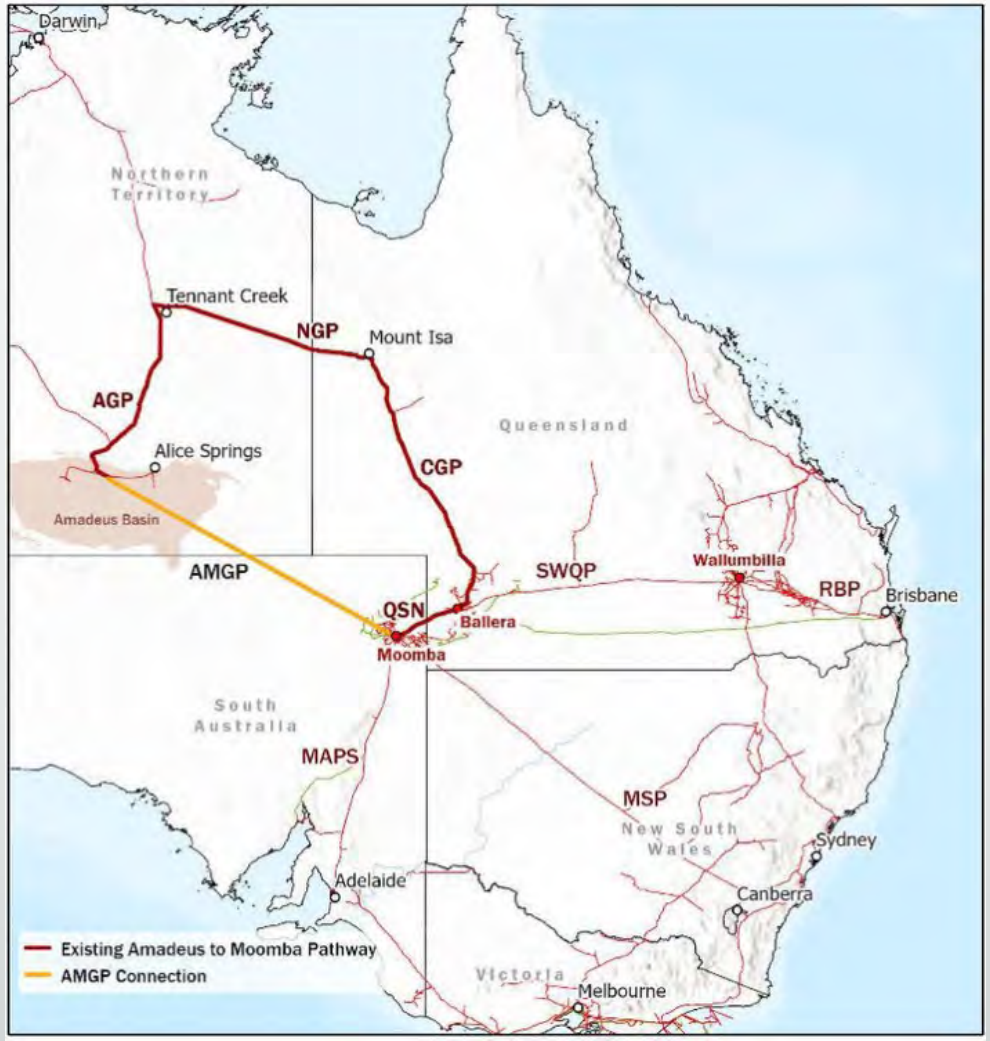
Other Business / Questions



Supporting information on Environmental Outcomes, Risks and Controls

Pipeline Opportunities

- Potential new pipeline from Amadeus Basin NT to Moomba South Australia opening up the East Coast gas market.
  - Sell gas to new customers
  - Support further development of the field
  - Increased revenue and royalties
- Feasibility still being assessed



Environmental Outcomes, Risks and Controls

- Comprehensive risk assessments undertaken across all areas
- Multiple layers of controls implemented to mitigate the impacts as a result of the planned activities.
- EMPs detailing how impacts to the environmental will be avoided and minimized is currently being developed

Outcomes / Objectives	Risks / Impacts	Controls
Minimise impacts on conservation areas and significant fauna / flora	Injury to fauna, loss of vegetation, increased weeds	- Minimum clearing undertaken - Flora and fauna survey conducted - Regular inspections
Minimise and control soil erosion / sedimentation and maintain the viability of soil through preventing contamination	Erosion, sedimentation, contamination	- Erosion and sedimentation plans - Complete remediation of any spills or leaks / spill response kits - Minimal volumes of fuels, oils and other chemicals will be stored and used - Regular inspections
All heritage and culturally significant sites are identified and protected	Disturbance to heritage sites	- Heritage survey conducted - CLC and Traditional owners consulted - Aboriginal Areas Protection Authority certificate application in progress and (fieldwork stage) with site visits currently planned

Environmental Outcomes, Risks and Controls

Outcomes / Objectives	Risks / Impacts	Controls
Avoid impacts to surface water and groundwater	Disturbance to drainage patterns, erosion and sedimentation, depletion of ground water, contamination	- Regular monitoring of ground and surface water conditions - Dual casing for all drilling to protect aquifers - Minimise groundwater usage - Regular inspections
Activities are not the cause of fires in the region	Fire, community	- Bushfire management plans in place include firefighting equipment, fire breaks
Mange capacity of road infrastructure up to and within the MRN Maintain and enhance community relationships	Traffic, noise, complaints	- Regular consultation with the community and stakeholders - Traffic management plans and community notification prior to commencing activities - All visitors to have appropriate CLC approval and be inducted on environmental issues prior to arrival at site
Activities do not negatively impact air quality	Dust generation, emissions, combustion	- Watering roads to minimise dust as required - Emissions management plan in place including restrictions on venting of gas and efforts to minimise flaring

- There may be unintended consequences as a result of an incident during the activities however comprehensive response plans and protocols are in place.
- There should be no impacts to stakeholder rights e.g. access to site during the planned activities, etc. however in order to manage safety on site we do ask that you inform the Site Supervisor.

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Environmental Outcomes, Risks and Controls

Outcomes / Objectives	Risks / Impacts	Controls
Avoid impacts to surface water and Groundwater	Disturbance to drainage patterns, erosion and sedimentation, contamination	- Regular monitoring of surface water conditions - No groundwater usage - Regular inspections
Activities are not the cause of fires in the region	Fire, community	- Bushfire management plans in place include firefighting equipment, fire breaks
Mange capacity of road infrastructure up to and within the MRN / SUP Maintain and enhance community relationships	Traffic, noise, complaints	- Regular consultation with the community and stakeholders - Traffic management plans and community notification prior to commencing activities - All visitors to have appropriate CLC approval and be inducted on environmental issues prior to arrival at site
Activities do not negatively impact air quality	Dust generation, emissions, combustion	- Emissions management plan in place - Limiting use of equiment

- There may be unintended consequences as a result of an incident during the activities however comprehensive response plans and protocols are in place.
- There should be no impacts to stakeholder rights e.g. access to site during the planned activities, etc. however in order to manage safety on site we do ask that you inform the Site Supervisor.

Contact and Further Information

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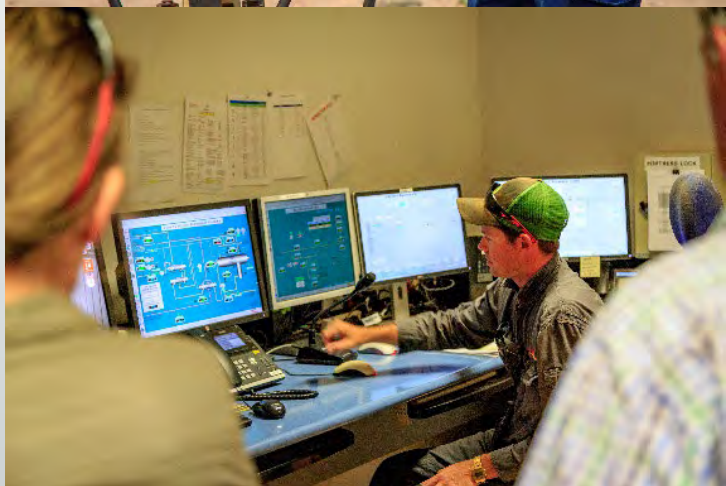
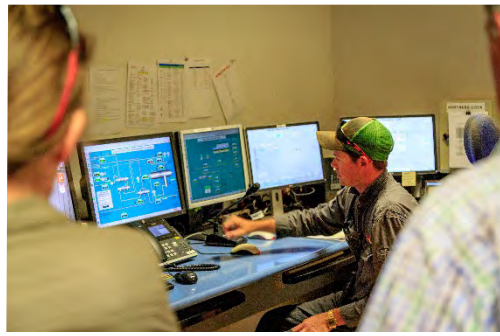










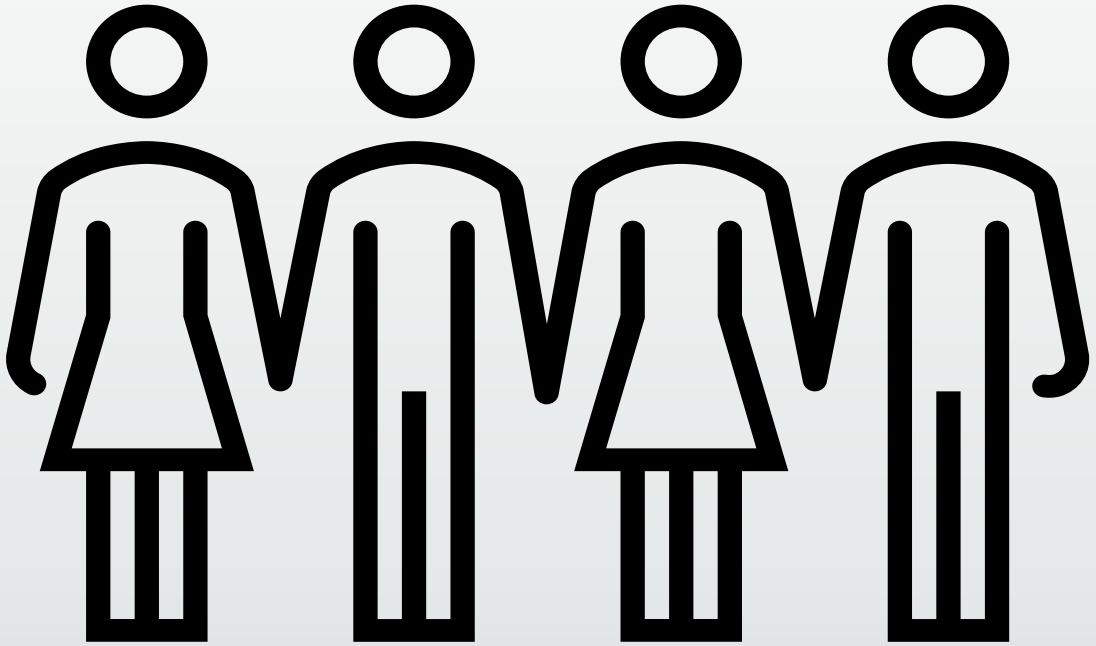
Mereenie LCM
21 September 2023

Central Petroleum

Agenda

1. Introductions / Welcome
2. CLC – LCM process and procedures
3. Central / Mereenie Performance
4. HSE Performance
5. Environmental Management
6. Social Management
7. Development Activities undertaken
8. Future Development Activities
9. Indigenous / Local Employment
10. Brumby / Community Engagement / Sponsorships
11. Mereenie Agreement Negotiation
12. Any Other business / Close

Introduction / Welcome



FY23 Mereenie Operating Performance

- Strong demand for energy across Australia. Supply is limited by the capacity of the field as the field continues its natural decline. Also limited by 3rd party – such as closure of pipe-lines
- Implemented multiple projects and monitoring programs to improve reliability of wells, pipelines and facilities
- June 23 - recompleted (changing the downhole set up) 5 older wells. Results were not as expected
- We continue to upskill our TO's with more of our operator / maintainers completed their Certificate III in operations
- We currently have 2 of our TO's for mechanical apprenticeships
- Potential vacancies for new recruits in 2023

Health, Safety & Environmental Performance

- Central has operated the Mereenie Field since September 2015 (over 8 years):
- Operated for over 3 years over 1,095 days, 319,513 hours worked across Mereenie without an injury requiring medical treatment or time off
  - This is a great record in the industry to operate without hurting anyone in the work place
  - Safety is a high priority – making sure people go home safe
- Central have operated the field without a significant environmental incident which is an outstanding result.
  - Proven environmental performance
  - Implemented comprehensive groundwater monitoring program
  - Annual weed surveys
  - Developed and executed rehabilitation activities across the site (reducing well pad size, closing non-operational areas)
  - Reducing greenhouse gas emissions – new equipment, etc.

Environmental Management

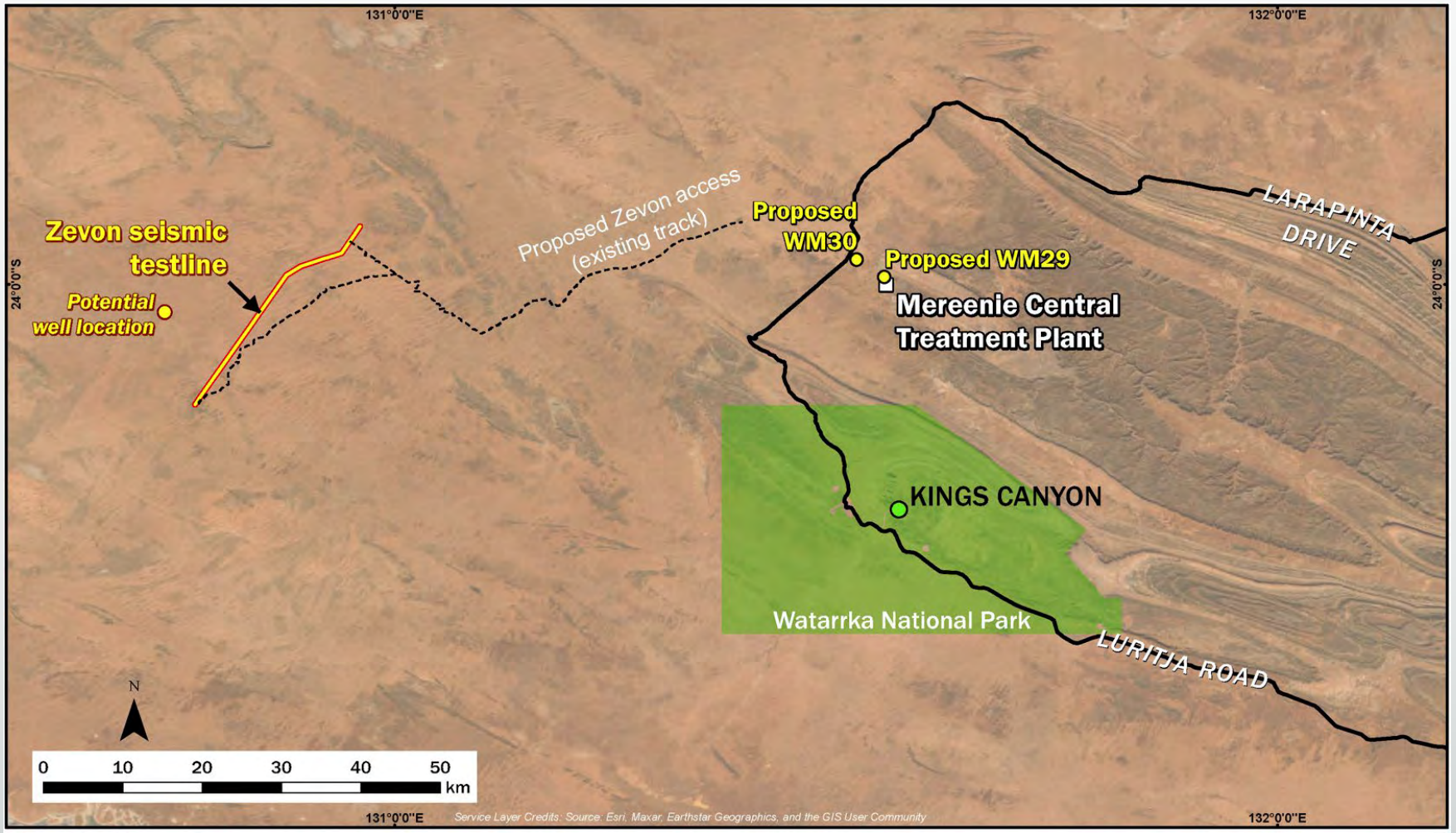
- Ongoing activities
  - Quarterly environmental inspections across all areas
  - Annual audits recently - 98% compliance with environmental outcomes and performance standards with only minor administrative opportunities identified
  - Only minor incidents which were immediately rectified
- Water management
  - Quarterly monitoring of water bores to ensure aquifer is protected including measuring usage rates, water quality, standing water levels
  - Water extraction licence granted caps water usage / no planned increase
- Environmental Management Plans (EMP)
  - All activities approved and conducted under an EMP which aims to protect and minimal impacts on ground water, flora and fauna, soils, weeds, etc. as well protect any sacred / historical sites.
  - All new activities require an EMP

Social Management

- Providing safe working conditions and a positive inclusive culture
- Promote diversity
  - gender, ethnicity, background, etc
- Positive impact on communities
  - Job opportunities, supporting local business
- Ethical sourcing of equipment and supplies used across our business
- Working with CLC and AAPA to protection heritage and sacred sites
- Work with NT government to protect environment and to ensure that all operations are conducted with full compliance.

Future Development Activities

- Zevon – Potential Seismic and the Drilling of a well.



Future Development Activities

- ZEVON Seismic and Drilling
  - CLC and AAPA approvals received for some seismic activities.
    - Activities could commence in November 2024
  - Drilling (12-18months time subject to approvals)
  - The area is of high interest to Central and planning is underway to investigate drilling.
  - Central will work closely with T/O's AAPA, CLC and the NT government to ensure that all of the relevant consultation undertaken, approvals granted and activities are conducted with full compliance for all drilling operations.

Seismic Surveys

Plates beneath large trucks make vibrations.

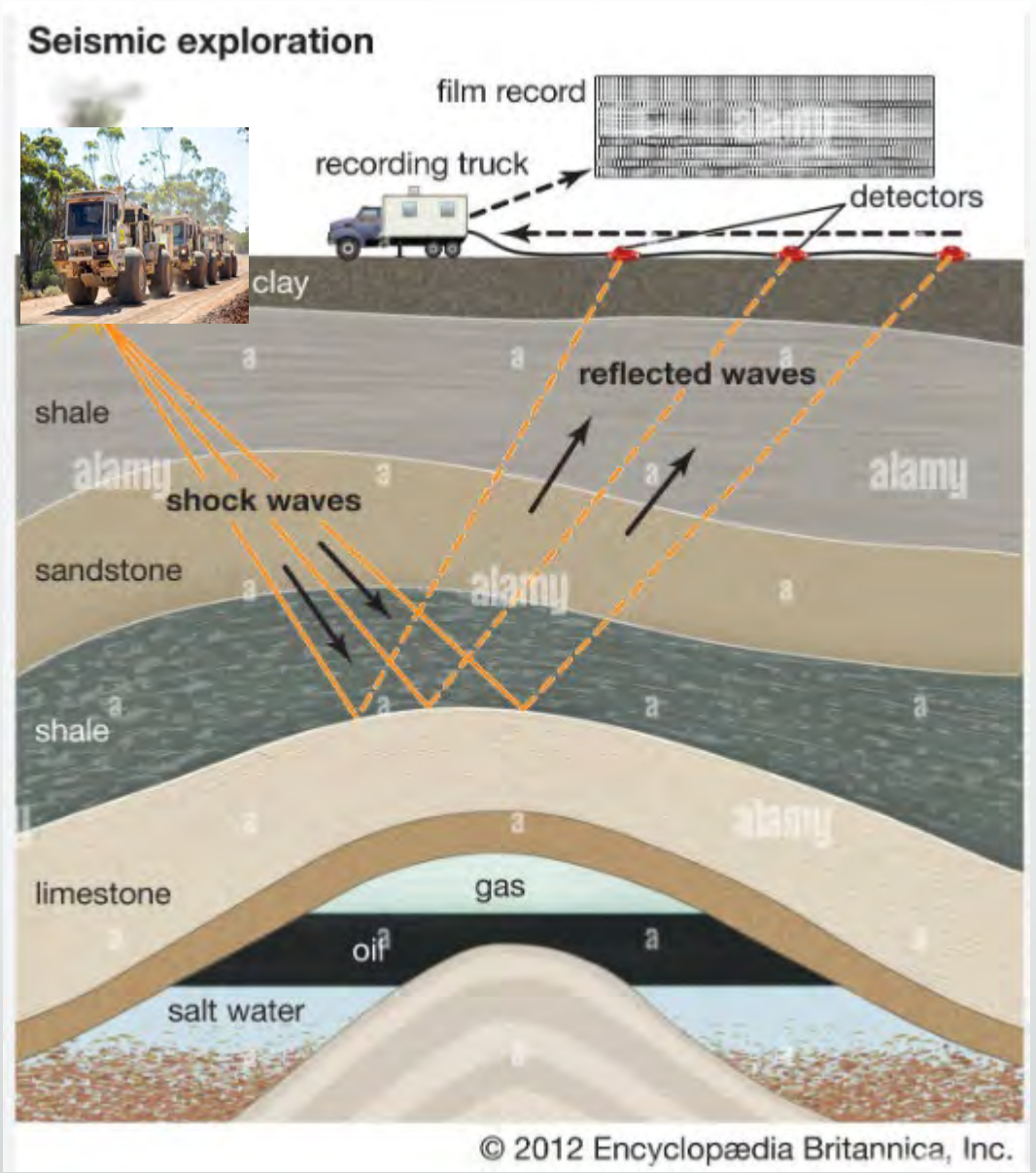
The vibrations cannot be felt 50m away.

The vibrations are recorded by geophones which are linked to a recording truck.

The seismic information is shown as an image which requires specialist interpretation to work out where oil or gas might be found.

Visual surveys are conducted before and after seismic acquisition to ensure no environmental or cultural disturbance.

All areas are rehabilitated and are typically invisible after 1-2 years



New Development Wells (Mereenie)

- Locations have been chosen based on the best compromise between down hole targets and surface constraints and has involved consultation with the CLC/ AAPA and the T/O's.
- Drilling of new wells is done in phases.
  - Site Clearances (AAPA and CLC) Ecology surveys (Completed)
  - Environmental Management Plan (Submitted and awaiting NT Government Approval
  - Civil Construction of well pad and access tracks – Scheduled for December / January 2024.



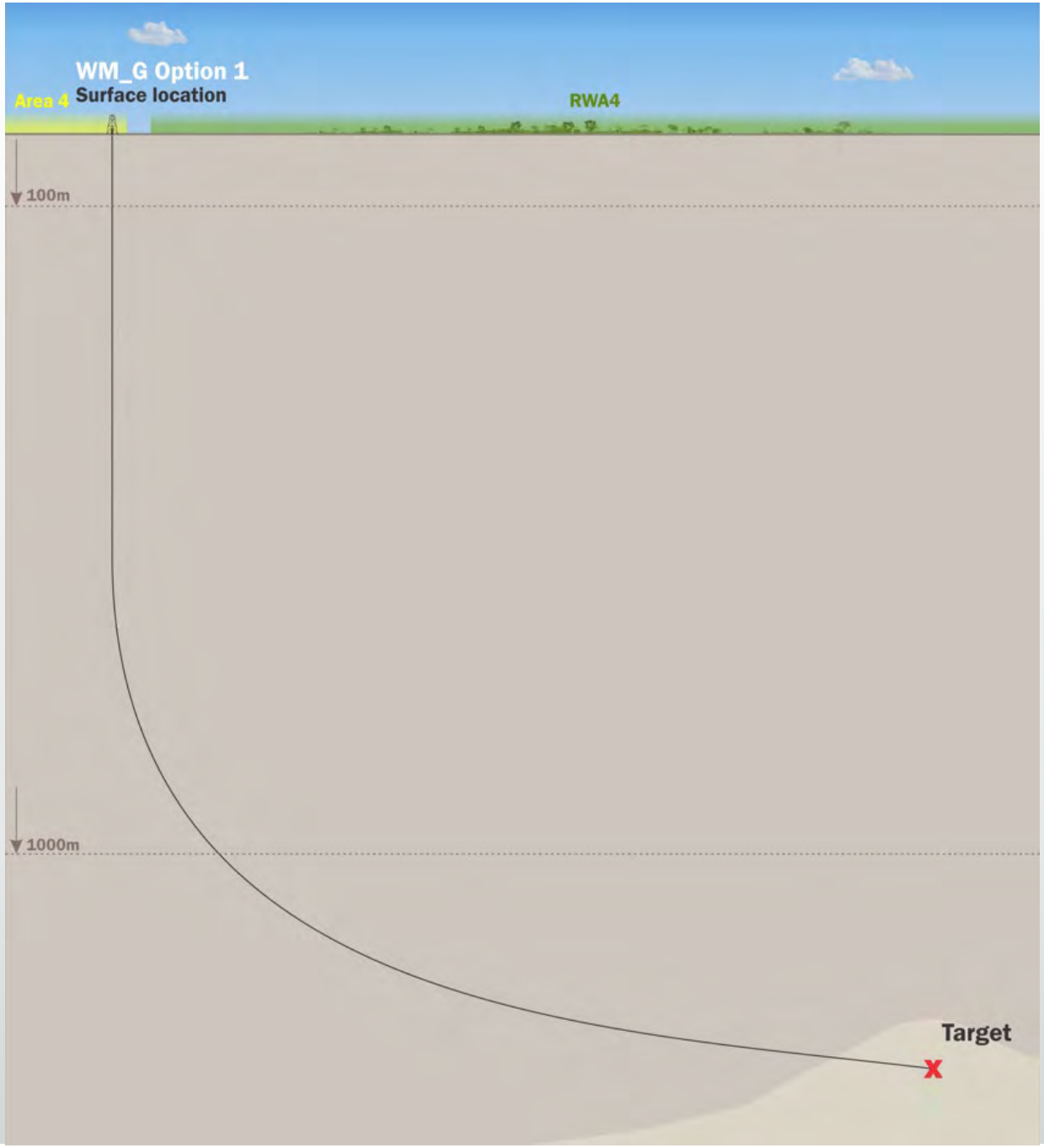
New Development Wells (Mereenie)

- Drilling of new wells is done in phases.
  - Mobilisation of drilling rig, equipment, mobile camp and personnel – planned for early 2024
  - Drilling of the well
  - Construct new pipe line from well to existing field gathering network
  - Hand well over to production operations if oil or gas is present.

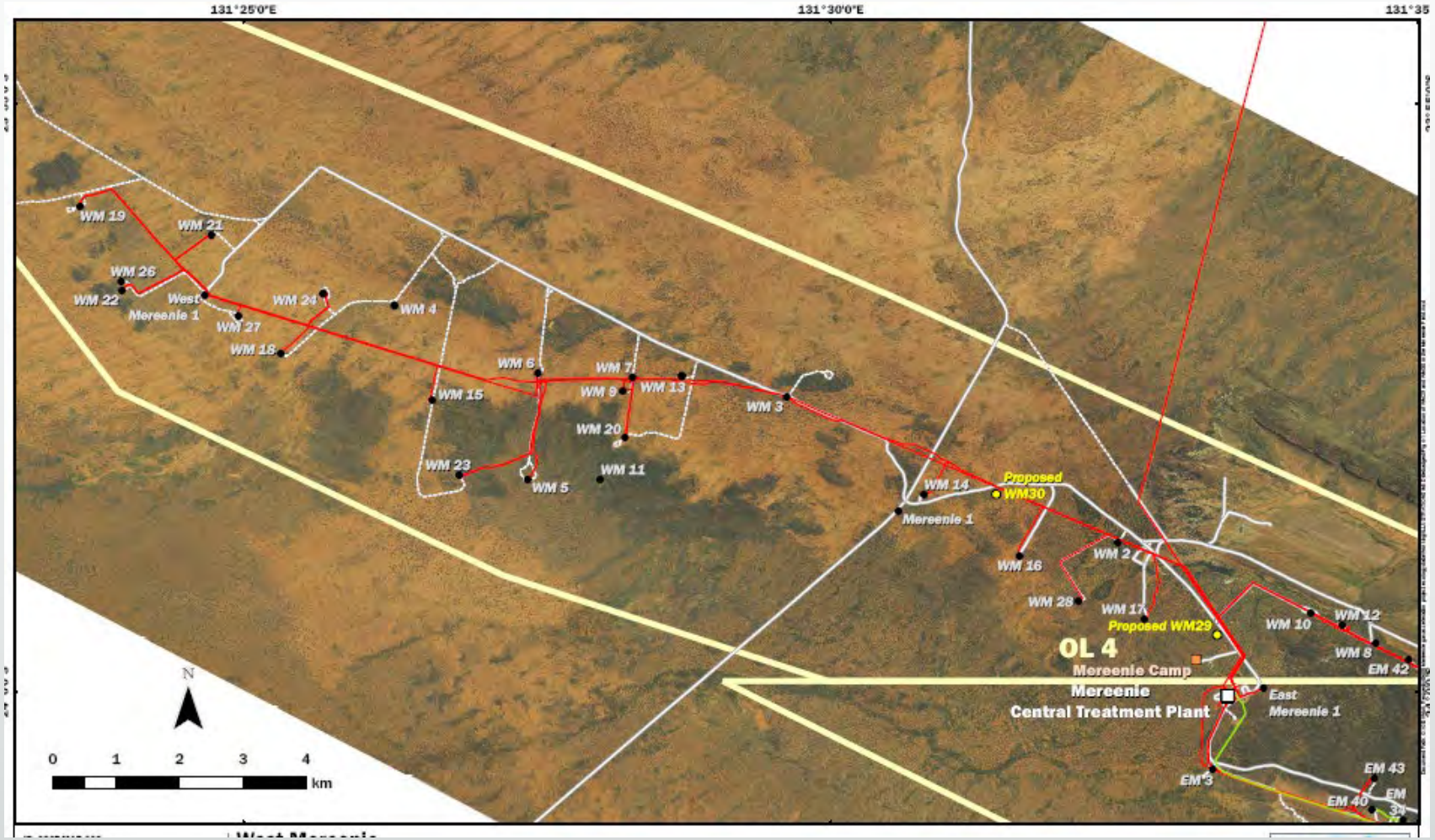


New Development Wells

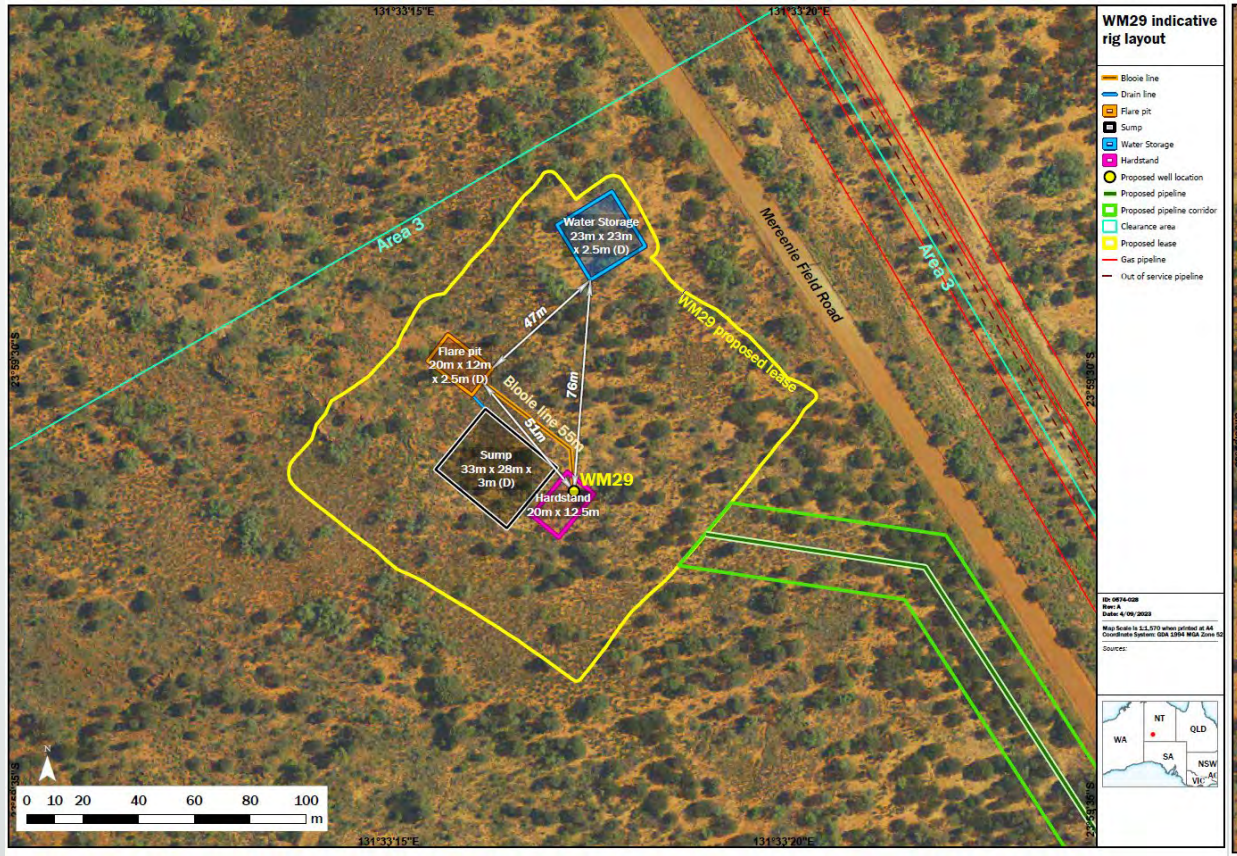
- Wells will be drilled vertically initially then directionally toward the deep gas targets.
- Surface location is located outside any areas of concern with no impact to the surface locations above.
- Targets 1500m below ground level.

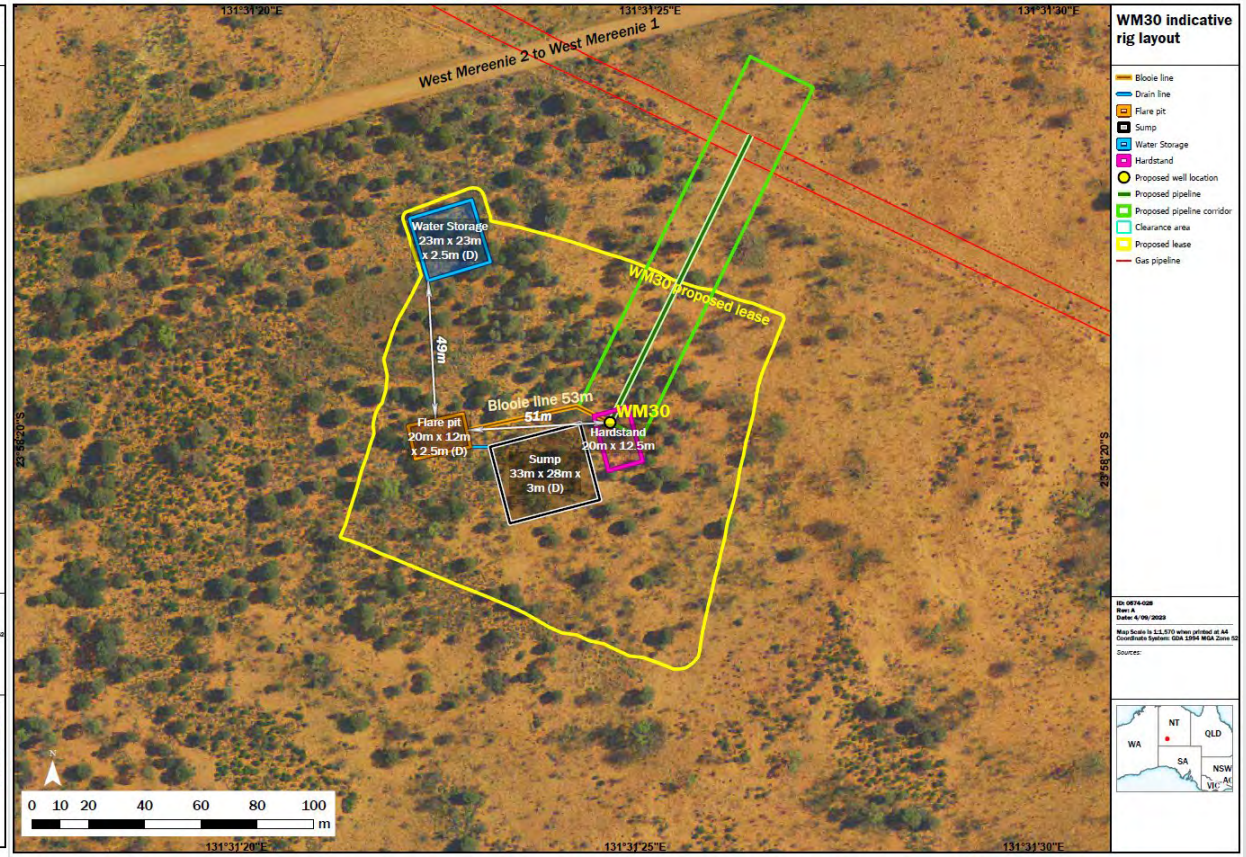


New Development Wells - location (Mereenie)



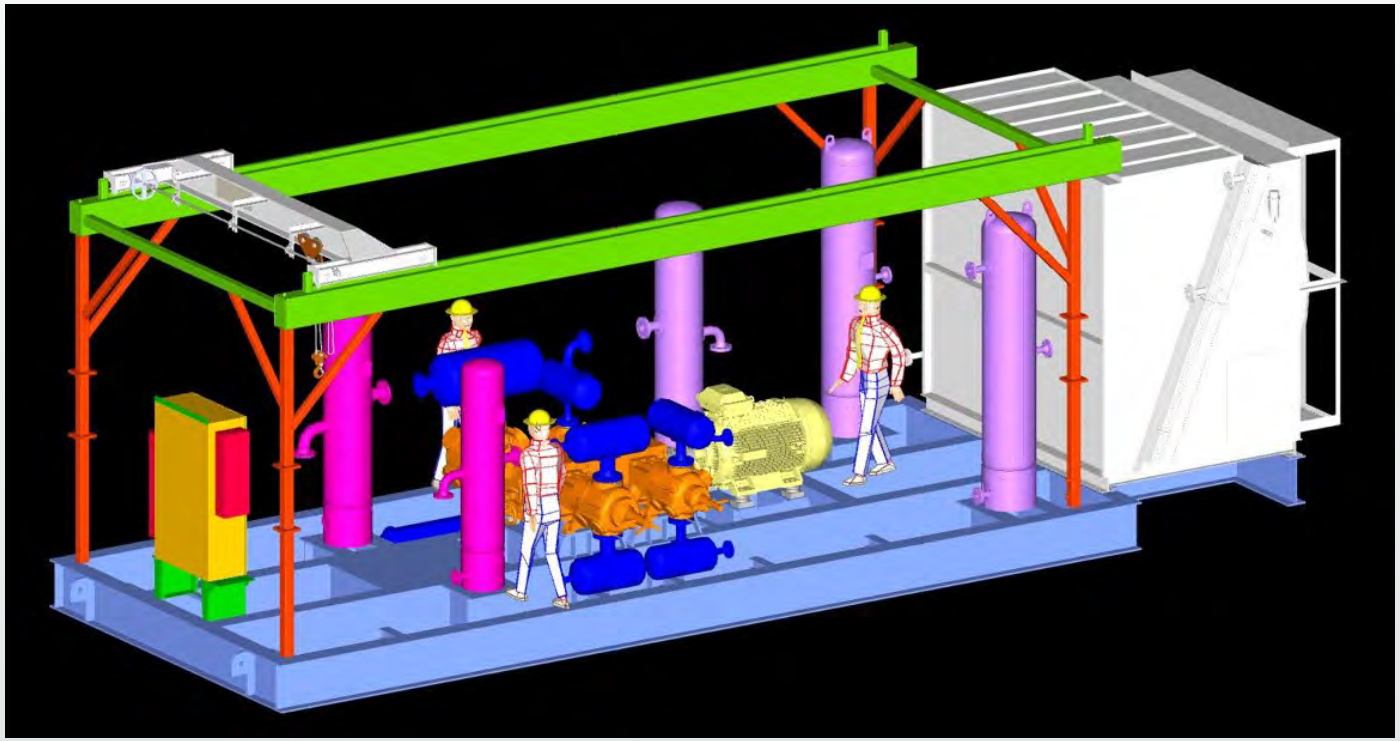
New Development Wells - location (Mereenie)





Gas plant: Process Improvement - Flare Gas Compressor

- The flare gas compressor will sit within the existing Mereenie Central Treatment Plant.
- No new land clearance required.
- Significant environmental improvements: We expect that the installation of this compressor will reduce flared gas volumes by two-thirds
- Gas that is currently flared will be captured and re-processed – some of the gas will be re-blended back into our sales gas
- It should be installed and online by the end of the year



Helium Potential at Mereenie and surrounding areas.

