APPENDIX A. Drilling Waste Report

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Central Petroleum

Landfarm Management Plan:

West Mereenie Wells 27 and 28, Mereenie Oil and Gas Field Central Treatment Plant, Larapinta Drive/Red Centre Way, near Mereenie, Northern Territory

***Prepared by*: MACH1 ENVIRONMENTAL PTY LTD**

APRIL 2022

REPORT NO: 22-002-006 RP1

Central Petroleum

Landfarm Management Plan:

West Mereenie Wells 27 and 28, Mereenie Oil and Gas Field Central Treatment Plant, Larapinta Drive/Red Centre Way, near Mereenie, Northern Territory

Prepared by: *Robin Wagland*

Role: Principal

Signed:

Date: 05 May 2022

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1 INTRODUCTION

MACH1 Environmental (MACH1) is pleased to provide Central Petroleum (CP) with the following Landfarm Management Plan for the drilling sump and flare pit remediation works at the West Mereenie Wells 27 and 28, Mereenie Oil and Gas Field Central Treatment Plant, Larapinta Drive/Red Centre Way, near Mereenie, Northern Territory (and herein referred to as 'the site').

The objective of the Landfarm Management Plan is to ensure completed works are to a standard suitable to meet the requirements of the Northern Territory (NT) Environmental Protection Agency (EPA). The works will assist in providing expert advice on the remediation of identified material and the future suitability of materials within the sumps and flare pits for the 'mix bury cover' disposal method.

1.1 Site Location

Details relating to the site are provided below in ***Table 1.1***.

Table 1.1. Site Identification Details

Well locations	West Mereenie Wells 27 and 28
Site Address	Mereenie Oil and Gas Field Central Treatment Plant, Larapinta Drive/Red Centre Way, near Mereenie, Northern Territory
Current Land Use	Oil and Gas Treatment Plant
Proposed Land Use	Oil and Gas Treatment Plant
Licence	Operating Licence 4 and Operating Licence 5
Co-ordinates	Well 27: Latitude -23.9478, Longitude 131.4168 Well 28: Latitude -23.9874, Longitude 131.5352

1.2 Site Description

The site is operational oil and gas treatment plant, which forms a part of the Mereenie Oil and Gas Field.

The surrounding area contains a large amount of infrastructure relating to the oil and gas plant operations, however, the remediation works focusses on the sumps and flare pits associated with the previous drilling of West Mereenie Wells 27 and 28.

The sumps are lined with a plastic liner and have a capacity of approximately 0.8ML. Materials within the sump were present in distinct layers and are constructed with similar approximate dimensions. Material within the sump has a maximum depth of approximately 2m, resulting in an approximate total volume of 600m^3 of material for remediation.

The flare pits were significantly smaller than the sump pits, with potential impacts limited to near surface soils, with observed odour impacts to maximum depths of approximately 0.7m, resulting in an approximate total volume of 200m^3 for remediation.

1.3 Guidelines and Assessment Criteria

The works were undertaken in accordance with the following guidelines:

- Guidelines issued under Schedule B of the National Environment Protection (Assessment of Site Contamination) Measure (NEPM), National Environment Protection Council, December 1999 (revised May 2013);
- AS4482.1-2005 Guide to the Sampling and Investigation of Potentially Contaminated Soil Part 1: Non-Volatile and Semi-Volatile Compounds;
- AS4482.2-1999 Guide to the Sampling and Investigation of Potentially Contaminated Soil Part 2: Volatile Substances;
- Code of Practice for Onshore Petroleum Activities in the Northern Territory, Department of Environment and Natural Resources (May 2019); and
- Northern Territory Contaminated Land Guideline, Northern Territory Environment Protection Authority (NT EPA) (June 2017).
- Australian Drinking Water Guidelines 6, 2011.
- New South Wales Environment Protection Authority (NSW EPA), Waste Classification Guidelines, Part 1: Classifying Waste.
- Victorian Environmental Protection Authority (Vic EPA) Waste Classification Guidelines, Waste Resource Guidelines, Soil Hazard Categorisation and Management, 2009.

The soil assessment criteria adopted are Health-based Investigation Levels for residential and industrial/commercial land uses (HIL-A and HIL-D), Health Screening Levels for low-high density residential (HSL A&B) and commercial/industrial (HSL D), and Ecological Screening Levels (ESLs).

Table 1.2: Soils Assessment Criteria – Metals and Other Compounds

Contaminant	Selected Screening Criteria – NEPM Guidelines		Selected Screening Criteria – Waste classification guidelines	
	NEPM 2013 HIL-A[1]	NEPM 2013 HIL-D[2]	NSW EPA Waste Classification[3]	VIC EPA Waste Classification[4]
Trace Metals (mg/kg)				
Copper (Cu)	6,000	240,000	--	100
Nickel (Ni)	400	6,000	1050	60
Other compounds (mg/kg)				
Carbon (C)	--	--	--	--
Carbonate (CO_3)	--	--	--	--
Electrical Conductivity (EC)	--	--	--	--
Total Inorganic Carbon (TIC)	--	--	--	--
Total Organic Carbon (TOC)	--	--	--	--
pH	--	--	--	--
Chlorine (Cl)	--	--	--	--
Fluoride (F)	--	--	1000	450

1 Soil HIL(A) for residential

2 Soil HIL(D) for commercial / industrial land uses

3 NSW EPA Waste Classification

4 VIC EPA Waste Classification

"--" = not available

Table 1.3: Soils Assessment Criteria – Hydrocarbons

Contaminant	Selected Screening Criteria – Residential land use		Selected Screening Criteria – Commercial / Industrial land use	
	NEPM 2013 ESL[1] / NEPM 2013 HIL-A[2]	Vapour intrusion HSL-A & B[3]	NEPM 2013 ESL[4] / NEPM 2013 HIL-D[5]	Vapour intrusion HSL-D[6]
Total Recoverable Hydrocarbons (TRH) (mg/kg)				
TRH C_6-C_{10}	180[1]	45	215[4]	260
TRH >C_{10}-C_{16}	120[1]	--	170[4]	--
TRH >C_{16}-C_{34}	300[1]	--	1,700[4]	--
TRH >C_{34}-C_{40}	2,800[1]	--	3,300[4]	--
TRH C_{10}-C_{16} (-Naphthalene)	--	110	--	Not limiting
Total TRH	--	--	--	--

- 1 Soil HIL(A) for residential land uses
- 2 Soil ESL for residential and public open space uses
- 3 Soil HSL(A) for residential land uses
- 4 Soil HIL(D) for commercial / industrial land uses
- 5 Soil ESL for commercial / industrial uses
- 6 Soil HSL(D) for commercial / industrial land uses

"--" = not available

2 SOIL REMEDIATION PLAN

Further to the investigation and assessment works completed for the sump and flare pits, a remediation plan has been completed to ensure that the management of this area does not cause any harm to human health or the environment.

Proposed management techniques for the construction of a remediation area are outlined below.

2.1 Recommendations for soil remediation

Further to the receipt of soil sample results from the materials within the sump and flare pit areas, it is considered that these materials are suitable for bioremediation (landfarming).

Landfarming is a biological process which uses naturally occurring micro-organisms to eliminate contaminating substances from soils over time. The process involves the spreading of excavated contaminated soils in a thin layer and the stimulation of microbial activity within the soils through aeration and potentially through the addition of minerals, nutrients and moisture.

The following recommendations are provided to assist in the appropriate construction and management of a temporary landfarm:

- The soil remediation area should be situated in a suitable location away from sensitive receptors such as water bodies or neighbouring land uses and in an area which is not prone to flooding or high volumes of stormwater flow. It is suggested that the existing sump pit could be utilised as a suitable location.
- Bunding and drainage channels (as appropriate) should be constructed around the soil materials in order to manage stormwater flows both into and out of the remediation area, noting these are likely already present within the existing sump pit.
- The landfarm should be managed with regular aeration (turning) at least once per month and watering (as required/available). More frequent turning will enhance the speed of the remediation process further.
- Sampling of materials within the landfarm should be undertaken at a rate of 1 sample per 100m^3 on an approximate two to three monthly basis, or 10 samples for the total of approximately 1,000m^3 of material (with bulking).
- If sample results indicate that bioremediation is not occurring or is progressing slowly, actions to promote further microbial activity such as increasing aeration or the addition of fertiliser should be considered or will be recommended.

2.2 Validation sampling

Sampling of the soils at a rate of one sample per 100m^3 of material, or ten (10) samples per well area with one (1) duplicate and one (1) triplicate sample (twelve (12) samples per area), should be undertaken after a period of approximately two to three months. These samples should be submitted to a suitably qualified and NATA accredited laboratory for analysis of the following parameters, based on the initial assessment results:

- Metals (Copper [Cu] and Nickel [Ni);
- Total Petroleum Hydrocarbons (TPH) / Total Recoverable Hydrocarbons (TRH);
- Carbon, Carbonate, Total Organic Carbon (TOC) and Total Inorganic Carbon (TIC);
- Chlorine [Cl] and Fluoride [F]; and
- Electrical conductivity [EC] and pH.

If results for TRH are below the nominated criteria as outlined within the SAQP for the investigation works, soils are considered suitable for reuse as clean fill within other parts of the site.

If soil concentrations of TRH are above the nominated guidelines, further landfarming of the materials will be required and the addition of fertiliser at a rate of 5kg per 100m^3 should be considered in order to boost bioremediation rates.

3 REFERENCES

- Guidelines issued under Schedule B of the National Environment Protection (Assessment of Site Contamination) Measure (NEPM), National Environment Protection Council, December 1999 (revised May 2013);
- AS4482.1-2005 Guide to the Sampling and Investigation of Potentially Contaminated Soil Part 1: Non-Volatile and Semi-Volatile Compounds;
- AS4482.2-1999 Guide to the Sampling and Investigation of Potentially Contaminated Soil Part 2: Volatile Substances;
- Code of Practice for Onshore Petroleum Activities in the Northern Territory, Department of Environment and Natural Resources (May 2019); and
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- Australian Drinking Water Guidelines 6, 2011.
- New South Wales Environment Protection Authority (NSW EPA), Waste Classification Guidelines, Part 1: Classifying Waste.
- Victorian Environmental Protection Authority (Vic EPA) Waste Classification Guidelines, Waste Resource Guidelines, Soil Hazard Categorisation and Management, 2009.

4 LIMITATIONS

This report is produced exclusively for the benefit of Central Petroleum and no liability is accepted for any reliance placed on it by any other party unless specifically agreed in writing otherwise. This report is prepared for the proposed uses stated in the report and the scope outlined and should not be used in whole or part in a different context without reference to MACH1. In time, improved practices or amended legislation may necessitate a re-assessment of the site.

This report refers, within the limitations stated, to the condition of the site at the time of the inspections. No warranty is given as to the possibility of future changes in the condition of the site.

The report is limited to those aspects of land contamination specifically reported on and is necessarily restricted to this and no liability is accepted for any other aspect especially concerning gradual or sudden pollution incidents. The opinions expressed in this report cannot be absolute due to the limitations of time and resources imposed by an agreed client brief and the possibility of un-recorded previous site use and abuse of the site and adjacent sites.

The findings of this report are based on the limited Scope of Work outlined in the proposal for the work (Ref No. 22-001-006). MACH1 performed the services in a manner consistent with the normal level of care and expertise exercised by members of the contaminated land remediation and environmental auditing profession. No warranties, or guarantees, express or implied, are made.

Subject to the Scope of Work, MACH1's assessment is limited strictly to identifying typical environmental conditions associated with the subject property and does not evaluate structural conditions of any buildings on the subject property, nor any other issues. Although normal standards of professional practice have been applied, the absence of any identified hazardous or toxic materials (including soil and groundwater) on the subject property should not be interpreted as a guarantee that such materials do not exist on the site.

This assessment is based on a site inspection conducted by MACH1 personnel, limited sampling and analyses described in the report was conducted by MACH1 and information used in the report was provided by Central Petroleum, associated consultants or other people with knowledge of the site conditions.

All conclusions and recommendations made in the report are the professional opinions of MACH1 personnel involved with the project and, while normal checking of the accuracy of data has been conducted, some of the opinions are based on unconfirmed data and work conducted by others. MACH1 assumes no responsibility or liability for errors in data obtained from regulatory agencies, other consultants or any other external sources, nor from occurrences outside the scope of this project.

MACH1 is not engaged in environmental auditing or reporting for the purpose of advertising, sales promoting, or endorsement of any client interests, including raising investment capital, recommending investment decisions, or other publicity purposes. The report should not be used or reproduced in full or in part for any such promotional purposes, and may not be used or relied upon in any prospectus or offering circular.

APPENDIX B. Protected Matters Search Tool (PMST) Results

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.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

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No Image Available

This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2015

Coordinates
Buffer: 50.0Km

No Image Available

Summary

Matters of National Environmental 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:	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 environment anywhere.

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 Land:	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

Extra Information

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

State and Territory Reserves:	2
Regional Forest Agreements:	None
Invasive Species:	11
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Species		[Resource Information]
Name	Status	Type of Presence
Birds		
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat known to occur within area
Pezoporus occidentalis Night Parrot [59350]	Endangered	Species or species habitat may occur within area
Polytelis alexandrae Princess Parrot, Alexandra's Parrot [758]	Vulnerable	Species or species habitat known to occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Mammals		
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area
Petrogale lateralis centralis Warru, Central Australian Rock-wallaby [90831]	Vulnerable	Species or species habitat known to occur within area
Sminthopsis psammophila Sandhill Dunnart [291]	Endangered	Species or species habitat may occur within area
Zyzomys pedunculatus Central Rock-rat, Antina [68]	Critically Endangered	Species or species habitat likely to occur within area
Plants		
Macrozamia macdonnellii MacDonnell Ranges Cycad [11843]	Vulnerable	Species or species habitat known to occur within area
Reptiles		
Liopholis kintorei Great Desert Skink, Tjakura, Warrarna, Mulyamiji [83160]	Vulnerable	Species or species habitat known to occur within area
Liopholis slateri slateri Slater's Skink, Floodplain Skink [83163]	Endangered	Species or species habitat may occur within

Name	Status	Type of Presence
		area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area

Name	Threatened	Type of Presence
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat may occur within area
Charadrius veredus		
Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area
Chrysococcyx osculans		
Black-eared Cuckoo [705]		Species or species habitat known to occur within area
Glareola maldivarum		
Oriental Pratincole [840]		Species or species habitat may occur within area
Merops ornatus		
Rainbow Bee-eater [670]		Species or species habitat may occur within area
Motacilla cinerea		
Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato)		
Painted Snipe [889]	Endangered*	Species or species habitat may occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Katiti Petermann	NT
Watarrka	NT

Invasive Species	[Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Mammals		
Bos taurus		
Domestic Cattle [16]		Species or species habitat likely to occur within area
Camelus dromedarius		
Dromedary, Camel [7]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Equus asinus Donkey, Ass [4]		Species or species habitat likely to occur within area
Equus caballus Horse [5]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Cenchrus ciliaris Buffel-grass, Black Buffel-grass [20213]		Species or species habitat likely to occur within area
Tamarix aphylla Athel Pine, Athel Tree, Tamarisk, Athel Tamarisk, Athel Tamarix, Desert Tamarisk, Flowering Cypress, Salt Cedar [16018]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, 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 distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for 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 reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

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

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

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

Coordinates

-23.99804 131.55358

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 C. Stakeholder Consultation

CENTRAL LAND COUNCIL

MEETING REPORT

AUTHOR: [redacted]
DATE: 21/09/223
REF: F16-1907.12
Re: Central Petroleum Liaison Committee Meeting 2023

AGENDA:

1. CLC – LCM Process and procedures
2. CP/ Mereenie Performance
3. HSE Performance
4. Environment Management
5. Social Management
6. Development Activities undertaken
7. Future Development Activities
8. Indigenous/ local employment
9. Community Engagement / Sponsorships
10. Agreement negotiation
11. Any other business/ Close

Attendance: [redacted]

CLC Staff: [redacted]

Central Petroleum: [redacted]

Apologies: [redacted]

Meeting start time 10:37 am

Meeting end time: 12:45 pm

Venue: Mereenie Base Camp

AGENDA OR DISCUSSION ITEM	ACTIVITY OR COMMENTS	ACTION ITEM
CP/ Mereenie Performance	CP notes that oil and gas is needed at night to keep the lights on and also to make fertiliser to produce food. Though there are talks about hydrocarbon being bad, CP sees a long future for the product. CP has been at Mereenie since 2015, and they intend to be there going forward. They do their best to look after country and will continue to develop relationships with the community. Company made a presentation about their operations in the last 12 months: D23-55355 There is a gas shortage in the East Coast and NT, and there is still a strong demand for gas. The gas CP produces is used domestically, and it is not LNG. They have done a lot of work on managing their assets and ensuring integrity management. In June they changed the dam-hole configurations to improve the reliability of the existing fields. CP is now looking at extracting gas from the upper layers. They are continuing the TO apprenticeship programme to train people as much as they can. They currently have 2 people working, and there will be vacancies from later 2023 till 2024.	
Health, safety and environmental performance	CP notes that they have gone for about 3 years without any incident. There was a recent incident with someone on site who passed away. However, this was not work related. Safety is CPs priority and they make sure that people that live and work at Mereenie go home safely. There has also been no significant environmental incidents. They do not want to contaminate the gas, but also they want to look after the land. They are going through progressive rehabilitation, doing an annual weed service, and making significant improvements to the plants. Most of the equipment used are now solar powered. They have done quarterly audits or inspections using third parties. At the last audit CP had a 98% compliance score.	

Environmental management	Water management – They have a series of water bores and want to make sure that the quality of water remains the same. The water bores are licensed and monitored, and reported to the NTG. [redacted] – what do you have on site for emergencies? Do you have a doctor, because one of my nephews passed away? [redacted] We have two trained occupational first aiders but not a doctor. We had an audit about the incident and they also audited Kings Canyon. The person who died had a heart attack that was so significant that it would not have mattered if a doctor was on site. [redacted] We have three levels of medical response. First – we have access to a doctor via phone Second – we have an ambulance that can take the person to a clinic but there is also no doctor at the clinic. However, the person can have access to a doctor via video, and it will be like the doctor was in the room. Third- we can have the Royal Flying Doctors come to evacuate the person in the event of an emergency. [redacted] – for the recent incident, we had the doctors' check the facility, and they said that what we have is good for an industrial site. It would not have made any difference in that case.	
Social management	CP has strong policies about where they buy their equipment from [redacted] – We need a pay rise. [redacted] – I am not allowed to talk about money, but you can speak with CLC.	
Future development	**<u>Zevon</u>** CP thinks that there is a potential for oil and gas in the Zevon area and there is a potential for drilling wells there. CP has the approvals for a seismic work, but bot for drilling. Drilling is planned in the next 12-18 months.	

	TOs note that the Zevon area belongs to Douglas Multa. Dianne – any discussion on Zevon needs to be done with Kieran and Henry, and should be a separate discussion, not here. [redacted] – we have a clearance for the Seismic Survey but not the drilling. The drilling will happen in one to two years. [redacted] – explained the process of the seismic survey, and notes that it is a low impact, vibration survey which paints a picture of the sub-surface. **Mereenie** CP has done an initial consultation with the CLC and AAPA for two new wells. They have clearance certificates. They have also submitted an EMP to government to show how they will protect the country. CP plans to conduct a land clearance in January 2024 and will plan for drilling to start February or March 2024 or in June 2024, if there is a delay. CP show that they will be drilling horizontally under the RWA near Kings Canyon. [redacted] asked if CP is permitted to drill under the RWA. [redacted] notes it was part of their proposal and that that they have a clearance to do so [redacted] – Is there fracking? [redacted] [redacted] – I asked in Hermansburg at a meeting, and they said there has been fracking done. I heard there is one here. [redacted] – it would have been about 20 years ago. [redacted] – it is not recent. We have only been here for 8 years. [redacted] – Santos maybe? TOs speak in language.	

	[redacted]- I would like the opportunity to speak to you about fracking technology and how it works. We don't know what will happen in the future. If there is no gas, and government says they need gas, fracking could be used. There are some wells which could be fracked. What we have heard from the land council and the Greens is they have gone to the extreme, and it is not completely true. So we would like to explain this to you. Because in the future, there might be some fracking done. [redacted] at the moment we are getting gas from the easy rocks, and it will decline over the years. Fracking allows us to get the gas from the harder rocks and everyone benefits. [redacted] – explains fracking using a diagram on the board. Notes that fracking is done to create smaller fractures that will allow the gas to come out. [redacted] – what about water? [redacted] – if you have time to explain properly so that we don't have to be listening to other people that would be good. [redacted] – we have a lot of checks and balances with government for fracking. Fracking is heavily controlled.	
Flare Gas Compressor	[redacted]- The compressor will capture about 2/3rds of the gas that is currently being flared. CP will put it through the machine, and will put it into the sales gas stream. The project has been underway for a while now. The compressor is in Toowomba. CP is getting ready to install this, and will get this running in a couple of months. So instead of wasting gas, CP will be selling it. [redacted] – the gas that is burnt is gas that doesn't meet the specifications of the customers. [redacted] can I take it home if I were to bring my NT gas bottle here? [redacted] – No, we can't give away that stuff.	
Helium	[redacted] explained the uses of helium. Helium is rare across the world because as soon as it is released, it leaves the planet. Here at Mereenie, there is helium in the gas, and CP thinks it is worth doing a project to extract the helium. CP has not decided to go ahead with this project. They have a memorandum of understanding with an American company – Twin Bridges- with experience to know if it is possible or economically feasible to go	

	ahead with the project. Because of the existence of more phones, helium is becoming quite useful to extract. The helium project may happen in the next two years. [redacted] – Does helium have any compound of uranium in it? [redacted] – No. [redacted] we are not extracting the uranium but we are extracting the molecules released as a result of the decay. [redacted] - The helium is coming with the gas already. [redacted] what is the economic potential of helium? [redacted] – CTP has not done the research to discover the economic potential yet. The American company we have an agreement with will help us to understand the economic potential of helium. CTP has been producing helium but has not been capturing it. CTP will work with the company in the next year to determine the feasibility and economic potential. Then the following year will construct the facilities for Helium within the current facilities they have.	
Brumby Week	Discussions around CTP sponsoring Brumby week. CTP wants to look at the Brumby week again. CTP notes that this might help with the erosion and tourism. They can think about how to involve other companies, and the project will be beneficial to country. [redacted]right now there is plenty pf water around for the Brumby, especially since we are expecting dry years. The Brumbys will be desperate for water. We can help protect your country from the damage that will be caused. [redacted] asked for TOs thoughts [redacted] – whether we get buyers is the hard one. [redacted] [redacted]we can take them to the abattoirs. [redacted]– has demand for them dropped off? [redacted] – yes, in the past 10 years. [redacted] – it seems there is some interest, and we can speak with [redacted] about how we can start the process.	

Community Engagement / Sponsorships	[redacted] we don't get requests from your mob regarding sponsorships. We tend to stay away from sponsoring on individual. We tend to look at all opportunities and if they bring benefits to the community or groups, we will be interested. We have helped with football. Just to let you know that we are still here. Put forward requests to [redacted] [redacted] – what do you mean by funeral expense? [redacted] – we have assisted. For the recent event, we helped the family to cover the expense. [redacted] Just in the future, you only have diesel here. It would be good if you supply unleaded fuel. TOs speaking in language. Anslem Jnr – it is difficult to have petrol in an oil and gas plant. JVR – unleaded is not safe, so we don't keep it here. Questions on fuel order. [redacted] asked how fuel orders are handled. [redacted] explains that fuel orders are given to the TOs before the event to enable them drive. [redacted] notes the fuel orders given were not sufficient because Mereenie is far. [redacted] notes that now that we know the distance CLC should give fuel orders for the full trip so that TOs can buy petrol as there isn't any at Mereenie. [redacted] notes that the fuel order is distributed based on the budget given to the company, and advised [redacted] that in this case the budget may be higher than budgeted. [redacted] notes that he always uses the budget estimate as a guide and this is fine.	

Employment	CTP notes they currently have 4 aboriginal employees on staff. Notes that they are all male, and there is no female. [redacted] – so for that, do they need any qualifications or trainings? [redacted] – yes, depends on where you start. We can provide training. [redacted] you can come as an apprentice without qualifications or training, or you can come as a skilled person. [redacted] works here. We assess applicants on their merits. [redacted] – what is the age of employment? [redacted] – as long as they are within the working age group, all applicants are considered. Discussions go on to the hydraulic fracturing/fracking. [redacted] – How much water do you need for this? 30 swimming pools? [redacted] It is not a one size fits all. It could be 30 or 40. We have an allowance from government and report on the usage of water. If we were to frack, it will be going through the government for approval. [redacted] it would be good to know when we can learn about fracking. You can organise it so that we can know exactly what happens. [redacted] we can do it when we are here. People who don't want fracking don't just want hydrocarbons. If they stop fracking, it means they have to stop the Beetaloo Basin. The NTG/ CSIRO have done research and found that it is not harmful. [redacted] can you turn saltwater into fresh water? [redacted] we can with a treatment plant. [redacted] it takes a lot of energy because water is incompressible. [redacted] there is a desalination plant in Victoria. So yes, you can treat water, but it is not cheap.	CLC to organise an information session on hydraulic fracturing, and to invite CTP to make the presentation from the industry perspective.

Updates on the agreement	[redacted] reads out resolution from CLC legal advising TOs that CLC intends to extend the current agreement for another year or two to aid CLC and CTP to continue negotiations, also given the intention of CTP to capture Helium. [redacted]notes that they agree in principle to the proposal Meeting ends at 12:35pm. CLC continues discussions with TOs on other confidential matters.	

CENTRAL LAND COUNCIL

MEETING REPORT

AUTHOR: [redacted]
DATE: 25/09/2022
REF:
Re: Central Petroleum Liaison Committee Meeting 2022

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

Attendance: [redacted]

CLC Staff: [redacted]

Central P[redacted]

Apologies: [redacted]

Meeting start time 10:25 am

AGENDA OR DISCUSSION ITEM	ACTIVITY OR COMMENTS	ACTION ITEM
1. Introductions / Welcome	Introduced agenda, those present introduced themselves. [redacted]thanked TOs, on behalf of CTP. CP produced a detailed presentation (D22-61819), capturing the agenda, which was shown on-screen throughout the LCM. Hard copies made available to all participants.	

AGENDA OR DISCUSSION ITEM	ACTIVITY OR COMMENTS	ACTION ITEM
2. CLC – LCM process and procedures		
3. Central / Mereenie Performance	Current production 30Tj per day, was 40-50Tj per day. [redacted]to help with perspective, approximately how left? [redacted]Approximately 20 years left. [redacted] Any fracking [redacted]No. In the past 'skin' fracking was done, but not in the past 8 years. Skin fracking damages the rock, and will be drilling with air, so not possible to skin frack.	
4. HSE Performance	No incidents or injuries.	
5. Environmental Management	Environmental Management Plan now available publicly. 98% compliance, non-compliance relates to late report submission. Aquifer approximately 100m below the surface. Water usage monitored and reported quarterly and water quality tested every 6 months. [redacted]– any anomalous results [redacted] No	
6. Social Management		
7. Development Activities undertaken		
8. Future Development Activities	Discussed Zevon seismic work, as well as Mereenie activities over the next 12 months, which is 6 more well recompletions. [redacted]draws example of well and recompletion work on the whiteboard. Work will involve about 10-12ppl and take about a month. Also drilling two new wells. Discussed how the drill hole is separated from the aquifer (drew on whiteboard). Directional (lateral) drilling was discussed, and in the context of avoiding sensitive areas above. Palm valley has a lateral drill hole ~500m, with Mereenie proposed at ~1,000m. No fracking involved, and is accessing gas which is already being accessed. To date, no shrinking of the reservoir, or any subsidence. Reiterated, no fracking involved. Slides were shown, in cross-section, to show what was being discussed. [redacted] interpreted. [redacted]any questions? TO's had no further questions.	

AGENDA OR DISCUSSION ITEM	ACTIVITY OR COMMENTS	ACTION ITEM
	[redacted] You looking for oil & gas [redacted] All activities gas focused Discussed new flare gas compressor, which will reduce flared gas by 2/3. Flare should also burn cleaner. [redacted] What is the driver for this? [redacted] will be cost neutral, but will reduce emissions. [redacted] interprets in language [redacted] how many wells? [redacted] about 70. [redacted] extended an invite to TOs to attend a drilling site, once set-up.	
9. Indigenous / Local Employment	Discussed current and upcoming employment options, including apprenticeships. [redacted] how are these opportunities communicated? [redacted] To date, it has been word of mouth. CLC employment are made aware. [redacted] Contacted CLC about work but heard nothing (over 10 years ago) [redacted] provided [redacted] with contact details if would like to follow it up.	
10. Community Engagement / Sponsorships	[redacted] We are looking to sponsor community benefit initiatives, as opposed to individual sponsorships. [redacted] Would like to talk about sponsorship i.e. chef etc [redacted] Discussed sponsorship vs employment opportunities, in the CTP context [redacted] – Education fund? [redacted] Would look at it. Described approval process, and gave examples and scenarios.	
11. Mereenie Agreement Negotiation	Touched on.	
12. Any Other business / Close	Meeting closed at 12:26.	

CENTRAL LAND COUNCIL

MEETING REPORT: LCM
AUTHOR: [redacted]
DATE: January 23, 2025
REF: F16-1907.23
Re: Mereenie Liaison Committee Meeting 2025

AGENDA:

1. Introductions / Welcome
2. Update on Mereenie production and 2024 Field Activities
3. Update on proposed field activities for 2025
4. Environmental Management
5. Social Management
6. Aboriginal Employment update
7. Community Sponsorships
8. Any Other business / Close

Attendance:

CLC Staff: [redacted]

Central Petroleum: [redacted]

Traditional Owners: [redacted]

Apologies: [redacted]

Meeting start time: 10:20 (few still on the way) (break around 10:40 am when three TO's arrived, resumed around 10:50) 11:20 break resumed 11:30

AGENDA OR DISCUSSION ITEM	ACTIVITY OR COMMENTS	ACTION ITEM
Introductions/Welcome	• [redacted] drilling and completions intro, • [redacted] an apology, rest of team in Brisbane • [redacted], maintenance, ops logistics, (apologies as I can't be there in person.	

	• [redacted] Risk and HSE manager at central, support for field crews, sorry can't be in person. (compliance) • [redacted] exploration and development for Central (underground) • [redacted] – IPA to be declared on 12 March of whole of Haasts Bluff Land Trust (due March) • [redacted] works for Central and is also a recognised TO of the area, [redacted] new LCM	
Update on Mereenie production Field Activities in 2024	• [redacted] Thanks and welcome to everyone. Thanks for letting Central work out there (Mereenie), it's a privilege for us to be there. CTP will have operated the field for 10 Years this year. • Mereenie produces oil and gas. The gas is put into the Amadeus pipeline and used domestically in the NT. The oil is sent to Port Bonython in South Australia for shipping offshore. • For general operations At Mereenie it's business as usual for the most part. • Generally, there is still a strong demand for gas and in 2024 production v budget is pretty much on trend. Noting that the market only allows Central to produce as much gas as there is demand for or market for. • However a new contract will allow Mereenie to be close to full production through 2025. • A new six year contract for gas has been signed with the NTGov and Central. This is great news for Central. All of the gas will now be used in the NT and primarily to support the NT and Darwin electricity production. • Currently Drilling 2 new wells (W29 now on line and W30 currently being drilled). •	
Update on field activities for 2024/2025	• There will be maintenance and safety checks on compressors on site as well as a few other small projects. • A flare gas recovery compressor (FGRC) was installed March 2024. • When gas is extracted, only some can be sold as is. The crude oil is sold as is, and some gas can go into the pipeline, but some product sits "in the middle". What was in the middle used to be flared, but now that middle now gets reprocessed so that more oil and gas can be captured and sold, and less is flared. • New wells – WM29/30 – 29 near camp, 30 half way between Larapinta drive and track into camp.	

	• W29 completed. The offer is there to go out and have a look – Central can accommodate a visit. The new wells may lift Mereenie capacity from mid 20TJ to 30TJ per day roughly. • More production capacity maintains the field for longer period and ultimately more benefits for the NT and the community. • Future plans 2025 and beyond: • West 31 and 31 – plans are with the NTGov as they can take 18 months to review and approve. These drill holes can be done from currently cleared areas (29 and 30) with some extension to the well pad • Drilling involves clearing area through NTG and CLC, then civil works, then rig goes out, then connected to pipeline, no fracking initially but maybe later. • Targeting a new reservoir (tight, so no fracking plans now, but maybe later). • If approved these wells will drill down then go horizontal as surface access restrictions prevent drilling directly above the target, that's part of why the wells will be horizontal. • [redacted]so that's fracking? [redacted]- No, horizontal drilling, not fracking for now, but may need to later. (locations, drilling techniques and trajectories shared with the group). • • [redacted]SSCC0046 – expired. Application had been submitted. CLC to review internally. • [redacted]Map and formal SSCC application to be reviewed by CTP. • 3D seismic may be proposed – still in early days, and would be discussed w/TO's before it happens. • If TO's approve and support, then TO's could be able to help with the work. • There's lots of positivity about Mereenie within Central, so want more work to come. • Helium capture – might do a helium recovery unit – but on hold for now. Too expensive to put in for now. • Water use questions: • water is drawn from the local aquifer for use at camp, for drilling, stock and other uses in the field, etc., • Petroleum wells drilled in accordance with the regulations. There are three layers of steel and two layers of cement placed between the hydrocarbon and the aquifers are triple steel. So significant barriers between petroleum and water.	

Environmental Management **Social Management**	• Operating for 10 years, long time since reported injury, operating safely. • There is an influx of contractors for drilling WM29 and 30, more work = more risk. • Recently there was medical treatment required for a contractor who was trying to move something off a forklift, but it caught his finger and split it. He went to the clinic and needed stitches. • Central have had NT Gov. environmental regulators visits during the past 12m, and has conducted their own internal audits. • Some of the old well pads were large, progressive rehab has been done. This involves ripping the ground, putting some seed stock back in. Some regrowth already visible after recent rains. • Central has commitment to progressive rehab. • Reports to regulator 134 compliant, 2 non compliances – both minor. One was administrative where a report was submitted a day late, one was a release of gas to the atmosphere. • Part of environmental management plan includes water management and sampling. The sampling details provided to the regulator indicate no contamination of groundwater. No negative findings to date. • Annual weed surveys – contracted out • Rehab and closure – progressing with rehab • Safety around pipelines – one at Dingo field, one Mereenie to ASP pipeline (APA run pipelines from Mereenie North). All pipelines are running at high pressure – watch for signs, pay attention if you're trenching/fencing near pipeline to avoid accidents, don't drive heavy trucks over them. Call the number on the signs if you have any questions or need to work near one. • [redacted] re bushfire [redacted] none this year. • [redacted] for discussion – Brumbies – big numbers, causing damage, do TO's support a cull? If so, CTP is happy to assist where possible. There might be lots of feed for horses now, but that won't last long, and when conditions worsen, horses get aggressive around the plant and facilities, and there are welfare issues with the horses. Central would like to do something before start of dry season. • [redacted] has spoken with everyone in the larger IPA area about culling, TO's want to manage large feral herbivores on the IPA (Hermannsburg to Mereenie and West). [redacted] has the old plans	

	from 2017 culling, and is hoping for wider area culls, but has never had approval for immediate Mereenie area. [redacted] to have a chat [redacted] to try and get approval. • [redacted] reiterated that Central is there to support it where possible.	
Aboriginal Employment Update	• Central's focus is on supporting local employment. • Central will work w/CLC to maximise opportunities [redacted] is the CLC employment facilitator). • Apprenticeship program – Still running, still offering an indigenous trade apprenticeship. • [redacted] wants to get two new ranger groups up with the IPA, so there will hopefully be some opportunities to build relationships with Central similar to Tjuwanpa Ranger group. • For those interested in work with Central, they can speak to [redacted] to see what's available. • Social management – central cares for local TO's and country, want to make a positive impact, if there are areas for improvement let them know. *Discussion in language about employment and issues facing youth*	
Community Sponsorship update	• Central have a sponsorship program. They're happy to do more beyond the program if they can. [redacted] is the key contact for this. • The programs need to demonstrate benefit to the community, or education, but not just be for one individual's benefit. No cash handouts or cars. • Can Central help w/solar, bores, power to outstations – yes, have done so in the past, will look to help with when possible. • [redacted] an we get footy jerseys etc., a bus for transporting girls to footy, [redacted] Central donated one vehicle, it didn't work well, but they can help to charter a bus, or provide fares, jerseys etc.,	
Agreement Renewal	A deed to extend the Mereenie agreement has been signed, lawyers working to renew it for longer	
Any other business		

Meeting end time: 12:32 meeting end.

APPENDIX D. LCM Presentation

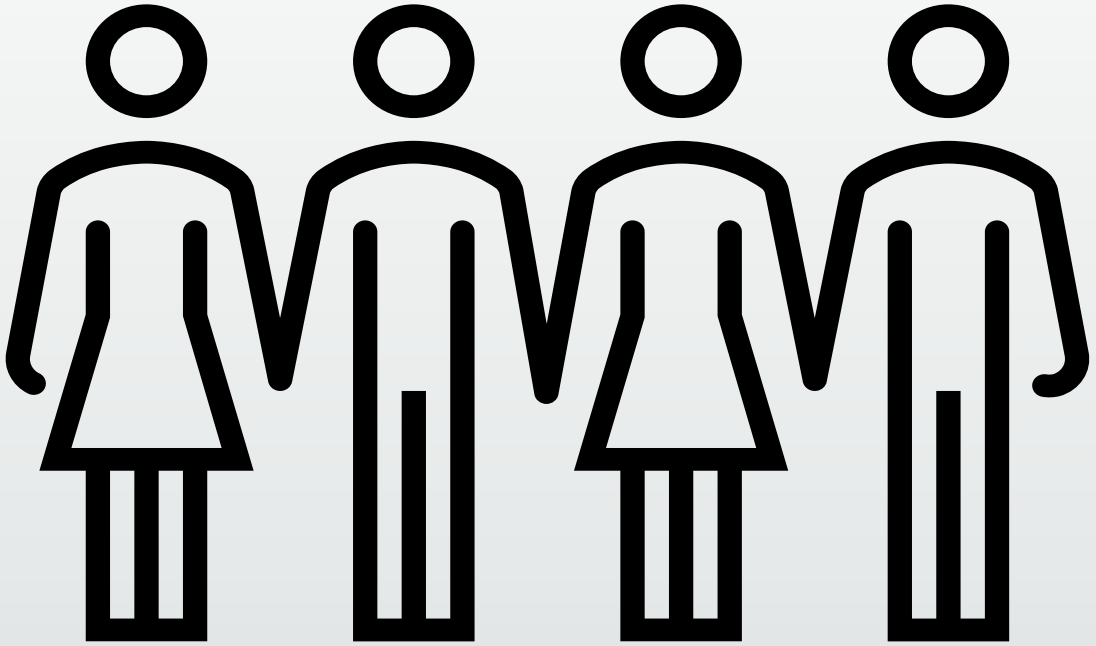
Mereenie LCM
15 September 2022

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 ([redacted])
- 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

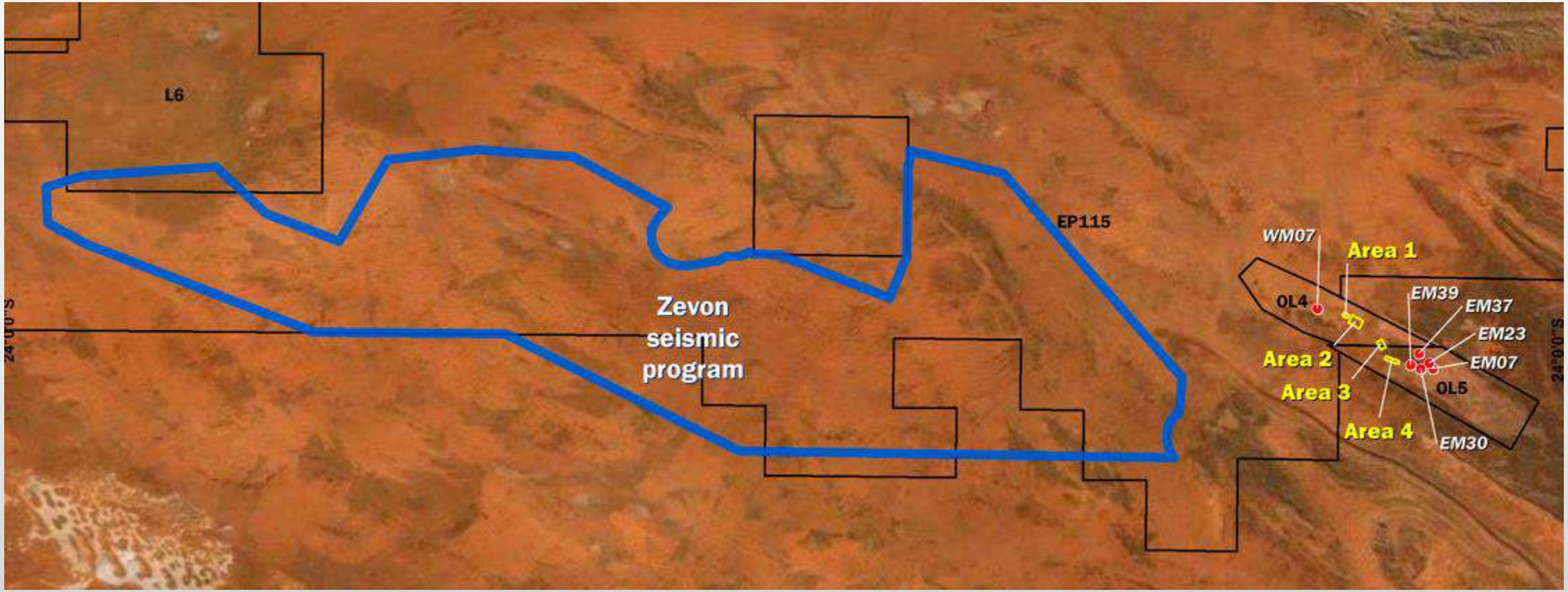
- Ongoing activities
  - Quarterly environmental inspections across all areas
  - Annual audits recently - 98% compliance with environmental outcomes and performance standards with only minor administrative opportunities identified
  - Only minor incidents
- Water management
  - Quarterly monitoring 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

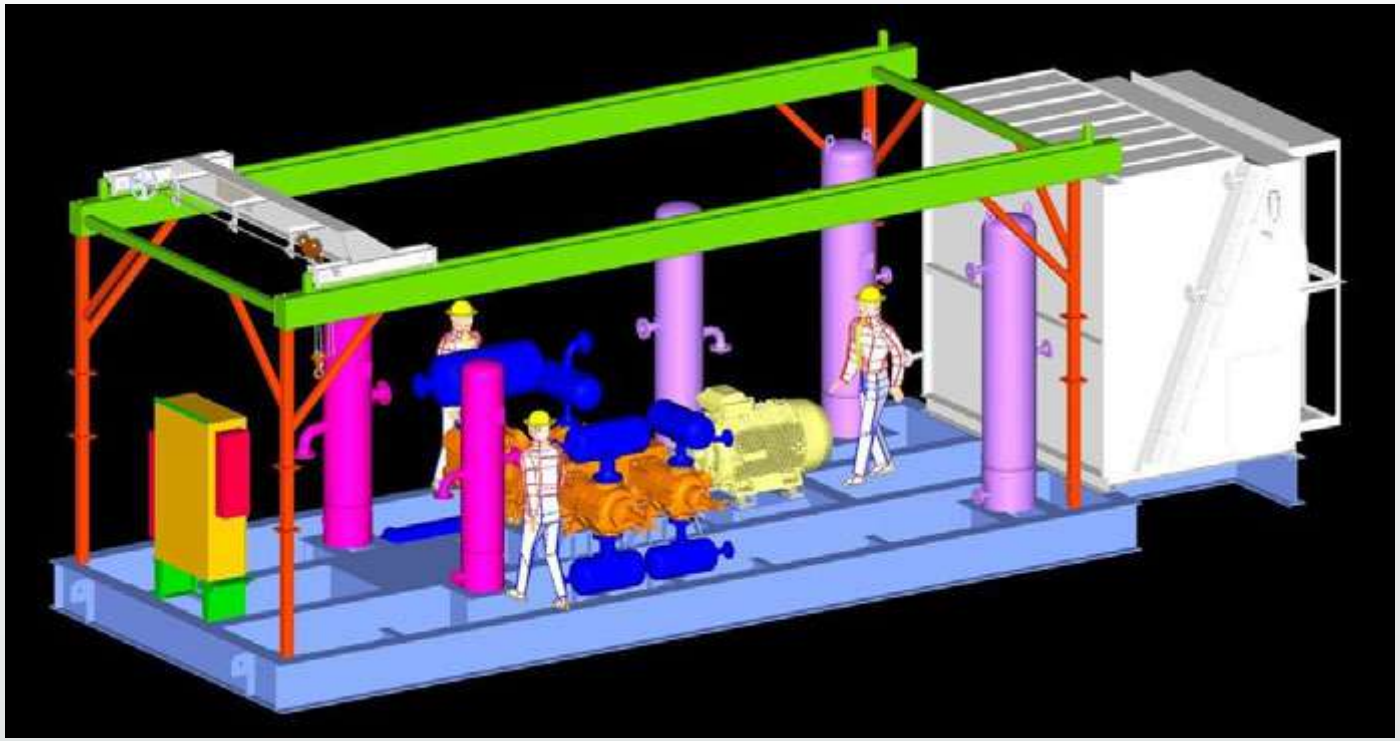
Future Development Activities

- 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

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.

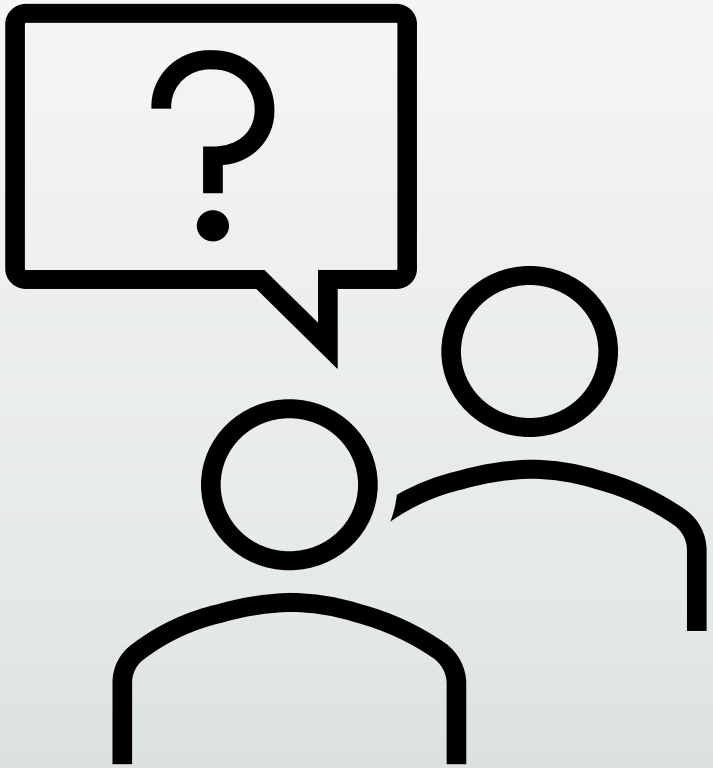
Indigenous Employee Company Profile by Location				
	Indigenous		Total	Indigenous
Location	Female	Male	Employees	%
Mereenie	o	5	29	17%
Palm Valley	0	2	7	29%
BECGS	0	3	7	43%
Northern Territory	0	10	43	23%
Brisbane	0	0	48	0%
Total	0	10	91	11%

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: info@centralpetroleum.com.au / 07 31813800

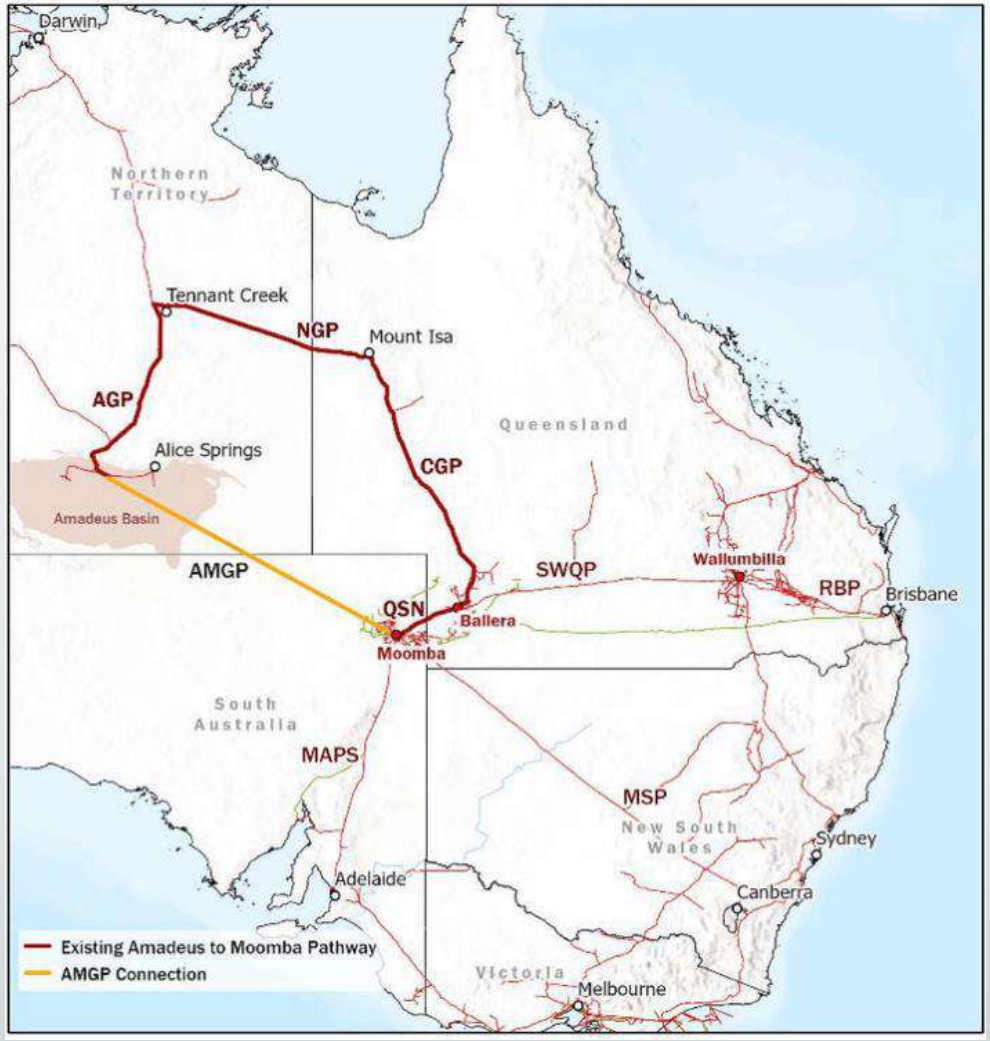
Other Business / Questions



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 in place

Outcomes / Objectives	Risks / Impacts	Controls
Minimise impacts on conservation areas and significant fauna / flora	Injury to fauna, loss of vegetation, increased weeds	- No additional 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 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
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.