Present at concentrations varying from 0.2% to 9%

Why the Amadeus (Old & Hot)

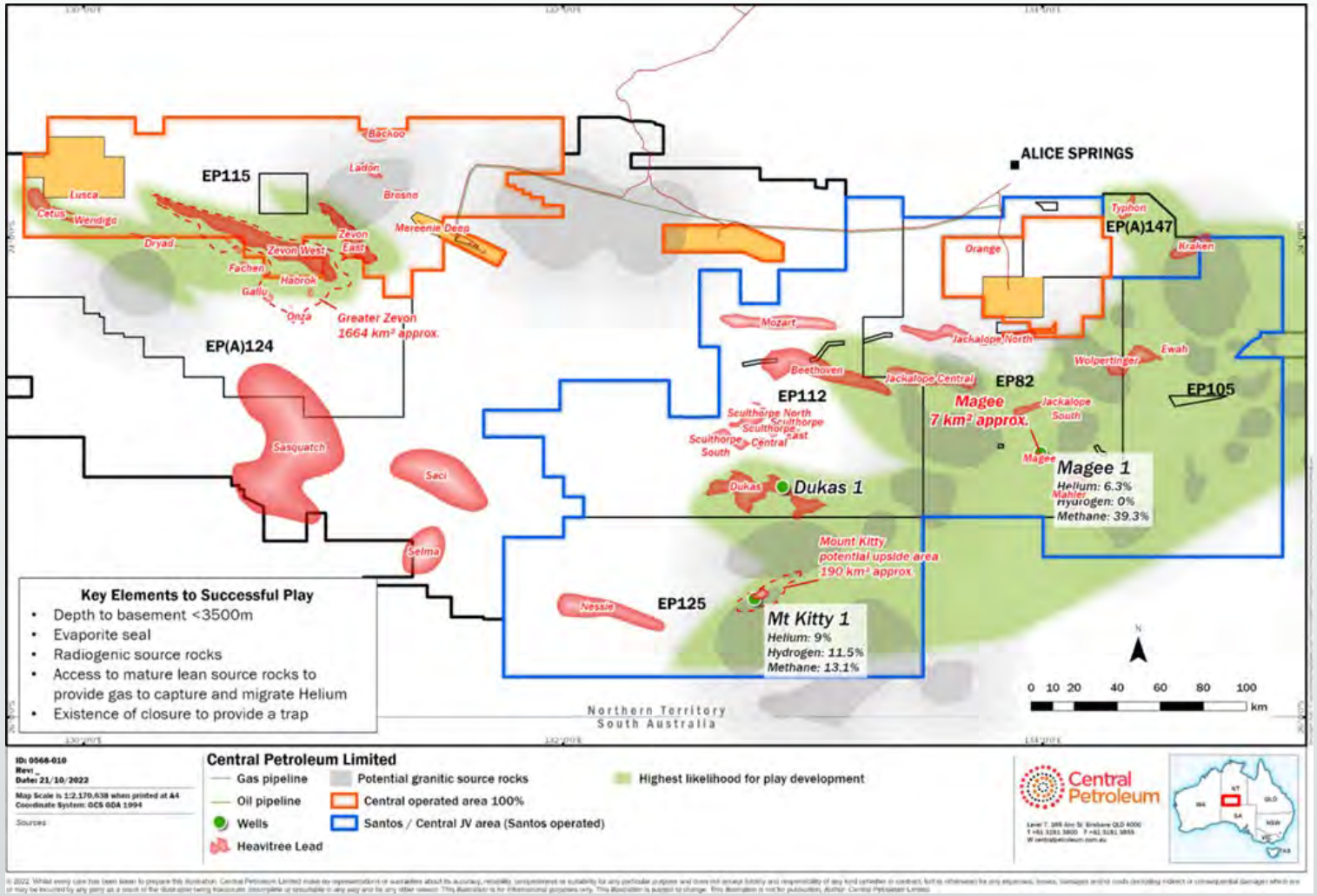
- Helium generation relies on radioactive decay of Uranium and Thorium
- Uranium and Thorium are both commonly found in high concentrations in Shales and Granite which are prevalent in the Amadeus
- The source and reservoir rocks have been co-located for hundreds of millions of years providing the time required for accumulation

In the South (Appraisal)

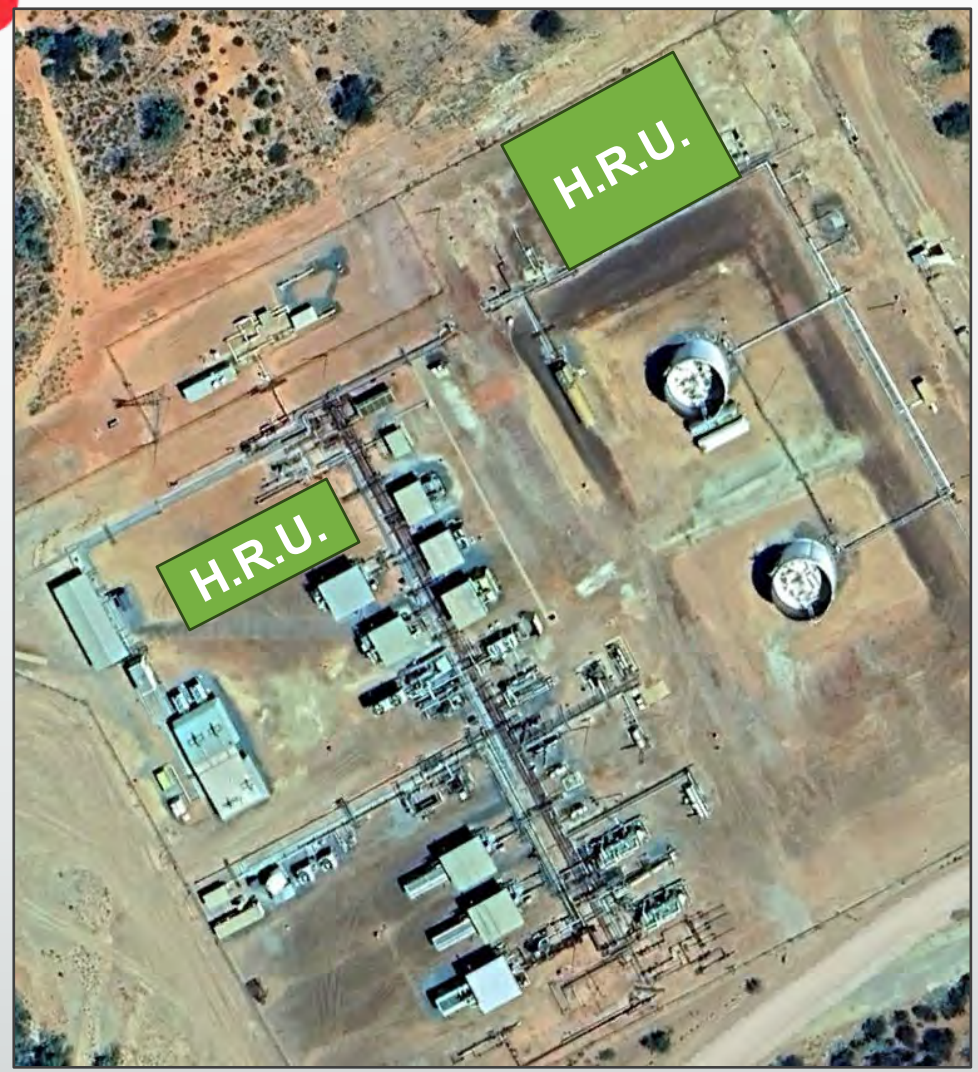
- 9% proven at Mt. Kitty (EP125)
- 6% proven at Magee (EP82)

In the North (Production)

- 60,000 scf/d at Mereenie
- 20,000 scf/d at Palm Valley
- 8,000 scf/d at Dingo

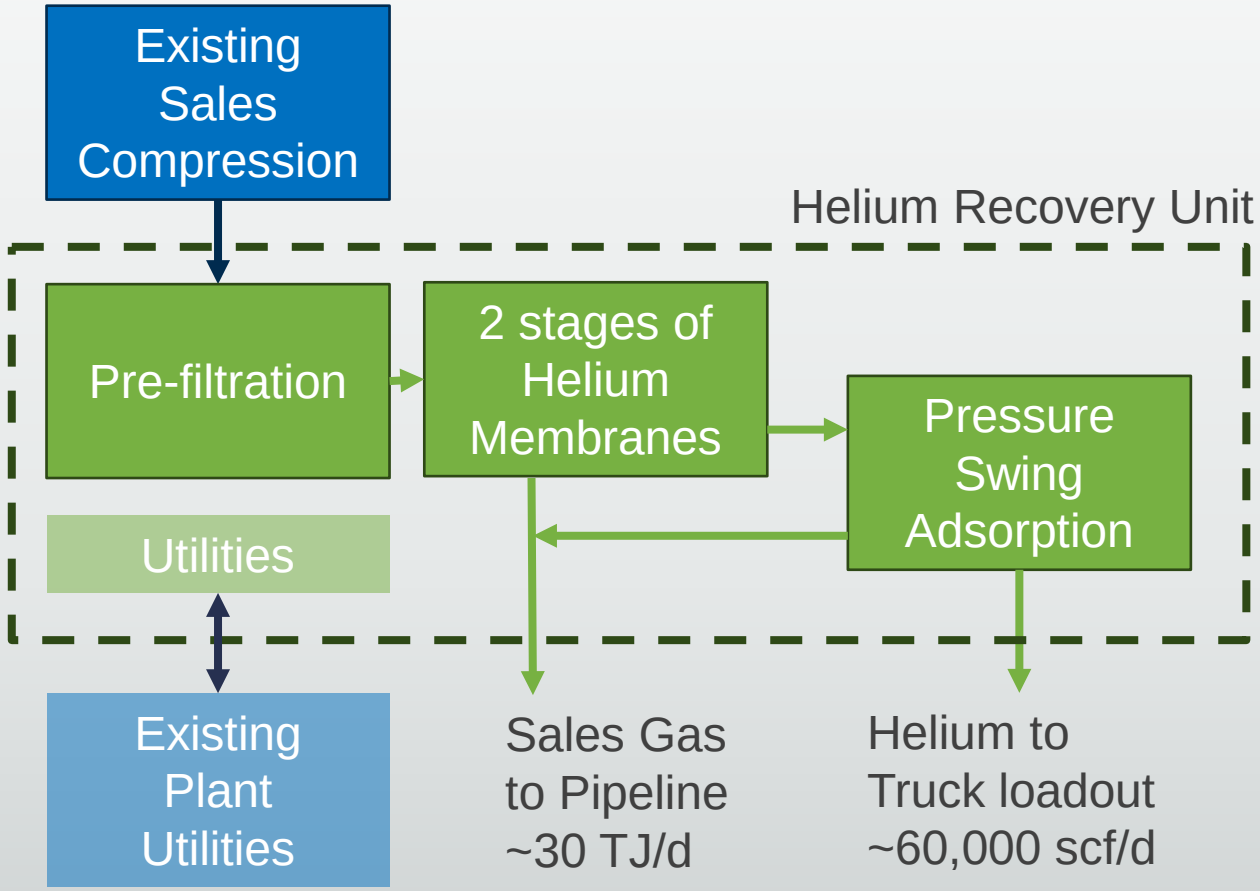


MOU (discussions) underway for Helium Recovery Unit at Mereenie



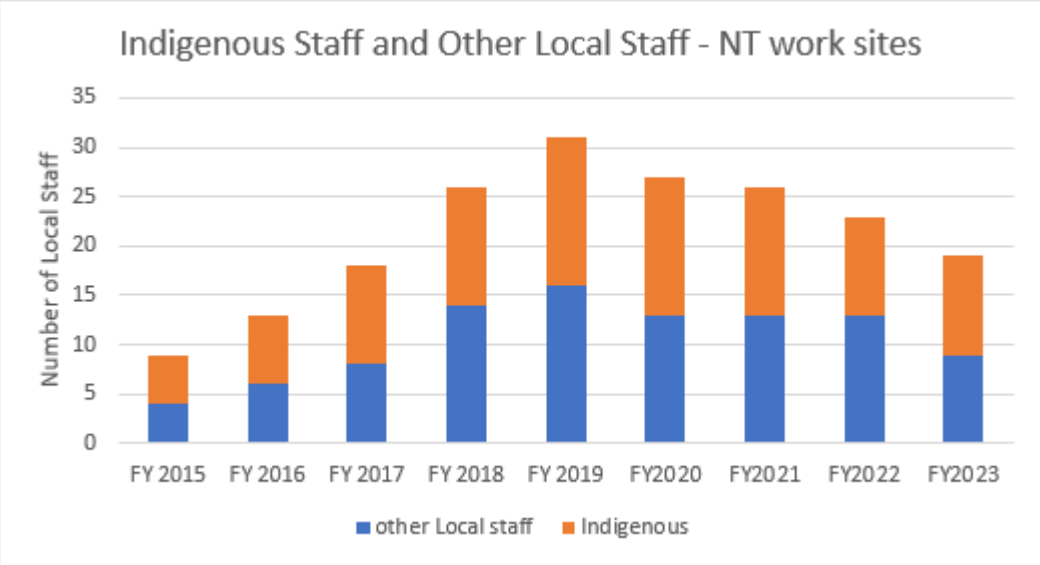
Potential locations for HRU

- ~0.2% He in sales gas can add material value from brownfields economics & attractive market dynamics
- Only domestic source of Helium after Darwin plant shuts down



Indigenous / Local Employment

- Focus on supporting local jobs and communities
- Central Petroleum works closely with the CLC to identify employment opportunities
- Maintained consistent levels of local and indigenous roles
- Offered indigenous trade apprenticeships
- There may be opportunities in the proposed works over the coming year.



Indigenous Employees by Location

Location	Indigenous Female	Indigenous Male	Total Employees	Indigenous %
Mereenie	0	4	25	16%
Palm Valley	0	3	9	33%
BECGS	0	3	6	50%
Northern Territory	0	10	40	25%
Brisbane	0	0	45	0%
Total	**0**	**10**	**85**	**12%**

Brumby Week ??

- Brumby Week – CTP would like to open discussions on Support for the brumby week resumption post closure in 2020.
- Large volumes of Brumbies in the area.
  - High water and vegetation consumption
  - Erosion damage due to their tracks.
  - Hig risk of collision with vehicles – Safety.
  - Could be a beneficial program for both the lands and people
- Central is keen to kick start formal discussions in support of the Brumby week.



Community Engagement / Sponsorships

- Central Petroleum continues to support communities with donations and sponsorships.
- Support provided in the past:
  - Australian Childrens Charity - Books, arts, and literature program in remote communities
  - Funeral expense
  - Sponsored Football clubs (AFL) paying for jerseys and registration.
  - Sponsored the Softball / basketball programs.
  - Ongoing support for the curation of Albert Namatjira Art works
  - Memory Mountain Weekend and sports week
  - Kintore Church for equipment and ongoing operations
  - Diesel and essential supplies for remote communities

Community Engagement / Sponsorships

- All groups and community organisations can apply for support using the application forms.
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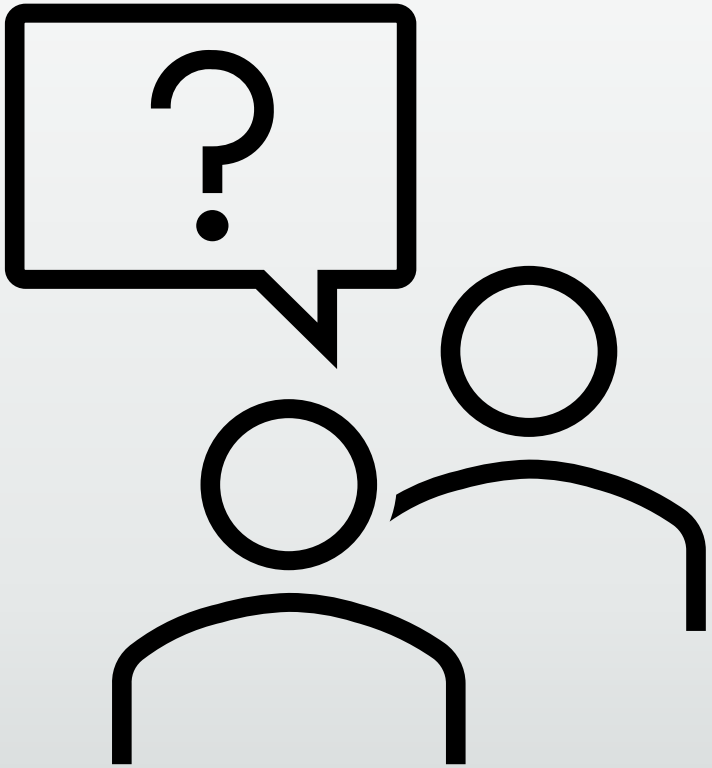

Other Business / Questions

- CLC presented a prepared statement on land access negotiations with CTP and CLC.

Supporting information on Environmental Outcomes, Risks and Controls

Environmental Outcomes, Risks and Controls

- Comprehensive risk assessments undertaken across all areas
- Multiple layers of controls implemented to mitigate the impacts as a result of the planned activities.
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All heritage and culturally significant sites are identified and protected	Disturbance to heritage sites	- Heritage surveys conducted - CLC and Traditional owners consulted - Aboriginal Areas Protection Authority / CLC sacred sites clearance certificates in place

Environmental Outcomes, Risks and Controls

Outcomes / Objectives	Risks / Impacts	Controls
Avoid impacts to surface water and groundwater	Disturbance to drainage patterns, erosion and sedimentation, depletion of ground water, contamination	- Regular monitoring of ground and surface water conditions - Dual casing for all drilling to protect aquifers - Minimise groundwater usage - Regular inspections
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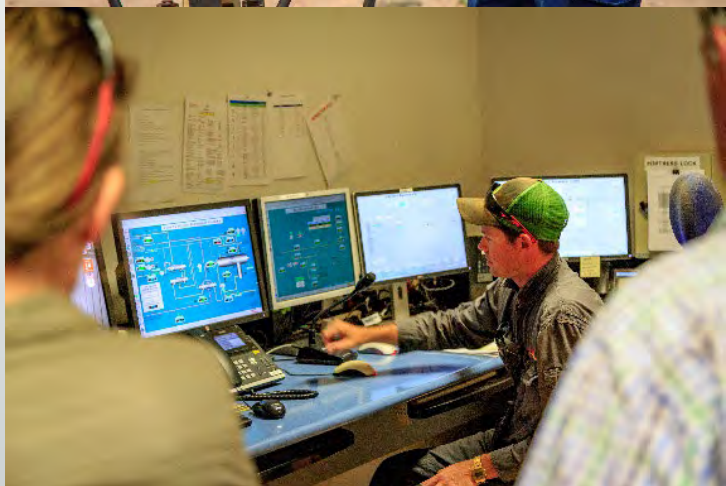








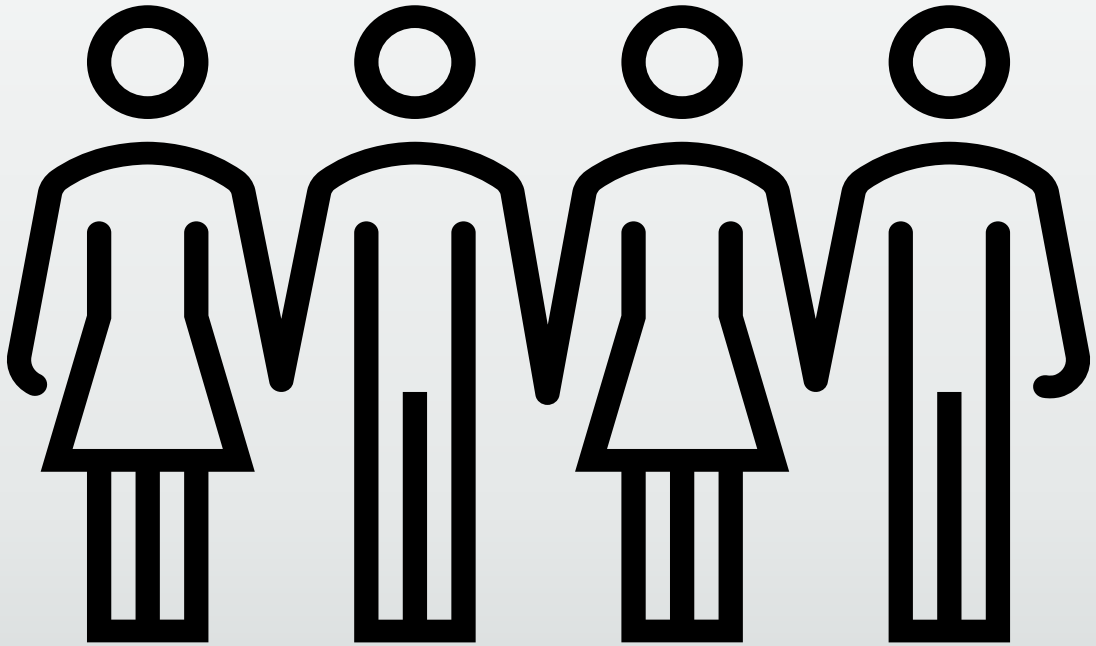
Mereenie LCM
23 January 2025

Central Petroleum

Agenda

1. Introductions / Welcome / Welcome MS Teams Guests / Apologies
2. CLC – LCM process and procedures
3. Central / Mereenie Production and Operations Performance
4. HSE Performance
5. Environmental Management
6. Development Activities undertaken
7. Indigenous / Local Employment
8. Social Management
9. Community Engagement / Sponsorships
10. Future Development Activities
11. Any Other business / Close

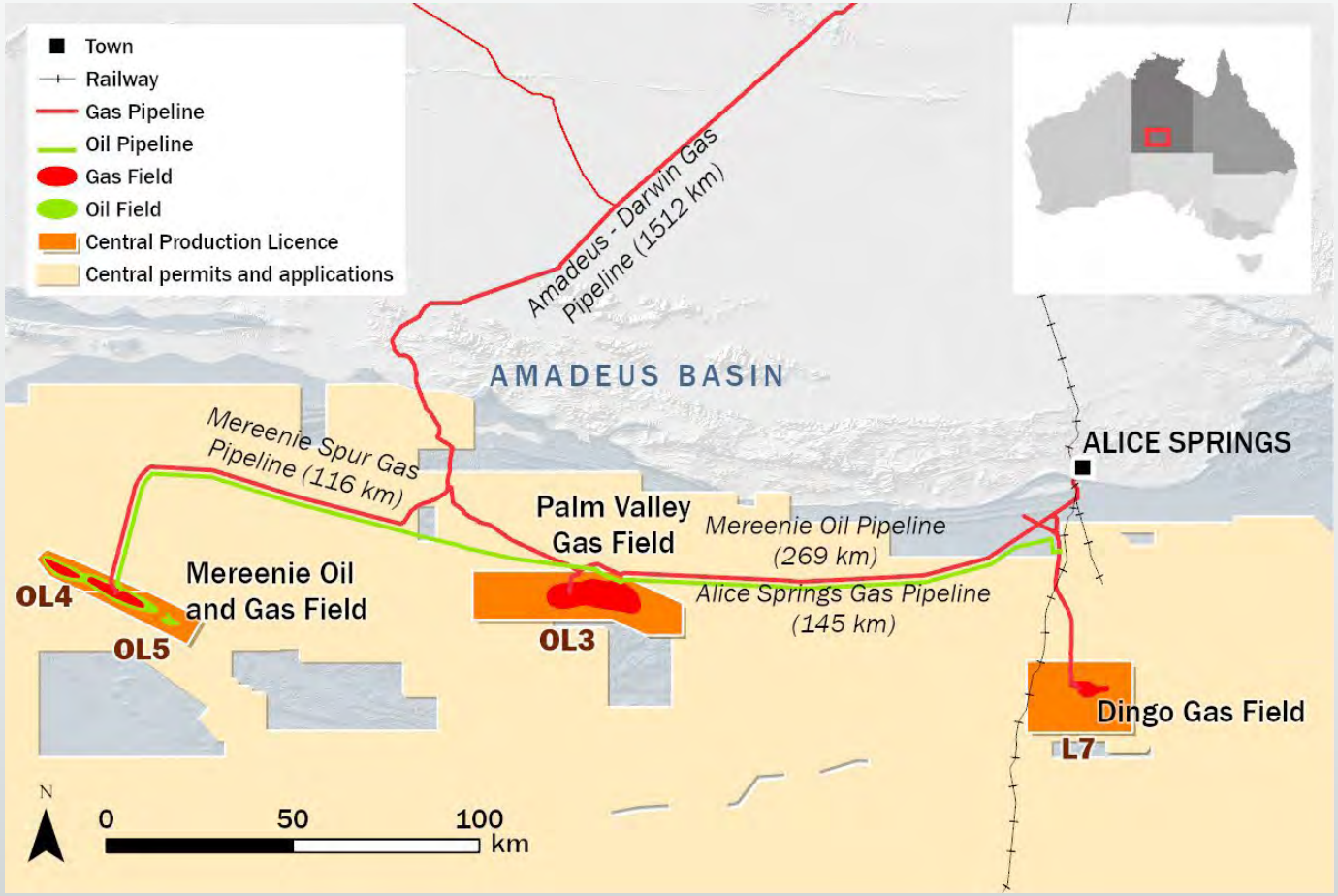
Introduction / Welcome



1. CLC
2. T/O’s
3. CTP both present and in Brisbane

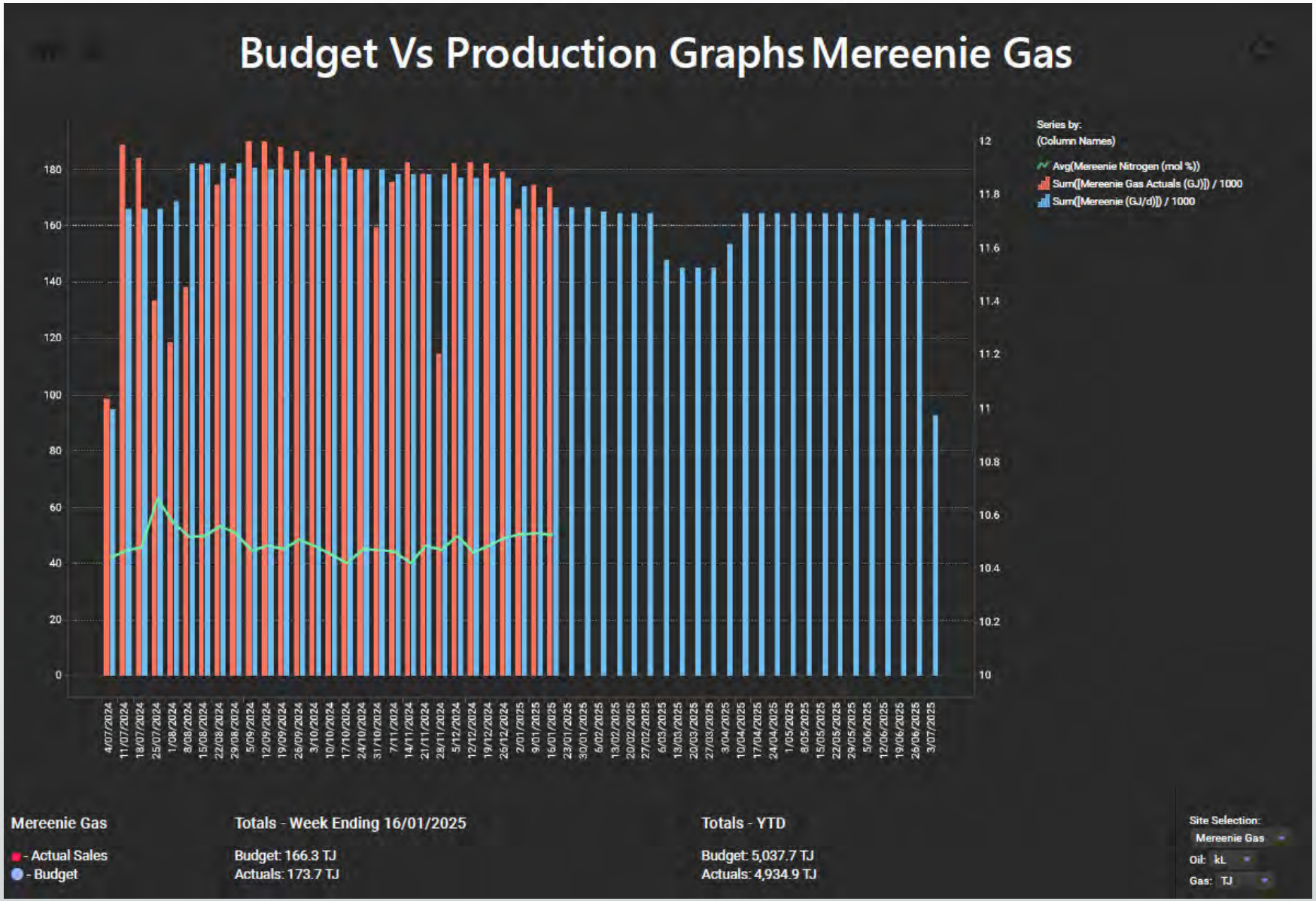
Mereenie Field Info

- The Mereenie Field is located 300 km west of Alice Springs
- There are about 35 producing wells at Mereenie. There are other wells are used for monitoring.
- Water, oil and condensate is removed from the gas in the treatment plant, mainly by cooling the gas.
- The gas is compressed and goes to Darwin in the pipeline.
- Oil is trucked to Port Bonython (SA). Some LPGs are flared at site.



Mereenie Production

- Field gas production (red bars) is currently tracking close to budget (blue bars).
- The production drop in July/August 2024 was related to customer demand.
- There is strong demand for gas in the NT.
- We will have more gas available once the new wells are drilled.



Mereenie Operations Performance

- Central has operated continuously during the year and plans on maintaining full production throughout next year
- Strong demand for energy across Australia. Supply is limited by the capacity of the field as the field continues its natural decline. Mereenie field continues to supply gas to NT consumers including the power stations in Darwin.
- From 1 January 2025 Central now has a new Gas Contract. All Mereenie Gas is now contracted to the NT.
- Central continued to implement multiple projects and monitoring programs to improve reliability of wells, pipelines and facilities:
  - The Flare gas recovery compressor was completed in 2024 – this reduces emissions by sending some gas back to sales.
  - West Mereenie 29 was connected in early 2025 – this increases the overall capacity of Mereenie.
  - West Mereenie 30 Currently being drilled at present

Health, Safety & Environmental Performance

- Central has operated the Mereenie facilities since September 2015 (10 Years this year):
- Strong performance with Field HSE (Operations), with over 1609 days with no recordable injuries.
- Drilling and Completions for WM29 & 30 has only one injury requiring medical treatment (stitches to left index finger) after the finger was caught in the line of fire when the forklift tines moved unexpectedly when being manually repositioned.
- Proven environmental performance – high level of compliance with environmental conditions in 2024
- Rehabilitation program at Mereenie to reduce size of a number of well pads.

Environmental Management

- **Ongoing activities**

- Bi Annual environmental inspections.
- Annual environmental performance audits conducted and submitted to NTG in May 24

Performance Status	Number	Percentage
Compliant	**134**	54%
Not Compliant	**2**	1%
Not Applicable	**113**	45%

The two non-compliances were:

- Minor administrative issue – Mereenie weekly reports submitted after 5pm ACST
- Minor incidents of release of gas to atmosphere, events were recorded and reported in the quarterly incident reports, there were no serious environmental impacts or incidents.

Environmental Management

- **Ongoing activities**
- Water management

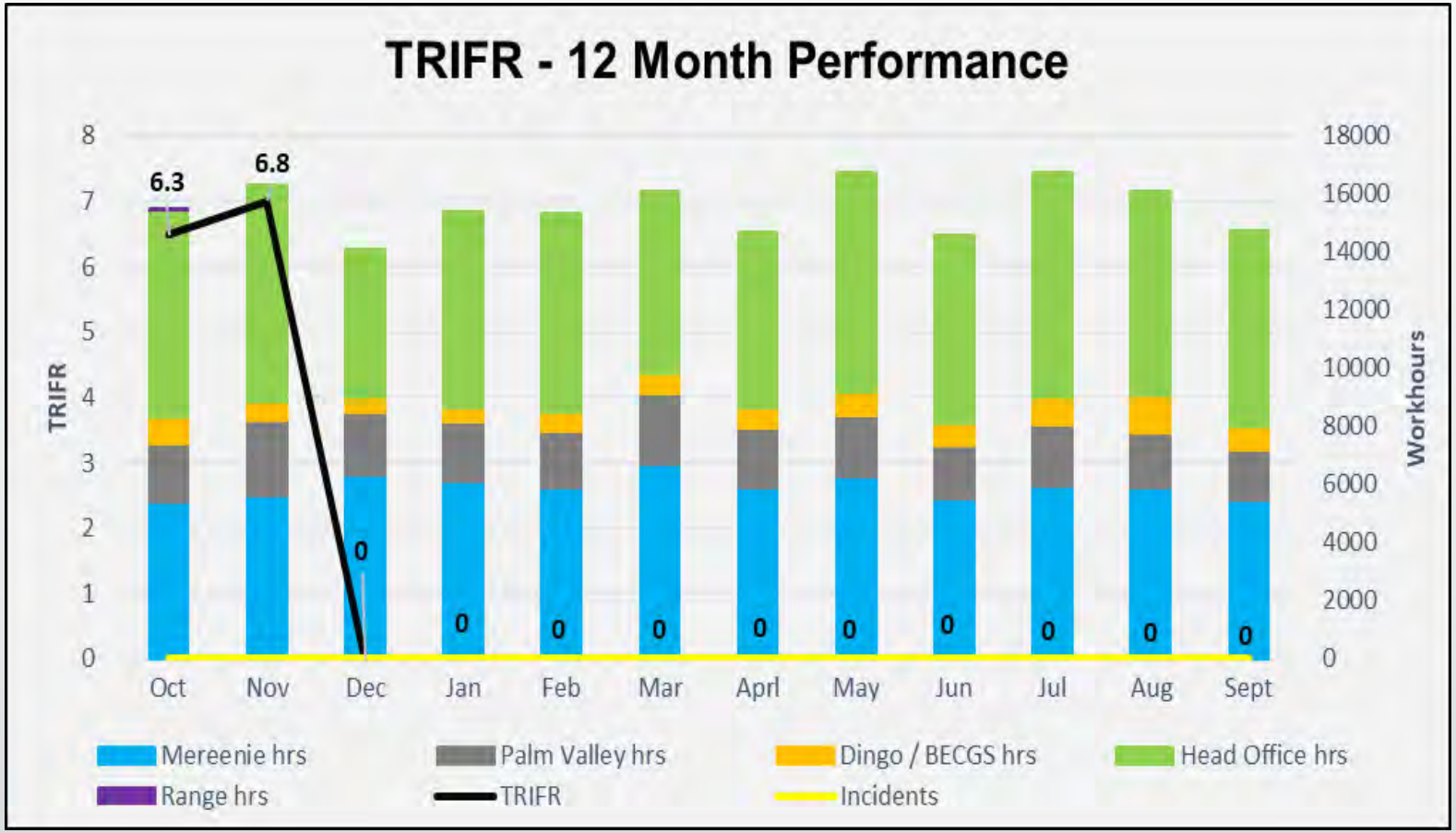
  Bi-annual monitoring of water quality, standing water levels in surrounds bores and springs in Mereenie. All inspections have indicated no adverse impacts from Central activities and will continue to ensure positive environmental outcomes into the future
- Environmental Management Plans (EMP)

- A new EMP for WM31/32 has been prepared and submitted to the NTG. We await their approval. this ensures all proposed drilling activities at Mereenie will be conducted in accordance with the very latest legislation.
- All new activities require an EMP

Health, Safety & Environmental Performance

- Implemented/completed comprehensive groundwater monitoring program – No issues identified
- Annual weed Surveys undertaken – No issues identified
- Developing progressive rehabilitation and closure plans
- Minimising greenhouse gas emissions and sustainability initiatives

Total Recordable Injury Frequency Rate



Days without an LTI / MTI:	
Mereenie	1609

Pipeline Safety

- Central operates two long distance pipelines in this area – MASP and Dingo
- Dingo – 40 km – from wells to gas plant
- MASP – 269 km – from Mereenie to Brewer estate
- APA also operate pipelines in the area.
- The lines are buried and are at high pressure. They are clearly signposted.
- Following procedures when working near pipelines helps keep everyone safe.



Pipeline Safety





If you need to dig or bore near the pipeline, or cross it with heavy machinery…

DON'T

- Start work without talking to Central or the pipeline operator

DO

- Ring the number on the pipeline sign.
- Talk to the pipeline operator about the work you need to do.
- Allow some time for the pipeline operator to check that it's safe to do the work.

Brumby Discussion

- Brumby numbers are still high
- Brumby's cause environmental harm
- Status of the CLC brumby cull ?
- CTP is happy to co-contribute funding





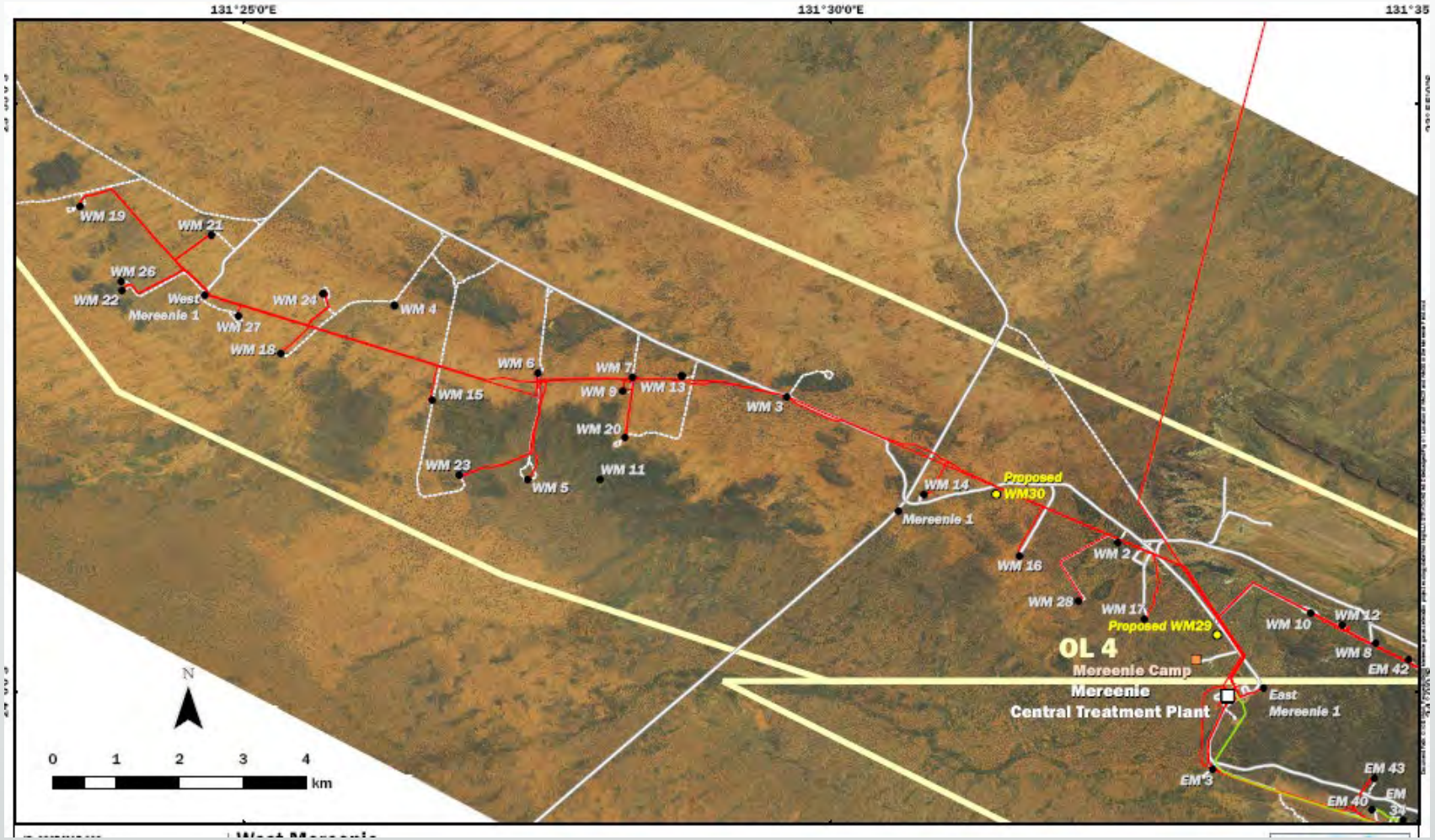
2024 – 2025 Current Projects underway

Flare Gas Recovery Compressor (FGRC)

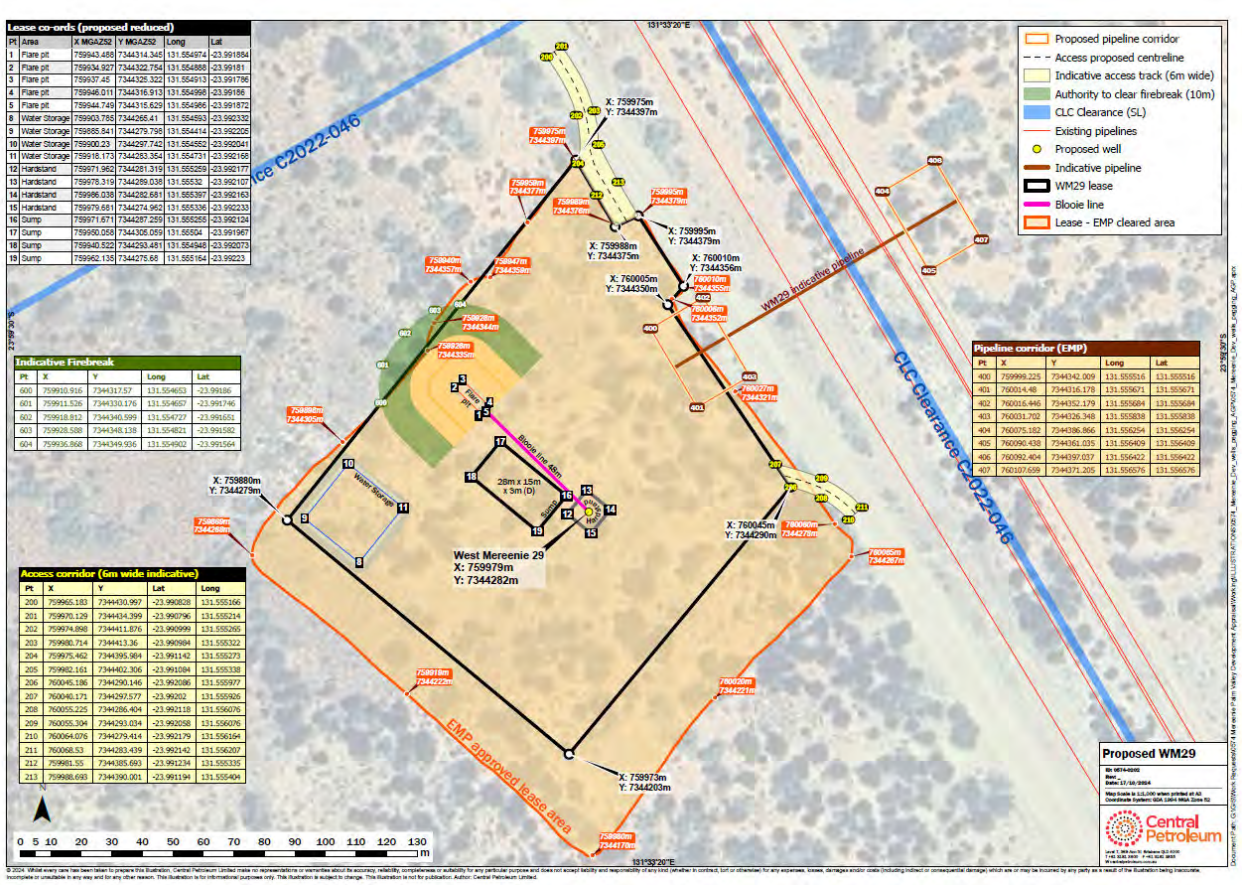


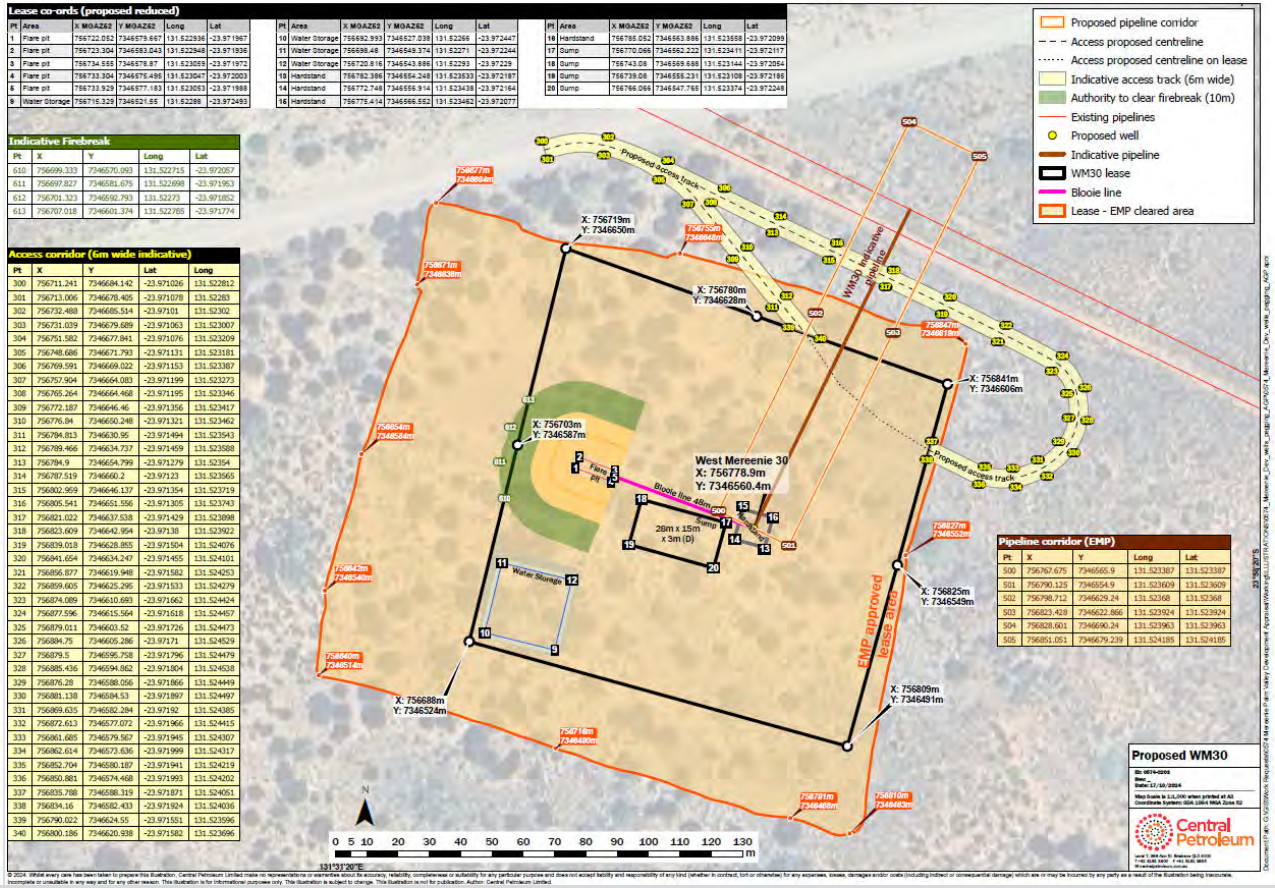
- FGRC started in March 2024.
- The compressor reduces flared gas by returning some gas to sales.

Current Development Wells WM29/30



Current Development Wells WM 29/30





Current Development Wells (WM29/30)

- Locations were chosen and approvals from CLC/ AAPA and the T/O's granted.
- NT government approvals granted.
  - EMP
  - WOMP
- Civil clearing commenced October 2024
- Drilling WM 29 commenced December 2024



Current Development Wells (WM 29/30)

- **WM 29 / 30**
  - WM 29Completed
  - Now on line and producing gas
- Move to WM 30 completed
- Drilling of WM 30 now underway



Indigenous / Local Employment

- Focus on supporting local jobs and communities
- Central Petroleum works closely with the CLC employment officer
- Maintained consistent levels of local and indigenous roles
- Offering indigenous trade apprenticeships
- There may be opportunities in the proposed works over the coming year.

Indigenous Employees by Location				
	Indigenous		Total	Indigenous
Location	Female	Male	Employees	%
Mereenie	0	4	26	15%
Mereenie	0	2	9	22%
BECGS	0	3	6	50%
Northern Territory	0	9	41	22%

Social Management

- Providing safe working conditions and a positive inclusive culture
- Promote diversity
  - gender, ethnicity, background, etc
- Positive impact on communities
  - Job opportunities, supporting local business
- Ethical sourcing of equipment and supplies used across our business
- Working with CLC and AAPA to protect heritage and sacred sites
- Work with NT government to protect environment
- Providing Energy to Alice Springs when there are no other options or renewables are not possible.

Community Engagement / Sponsorships

- All groups and community organisations can apply for support using the application forms.
- Central will consider the following types of support:
  - A financial contribution made to a non-profit organisation, charity or private foundation;
  - A financial contribution in support of an event, activity, or organisation; or
  - A contribution by Central or Central personnel in the form of services or materials.
  - Consideration given to Central branding or verbal, written and visual acknowledgement
- Additional governance has been implemented. Applications will be considered on their merit and in the context of approved budgets. It is unlikely that there will be adequate budget for all requests, so unfortunately some applications will not be accepted. Priority will be given to activities or initiatives that are closely aligned with our operations.
- All applications can be emailed to: info@centralpetroleum.com.au / 07 31813800

Community Engagement / Sponsorships

- Central Petroleum continues to support communities with donations and sponsorships.
- Support provided in the past:
  - Funeral support
  - Brumby Week
  - Community events
  - PA system for community centres
  - Children's Charity Network
  - Literacy programs
  - Local sporting clubs – men’s and women’s teams (fees, jerseys, travel)
  - Diesel for remote communities
  - Christmas party food
  - Donations

CLC Production Agreement Renewal

- Current agreement extended to November 2025
- Central / CLC have commenced the process to renew the agreement
- Further engagement and discussions to support the renewal to occur during 2025

2025 and beyond! Projects being planned

Development Wells – New Opportunities

- New wells can extend the life of the field.
  - This results in prolonged production, royalties and benefits for the community.
  - As previously highlighted last year LCM, Central has cleared multiple areas for new wells in the Mereenie field.
- Planning has commenced for 2 x NEW wells – West Mereenie 31 and 32 due to the success of WM 29.
- These new wells can be done from previously cleared areas (WM 29/30)
- Consultation is commencing now with you the T/O's and relevant authorities.
- Drilling if approved anticipated in late 2025

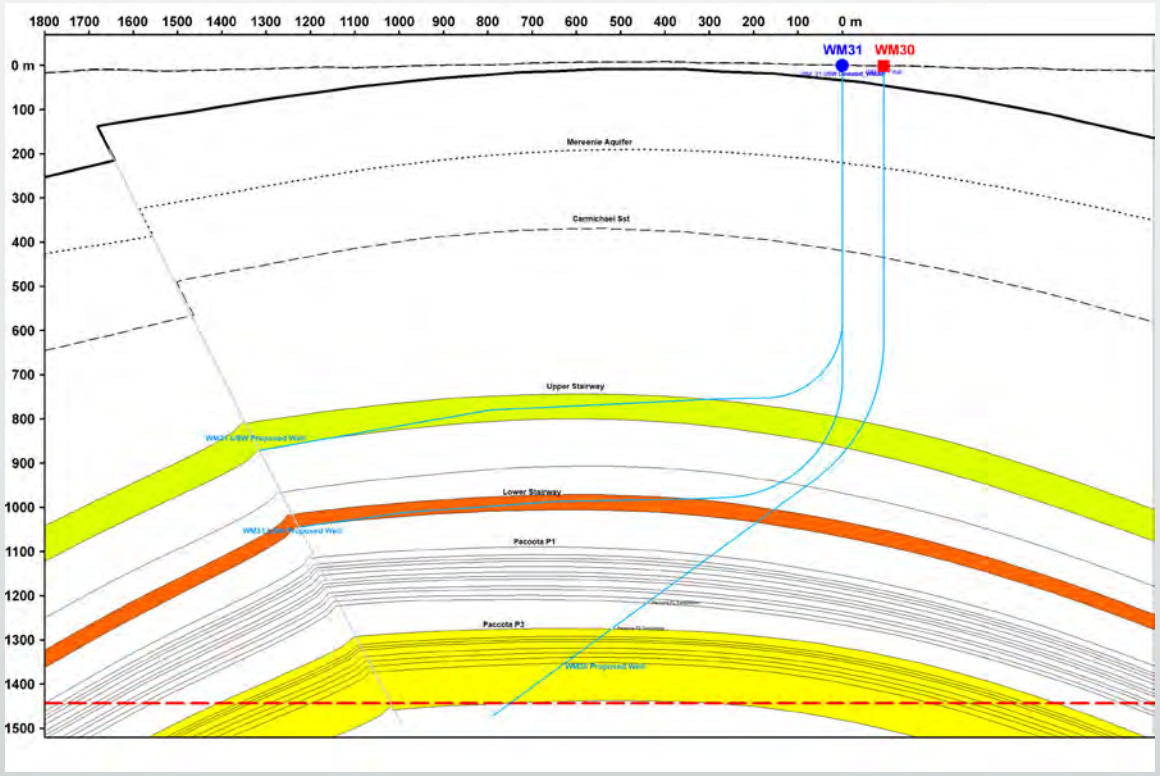
Development Activities – New Well 2025

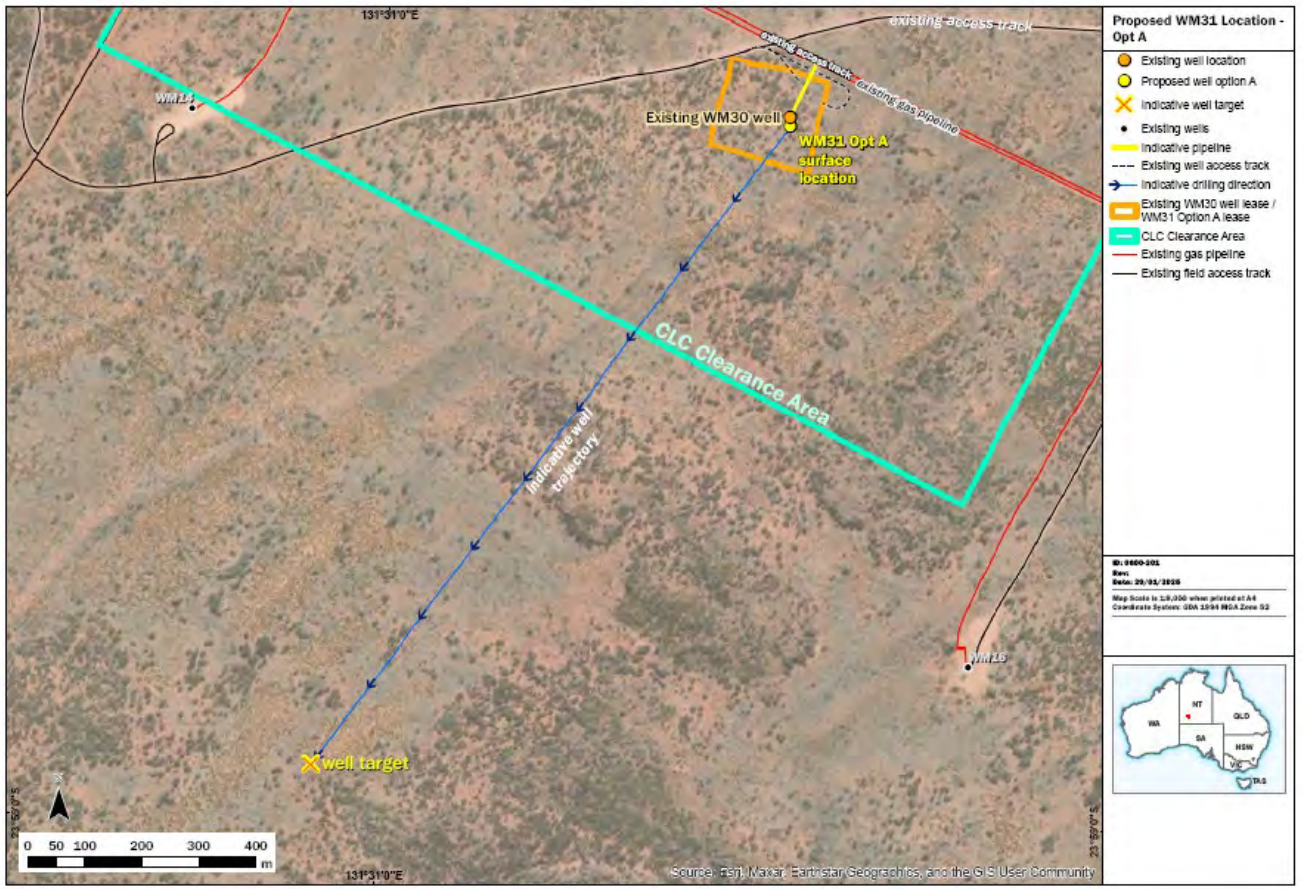
- West Mereenie 31/32 may commence in 2025 involving:
  - Civil Construction – making bigger existing well pad and access tracks. May include limited drill and blast
  - Mobilisation of drilling rig, equipment, mobile camp and personnel
  - Drilling of up to 2 wells
  - Construct new pipe line from well to existing field gathering network
  - Well commissioning and handing over to production operations
  - No fracking initially – but may be required in the future for these wells.



Development Activities – WM 31 Trajectory

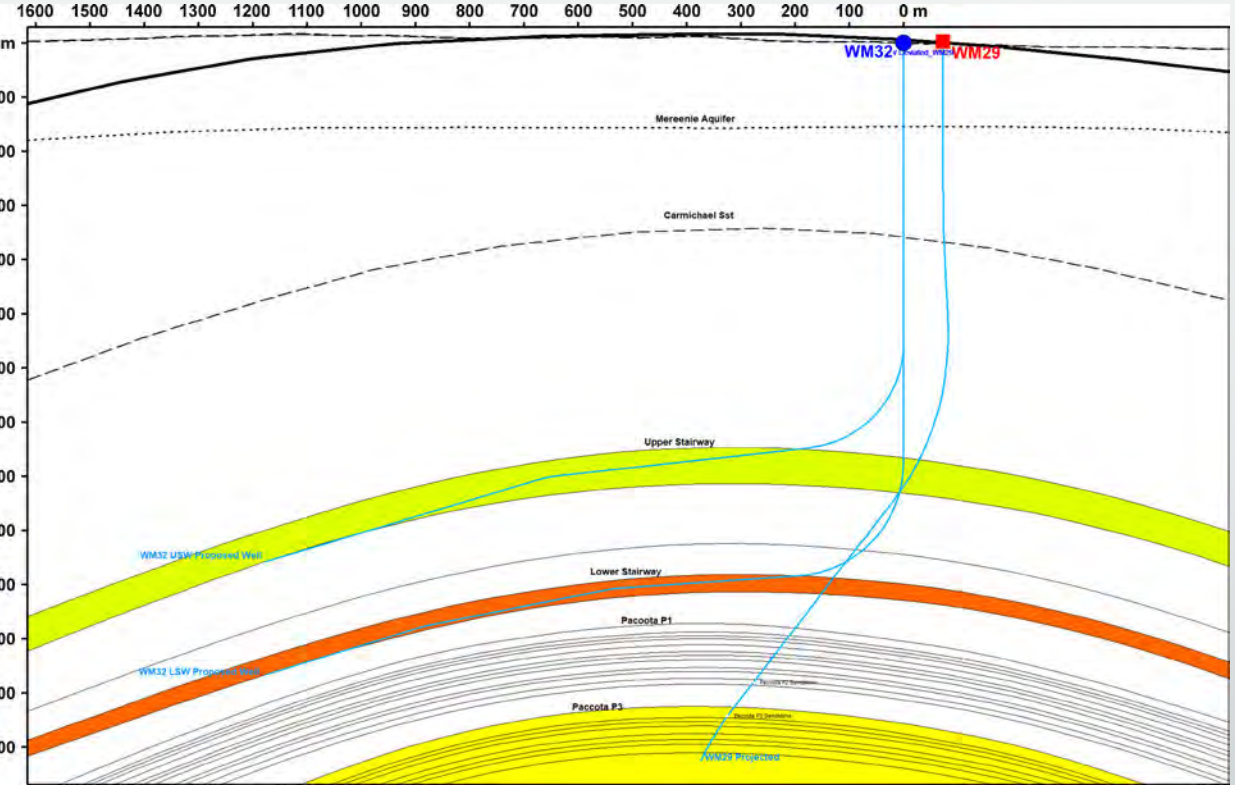
- West Mereenie 31 trajectory outlined
  - Away from known restricted work areas
  - Well is 1 km below ground level

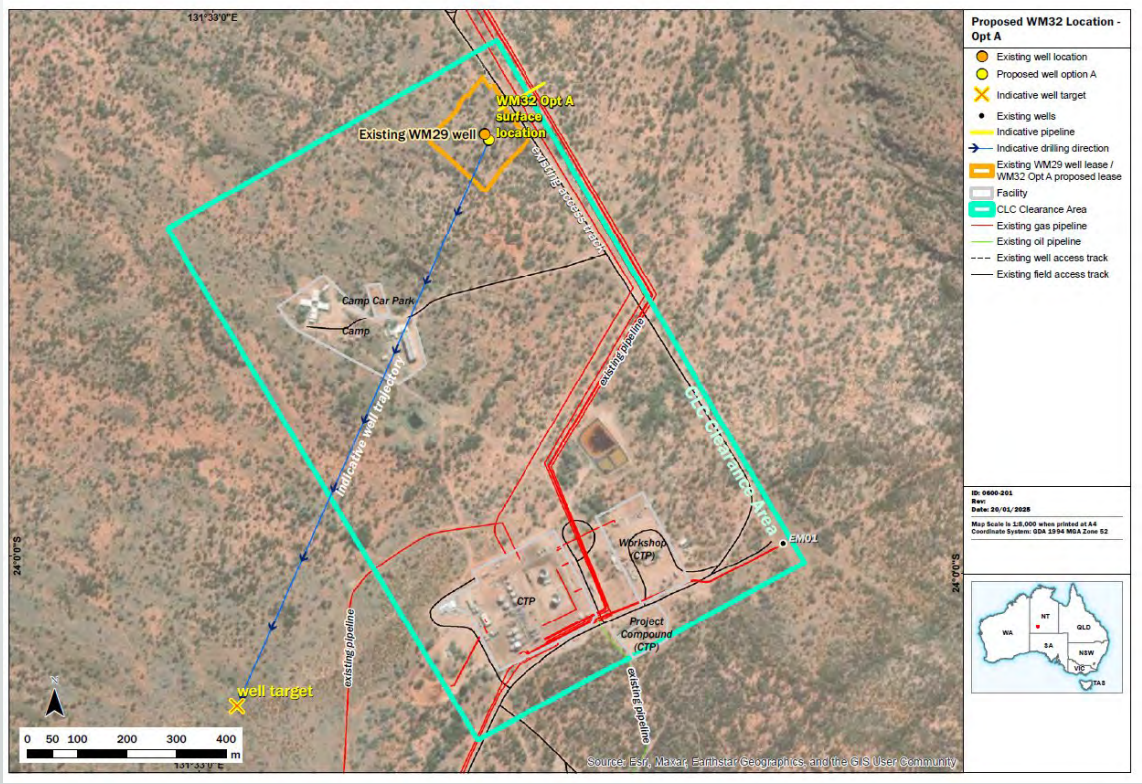




Development Activities – WM 32 Trajectory

- West Mereenie 31 trajectory outlined
  - Away from known restricted work areas. Heads under camp
  - Well is >1 km below ground level





Development Activities 2025+ – Seismic Acquisition for well placement

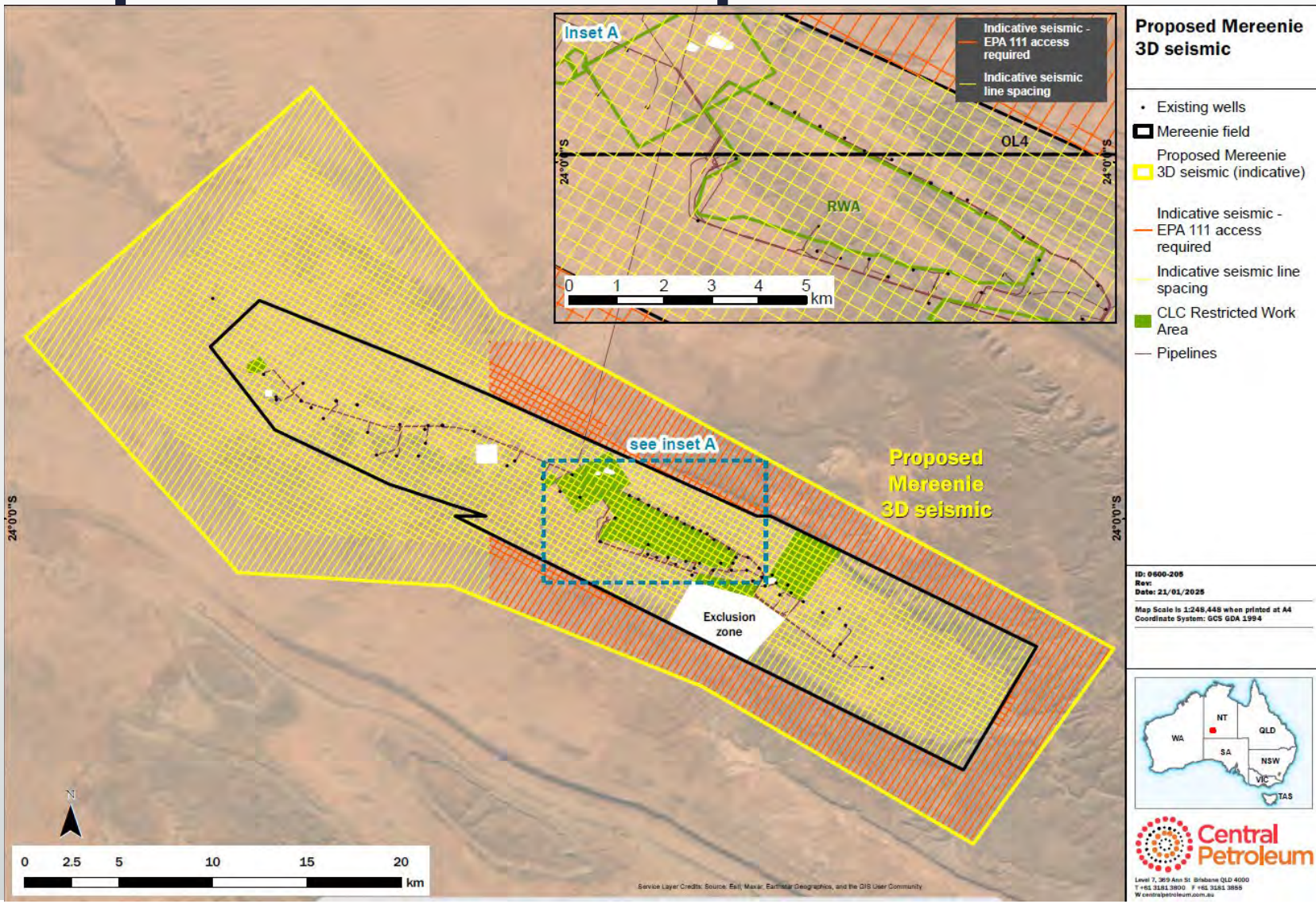
Future wells required to extend field life, may require additional information

Map to the right outlines scale of possible 3D seismic acquisition

- New technology does not require line clearing

To maximise impact and value, access to restricted work areas may be required

- Low impact activities
- Can be conducted or supported by TO's

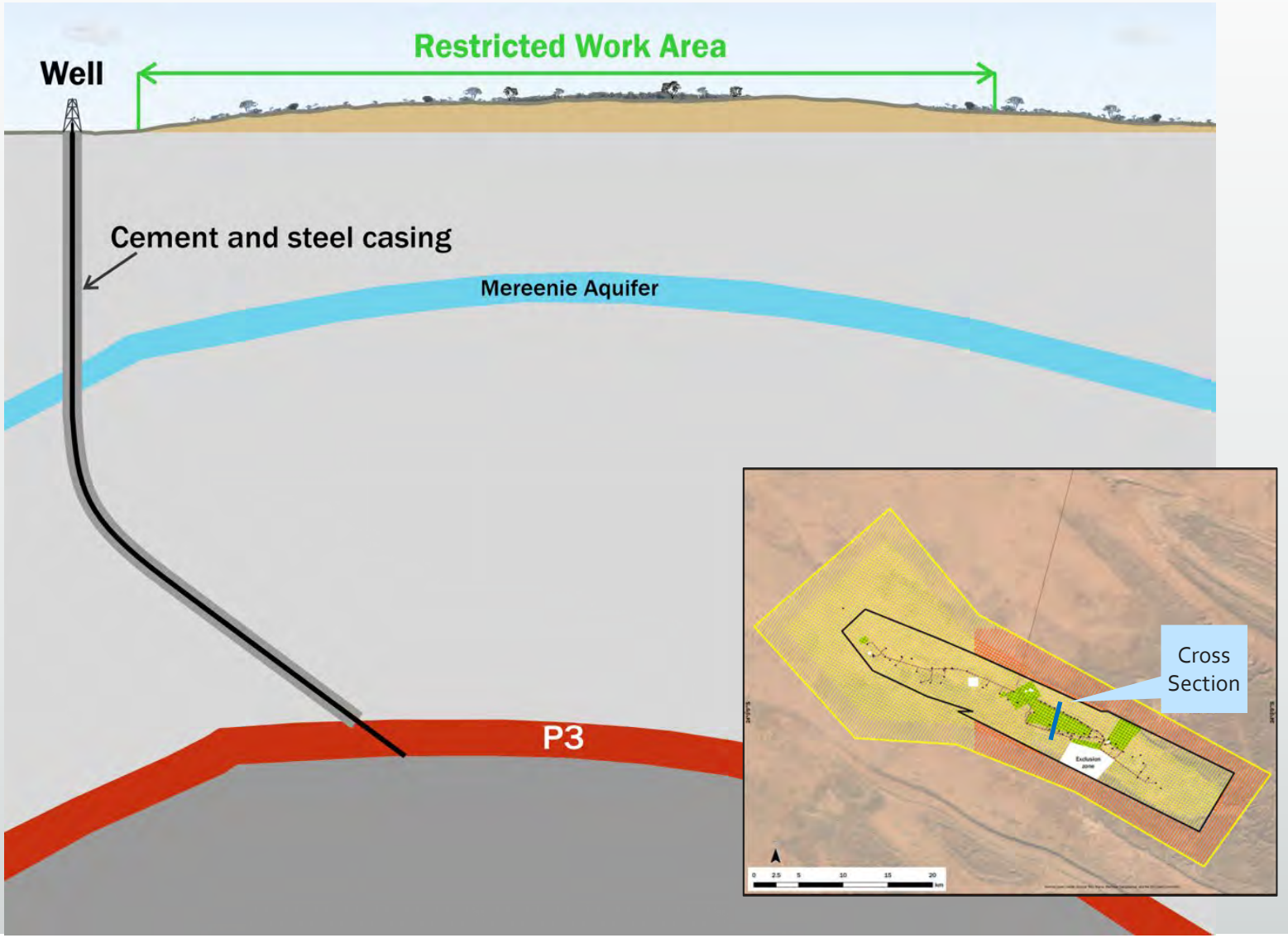


Development Activities 2025+ – Well under RWA

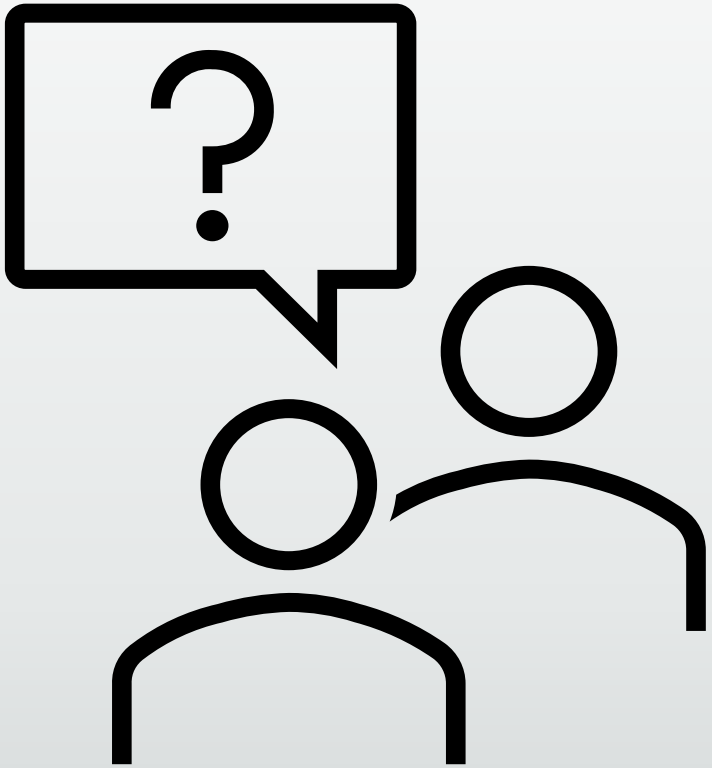
Primary area for new wells targeting good production lies under restricted work areas in the East (see inset)

Cross section across RWA is shown to scale with target at ~1.5km depth

- Directional drilling technology will allow target to be accessed without disturbing or encroaching on RWA
- Steel casing, will be cemented in place to protect aquifer and other subsurface formations



Other Business / Questions



Environmental Outcomes, Risks and Controls

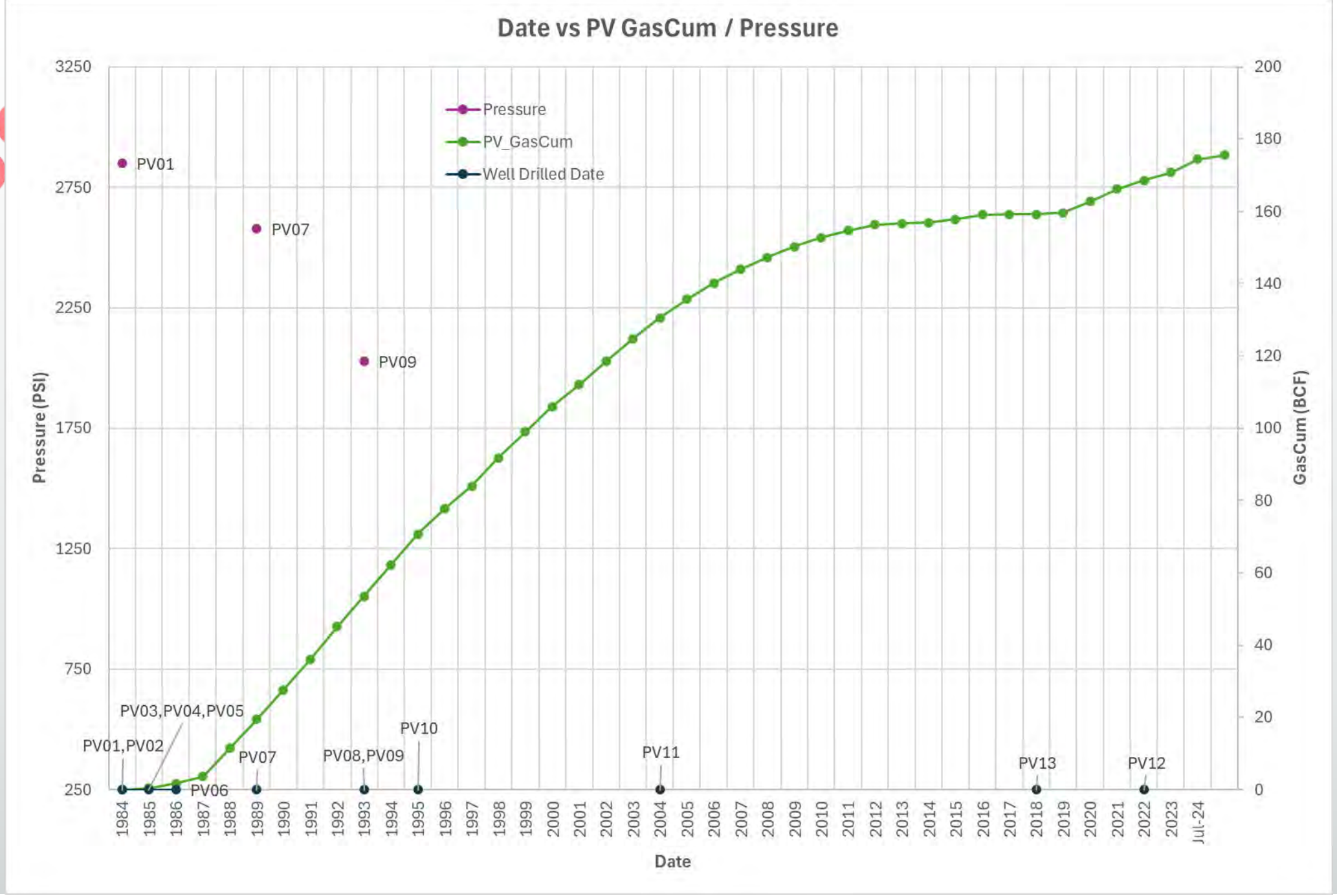
- Comprehensive risk assessments undertaken across all areas
- Multiple layers of controls implemented to mitigate the impacts as a result of the planned activities
- EMPs detailing how impacts to the environmental will be avoided and minimized has been approved

Outcomes / Objectives	Risks / Impacts	Controls
Minimise impacts on conservation areas and significant fauna / flora	Injury to fauna, loss of vegetation, increased weeds	- Minimum clearing undertaken - Flora and fauna survey conducted - Regular inspections
Minimise and control soil erosion / sedimentation and maintain the viability of soil through preventing contamination	Erosion, sedimentation, contamination	- Erosion and sedimentation plans - Complete remediation of any spills or leaks / spill response kits - Minimal volumes of fuels, oils and other chemicals will be stored and used - Regular inspections
All heritage and culturally significant sites are identified and protected	Disturbance to heritage sites	- Heritage survey conducted - CLC and Traditional owners consulted - Aboriginal Areas Protection Authority certificate application in progress and (fieldwork stage) with site visits currently planned

Environmental Outcomes, Risks and Controls

Outcomes / Objectives	Risks / Impacts	Controls
Avoid impacts to surface water and groundwater	Disturbance to drainage patterns, erosion and sedimentation, depletion of ground water, contamination	- Regular monitoring of ground and surface water conditions - Dual casing for all drilling to protect aquifers - Minimise groundwater usage - Regular inspections
Activities are not the cause of fires in the region	Fire, community	- Bushfire management plans in place include firefighting equipment, fire breaks
Mange capacity of road infrastructure up to and within the MRN Maintain and enhance community relationships	Traffic, noise, complaints	- Regular consultation with the community and stakeholders - Traffic management plans and community notification prior to commencing activities - All visitors to have appropriate CLC approval and be inducted on environmental issues prior to arrival at site
Activities do not negatively impact air quality	Dust generation, emissions, combustion	- Watering roads to minimise dust as required - Emissions management plan in place including restrictions on venting of gas and efforts to minimise flaring

- There may be unintended consequences as a result of an incident during the activities however comprehensive response plans and protocols are in place.
- There should be no impacts to stakeholder rights e.g. access to site during the planned activities, etc. however in order to manage safety on site we do ask that you inform Central Petroleum.


Date vs PV GasCum / Pressure
Pressure
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Well Drilled Date
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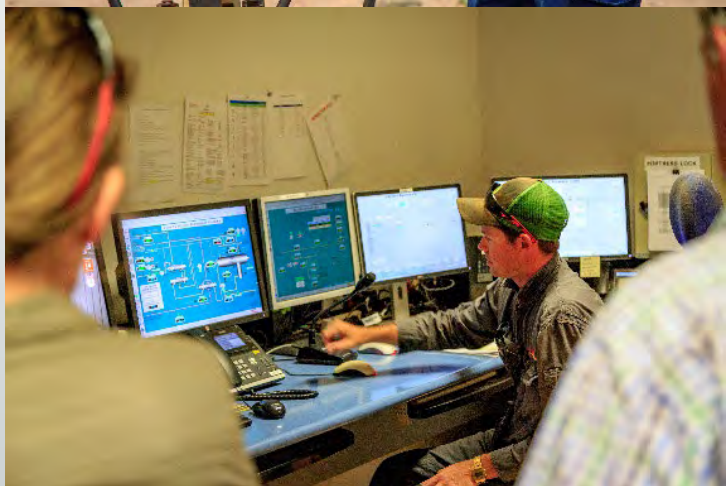








Mereenie LCM
02 June 2026 – Alice Springs

Central Petroleum

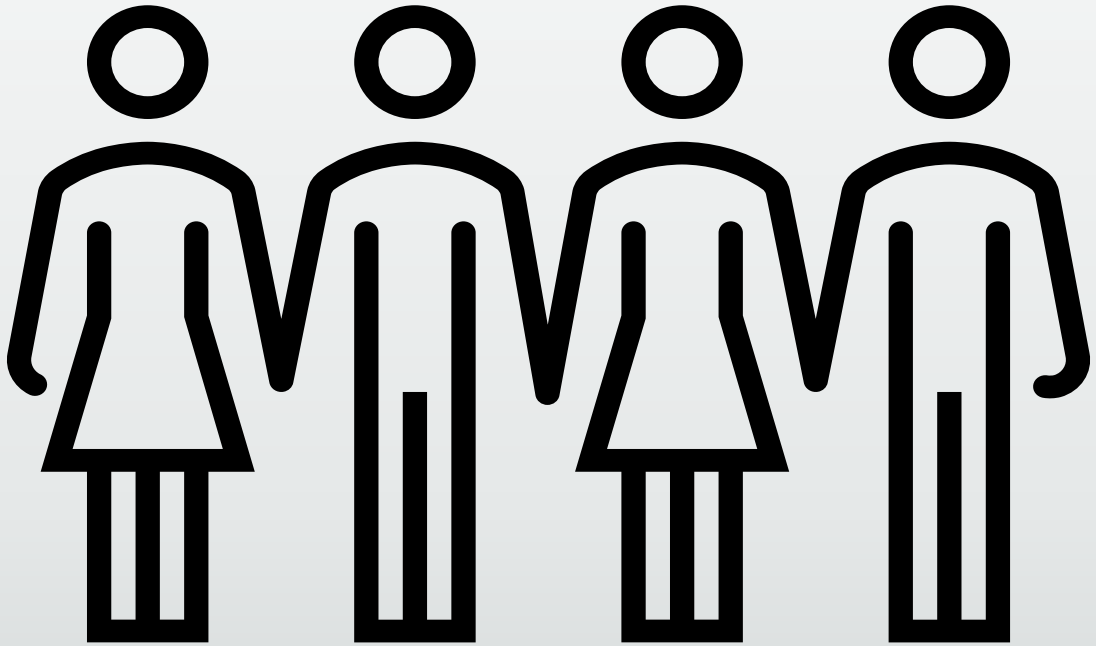
Agenda

1. Introductions / Welcome / Welcome MS Teams Guests / Apologies
2. CLC – LCM process and procedures
3. New Mereenie Production agreement
4. Status update of Cultural awareness Inductions / Video
5. Mereenie Production and Operations Performance
6. HSE Performance
7. Environmental Management / Rehabilitation – Works underway
8. Water Usage
9. Reserves and Resources – Timing of closure
10. Development Activities undertaken

Agenda

11. Development Activities planned
12. Major projects being planned
13. Update on Human Resources / Recruitment / Training
14. Social Management
15. Community Engagement / Sponsorships
16. Any Other business / grievances / Close
17. Tour of the recovery operations if requested.

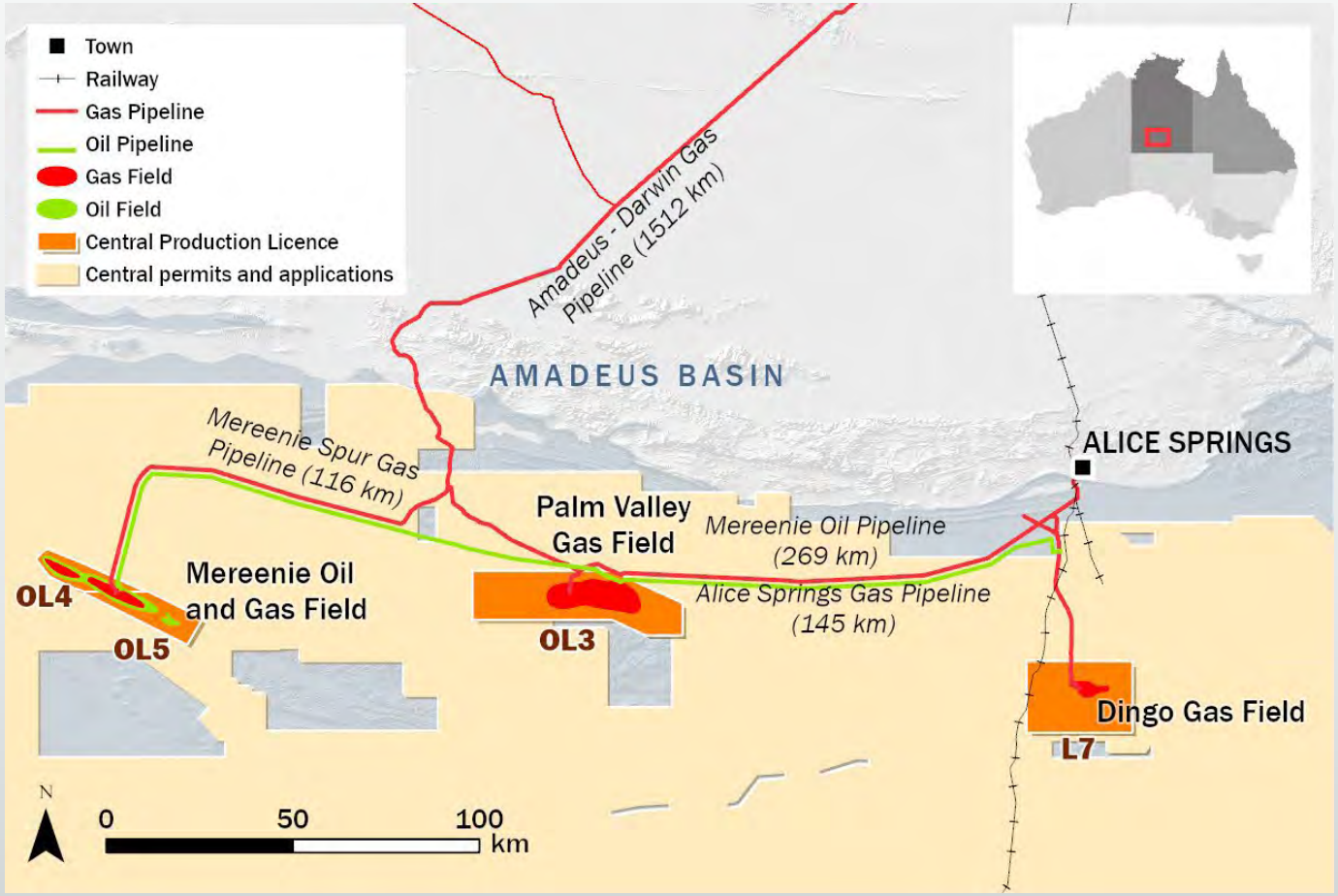
1 & 2 Introduction / Welcome



1. CLC
2. T/O’s
3. CTP both present and in Brisbane

Mereenie Field Info

- The Mereenie Field is located 300 km west of Alice Springs
- There are about 35 producing wells at Mereenie. There are other wells are used for monitoring.
- Water, oil and condensate is removed from the gas in the treatment plant, mainly by cooling the gas.
- The gas is compressed and goes to Darwin in the pipeline.
- Oil is trucked to Port Bonython (SA). Some LPGs are flared at site.



3. New production / access agreement

- The second renewal agreement was signed on the 17th April 2026 between the CLC and Central Petroleum as operator (Horizon Australia, Echelon Mereenie and Cue Mereenie as JV partners)
- Original Agreement signed 18 November 1981.
- Renewal agreement is for 21 years
- Expiry of agreement is now 17 November 2044.



3. New Production / access agreement

- The new Agreement is now a modern agreement with provisions for
  - Royalties to the Traditional Owners
  - Increased annual rental payments for the use of the land
  - Additional Environmental reporting obligations
  - CLC and T/O – Employment Opportunities
    - Establishment of an employment working group
    - Establish gap analysis and assist with training opportunities
    - Notify CLC of any Job vacancies

3. New Production / access agreement

- The new Agreement is now a modern agreement with provisions for
  - New Requirements for Traditional Owner Cultural Heritage awareness.
  - The CLC may, in consultation with Aboriginal Owners, develop text and imagery for:
    - Development of Training packages
    - Development of Induction Videos
  - CTP will work closely with the CLC in assisting and developing the above.

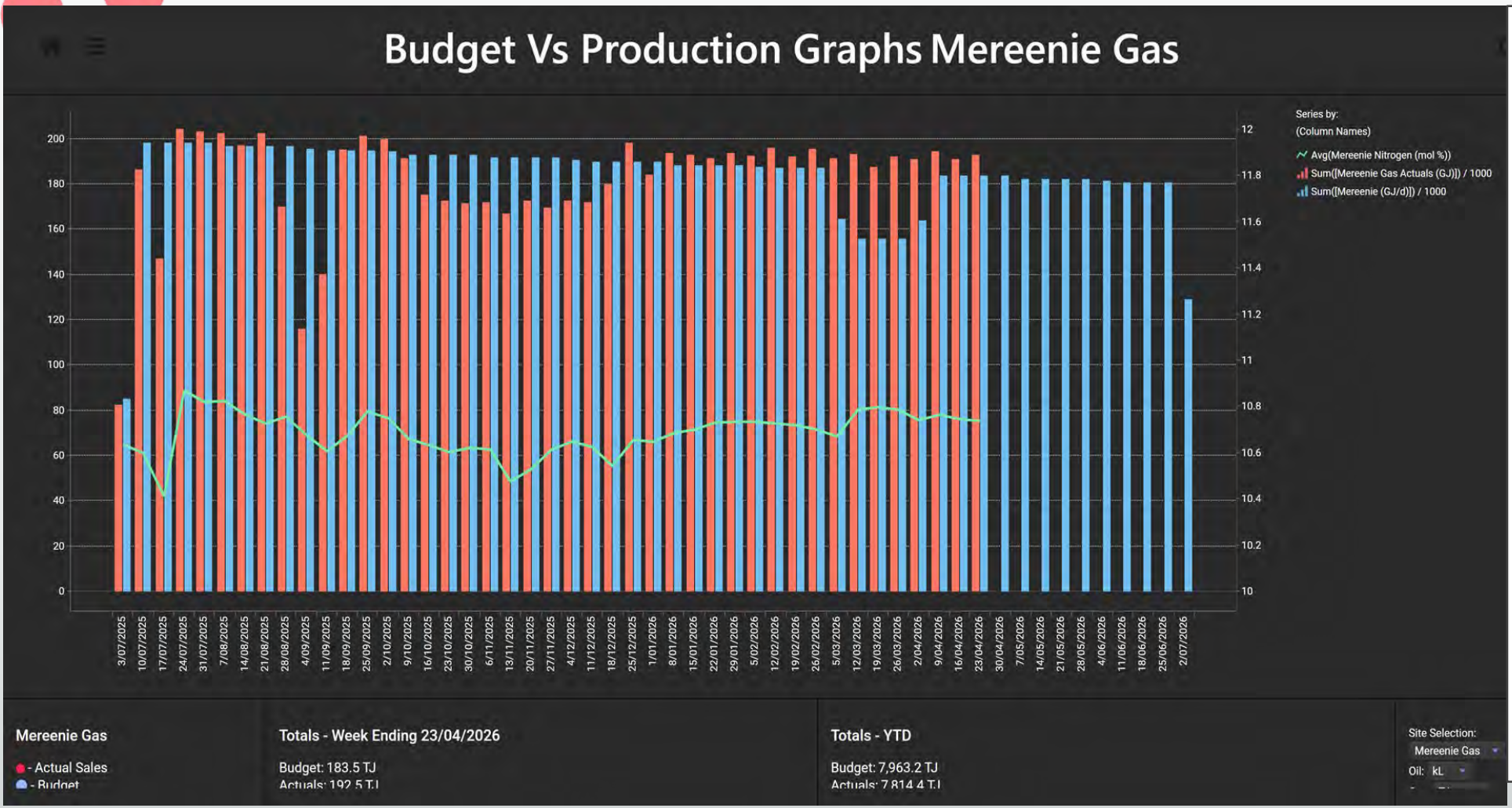
4 Cultural Heritage: Induction and training

- Central Petroleum and CLC to work together with T/O's to:
  - Provide a Cultural Awareness Video.
    - This is to be pre-recorded by a provider nominated by the CLC within 12 months and all persons on site will have to review the video.
  - Updated Signage and Induction package for all visitors to site.
    - The CLC may, in consultation with Aboriginal Owners, develop text and imagery for:
    - Signage (welcome sign) to be installed outside the camp at Mereenie that provides a welcome to Aboriginal Land from and on behalf of the Aboriginal Owners that sets out information about Aboriginal Land and the Aboriginal Owners of Mereenie (History Sign) and;
    - Provide information and images about Aboriginal Land and the Aboriginal Owners, for inclusion in the induction pack provided to all personnel attending the Mereenie camp (Induction Pack).
    - Additional flag pole at the MN camp – work order generated and will be installed soon to fly the aboriginal flag.

4 Cultural Heritage: Upcoming applications

- Central Petroleum is currently looking at several applications for Sacred Site Clearances / Heritage works:
  - Potential drilling of 2 new wells. This is covered under the development activities.
  - Some additional clearing around the flare pit as best industry practice for bushfire management.
  - New evaporation pond requirements for ongoing operations.

5. Mereenie Production and Operations performance



- Field gas production (red bars) is currently tracking close to budget (blue bars).
- The production drop in Oct/Nov 2025 was because we were looking for a new customer for our oil.
- The budget drop in March was for a plant shutdown. This happened in May.
- There is strong demand for gas in the NT.

5. Mereenie Production and Operations performance

- Central has operated continuously during the year and plans on maintaining full production throughout next year
- Strong demand for energy across Australia. Supply is limited by the capacity of the field as the field continues its natural decline. Mereenie field continues to supply gas to NT consumers including the power stations in Darwin.
- From 1 January 2025 Central now has a new Gas Contract. All Mereenie Gas is now contracted to the NT. In April 2026 this was revised for additional gas from all fields.
- Central continued with regular maintenance and some small upgrades to improve reliability of wells, pipelines and facilities.
- Santos has reduced the amount of Mereenie oil they are willing to take. We have been looking for other market options. To maintain production, we have been flaring some of the condensate we would normally sell.

6. Pipeline Safety

- Central operates two long distance pipelines in this area – MASP and Dingo
- Dingo – 40 km – from wells to gas plant
- MASP – 269 km – from Mereenie to Brewer estate
- APA also operate pipelines in the area.
- The lines are buried and are at high pressure. They are clearly signposted.
- Following procedures when working near pipelines helps keep everyone safe.



6. Pipeline Safety





If you need to dig or bore near the pipeline, or cross it with heavy machinery…

DON'T

- Start work without talking to Central or the pipeline operator

DO

- Ring the number on the pipeline sign.
- Talk to the pipeline operator about the work you need to do.
- Allow some time for the pipeline operator to check that it's safe to do the work.

6. Health, Safety & Environmental Performance

- Central has operated the Mereenie facilities since September 2015 (11 Years this year):
- Strong performance with Field HSE (Operations), with over 1464 days with no recordable injuries.
- Drilling and Completions for WM29 & 30 has only one injury requiring medical treatment (stitches to left index finger) after the finger was caught in the line of fire when the forklift tines moved unexpectedly when being manually repositioned.
- Proven environmental performance – high level of compliance with environmental conditions in 2025/2026
- No major incidents to report

6. Environmental Management

- **Ongoing activities**

- 2 x per year: environmental inspections.
- Annual environmental performance audits conducted and submitted to NTG in October 2025

Performance Status	Number	Percentage
Compliant	58	84%
Not Compliant	0	0%
Not Applicable	11	16%

There were some minor non-compliances that occurred outside this reporting period:

- Minor leak of liquids (process water) from above ground pond – EMP being drafted to expedite the construction of a new evaporation pond, this would involve clearing adjacent to the existing evaporation pond. Any contamination will be removed at this time (negligible impact).
- 2 minor fires around flare pit during flaring activities – Central is drafting an amendment to the EMP to allow widening of the fire break to further reduce this risk
- Release of solid gas (ice - hydrate) adjacent flare pit, these pieces of ice were collected and disposed of. No contamination of land occurred as any trace of the ice evaporated.

6. Environmental Management

- Air, dust and soil sampling conducted during increased flaring activities (condensate), with results below detectable limits for tested contaminants. Dust and soil sampling to be continued. Nil detected.
- Water management
  - Implemented/completed comprehensive groundwater monitoring program with 2 x per year: monitoring of water quality, standing water levels in surrounds bores and springs in Mereenie.– No issues identified
- Annual weed Surveys undertaken – No issues identified
- Minimising greenhouse gas emissions and sustainability initiatives

6. Environmental Management

- Environmental Management Plans (EMP) for NEW ACTIVITIES or modifications to current EMP:

- A revised EMP for WM31/32 is being prepared for submission to the Government. This amendment ensures all proposed drilling activities at Mereenie will be conducted in accordance with the very latest legislation with a reduced environmental impact
- A new EMP for WM 33/34 is under review and may be submitted – see development section.
- A new EMP for the proposed evaporation ponds currently in development with ecology and cultural surveys completed, the new pond will result in the above ground pond and current evaporation pond to be emptied and area rehabilitated.
- A revision of the current EMP is underway to allow for additional vegetation removal around existing flares to minimise the risk of bush fires.

6. Environmental Management

- Environmental Management Plans (EMP) for NEW ACTIVITIES:
  - A revised EMP for Mereenie is currently being drafted for a trial to reinject liquid hydrocarbons (currently being flared) back into the formation where it came from for future recovery. The need to flare condensate would only be required in an emergency.
  - Reinjection would result in lower emissions and gives additional options for the managment of production. The condensate would be put back into the layer underground that it came from (not in contact with water) and could be potentially recovered for future sales.

7. Rehabilitation & Other

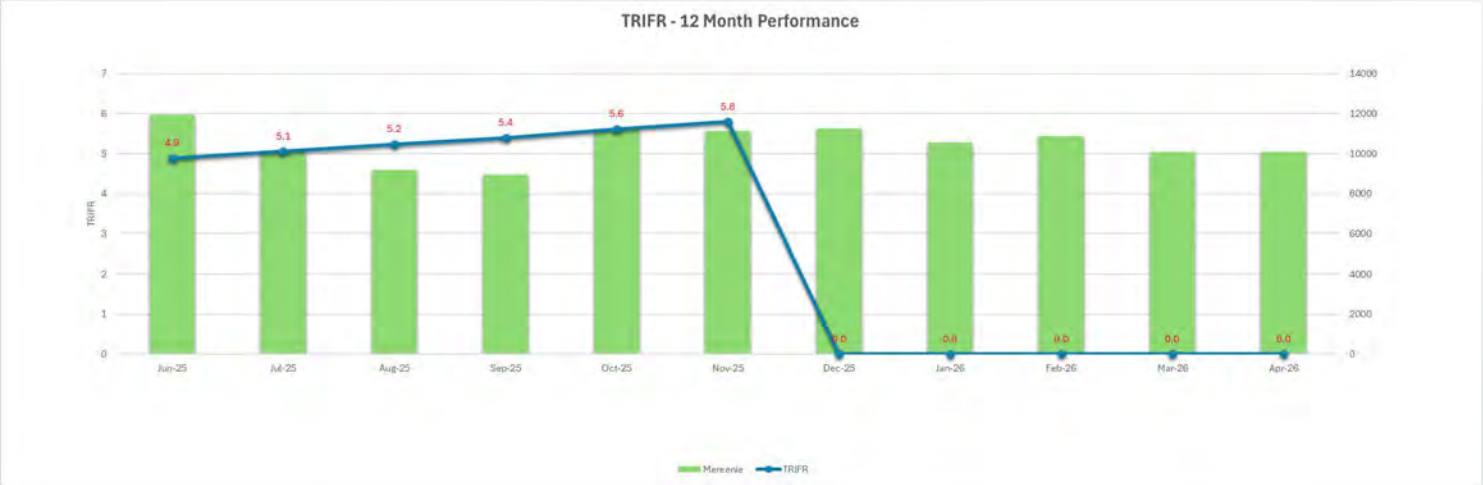
- Ongoing Rehabilitation program at Mereenie to reduce size of some of the well pads is continuing with work on a detailed rehabilitation plan the field currently in development.
- Developing progressive rehabilitation and closure plans
- Performing weed management / removal using traditional owners for guidance.
- Ongoing Rehabilitation under way at this present time.