Contact and Further Information

Level 7, 369 Ann Street
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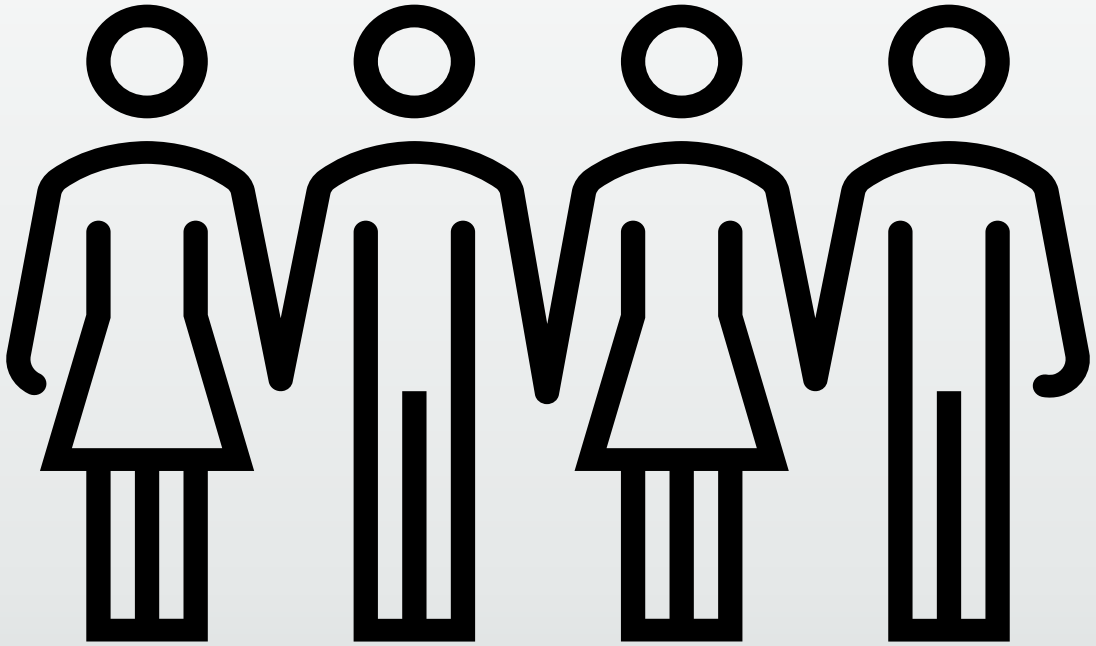
Mereenie LCM
21 September 2023

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

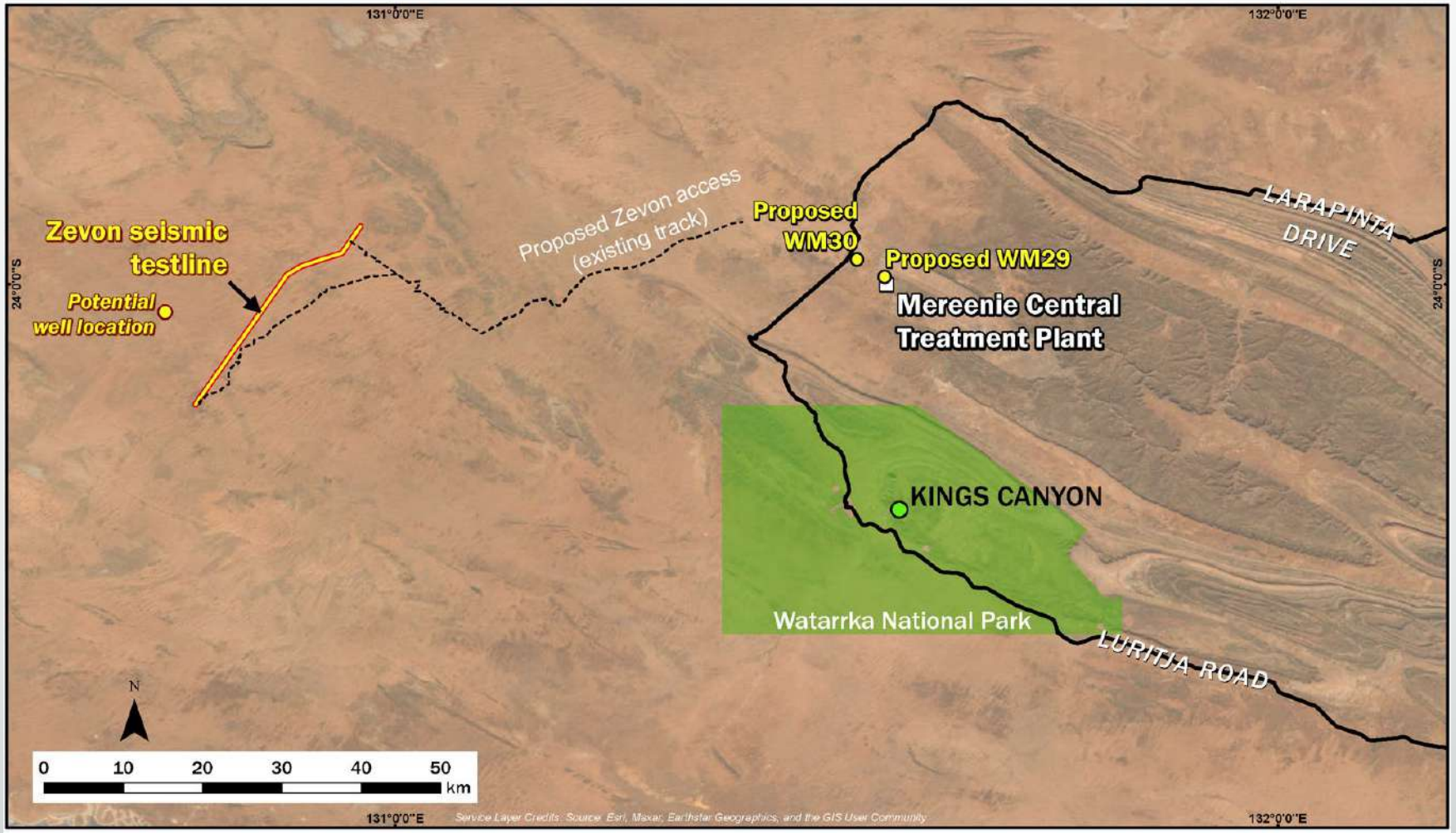
- Ongoing activities
  - Quarterly environmental inspections across all areas
  - Annual audits recently - 98% compliance with environmental outcomes and performance standards with only minor administrative opportunities identified
  - Only minor incidents which were immediately rectified
- Water management
  - 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.

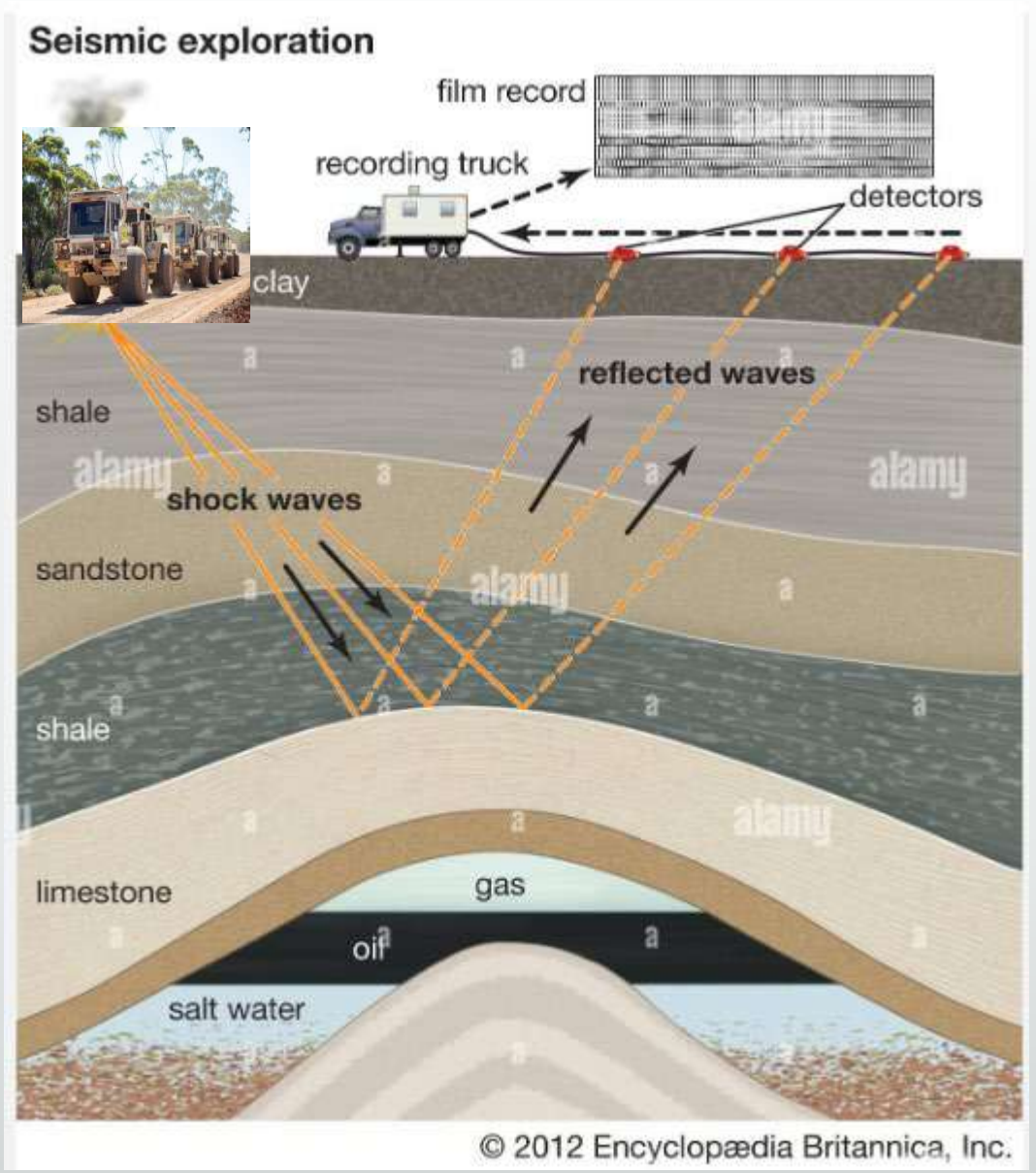
The vibrations cannot be felt 50m away.

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.

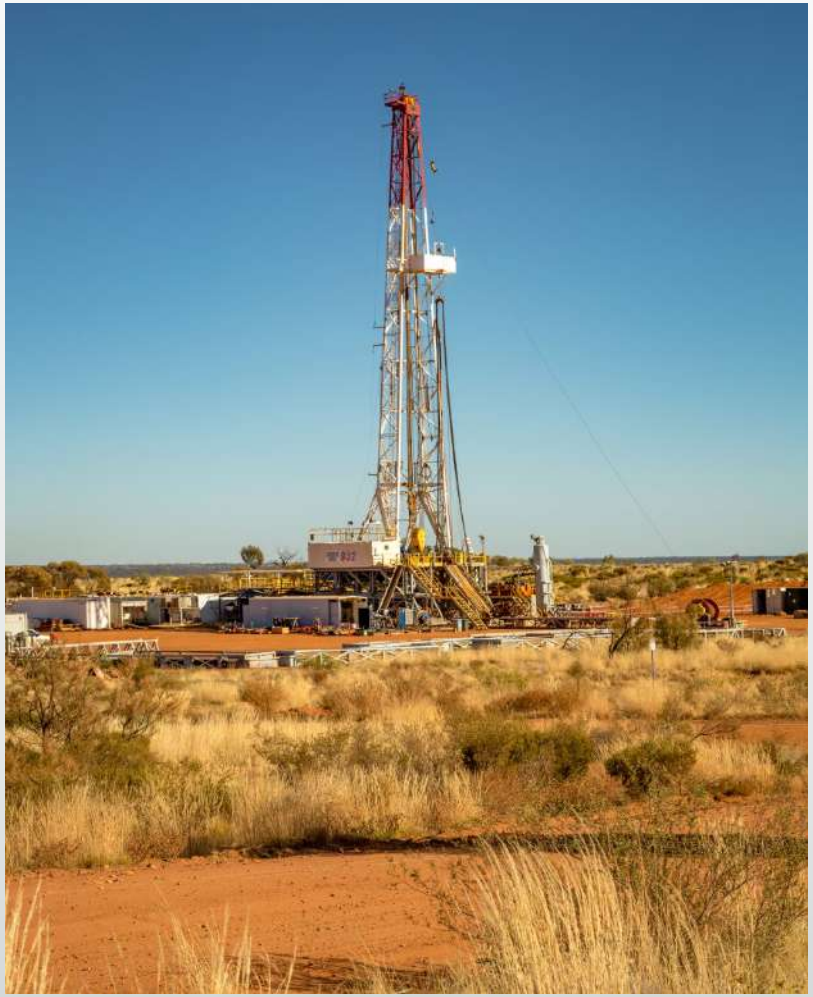
Visual surveys are conducted before and after seismic acquisition to ensure no environmental or cultural disturbance.

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



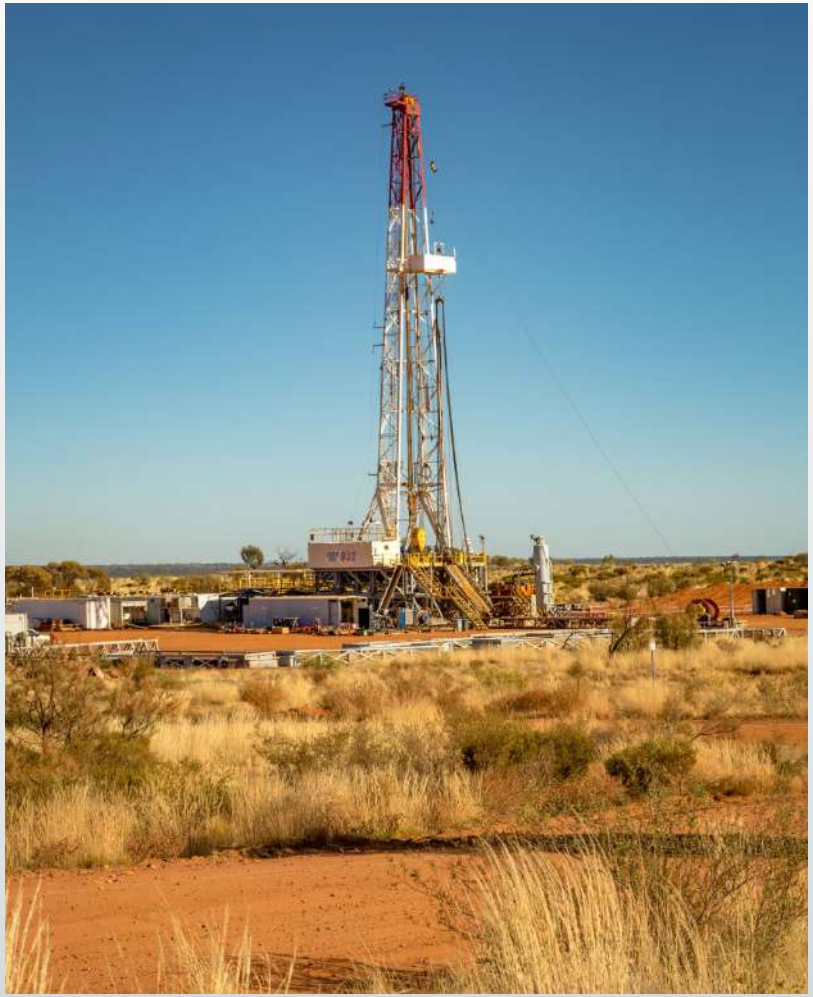
New Development Wells (Mereenie)

- 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.



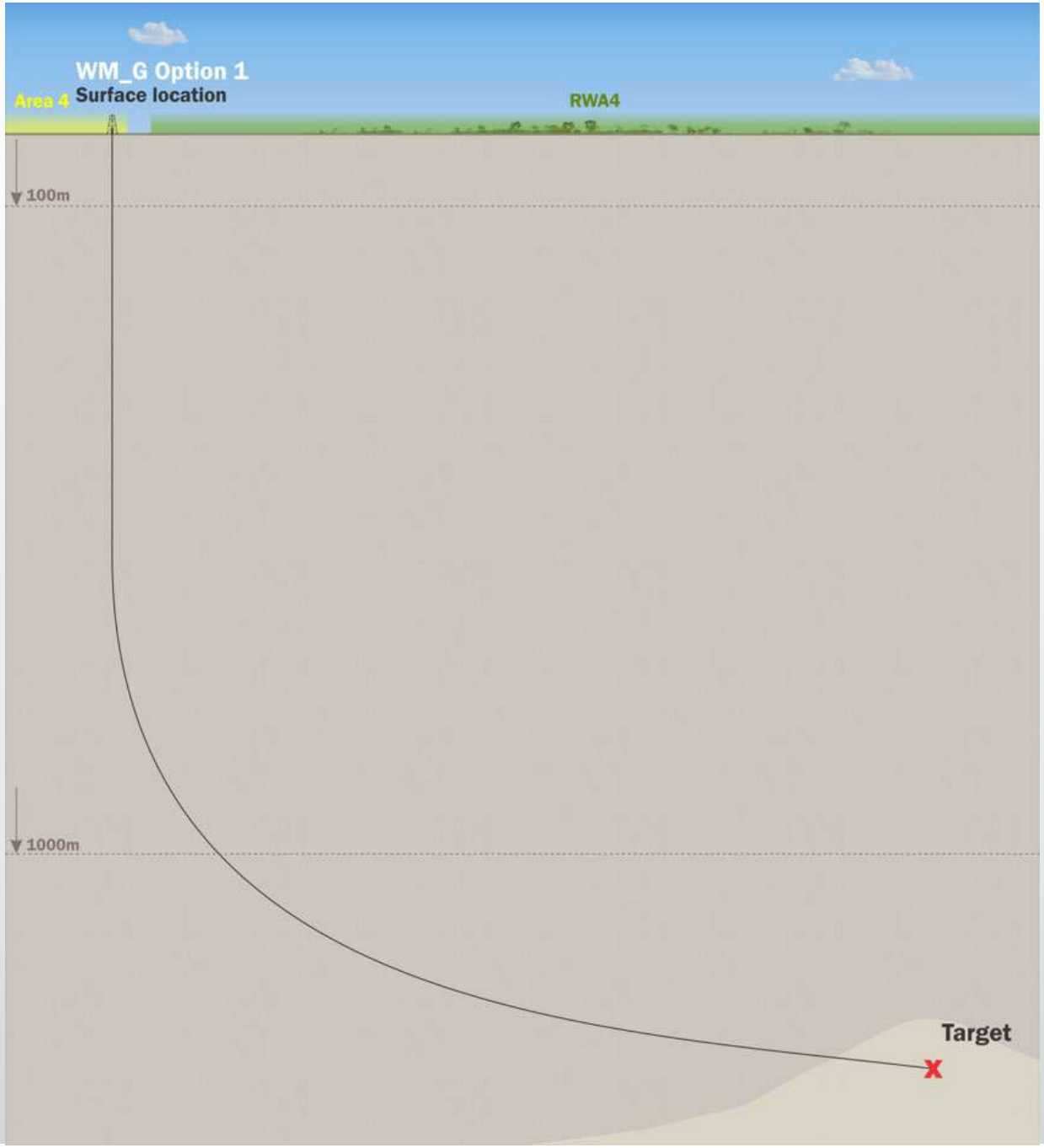
New Development Wells (Mereenie)

- 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.

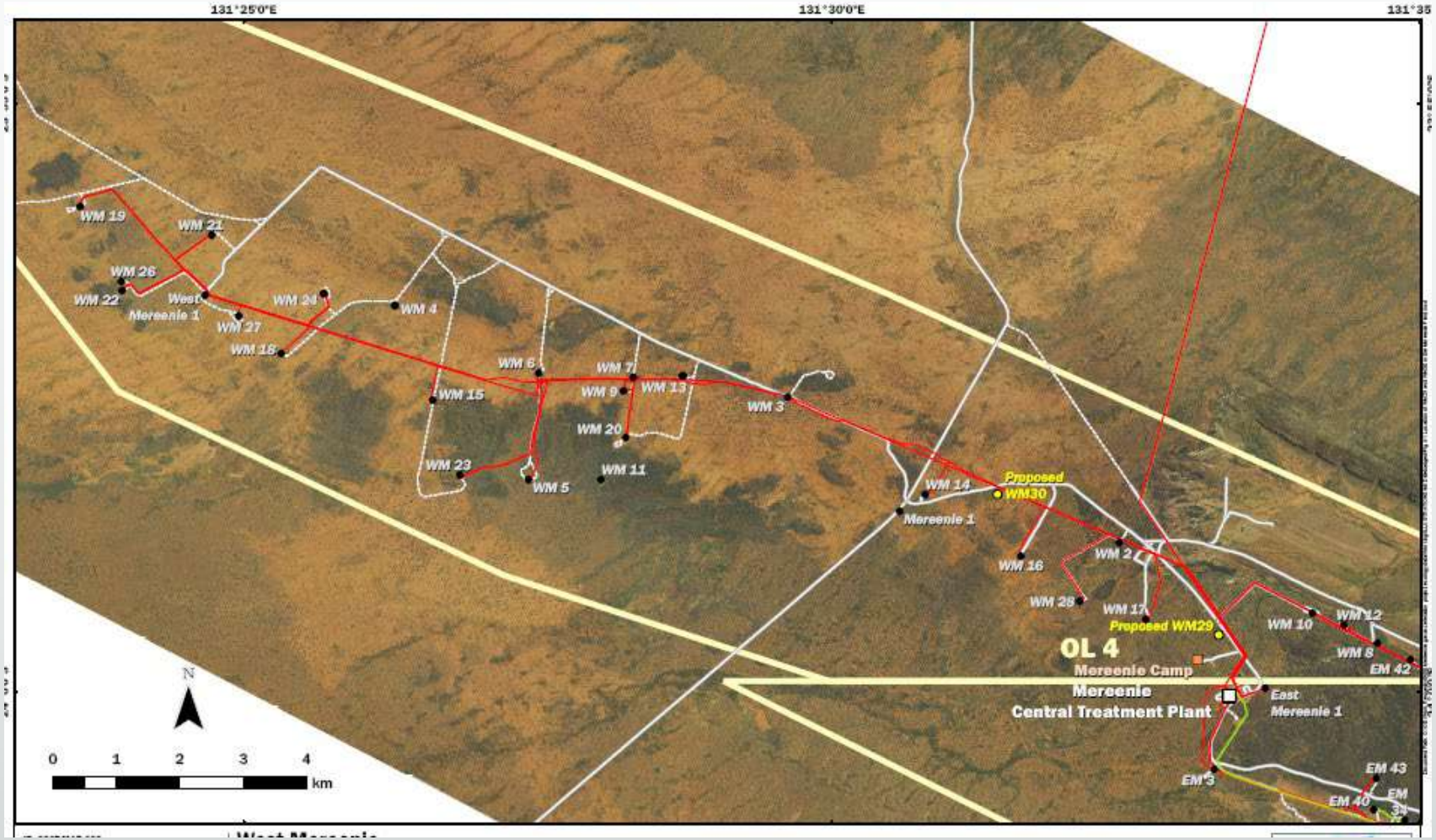


New Development Wells

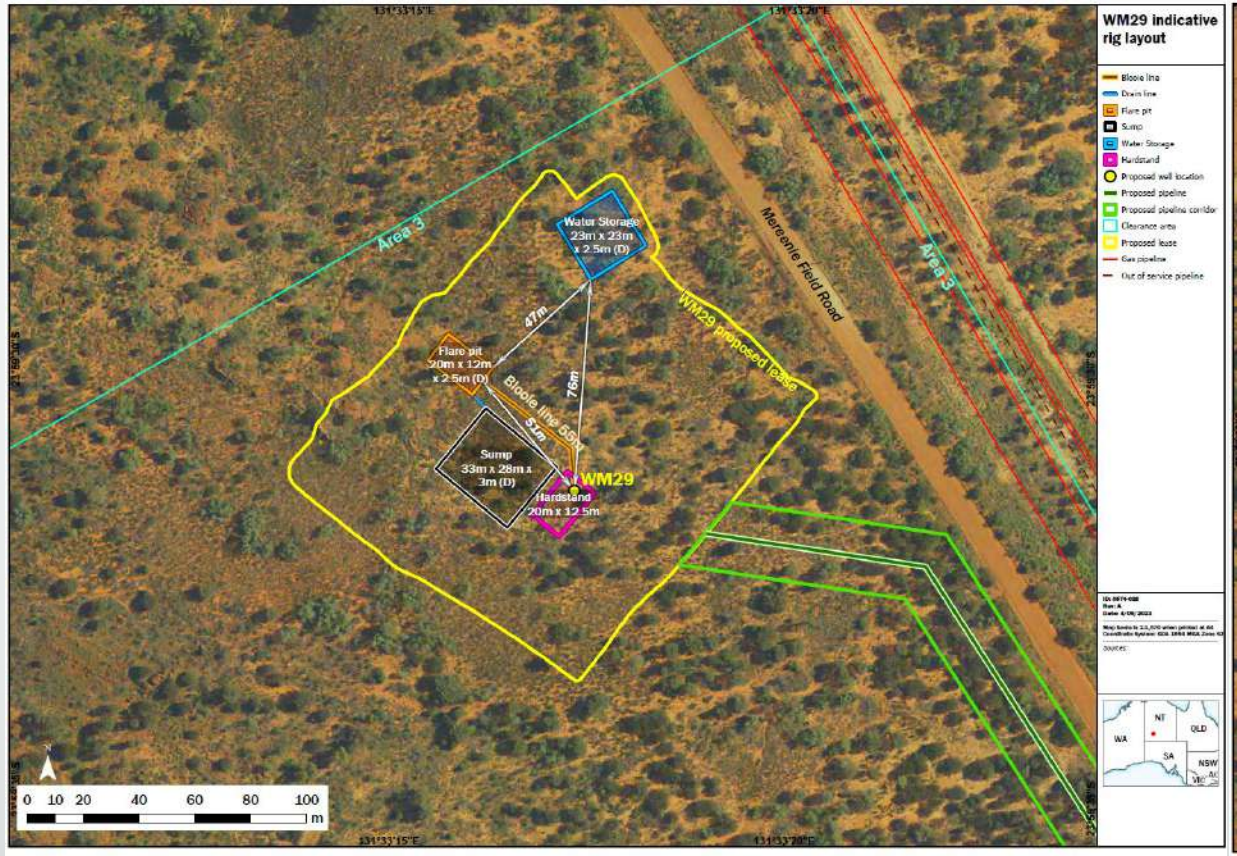
- Wells will be drilled vertically initially then directionally toward the deep gas targets.
- Surface location is located outside any areas of concern with no impact to the surface locations above.
- Targets 1500m below ground level.