8. Water Usage

- Surface Water.
  - No surface water is used by Central Petroleum.
- Subsurface water
  - The underground water source at Mereenie is located ~450-600m below ground in the Mereenie Sandstone.
  - Central Petroleum has a license with the NT Government (DLPE) for the extraction of water for use at the Mereenie Camp and production operations.
  - The water usage is metered and this is reported to the DLPE 4 x per year.
  - CTP can provide these to the traditional Owners / CLC if required.

Total Recordable Injury Frequency Rate

Days without an LTI / MTI:	
Mereenie	1464



- Strong performance with Field HSE (Operations), with over 1464 days with no recordable injuries.

9. Reserves and Resources

- Gross Reserves and Resources shown below were last estimated at 30 June 2025
- Reserves and Resources are updated every year in June
- Next update will be end of June 2026
- Current Field life is >20 Years. No detailed closure plan available at this point.
- CTP does maintain closure estimates and these can be made available to the CLC

Resource Category	Remaining Gas (Petajoules)	Estimated Closure
Proved + Probable Reserves (2P)	154*	2051 (25 years)
Contingent Resource (2C)	182 PJ	N/A

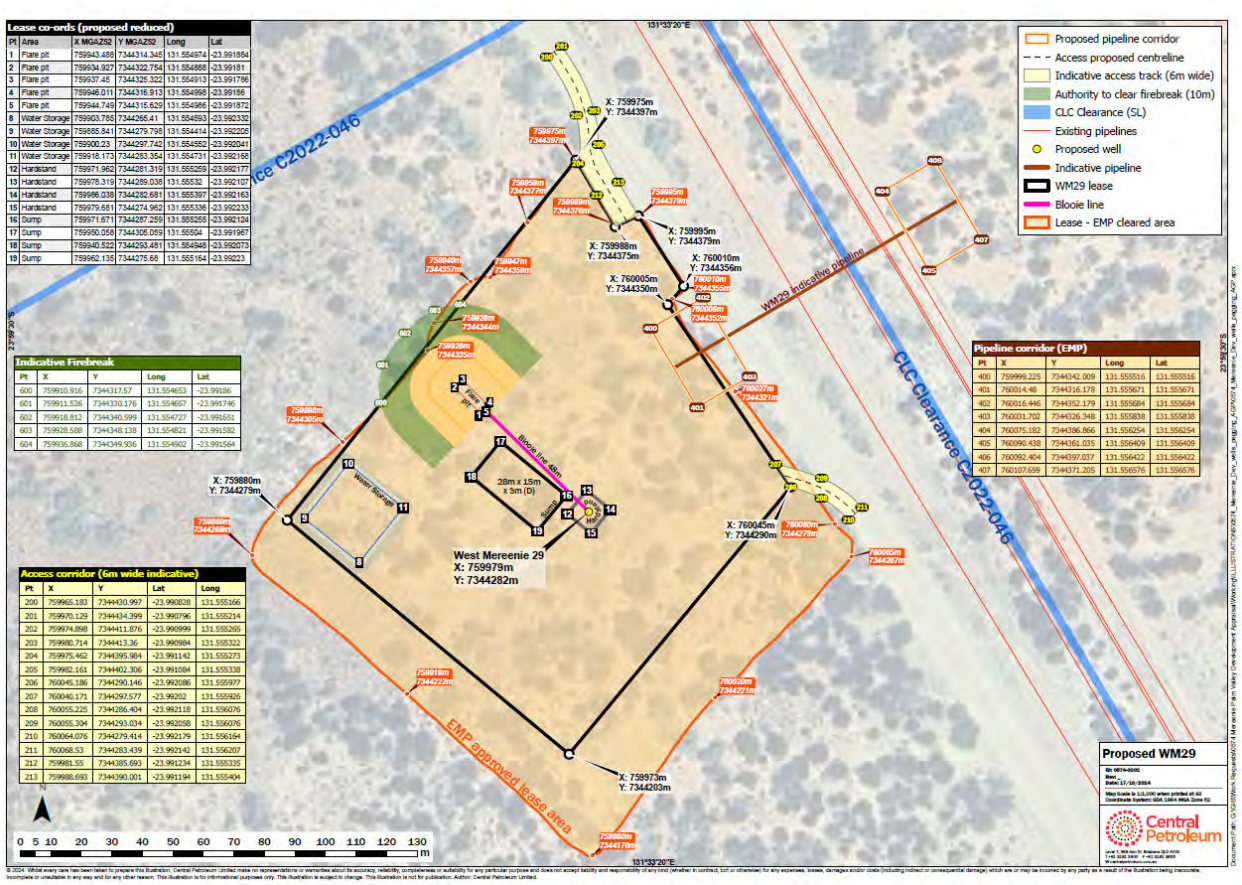
Remaining Reserves shown do not include volumes estimated to be consumed in operations*

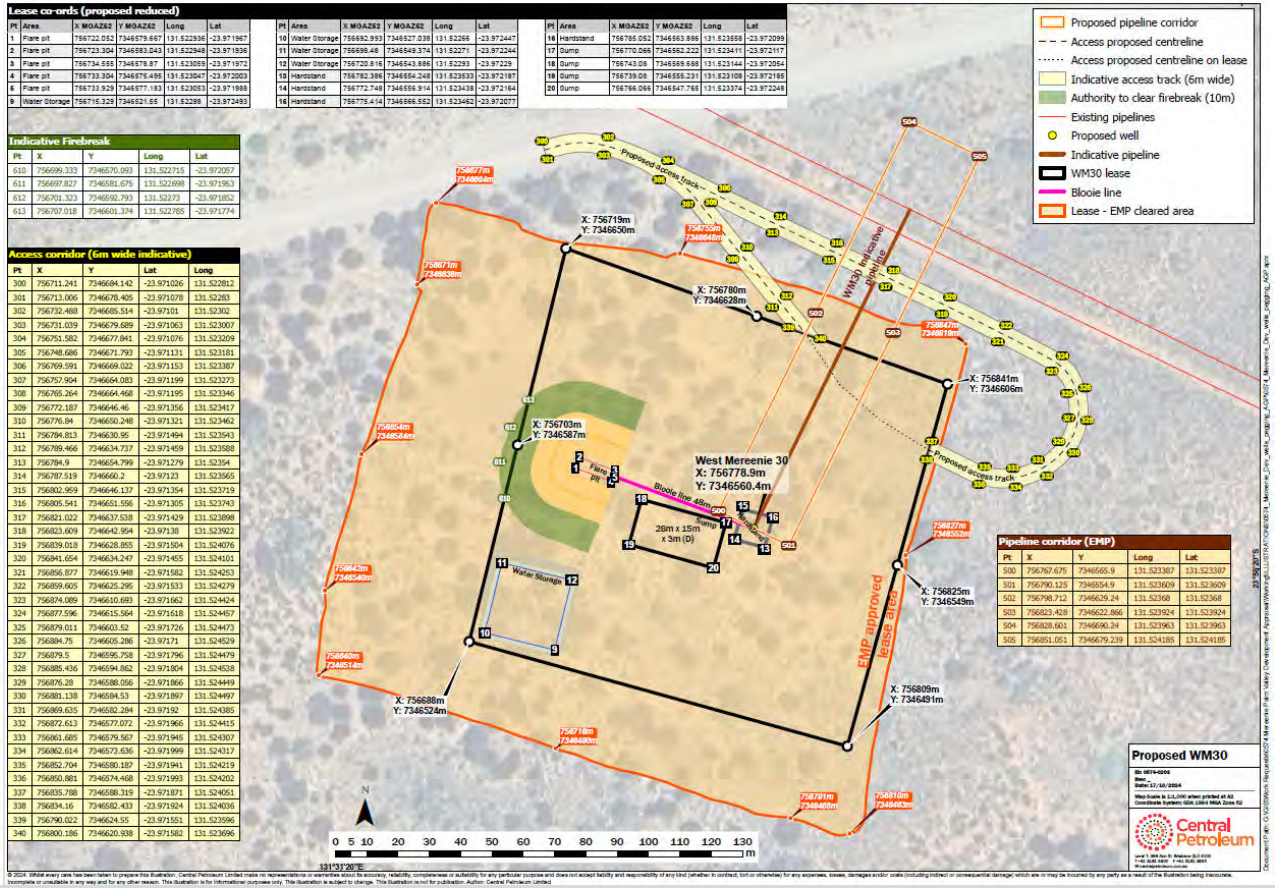
Resource Category	Remaining Oil (MMbbl)	Estimated Closure
Proved + Probable Reserves (2P)	1.55	2051 (25 years)
Contingent Resource (2C)	0.2	N/A

10. Development activities undertaken

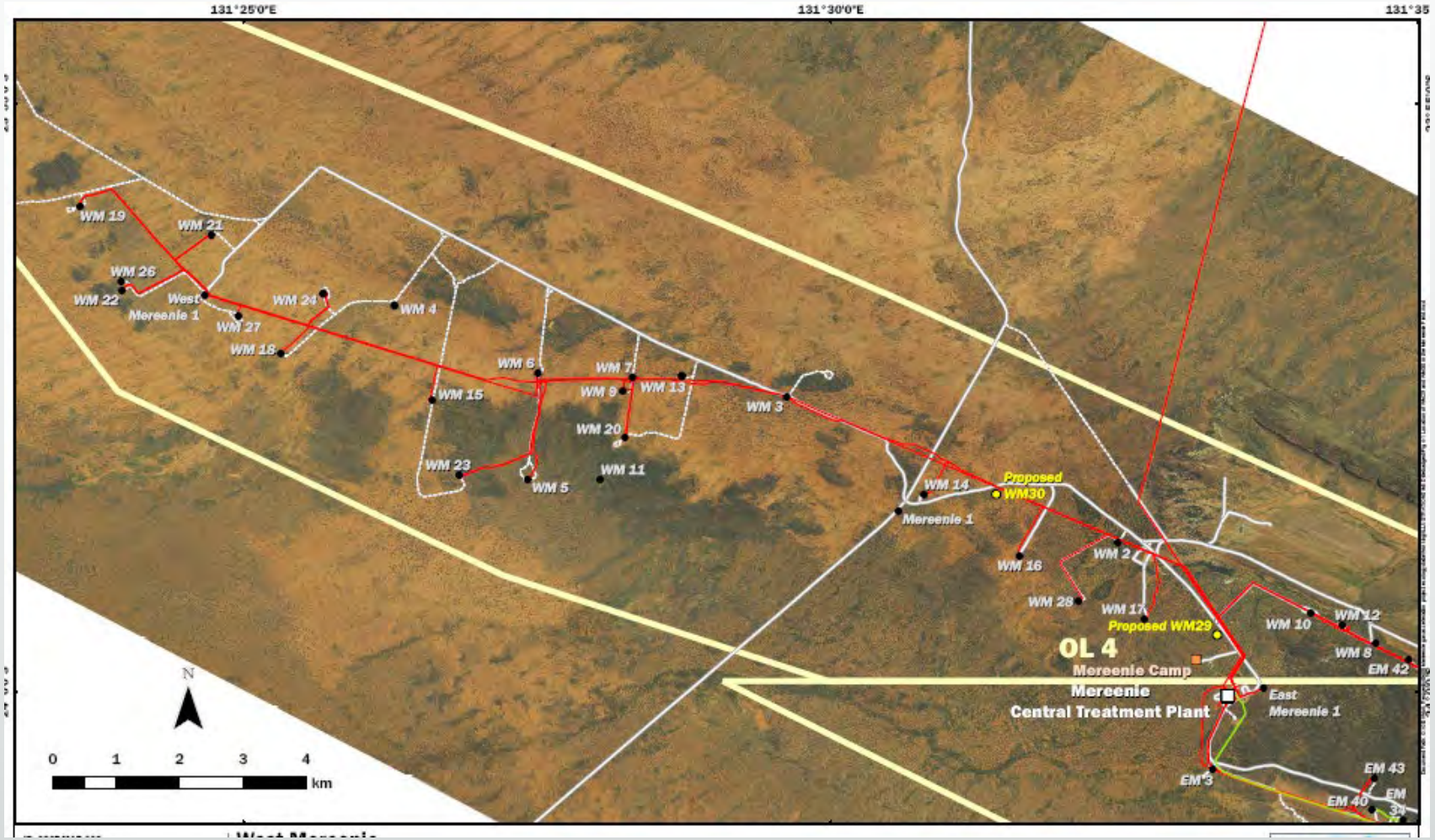
2025- 2026 Completed or Current Projects Underway

10. Completed Development Wells WM 29/30





10. Completed Development Wells WM29/30



10. Completed Development Wells (WM29/30)

- Drilling WM 29 & 30 commenced December 2024 and finished on W30 March 2025.
- Wells tied in and on-line
- Development wells considerably increase the life of the field by bringing on new supply.





11& 12. Development Activities planned or major projects

2026 – 2027 Planned Projects

11/12. Development Wells – New Opportunities

- New wells if successful do extend the life of the field.
  - This results in prolonged production, royalties and benefits for the community.
  - As previously highlighted last year LCM, Central has cleared multiple areas for new wells in the Mereenie field.
- Drilling was planned in 2025/2026 for two wells – West Mereenie 31 and 32 however, the drilling of these wells is currently suspended due to commercial constraints.
- These wells have been approved by CLC / T/O's.

11/12. Development Wells – New Opportunities

- We are currently looking at two alternative locations - West Mereenie 33/34 (Near existing wells.
- These wells are not yet culturally cleared however, if CTP wishes to drill the wells we will approach the CLC and T/O's to obtain consent.
- Drilling timing is being evaluated and if the WM 31 /32 or WM 33/34 projects do go ahead it would be 2027-2028

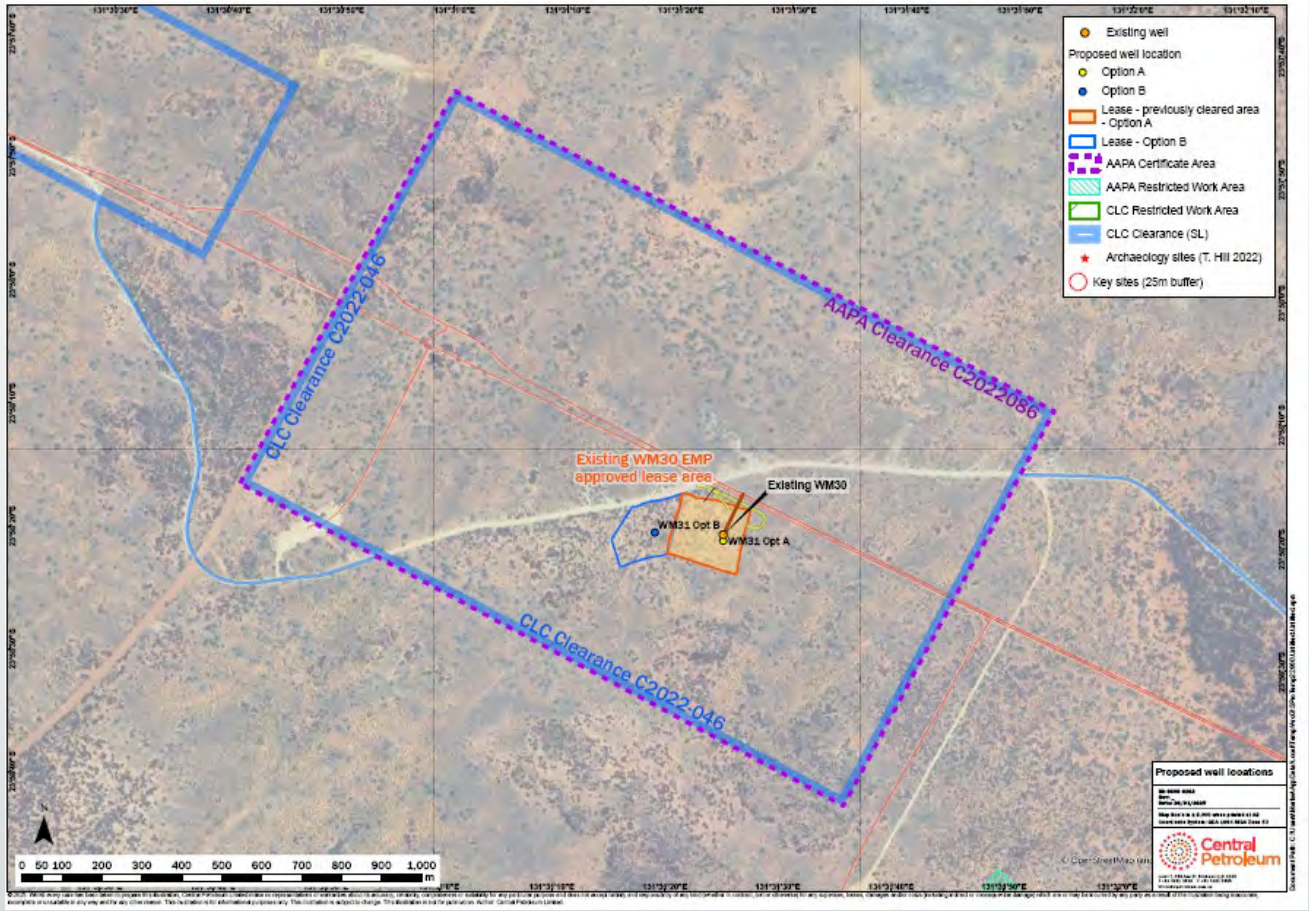
11/12. Development Activities – New Well

- West Mereenie 31/32 or 33/34 may commence in 2027-28 involving:
  - Civil Construction – making bigger existing well pad and access tracks. May include limited drill and blast
  - Mobilisation of drilling rig, equipment, mobile camp and personnel
  - Drilling of up to 2 -4 wells
  - Construct new pipe line from well to existing field gathering network
  - Well commissioning and handing over to production operations
  - No fracking initially – but may be required in the future for these wells.



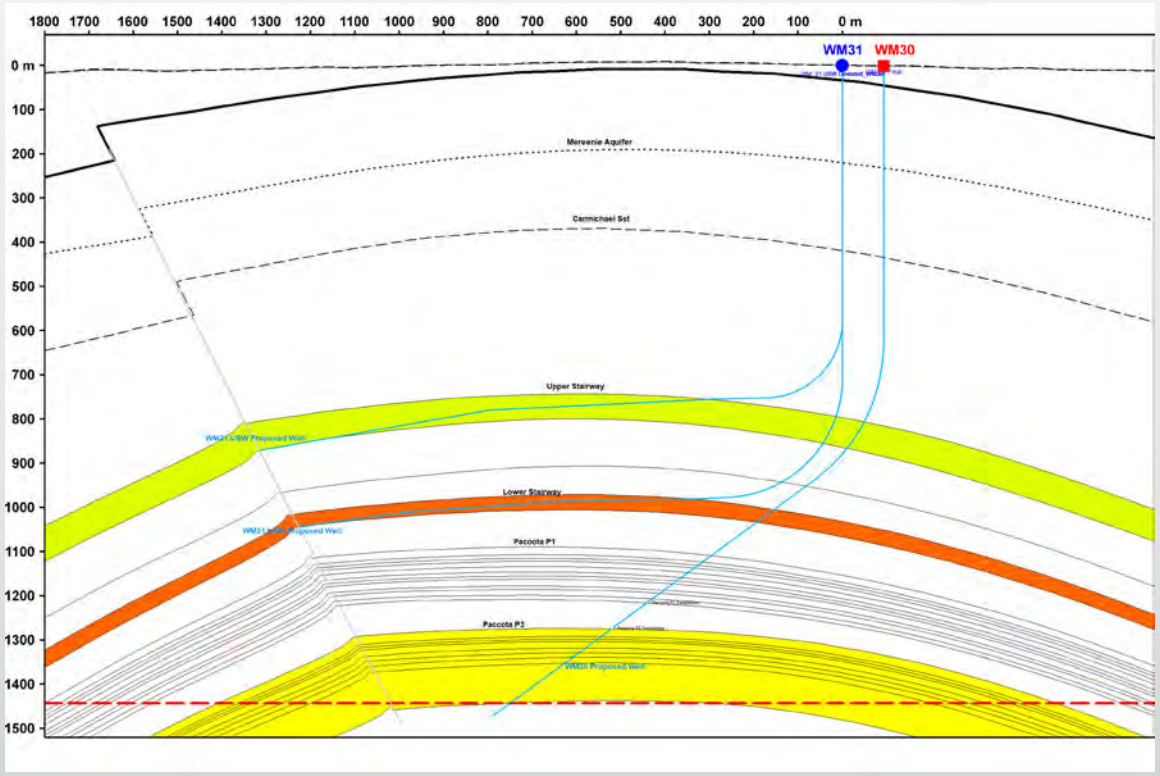
11/12. Development Activities – WM 31 Location

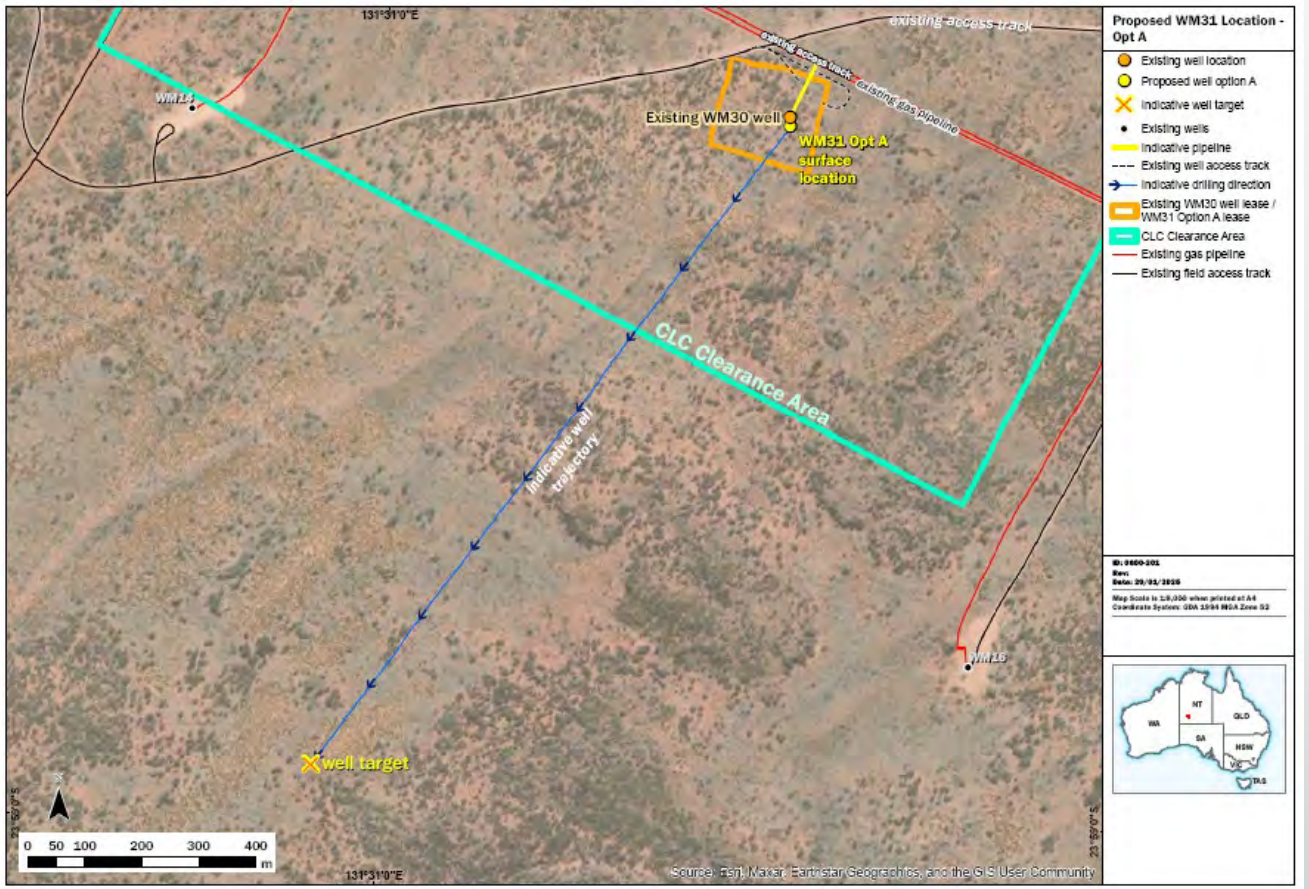
- West Mereenie 31 is located in the same area as WM 30
  - Entire area has been CLC cleared
  - Entire area has been AAPA cleared.
  - Civils involve extending the pad and having 2 wells on one area
  - Reduced environmental clearances require
  - Reduced footprint.
  - Fracking may be considered if the wells are not productive in the future.



11/12. Development Activities – WM 31 Trajectory

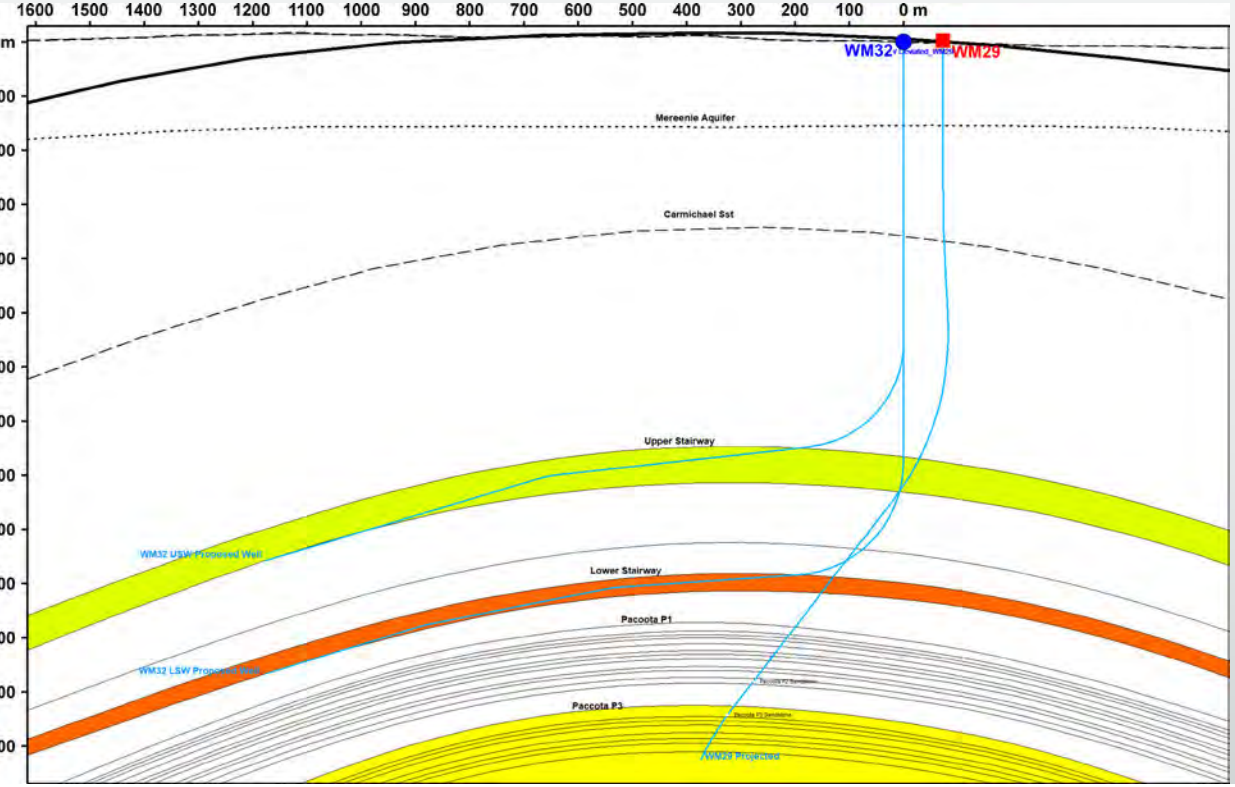
- West Mereenie 31 trajectory outlined
  - Away from known restricted work areas
  - Well is 1 km below ground level

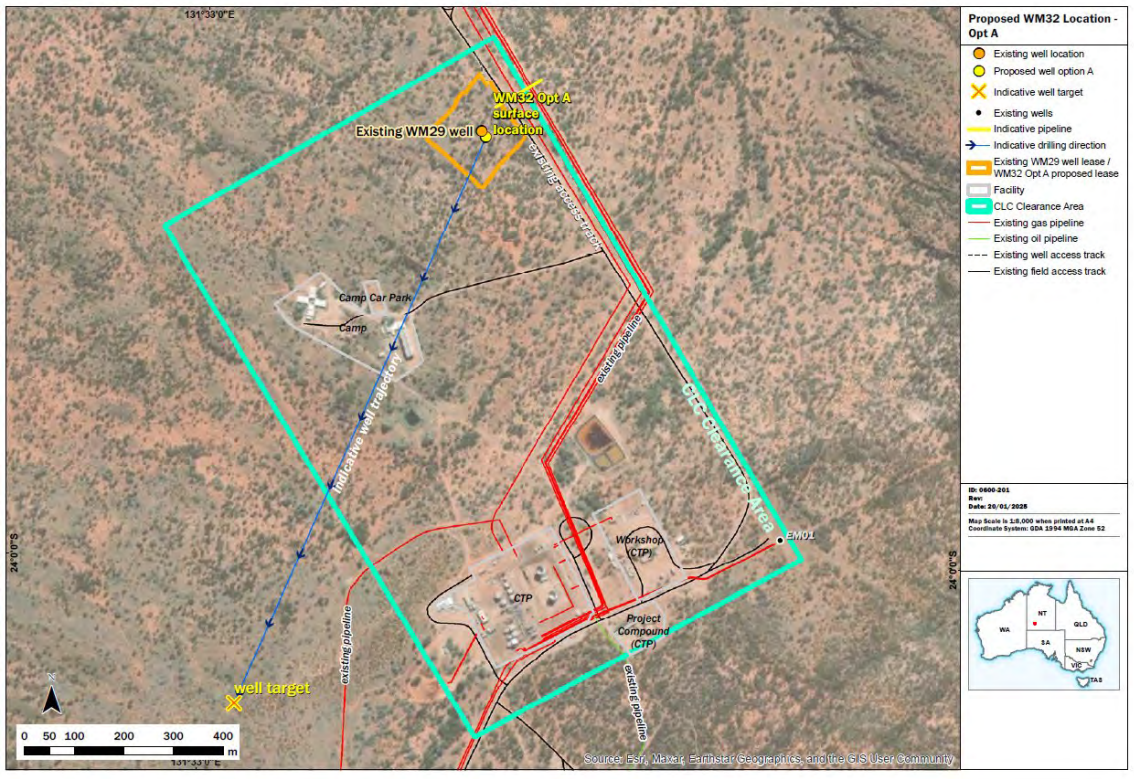




11/12. Development Activities – WM 32 Trajectory

- West Mereenie 31 trajectory outlined
  - Away from known restricted work areas. Heads under camp
  - Well is >1 km below ground level





11/12. Development Activities – WM 33/44

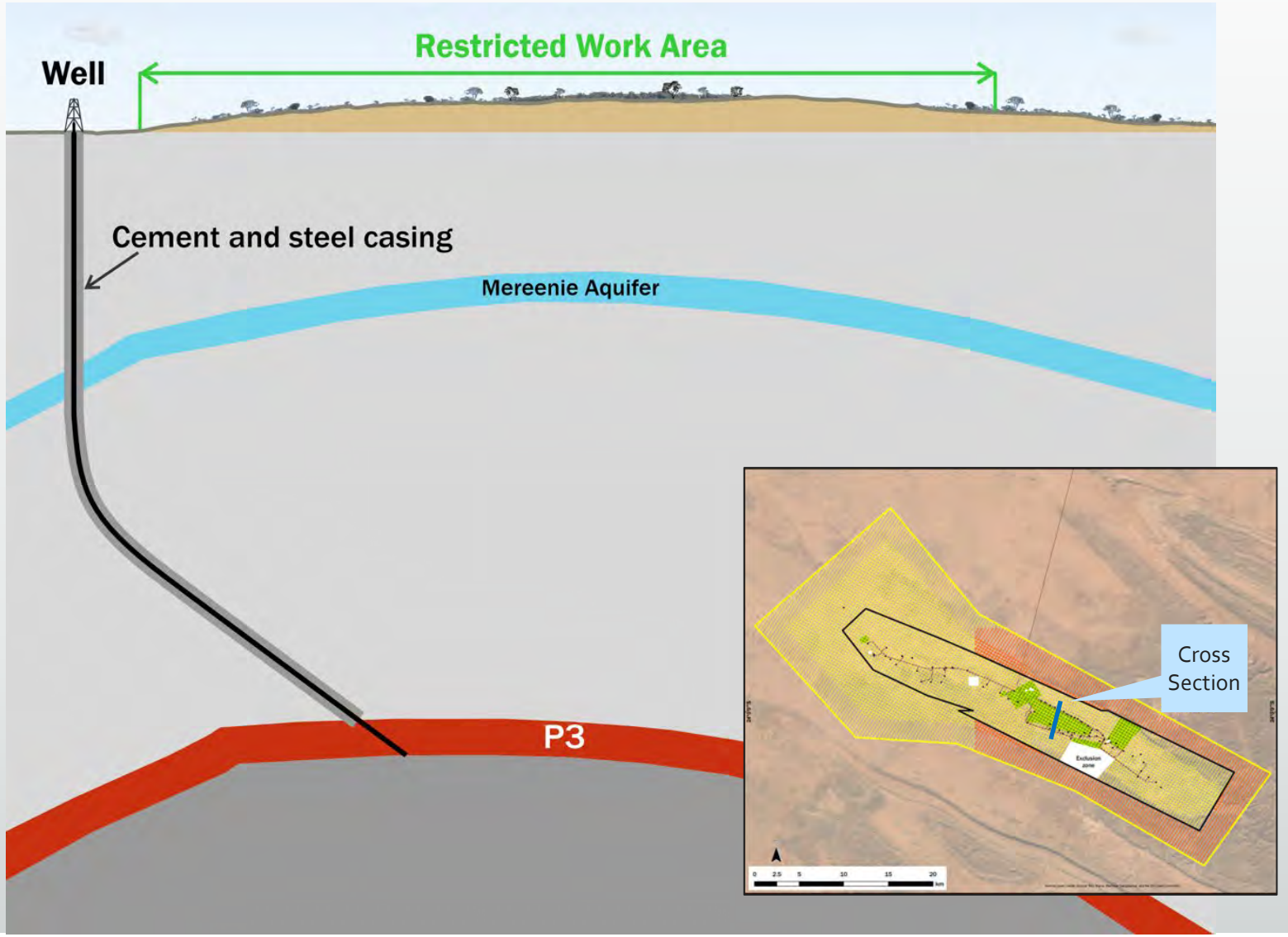
- Details to be provided.

11/12 Development Activities 2026+ – Well under RWA

Primary area for new wells targeting good production lies under restricted work areas in the East (see inset)

Cross section across RWA is shown to scale with target at ~1.5km depth

- Directional drilling technology will allow target to be accessed without disturbing or encroaching on RWA
- Steel casing, will be cemented in place to protect aquifer and other subsurface formations



13 Indigenous / Local Employment

- Focus on supporting local jobs and communities
- Central Petroleum works closely with the CLC employment officer
  - Key Contacts: Lilly Thivisol, Employment Facilitator - Minerals and Energy, Central Land Council
  - Jason Pennicott – HR Manager Central Petroleum
- All employment opportunities will be advertised with the CLC.
- Maintained consistent levels of local and indigenous roles
- Offering indigenous trade apprenticeships (New Hire Billy Pareroultja just hired as a apprentice Mechanic
- Theo Lankin and son recently hired for land management.
- CTP is looking for new Liaison officer.

Indigenous Employees by Location

	Indigenous		Total	Indigenous
Location	Female	Male	Employees	%
Mereenie	0	4	27	15%
Palm Valley	0	2	8	25%
BECGS	0	2	3	66%
Northern Territory	0	8	38	21%
Brisbane	0	0	46	0%
Total	0	8	84	10%

13 Indigenous / Local Employment

- Under the New Agreement: the CLC, CTP and T/O – are to form a working group to look at: E
  - Employment Opportunities
  - Establish gap analysis and assist with training opportunities
  - Notify CLC of any Job vacancies

- We will be working with the CLC on this matter in the upcoming weeks and we will be looking for 2+ T/O's to assist in this matter.

14. Social Management

- Providing safe working conditions and a positive inclusive culture
- Promote diversity
  - gender, ethnicity, background, etc
- Positive impact on communities
  - Job opportunities, supporting local business
- Ethical sourcing of equipment and supplies used across our business
- Working with CLC and AAPA to protect heritage and sacred sites
- Work with NT government to protect environment
- Providing Energy to Alice Springs when there are no other options or renewables are not possible.

15. Community Engagement / Sponsorships

- All groups and community organisations can apply for support using the application forms.
- Central will consider the following types of support:
  - A financial contribution made to a non-profit organisation, charity or private foundation;
  - A financial contribution in support of an event, activity, or organisation; or
  - A contribution by Central or Central personnel in the form of services or materials.
  - Consideration given to Central branding or verbal, written and visual acknowledgement
- Additional governance has been implemented. Applications will be considered on their merit and in the context of approved budgets. It is unlikely that there will be adequate budget for all requests, so unfortunately some applications will not be accepted. Priority will be given to activities or initiatives that are closely aligned with our operations.
- All applications can be emailed to: info@centralpetroleum.com.au / 07 31813800

15. Community Engagement / Sponsorships

- Central Petroleum continues to support communities with donations and sponsorships.
- Support provided in the past:
  - Funeral support
  - Community events
  - PA system for community centres
  - Literacy programs
  - Local sporting clubs – men's and women's teams (fees, jerseys, travel)
  - Diesel for remote communities
  - Christmas party food
  - Donations

16. Other Business / Questions / Grievances

Open to floor

Environmental Outcomes, Risks and Controls

- Comprehensive risk assessments undertaken across all areas
- Multiple layers of controls implemented to mitigate the impacts as a result of the planned activities
- EMPs detailing how impacts to the environmental will be avoided and minimized has been approved

Outcomes / Objectives	Risks / Impacts	Controls
Minimise impacts on conservation areas and significant fauna / flora	Injury to fauna, loss of vegetation, increased weeds	- Minimum clearing undertaken - Flora and fauna survey conducted - Regular inspections
Minimise and control soil erosion / sedimentation and maintain the viability of soil through preventing contamination	Erosion, sedimentation, contamination	- Erosion and sedimentation plans - Complete remediation of any spills or leaks / spill response kits - Minimal volumes of fuels, oils and other chemicals will be stored and used - Regular inspections
All heritage and culturally significant sites are identified and protected	Disturbance to heritage sites	- Heritage survey conducted - CLC and Traditional owners consulted - Aboriginal Areas Protection Authority certificate application in progress and (fieldwork stage) with site visits currently planned

Environmental Outcomes, Risks and Controls

Outcomes / Objectives	Risks / Impacts	Controls
Avoid impacts to surface water and groundwater	Disturbance to drainage patterns, erosion and sedimentation, depletion of ground water, contamination	- Regular monitoring of ground and surface water conditions - Dual casing for all drilling to protect aquifers - Minimise groundwater usage - Regular inspections
Activities are not the cause of fires in the region	Fire, community	- Bushfire management plans in place include firefighting equipment, fire breaks
Mange capacity of road infrastructure up to and within the MRN Maintain and enhance community relationships	Traffic, noise, complaints	- Regular consultation with the community and stakeholders - Traffic management plans and community notification prior to commencing activities - All visitors to have appropriate CLC approval and be inducted on environmental issues prior to arrival at site
Activities do not negatively impact air quality	Dust generation, emissions, combustion	- Watering roads to minimise dust as required - Emissions management plan in place including restrictions on venting of gas and efforts to minimise flaring

- There may be unintended consequences as a result of an incident during the activities however comprehensive response plans and protocols are in place.
- There should be no impacts to stakeholder rights e.g. access to site during the planned activities, etc. however in order to manage safety on site we do ask that you inform Central Petroleum.

Contact and Further Information

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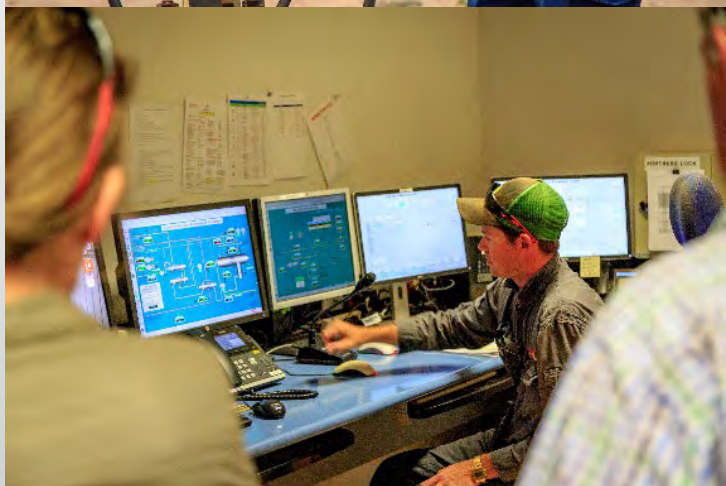

APPENDIX C. Protected Matters Search Tool Report

Australian Government
Department of Agriculture, Water and the Environment

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 21-Sep-2022

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	12
Listed Migratory Species:	9

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	13
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	2
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	1
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Species			[Resource Information]
Status of Conservation Dependent and Extinct are not MNES under the EPBC Act. Number is the current name ID.			
Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area	In feature area
Polytelis alexandrae Princess Parrot, Alexandra's Parrot [758]	Vulnerable	Species or species habitat known to occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area	In feature area
MAMMAL			
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area	In feature area
Petrogale lateralis centralis Warru, Central Australian Rock-wallaby [90831]	Vulnerable	Species or species habitat known to occur within area	In feature area
Sminthopsis psammophila Sandhill Dunnart [291]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Zyzomys pedunculatus			
Central Rock-rat, Antina [68]	Critically Endangered	Species or species habitat may occur within area	In feature area
PLANT			
Macrozamia macdonnellii			
MacDonnell Ranges Cycad [11843]	Vulnerable	Species or species habitat known to occur within area	In feature area
REPTILE			
Liopholis kintorei			
Great Desert Skink, Tjakura, Warrarna, Mulyamiji [83160]	Vulnerable	Species or species habitat known to occur within area	In feature area
Liopholis slateri slateri			
Slater's Skink, Floodplain Skink [83163]	Endangered	Species or species habitat may occur within area	In feature area

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Motacilla cinerea			
Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Motacilla flava			
Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Charadrius veredus			
Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area	In feature area
Glareola maldivarum			
Oriental Pratincole [840]		Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis			
Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Chalcites osculans as Chrysococcyx osculans](#)			
Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area	In feature area
[Charadrius veredus](#)			
Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area	In feature area
[Glareola maldivarum](#)			
Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area	In feature area
[Merops ornatus](#)			
Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
[Motacilla cinerea](#)			
Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
[Motacilla flava](#)			
Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
[Rostratula australis as Rostratula benghalensis (sensu lato)](#)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Katiti Petermann	Indigenous Protected Area	NT	In buffer area only
Watarrka	National Park	NT	In buffer area only

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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APPENDIX D. Environmental Sensitivity Maps



EAST MEREENIE 1

- Well
- Water bore

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

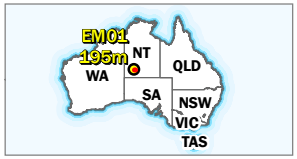
TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit
- Sump

ID: 0534-010
Rev:
Date: 6/12/2022

Map Scale is 1:1,500 when printed at A4
Coordinate System: GCS WGS 1984

Streams modified to match imagery and DEM by Central Petroleum after NT Drainage Lines: Australian Hydrological Geospatial Fabric (Geofabric) V2.1.1 Modified by: DENR. Significant Flora (TPWCA Status) - Department of Environment and Natural Resources, Parks and Wildlife Commission of the Northern Territory 2000. Central Petroleum Flora and Fauna Assessment. Significant Fauna (TPWCA Status). Land Systems from Department of Environment and Natural Resources - Copyright Northern Territory Government. Environmental Weeds from "Low Ecological Services Pty Ltd, 2019 - Central Petroleum Mereenie Weed Management Plan" and Department of Environment and Natural Resources. TPWCA Near Threatened Flora Populations - Parks and Wildlife Commission of the Northern Territory, 2000. Central Petroleum Flora and Fauna Assessment.