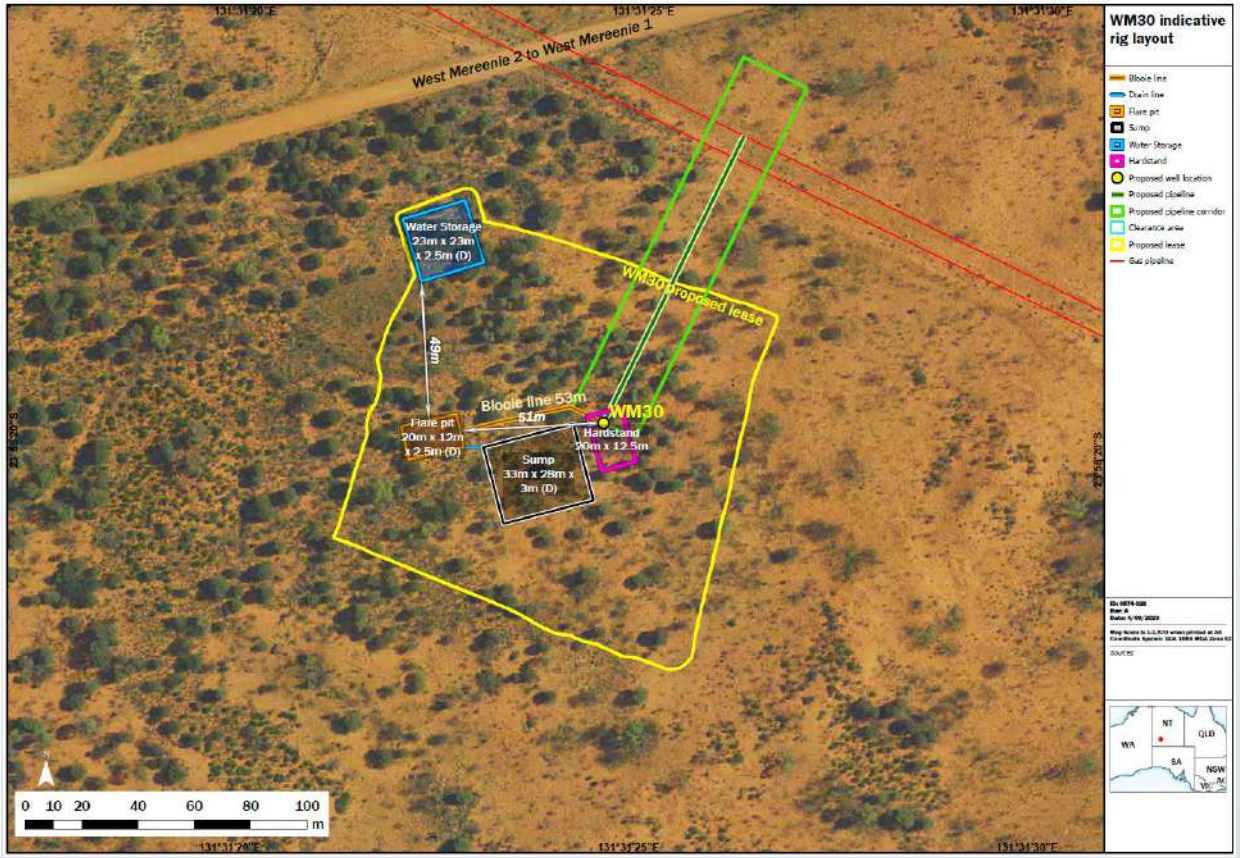


New Development Wells - location (Mereenie)



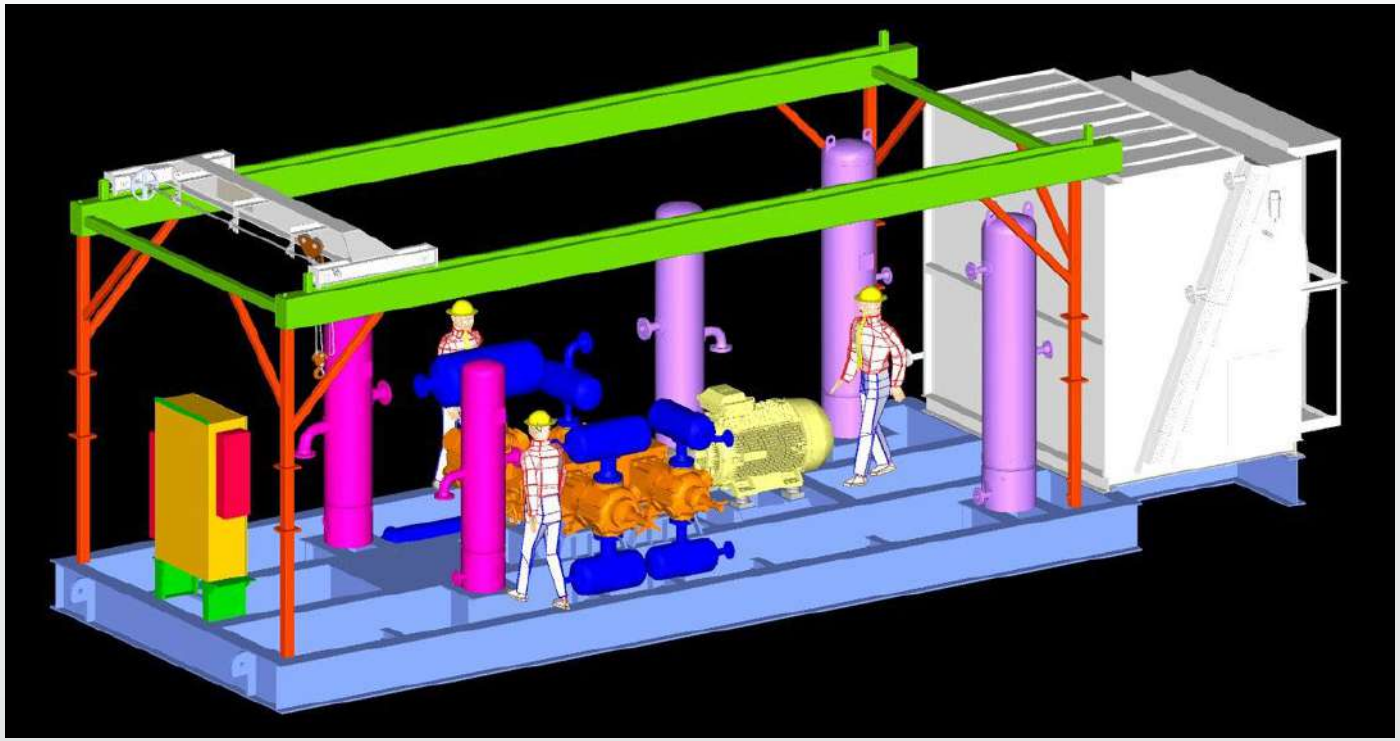
New Development Wells - location (Mereenie)





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)

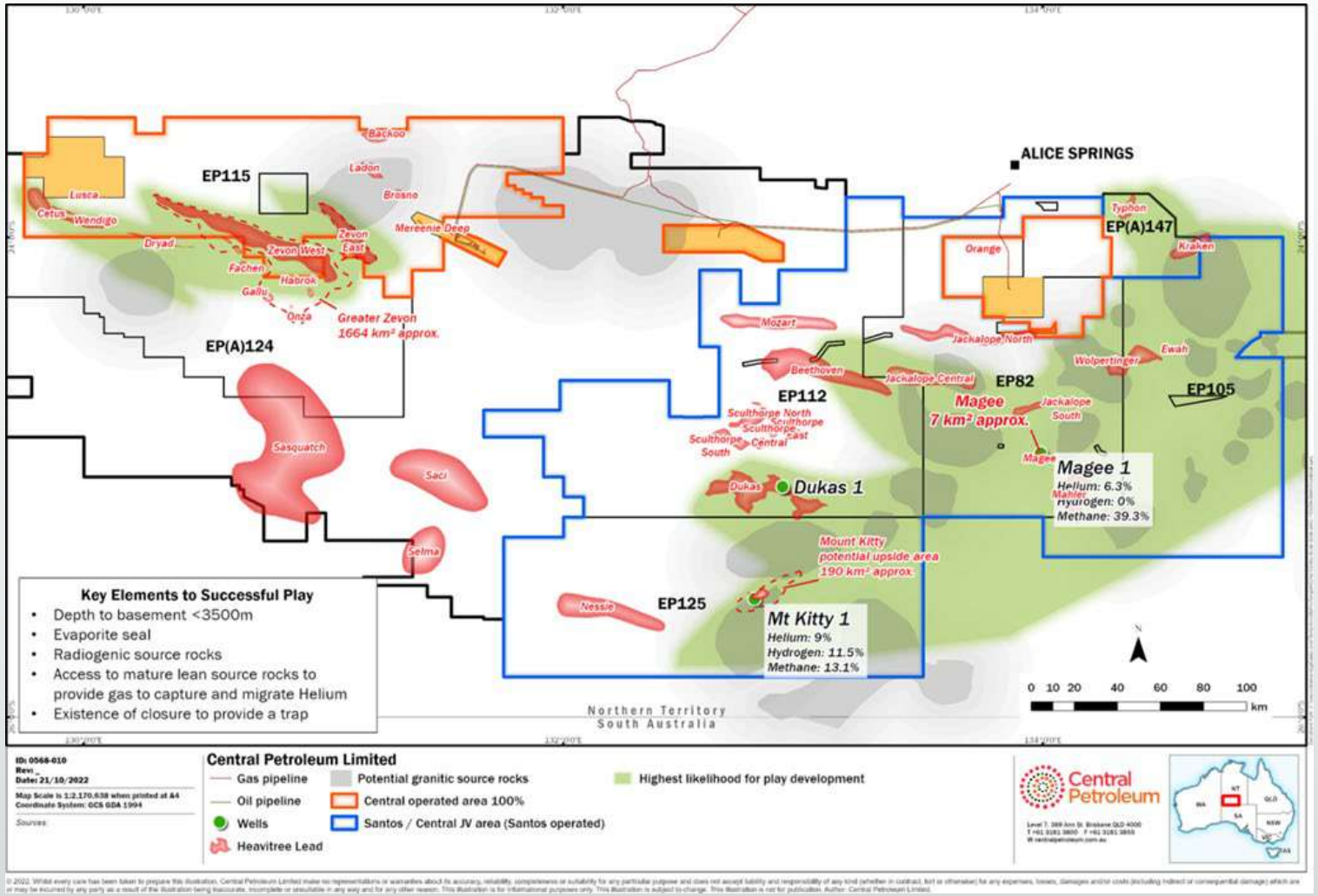
- Helium generation relies on radioactive decay of Uranium and Thorium
- Uranium and Thorium are both commonly found in high concentrations in Shales and Granite which are prevalent in the Amadeus
- The source and reservoir rocks have been co-located for hundreds of millions of years providing the time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

In the South (Appraisal)

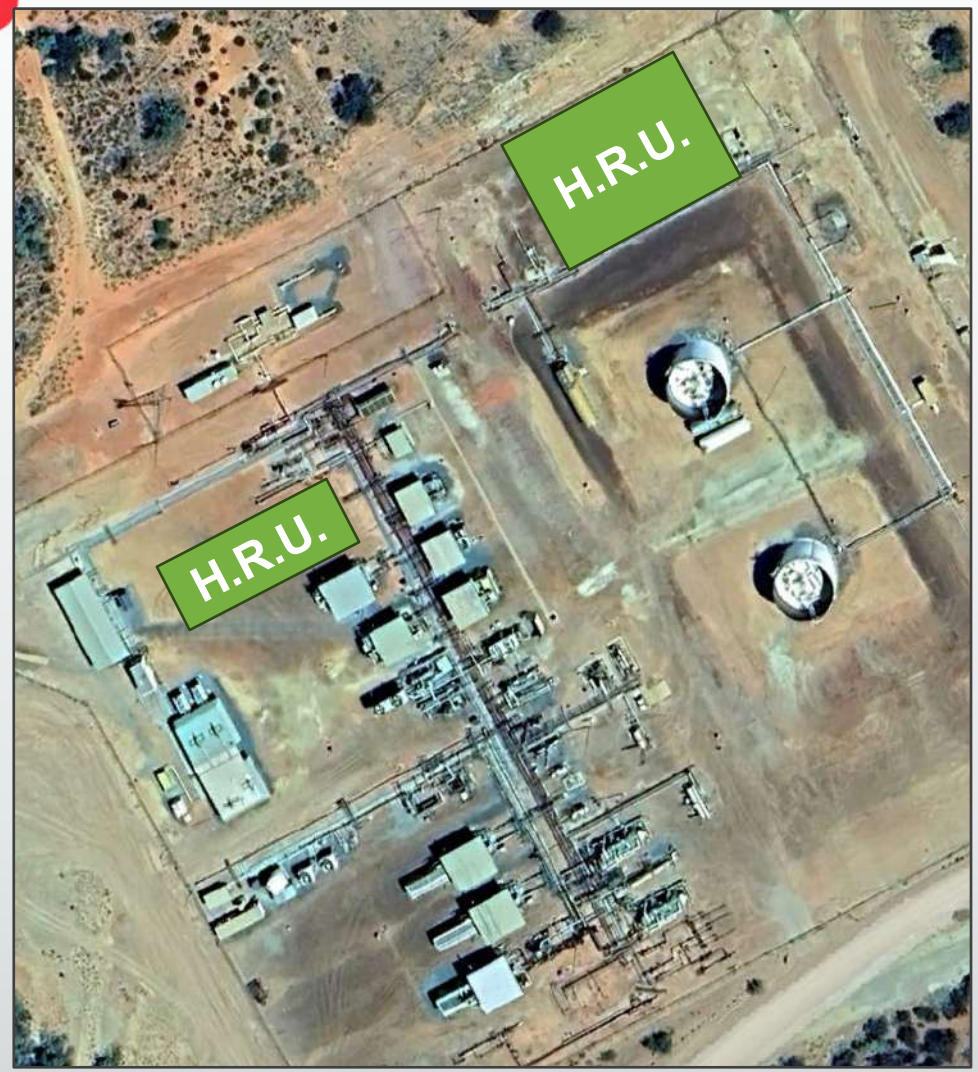
- 9% proven at Mt. Kitty (EP125)
- 6% proven at Magee (EP82)

In the North (Production)

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

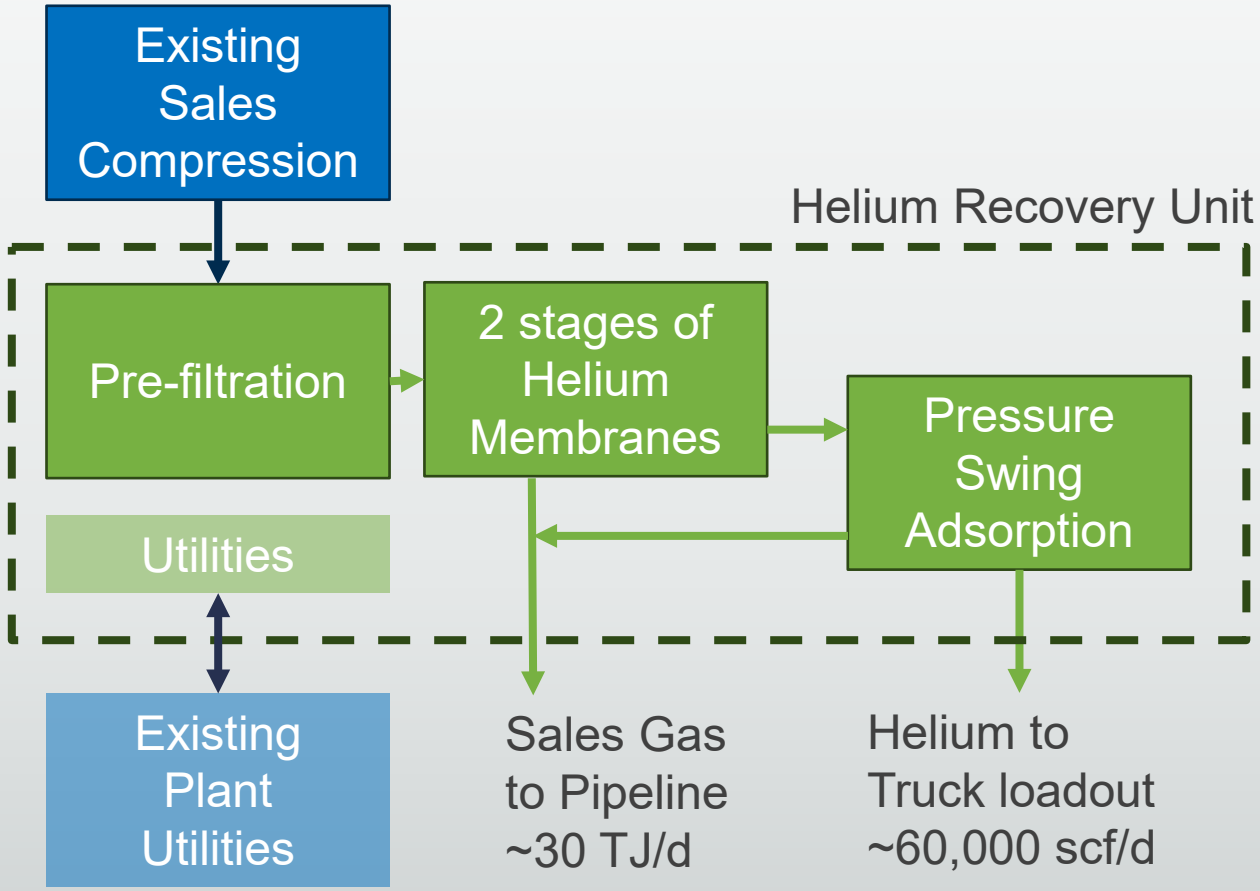


MOU (discussions) underway for Helium Recovery Unit at Mereenie



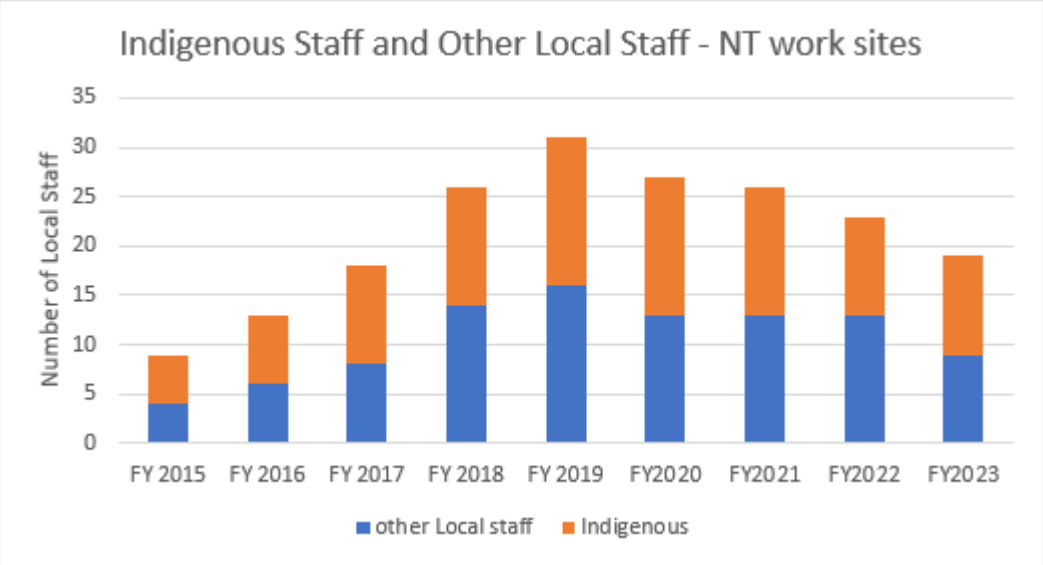
Potential locations for HRU

- ~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 [redacted]
  - 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.
- 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: info@centralpetroleum.com.au / 07 31813800

Other Business / Questions

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.
- EMPs detailing how impacts to the environmental will be avoided and minimized is in place

Outcomes / Objectives	Risks / Impacts	Controls
Minimise impacts on conservation areas and significant fauna / flora	Injury to fauna, loss of vegetation, increased weeds	- No additional clearing undertaken - Flora and fauna survey conducted - Regular inspections
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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, 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
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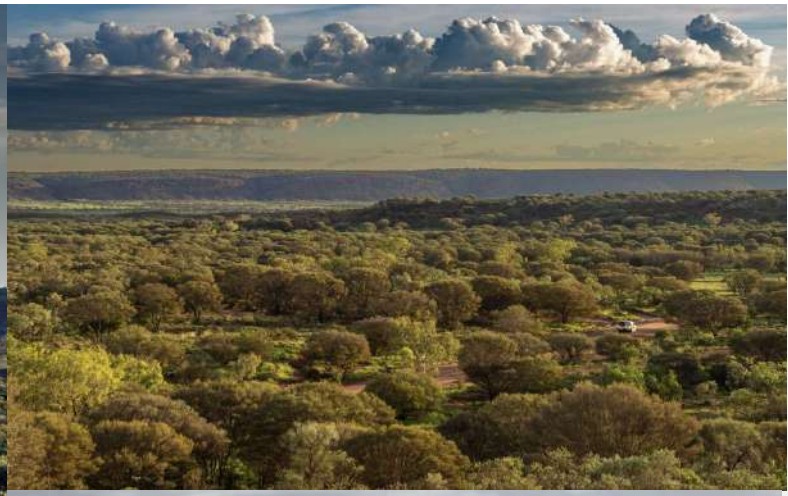


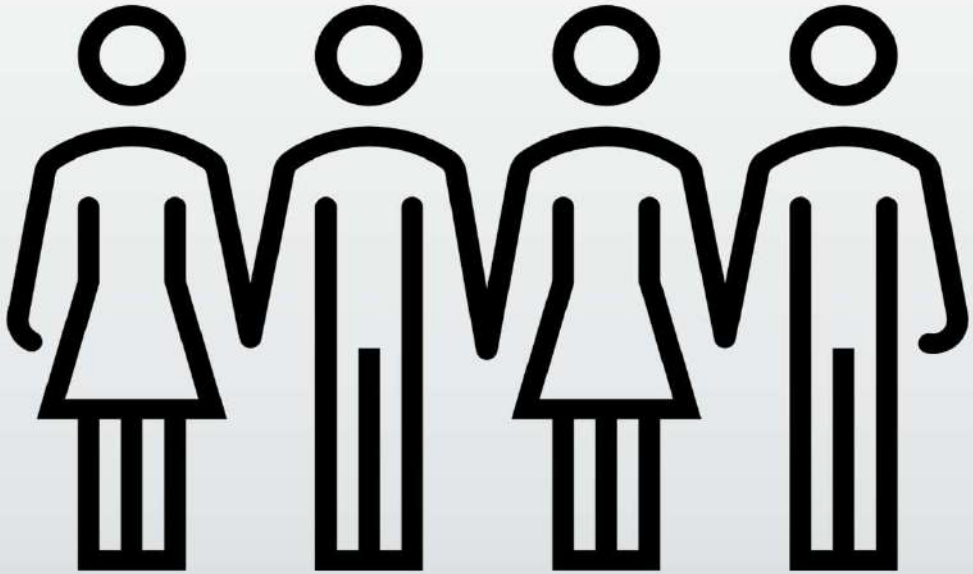
Mereenie LCM
23 January 2025

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

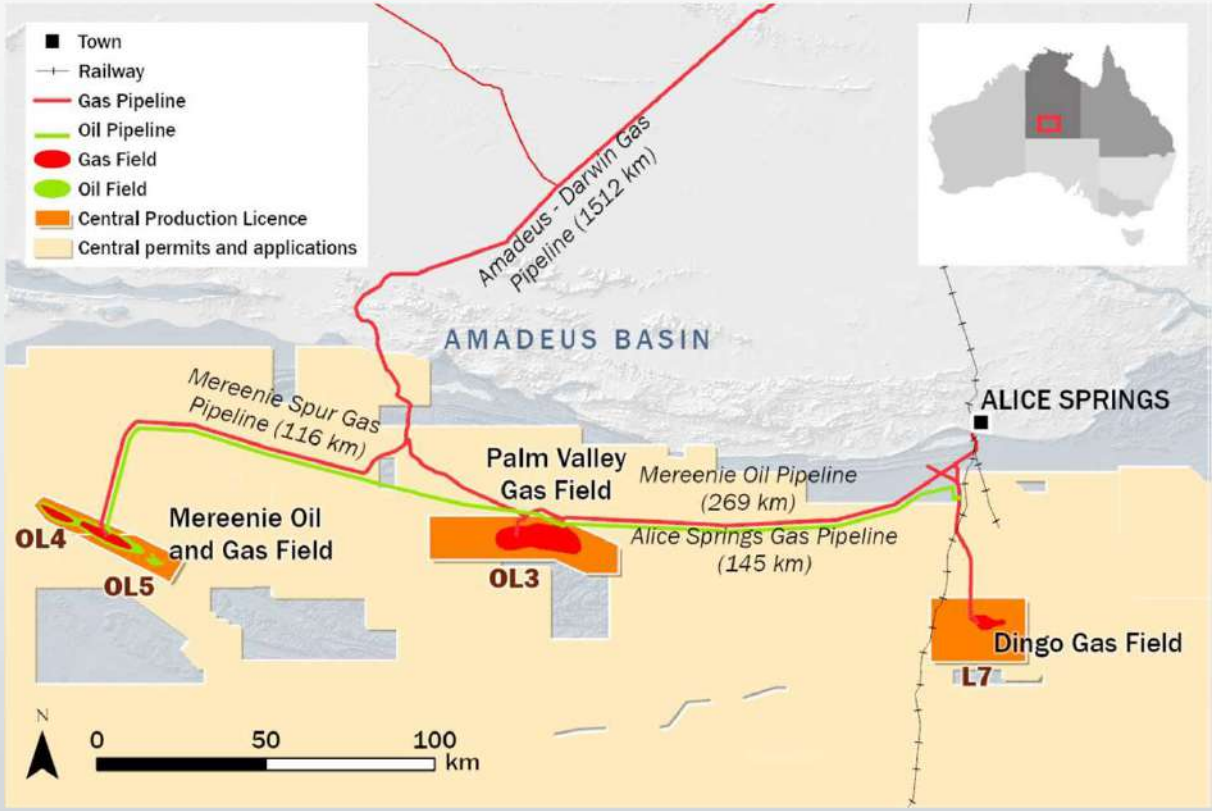
Introduction / Welcome



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

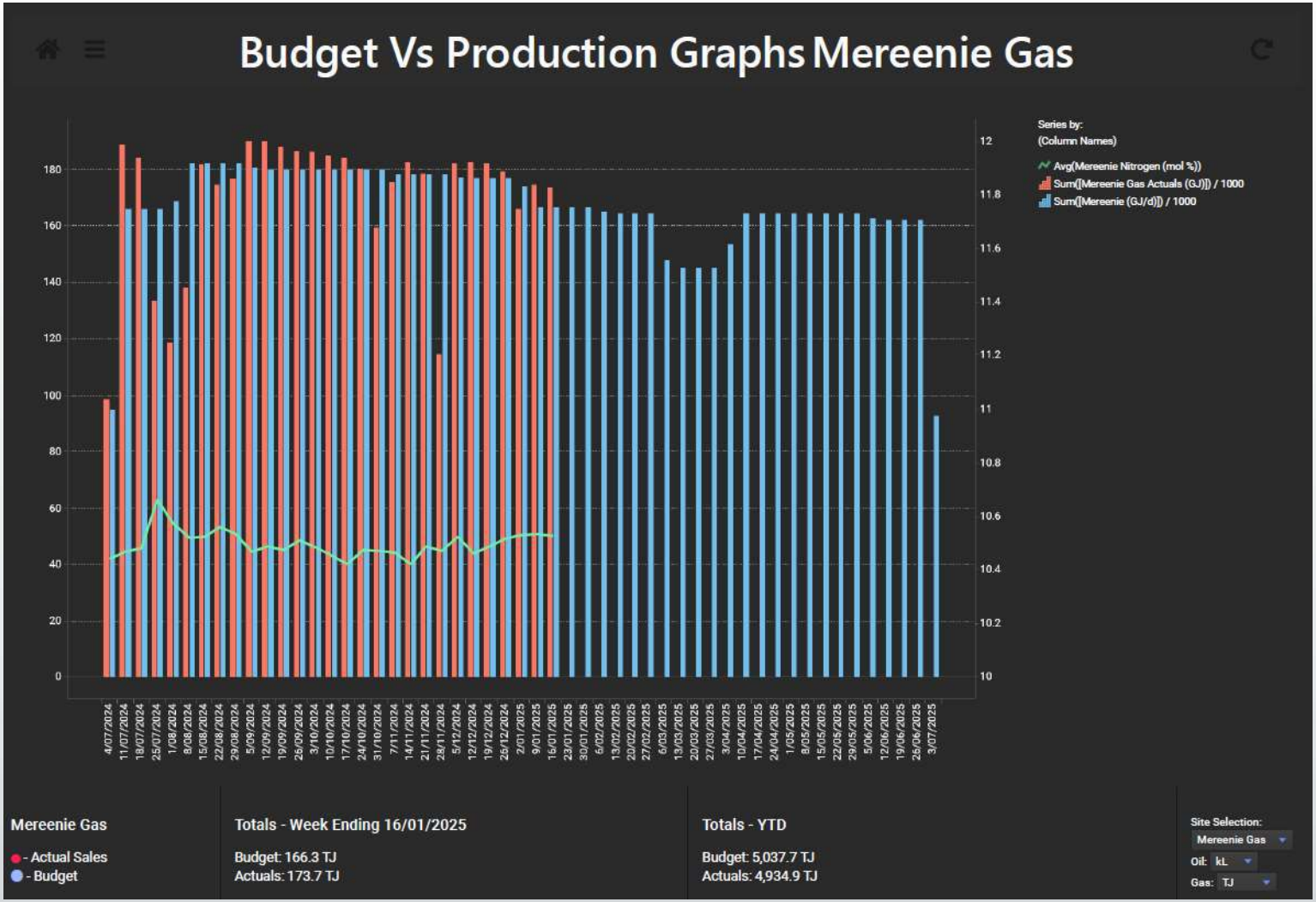
Mereenie Field Info

- 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

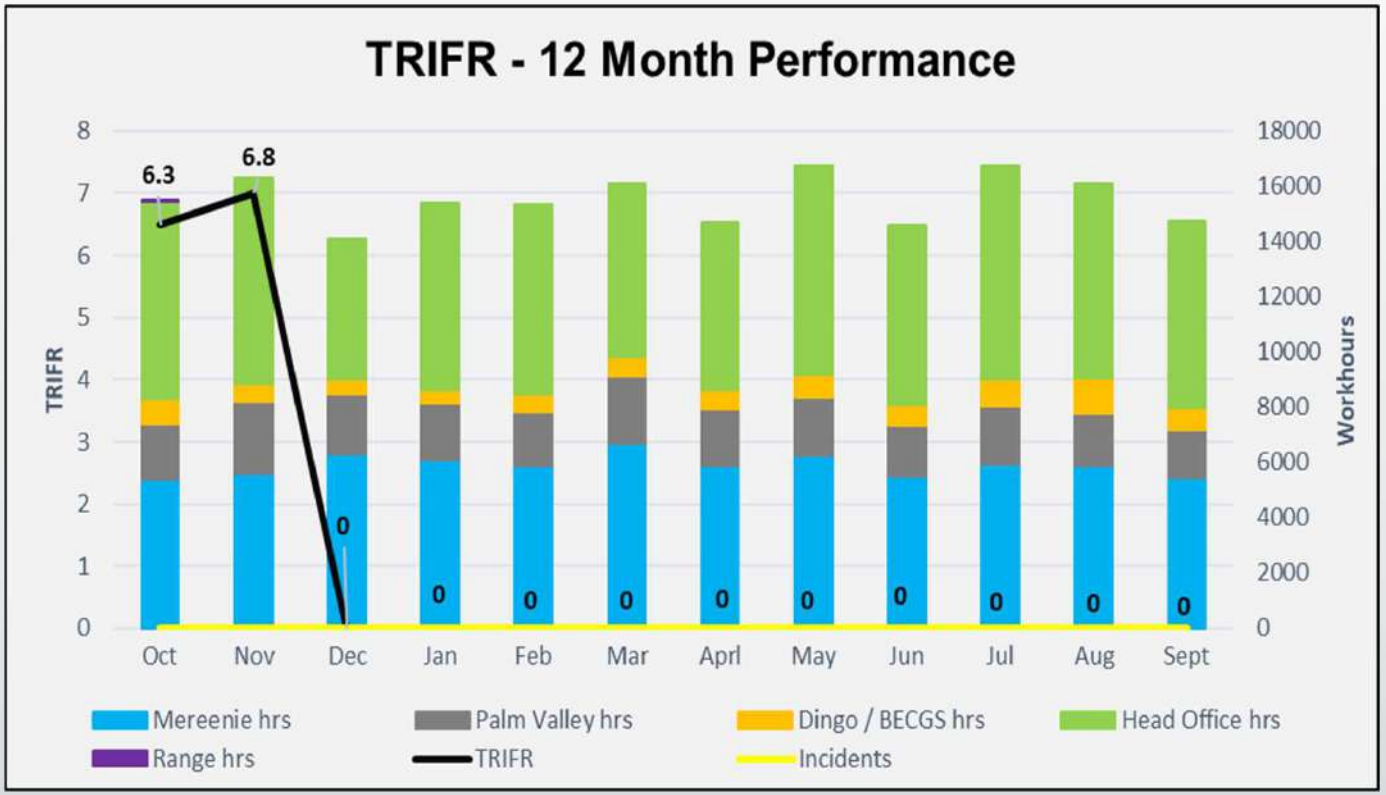
  Bi-annual monitoring of water quality, standing water levels in surrounds bores and springs in Mereenie. All inspections have indicated no adverse impacts from Central activities and will continue to ensure positive environmental outcomes into the future
- Environmental Management Plans (EMP)

- 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

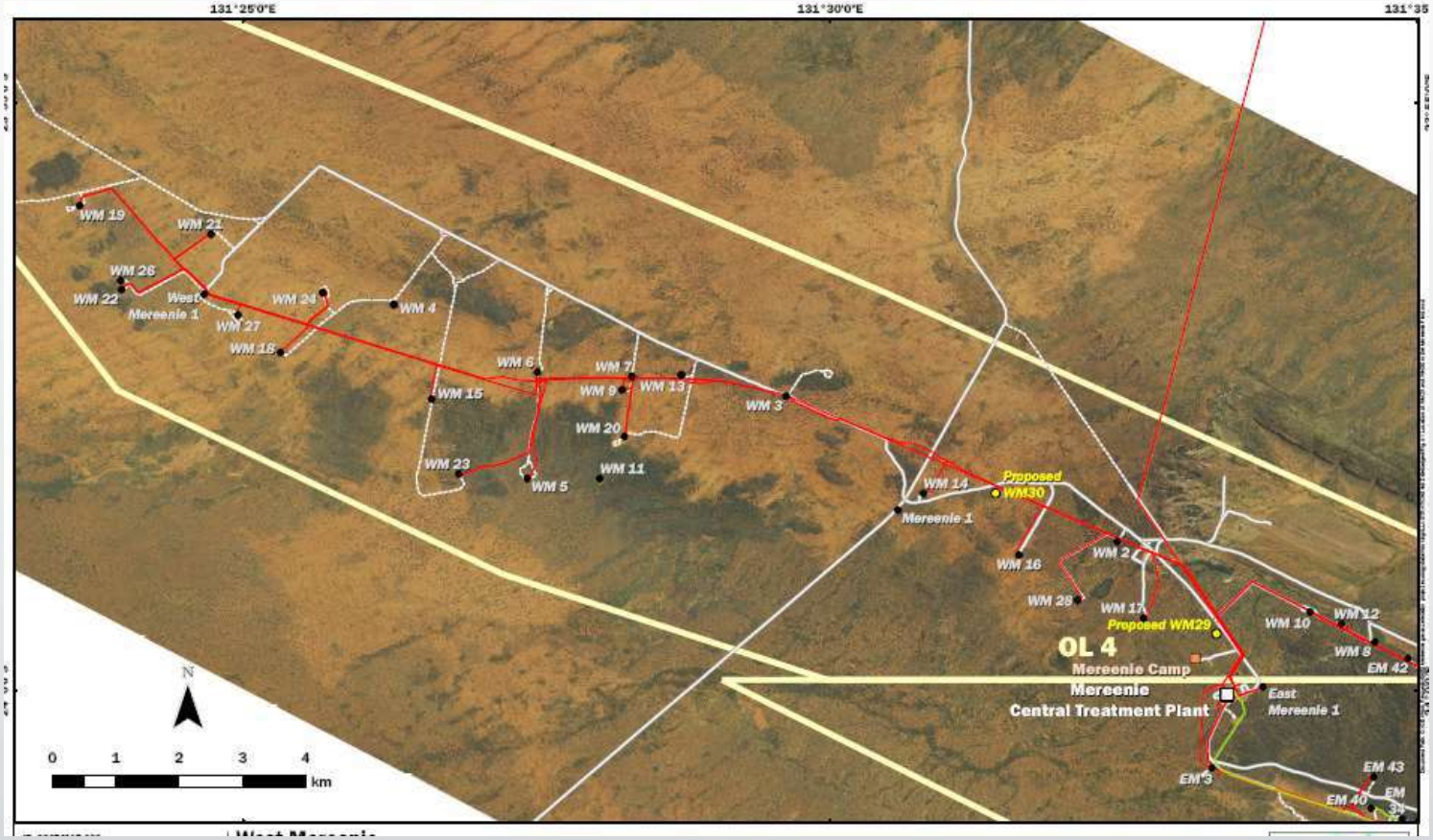
- Brumby numbers are still high
- Brumby's cause environmental harm
- Status of the CLC brumby cull ?
- CTP is happy to co-contribute funding

2024 – 2025 Current Projects underway

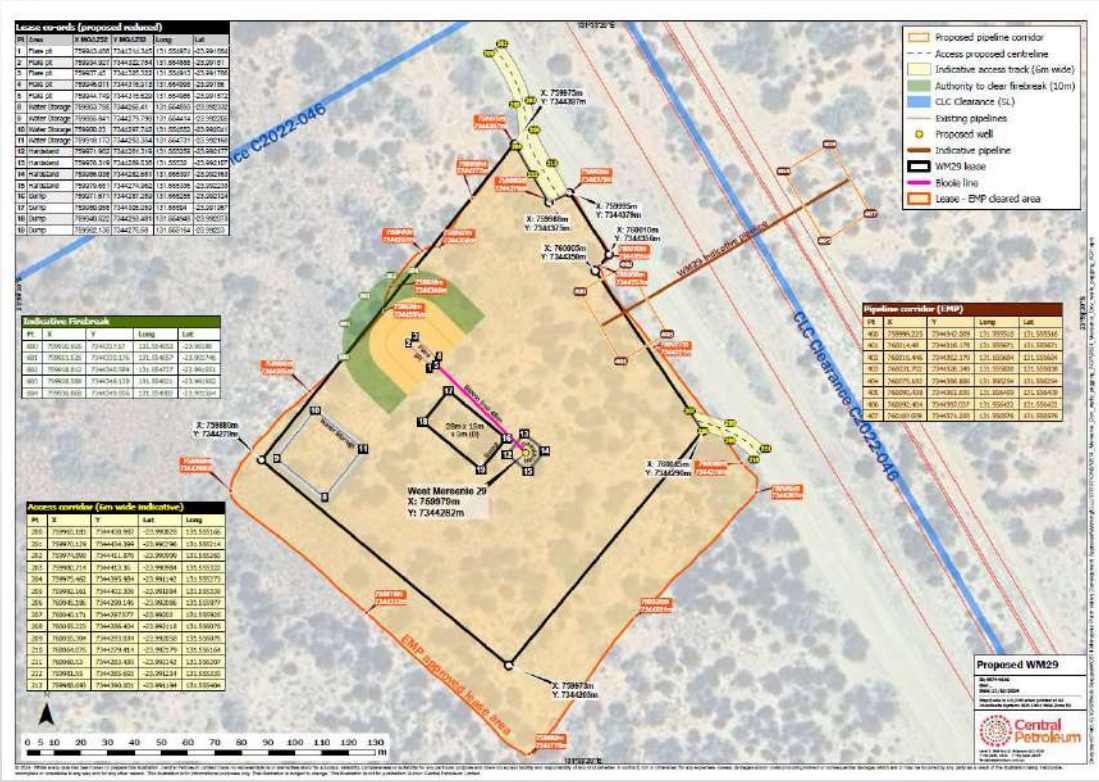
Flare Gas Recovery Compressor (FGRC)

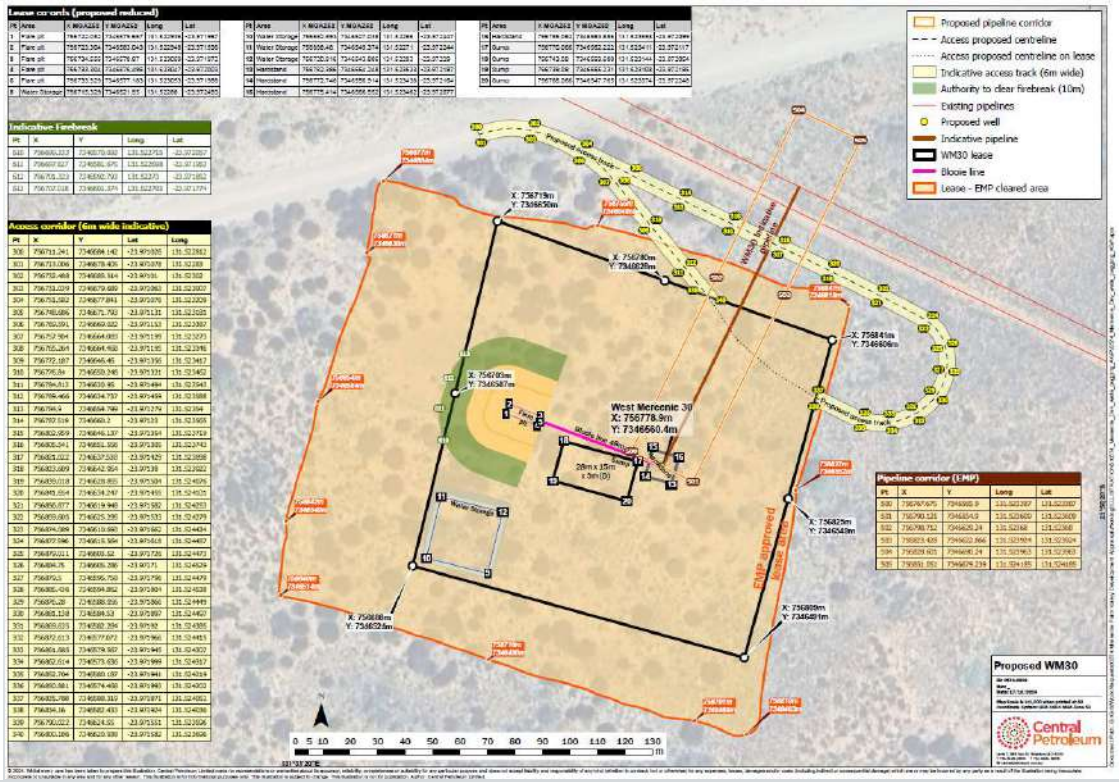
- FGRC started in March 2024.
- The compressor reduces flared gas by returning some gas to sales.

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

West Mereenie 29

- West Mereenie 29 is now connected and producing.
- Initial results are encouraging.
- West Mereenie 30 is being drilled at the moment and should be connected early March.

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

Mereenie Future Operations

- Major areas of activity in the coming year include:
  - Continue to investigate opportunities to enhance safety and environmental performance
  - Keep the existing plant running optimally and in compliance.
  - Continue to ensure integrity of the wells and facilities are maintained.
  - Connect the West Mereenie 30 well
  - Investigate the feasibility of a helium recovery plant with project partners (on hold for now)
  - Plan for future development activities

Development Wells – New Opportunities

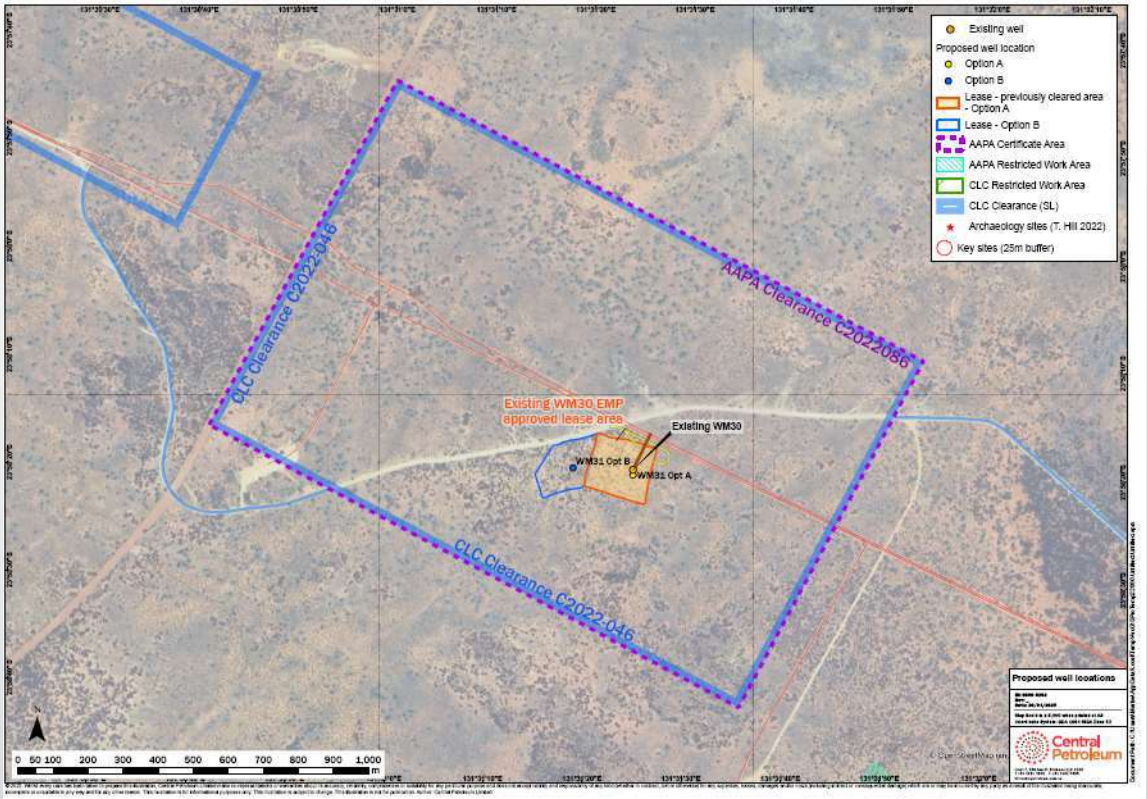
- New wells can extend the life of the field.
  - This results in prolonged production, royalties and benefits for the community.
  - As previously highlighted last year LCM, Central has cleared multiple areas for new wells in the Mereenie field.
- Planning has commenced for 2 x NEW wells – West Mereenie 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.