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Document Path: G:\GIS\Work Requests\0534 Mereenie recompletions EMP extra maps\Working\ILLUSTRATOR\EMW XD\0534-010-MAP Environmental sensitivity maps 20221206.mxd

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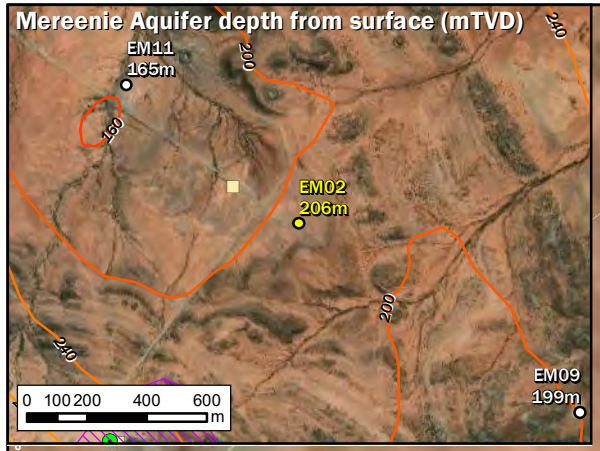

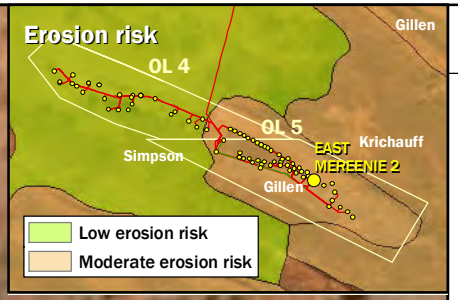

131°39'5"E

East Mereenie 2 Flare

East Mereenie 2 Access Road

Field Access

EAST MEREENIE 2

24°2'20"S

24°2'25"S

N

0 5 10 20 30 40 50
metres

131°39'0"E

131°39'5"E

EAST MEREENIE 2

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit

ID: 0534-010
Rev:
Date: 6/12/2022

Map Scale is 1:1,500 when printed at A4
Coordinate System: GCS WGS 1984

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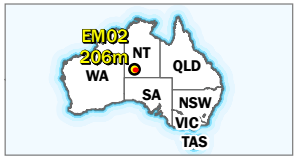

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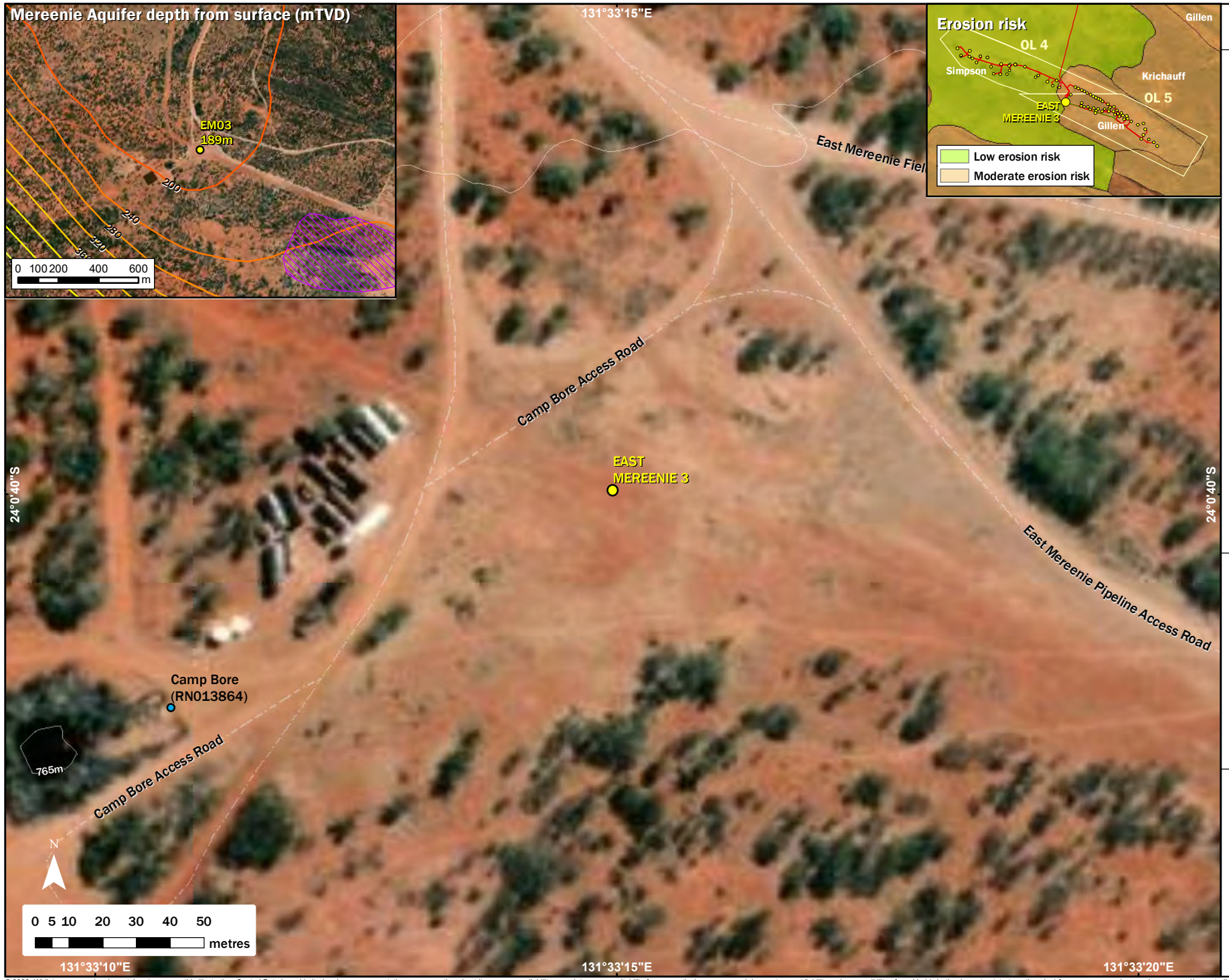

EAST MEREENIE 3

- Well
- Water bore

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush

ID: 0534-010
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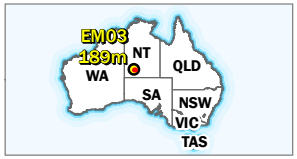

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EAST MEREENIE 4

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit

ID: 0534-010
Rev:
Date: 6/12/2022

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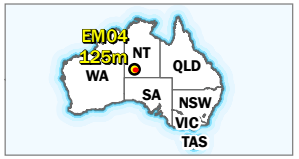

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EAST MEREENIE 5

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit

ID: 0534-010
Rev:
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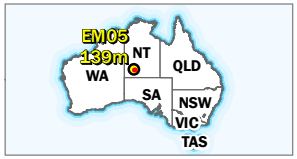

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EAST MEREENIE 6

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit

ID: 0534-010
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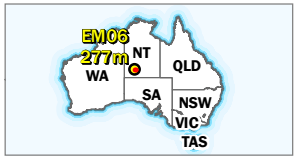

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EAST MEREENIE 7

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit

ID: 0534-010
Rev:
Date: 6/12/2022

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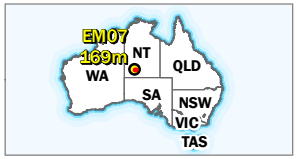

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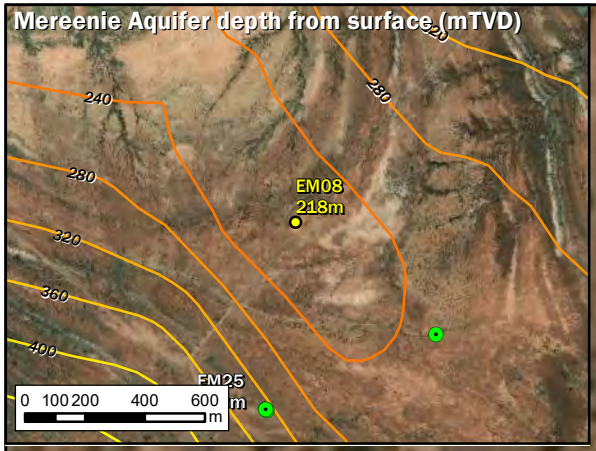

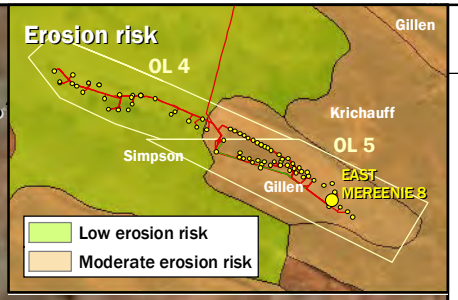

131°40'10"E

East Mereenie 8, 9, 26

EAST
MEREENIE 8

24°3'35"S

715m

N

0 5 10 20 30 40 50
metres

131°40'5"E

131°40'10"E

EAST MEREENIE 8

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush

ID: 0534-010
Rev:
Date: 6/12/2022

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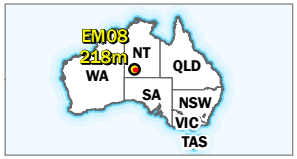

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EAST MEREENIE 9

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit

ID: 0534-010
Rev:
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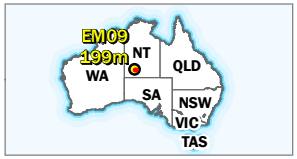

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EAST MEREENIE 10

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Borrow pit

ID: 0534-010
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EAST MEREENIE 11

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush

- Streams (modified CTP after NT Drainage Lines)
- 5m riparian zone

ID: 0534-010
Rev:
Date: 6/12/2022

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EAST MEREENIE 12

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Streams (modified CTP after NT Drainage Lines)
- 5m riparian zone
- Flare Pit

ID: 0534-010
Rev:
Date: 6/12/2022

Map Scale is 1:1,500 when printed at A4
Coordinate System: GCS WGS 1984

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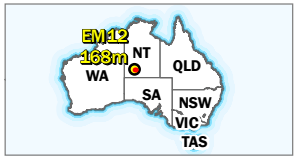

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EAST MEREENIE 13

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Streams (modified CTP after NT Drainage Lines)
- 5m riparian zone
- Borrow pit
- Flare Pit

ID: 0534-010
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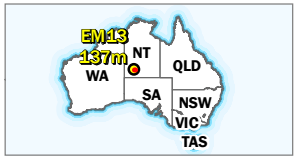

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EAST MEREENIE 14

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Streams (modified CTP after NT Drainage Lines)
- 5m riparian zone
- Flare Pit

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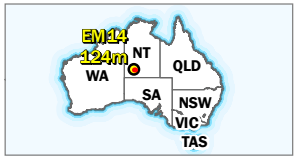

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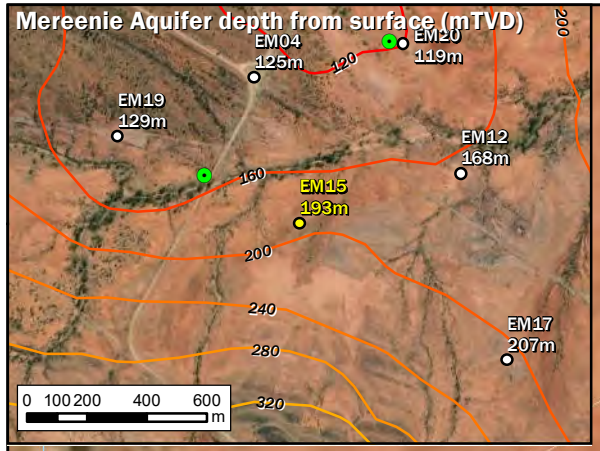

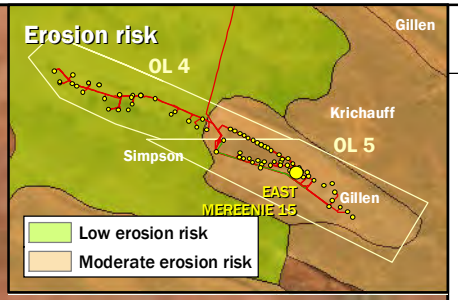

131°38'0"E

24°1'55"S

710m

East Mereenie 15 Access Road

EAST
MEREENIE 15

East
Mereenie 15
Flare

East
Mereenie 15
Sump

24°20'0"S

N

0 5 10 20 30 40 50
metres

131°37'55"E

131°38'0"E

EAST MEREENIE 15

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Streams (modified CTP after NT Drainage Lines)
- Flare Pit
- Sump

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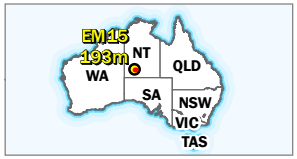

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EAST MEREENIE 16

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit
- Sump

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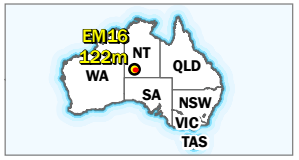

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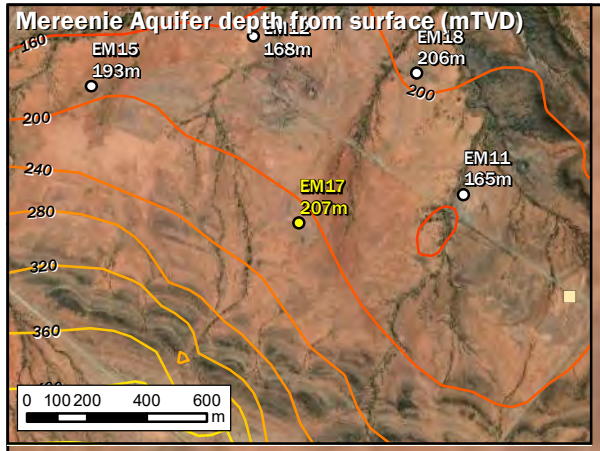

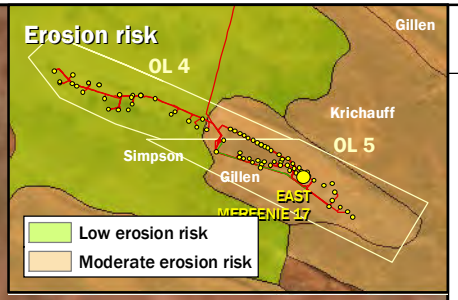

131°38'25"E

East Mereenie 17 Access Road

24°2'10"S

EAST
MEREENIE 17

East Mereenie
17 Flare

715m

N

0 5 10 20 30 40 50
metres

24°2'15"S

131°38'20"E

131°38'25"E

EAST MEREENIE 17

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- 5m riparian zone
- Flare Pit

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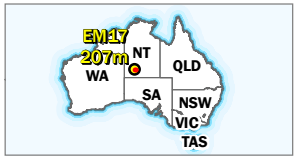

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EAST MEREENIE 18

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Streams (modified CTP after NT Drainage Lines)
- 5m riparian zone
- Sump

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EAST MEREENIE 19

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Streams (modified CTP after NT Drainage Lines)
- 5m riparian zone
- Flare
- Flare Pit
- Sump

ID: 0534-010
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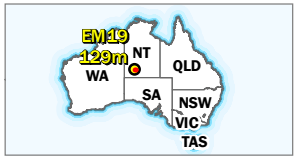

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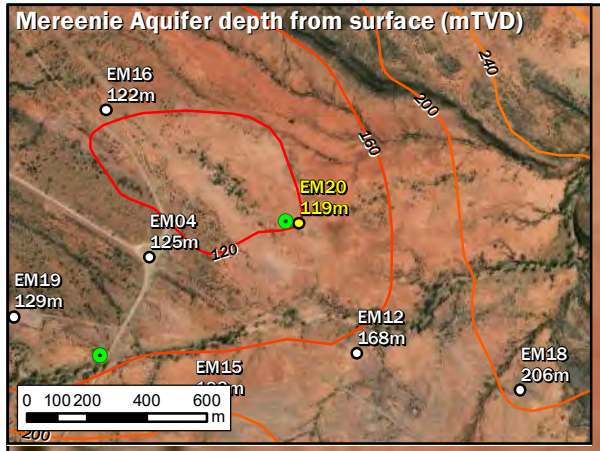

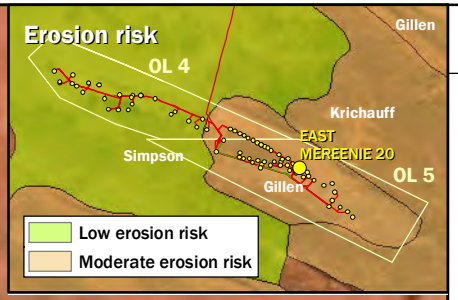

131°38'10"E

131°38'15"E

24°1'35"S

24°1'40"S

East Mereenie 20 Flare

East Mereenie 20 Access Road

EAST
MEREENIE 20

N

0 5 10 20 30 40 50
metres

EAST MEREENIE 20

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit

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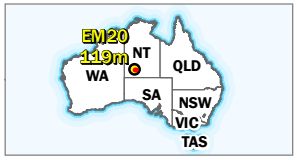

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EAST MEREENIE 21

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Streams (modified CTP after NT Drainage Lines)
- 5m riparian zone
- Flare Pit

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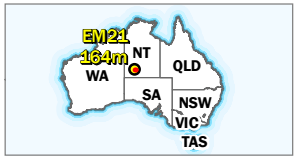

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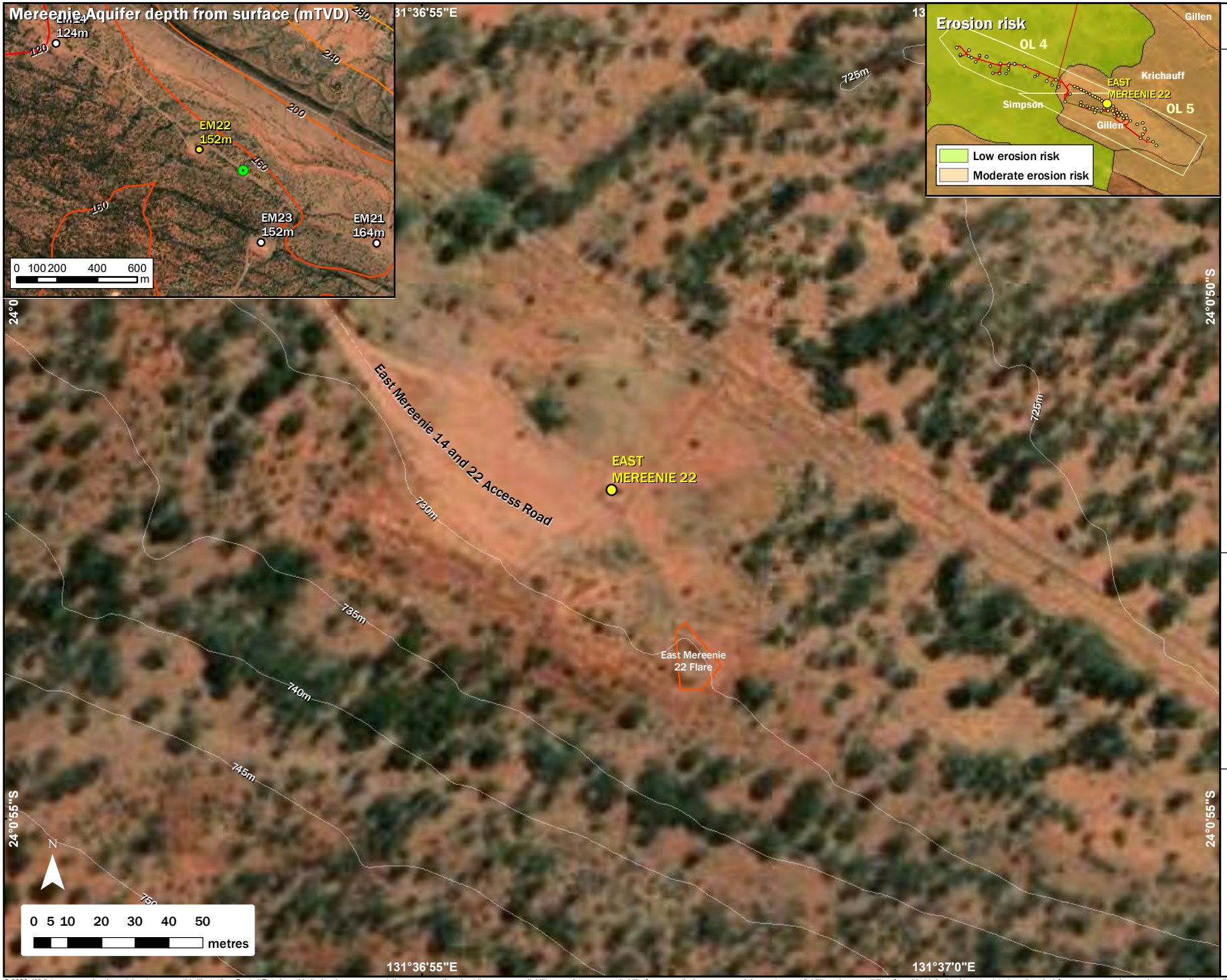

EAST MEREENIE 22

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit

ID: 0534-010
Rev:
Date: 6/12/2022

Map Scale is 1:1,500 when printed at A4
Coordinate System: GCS WGS 1984

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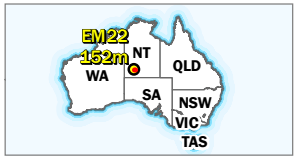

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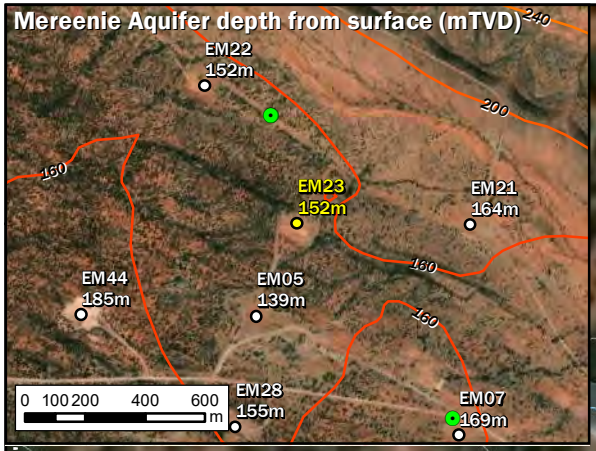

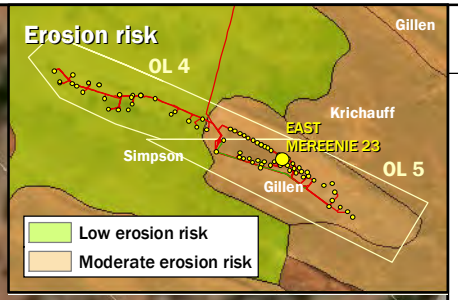

131°37'10"E

735m

24°1'5"S

EAST
MEREENIE 23

745m

East Mereenie 5 Access Road

East Mereenie
23 Flare

750m

24°1'10"S

N

0 5 10 20 30 40 50
metres

131°37'5"E

131°37'10"E

EAST MEREENIE 23

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Streams (modified CTP after NT Drainage Lines)
- 5m riparian zone
- Flare Pit

ID: 0534-010
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EAST MEREENIE 24

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit
- Sump

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EAST MEREENIE 25

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit

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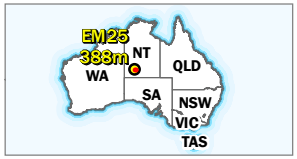

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EAST MEREENIE 26

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit
- Sump

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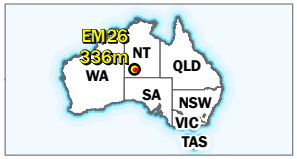

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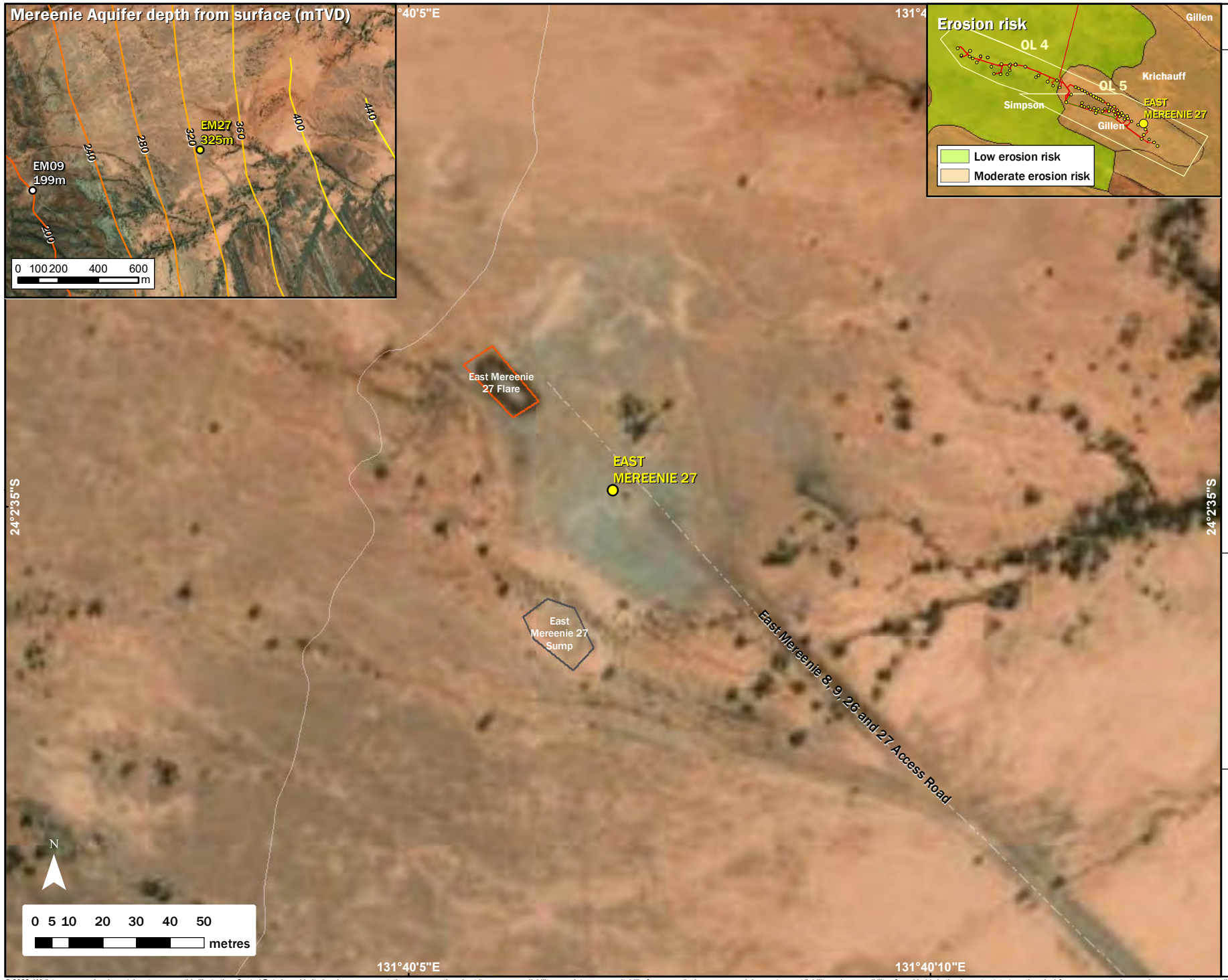

EAST MEREENIE 27

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit
- Sump

ID: 0534-010
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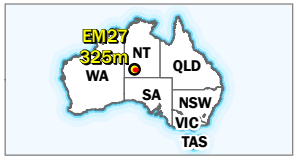

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EAST MEREENIE 28

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Streams (modified CTP after NT Drainage Lines)
- 5m riparian zone
- Flare Pit

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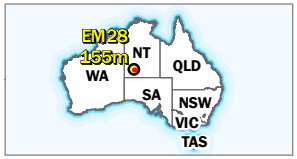

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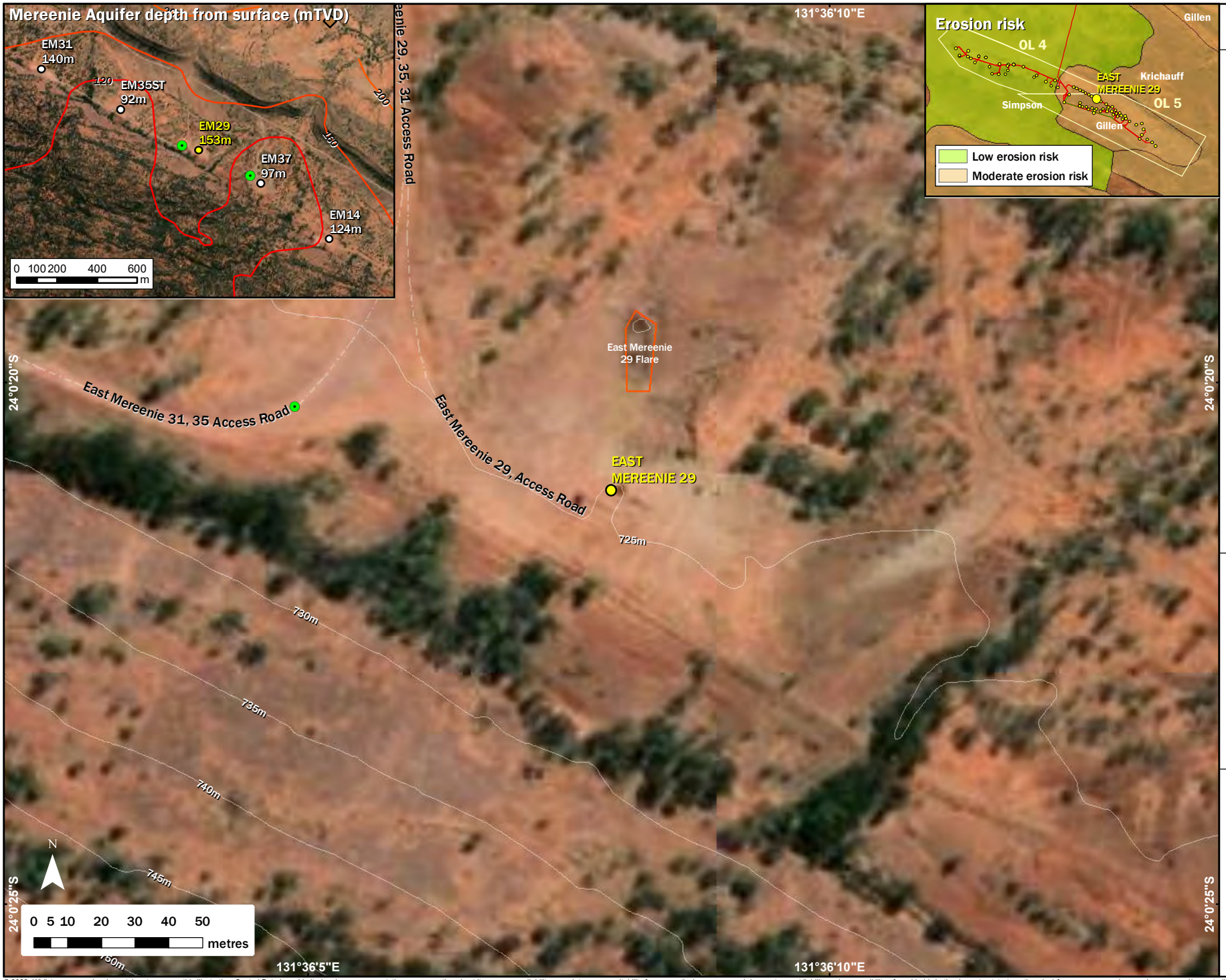

EAST MEREENIE 29

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit

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EAST MEREENIE 30

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit

ID: 0534-010
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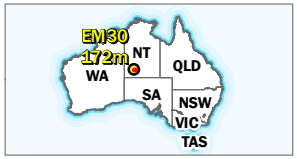

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EAST MEREENIE 31

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Streams (modified CTP after NT Drainage Lines)
- 5m riparian zone
- Flare Pit

ID: 0534-010
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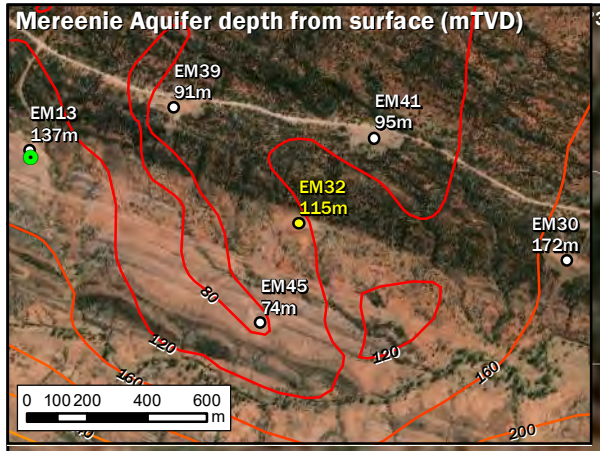

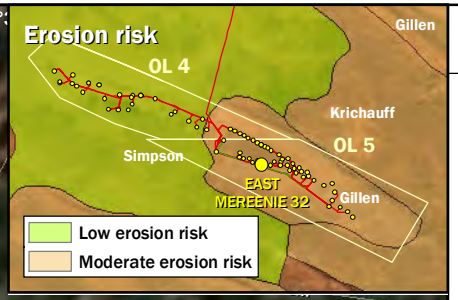

'35'55"E

131°

745m

740m

735m

24°1'25"S

24°1'25"S

EAST
MEREENIE 32

East Mereenie 32 Access Road

Flare

N

Pipeline Access Road

0 5 10 20 30 40 50
metres

24°1'30"S

131°35'55"E

131°36'0"E

24°1'30"S

EAST MEREENIE 32

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit

ID: 0534-010
Rev:
Date: 6/12/2022

Map Scale is 1:1,500 when printed at A4
Coordinate System: GCS WGS 1984

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EAST MEREENIE 33

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit

ID: 0534-010
Rev:
Date: 6/12/2022

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EAST MEREENIE 34

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Streams (modified CTP after NT Drainage Lines)
- 5m riparian zone
- Flare Pit

ID: 0534-010
Rev:
Date: 6/12/2022

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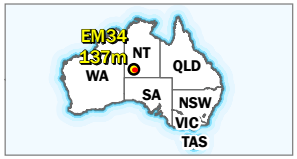

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EAST MEREENIE 35

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Streams (modified CTP after NT Drainage Lines)
- 5m riparian zone
- Flare Pit

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EAST MEREENIE 36

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Streams (modified CTP after NT Drainage Lines)
- 5m riparian zone
- Flare Pit

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EAST MEREENIE 37

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Streams (modified CTP after NT Drainage Lines)
- 5m riparian zone

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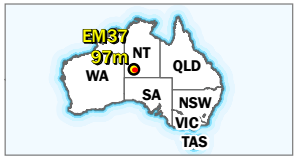

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EAST MEREENIE 38

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit
- Sump

ID: 0534-010
Rev:
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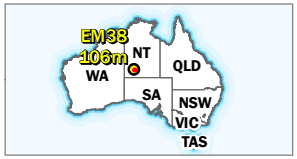

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EAST MEREENIE 39

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Streams (modified CTP after NT Drainage Lines)
- 5m riparian zone
- Flare Pit
- Sump

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EAST MEREENIE 40

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Streams (modified CTP after NT Drainage Lines)
- 5m riparian zone
- Borrow pit
- Flare Pit

ID: 0534-010
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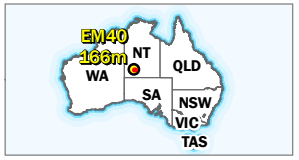

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EAST MEREENIE 41

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit
- Sump

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Date: 6/12/2022

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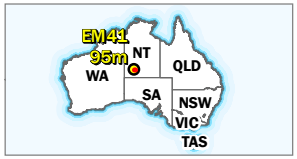

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EAST MEREENIE 42

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Streams (modified CTP after NT Drainage Lines)
- 5m riparian zone
- Flare Pit
- Sump

ID: 0534-010
Rev:
Date: 6/12/2022

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EAST MEREENIE 43

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Streams (modified CTP after NT Drainage Lines)
- 5m riparian zone
- Flare Pit

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EAST MEREENIE 44

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Streams (modified CTP after NT Drainage Lines)
- 5m riparian zone
- Flare Pit
- Sump

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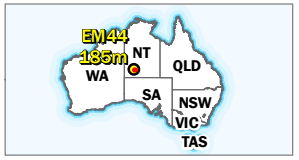
Coordinate System: GCS WGS 1984

Streams modified to match imagery and DEM by Central Petroleum after NT Drainage Lines: Australian Hydrological Geospatial Fabric (Geofabric) V2.1.1 Modified by: DENR. Significant Flora (TPWCA Status) - Department of Environment and Natural Resources, Parks and Wildlife Commission of the Northern Territory 2000. Central Petroleum Flora and Fauna Assessment. Significant Fauna (TPWCA Status). Land Systems from Department of Environment and Natural Resources - Copyright Northern Territory Government. Environmental Weeds from "Low Ecological Services Pty Ltd, 2019 - Central Petroleum Mereenie Weed Management Plan" and Department of Environment and Natural Resources. TPWCA Near Threatened Flora Populations - Parks and Wildlife Commission of the Northern Territory, 2000. Central Petroleum Flora and Fauna Assessment.



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EAST MEREENIE 45

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Streams (modified CTP after NT Drainage Lines)
- 5m riparian zone
- Flare Pit
- Sump

ID: 0534-010
Rev:
Date: 6/12/2022

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MEREENIE 1

- Well
- Water bore

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush

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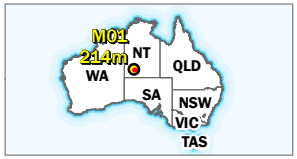

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WEST MEREENIE 1

- Well

(TPWCA Status)

- Data Deficient
- Near Threatened

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit

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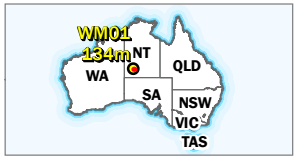

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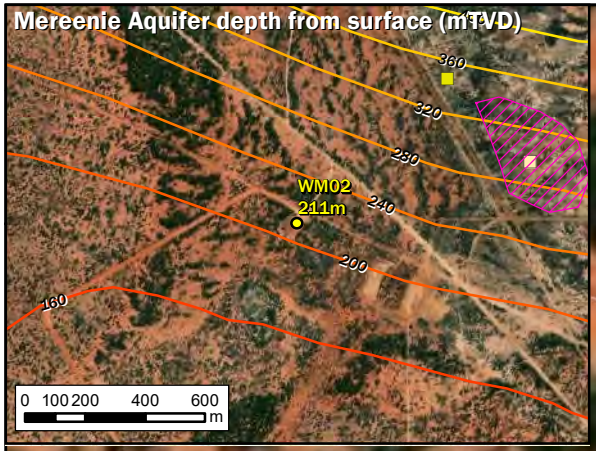

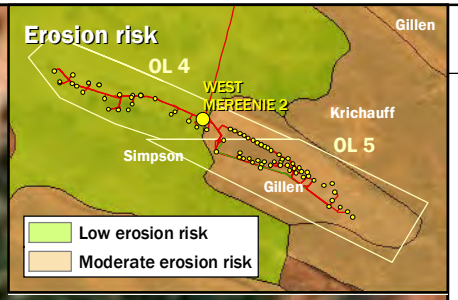

131°32'25"E

West Mereenie 2 Access Road

WEST
MEREENIE 2

23°58'45"S

N

0 5 10 20 30 40 50
metres

131°32'25"E

131°32'30"E

WEST MEREENIE 2

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush

ID: 0534-010
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WEST MEREENIE 3

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit

ID: 0534-010
Rev:
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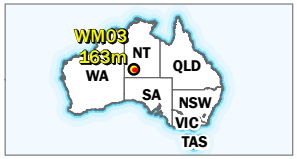

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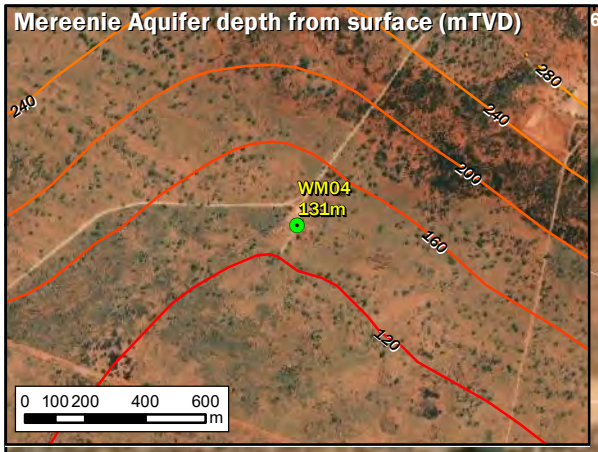

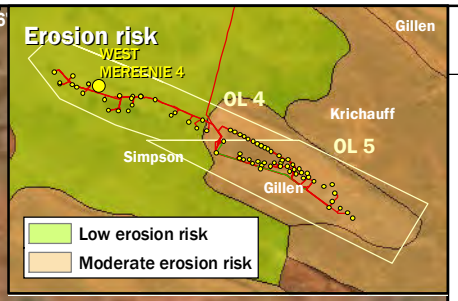

WEST MEREENIE 4

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit

ID: 0534-010
Rev:
Date: 6/12/2022

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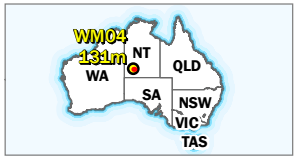

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WEST MEREENIE 5

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit

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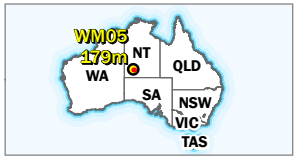

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WEST MEREENIE 6

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit

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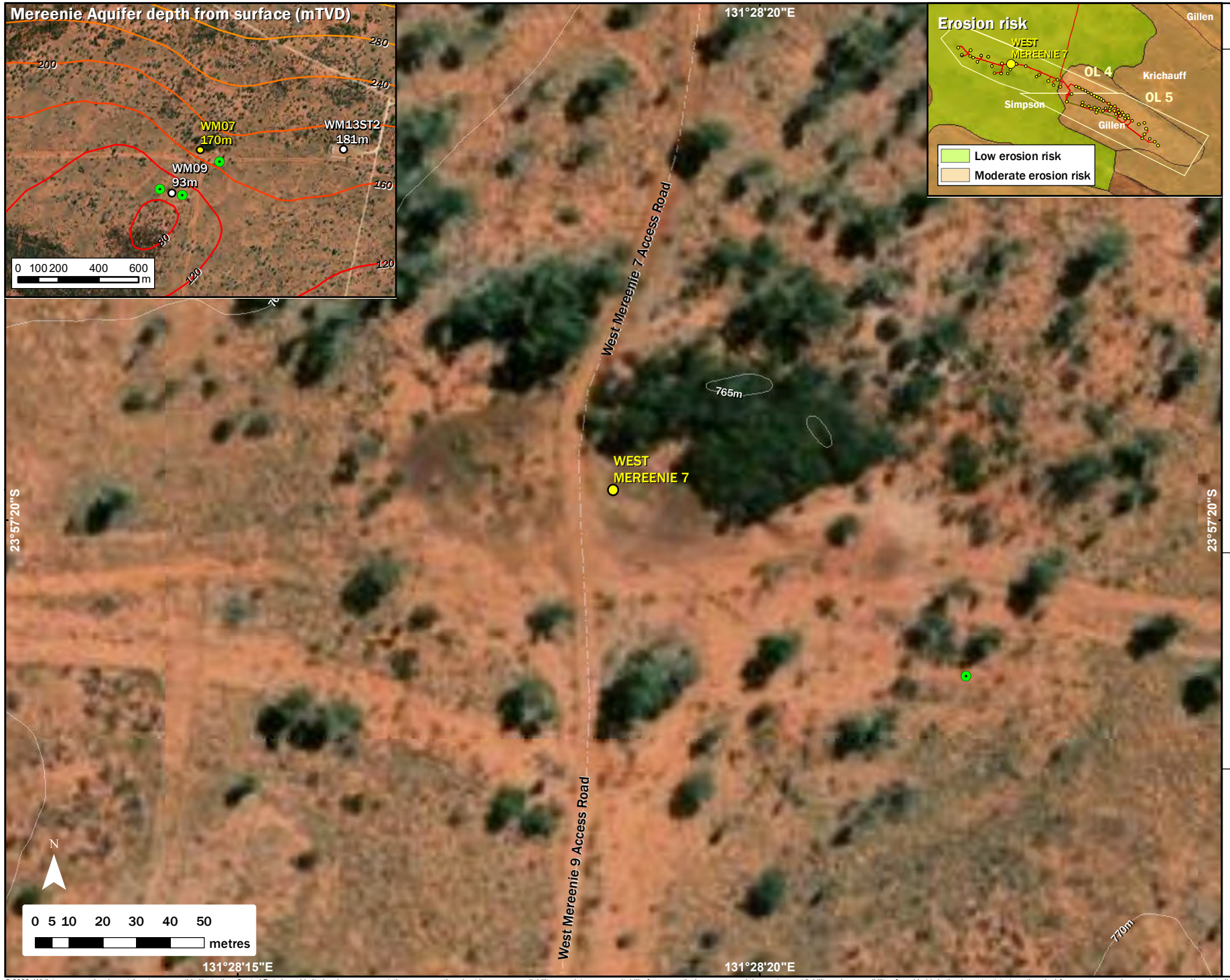

WEST MEREENIE 7

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush

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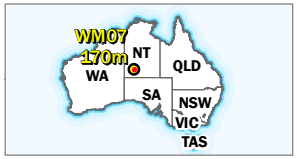

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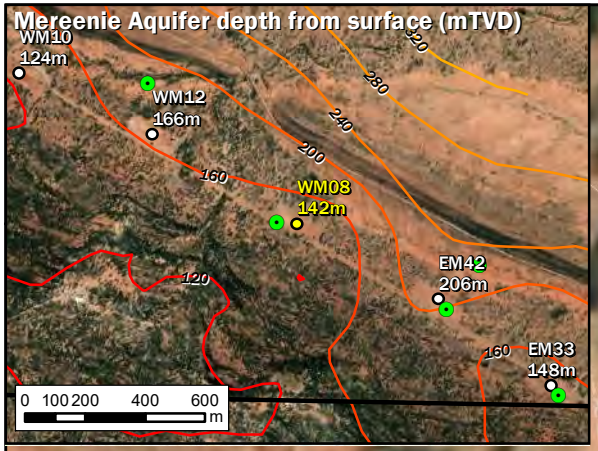

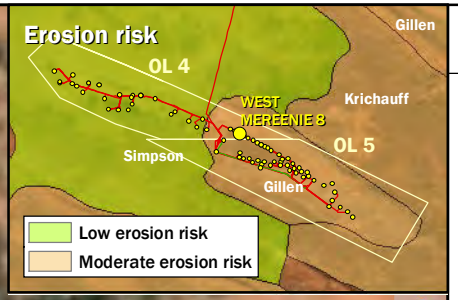

131°34'40"E

West Mereenie 8 and 12 Access Road

West Mereenie 8 Access Road

West Mereenie 8 Flare

740m

WEST MEREENIE 8

745m

750m

755m

23°59'35"S

23°59'40"S

N

0 5 10 20 30 40 50
metres

131°34'35"E

131°34'40"E

WEST MEREENIE 8

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Streams (modified CTP after NT Drainage Lines)
- 5m riparian zone
- Flare Pit

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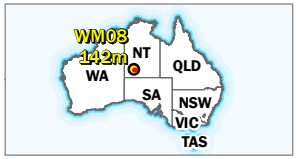

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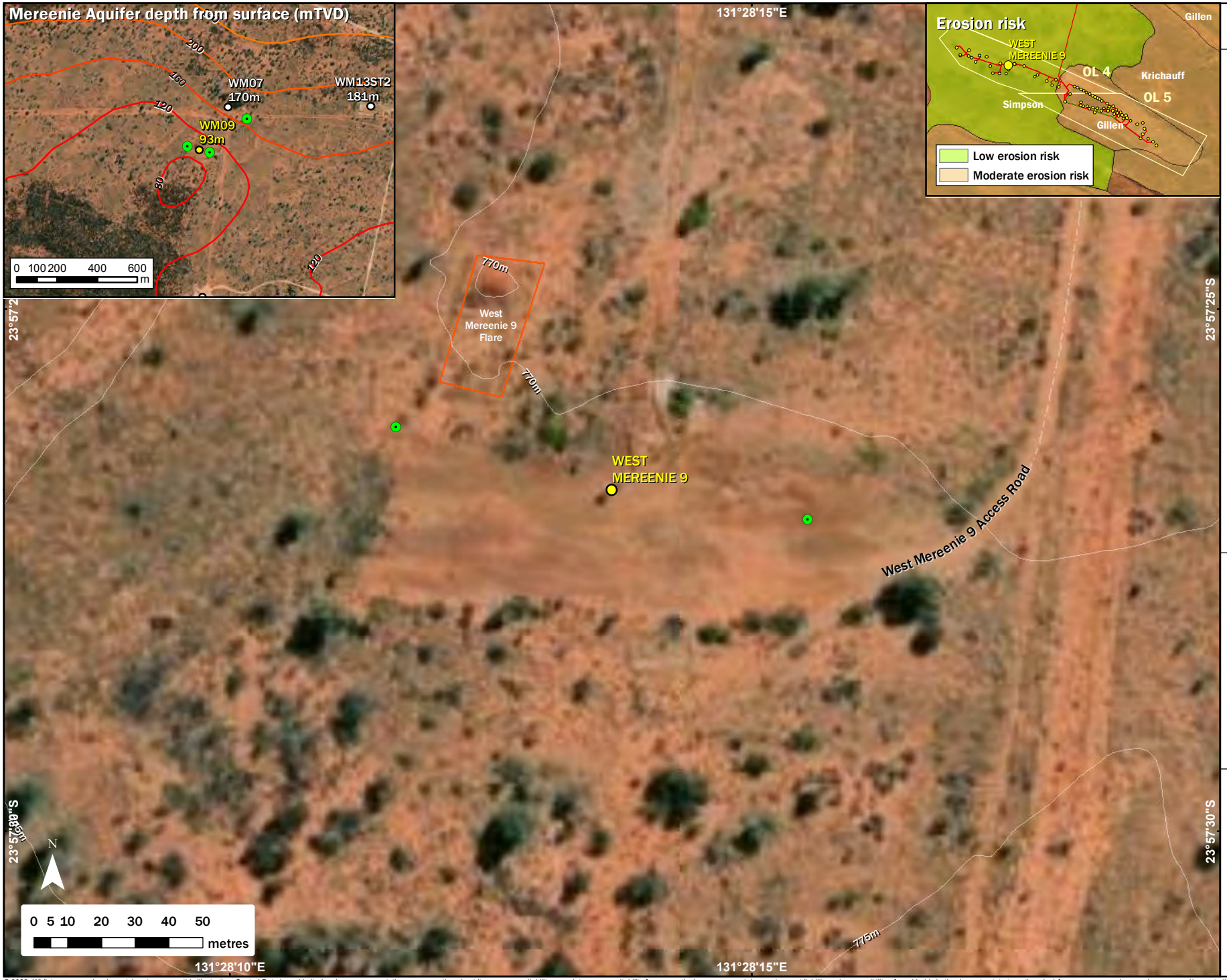

WEST MEREENIE 9

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit

ID: 0534-010
Rev:
Date: 6/12/2022

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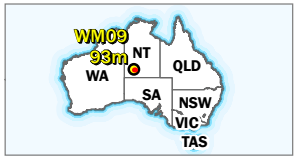

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WEST MEREENIE 10

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Streams (modified CTP after NT Drainage Lines)
- 5m riparian zone
- Flare Pit
- Sump

ID: 0534-010
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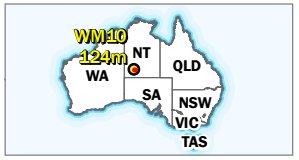

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WEST MEREENIE 11

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit
- Sump

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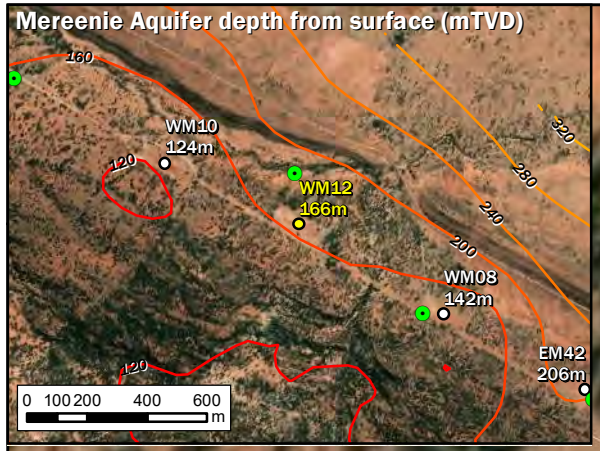
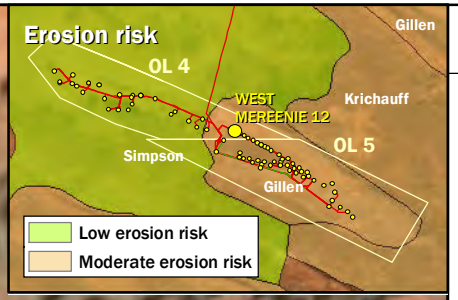


131°34'20"E



WEST MEREENIE 12

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare
- Fence
- Flare Pit

23°59'25"S

West Mereenie 12 Flare

WEST MEREENIE 12

West Mereenie 10 and 12 Access Road

740m

West Mereenie 8 and 12 Access Road

745m

N

0 5 10 20 30 40 50
metres

23°59'30"S

131°34'20"E

131°34'25"E

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WEST MEREENIE 13

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit

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WEST MEREENIE 14

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit

ID: 0534-010
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WEST MEREENIE 15

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit
- Sump

ID: 0534-010
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WEST MEREENIE 16

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Sump

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WEST MEREENIE 17

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit
- Sump

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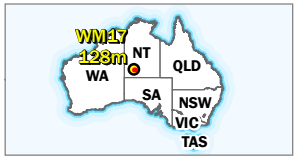

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WEST MEREENIE 18

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit
- Sump

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WEST MEREENIE 19

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit
- Sump

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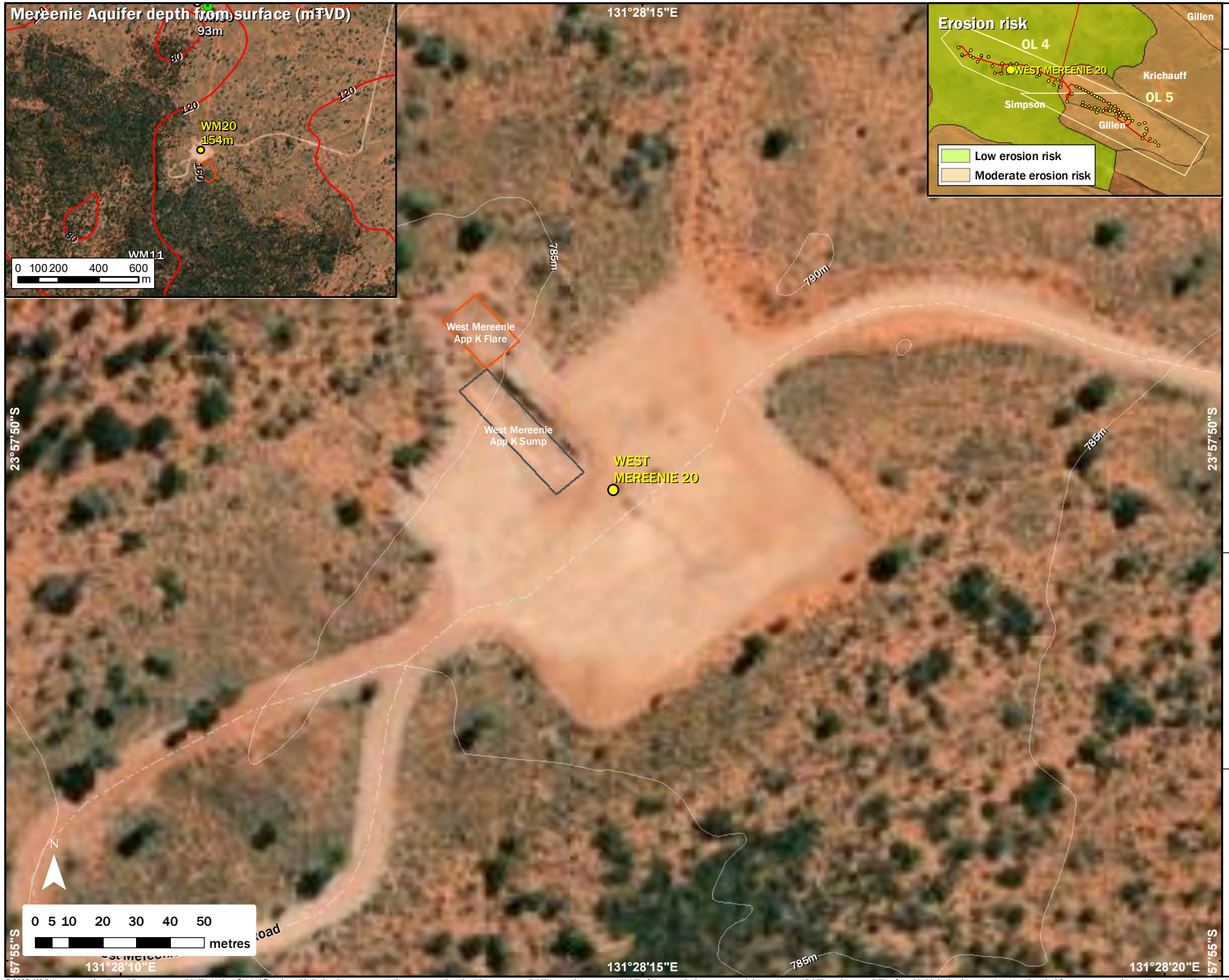

WEST MEREENIE 20

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit
- Sump

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WEST MEREENIE 21

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit
- Sump

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WEST MEREENIE 22

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit
- Sump

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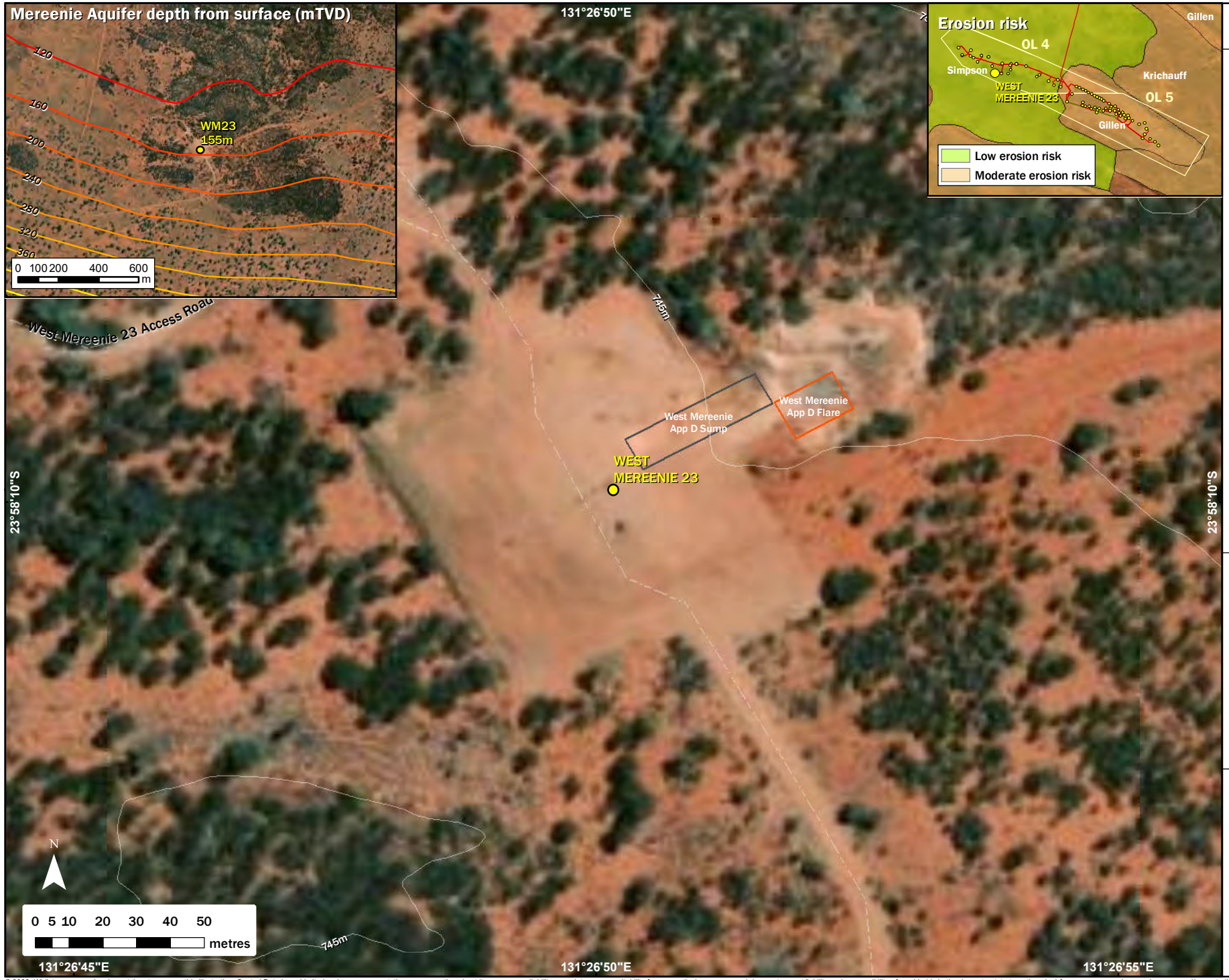

WEST MEREENIE 23

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit
- Sump

ID: 0534-010
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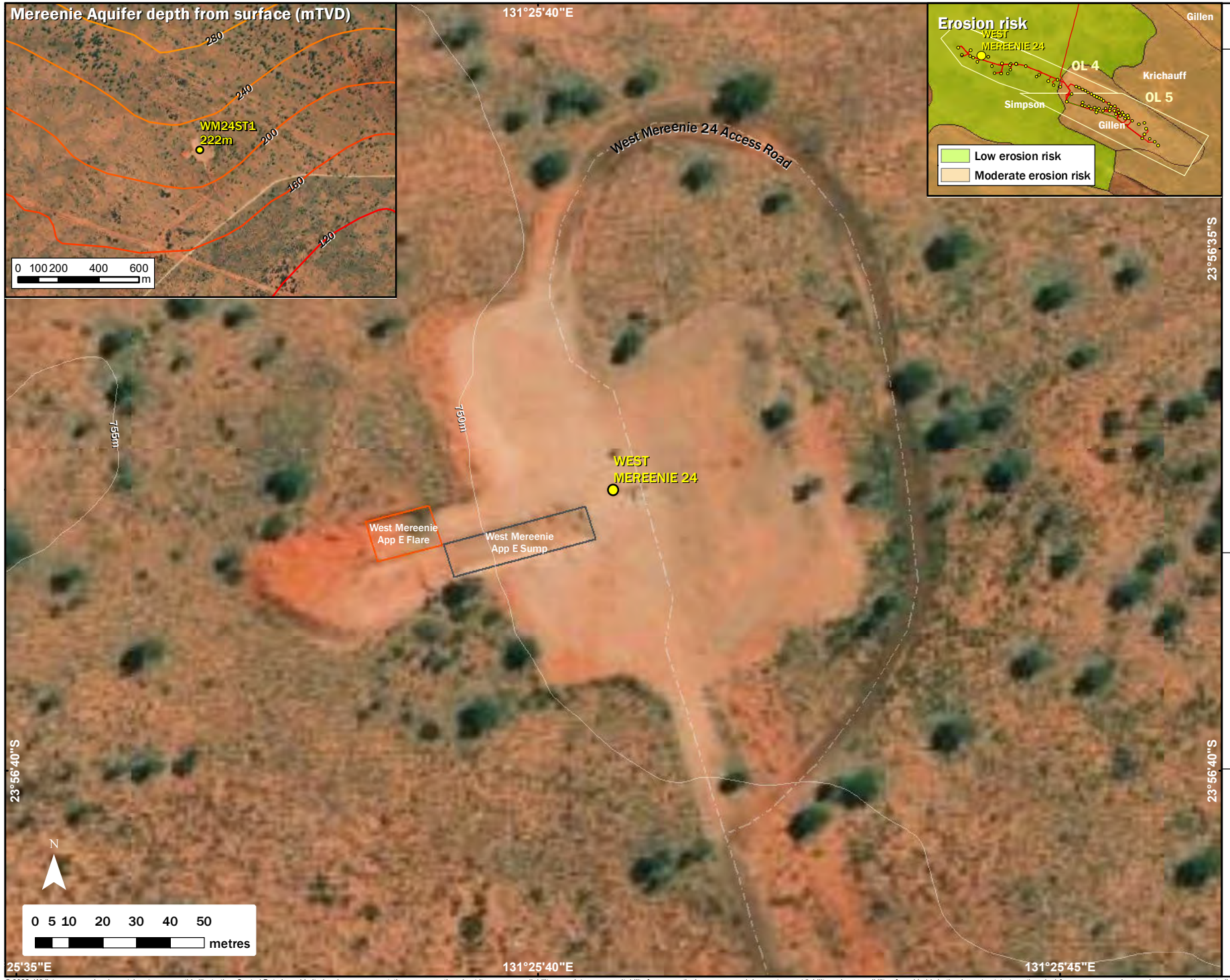

WEST MEREENIE 24

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit
- Sump

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WEST MEREENIE 26

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit
- Sump

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WEST MEREENIE 27

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit

ID: 0534-010
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WEST MEREENIE 28

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Flare Pit

ID: 0534-010
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Mereenie Aquifer depth from surface (m bgl)
Erosion risk
Low erosion risk
Moderate erosion risk
WEST MEREENIE 29
Well
Conservation Significant Flora
(TPWCA Status)
Critically Endangered
Data Deficient
Endangered
Near Threatened
Vulnerable
Conservation Significant Fauna
(TPWCA Status)
Critically Endangered
Data Deficient
Endangered
Near Threatened
Vulnerable
Environmental Weeds
TPWCA Near Threatened Flora Populations
brilliant hopbush
false caustic bush
Dump
WEST MEREENIE 24
Mereenie Field Road
0 5 10 20 30 40 50
metres
Central Petroleum



WEST MEREENIE 30

- Well

Conservation Significant Flora

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable

Conservation Significant Fauna

(TPWCA Status)

- Critically Endangered
- Data Deficient
- Endangered
- Near Threatened
- Vulnerable
- Environmental Weeds

TPWCA Near Threatened Flora Populations

- brilliant hopbush
- false caustic bush
- Sump

ID: 0534-010
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APPENDIX E. Emergency Response Plan



Mereenie

Emergency Response Plan

Central Petroleum

Mereenie – Emergency Response Plan: MSTD13-MER-PL001
Version: 8 / Effective: 5 February 2024 / Revalidation: 5 February 2026
Document Owner: Production Supervisor

1. INTRODUCTION 4
1.1 Purpose 4
1.2 Scope 4
1.3 Emergency response Training 4
1.4 Emergency Management Approach 4
1.5 Response Priorities 5
1.6 Related Documents 5
2. SITE EMERGENCY RESPONSE TEAM 5
2.1 Roles and Responsibilities 5
3. EMERGENCY RESPONSE PROCESS 6
3.1 Identification 6
3.2 Notification 7
3.2 Assessment 7
3.3 Activation 8
3.4 Response 8
3.5 Stand-down and recovery 9
4. EMERGENCY RESPONSE RESOURCES 9
4.1 Role Cards 9
4.2 Emergency Action Guides 9
4.3 Chemical Response Guidance 9
4.4 Plant and Pipeline Shutdown / Isolation 9
4.5 Emergency Equipment 10
4.6 Medical Support 10
4.7 Aviation Resources 11
4.8 Site Emergency Response Room 11
4.9 Communication 11
4.10 Emergency Management Team / Plan 11
5. STAKEHOLDER MANAGEMENT AND COMMUNICATIONS 12
6. POST EMERGENCY REVIEW 12
7. EMERGENCY CONTACTS 13
7.1 Central Emergency Contacts 13
Details of the responsible Duty Manager for the weekend are emailed to site supervisors / PICs every Friday 13
7.2 Site Contact Information 13
7.3 Emergency Services 13
8. ROLE CARDS 15
8.1 First Responder 15
8.2 Site Emergency Response Team leader (SERTL) 16
8.3 Site Emergency Response Team Coordinator 20
8.4 Emergency Response Team Member 22
8.5 Emergency Response First Aid 23
9. EMERGENCY EVENT GUIDES 24
9.1 Emergency Event Guide 1 – Vehicle Accident 24
9.2 Emergency Event Guide 2 – Transporting Incident – Rollover/Injuries 26
9.3 Emergency Event Guide 3 – Security Incident 27
9.4 Emergency Event Guide 4 – Bushfire / Flood 29
9.5 Emergency Event Guide 5 – Electric Shock 30
9.6 Emergency Event Guide 6 – Fire / Explosion 31
9.7 Emergency Event Guide 7 – Confined Space 32
9.8 Emergency Event Guide 8 – Spill / Release – Road Haulage – Wet Weather 33
9.9 Emergency Event Guide 9 – Spill / Release Site related 34
9.10 Emergency Event Guide 10 – Aircraft Accident 35
9.11 Emergency Event Guide 11 – Medical Trauma 36
9.12 Emergency Event Guide 12 – Well Blowout 37
9.13 Emergency Event Guide 13 – Bites / Stings 38
9.14 Emergency Event Guide 14 – Pipelines 40

9.15 EMERGENCY EVENT GUIDE 15 – GAS LEAK (MINOR) 41
9.16 EMERGENCY EVENT GUIDE 16 – GAS LEAK (MAJOR) 42
9.17 EMERGENCY EVENT GUIDE 17 – MASP (LOPC) 43
10. ADDITIONAL INFORMATION 44
10.1 AVIATION GUIDANCE 44
10.2 SITE INFORMATION / MAPS 47

Revision History

Revision	Date	Changes
8	5 Feb 2024	Emergency contacts table updated. Refer to Section 7

1. Introduction

1.1 Purpose

The Emergency Response Plan is designed to direct and guide the Site Emergency Response Team (SERT) to respond effectively to site emergencies and resume normal operations. It identifies persons responsible for managing and/or assisting in an emergency and provides general guidelines and tools to assist in the process.

1.2 Scope

An emergency is defined as an event (actual or imminent) which endangers or threatens to endanger life, property or the environment, and in the context of this plan requires a coordinated response.

This plan is applicable to all employees, contractors and visitors to Mereenie, and the following assets and associated infrastructure operated by Central Petroleum (CTP):

- well sites
- gathering lines
- gas processing facilities
- oil storage tanks
- site offices and workshops
- camp.

This plan is to be used in conjunction with CTP's Emergency Management Plan (MSTD-PLN001 VX).

Areas under the control of a principal contractor are not covered under this plan however CTP's contract manager must review and approve the contractors' plans and if necessary, create a bridging document detailing any additional requirements and support required as well as establishing clear notification protocols.

All ERP's shall be reviewed every 2 years or, if changes to plant and conditions occur.

1.3 Emergency response Training

All personnel shall receive Emergency Response training in an ongoing manner at each operational site. This training shall consist of both in field and desktop scenarios. Each site shall ensure the training is held (where operational viable) every 6 weeks.

1.4 Emergency Management Approach

CTP uses a two-tiered approach to emergency management as outlined in Figure 1.

Figure 1

Level	Examples	Document	Owner
Level 1 – Emergency Response	▪ Control of the situation does not require external support ▪ Non-life-threatening ▪ Not expected to escalate ▪ Limited damage to the environment, assets or reputation	Site Emergency Response Plan	Site Emergency Response Team leader
Level 2 - Emergency Management	▪ Control of the situation requires external support ▪ Life is at risk ▪ Major damage to the environment, assets ▪ or reputation ▪ Situation may have personnel, technical, operational or public affairs implications ▪ Highly likely to impact CTP's reputation	Emergency Management Plan	Emergency Management Team leader

In addition to and supporting this plan, the Emergency Management Team (EMT) and Emergency Management Plan (EMP) outlines the responsibilities, actions and resources available at head office to support site in the event of a significant emergency.

1.5 Response Priorities

In managing an incident, the SERT will focus their response to ensure:
- our **people** are accounted for and safe.
- we minimise impact on the **environment**
- our **assets** are protected
- CTP's **reputation** is safeguarded.

1.6 Related Documents

Whilst this plan has been designed to be a standalone document, references are made throughout to various other documents which may be useful in the event of an emergency. It is the responsibility of all SERT members to be familiar with the processes and standards within their area of responsibility, and conduct regular exercises to ensure readiness.

2. Site Emergency Response Team

2.1 Roles and Responsibilities

The following specific roles and responsibilities are essential to ensure effective management and accountability during an emergency:
- first responder
- SERT leader – the Person in Charge (PIC) or Delegate on site
- SERT coordinator (supported by a log keeper)
- SERT first aider

Operators, technicians and logistics personnel will assist the SERT leader and may be required to undertake multiple roles depending on the nature of the emergency, its duration and complexity.

If for some reason the SERT leader is unable / unavailable to perform their duties, an alternate person must be identified. Should for some reason SERT members be unable to perform their duties, the SERT leader will allocate other suitably trained persons. On shift SERT role information is to be displayed on the notice board or in the site emergency response room.

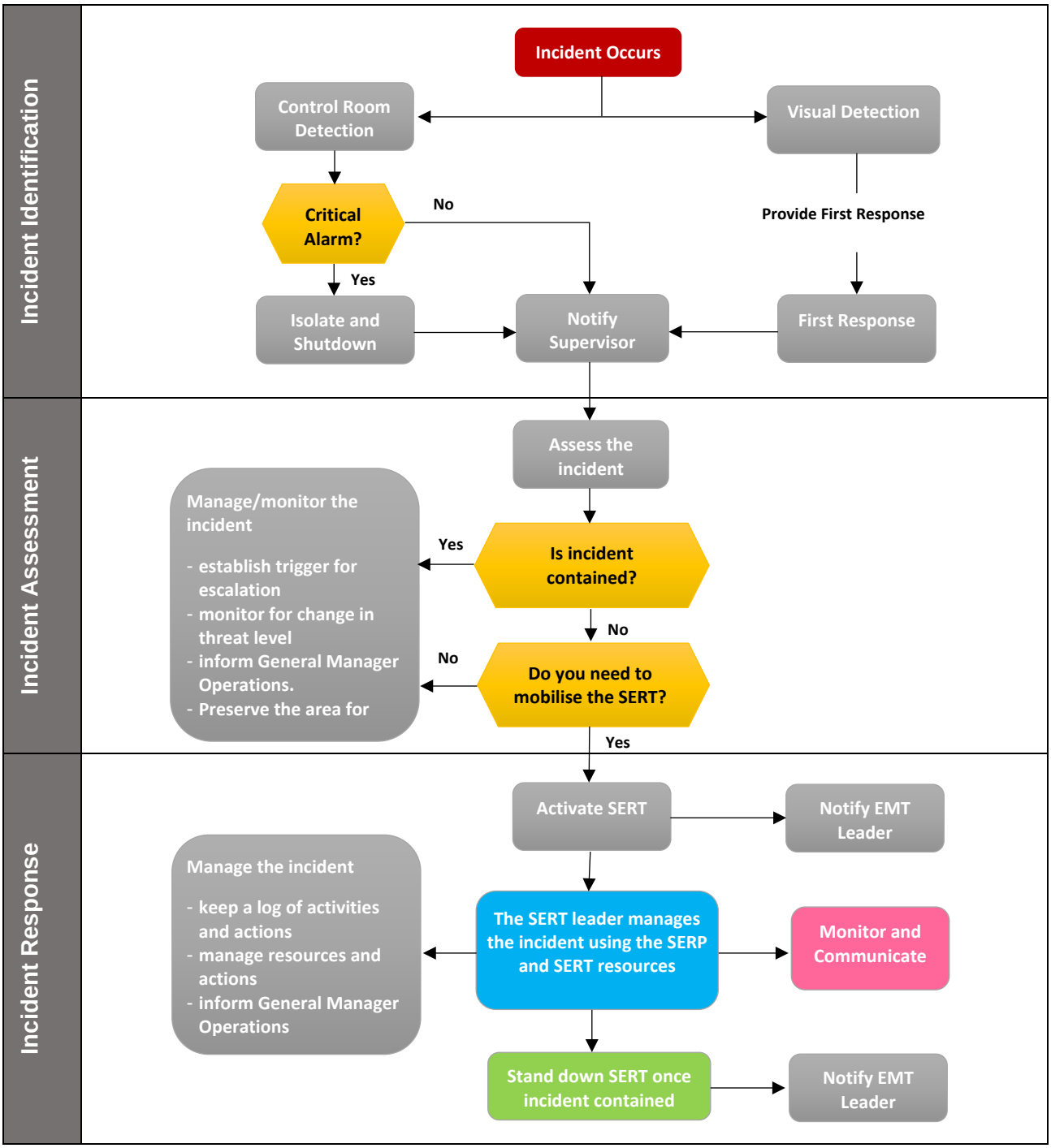
Depending on the nature and severity of the emergency, the EMT may be activated to support issues such as:
- regulatory and stakeholder notifications
- additional manning
- sourcing assets required to support the site, such as aviation
- medical or other emergency services
- mutual aid or contractor resources.

For more detailed information regarding the above SERT roles, refer to the role cards in Section 4.1.

3. Emergency Response Process

Identification, assessment and response processes are outlined in Figure 2 below. Further guidance is available in the role cards in Section 4.1.

Figure 2



3.1 Identification

When an event (actual or imminent) endangers or threatens to endanger life, property or the environment, the first responder must, if safe to do so, take action aligned with the first responder role card. It's important everyone is familiar with the responsibilities and initial actions of the first responder.

3.2 Notification

Once immediate action is taken, the first responder must raise the alarm and advise the production supervisor as to the nature of the emergency and any assistance required. An alarm can be raised:

- in person
- by radio (using prefix 'Emergency, Emergency, Emergency)
- by landline or mobile phone (not in restricted areas)
- by SOS alarm on a tracker.

3.2 Assessment

Once notified and briefed, the production supervisor will assess the incident in line with the Emergency Assessment and Escalation Matrix (Figure 3) and call on their experience to determine if the SERT should be activated. Note that even if the thresholds are not met, the SERT may still be activated at the discretion of the PIC on site.

Figure 3

	Site Emergency Response Team	Emergency Management Team
Activation	The SERT may activate if any of the below criteria is met	The EMT may be activated if any of the below criteria are met
Escalation/Notification	If the team is activated, the SERT leader notifies and provides a summary to the EMT leader	If the EMT is activated, the EMT leader contacts the EMT members and notifies the CEO
Risk Impact	Serious	Critical or Extreme
Injury / Illness to workers	Injury or ill health requiring medical treatment	Fatality or injury/ill health requiring extensive medical treatment (e.g. amputation, spinal injuries, etc.)
Loss of workforce capacity (pandemic or industrial action)	Loss of key staff impacting on operational output or threat of industrial action	Operations compromised due to staff being unavailable
Personnel and asset security	Non-specific threat to CTP staff e.g. protests, suspicious packages, bomb threats, etc.	Community protest action e.g. threats to CTP staff, bomb threat, suspicious packages, security incidents
Environment and / or Community	Localised and / or short-term environment and/or community incident/emergency	Extensive environmental or community incident such as significant contamination, offsite pollution or fatality
Natural Disaster	Predicted or localised damage to facilities/assets e.g. storms, external fires, flooding	Storm, fire, flood damage. Forecast natural disaster (widespread). Multiple locations impacted
Fire and Explosion	Small localised fires or explosions extinguishable by site resources	Uncontrolled fire/explosion requiring external emergency support
Property Damage	Serious damage to CTP assets / third party property	Major damage to CTP assets / third party property
Loss of Containment (LOC) – chemical spill, solid, vapor, liquid.	Major accident event or event requiring HAZMAT response, or non-hazardous substance spill that meets response activating SERP scenario. Any spill to water	Uncontrolled release unable to be isolated and contained within an hour after activating SERT scenario
Laws, regulations, civil actions	Breach of regulations regarding investigations and reporting to authorities. Possible prosecution/fine	Litigation/prosecution by regulator which could lead to temporary plant closure
Stakeholders / Media	Local media coverage. Health and / or safety concerns to local community	State/ national or social media with potential to impact performance of site/team operations
Facility, Plant or System failure / Cyber attack	Significant breach/IT incident affecting one site/location. Loss of access to single location <4hrs	Significant breach /IT incident affecting more than one site/location. Loss of access to single location for >4hrs

	Site Emergency Response Team	Emergency Management Team
Customer interruption / Supply disruptions	Customer service interruption up to 1 day. Product shortfall at facility or supply point >10 TJ per day	Potential customer service interruption up to 3 days. Supply shortage impacting major customers >25TJ per day
Third party failure (Inc. contractor, supplier or partner	Restricted impact which can be rectified in the normal course of business e.g. haulage contract	Supply or services disrupted with threat of serious impacts e.g. customers or critical functions
Financial	Cash flow: <$1m	Cash flow: >$1m

3.3 Activation

The decision to activate the SERT in an emergency is the responsibility of the PIC and, once activated, they will assume the role of SERT leader and will engage the appropriate personnel to fulfil the SERT roles. If activated, the SERT leader must notify and brief the EMT leader as soon as practical.

3.4 Response

Initial briefing

The SERTL will provide an initial briefing (see role card for guidance) covering:

- incident details (where, what, when and how)
- SERT priorities (what's the focus of response activity)
- confirm SERT roles
- answering any questions from the team.

Develop response actions

Once briefed, the SERT will commence activities aligned with their role cards and using the emergency action guides to:

- identify priorities and tasks e.g. immediate actions
- assign resources/accountability to execute (timing)
- agree communication protocols (next meeting time).

Once actions have been developed, the SERT leader will if necessary, schedule the next meeting and SERT members will commence delivery of their allocated tasks.

All of the above information will be captured by the SERT coordinator and the log keeper in order to ensure actions are clear and accurate.

SERT meetings

At any subsequent meetings, the SERT leader will provide further updates and members will update the team on their actions / progress.

Role handover

The management of some events/incidents could be time consuming and require EMT members to rest. It is the responsibility of the SERT leader and coordinator to monitor team members and rotate personnel with suitable replacements, if necessary. It is essential that replacement team members receive a thorough hand-over briefing prior to commencing.

If an incident is likely to run for an extended period, it is recommended that the initial handover commences early. For reasons of information continuity and familiarisation with the incident, consideration should be given to changing the team every 6-8 hours.

3.5 Stand-down and recovery

An emergency response ends when the SERT leader is satisfied that objectives have been met and priority shifts to achieving business continuity and recovery. Only the SERT leader can decide to 'stand-down' the SERT and switch the focus to recovery. The stand-down should be undertaken in consultation with the General Manager Operations.

When external emergency services are involved, stand-down must be done in consultation with the relevant agencies.

When standing down, the SERT leader must:
- ensure that all teams are informed of the stand down
- identify and document outstanding issues that need to be addressed after the team is deactivated and assign responsible personnel to address these issues
- ensure evidence is preserved to aid in any investigation
- ensure affected areas are barricaded
- that witness accounts are taken
- where possible, photograph evidence
- capture lessons learned as soon as possible after the event (debrief)
- ensure the site emergency response room is immediately re-stocked.

In addition, before recommencing operations the following questions should be asked:
- has all plant and equipment been tested and confirmed safe?
- have relevant emergency service providers confirmed that normal activities can recommence?
- have relevant government agencies/departments agreed that normal activities can recommence?
- could employees be suffering from the effects of the incident?
- are there any unauthorised personnel remaining on site?

4. Emergency Response Resources

4.1 Role Cards

Role cards act as prompts and are used as an aid in the event of an emergency. A set of role cards to support this plan are provided in section 6.

4.2 Emergency Action Guides

Emergency Action Guides have been developed and outline typical responses for specific types of emergencies. A set of Emergency Action Guides to support this plan are provided in section D.

4.3 Chemical Response Guidance

All chemicals stored and used on site are to be managed in accordance with the corresponding Safety Data Sheets. Hard copies of Safety Data Sheets are stored in the warehouse with electronic copies available via the Chemwatch website.

4.4 Plant and Pipeline Shutdown / Isolation

In the event of a loss of containment event, emergency shutdown devices (ESDs) are to be used, however if isolation identification is not clear then the SERT members can access Piping and Instrument Diagrams (P&IDs) on M: files. In these instances, the isolation should be undertaken, and any associated documentation should be completed post event and prior to restart. In the event of a power outage there are master sets of PID's in the control room, supervisor's office & ESS control room.

4.5 Emergency Equipment

Emergency equipment is provided at Mereenie in accordance with the site's hazards and possible emergency situations are identified in the site Risk Register. The following equipment is positioned in appropriate locations, clearly identified, and maintained.

- Portable radios
- Satellite Phone
- Portable gas detectors
- First aid equipment (Include Defibrillator)
- On site ambulance
- Fire extinguishers
- Confined space rescue equipment
- Working at heights rescue equipment
- Self-contained breathing apparatus
- Oil and chemical spill kits
- Safety showers / eyewash stations.

Where applicable, sites are to be equipped with fixed fire and gas detection and fire-fighting equipment in accordance with the relevant fire codes and legislation.

4.6 Medical Support

Medical emergencies fall into three categories:

1. Minor medical emergencies (dealt with on-site by a trained first aider)
2. Medical emergencies or injuries requiring more than first aid (dealt with under the guidance of an emergency expert
3. Critical or life-threatening medical emergencies which require immediate evacuation of the patient.

The site is supported with a 24/7 dial-in medical service with an on-call doctor for routine medical support or emergency medical advice. In addition, the Kings Canyon medical facility can provide additional support. Medical advice and support will be provided by:

- on-site first aid trained personnel (available on all shifts)
- primary emergency advice:
    - RFDS 24-hour emergency operations center
    - MRACC (Royal Flying Doctors) Telehealth Doctor service
- secondary Emergency Advice:
    - Alice Springs Hospital
    - Kings Canyon clinic.

The Royal Flying Doctor Service is also available to support emergencies.

If medical assistance or a Medivac is required, the initial medical provider will seek advice from the Air Medical Services Doctor or the Royal Flying Doctor Service Call Centre who will coordinate the ongoing actions.

The SERT leader, in consultation with a medical provider, has the authority to initiate a Medivac.

The initial medical provider will consult with the doctor(s) to determine the appropriate level of transport, resources and medical assistance required for a Medivac flight.

Patients will be transferred to the nearest care facility as determined by the initial medical provider in consultation with the Royal Flying Doctor Service call center or the doctor associated with the treatment.

Note - there must always be 2 people in the Central Petroleum ambulance when transporting a patient - Primary OFA to be supporting the patient - the 2nd person drives and be up to date with First Aid/CPR training.

4.7 Aviation Resources

Sites may have the capacity to facilitate both Helicopters (rotary) and Planes (fixed wing) in the event of an emergency, however, the preferred option is fixed wing aircraft.

Further details regarding the airstrip / helipad and its safety protocols are outlined in section E.

4.8 Site Emergency Response Room

The site conference room has been established for use if the SERT is activated. This room will be the coordination center and communications hub. All SERT members are to meet there to manage and support operations in the event of an emergency. The room is equipped with:

Plans	▪ Site Emergency Response Plan – Mereenie ▪ Emergency Management Plan
Communication	▪ Telephones – landline and satellite ▪ Digital site Radios ▪ Video/conference calling facilities ▪ Access to Wi-Fi/internet
General	▪ Basic stationery – pens, note pads ▪ Whiteboard and markers ▪ Emergency information board ▪ Site maps indicate location of emergency equipment and muster points ▪ Clock

The on-site emergency response room will be maintained in a 'ready-for-use' state and is the responsibility of the Administration and Logistics Coordinator. The room will be regularly inspected, and equipment tested every time an emergency exercise is undertaken (approximately every 6 weeks).

4.9 Communication

On-site communications during emergency situations is via site digital radios on the:
- Main field channel No. 1; or
- Emergency channel No. 2.

Personnel are to use the radio on the "field" channel to transmit information. Radio communication should be kept to a minimum, so the channel is available for use when required. The PIC will determine when to switch to channel 2 (emergency channel) if at all.

The designated phone in the emergency response room should be used to communicate with the EMT and other sites. Emergency contacts are detailed in section 6. There are two phones in the emergency response room, we should decide which one is to be utilised in an emergency.

4.10 Emergency Management Team / Plan

Any emergencies with the potential for critical or extreme outcomes are to be managed in conjunction with the EMT. In an emergency, the objectives of the EMT are to:
- provide support and logistics to the site
- ensure a coordinated response from all parties involved e.g. the state emergency services
- Monitor the site personnel and their ability to manage the situation, especially if there is a long duration.
- control and minimise impacts/losses (human, financial, resource, reputation) related to an escalating incident and to protect those with a vested interest in CTP
- develop an effective communication strategy for all stakeholders e.g. insurers, government and the media
- recover and resume CTP operations.

5. Stakeholder Management and Communications

In an emergency, it is important that all communication remains open, honest, timely and accurate.

External Communication

Any communication with external parties (not related to the immediate emergency response) is to be handled centrally via the EMT leader.

Internal Communication

The SERT leader / coordinator will ensure all relevant personnel are kept up-to-date and will provide regular updates to the EMT leader.

Managing Enquiries

If any person receives a call from an external party e.g. journalist, community member, government official, etc., they must inform the caller that they are not an authorised spokesperson and are not in a position to comment, however, will organise for someone to call them back. A message should be logged capturing the follow information.

- callers name
- organisation / affiliation
- contact details
- who they want to speak with
- what the message / query is about

Social Media

Nothing should be posted on any social media platforms. Centrals disciplinary process with be followed for any anyone identified as having post any incident related content.

6. Post Emergency Review

At the earliest possible time following the emergency, the General Manager Operations or delegate is to organise and facilitate a post-emergency review to identify any lessons learnt (positive and negative).

If appropriate, any improvements or amendments should be considered and, if necessary, a change management process be undertaken to update the framework and any supporting documents, followed by the appropriate training.

7. Emergency Contacts

7.1 Central Emergency Contacts

Position	Contact Details
General Manager Operations or Duty Manager	[redacted]
Chief Operating Officer	[redacted]
Risk and HSE Manager	[redacted]
Health & Safety Specialist	[redacted]
Brisbane emergency phone - To be used whilst emergencies are in progress	07 3181 3860

Details of the responsible Duty Manager for the weekend are emailed to site supervisors / PICs every Friday.

7.2 Site Contact Information

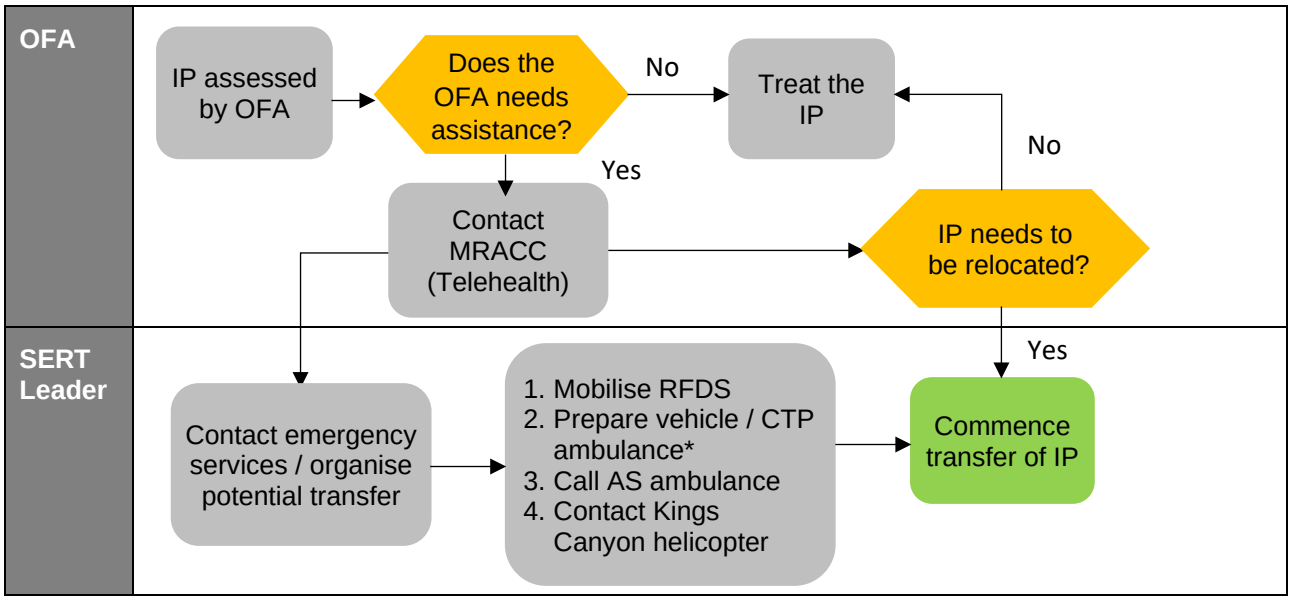
Role / Detail	Contact Details	
Production Supervisor	[redacted] 08 8954 3773	Jarrad Wild David Bushell Supervisor Office
Logistics and Administration Coordinators	08 8954 3702	
Kitchen / Ambulance (Satellite Phone)	[redacted]	
Response Room (Satellite Phone)	[redacted]	
Emergency Alert Number	**1300 134 406**	**ISS First Response (24/7)**
Mereenie Emergency Number	**08 8954 3822**	

7.3 Emergency Services

Decision tree

The assessment and response to a medical emergency is outlined in Figure 4 below. The on-site OFA is responsible for the decision to escalate and seek professional guidance. The SERT Lead is accountable for the early engagement with emergency services e.g. RFDS, Alice Springs Hospital, etc.

Figure 4



*Where the CTP ambulance is to be used contact AS ambulance and plan to meet halfway.

Service		Contact Details	Response Time
Police / Fire / Ambulance (Emergency)		**000**	
Medical	Remote Health & Royal Flying Doctors Service[1]	08 89517840 / 08 8951 7777 (24/7)	Time will vary on the nature of the event/patient status
	RFDS Port Augusta Communications centre	1800 630 784 for plane's ETA's	
	MRACC (Royal Flying Doctors)	1800 1MRACC (1800 167 222)	Immediate
	Alice Springs Hospital (24/7)	08 8951 7777	3hrs 30 min drive
	Kings Canyon Medical Clinic[2]	08 8956 7807	40 min drive
	St John Ambulance - Alice Springs Office	08 8959 6600	Potential to meet IP halfway to Mereenie
	Mall Medical Clinic - Alice Springs	08 8952 2744	
Police	Police - Alice Springs Station	08 8951 8822	
	Police (non-emergency)	131 444	
Fire	Fire and Rescue (non-emergency)	08 8999 3473	
Emergency	Emergency Services (flood, storms, etc)	132 500	

In the event of an emergency, the SERT leader is authorised to contact the above, however, **any contact with government, regulatory bodies, etc., must be undertaken centrally by the Brisbane based EMT leader**.

[1] Doctor on call for all Medical Evacuations via Alice Springs
[2] Clinic can be dispatched by 000 if required

8. Role Cards

8.1 First Responder

Role Card

Section 1 – Responsibilities	
In the event of an incident, please remain calm and be prepared to assist where possible (depending on your experience and competency). Please provide as much information as possible to the production supervisor.	
Immediate Actions	**Complete**
▪ Raise the alarm ▪ Check for DANGER - do not put yourself at risk - Is the scene safe? ▪ Implement appropriate actions to prevent or contain the situation, if possible ▪ Provide assistance e.g. assess for life threatening injuries - Are they responsive? - Are they breathing? - Any bleeding? ▪ If safe and appropriate to do so, shut down any equipment ▪ Evacuate or leave the scene, if warranted ▪ Notify the production supervisor providing as much detail as possible e.g. - Location - Incident details - Number of casualties and their condition	
During an Emergency	**Complete**
▪ Follow the production supervisor/SERT leader's instructions	
Post Incident	**Complete**
▪ Participate in the SERT post-emergency review ▪ Propose changes to the Site Emergency Response plan and any procedures, as a result of the incident	

8.2 Site Emergency Response Team leader (SERTL)

Role Card

Section 1 – Responsibilities

The SERT leader is responsible for:
- activation and stand-down of the SERT
- notifying the EMT leader upon activation
- overall management of the emergency response including recovery.