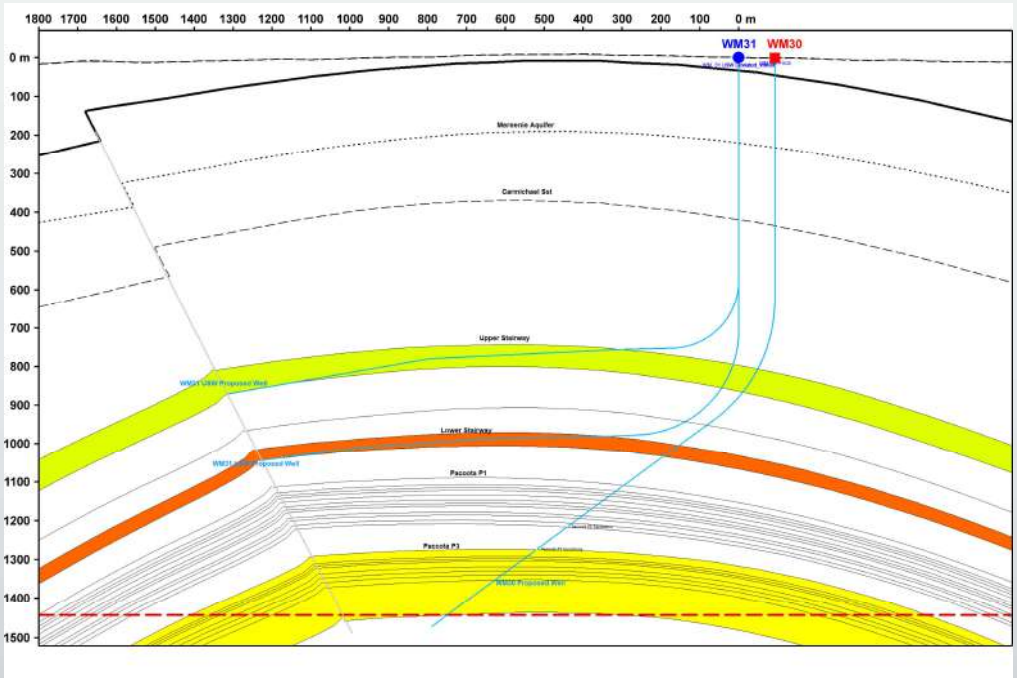
Development Activities – WM 31 Location

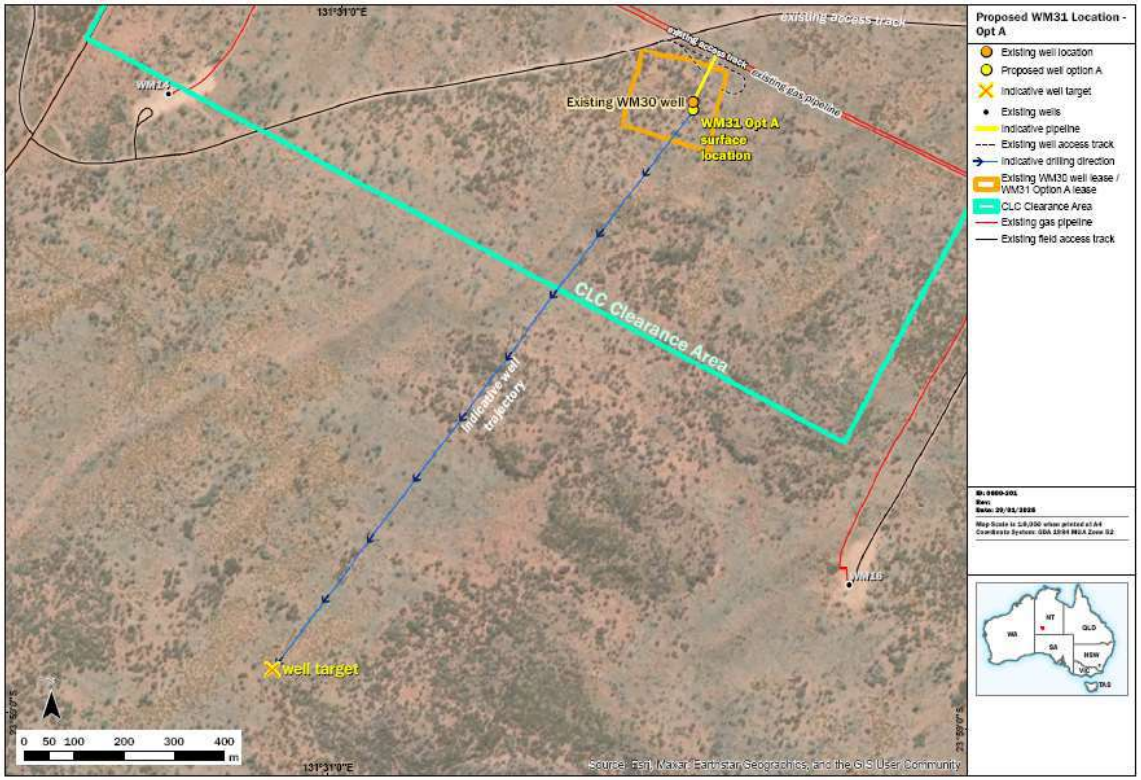
- West Mereenie 31 is located in the same area as WM 30
  - Entire area has been CLC cleared
  - Entire area has been AAPA cleared.
  - Civils involve extending the pad and having 2 wells on one area
  - Reduced environmental clearances require
  - Reduced footprint.
  - Fracking may be considered if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



Development Activities – WM 31 Trajectory

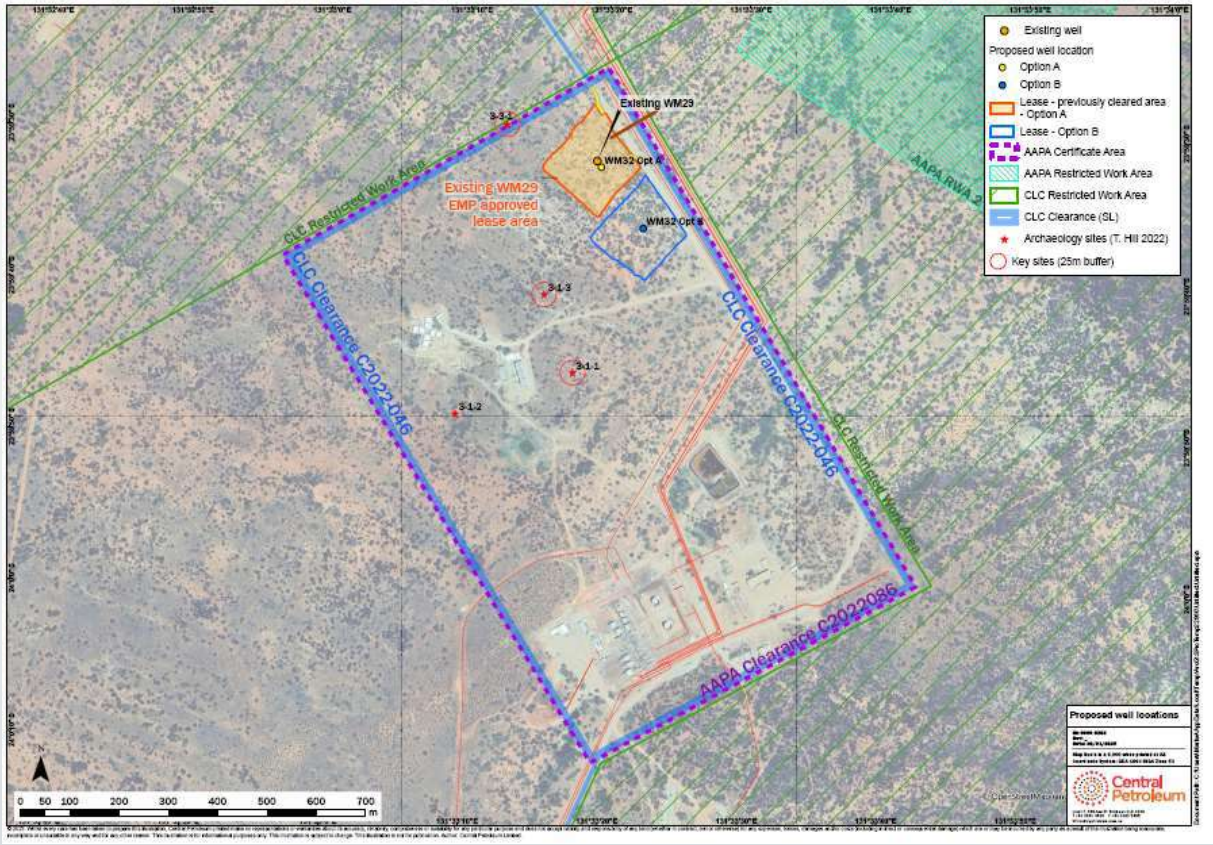
- West Mereenie 31 trajectory outlined
  - Away from known restricted work areas
  - Well is 1 km below ground level





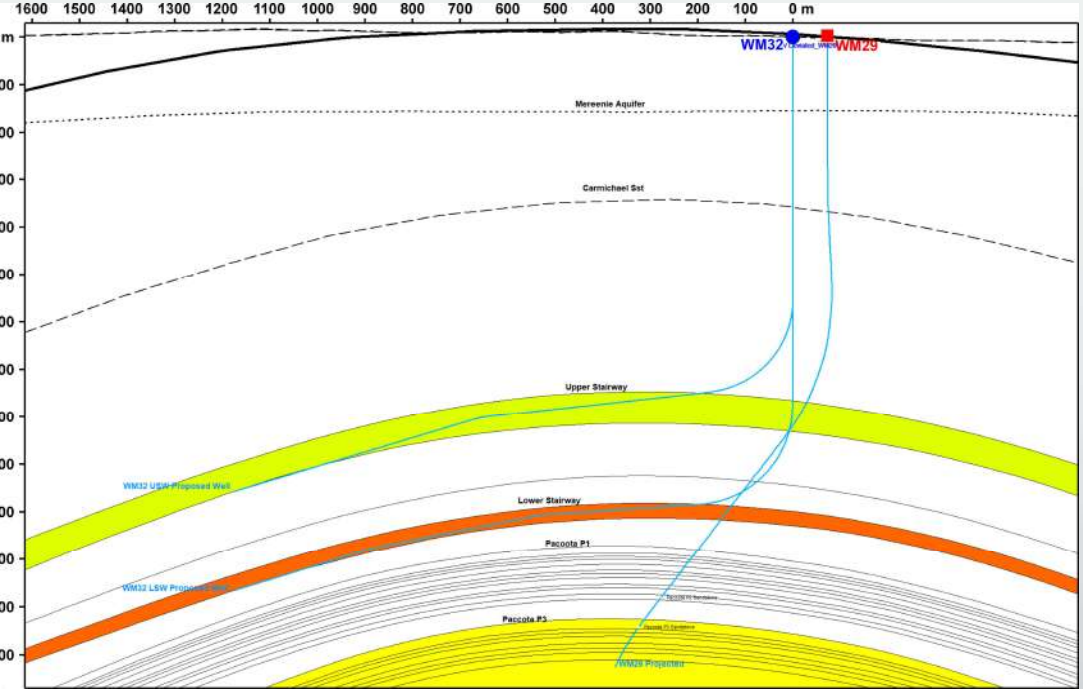
Development Activities – WM 32 Location

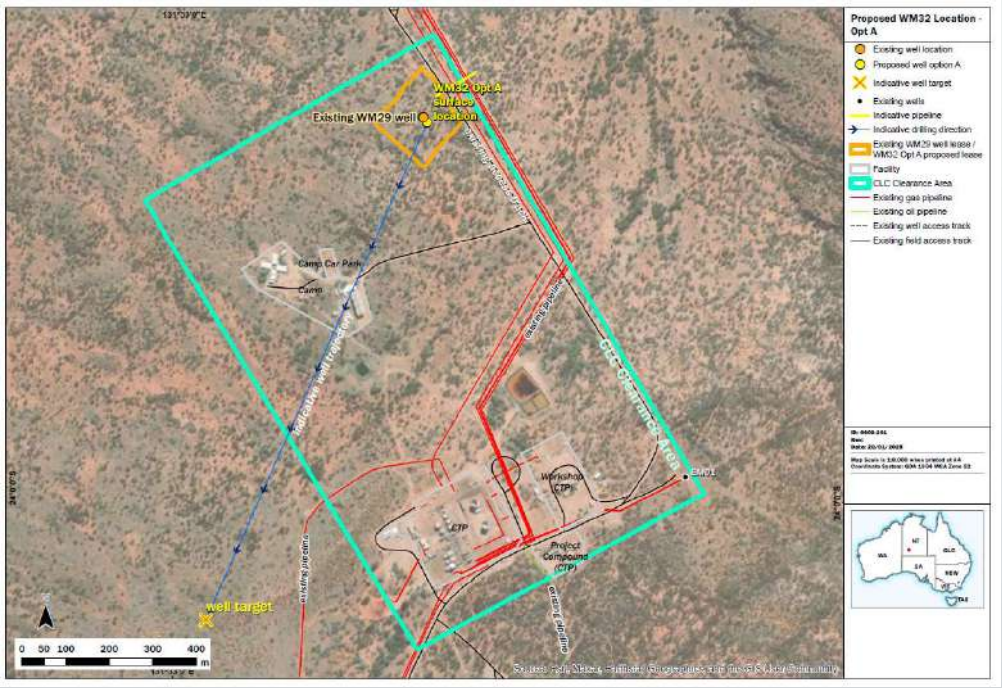
- West Mereenie 32 is located in the same area as WM 29
  - Entire area has been CLC cleared
  - Entire area has been AAPA cleared.
  - Civils involve extending the pad and having 2 wells on one area
  - Reduced environmental clearances require
  - Reduced footprint.
  - Fracking may be considered if the wells are not productive in the future.



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

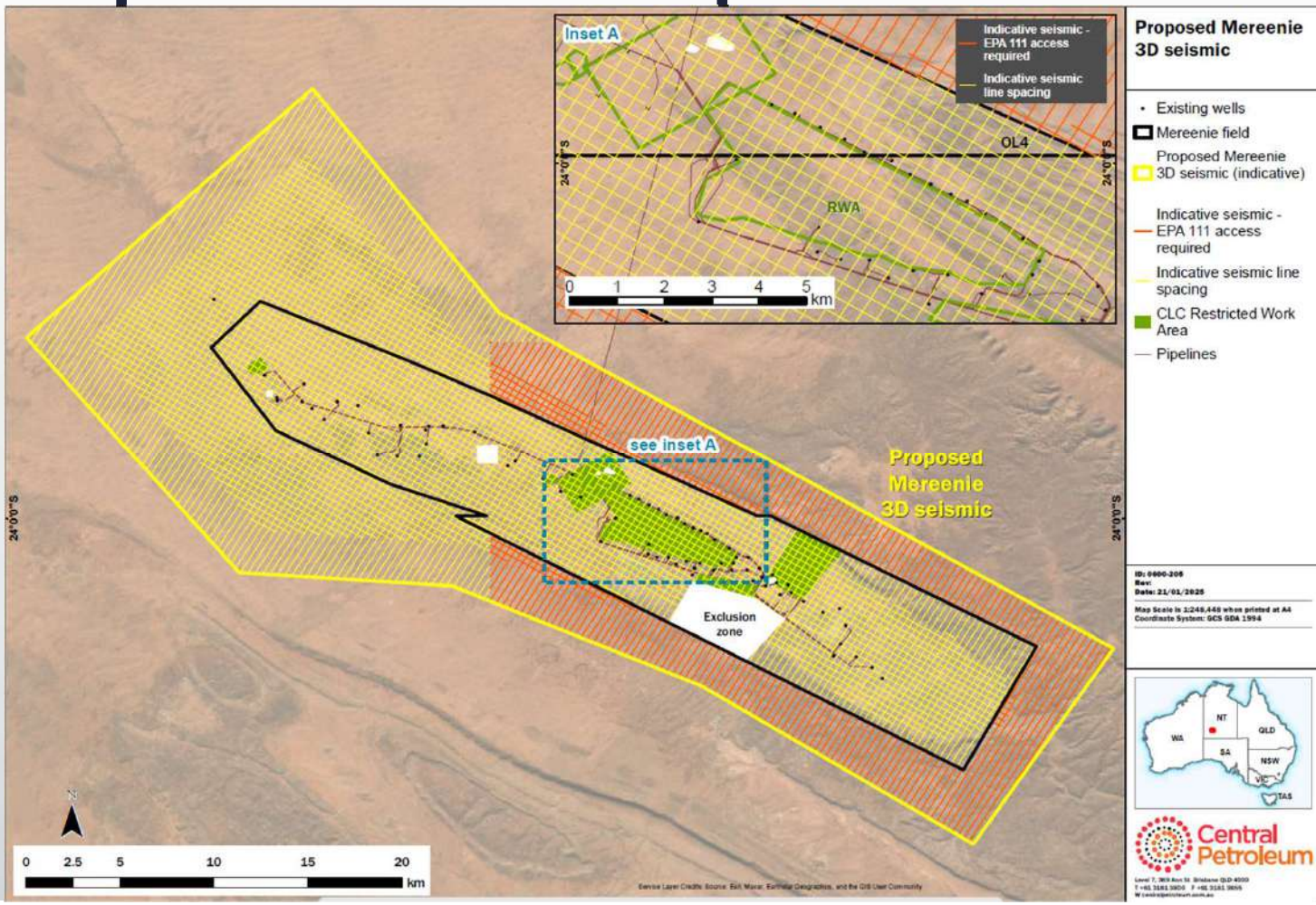
Future wells required to extend field life, may require additional information

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

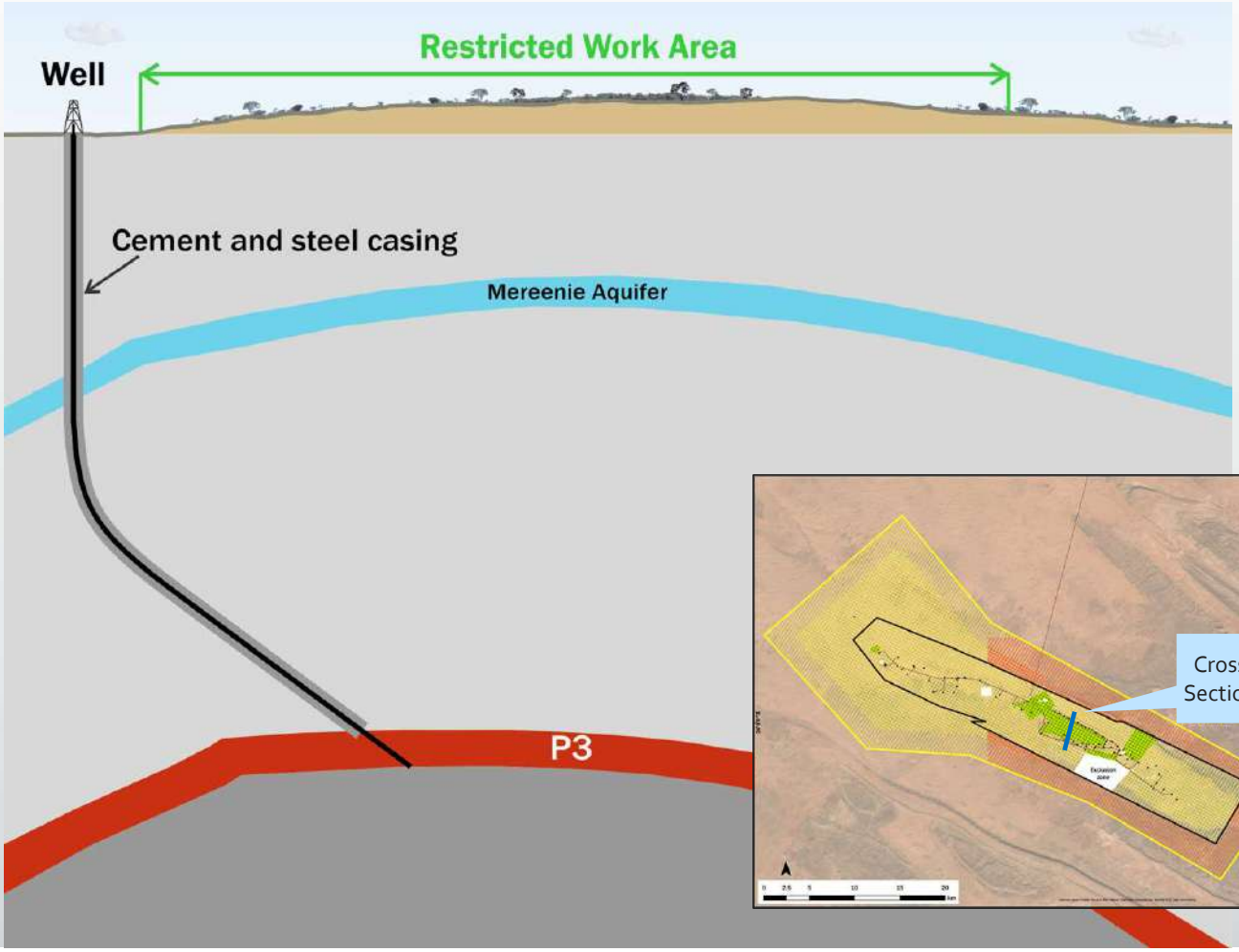


Development Activities 2025+ – Well under RWA

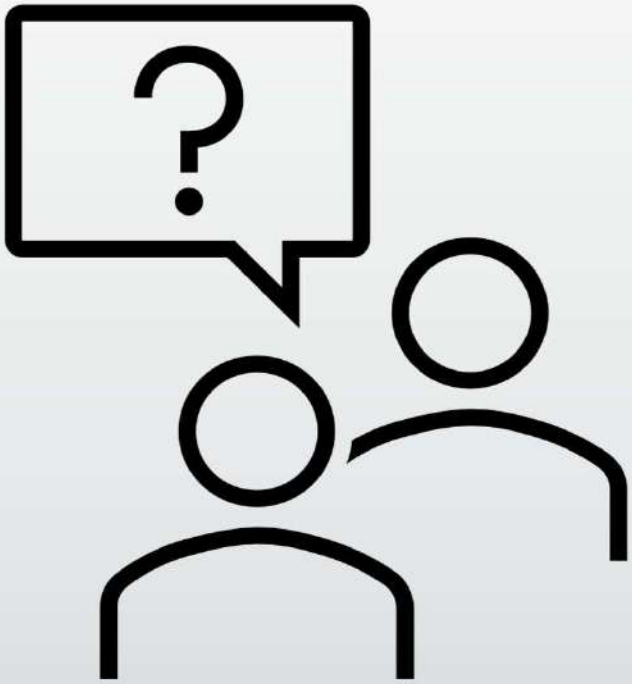
Primary area for new wells targeting good production lies under restricted work areas in the East (see inset)