The SERT leader is the final decision maker in relation to analysis, option development, selection and execution of the incident response

Immediate Actions	Complete

- Review the first responder's brief
- Take immediate action, if necessary
- Work through the SERT leader activation checklist (Section 2)
- Using your knowledge and experience and the Emergency Assessment Matrix (Section 3), determine if the SERT should be activated

Activate	Not Activate
▪ Determine which SERT members (Section 4) are required ▪ Engage SERT coordinator to contact SERT members ▪ Notify the EMT leader of activation and provide a situation update ▪ Proceed to the designated site emergency response room ▪ Conduct an initial team brief using information from section 2 ▪ Confirm the SERT member roles and activities	▪ Await updates from operations personnel and reassess the incident as required

During an Emergency	Complete

- Authorise any immediate assistance and specialist support (internal or external)
- Consolidate assumptions and identify the worst case and most likely impacts
- Decide on the priority objectives.
- Manage and lead the SERT to ensure the efficient and effective resolution of the emergency, ensuring the impact on people, assets, environment, value and reputation is minimised
- Facilitate open communication and ensure regular updates are provided
- Ensure the General Manager Operations is regularly updated on the incident
- Approve necessary expenses related to the management of the emergency
- Facilitate and support the implementation of any business continuity plans by the respective teams
- Ensure an accurate record is kept of all SERT actions and decisions
- Declare the emergency is over and stand-down teams
- Coordinate transition to recovery stage
- Decide on the team structure to manage the recovery process

Post Incident	Complete

- Determine the level of investigation required and initiate the process – GM ops
- Debrief the SERT
- Conduct a post-emergency review – GM ops.
- Propose changes to the site emergency response framework and any procedures, as a result of the incident. – ALL

Section 2 – Activation checklist					
Date		**Time**		**Name**	
Incident Description					
What happened?					
Where did it happen?					
When did it happen?					
How did it happen?					
Is everybody accounted for?					
Are there any casualties?					
How have you been notified and how accurate is the information?					
Incident Status					
Is the incident contained or escalating?					
What is potentially at risk?					
What are your objectives?					
What actions are being taken?					
Who is taking action?					
What resources / equipment / manpower is being used?					
Initial incident assessment					
What are the likely impacts on health, safety, environment and/or community?					
What are the likely community, government, media or reputational impact?					
What is the operational impact (short, medium or long term)?					
How effective is the response?					
What support is needed?					
What support does the SERT need from the EMT (in the longer term)?					
Follow up					
Exchange / confirm contact details for first responder					
Decision					
Based on the information provided, assistance requested and your experience, consider the actual or potential impacts and determine whether to activate the SERT using the 'Emergency Assessment Matrix (see section 3).					
Yes			**No**		
Rationale					

Section 3 – Assessment and Escalation Matrix

The SERT leader will:

- use this guide to quickly assess actual or potential incident consequences and notification thresholds. Note that you may choose to activate / notify at levels lower than those detailed;
- Contact the EMT leader if the SERT is activated;

	Site Emergency Response Team	Emergency Management Team
Activation	The SERT may activate if any of the criteria below is met	The EMT may activate if any of the below criteria is met
Escalation / Notification	If this team is activated, the SERT leader notifies and provides a summary to the EMT leader	If the EMT is activated, the EMT leader contacts EMT members and notifies the CEO
Risk Impact	Minor to Serious	Critical or Extreme
Injury / Illness to workers	Injury or ill health requiring medical treatment	Fatality or Injury/ill health requiring extensive medical treatment (e.g. amputation, spinal injuries, etc.)
Loss of workforce capacity (pandemic or industrial action)	Loss of key staff impacting operational output or threat of industrial action	Operations compromised due to staff being unavailable
Personnel and asset security	Non-specific threat to CTP staff e.g. protests, suspicious packages, bomb threat, etc.	Community protest action e.g. threats to CTP staff, bomb threat, suspicious packages, security incidents
Environment and / or Community	Localised and/or short-term environmental and/or community incident/emergency	Extensive environmental or community incident such as significant contamination, offsite pollution or fatality
Natural Disaster	Predicted or localised damage to facilities/assets e.g. storms, external fires, flooding	Storm, fire, flood damage. Forecast natural disaster (widespread). Multiple locations impacted
Fire and Explosion	Small localised fires or explosions extinguishable by site resources	Uncontrolled fire/explosion requiring external emergency support
Property Damage	Serious damage to CTP assets/third party property	Major damage to CTP assets/third party property
Loss of Containment (LOC) – chemical spill, solid, vapor, liquid.	Major accident event, or event requiring HAZMAT response, or non-hazardous substance spill that meets response activating SERP scenario. Any spill to water	Uncontrolled release unable to be isolated and contained within an hour after activating SERT scenario
Laws, regulations, civil actions	Breach of regulations regarding investigations and reporting to authorities. Possible prosecution/fine	Litigation/prosecution by regulator which could lead to temporary plant closure
Stakeholders / Media	Local media coverage. Health and/or safety concerns to local community	State/national or social media with potential to impact performance of site/team operations
Facility, Plant or System failure / Cyber attack	Significant breach/IT incident affecting one site/location. Loss of access to single location <4hrs	Significant breach/IT incident affecting more than one site/location. Loss of access to single location for >4hrs
Customer interruption / Supply disruptions	Customer service interruption up to 1 day. Product shortfall at facility or supply point >10 TJ per day	Potential customer service interruption up to 3 days. Supply shortage impacting major customer >25TJ per day
Third party failure (inc. contractor, supplier or partner	Restricted impact which can be rectified in the normal course of business. e.g. haulage contract	Supply or services potentially disrupted with threat of serious impacts e.g. customers or critical functions
Financial	Cash flow: <$1m	Cash flow: >$1m

Section 4 – SERT Member Details		
Role	Name	Engaged
Mandatory		
SERT leader		
Coordinator		
Log keeper		
SERT Members		
First aid		
Team member		
Team member		
Team member		
Team member		
Team member		

8.3 Site Emergency Response Team Coordinator

Role Card

Section 1 – Responsibilities	
The SERT coordinator's primary role is to support the SERT leader. The function of the coordinator is to: ▪ manage and coordinate staff while providing quality control and coordination of the SERT's planning process ▪ ensure that staff have the information, guidance and facilities required to fulfil their roles ▪ manage the SERT's time, coordinate briefings, and manage the site emergency response room ▪ align the planning of the functional areas with the direction and intent of the SERT leader ▪ assume the role of SERT leader should the SERT leader be unavailable ▪ The SERT coordinator will be the primary contact p for all communications	
Immediate Actions	**Complete**
▪ Respond to the activation ▪ Contact SERT members ▪ Confirm the arrival of all SERT members ▪ Facilitate the initial team brief to the SERT	
During an Emergency	**Complete**
▪ Record and monitor all response actions (Section 2) ▪ Establish communications ▪ Provide regular situation updates to the SERT leader ▪ Implement routines and procedures in the site emergency response room including security of information, control of access, and equipment ▪ Coordinate and synchronise staff in the site emergency response room ▪ Ensure an accurate record is kept of all SERT actions and decisions ▪ Program and facilitate SERT update briefs ▪ Coordinate SERT requests for assistance ▪ Coordinate the regular update of the SERT ▪ Monitor and ensure that activities are in accordance with SERT objectives ▪ Supervise the completion of an accurate SERT log ▪ Be prepared to act as the SERT leader if required	
Post Incident	**Complete**
▪ Support recovery operations, as required ▪ Ensure SERT members attend the debriefing ▪ Coordinate and participate in the post-emergency review ▪ Carry-out all relevant SERT coordinator actions identified in the post-emergency review ▪ Propose changes to the site emergency response framework and any procedures, as a result of the incident.	

Section 2 – Site Response Activity / Event Log				
Time	Action	Owner	Due	Status

8.4 Emergency Response Team Member

Role Card

Section 1 – Responsibilities	
The SERT member's primary role is to support the SERT leader	
Immediate Actions	**Complete**
▪ Respond to the activation ▪ Proceed to muster point **and respond to the situation as directed by the SERT leader** ▪ Attend the initial brief	
During an Emergency	**Complete**
▪ If instructed & safe to do so, participate in incident response, which could include: - rescuing personnel if there is no danger - extinguishing small fires around the plant using a range of extinguishers - using a fire blanket to extinguish small fires - provide basic first aid - containing minor spills • If required (e.g. after hours when admin staff re not on site), undertake the role and responsibility of: - log keeper – documenting incoming/outgoing information and maintaining incident log sheet - coordinator – providing support to the SERT leader and coordinating movement of personnel and delivery of equipment resources and liaison with the response team - coordinate any resources/assistance required by the SERT or EMT ▪ Consider any secondary impacts as a result of the incident ▪ Assist in the development of the SERT's responses, objectives and priorities ▪ Cooperate with emergency services ▪ Prepare for the stand-down of the SERT and recovery of site	
Post Incident	**Complete**
▪ Provide ongoing advice to the recovery operations, as required ▪ Participate in the SERT post-emergency review ▪ Propose changes to the site emergency response framework and any procedures, as a result of the incident	

8.5 Emergency Response First Aid

Role Card

Section 1 – Responsibilities	
Assess and provide first aid assistance to injured people	
Immediate Actions	**Complete**
▪ Respond to the activation ▪ Proceed to muster point and respond to the situation as directed by the SERT leader ▪ Attend the initial briefing and consider the incident	
During an Emergency	**Complete**
▪ Perform triage on injured personnel ▪ Assess medical response ▪ Direct/manage medical personnel and supplies ▪ Activate external resources, if needed ▪ Consider any secondary impacts as a result of the incident ▪ Assist in the development of the SERT's response, objectives and priorities ▪ Cooperate with emergency services ▪ Prepare for stand-down and recovery of SERT **Note - there must always be 2 people in the ambulance when transporting a patient - Primary OFA to be supporting the patient - the 2nd person drives and be up to date with First Aid/CPR training.**	
Post Incident	**Complete**
▪ Be prepared to provide ongoing advice to the recovery operations, as required ▪ Participate in the SERT post-emergency review ▪ Propose changes to the site emergency response framework and any procedures as a result of the incident	

9. Emergency Event Guides

9.1 Emergency Event Guide 1 – Vehicle Accident

Incident	
Nature of the incident: ☐ Vehicle/Vehicle Collision ☐ Vehicle/Structure Collision ☐ Vehicle Roll Over ☐ Pedestrian Hit/Run Over ☐ Other ……	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
• Call for assistance as soon as possible • Assess and ensure the scene is safe – withdraw personnel from danger (if required) • Prioritise causalities – undertake a primary assessment of any causalities • Mobilise SERT, if additional resources are needed • Mobilise competent first aider to treat injured persons (if required) at scene or first-aid station • Mobilise the following if necessary - electrician if there is an electrical risk, equipment to stabilise vehicle, fire control equipment	
Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Call a medical facility for assistance/guidance	
Arrange escort for external emergency support / back-up	
Notify General Manager Operations	

What to Do

Consider the following, to **minimise danger:**

1. **Other traffic**:
- use hazard lights on vehicles to warn oncoming traffic
- switch headings on if at night
- ask bystander/s to extend the warning perimeter to at least 100mts away to warn & control oncoming traffic
- Battery disconnect

2. **Fire:**
- switch off the vehicle's motor and, for diesel vehicles, shut off any emergency fuel switches
- stop people from smoking nearby
- if there is a fire under the bonnet, and you have a fire extinguisher and it safe to do so, release the bonnet catch (but don't open fully) and aim the extinguisher through the gap

3. **Fumes**:
- stay clear of fumes if petrol/diesel is leaking and ensure there are no naked flames or people smoking nearby

4. **Damaged vehicles:**
- if airbags have not been activated, stay clear of the steering wheel and front dashboard
- if not in gear, apply the handbrake or put the vehicle in gear

5. **Spilt fuel or chemicals:**
- if the accident involves a vehicle carrying hazardous material, stay clear. Take note of the signs indicating what is being carried e.g. type of sign and code number and call 000 for advice
- if there are clouds of vapour, spilt liquids, bottles, gas cylinders or unusual odors, avoid contact with these substances and have everyone stay upwind if possible, to avoid fumes

6. **Fallen or damaged powerlines**
- remain at least 6m from any fallen power lines and don't attempt to move the cables
- do not go near a vehicle if it is being touched by electrical cables advise the patient not to move and wait for emergency services to arrive

What to Do

Prioritise Causalities

1. Once safe to do so, assess casualties as follows: (Using the vehicle medical booklet to assist)
   - Are they conscious?
   - Are their airways clear and open?
   - Are they breathing?
   - Are they bleeding?

Injuries and Ongoing Management

- Common injury types:
  - airway blockages
  - head injuries
  - chest injuries
  - spinal injuries

1. Unless necessary (for example if the vehicle could explode), do not move a patient until help arrives as it could lead to further injury;
2. Continue to monitor their breathing as this can rapidly deteriorate. Be ready to perform CPR should this occur - Do not use mouth-to-mouth method if victim ingested or inhaled any substance;
3. Record observations (if possible) until help arrives e.g. breathing, pulse, skin colour and temperature. Any changes could indicate a serious change in their condition;
4. If the patient is conscious, continue to reassure them. Let them know that help is on the way.

Note - there must always be 2 people in the ambulance when transporting a patient - Primary OFA to be supporting the patient - the 2nd person drives and be up to date with First Aid/CPR training.

NOTICE

- **Try to remain calm as anxiety can spread quickly.**

Post Event Actions

- Clean up any oil/fuel spills, as per site environmental procedures;
- Monitor for possible fire;
- Secure the scene for incident investigation - do not move anything unless a person's life depends upon it;
- Photograph & preserve the scene.
- In the case of a Fatality, authorities (Police) must notify Next of Kin before the EMT leader commences communication (with Next of Kin)

9.2 Emergency Event Guide 2 – Transporting Incident – Rollover/Injuries

Incident
Nature of the incident: ☐ Heavy Haulage / Road transport ☐ Bulk vessel (transported) ☐ Road Tanker / Tanker truck ☐ Other ……

Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Call for assistance as soon as possible; ▪ Assess and cautiously approach from upwind - ensure the scene is safe – withdraw personnel from danger (if required); ▪ Mobilise the SERT if additional resources are needed – carry suitable volumes of fresh water; ▪ Mobilise competent first-aider(s) to treat injured persons (if required) at scene or first-aid station; ▪ Assist external personnel with notifications and calls for assistance.	

Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Arrange escort for external back-up	
Notify General Manager Operations	

What to Do

1. Interacting personnel enter after considering their Safety needs and wear appropriate PPE;
2. Attempt to Identify the spill - refer to the HAZCHEM code, Truck Placarding, Driver or SDS for methods of control / management;
3. Alert Management / SES / Police or 000 of situation ASAP, note location, HAZCHEM concerned, areas of impact;
4. Ensure all personnel are safe and clear of area -Stay upwind and clear of any Vapour, Fumes, Smoke and Spills.
5. Use safety related equipment as required, to safely extract personnel if in immediate danger;
6. Extricate personnel and team to a safe distance and clear of fumes (Upwind);
7. Consider decontamination of personnel – clothing / footwear / equipment – water to dilute substance;
8. Divert or stop traffic (do not start vehicles if a low flash-point product has been split) – if tanker truck is involved in a fire, ISOLATE for 800 metres (1/2 mile) in all directions;
9. If Spill fluid loss evident, undertake measures to prevent spread of spilled product – if possible - (i.e. block drains, dam ditches, boom watercourses, close water intakes);
10. Isolate spill or leak area for at least 100 metres (330 feet) in all directions;
11. Remove all sources of ignition to reduce the potential fire hazard;
12. Stop further leakage - close valves, attempt to stop leaks, if safe to do so;
13. Never attempt to perform a rescue without support or adequate forethought;
14. Consider all details as described in Event Guide 1.

Note - there must always be 2 people in the ambulance when transporting a patient - Primary OFA to be supporting the patient - the 2nd person drives and be up to date with First Aid/CPR training.

Post Event Actions

- Secure the scene for incident investigation.
- In the case of a Fatality, authorities (Police) must notify Next of Kin before the EMT leader commences communication (with Next of Kin)
- Team debrief / Mental anguish and concerns.

9.3 Emergency Event Guide 3 – Security Incident

Incident		
Nature of the incident:		
☐ Unauthorised Access	☐ Threat of Violence	☐ Assault
☐ Missing Person(s)	☐ Suspicious Package	☐ Bomb Threat
☐ Other ……		

Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Call for assistance as soon as possible; ▪ Assess and ensure the site is safe – withdraw personnel from danger (if required); ▪ Mobilise the SERT if additional resources are needed.	

Additional Response – as required	
Ambulance – Police (Dial 000)	
Arrange escort for external back-up	
Notify General Manager Operations	

What to Do

Bomb Threat / Suspicious Package

NOTICE

- Under no circumstances should any person attempt to move or disarm a bomb or open a suspicious package
- Bomb threats create a specific type of emergency and require a swift and positive response. If a bomb threat is received, by whatever means, ALL action taken will be under the guidance and direction of the SERT leader
- If the threat is received via phone, do not hang up as the call could possibly be traced

Telephone

- Try to obtain as much information as possible from the caller. When did you put it there? Where did you put it? What does it look like? What kind of bomb is it? What will make it explode?
- Try to assess if the caller is male or female? Do they have an accent? Are there any distinctive background noises?

Post

- Do not open a letter or package if it looks suspicious.

1. Remain calm and treat the threat seriously
2. Activate the evacuation alarm, consider ESD of the plant and, if necessary, de-pressure and isolate affected equipment
3. Complete the bomb/extortion threat report
4. Call the police on 000
5. Make a decision to evacuate personnel
6. Devise and implement (with assistance of police) a search plan
7. Devise and implement an evacuation plan
8. Assess the long-term and short-term threats
9. Make a decision to resume normal activities

Threat of Violence/Assault

NOTICE

- Avoid directly confronting a person who is threatening violence
- If the violence escalates, do not try to deal with the violent person by yourself – seek help

1. Allow the person to talk
   - Try not to interrupt. If you do, then do so in a calm, gentle and assured manner.
2. Observe but do not turn your back on the person
   - Avoid direct eye contact
   - Do not walk in front of the person and remain far enough away to avoid being assaulted
   - Note physiological changes in the person such as reddening of the face, clenching fists, grimaces, voice becoming louder, heavy breathing, narrowing of their gaze, and so forth.
3. Diffuse the situation
   - Put the person at ease, empathise with their situation/concerns and let them know you understand. Try to identify their grievances and negotiate a peaceful solution
4. Contact human resources for support

Unauthorised Access to Site

1. Initiate search for any unauthorised personnel
   - Identify where they were last seen and what they were doing
2. Secure people, facilities and vehicles
   - Activate general alarm and muster, if necessary
   - Consider shutting down safety critical systems if they cannot be maintained safely if unattended
3. If located:
   - Approach the individual and clearly communicate where they are and the area's restrictions
   - Try to find out why they are on site (follow the guidelines provided)
4. Call the police on 000 or escort the individual off site

Missing Person

1. Obtain information on the time and location of their last sighting
   - Use trackers, work information, last known sighting
2. Try and establish communication via phone, radio or tracker
3. Initiate search
4. Dispatch SERT member to last known location, plan to drive the route taken by missing personnel. Ensure contact is maintained with the SERT member undertaking the search
5. Determine any requirements for outside assistance or additional support and notify authorities, if necessary
6. If the police are required for a search and rescue, allow them to take control of the situation
7. EMT leader to communicate with next of kin

Post Event Actions

- Secure the scene for incident investigation
- Ensure that the termination of the emergency is communicated
- Follow up with any witnesses/bystanders to ensure they are ok

9.4 Emergency Event Guide 4 – Bushfire / Flood

Incident	
Nature of the incident: ☐ Bushfire ☐ Storm ☐ Flood ☐ Other ……	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Call for assistance as soon as possible; ▪ Assess and ensure the scene is safe – withdraw personnel from danger (if required); ▪ Mobilise the SERT if additional resources are needed; ▪ Mobilise competent first aider to treat injured persons (if required) at scene or first-aid station.	
Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Arrange escort for external back-up	
Notify General Manager Operations	

What to Do

Bushfire

1. Obtain information about the fire including location, wind direction, strength, size and type of fire, and if there are any injured/missing personnel
2. Get weather information and pay attention to the wind direction, check local fire info at: www.firenorth.org.au/nafi3/
3. Consider checking fire breaks, if safe to do so
4. Initiate contact with emergency services and neighbours in surrounding properties
5. Activate alarms and muster, as required

NOTICE

- The control of a bushfire rests with the Rural Fire Brigade until the fire reaches the site boundaries at which time management can then take control
- Should fire breaks be crossed, the SERT leader shall review what plant must be shut down or additional fire breaks be prepared
- During a fire, to ensure the safety of personnel, the environment and equipment, consideration must be given to shutting the plant down.

Adverse Weather

1. Obtain information about the emergency including location, size and extent of event, potential for damage, flooding or storm, and if personnel have been injured or are missing
2. Regularly check weather information and pay attention to warnings from: http://www.bom.gov.au/nt/
3. Road condition reports from: https://roadreport.nt.gov.au/road-map
4. Initiate contact with emergency services, alert road transport companies used by CTP of current conditions.
5. Ensure that no critical activity is started which cannot be completed before the event due to possible evacuation
6. If adequate warning, prepare site by removing any items which may become loose during a storm, flood, etc.
7. Consider whether the plant should be shut down or develop protocols for shutdown
8. Consider if it is safe for people to remain on-site and if so – where.
9. Activate alarms and muster, as required

Post Event Actions

- Secure the scene for incident investigation

9.5 Emergency Event Guide 5 – Electric Shock

Incident

Nature of the incident:

☐ Electric Shock	☐ Flash Burn Injury	☐ Vehicle Roll Over
☐ Unconscious	☐ Respiratory Condition	☐ Other ……

Response Guide

Apply Emergency Action Guide and prepare for escalation	
▪ Call for assistance as soon as possible ▪ Assess and ensure the scene is safe – withdraw personnel from danger (if required) ▪ Mobilise the SERT if additional resources are needed ▪ Mobilise electrician to arrange isolations (if required) ▪ Mobilise competent first-aider to treat injured persons (if required) at scene or first-aid station ▪ Call Ambulance – Dial 000 ▪ Arrange clean potable water for initial treatment of flash burns	

Additional Response – as required

Call a medical facility for assistance/guidance	
Arrange escort for external back-up	
Notify General Manager Operations	

What to Do

Treatment for Electric Shock

1. Check for danger to yourself, bystanders and the patient
2. Before trying to assist the patient, switch off or isolate power
3. If the patient is in contact with high voltage lines, do not approach. Wait until power is disconnected by an authorised electrician
4. Reassure and calm the patient and do not leave them alone

   If patient is unconscious
   - Check for signs of life: if unconscious, follow DRSABCD (Danger, Response, send for help, Airway, Breathing, CPR, Defibrillation)

   If patient is conscious
   - Place them in a comfortable position propped up against a wall to avoid further injury and/or breathing difficulties
5. Apply cool running water to the burnt area for 20 minutes
6. If possible, remove jewellery and clothing from burnt areas
7. Cover the burnt area with a loose and light non-stick dressing, preferably clean, dry, non-fluffy material such as plastic cling film
8. Seek professional medical assistance

NOTICE

- In the event of any electrical shock, the patient should be transported by ambulance or company vehicle for medical attention

Post Event Actions

- Secure the scene for incident investigation

9.6 Emergency Event Guide 6 – Fire / Explosion

Incident		
Nature of the incident:		
☐ Building	☐ Plant and Equipment	☐ Bulk Fuel/Oil
☐ Electrical	☐ Chemical	☐ Other ……

Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Call for assistance as soon as possible; ▪ Assess and ensure the scene is safe – withdraw personnel from danger (if required); ▪ Shut down plant and systems that may be affected by the fire or provide first response fire-fighting, if safe to do so; ▪ Mobilise the SERT if additional resources are needed; ▪ Mobilise competent first-aider(s) to treat injured persons (if required) at scene or first-aid station; ▪ Establish exclusion zones if required (800 mtrs – 1600 mtrs – as required); ▪ Arrange isolation of energy sources; ▪ Assess work permit (where applicable) at job site and refer to emergency plan; ▪ Consult signage/labelling to identify hazardous materials and any response requirements.	

Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Arrange escort for external back-up	
Notify General Manager Operations	

What to Do

Treatment Plant

NOTICE

NOTE: Major plant fires will not be fought using firefighting equipment, plant ESD will be used.

- Only provide basic firefighting on small fires (wastepaper bin size), if close enough or safe to do so.

1. Shut down and depressurise plant and systems that may be affected by the fire
2. If possible, isolate all energy sources and keep ignition sources clear of the hazardous area
3. Evacuate to the muster point, ensuring it is at a safe distance (up to 800 mts) and upwind and conduct head count of all POB.
4. Notify the EMT leader
   - discuss and determine if any additional assistance is required
5. Initiate search and rescue for the missing personnel, if and when safe to do so, and only after confirmation with the SERT leader

Tanks

1. Stop pumps, close valves, if safe to do so, and activate alarm
2. Don't go into bunded areas or onto tanks, or areas where escape may be limited
3. Activate foam generators if safe to do so – SERTL. (*SOP number* for site:).
4. Do not attempt to remove vehicles/road tankers unless action approved by SERTL

Post Event Actions

- Secure the scene for incident investigation

9.7 Emergency Event Guide 7 – Confined Space

Incident	
Nature of the incident: ☐ Person Trapped ☐ Person Injured ☐ Fire ☐ Toxic Atmosphere ☐ Electrical ☐ Engulfment ☐ Other ……	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Call for assistance as soon as possible ▪ Assess and ensure the scene is safe – withdraw all unnecessary personnel from area ▪ Mobilise the SERT if additional resources are needed ▪ Mobilise competent first-aider to treat injured persons (if required) at scene or first-aid station ▪ Mobilise electrician – arrange isolations (if required) ▪ Access Work Permit at job site and refer to the emergency plan	
Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Check gas monitoring results on work permit	
Test atmosphere with monitor before entering the confined space – check wind direction	
Arrange escort for external back-up	
Notify General Manager Operations	
What to Do	
1. If personnel are trapped or unable to escape the CS – STOP all persons from entering the location unless authorised and fitted with appropriate lifesaving equipment / PPE 2. SERT Leader shall ensure that isolations remain intact and that no other oxygen depleting events may unfold during the extraction. 3. The Rescue plan for the task would indicate the requirement to have BA, first aid, a method of extraction and suitable numbers to complete the task – ensuring this is correct and the gear is available, then; 4. SERT Leader shall order the insertion of team members in BA only when prepared, and ready to respond 5. Other team members shall be waiting in support including the SERT first aider with a Satellite phone with access to medical support online (if required) 6. Vehicle (ambulance if possible) is at the ready to remove patient as required 7. Ambulance has oxygen with mask and defibrillator available 8. Spotters shall be used to ensure that all persons remain clear of the situation unless required to assist	
Post Event Actions	
▪ Secure the scene for incident investigation	

9.8 Emergency Event Guide 8 – Spill / Release – Road Haulage – Wet Weather

Incident
Nature of the incident: ☐ Heavy Haulage / Road transport ☐ Bulk transport vessel ☐ Bulk Chemical Load ☐ Other ……

Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Site responder - Call for assistance as soon as possible ▪ If on scene -Assess and cautiously approach from upwind - ensure the scene is safe – withdraw personnel from danger (as required), use available extinguishers, shielding, breathing support; ▪ Mobilise the SERT for additional resources as needed – carry ELSA gear, extinguishers, tools, spill gear. ▪ Mobilise competent first-aider(s) to treat injured persons (if required) at scene or first-aid station ▪ Assist external personnel with notifications and calls for assistance	

Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Arrange escort for external back-up	
Notify General Manager Operations	

What to Do

1. Ensure vehicles can safely navigate to and from areas of concern – provide alternate routes if possible;
2. Ensure all personnel are safe and clear of area -Stay clear of Vapour, Fumes, Smoke and Spills;
3. Use safety related equipment as required, to safely extract personnel if in immediate danger;
4. Different PPE (Face shields, goggles, heavy gloves, Gum boots) may be required in Wet weather situations to safely perform any task;
5. Extricate personnel and team to a safe distance and clear of potential hazardous fumes (Upwind);
6. Attempt to Identify the spill - refer to the HAZCHEM code, Truck Placarding, Driver or SDS for methods of control / management;
7. Alert Management / SES / Police or 000 of situation ASAP, note location, HAZCHEM concerned, areas of impact;
8. Divert or stop traffic (do not start vehicles if a low flash-point product has been split) if tanker truck or Chemical event is involved in a fire, ISOLATE for 800 metres in all directions;
9. Consider equipment – dependent on location, proximity or safety – what can or should be saved?
10. Interacting personnel enter only when wearing appropriate PPE;
11. If fluid form, attempt to prevent spread of spilled product from the vehicle itself (shut valves – internal / external) if safe to do so, using hazard specific PPE;
12. Remove all sources of ignition to reduce any potential of fire;
13. Notify EMT and advise situation and request assistance if needed – advise SES, Police – update as required;
14. Never attempt to perform a rescue without support or adequate forethought;

Refer to: MSTD13-PL002 ERP Spill response procedure for assistance with methods of containment or prompts during the containment process (if fluid) or the ***Australian-Emergency-Response-Guide-Book-2018*** in M-Files.

Post Event Actions

- Secure the scene for incident investigation;
- Team debrief / Mental anguish and concerns.

9.9 Emergency Event Guide 9 – Spill / Release Site related

Incident
Nature of the incident: ☐ Warehousing movements ☐ Plant Failure ☐ Bulk site storage vessel ☐ Evaporation Pond ☐ Other ……

Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Call for assistance as soon as possible; ▪ Assess and cautiously approach from upwind - ensure the scene is safe – withdraw personnel from danger (if required or able); ▪ Mobilise the SERT if additional resources are needed - carry ELSA gear, extinguishers, tools, spill gear; ▪ Mobilise competent first-aider to treat injured persons (if required) at scene or first-aid station; ▪ Assist external personnel with notifications and calls for assistance.	

Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Arrange escort for external back-up	
Notify General Manager Operations	

What to Do

1. Notify EMT (radio) and advise situation and request assistance if needed;
2. Consider ESD of plant – dependent on location, proximity or safety need;
3. Ensure all personnel are safe and clear of area -Stay clear of Vapour, Fumes, Smoke and Spills;
4. Interacting personnel consider wearing ELSA gear if attempting to extract any personnel – advise ERTL of intent – obtain support and clearance;
5. Different PPE (Face shields, goggles, heavy gloves, Gum boots) may be required to safely perform the task;
6. Remove all sources of ignition to reduce the potential fire hazard;
7. Establish source of spill/leak, and determine the extent of pollution;
8. Stop further leakage (e.g. stop pumping or in case of pipeline leak give warnings to stop the flow), close valves, attempt to stop leaks, move object on its side;
9. Isolate spill or leak area for at least 100 metres (330 feet) in all directions to prevent spread of spilled product (if the situation requires- i.e. block drains, dam ditches, boom watercourses, close water intakes);
10. Divert or stop traffic (do not start vehicles if a low flash-point product has been split);
11. Attempt to collect spilled and ponding hydrocarbon and return product to safe containment;
12. Use safety related equipment as required, to safely extract personnel if in immediate danger;
13. Consider decontamination of personnel – clothing / footwear / equipment – water to dilute substance;
14. Never attempt to perform a rescue without support or adequate forethought;

Refer to: MSTD13-PL002 ERP Spill response procedure for assistance with methods of containment or prompts during the containment process (if fluid) or the ***Australian-Emergency-Response-Guide-Book-2018*** in M-Files.

Post Event Actions

- Secure the scene for incident investigation;
- Team debrief / Mental anguish and concerns.

9.10 Emergency Event Guide 10 – Aircraft Accident

Incident	
Nature of the incident: ☐ Helicopter Down ☐ Plane Down ☐ Emergency Landing ☐ Other ……	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Call for assistance as soon as possible ▪ Assess and ensure the scene is safe – withdraw personnel from danger (if required) ▪ Mobilise the SERT if additional resources are needed ▪ Mobilise competent first-aider to treat injured persons (if required) at scene or first-aid station ▪ Assist pilot and crew with notifications and calls for assistance	
Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Arrange escort for external back-up	
Notify General Manager Operations	

What to Do

1. Fire response team and vehicle to attend site – with a satellite phone;
2. If personnel are on the plane and fire is a barrier - Safely attempt to approach and extinguish any fire (or keep at bay) whilst personnel exit or are assisted;
3. Interacting personnel consider wearing ELSA gear when attempting to extract any onboard aircraft personnel.
4. Extricate personnel and team to a safe distance and clear of fumes (Upwind);
5. Isolate spill or leak area in all directions to prevent spread of spilled product (i.e. block drains, dam ditches, boom watercourses, close water intakes);
6. Remove all sources of ignition to reduce the potential fire hazard;
7. SERT first aid responder to provide immediate assistance – call Medical doctor / advise nearest clinic for support if required for in-field assistance;
8. Call 000 to advise of incident;
9. Monitor the downed aircraft and maintain safety vigil from a safe distance;
10. Do not attempt to touch or move the aircraft or any items which may have been thrown from the impact area.

Post Event Actions

- Secure the scene for incident investigation (CASA and Police incident scene)

9.11 Emergency Event Guide 11 – Medical Trauma

Incident		
Nature of the incident: ☐ Person Trapped ☐ Person Injured ☐ Fire ☐ Toxic Atmosphere ☐ Electrical ☐ Engulfment ☐ Other ……		
Response Guide		
Apply Emergency Action Guide and prepare for escalation		
▪ Call for assistance as soon as possible ▪ Assess and ensure the scene is safe – withdraw personnel from danger (if required) ▪ Mobilise the SERT if additional resources are needed ▪ Mobilise competent first-aider to treat injured persons (if required) at scene or first-aid station ▪ Mobilise electrician and arrange isolations (if required) ▪ Access Work Permit at job site and refer to the emergency plan		
Additional Response – as required		
Ambulance – Fire – Police (Dial 000)		
Arrange escort for external back-up		
Notify General Manager Operations		

What to Do

1. First responder shall:
2. Follow DRSABCD (Danger, Response, Send for help, Airway, Breathing, CPR, Defibrillation);
3. After the area assessment begin most appropriate actions;
4. Remove the patient and clear the area of personnel if potential for harm is, or may become evident (as required);
5. Keep others aware of dangers and delegate an assistant to help in key tasks;
6. Give preference to the SERT First Aider to deliver emergency care to an injured person;
7. If an ambulance is available – bring the vehicle (and all medical equipment) to the site of the injured person;

   Note - there must always be 2 people in the ambulance when transporting a patient - Primary OFA to be supporting the patient - the 2nd person drives and be up to date with First Aid/CPR training.
8. Ensure a Satellite phone is at the scene and turned on;
9. SERT leader shall activate the SERT to ensure the area is made safe.

Post Event Actions

- Secure the scene for incident investigation
- In the case of a Fatality, authorities (Police) must notify Next of Kin before the EMT leader commences communication (with Next of Kin)

9.12 Emergency Event Guide 12 – Well Blowout

Incident	
Nature of the incident: ☐ Oil Well ☐ Gas Well ☐ Other ……	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Call for assistance as soon as possible ▪ Activate the emergency shutdown ▪ Assess and ensure the scene is safe – withdraw personnel from danger (if required) ▪ Mobilise the SERT if additional resources are needed ▪ Mobilise competent first-aider to treat injured persons (if required) at scene or first-aid station ▪ Mobilise electrician and arrange isolations (if required)	
Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Arrange escort for external back-up	
Notify General Manager Operations	

What to Do

1. Use DRS – Danger, Response, Send for help;
2. Close the surface valves or the Blowout Preventer (BOP) using all necessary safety equipment and care;
3. Evacuate non-essential personnel and establish exclusion zones;
4. Contact Company Drilling manager for information on how to further control the situation;
5. Initiate the necessary well controls and monitor results;
6. Account for personnel – both contractor and staff.

Post Event Actions
▪ Secure the scene for incident investigation

9.13 Emergency Event Guide 13 – Bites / Stings

Incident	
Nature of the incident: ☐ Snake Bite ☐ Spider Bite ☐ Bee / Wasp Sting ☐ Other ……..	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Call for assistance as soon as possible ▪ Secure scene and withdraw personnel from danger (if required) ▪ Try to identify what caused the poisoning/bite/sting ▪ Establish exclusion zones, if required ▪ Mobilise the SERT if additional resources are needed ▪ Mobilise competent first-aider to treat injured persons (if required) at scene or first-aid station ▪ Arrange escort for internal backup	
Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Arrange transport of persons to medical facility	
Arrange escort for external back-up	
Notify General Manager Operations	

What to Do

Managing a Snake Bite

NOTICE

- Do not wash venom **off the skin as this will assist identification. Do not use a constrictive bandage (i.e. arterial tourniquet)**
- Do not try and catch the snake – identification is no longer required for antivenom

1. Check for signs of life: if patient is unconscious, follow DRSABCD (Danger, Response, Send for help, Airway, Breathing, CPR, Defibrillation) procedures;
2. Keep the patient calm;
3. Apply a pressure bandage firmly starting just above the fingers or toes and moving up the limb as far as possible;
4. Immobilise casualty:
   - apply a splint to immobilise the limb
   - check circulation of fingers or toes
   - ensure patient doesn't move
5. Call for an ambulance/medical assistance.

What to Do

Managing a Spider Bite

1. Follow DRABCD (Danger, Response, Airway, Breathing, CPR, Defibrillation) procedures
2. Lie patient down
3. Keep patient calm
4. Immobilise patient:
   - apply a splint to immobilise the limb
   - check circulation in fingers or toes
   - ensure patient doesn't move
5. Call for an ambulance/medical assistance.

What to Do

Managing a Sting / Allergy

NOTICE

- Person with a known allergy may be carrying an EpiPen® and may request assistance in administering the drug

1. Follow DRABCD (Danger, Response, Airway, Breathing, CPR, Defibrillation) procedures;
2. Lie patient down;
3. Keep patient calm;
4. Administer
   - EpiPen® if available and required (EpiPen injection time use is indicated on the pen – 10 second & new 3 second);
5. Apply ice or cold compresses to help reduce the pain and/or swelling;
6. Call for an ambulance/medical assistance.

Post Event Actions

- Secure the scene for incident investigation
- In the case of a Fatality, authorities (Police) must notify Next of Kin before the EMT leader commences communication (with Next of Kin)

Note - there must always be 2 people in the ambulance when transporting a patient - Primary OFA to be supporting the patient - the 2nd person drives and be up to date with First Aid/CPR training.

9.14 Emergency Event Guide 14 – Pipelines

Incident	
Nature of the incident: ☐ **Rupture** ☐ **Leak** ☐ **Blowout** ☐ **Other ……**	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Call for assistance as soon as possible ▪ Assess and ensure the scene is safe – withdraw personnel from danger (if required) ▪ Mobilise the SERT if additional resources are needed ▪ Mobilise competent first-aider to treat injured persons (if required) at scene or first-aid station ▪ Mobilise electrician and arrange isolations (if required) ▪ Access Work Permit at job site and refer to the emergency plan	
Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Check gas monitoring results on work permit	
Test atmosphere with gas monitor before entering the confined space	
Arrange escort for external back-up	
Notify General Manager Operations	

What to Do

Leak

NOTE: If there is a leak, the response should be consistent with the information presented in the spill/release Emergency Action Guide.

Ruptures

1. Identify the location of the failure and isolate the affected section of the pipeline, suspend operations if necessary;
2. Arrange for the safe shutdown of plant, equipment, vehicles in the affected area;
3. Establish a perimeter around the affected area, evacuate or restrict access;
4. Determine if any outside assistance is required;
5. Establish gas or other testing protocols prior to entering the area or introducing any potential ignition sources e.g. equipment;
6. If the spill has leaked into any water courses, install booms/barriers to limit any flows. Establish spoon drains/berms/dirt bunds to contain any flow or runoff;
7. Review forecast weather information;
8. Monitor and manage the leaked product ensuring personnel remain safe.

Post Event Actions

- Secure the scene for incident investigation;
- Determine the likely amount of spillage.

9.15 Emergency Event Guide 15 – Gas Leak (Minor)

Incident	
Nature of the incident: ☐ Rupture ☐ Leak ☐ Blowout ☐ Other ……	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Communicate to personnel to vacate the area and notify SERT Coordinator and SERT Leader ▪ Mobilise the SERT if additional resources are needed ▪ Shut down or isolate plant as required, cease vehicle / equipment movements, cordon off the area ▪ Organise Work Permit and or Initiate immediate repairs or other actions as required. ▪ Monitor progress of repairs or situation until condition made safe ▪ Advise team members of satisfactory completion of repairs or of safe condition	
Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Check gas monitoring during process of repairs or making safe	
Test atmosphere with monitor before entering the area	
Log details of condition, time and task progress	
Notify General Manager Operations	

What to Do

Leak

NOTE: The ESD systems provide the main control mechanism for all Gas escapes: no attempt should be made to disperse or extinguish a Gas cloud or fire unless the extinguisher is readily at hand and the fire smaller than a waste bin in size.

1. Identify the location of the leak and isolate the affected section of the pipeline, suspend operations if necessary;
2. Arrange for the safe shutdown of plant, equipment, vehicles in the affected area;
3. Establish a perimeter around the affected area, evacuate or restrict access;
4. Determine if any outside assistance is required;
5. Establish gas or other testing protocols prior to entering the area or introducing any potential ignition sources e.g. equipment;
6. Make emergency repairs to eliminate gas escaping from the affected area;
7. Review forecast weather information;
8. Prepare a Permit and work order to finalise after immediate repairs undertaken;
9. Prepare and enter information to incident report in INX;
10. Determine the likely amount of release.

Post Event Actions

- Secure the scene for incident investigation
- De-brief team re incident, non-dissemination or disclosure of information to friends or media

9.16 Emergency Event Guide 16 – Gas Leak (Major)

Incident	
Nature of the incident: ☐ Rupture ☐ Leak ☐ Blowout ☐ Other ……	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Call for assistance as soon as possible ▪ Activate the ESD system – as required ▪ Mobilise the SERT ▪ Shut down or isolate plant as required, cease vehicle / equipment movements, cordon off the area ▪ Assess the scene – move personnel further from danger (if required) ▪ Notify EMT if additional resources are needed ▪ Mobilise competent first aider to treat injured persons (if required) at scene or first-aid station ▪ SERT refer to the emergency plan	
Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Monitor emergency situation and advise EMT	
Restrict entry to all affected areas	
Notify General Manager Operations	
Notify external emergency response as directed or required	
What to Do	
Leak	
1. The ESD systems provide the main control mechanism for all Gas escapes: no attempt should be made to disperse or extinguish a Gas cloud or fire; 2. Identify the location of the failure and isolate the affected section of the leak, suspend operations if necessary; 3. Arrange for the safe shutdown of plant, equipment, vehicles in the affected area; 4. Establish a perimeter around the affected area, evacuate or restrict access; 5. Determine if any outside assistance is required; 6. If repairs are possible – undertake using caution; 7. Review forecast weather information; 8. Assign a team member to gather and record information about the leak and the incident timeline; 9. Determine the likely leak volume.	
Post Event Actions	
▪ Secure the scene for incident investigation ▪ De-brief team re incident, non-dissemination or disclosure of information to friends or media	

9.17 Emergency Event Guide 17 – MASP (LOPC)

Incident	
Nature of the incident: ☐ **Leak** ☐ **Strike** ☐ **Other ……**	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Receive call from Central personnel, general public or 1300 notification <ISS notification process>. ▪ Assess and ensure the scene is safe – withdraw personnel from danger (if required) ▪ **Mereenie** PIC to be notified (Asset Owner) and take the role of SERT Lead ▪ Mobilise the SERT if additional resources are needed (potentially resources from PV/BECGS) ▪ Mobilise competent first responder, first-aider to treat potential injured persons (if required) at scene ▪ Establish communication link between incident site and SERT. ▪ Refer response guide below.	
Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Notify General Manager Operations / Duty Manager / EMT	
External contracted services (civil and / or mechanical)	
What to Do	
Leak / Strike	
9. Identify the location of the failure and isolate the affected section of the MASP (if possible). 10. SERT leader to nominate site first responder to mobilise to reported leak/strike location. 11. Arrange for the safe shutdown of plant, equipment, vehicles in the affected area; 12. Establish a perimeter around the affected area, evacuate or restrict access; 13. Determine if any outside assistance is required. Consult with GM Operations or Duty Manager regarding escalation to Emergency Management Team (Brisbane). 14. Establish gas or other testing protocols prior to entering the area or introducing any potential ignition sources e.g. equipment; 15. If the spill has leaked into any water courses, install booms/barriers to limit any flows. Establish spoon drains/berms/dirt bunds to contain any flow or runoff; 16. Monitor and manage the leaked product ensuring personnel remain safe.	
Post Event Actions	
▪ Secure the scene for incident investigation; ▪ Determine the likely amount of spillage.	

10. Additional Information

10.1 Aviation Guidance

Aircraft must contain enough fuel for the return leg of journey as additional fuel stocks are not available on site

Site Airstrip Basic Information

- Airstrips are generally maintained all-weather dirt runway
- Site coordinates (To be supplied):
    - Latitude/Longitude:
    - Elevation
- The runway is on a magnetic bearing of:
- The strip dimensions are:
- Runway / Site call sign and frequency: (if required) Frequency:
- Pilot should establish radio communications with Site 30 minutes from runway to allow for runway checks and local weather condition reports

Note: Any concerns or hazards associated with the runway or landing position:

When arriving at night (or following periods of wet weather), the RFDS pilot may determine that an airstrip inspection is required prior to landing.

1. If an inspection is deemed necessary, the RFDS Operations Communications Centre will contact you to arrange some someone to be present at the airfield at least 15 minutes prior to the aircraft's arrival.
2. The pilot must be able to contact a person at the airfield to confirm the runway is serviceable and free of hazards.
3. Contact between the aircraft and the ground will be made via **UHF Channel 13.**
4. If verbal confirmation via **UHF Channel 13** is not forthcoming, the pilot will independently assess the situation and may not land.

Site Airstrip Night Landing

Lighting is required to be initiated at least 30 minutes before the estimated time of arrival of the aircraft in the way prescribed by RFDS night landing requirements.

Parking

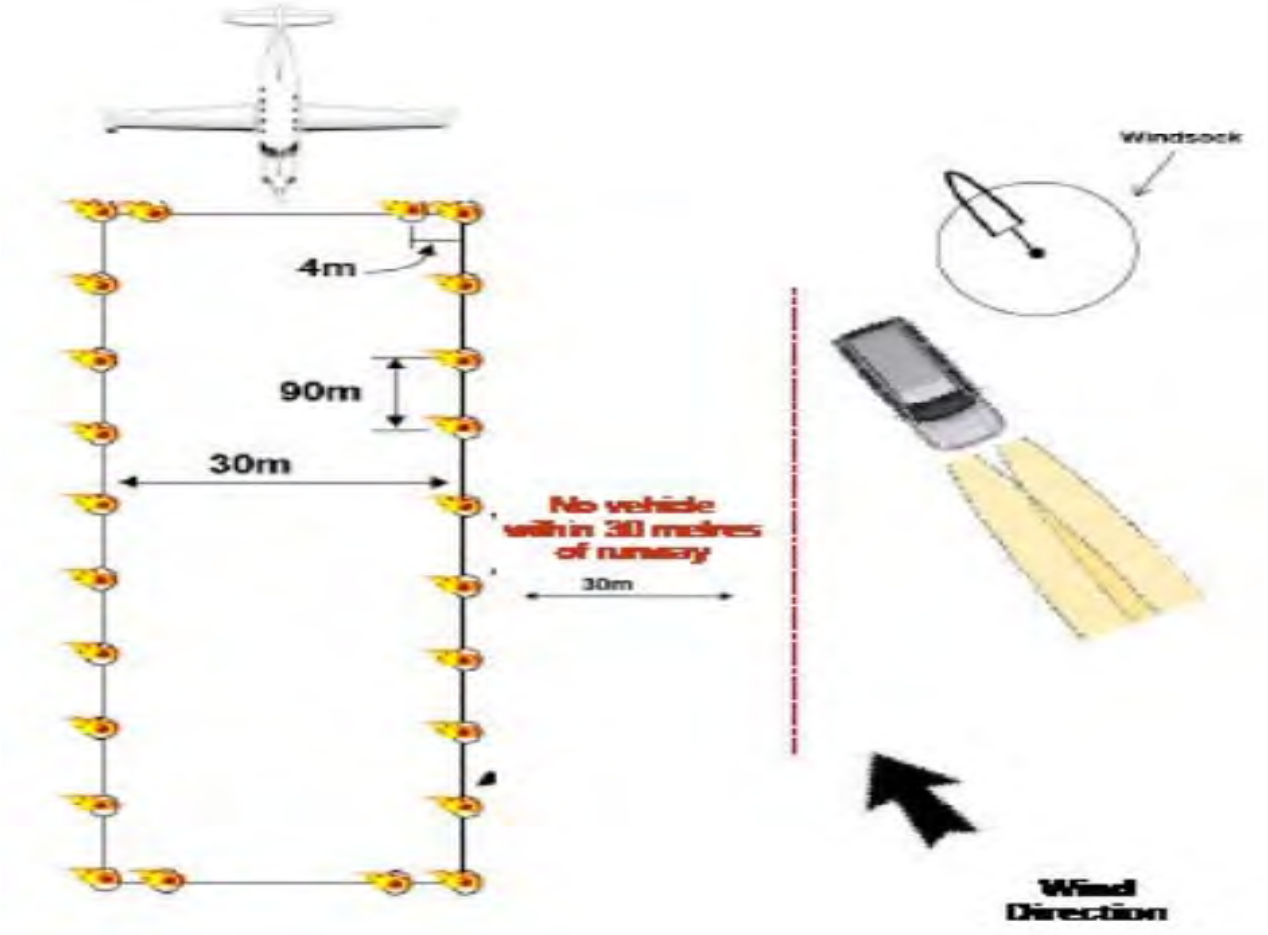
- Park your vehicle so that it is pointing into the wind.
- Turn your headlights on high beam and hazard lights on.
- No vehicle is to be parked at either end of the runway.
- All vehicles must be at least 30 metres from the side of the airstrip.
- If possible, park as close as practicable to the windsock (do not attempt to illuminate the windsock with car lights).
- If parking here is not possible, park in a clear location at least 30 metres from the side of the strip.

Stay listening to UHF channel 13

1. The pilot will contact you as they approach your area to confirm the airstrip is serviceable and safe.
2. Speak up if there are any issues
3. The aircraft may NOT land if the pilot is unable to contact you.
4. In the event the aircraft is circling overhead, and you haven't had contact from them, there may be radio issues. If you have checked the airfield as per this procedure, turn on your vehicle's hazard lights to indicate it is safe to land.
5. If you have radio issues, call the RFDS Operations Communications Centre on 1800 RFDS SA (1800 733 772).

After aircraft departure
Flares / lights must be left lit for 30 minutes in the event the aircraft must return to land due to an emergency.

Figure 1



Before the aircraft is due to land, check the strip to ensure it is clear of wildlife, stock or debris. Condition of runway surface is to be determined and any issues communicated to the pilot.

<u>Site Helipad basic information</u>

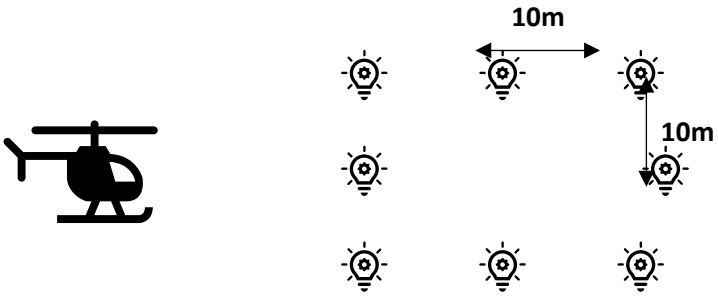
- Helipad is a maintained all-weather dirt pad
- Site coordinates:
  - Latitude/Longitude:
- The helipad is located:
- The pad dimensions are 30 x 30 meters
- Site call sign:
- Frequency:
- Pilot should establish radio communications 30 minutes prior to landing on site to allow for checks and local weather condition reports

The helipad has a final approach and take-off area which is circular and equal to twice the length of a helicopter. Should a larger than normal helicopter be used, and concern is raised regarding the landing site, the airstrip should be used.

Site Helipad Night Landing

Lighting is required to be initiated at least 30 minutes before the estimated time of arrival of the aircraft in the way prescribed by RFDS night landing requirements.

Figure 1



Five (5) minutes before the helicopter is due to arrive, inspect the landing area to ensure the site is free of lose objects that could be blown away.

Helicopter Safety Procedure

All personnel are to be instructed as to the safest way to approach the helicopter including:

- removing and securing any loose clothing when approaching or when showing wind direction
- only approaching the helicopter when the pilot gives you the thumbs up
- approaching and leaving the helicopter in a crouched position in the pilot's field of vision, never toward the rear of the helicopter
- always follow the pilot's instructions as they are responsible for the safety of the flight
- If the helicopter is taking off immediately, move at least 10 metres away with your gear and crouch down. Remain there until the helicopter has gone.

10.2 Site Information / Maps

Location

Site Name	Mereenie	
Site Address	Off Larapinta Drive	
Site Grid Reference	Latitude: 23 58 36 South Longitude: 131 33 42 East	
Site Location and Accessibility Relevant to Local Community	**Item**	**Details**
	Nearest Town	Alice Springs (300kms)
	Nearest Major Road	Larapinta Drive
	Nearest Airport	Kings Canyon
	Nearest Airstrip	Mereenie

Operation

Core Site Business	Gas Production
Operating Hours	365 days per year, 24 hours per day
Staffing arrangements	Operations staff work day shift only. 24-hour support is provided via an on-call roster. Operations staff stay on-site in an accommodation block.
Site Internal Emergency Radio Channel	No. 2 Not monitored 24hrs.

Onsite Medical Support

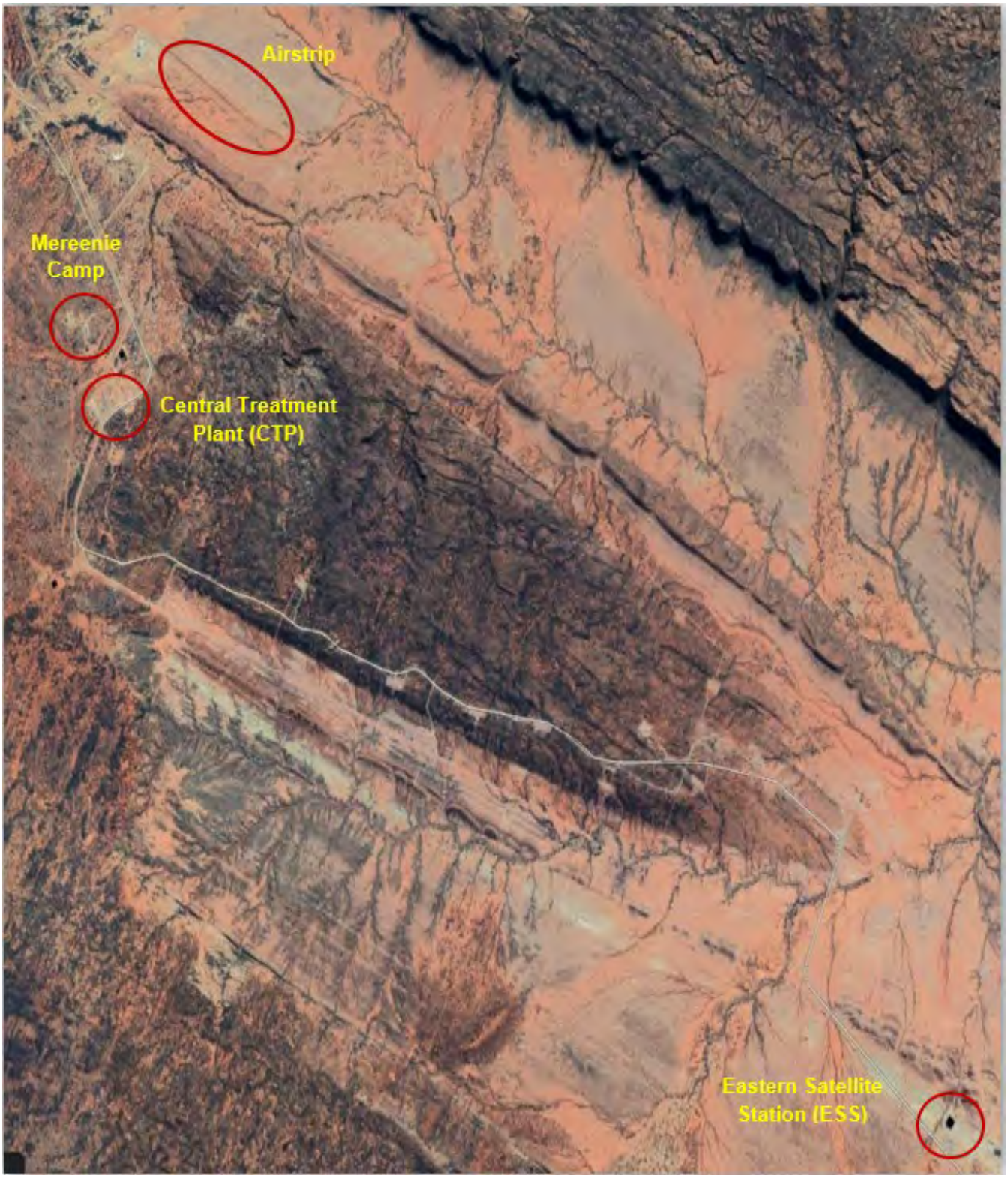
Qualified first aiders	2 per shift
First aid kits	In every vehicle and boxed for use in emergencies
NT Health Medial Kit	Fully equipped drug dispensing kit
Specific equipment	Fully equipped medical room and ambulance on standby

Maps

The following maps / pictures are included for use in an emergency:

- Site – showing location of the camp, Central Processing Facility, and airstrip
- Camp maps – showing the location of emergency equipment
- Central Processing Facility
- Major pipeline infrastructure map

Mereenie Operation Map



Mereenie Camp Map



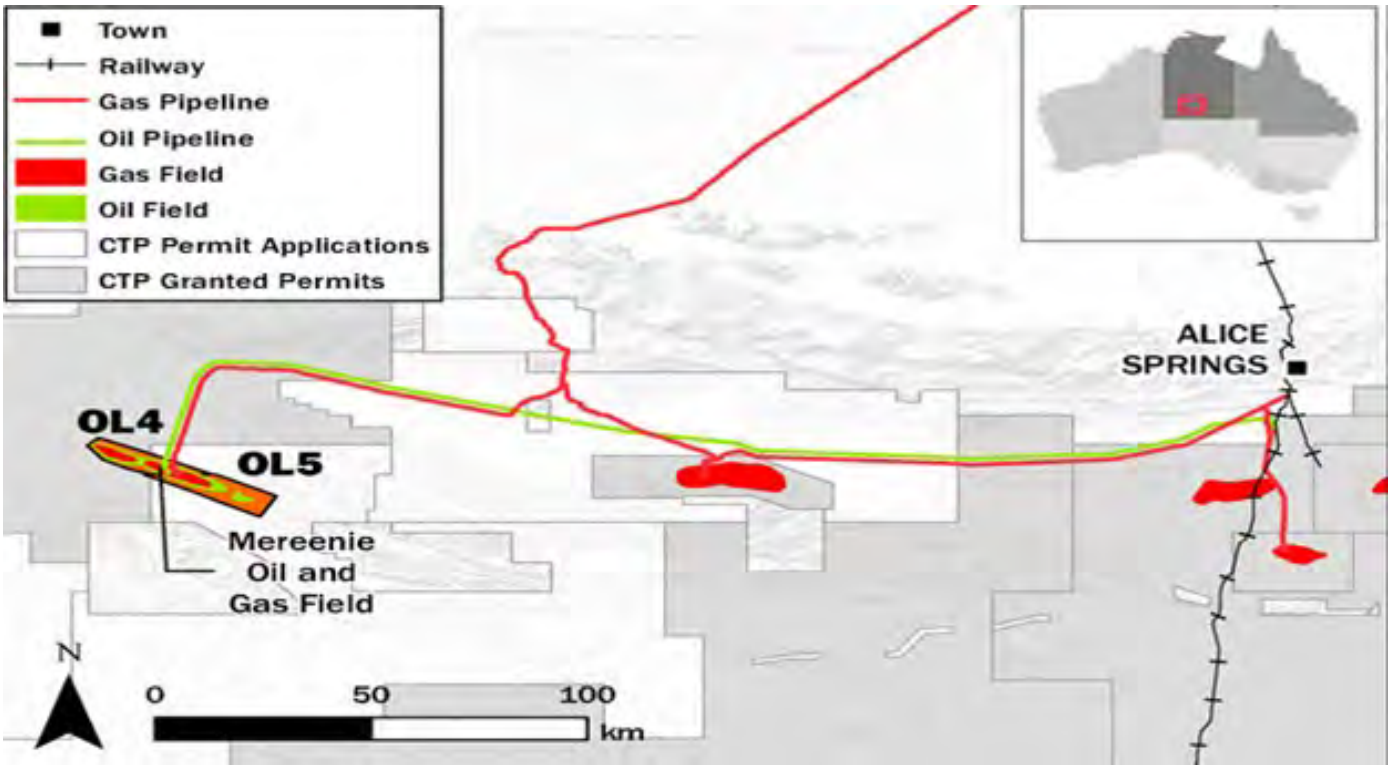
Central Treatment Plant



Eastern Satalitte Station



Major Pipeline Infrastructure map



APPENDIX F. Liquids Flare HAZOP Report

PAPSOLUTIONS PTY LTD

MEREENIE CENTRAL TREATMENT PLANT – HC LIQUIDS FLARE LINE CONNECTIONS HAZOP REPORT

Document Number: **CPL2514-PRO-RPT-002**

Published: **24/10/2025**

Revision: **1**

CTP Doc Number: MOC2510003-015-REP-0001

Client(s): Central Petroleum

PREPARED FOR:

Central Petroleum

Disclaimer & Confidentiality

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[redacted]

DOCUMENT NUMBER CTP Doc Number	CPL2514-PRO-RPT-002 MOC2510003-015-REP-0001					
1	24-10-25	Re-Issued for Use	JL	KT	KT	MK
0	21-10-25	Issued for Use	JL	KT	KT	MK
A	17-10-25	Issued for Review	JL	KT	KT	MK
REVISION	**DATE**	**DESCRIPTION**	**ORIGINATOR**	**REVIEWER**	**APPROVAL**	**CLIENT**

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TABLE OF CONTENTS

ABBREVIATIONS ..... **I**
EXECUTIVE SUMMARY ..... **II**
1. INTRODUCTION **1**
1.1. Background 1
1.2. Scope 1
1.3. Objectives 1
1.4. Reference Documents 2
2. HAZOP STUDY MEETING AND TEAM **3**
3. METHODOLOGY AND PROCEDURE **4**
4. FINDINGS AND RECOMMENDATIONS **6**
APPENDIX A. ATTENDANCE **7**
APPENDIX B. WORKSHOP MINUTES **8**
APPENDIX C. MASTER P&IDS **9**

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ABBREVIATIONS

Abbreviation	Definition
AS	Australian Standard
ALARP	As Low As Reasonably Practicable
CPL	Central Petroleum Limited
CTP	Central Treatment Plant
FGRC	Flare Gas Recovery Compressor
HAZOP	Hazard and Operability Study
IDLH	Immediately Dangerous to Life or Health
LPG	Liquefied Petroleum Gas
MS	Microsoft
MoC	Management of Change
NO_x	Nitrogen Oxides
P&ID	Piping & Instrumentation Diagram
TEA	Triethyl Arsenic
TMA	Trimethyl Arsenic
Sm^3	Standard Cubic Meter
SO_x	Sulphur Oxides
STEL	Short Term Exposure Limit
TOR	Terms of Reference

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EXECUTIVE SUMMARY

A Hazard and Operability Study (HAZOP) was performed for the Mereenie CTP Flare Line Connections Projects covered by [redacted] MOC 25 10 003 and annexed MOC 25 03 002. The workshop was held on Wednesday, 15th of October via MS Teams.

The workshop examined the proposed flare modifications to the Mereenie CTP to identify any potential hazards rising from deviations in process conditions, and to examine whether sufficient controls are in place to manage the hazards. A previous HAZOP workshop was conducted on 26th March, 2025 for MOC 25 03 002. However, changes have been made to the flare system since the initial HAZOP.

The findings and workshop recordings from the HAZOP are provided in Appendix B.

Eleven (11) recommendations were made during HAZOP.

A complete list of the recommendations can be found in Section 4.

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1. INTRODUCTION

1.1. BACKGROUND

Central Petroleum has identified the concentration of arsenic in the oil as a potential concern for their clients downstream processing operations which are fed with crude and condensate trucked from the Mereenie Central Treatment Plant (CTP). As an interim measure, CPL has proposed additional connections to the flare header under MoC 2503002 annex., [redacted] and MOC 25 10 003 – Mereenie Condensate [redacted] Flare Line Connections, which would allow CPL to manage reduced blended oil export volumes in-line with the clients' request. CPL is also investigating the feasibility of a permanent flaring system including atomizers and blowers for a long-term, future solution.

A previous HAZOP assessment has been conducted on 26th of March. However, modifications to the project are proposed and therefore Central Petroleum has requested a second HAZOP to identify potential hazards due to the modifications.

1.2. SCOPE

The scope of the workshop includes:

- Condensate stabiliser liquid drain connection to flare header modifications;
- Different modes of operation:
  - Full flaring;
  - Partial flaring; and
  - No flaring.

[redacted]

- FGRC 2nd stage suction scrubber liquid drain to flare.

The HAZOP excludes:

- Upstream and downstream connections unaffected by the modification.
- Legacy issues.
- Consideration of concurrent approvals or future modifications.

1.3. OBJECTIVES

The objectives of a HAZOP review are to:

a) Review a plant or process to provide early identification of potential hazards or operability problems to ensure that they are adequately addressed in the design and operation of the facility with minimal impact on project cost or schedule;
b) Ensure that the hazardous aspects of the design are fully addressed;
c) Ensure that the design is safe and can be operated safely;
d) Ensure that actions and outcomes of the HAZOP are recorded and subsequently closed-out;
e) Identify existing safeguards; and
f) If existing safeguards are considered inadequate, propose actions to undertake further assessment to address the potential hazard or operability problem

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1.4. REFERENCE DOCUMENTS

The documents outlined in Table 1-1 were used in the writing of this report and should be read in conjunction with this report.

Table 1-1 – Reference documents

Ref	Document Number	Document Title	Revision
[1]	CPL2504-PRO-RPT-001	Mereenie Condensate and Crude Oil Flare Line Connection – HAZOP report	1
[2]	CPL2514-PRO-RPT-001	Mereenie Condensate and Crude Oil Flare HAZOP TOR	A
[3]	9925-010-PID-0044_12W1	Mereenie CTP – Condensate Stabilisation P&ID	A
[redacted]			
[6]	9925-010-PID-0187_2W1	Mereenie CTP – Flare Gas Recovery compressor P&ID	A
[7]	9925-010-PID-0173_2W1	Mereenie CTP – Flare Gas Compression P&ID	A
[8]	9925-010-PID-0183_4W1	Mereenie CTP – Services 1 (K-701) Stage 1 compression P&ID	A

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2. HAZOP Study Meeting and Team

The HAZOP Study was conducted on Wednesday, 15th of October 2025. The study team possessed the necessary experience and knowledge to be able to address issues within the confines of the meeting.

The study team was comprised of the following personnel shown in Table 2-1 below. A copy of the attendance record can be found in Appendix A.

Table 2-1 – HAZOP Attendees

Name	Role	Company	Location
Kurt Thoren	Facilitator	Pap Solutions	MS Teams
Jun Lee	Scribe	Pap Solutions	MS Teams
Marc Kretschmann	Engineering Team Lead	Central Petroleum	BNE – Mereenie
Rudi Hoogsteyns	Principal Facilities Engineer	Central Petroleum	BNE – Mereenie
Lars Aarekol	Senior Process Engineer	Central Petroleum	MS Teams
Sofia Cerimovic	Operations Engineer	Central Petroleum	BNE – Mereenie
Jarrad Wild	Mereenie Operations Supervisor	Central Petroleum	MS Teams
James Clover	Team Leader – Operations	Central Petroleum	MS Teams

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3. METHODOLOGY AND PROCEDURE

The HAZOP process is illustrated in Figure 3-1 below. The P&IDs were systematically and comprehensively examined to identify possible hazards and potential deviations from normal operations associated with the proposed design.

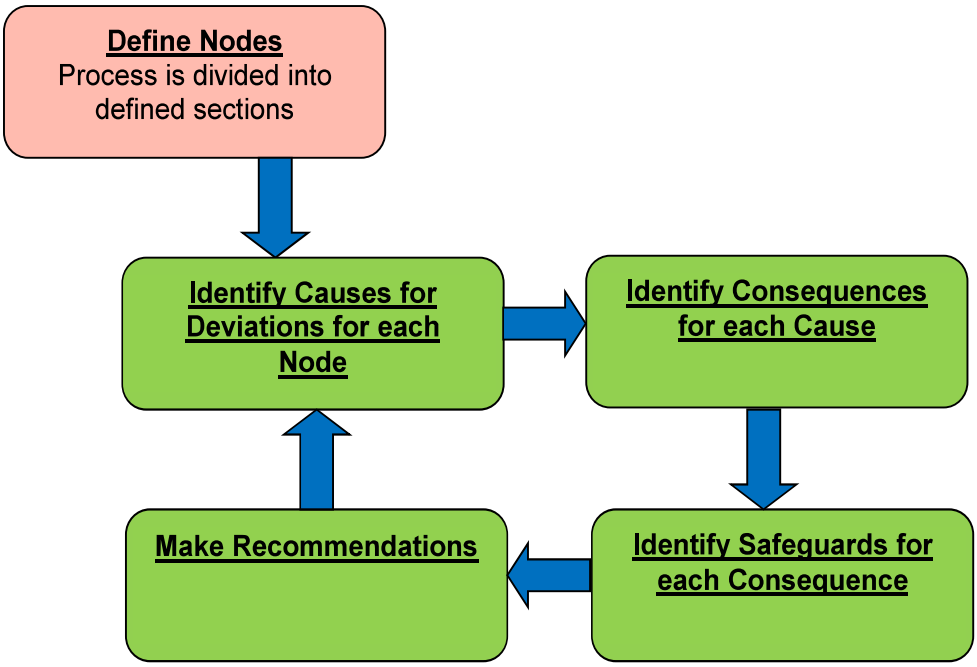

Figure 3-1 - HAZOP Process Overview

The workshop team reviewed the P&ID of the design. The chosen nodes are shown in Table 3-1 below. The nodes were defined and agreed prior to the workshop commencing. The HAZOP P&IDs from the workshop can be found in Appendix C.

Table 3-1 – Nodes from the HAZOP Review

ID	System	Ref.
1	Condensate Stabiliser Liquids Product Line	9925-010-PID-0044_12W1 Rev A
[redacted]		
3	FGRC V-540 Drain tie-in at TIP C	9925-010-PID-0187_2W1 Rev A 9925-010-PID-0173_2W1 Rev A 9925-010-PID-0183_4W1 Rev A

The nodes were subjected to a review using a brainstorming approach prompted by the guidewords found in Table 3-2. Systematic and structured analysis shall be conducted reviewing the potential deviations from normal operating conditions to identify potential hazards and operability issues.

Table 3-2 - Deviations

Deviation
Low / No Flow
High Flow

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Deviation
Reverse / Misdirected Flow
“As well as” Flow
High Level
Low Level
High Pressure
Low Pressure
High Temperature
Low Temperature
Impurities / Composition (Concentration
Instrumentation / Control
Plant Items

Upon completion of the study of Nodes 1 to 3, further review of the overall system was conducted using the guidewords in Table 3-3 below to identify any potential deviations that are not intrinsic to the nodes.

Table 3-3 – Overview Guidewords

Overview Guidewords
General
Testing
Toxicity
Electrical (HA, isolation, earthing)
Service required (air, nitrogen, water)
Materials of Construction (vessels, pipelines, pumps)
Commissioning
Start up
Shut down (isolation, purging)
Break down (power failure, air, steam, water, vacuum, fuels, vents, computer)
Effluent / Waste (gaseous, liquid, solid)
Noise (sources, control methods)
Fire / Explosion
Safety Equipment (personal, fire detection / fighting, escape routes)
P&ID markups

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4. FINDINGS AND RECOMMENDATIONS

The HAZOP successfully examined all major hazard and operability issues that could detract from the successful performance of the proposed facilities within the scope studied. The study team possessed the right mix of design and operating experience.

The reviews were recorded using the Excel Worksheet. The minutes were projected for all attendees to review at the end of each node and distributed for review following the workshop. The complete record of the workshops is included in Appendix B.

In total, eleven (11) recommendations were made during the workshop.

A complete list of actions is shown in Table 4-1.

Table 4-1 – Recommendations

ID	Recommendation	Responsibility
1	Consider increasing alarm priority of reboiler high level alarm LI-0005.	Central Petroleum
2	Consider changing the tag number of Bypass valve 4480 to avoid confusion with valve 4408.	Central Petroleum
3	Ensure that service swap procedure is developed and include the hazards associated with incorrect valve positions for operator awareness.	Central Petroleum
[redacted]		
8	Retain connection to V-250 with valved isolation.	Central Petroleum
9	Consider a three-way valve to direct the flow either to V-250 or flare.	Central Petroleum
10	Provide a check valve on line to V-250 to prevent reverse flow.	Central Petroleum
11	Review dispersion modelling impact of existing muster point if impacted.	Central Petroleum

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APPENDIX G. Mereenie condensate and crude oil flare line connection

ADDENDUM B – Condensate-to-flare system usage case clarifications

Date 29/06/26

Description of Addendum

This addendum to MOC 25 03 002 – Mereenie Condensate and Crude Oil Flare Line Connections is to provide clarification for the usage case of the hydrocarbon liquids flaring provisions.

Addendum A of this MOC stated the usage case of the hydrocarbon liquids flaring system to be a 'short-term operational measure'. While a project is currently budgeted and planned to work through the design of more purpose-built flaring system, and alternative projects and trials are being worked through to address the presence of organic arsenic in our hydrocarbon liquids, this wording may have not adequately communicated the intended use.

The usage case intention for the hydrocarbon liquids flaring system is as follows:

- The system is to only be used where necessary to maintain safe operations while delivering on contracted gas production commitments;
- Usage is intended to stop once normal off take resumes or alternative management measures become available and reliable;
- Flaring will occur within approved flare infrastructure and existing disturbance areas;
- The liquids flaring system will only be used as an ongoing contingency measure if other condensate management measures are not available and reliable (eg. through onsite sales / transport or liquid reinjection into approved wells).

Reason for the Addendum

The purpose of this addendum is to provide clarity of the usage case for hydrocarbon liquids flaring systems at the Mereenie site for alignment with the revised EMP.

Other Notes / Comments

The following MOC deliverables were reviewed for conflicts with this clarified usage case and were deemed to be in-alignment with no changes required:

- MOC250003-015-REP-0001 – Mereenie CTP – HC Liquids Flare Line Connections HAZOP – Report,
- 9925-010-REP-0007 – Mereenie Condensate & Crude Flaring – Flare Consequence Modelling – Report,
- 9925-200-PRO-0024 – Start Up and / or Shut Down the Condensate Stabiliser Liquids Line To Flare - Standard Operating Procedure.

Addendum – Deliverables

No additional deliverables – Per Other Notes / Comments section above.

Approvals

Discipline	Name	[redacted]	Date	Approval Comments
Process	L. Aarekol			
HSE Manager	J. Roebig			
Team Leader Engineering	M. Kretschma			
GM Operation	N. Robertson		01/07/2026	

APPENDIX H. Sampling at Mereenie Field – Implementation Strategy

Implementation Strategy for Environmental Sampling at Mereenie Field

1.0 Purpose and Outcome

- Verify compliance with the Mereenie Field EMP and demonstrate environmental performance
- Define processes and procedures for the accurate monitoring of environmental parameters
- Define measurement standards and criteria

2.0 Scope

Media
Groundwater, soils, wastewater and dust deposition
Area
Groundwater – 5 monitoring bores located within the Mereenie Field
Soils – 7 monitoring locations around the Mereenie Field
Wastewater – 1 monitoring location within the Mereenie Field
Dust Deposition – Sampling locations TBA
Contaminants of Potential Concern
Hydrocarbons
Radioactivity
Metals (particularly arsenic)

3.0 Roles and Responsibilities

Risk and HSE Manager: Approves plan, ensures compliance, signs off reports/actions, informs regulators in the event of an incident

Environmental Specialist Coordinates fieldwork and analysis, data validation, ensures adequate reporting

Site Supervisor Operation of groundwater pumps, approves site access

Laboratory: Analysis, chain of custody, QC results

Consultants: Analyse data, provide analysis reports as requested

4.0 Measurement Standards and Criteria

Groundwater – ANZECC (2000) livestock values
Soils - NEPM Guidelines and background samples

Wastewater – (Human Health Risk Assessment) National Health and Medical Research Council Australian Drinking Water Guidelines
Dust Deposition – Background sample – location 4

5.0 Standard Methods and Field Procedures

5.1 Groundwater

Groundwater monitoring infrastructure

- Maintain a network of properly constructed monitoring bores
- Ensure survey bores are appropriately capped/covered
- Maintain GPS coordinates of survey bores:
    - East Mereenie 2 Water Bore (-24.03416667; 131.6475000)
    - WM15 Water Bore (-23.94138889; 131.4469444)
    - Production No 2 Water Bore (-24.0116667; 131.55305556)
    - ESS or PL5 Water Bore (-24.04638889; 131.64277778)
    - CTP Water Bore (TBA – recently completed bore)

Frequency – Biannual sampling, annual monitoring report

Field Measurements – Temperature, pH, EC

Purging – Undertake purging in accordance with times recorded on the field data sheet (Appendix 8)

Sampling

- Wear nitrile gloves
- Use calibrated TPS water meter
- Complete a QA/QC duplicate
- Use a syringe and filter/s to filter water for specified tests
- Use containers in accordance with ALS Sample Bottle Guide (Appendix 9)

Parameters

- General parameters (pH, electrical conductivity, total dissolved solids, total suspended solids, gross alpha, gross beta)
- Major anions and cations
- Hydrocarbons
- Dissolved gasses
- Dissolved metals/metalloids

5.2 Soils

Soils monitoring

- Maintain GPS coordinates of survey locations:
    - Flare 1 (-24.00199; 131.555013)
    - Flare 2 (-24.00237; 131.554899)
    - Flare 3 (-24.00262; 131.554222)
    - Flare 4 (-24.002213; 131.554753)
    - Office (-24.000719; 131.554753)
    - WM29 (-23.991919; 131.554948)
    - WM30 (-23.971961; 131.523119)

Frequency – Quarterly sampling during temporary increased flaring (December 2025 – My 2025). Annual sampling after increased flaring timeframe has been completed.

Sampling

- Wear nitrile gloves
- Complete a QA/QC duplicate
- Use containers in accordance with ALS Sample Bottle Guide (Appendix 9)
- Take photos of each sampling location

Parameters

Arsenic (mg/kg)

5.3 Wastewater

Wastewater Monitoring Location

- Maintain GPS coordinates of wastewater pond:
    - ESS Pond (-24.0017; 131.55636)

Frequency – biannual sampling, annual monitoring report and Human Health Risk Assessment

Field Measurements – Temperature, pH, EC

Sampling

- Wear nitrile gloves
- Use calibrated TPS water meter
- Use sample pole to reach the water
- Use a syringe and filter/s to filter water for specified tests

- Complete a QA/QC duplicate
- Use containers in accordance with ALS Sample Bottle Guide (Appendix 9)

Parameters

- General parameters (pH, electrical conductivity, total dissolved solids, total suspended solids, gross alpha, gross beta)
- Major anions and cations
- Arsenic speciation
- Hydrocarbons
- Nutrients
- Phenolic Compounds
- Dissolved gasses
- Dissolved metals/metalloids
- Surrogates

5.4 Dust Deposition Monitoring

Dust Monitoring Locations

See figure 1

Figure 1 – Dust monitoring locations



(Location 4 is background)

Frequency – monthly sampling during the period of increased flaring

Methodology –

Depositional dust sampling is conducted at fixed locations within and around the predicted dispersion footprint. Samples are analysed for total arsenic content and, where practicable, arsenic speciation. Monthly rolling analysis permits the identification of accumulation trends over time and provides evidence of whether the modelled airborne-only scenario is conservative or underestimated.

Sampling

- Wear nitrile gloves
- Use containers in accordance with ALS Sample Bottle Guide or other laboratory as determined by specialised consultant.

Parameters

- Arsenic

6.0 Logistics and Field Execution

Sampling Calendar – Sampling events recorded in INX and compliance register, prebook lab bottles, eskies and ice-bricks

Access - Prebook a field operator for assistance operating groundwater pumps, check with supervisor if conditions are safe to work in the firebreak area around the flare pit

Equipment and Consumables – Calibrated TPS meter, nitrile gloves, syringes, filter, eskies, ice-bricks, bottles/containers, field data sheets, pens, camera/phone, shovel, DI water

Sample integrity – Correct containers, temperature control/ preservation, holding times (if possible), chain of custody, book courier and label and secure samples for transit to laboratory

7.0 Quality Assurance/Quality Control (QA/QC)

Duplicates – at least one per sample round

Field Blanks – not required

Calibration – Calibrate TPS water meter upon arrival at field. Laboratory to undertake QA/QC and calibration processes. Spreadsheet evidence can be provided to DLPE on request.

8.0 Data Management and Reporting

- Use field data sheet (Appendix 8)
- Transcribe data as soon as possible into CTP drives. Scan and save handwritten notes and datasheets.
- Report any concerning results or events in INX

9.0 Integration with Operational Controls

Monitoring outcomes may instigate operational controls, such as:

- Increased dust suppression
- Reduction in flaring

- Stormwater management
- Bunding/integrity checks, spill response, tank inspections, pond inspections
- Additional monitoring
- Pumping arrangements
- Containment repair

10.0 Exceedances, Reporting and Incident Response

- Confirm result validity (QA/QC, resample if needed)
- Implement immediate controls (source isolation, dust suppression, pumping arrangements, containment repair etc)
- If a notifiable incident is detected, notify DLPE (Regulator) as soon as possible
- Annual reports will be provided to DLPE for Groundwater and Wastewater
- Conduct investigation
- Implement corrective actions with verification monitoring
- Document all steps and close out with evidence.

11.0 Environmental Performance Standards

Results will be assessed against the following environmental performance standards

Groundwater

Groundwater results are currently assessed by a hydrogeologist against ANZECC Guidelines. Site Specific Performance Standards for Mereenie Field are currently being developed by a specialist consultant and will be assessed and reported against in the near future.

Soils

Soil samples collected around the flare pit are to be assessed against previous results and against two background reference samples.

Wastewater

Annual review and human health risk assessment is undertaken annually in accordance with Section37B(2). Exposure parameters are sourced from the Australian exposure factors guidance document, as well as being informed by site specific considerations and publicly available literature.

Dust Deposition

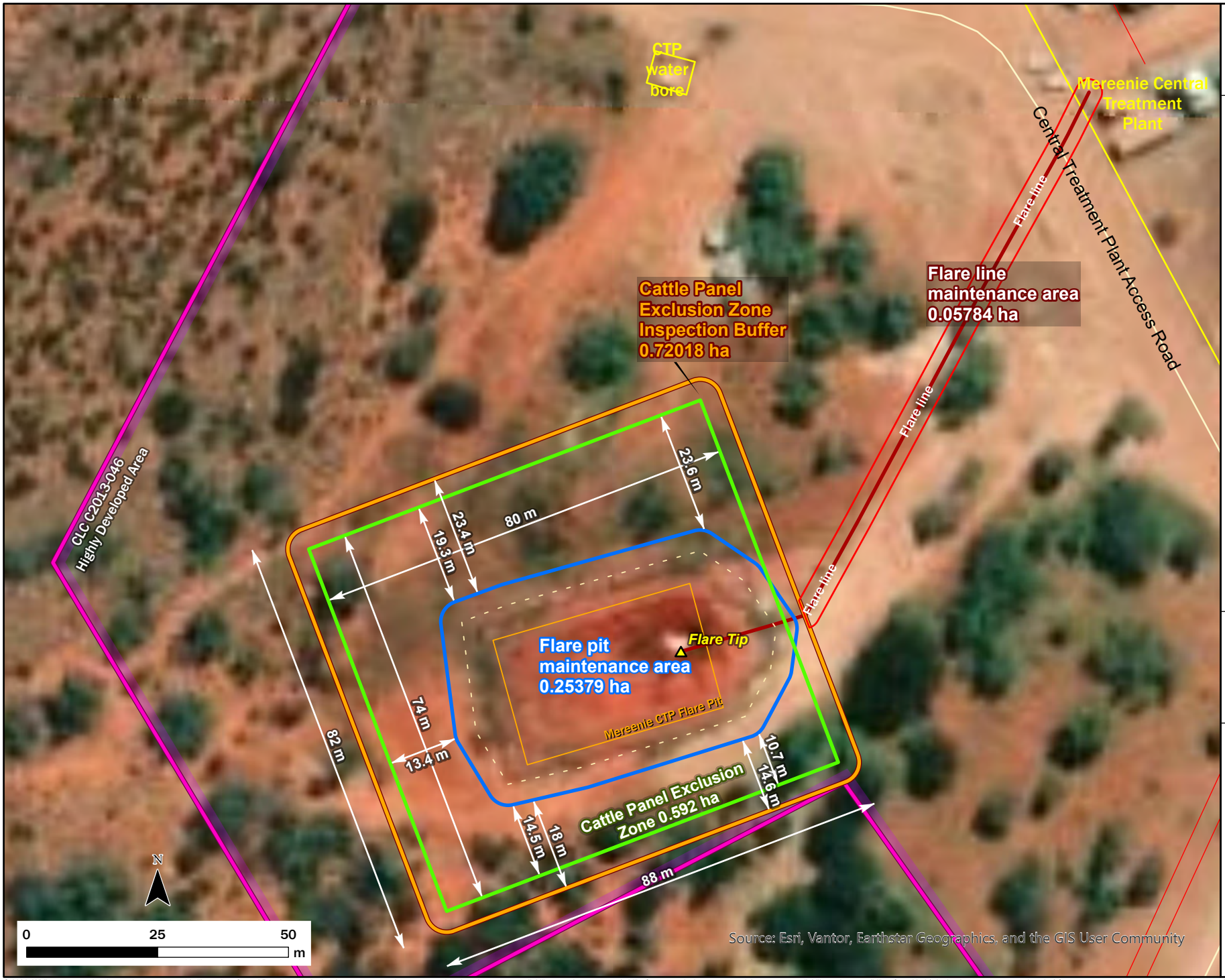
Dust deposition samples collected around the flare pit and office are to be assessed against previous results and against the background reference sample.

Limit is 4 µg/m2/day which is a guideline value taken from Germany's DE TA Luft (1999) regulation – Arsenic Deposition Limit

APPENDIX I. Addendum

All references to 73 wells should now be read as 75 wells.

APPENDIX J. Extent of clearing for flare exclusion zone



Mereenie CTP Flare Clearance Areas

- Flare Tip
- Flare line
- Flare pit maintenance area - previously cleared
- Cattle Panel Exclusion Zone
- Cattle Panel Exclusion Zone Inspection buffer
- Flare line maintenance area (5m wide)
- Access track
- Miscellaneous clearing
- Flare Pit
- Gas pipeline
- CLC Highly Developed Area
- Indicative fenced area

ID: 0682-004
Rev:
Date: 21/07/2026

Map Scale is 1:968 when printed at A4
Coordinate System: GDA 1994 MGA Zone 52



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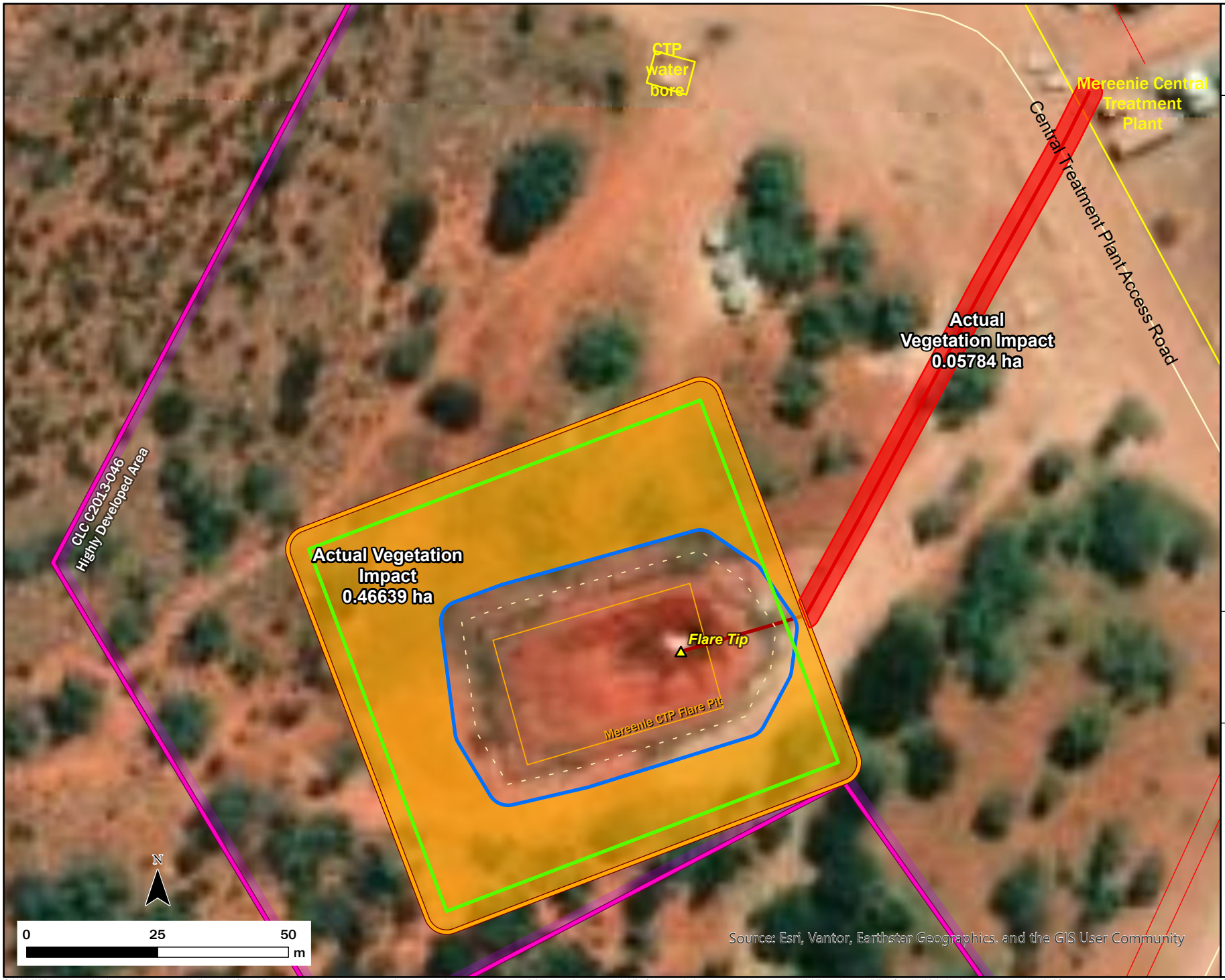

Mereenie CTP flare Actual Vegetation Impact

- Flare Tip
- Flare line
- Flare pit maintenance area - previously cleared
- Cattle Panel Exclusion Zone
- Cattle Panel Exclusion Zone Inspection buffer
- Flare line maintenance area (5m wide)
- Access track
- Miscellaneous clearing
- Flare Pit
- Gas pipeline
- CLC Highly Developed Area
- Indicative fenced area
- Actual Vegetation Impact, Cattle Exclusion Zone
- Actual Vegetation Impact, Flare Line Maintenance

All coordinates are MGA Zone 52, GDA94

ID: 0682-003
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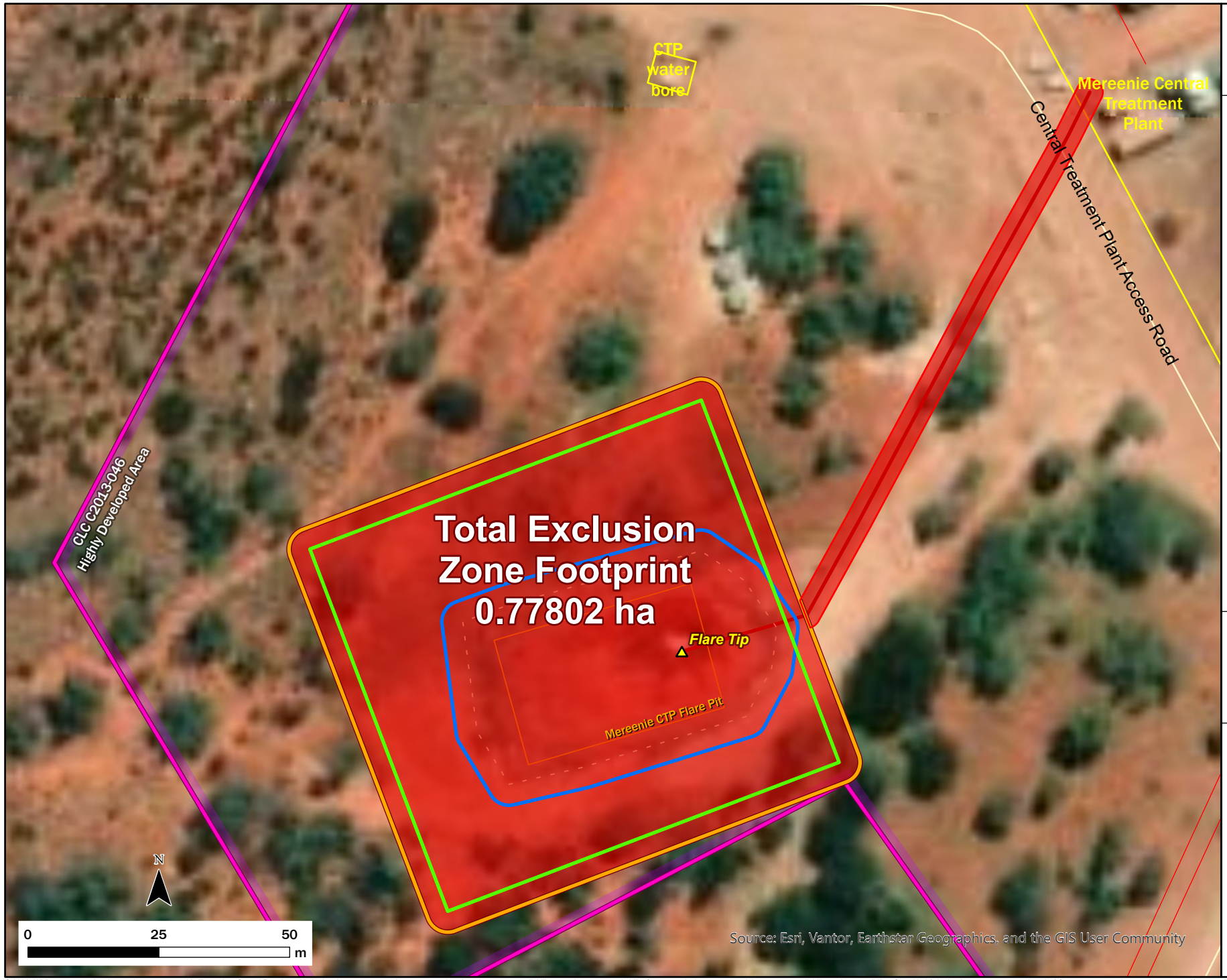

Mereenie CTP flare Total Exclusion Zone Footprint

- Flare Tip
- Flare line
- Flare pit maintenance area - previously cleared
- Cattle Panel Exclusion Zone
- Cattle Panel Exclusion Zone Inspection buffer
- Flare line maintenance area (5m wide)
- Access track
- Miscellaneous clearing
- Flare Pit
- Gas pipeline
- CLC Highly Developed Area
- Indicative fenced area
- Total Exclusion Zone Footprint

All coordinates are MGA Zone 52, GDA94

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