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

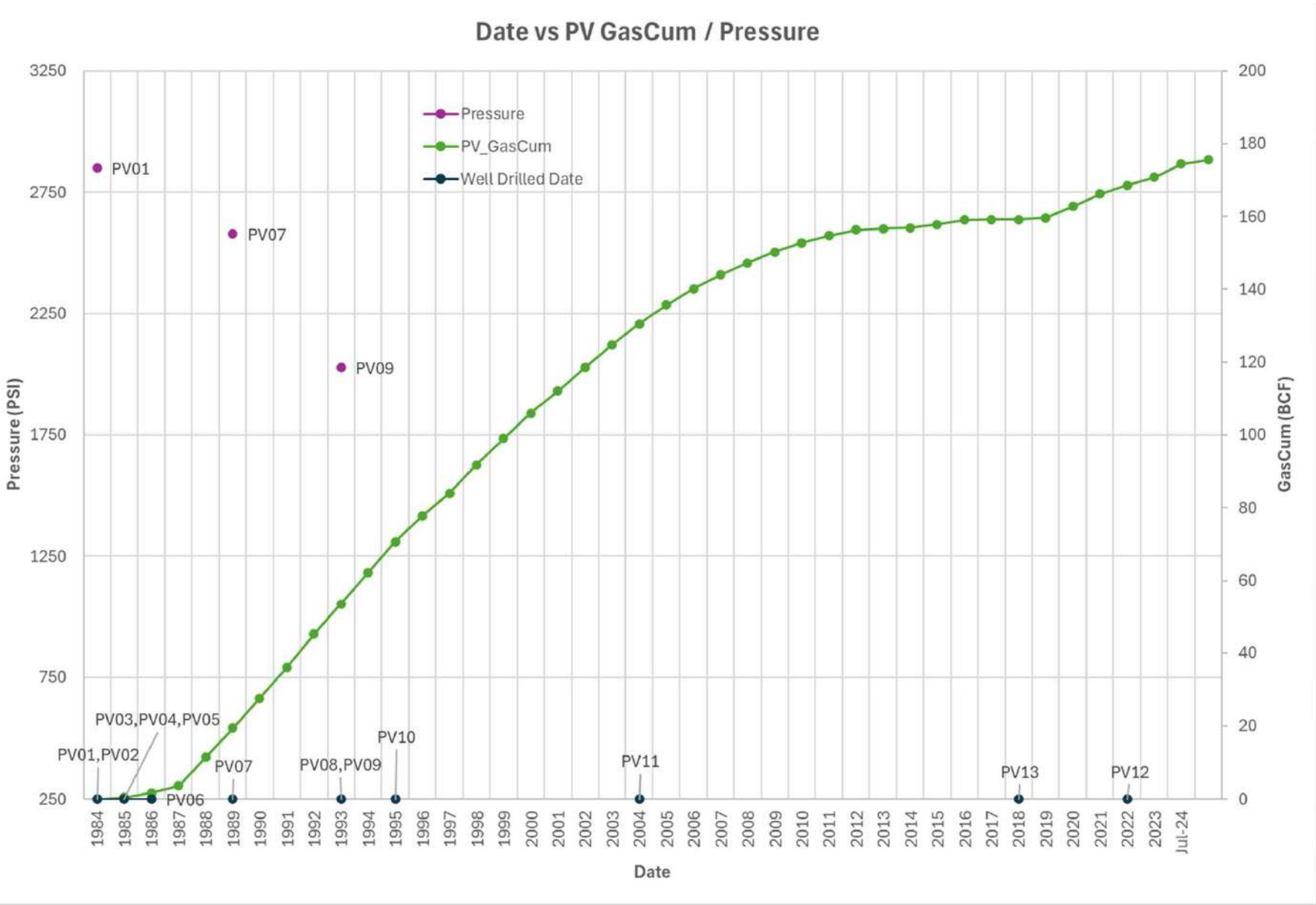
- Comprehensive risk assessments undertaken across all areas
- Multiple layers of controls implemented to mitigate the impacts as a result of the planned activities
- EMPs detailing how impacts to the environmental will be avoided and minimized has been approved

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
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Contact and Further Information

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APPENDIX E. Risk Register

Environmental Aspect	Potential impact	Causes	Consequence	Inherent Risk			Risk Mitigation Measures (Hierarchy Type)	Controls Rating	Residual Risk			Uncertainty Level	Code of Practice	ALARP Rationale
				C	L	R			C	L	R			
Groundwater	Decline in water levels due to cross-flow of groundwater to another formation	Wellbore failure due to incomplete cement placement or casing failure during construction to post abandonment.	▪ Surrounding production bores suffer impaired capacity ▪ Reduced environmental flows in connected springs/rivers	Serious	Possible	High	▪ Deep set 20” and 13 3/8” conductors and 10 ¾” intermediate casing will be cemented from shoe to surface (engineering) ▪ Production casing will also be cemented from base of the chandler formation to surface (engineering) ▪ There will be two strings of casing and cement across known deep water aquifers (engineering) ▪ There will be three strings of casing and cement across known shallow drinking water aquifers (engineering)	Effective	Serious	Remote	Medium	A (Low)	Clause B.4.1 Clause B.4.2 Clause B.4.3 Clause B.4.6 Clause B.4.7 Clause B.4.11	Construction of each of the wells is undertaken in accordance with the Code of Practice which is the industry requirement in the NT. Multiple barriers have been installed across aquifers to ensure isolation. Cement bond logs and pressure testing of each of the strings will occur to confirm that control measures have met design requirements. 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 6.5, with no further risk reduction warranted.
	Local contamination of utilised aquifer leading to impaired capacity of water bores	Cross flow of water and/or gas from deeper formations into a utilised aquifer	Groundwater quality unsuitable for current or future users	Serious	Possible	High	▪ Well to be constructed and operated in accordance with a WOMP (administrative)	Effective	Serious	Remote	Medium	A (Low)	Clause B.4.1 Clause B.4.2 Clause B.4.3 Clause B.4.6 Clause B.4.7 Clause B.4.11	Construction of each of the wells is undertaken in accordance with the Code of Practice which is the industry requirement in the NT. Multiple barriers have been installed across aquifers to ensure isolation. Cement bond logs and pressure testing of each of the strings will occur to confirm that control measures have met design requirements. 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 6.5, with no further risk reduction warranted.

Environmental Aspect	Potential impact	Causes	Consequence	Inherent Risk			Risk Mitigation Measures (Hierarchy Type)	Controls Rating	Residual Risk			Uncertainty Level	Code of Practice	ALARP Rationale
				C	L	R			C	L	R			
	Contamination of aquifers impacts existing groundwater users and environmental dependencies	Uncontrolled discharge of formation water / hydrocarbon to groundwater due to well integrity failure	Groundwater quality unsuitable for current or future use by users or the environment	Serious	Possible	High	▪ All casing and cement designs are submitted in a WOMP and approved by the NT DITT as per clause 301 of the Onshore Schedule (administrative) ▪ Verified integrity of the casing strings and cement - All casing strings run in the hole comply to API 5CT and are pressure tested once run (except conductor that cannot be tested) (engineering) - Cement designs are verified by a 3rd party and submitted in the WOMP for NT DITT review and approval (engineering) - The cement is pumped by a professional 3rd party contractor and verified through cement reports that are also submitted to the DITT (administrative) - Quality and placement of casing cement is also verified through an independent 3rd party cement bond log post pumping. (except conductor that cannot be logged) (administrative) ▪ Well barrier integrity report is required to be verified and then submitted to the DITT (administrative).	Effective	Serious	Remote	Medium	A (Low)	Clause B.4.1 Clause B.4.2 Clause B.4.3 Clause B.4.6 Clause B.4.7 Clause B.4.11	Construction of each of the wells is undertaken in accordance with the Code of Practice which is the industry requirement in the NT. Multiple barriers have been installed across aquifers to ensure isolation. Cement bond logs and pressure testing of each of the strings will occur to confirm that control measures have met design requirements. 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 6.5, with no further risk reduction warranted.
	Groundwater extraction for project purposes impacts on existing users and environmental dependencies	Groundwater extraction for project activities causes the decline in groundwater levels in source aquifers	▪ Surrounding bores suffer impaired capacity ▪ Reduced environmental flows in connected springs/rivers	Serious	Possible	High	▪ A groundwater extraction licence (M10001) has been granted to Interest Holder allowing 52.8ML per annum for use throughout the field which includes groundwater for development well drilling	Effective	Minor	Remote	Low	A (Low)	NA	No new groundwater bores are proposed as part of the drilling program. 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 6.5, with no further risk reduction possible.
	Groundwater extraction from project activities	Groundwater inflow during air drilling causes the decline in groundwater levels in source aquifers	▪ Surrounding bores suffer impaired capacity ▪ Reduced environmental flows in connected springs/rivers	Moderate	Unlikely	Medium	▪ Realtime monitoring of downhole conditions. In the event of significant groundwater influx while drilling with air, drilling fluid will be converted to a mud-based fluid system (substitution) ▪ Sufficient mud-based fluids are available at the well lease to convert to a mud-based fluid system (administrative)	Effective	Moderate	Remote	Low	A (Low)	Clause B.4.1 Clause B.4.10	The mud-based system will contain loss circulation materials which are designed to 'plug' any holes in the well that may be allowing groundwater inflow. The use of loss circulation materials in drilling muds is the standard industry practice across the world for drilling petroleum wells. 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 6.5, with no further risk reduction possible.

Environmental Aspect	Potential impact	Causes	Consequence	Inherent Risk C	Inherent Risk L	Inherent Risk R	Risk Mitigation Measures (Hierarchy Type)	Controls Rating	Residual Risk C	Residual Risk L	Residual Risk R	Uncertainty Level	Code of Practice	ALARP Rationale
	Contamination of aquifers impacts existing groundwater users and environmental dependencies	▪ Leakage due to tank/storage integrity breach ▪ Loss of containment during onsite transfer of fluids ▪ Storage and transport of chemicals during the wet season	Groundwater quality unsuitable for current or future use by users or the environment	Moderate	Possible	Medium	▪ All chemicals, hazardous substances and dangerous goods stored in bunded areas (engineering) ▪ Drill sump to be lined (engineering) ▪ Chemical mixing area and drilling fluid tanks will be surrounded by a lined drain that terminates in the lined drill sump (engineering) ▪ Implement Spill Management Plan (administrative) ▪ Implement Wastewater Management Plan (administrative) ▪ Implement Emergency Response Plan (Appendix 6) for incidents beyond the scope of the Spill Management and Wastewater Management Plan (administrative) ▪ Spill kits are available where hazardous materials are used and personnel trained in their correct use (administrative)	Effective	Moderate	Remote	Low	A (Low)	Clause A.3.8 Clause B.4.10 Clause B.4.16 Clause C.7.1 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 7.7, with no further risk reduction possible.
		Inadequate storage capacity in drill sump		Moderate	Possible	Medium	▪ Sumps to maintain a 0.1% AEP event freeboard (engineering) ▪ Flood controls for the wells prevent up to a 1% AEP event from reaching the sump (engineering) ▪ Implement Wet Season Operations Management Plan (administrative)	Effective	Moderate	Remote	Low	A (Low)	Clause A.3.1 Clause A.3.8	The Code of Practice requires storages of produced water and flowback water from hydraulic fracture stimulation to meet the 0.1% AEP freeboard requirement. Interest Holder has committed to this freeboard requirement despite no hydraulic fracturing being undertaken for this drilling campaign. Flood controls will prevent a 1% AEP event from reaching the sump. 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 6.5, with no further risk reduction possible.

Environmental Aspect	Potential impact	Causes	Consequence	Inherent Risk			Risk Mitigation Measures (Hierarchy Type)	Controls Rating	Residual Risk			Uncertainty Level	Code of Practice	ALARP Rationale
				C	L	R			C	L	R			
	Local contamination of utilised aquifer leading to impaired capacity of water bores	Significant loss of drilling fluids into a utilised aquifer	Groundwater quality unsuitable for current or future use by users	Moderate	Unlikely	Medium	▪ Realtime monitoring of downhole conditions so loss circulation materials can be added to the mud system when losses are detected. ▪ Production zone of well to be drilled with air or mist, therefore low potential for drilling fluid loss. ▪ Loss circulation material available on site (as per the approved drilling program)	Effective	Moderate	Remote	Low	A (Low)	Clause B.4.1 Clause B.4.2 Clause B.4.9 Clause B.4.11	The drilling program preferentially uses air/mist drilling which reduces the need for mud-based drilling fluids to be used. Where mud-based drilling is undertaken, loss circulation materials are added when losses are detected to 'plug' any holes. Detection of loss of drilling fluid is performed in real-time so changes to the system can be made quickly to avoid significant losses. 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 6.5, with no further risk reduction possible.
Surface Water	Contamination of surface waters	Failure of storage / mixing tanks	▪ Aquatic fauna / flora death ▪ Surface water unsuitable for primary / secondary contact	Moderate	Possible	Medium	▪ Implement Wastewater Management Plan (administrative) ▪ Diesel tanks to have secondary containment (engineering) ▪ Daily monitoring of tank levels whilst drilling and production testing (administrative) ▪ Mixing tanks will be surrounded by a lined drain that directs fluids to the	Effective	Moderate	Unlikely	Low	A (Low)	Clause A.3.8 Clause C.7.1 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 6.4, with no further risk reduction possible.
		Overtopping of sumps and storage/ mixing tanks		Moderate	Possible	Medium	▪ Sumps to maintain a 0.1% AEP freeboard (engineering) ▪ Mixing tanks will be surrounded by a lined drain that directs fluids to the sump (engineering) ▪ Daily monitoring of sump levels whilst drilling and testing (administrative) ▪ Implement Wet Season Operations Management Plan (administrative)	Effective	Moderate	Unlikely	Low	A (Low)	Clause A.3.8 Clause C.7.1 Clause C.7.2	The Code of Practice requires storages of produced water and flowback water from hydraulic fracture stimulation to meet the 0.1% AEP freeboard requirement. Interest Holder has committed to this freeboard requirement despite no hydraulic fracturing being undertaken for this drilling campaign. 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 6.4, with no further risk reduction possible.

Environmental Aspect	Potential impact	Causes	Consequence	Inherent Risk			Risk Mitigation Measures (Hierarchy Type)	Controls Rating	Residual Risk			Uncertainty Level	Code of Practice	ALARP Rationale
				C	L	R			C	L	R			
		Spills / leaks from: ▪ Onsite storage, handling use and transfer of chemicals, dangerous goods and hazardous substances ▪ Storage and transportation of wastes ▪ Storage and transport of chemicals during the wet season		Moderate	Possible	Medium	▪ Undertake inspection of locations 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 of the facilities (engineering) ▪ Provide spill response kits appropriate for the types of spills possible at each location (engineering) ▪ Store wastes in secured containers (engineering) ▪ Store liquid wastes in a bunded and impervious area (engineering) ▪ Implement Spill Management Plan (administrative) ▪ Implement West Season Operations Management Plan (administrative)	Effective	Moderate	Unlikely	Low	A (Low)	Clause A.3.1 Clause A.3.8 Clause C.7.1 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 6.4, with no further risk reduction possible.
		Release of captured dirty stormwater		Moderate	Possible	Medium	▪ Implement Erosion and Sediment Control Plan (engineering, administrative)	Effective	Moderate	Unlikely	Low	A (Low)	Clause A.3.1 Clause A.3.4 Clause A.3.8	Erosion and Sediment Control plan has identified measures to be undertaken in regard to devices to treat dirty stormwater before its release. The Plan has been prepared by a suitably qualified person. 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 6.4, with no further risk reduction possible.
		Erosion and sediment releases	• Aquatic fauna / flora death • Siltation of surface waters	Moderate	Possible	Medium	▪ Implement Erosion and Sediment Control Plan (engineering, administrative) ▪ Utilise existing tracks as much as possible to minimise additional disturbance (engineering, administrative) ▪ Waterways will be avoided where possible and the secondary ESCP will define the set-backs to be maintained (engineering, administrative) ▪ Inspect locations following significant rainfall events (>15 mm in 24 hours) to determine extent of erosion and remedial actions to be taken	Effective	Moderate	Unlikely	Low	A (Low)	Clause A.3.1 Clause A.3.4 Clause A.3.8	Erosion and Sediment Control plan has identified measures to be undertaken in regard to devices to minimise erosion and sediment releases. The Plan has been prepared by a suitably qualified person. 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 6.4, with no further risk reduction possible.

Environmental Aspect	Potential impact	Causes	Consequence	Inherent Risk			Risk Mitigation Measures (Hierarchy Type)	Controls Rating	Residual Risk			Uncertainty Level	Code of Practice	ALARP Rationale
				C	L	R			C	L	R			
		Run off from sewage irrigation areas	• Aquatic fauna / flora death • Surface water unsuitable for primary / secondary contact	Moderate	Possible	Medium	▪ Effluent irrigation area designed in accordance with Department of Health, Code of Practice for Onsite Wastewater Management (2014) (engineering) ▪ Irrigation areas located greater than 200 m from nearest watercourse (engineering) ▪ Irrigation ceases during significant rainfall events (>15 mm in 24 hours) (administrative)	Effective	Moderate	Unlikely	Low	A (Low)	Clause A.3.1 Clause A.3.4 Clause A.3.8	Irrigation area has been designed in accordance with NT government requirements. 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 6.4, with no further risk reduction possible.
		Flood event (1% AEP)	▪ Aquatic fauna / flora death ▪ Surface water unsuitable for primary / secondary contact	Moderate	Possible	Medium	▪ Diversion structures as outlined in the Flood Study to be implemented	Effective	Moderate	Remote	Low	A (Low)	Clause A.3.1	Diversion structures (where required) are designed to withhold a 1% AEP rainfall event at each of the wells 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 6.4, with no further risk reduction possible.
Land	Loss in long term soil productivity and viability	Soil compaction during vehicle movements and civil works (e.g. access tracks, well leases, camp area)	▪ Failed rehabilitation ▪ Landowner complaints ▪ Additional costs to remediate	Serious	Possible	High	▪ Compacted areas to be deep ripped to encourage infiltration and water retention (engineering) ▪ Implement Rehabilitation Management Plan (administrative)	Effective	Serious	Remote	Medium	A (Low)	Clause A.3.9	The Rehabilitation Management Plan has been developed by a suitably qualified person and is designed to ensure that at the completion of activities the land is returned to its pre disturbance land use capability The plan contains what would be considered standard practices in the NT for rehabilitation. 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 6.3, with no further risk reduction warranted.
		Topsoil not preserved (including separation from subsoils)		Moderate	Possible	Medium	▪ Topsoil to be stripped and stockpiled (engineering) ▪ Topsoil stockpiles not to be in overland flow paths / drainage lines (engineering) ▪ Topsoil stockpiles will have erosion and sediment control measures installed (as per the Erosion and Sediment Control Plan) (engineering)	Effective	Moderate	Remote	Low	A (Low)	Clause A.3.1 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 6.3 with no further risk reduction possible.

Environmental Aspect	Potential impact	Causes	Consequence	Inherent Risk C	Inherent Risk L	Inherent Risk R	Risk Mitigation Measures (Hierarchy Type)	Controls Rating	Residual Risk C	Residual Risk L	Residual Risk R	Uncertainty Level	Code of Practice	ALARP Rationale
		Soil erosion from cleared areas	▪ Loss of soil productivity ▪ Increased watercourse sedimentation loads ▪ Topography changes	Moderate	Possible	Medium	Implement Erosion and Sediment Control Plan (engineering, administrative)	Effective	Moderate	Remote	Low	A (Low)	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 6.3, with no further risk reduction possible.
	Soil contamination	▪ Spills / leaks from onsite storage, handling use and transfer of chemicals ▪ Storage and transportation of wastes ▪ Failure of sumps ▪ Failure of aboveground flowlines ▪ Storage and transport of chemicals during the wet season	▪ Failed rehabilitation ▪ Groundwater / surface water contamination ▪ Additional costs to remediate	Moderate	Possible	Medium	▪ Implement Wastewater Management Plan (administrative) ▪ Tanks and chemical storage areas to have secondary containment (engineering) ▪ Chemical mixing area and drilling fluid mud tanks will be surrounded by a lined drain that terminates in the lined, mud sumps (engineering) ▪ Provide portable spill containment equipment (e.g. spill trays) at each of the facilities (engineering) ▪ Sumps are lined (engineering) ▪ Material in sump to be tested if suitable for burial onsite or if offsite disposal is required ▪ Provide spill response kits appropriate for the types of spills possible at each location (engineering) ▪ Wastes stored in secured containers (engineering) ▪ Liquid wastes to be stored in a bunded and impervious area (engineering) ▪ Undertake inspection of locations 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) ▪ Implement Spill Management Plan (administrative) ▪ Implement Wet Season Operations Management Plan (administrative)	Effective	Moderate	Remote	Low	A (Low)	Clause A.3.8 Clause C.7.1 Clause C.7.2	The Wastewater Management Plan, Spill Management Plan and Wet Season Operations Management Plan address the requirements of the Code of Practice and have been developed by a suitably qualified person. 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 6.3, with no further risk reduction possible.

Environmental Aspect	Potential impact	Causes	Consequence	Inherent Risk			Risk Mitigation Measures (Hierarchy Type)	Controls Rating	Residual Risk			Uncertainty Level	Code of Practice	ALARP Rationale
				C	L	R			C	L	R			
		Failure of flowlines	▪ Failed rehabilitation ▪ Groundwater contamination	Moderate	Possible	Medium	**Aboveground Flowlines** ▪ The flowlines are not co-located with the access track to decrease likelihood of accidental vehicle damage (engineering) ▪ Flowlines to 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 in accordance with the existing approved Field EMPs (administrative) ▪ The flowline route represents the most direct route (taking into account other constraints) to connect with the existing network (engineering)	Effective	Moderate	Remote	Low	A (Low)	Clause A.3.1	**Aboveground Flowlines** The West Mereenie wells are part of an existing field development for which their flowlines are to connect with existing above ground infrastructure. In 5 years of Interest Holder operating the field, there have been no instances of aboveground flowline failures due to damage from vehicles / equipment Flowlines contain gas, so failure would result in primarily escape of emissions to air. Typically, less than 1% of volume is solid / liquid that could escape to land **All Flowlines** Flowlines are monitored in real time to detect any failures (via pressure changes) and will become part of the respective Field EMP's integrity inspection regime to detect potential failures. 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 6.3, with no further risk reduction possible.
Air	Increase in air pollutants in areas surrounding activities	Emissions from combustion of diesel associated with civil works, drilling and well testing	Human and fauna respiratory ailments	Moderate	Possible	Medium	▪ All diesel used onsite is to be compliant with the Federal Government's *Fuel Quality Standards (Automotive Diesel) Determination 2019* (administrative) ▪ Vehicles and equipment will be switched off when not in use (administrative) ▪ Onsite personnel to wear appropriate PPE (PPE) ▪ No homesteads or communities located with 15 Km of any well leases (engineering)	Effective	Moderate	Remote	Low	A (Low)	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 0, with no further risk reduction possible.

Environmental Aspect	Potential impact	Causes	Consequence	Inherent Risk			Risk Mitigation Measures (Hierarchy Type)	Controls Rating	Residual Risk			Uncertainty Level	Code of Practice	ALARP Rationale
				C	L	R			C	L	R			
		Emissions from release of chemicals, hazardous substances and dangerous goods to atmosphere during onsite storage, mixing and use during drilling and well testing (particularly volatile organic compounds)	Human and fauna respiratory ailments	Minor	Possible	Low	▪ Chemicals, hazardous substances and dangerous goods stored in sealed containers (engineering) ▪ Onsite personnel to wear appropriate PPE whilst mixing and use (PPE)	Effective	Minor	Remote	Low	A (Low)	Clause A.3.8	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 0 with no further risk reduction possible.
		Emissions from gas releases / diesel combustion	Contribution to greenhouse gas emissions	Minor	Frequent	Medium	▪ No planned venting of hydrocarbons to occur (administrative) ▪ Flare will be used during drilling and well testing (engineering) ▪ All diesel used onsite is to be compliant with the Federal Government's *Fuel Quality Standards (Automotive Diesel) Determination 2019* (administrative) ▪ Flowlines to be pressure tested prior to becoming operational (administrative) ▪ Flowline pressure monitored continuously to detect any failures as they occur (administrative) ▪ Flowline integrity inspections to be undertaken in accordance with the existing approved Field EMPs (administrative) ▪ Implement Methane Emissions Management Plan (administrative)	Effective	Minor	Likely	Medium	A (Low)	Clause D.5.1 Clause D.5.2 Clause D.5.4 Clause D.5.5 Clause D.5.6 Clause D.5.9	Greenhouse gas emission will be released as the drilling program relies upon fossil fuels for combustion. Diesel fuel which has a lower greenhouse gas contribution than petrol is used in all vehicles and the drill rig which account for the majority of fuel usage. Small equipment may still use petrol engines. Flaring will be undertaken rather than venting. Capture of any gas during the well testing phase is not practical given the relatively short period of testing and commercial viability of the captured gas. Once sufficient information has been obtained during testing the well will either be completed, cased and suspended or decommissioned. Monitoring of flowlines post initial pressure testing will be undertaken in accordance with the respective Field EMP for the well. 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 0, with no further risk reduction warranted.

Environmental Aspect	Potential impact	Causes	Consequence	Inherent Risk C	Inherent Risk L	Inherent Risk R	Risk Mitigation Measures (Hierarchy Type)	Controls Rating	Residual Risk C	Residual Risk L	Residual Risk R	Uncertainty Level	Code of Practice	ALARP Rationale
		Bushfire as a result of accidental ignition at site	▪ Human and fauna respiratory ailments ▪ Loss of flora / fauna habitat ▪ Loss of fauna	Moderate	Possible	Medium	▪ Vegetation cleared from well leases and camps and stockpiled (engineering) ▪ Vegetation stockpiles (and other infrastructure) to have a 10m fire break (engineering) ▪ Horizontal, inground flare system to be used (engineering) ▪ Flare pit design (engineering) ▪ Implement Bushfire Management Plan (administrative) ▪ Designated smoking areas at each site (administrative) ▪ Fire-fighting equipment available at each site (PPE) ▪ Onsite personnel to be trained in use of fire-fighting equipment (administrative) ▪ Ignition sources to be kept outside designated hazardous area (administrative) ▪ Hazard areas to be included in onsite induction (administrative) ▪ Implement Emergency Response Plan (administrative)	Effective	Moderate	Remote	Low	A (Low)	Clause A.3.7	Fire-fighting controls are designed to deal with small scale fires before they escalate to a larger bushfire. Flare pit design has been undertaken by a competent person to ensure flaring stays within the pit Firebreaks are as per the minimum requirements under the *Bushfires Management Act 2016.* 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 0, with no further risk reduction possible.
	Nuisance from dust emissions associated with drilling activities	Dust generation as a result of vehicle movements associated with travel to site, civil works, drilling and well testing	▪ Human and fauna respiratory problems ▪ Flora stress and/or dieback	Minor	Likely	Medium	▪ Water to be used for dust suppression (engineering) ▪ Vehicle speeds limited to 60km/hr on unsealed tracks (administrative) ▪ Onsite personnel to wear appropriate PPE (PPE) ▪ No homesteads or communities located with 15 Km of any well leases (administrative)	Effective	Minor	Unlikely	Low	A (Low)	Clause A.3.1	Sensitive receptors are located considerable distances from the well locations. Risk mitigation measures are standard measures to manage dust generation. The measures do not eliminate the risk but seek to reduce the likelihood. 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 0, with no further risk reduction possible.

Environmental Aspect	Potential impact	Causes	Consequence	Inherent Risk			Risk Mitigation Measures (Hierarchy Type)	Controls Rating	Residual Risk			Uncertainty Level	Code of Practice	ALARP Rationale
				C	L	R			C	L	R			
Terrestrial flora / fauna	Significant decrease in population of conservation significant flora / fauna habitat	Clearing of vegetation for drilling program	▪ Injury or death of native fauna ▪ Loss of vegetation and fauna habitat ▪ Habitat fragmentation	Serious	Possible	High	▪ Baseline ecology assessments confirm locations of conservation significant flora and fauna habitat (administrative) ▪ Land disturbance locations are designed to avoid where possible conservation significant flora and fauna habitat (engineering) ▪ Land disturbance locations are designed to avoid where possible land types that support conservation significant flora and fauna habitat (i.e. clay pans and dunes) (eliminate) ▪ Conservation significant flora and fauna habitat within 50 m of land disturbance areas to be noted as an exclusion area on maps and to be demarcated with bunting (administrative) ▪ Permit to work to specify area authorised to be cleared (administrative) ▪ Induction program to specify authorised area to be cleared (administrative) ▪ All personnel to receive induction program relevant to location (administrative)	Effective	Serious	Remote	Medium	A (Low)	Clause A.3.1 Clause A.3.5	Baseline ecology assessment has been performed by a suitably qualified person and the location of conservation significant flora and fauna habitat is known. There are near threatened flora species within the Mereenie field none in close proximity to WM29 and WM30. 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 6.2, with no further risk reduction warranted.
		▪ Failure of storage tanks / sumps on well leases ▪ Spills and leaks from chemical storage areas and chemical mixing areas on well leases ▪ Spills and leaks from diesel storage on well leases	▪ Injury or death of native fauna ▪ Loss of vegetation and fauna habitat	Moderate	Possible	Medium	▪ Implement Wastewater Management Plan (administrative) ▪ Drilling fluid mud tanks will be surrounded by a lined drain that terminates in the lined, mud sumps ▪ (engineering) Storage tanks engineered to meet relevant Australian Standards for integrity ▪ (engineering) Chemical storage area bunded ▪ (engineering) Diesel tank double bunded ▪ Undertake inspection of locations 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) ▪ Implement Spill Management Plan (administrative) ▪ Implement Emergency Response Plan (administrative)	Effective	Moderate	Remote	Low	A (Low)	Clause A.3.8 Clause C.7.1 Clause C.7.2	The Wastewater Management Plan and Spill Management Plan address the requirements of the Code of Practice and have been developed by a suitably qualified person. 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 6.2, with no further risk reduction possible.

Environmental Aspect	Potential impact	Causes	Consequence	Inherent Risk			Risk Mitigation Measures (Hierarchy Type)	Controls Rating	Residual Risk			Uncertainty Level	Code of Practice	ALARP Rationale
				C	L	R			C	L	R			
		Introduction and / or spread of weeds	▪ Increased occurrence of weeds ▪ Reduced native flora	Serious	Possible	High	▪ Implement Weed Management Plan (elimination, engineering, administrative) ▪ All vehicles, equipment and machinery from known weed infested areas are to be cleaned and inspected for weeds prior to attending a site (engineering) ▪ Vehicles to stay on designated tracks (administrative)	Effective	Serious	Remote	Medium	A (Low)	Clause A.3.1 Clause A.3.6	Baseline weed surveys have been undertaken. Buffel grass was the only weed detected during these surveys. The Weed Management Plan has been designed to prevent the spread of buffel grass and introduction of new weeds as part of the drill program. 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 6.2, with no further risk reduction warranted.
		Bushfire as a result of accidental ignition at site	▪ Injury or death of fauna ▪ Loss of vegetation and fauna habitat ▪ Destruction of infrastructure	Serious	Possible	High	▪ Vegetation cleared from well leases and camps and stockpiled (engineering) ▪ Vegetation stockpiles (and other infrastructure) to have a 10m fire break (engineering) ▪ Horizontal, inground flare system to be used (engineering) ▪ Flare pit design (engineering) ▪ Implement Bushfire Management Plan ▪ No flaring to occur on designated fire ban days ▪ Designated smoking areas at each site (administrative) ▪ Fire-fighting equipment available at each site (PPE) ▪ Onsite personnel to be trained in use of fire-fighting equipment (administrative) ▪ Ignition sources to be kept outside designated hazardous area (administrative) ▪ Hazard areas to be included in onsite induction (administrative) ▪ Implement Emergency Response Plan (administrative)	Effective	Serious	Remote	Medium	A (Low)	Clause A.3.7	Fire-fighting controls are designed to deal with small scale fires at the infrastructure before they escalate to a larger bushfire. Firebreaks are as per the minimum requirements under the Bushfires Management Act 2016 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 6.7, with no further risk reduction warranted.
	Reduction in conservation significant fauna species	Vegetation clearing / site preparation	▪ Injury or death of native fauna ▪ Loss of habitat	Minor	Likely	Medium	▪ Clearing occurs in a sequential manner to allow fauna to naturally escape (administrative) ▪ Avoid or minimise disturbance of drainage feature land types. (engineering)	Effective	Minor	Possible	Low	A (Low)	Clause A.3.1 Clause A.3.5	Sequential clearing is a standard industry practice to allow fauna within the proposed clearing area to naturally escape. 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 6.2, with no further risk reduction possible.

Environmental Aspect	Potential impact	Causes	Consequence	Inherent Risk			Risk Mitigation Measures (Hierarchy Type)	Controls Rating	Residual Risk			Uncertainty Level	Code of Practice	ALARP Rationale
				C	L	R			C	L	R			
		Vehicle collisions	Injury or death of native fauna	Minor	Likely	Medium	▪ Limit speed on unsealed Interest Holder controlled access roads to 60 km/hr (administrative) ▪ Report all vehicle interactions with fauna (administrative)	Effective	Minor	Possible	Low	A (Low)	Clause A.3.5	Speed has been limited to maintain a balance between ability to perform activities and protecting fauna from vehicle strikes. Interest Holder's experience is that this speed is adequate to control the event. 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 6.2, with no further risk reduction possible.
		Fauna trapped in tanks, sumps, open pipework		Minor	Likely	Medium	▪ Tanks walls are vertical to prevent fauna access (engineering) ▪ Site manned during operation (administrative) ▪ Sumps temporarily fenced to prevent stock and wildlife access (engineering) ▪ Open pipework to be checked before use for trapped fauna (administrative)	Effective	Minor	Possible	Low	A (Low)	Clause A.3.5	The risk mitigation measures are standard practice across Interest Holder's activities in the NT and are designed to either prevent or identify and remove fauna before they are injured or killed whilst at the well location. 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 6.2, with no further risk reduction possible.
		Encouragement of pest species which compete with native fauna	▪ Injury or death of native fauna ▪ Increased pest species	Minor	Likely	Medium	▪ Suitable waste containers for waste storage are to be available at each location (engineering) ▪ Waste containers to be fauna and vermin proof (engineering) ▪ Each facility is maintained free of rubbish outside waste disposal receptacles (administrative) ▪ Wastes to be removed from site by a suitably licensed person and disposed at an appropriately licensed facility	Effective	Minor	Possible	Low	A (Low)	Clause A.3.5	The risk mitigation measures are standard practice across Interest Holder's activities in the NT and are designed to prevent the encouragement of pest species at the well locations or camps. 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 6.2, with no further risk reduction possible.

Environmental Aspect	Potential impact	Causes	Consequence	Inherent Risk			Risk Mitigation Measures (Hierarchy Type)	Controls Rating	Residual Risk			Uncertainty Level	Code of Practice	ALARP Rationale
				C	L	R			C	L	R			
		Bushfire as a result of accidental ignition at site	▪ Injury or death of fauna ▪ Loss of vegetation and fauna habitat ▪ Destruction of infrastructure	Serious	Possible	High	▪ Vegetation cleared from well leases and camps and stockpiled (engineering) ▪ Vegetation stockpiles (and other infrastructure) to have a 4 m fire break (engineering) ▪ Horizontal, inground flare system to be used (engineering) ▪ Flare pit design (engineering) ▪ Implement Bushfire Management Plan ▪ No flaring to occur on designated fire ban days ▪ Designated smoking areas at each site (administrative) ▪ Fire-fighting equipment available at each site (PPE) ▪ Onsite personnel to be trained in use of fire-fighting equipment (administrative) ▪ Ignition sources to be kept outside designated hazardous area (administrative) ▪ Hazard areas to be included in onsite induction (administrative) ▪ Implement Emergency Response Plan (administrative)	Effective	Serious	Remote	Medium	A (Low)	Clause A.3.7	Fire-fighting controls are designed to deal with small scale fires before they escalate to a larger bushfire. Firebreaks are as per the minimum requirements under the *Bushfires Management Act 2016* No flaring to be conducted on fire ban days 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 6.2, with no further risk reduction warranted.
Cultural heritage / sacred sites	Unauthorised disturbance to sacred sites or culturally sensitive sites	Sites not previously identified during baseline assessments Works undertaken within exclusion areas	▪ Disturbance to cultural heritage / sacred sites ▪ Loss or destruction of cultural heritage / sacred sites	Serious	Possible	High	▪ AAPA and CLC certificates obtained for drilling program (administrative) ▪ Exclusion areas to be established around known finds (as per Heritage Management Planning: *Mereenie Gas Acceleration Aboriginal Archaeological Assessment 2022*) (engineering) ▪ Undertake further assessment to ensure works will avoid identified quartzite quarries (site 3/3/1) and obtain works approval as required ▪ Implement Aboriginal Object Find / Stop Work Procedure for unexpected finds (as per Heritage Management Planning: *Mereenie Gas Acceleration Aboriginal Archaeological Assessment 2022*) (administrative) ▪ Obtain work approval or move WM29 well pad to avoid quartzite quarry. ▪ All site personnel to receive induction program which includes locations of exclusion areas and Aboriginal Object Find / Stop Work Procedure (administrative)	Effective	Serious	Remote	Medium	A (Low)	Clause A.3.1	Baseline assessments have been undertaken by a suitably qualified person. Risk mitigation measures have been developed that address both known and unknown finds. WM29 has been position to avoid the known archaeological site and an unexpected find procedure will be implemented during all works. 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 0, with no further risk reduction warranted.

Environmental Aspect	Potential impact	Causes	Consequence	Inherent Risk			Risk Mitigation Measures (Hierarchy Type)	Controls Rating	Residual Risk			Uncertainty Level	Code of Practice	ALARP Rationale
				C	L	R			C	L	R			
People and Community	Loss of visual amenity	Industrialisation of the landscape Light emissions (flaring and safety lighting)	▪ Local community and landowner complaints ▪ Disruption to surrounding stakeholder's regular activities	Minor	Possible	Low	▪ Sites are located away from major roads and infrastructure is not visible from the major road ▪ Hermannsburg approximately 110 km east ▪ Well lease and camp disturbance footprints are the minimum whist still meeting health and safety requirements ▪ Local community alerted to flaring period by community engagement, provision of notices on public notice boards and notifications in the local paper	Effective	Minor	Unlikely	Low	A (Low)	Clause A.3.1 Clause A.3.2	Well locations are not visible from major roads. It is possible that during flaring at night, the community will see the hue of the flare, which will only occur during testing of each well. For previous Interest Holder drilling campaigns, alerting the community via notifications on public notice boards has been utilised. Any perceived loss of amenity would be limited to the duration of well testing. 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 6.9, with no further risk reduction possible.
	Vehicle accidents	Increased traffic on local roads as a result of drilling program	▪ Local community and landowner complaints ▪ Disruption to surrounding stakeholder's regular activities	Minor	Possible	Low	▪ DIPL approved Traffic Management Plan to be in place prior to commencing activities (administrative) ▪ Transportation of over-width or over-dimension loads conducted in accordance with Department of Transport permit (administrative) ▪ On unsealed roads if dust is created reduce speed (administrative) ▪ Well lease access tracks signed to prevent unauthorised access (administrative) ▪ All turn off and turns onto NT controlled roads are suitable for petroleum activities (engineering) ▪ Personnel manage journey in accordance with a journey management plan (administrative) ▪ Interest Holder has paramedics, an ambulance on site and field hospital facilities (administrative) ▪ Zero alcohol and/or drugs policy with routine testing undertaken (administrative)	Effective	Minor	Unlikely	Low	A (Low)	Clause A.3.1	Traffic Management Plan requires approval from the DIPL Other permits as necessary will be obtained prior to transporting loads. Both these measures are the mandatory requirements under NT legislation. 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 6.9, with no further risk reduction possible.

Environmental Aspect	Potential impact	Causes	Consequence	Inherent Risk C	Inherent Risk L	Inherent Risk R	Risk Mitigation Measures (Hierarchy Type)	Controls Rating	Residual Risk C	Residual Risk L	Residual Risk R	Uncertainty Level	Code of Practice	ALARP Rationale
	Reduction in productivity of the land	Introduction and spread of weeds Disturbed land not returned to pre disturbance land use capability	▪ Failed rehabilitation ▪ Landowner complaints ▪ Additional costs to remediate	Serious	Possible	High	▪ Implement Weed Management Plan ▪ All vehicles, equipment and machinery from known weed infested areas are to be cleaned and inspected for weeds prior to attending a site (engineering) ▪ Implement Rehabilitation Plan	Effective	Serious	Remote	Medium	A (Low)	Clause A.3.6 Clause A.3.9	The Weed Management Plan and Rehabilitation Management Plan have been developed by a suitably qualified person and is designed to ensure that at the completion of activities the land is returned to its pre disturbance land use capability These plans contain what would be considered standard practices in the NT for weed management and rehabilitation. 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 6.9, with no further risk reduction warranted.
	Unnecessary disruption to landholder activities	Not undertaking activities in accordance with land access agreements	▪ Landowner complaints ▪ Delays to program	Minor	Possible	Low	▪ Induction program to include information on authorised activities for a site ▪ All personnel to receive induction program relevant to the site they are accessing	Effective	Minor	Unlikely	Low	A (Low)	NA	Induction programs are designed to instil the specific requirements for each well location to all personnel who attend the location. 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 6.9, with no further risk reduction possible.
	Increased noise due to drilling activities	Location of well sites	Local community complaints	Minor	Possible	Low	Hermannsburg approximately 110 km east	Effective	Minor	Unlikely	Low	A (Low)	Clause 3.1.1 Clause A.3.3	The location of the wells is the primary control. 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 6.9, with no further risk reduction possible.
Greenhouse Gas Emissions	Greenhouse gas emissions from the activity	Combustion of diesel during activities	Contribution to greenhouse gas emissions	Minor	Frequent	Medium	▪ All diesel used onsite is to be compliant with the Federal Government's *Fuel Quality Standards (Automotive Diesel) Determination 2019* ▪ All equipment / machinery to be maintained in accordance with manufacturer specifications	Effective	Minor	Likely	Medium	A (Low)	Clause A.3.1	Greenhouse gas emissions will be released as the drilling program relies upon fossil fuels for combustion. Diesel fuel which has a lower greenhouse gas contribution than petrol is used in all vehicles and the drill rig which account for the majority of fuel usage. Small equipment may still use petrol engines. The residual risk has been reduced to the greatest extent possible due to the likelihood rating remaining as likely (the only way to reduce this further would be to not use fossil fuels). Therefore, we consider this risk ALARP and acceptable in accordance with the rationale provided in Section 0, with no further risk reduction warranted.

Environmental Aspect	Potential impact	Causes	Consequence	Inherent Risk			Risk Mitigation Measures (Hierarchy Type)	Controls Rating	Residual Risk			Uncertainty Level	Code of Practice	ALARP Rationale
				C	L	R			C	L	R			
		Venting of gas during drilling / well testing		Minor	Frequent	Medium	Flare will be used during drilling and well testing.	Effective	Minor	Remote	Low	A (Low)	Clause D.5.9	Flaring results in less greenhouse gas emissions compared to venting. Capture of any gas during the well testing phase is not practical given the relatively short period of testing and commercial quantity of the captured gas. Once sufficient information has been obtained during testing the well will either be completed, cased and suspended or decommissioned. 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 0, with no further risk reduction warranted.
		Leakage of gas from wells		Minor	Likely	Medium	▪ Well design includes multiple steel casing and cement barriers between hydrocarbon bearing zone and surface (engineering) ▪ Well design and barrier integrity validation reports submitted to DITT as part of WOMP (administrative) ▪ Routine well integrity and well barrier verification processes in place for the entire life of the well (engineering) ▪ As part of the DITT approved WOMP an inspection criteria will be defined (administrative) ▪ Methane emission detection to be undertaken in accordance with the Methane Emission Management Plan (administrative, engineering) ▪ Well decommissioning / case and suspended includes multiple steel casing and cement barriers between hydrocarbon bearing zone and surface (engineering)	Effective	Minor	Remote	Low	A (Low)	Clause B.4.1 Clause B.4.3 Clause D.5	Construction of each of the wells is undertaken in accordance with the Code of Practice which is the industry requirement in the NT. Multiple barriers have been installed across aquifers to ensure isolation. Cement bond logs and pressure testing of each of the strings will occur to confirm that control measures have met design requirements. 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 0, with no further risk reduction possible.

APPENDIX F. Mereenie Emergency Response Plan

Mereenie

Emergency Response Plan

Central Petroleum

Mereenie – Emergency Response Plan: MSTD13-MER-PL001
Version: 7 / Effective: 15 September 2023 / Revalidation: 15 September 2025
Document Owner: Production Supervisor

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.

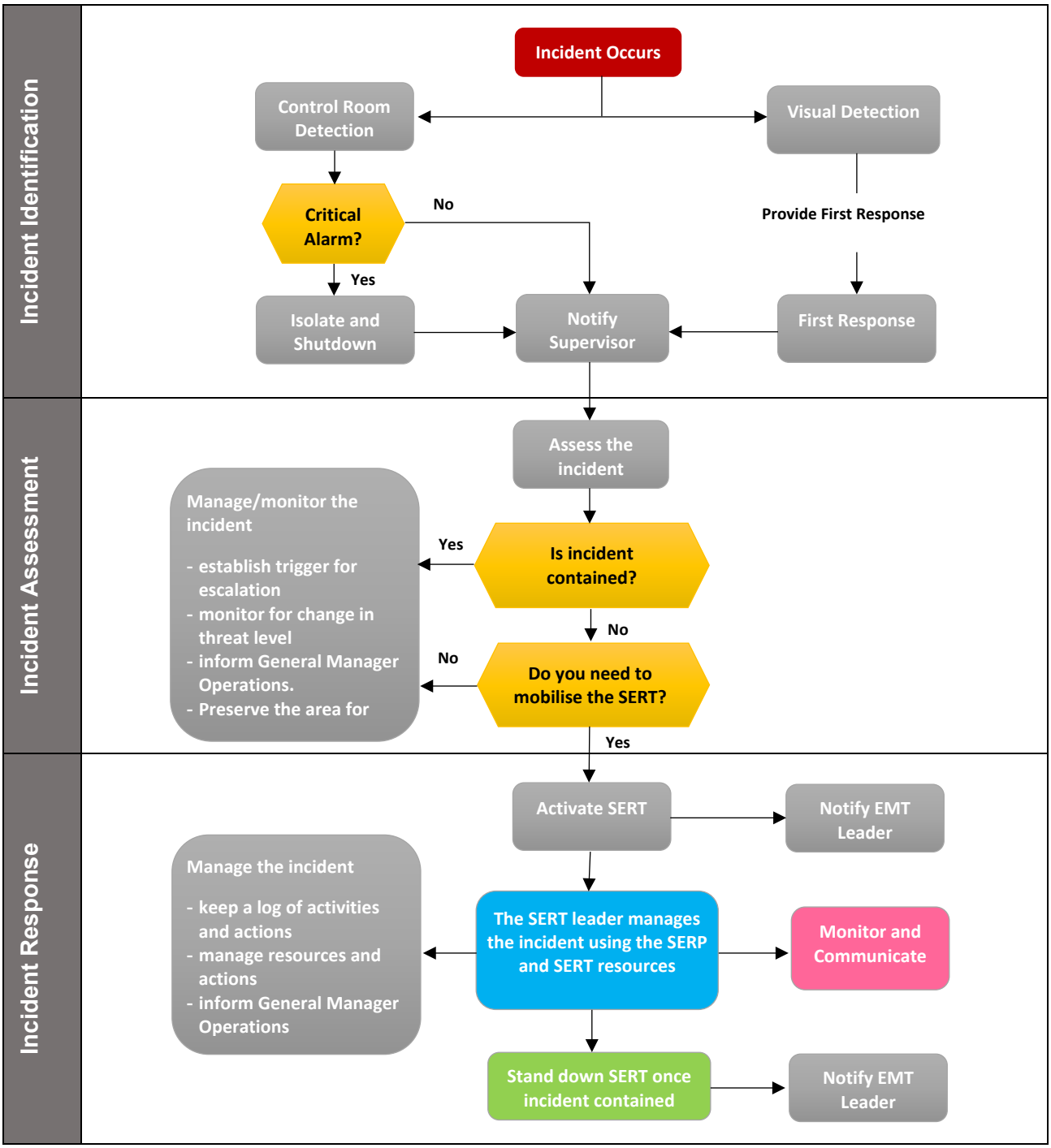
Dependant on the nature and scale of an emergency event, the EMT in consultation with the NT Police, Fire & Emergency Services may designate an area for use as a Police Forward Command Post to sustain the emergency or investigative response.

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 Flowline 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 10.1.

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	
Brisbane emergency phone - To be used whilst emergencies are in progress	[redacted]

Details of the responsible Duty Manager for the weekend are emailed to site supervisors / PICs every Friday.

7.2 Site Contact Information

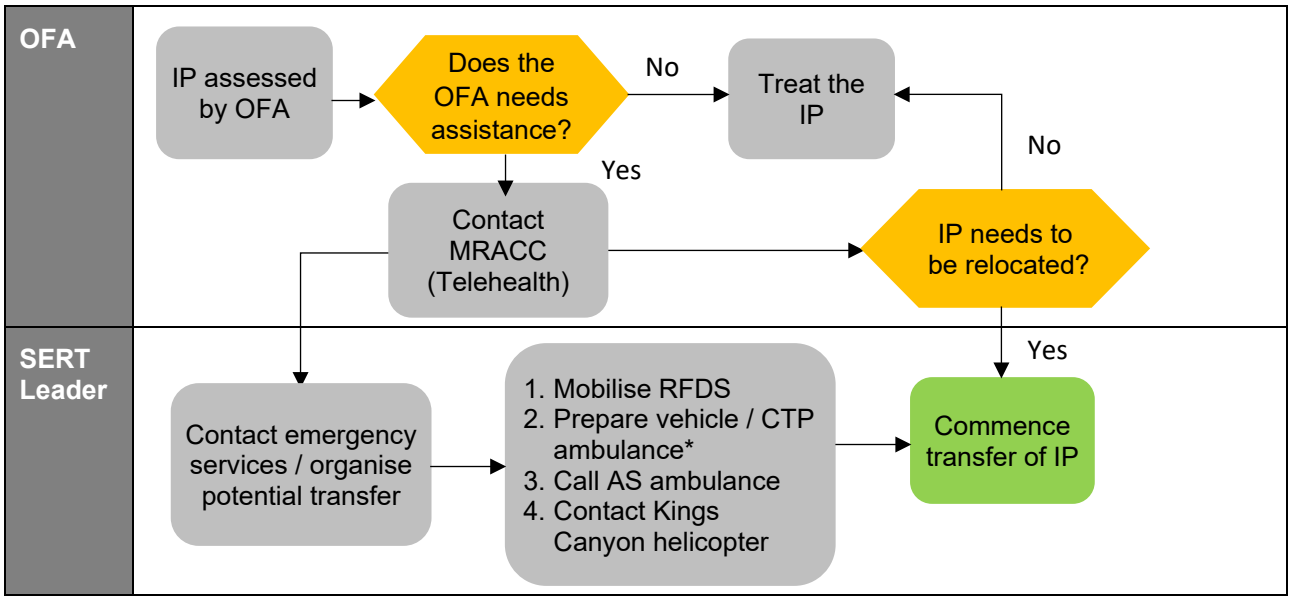
Role / Detail	Contact Details
Production Supervisor	[redacted]
Logistics and Administration Coordinators	08 8954 3702
Kitchen / Ambulance (Satellite Phone)	0405 896 676
Response Room (Satellite Phone)	0405 896 673
Emergency Alert Number	**1300 134 406** **ISS First Response (24/7)**
Mereenie Emergency 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)	Xhrs to mobilise and be at Mereenie
	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	Territory Duty Superintendent	8922 1518 / 0429 229 116	
	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 Note: Ambulance, fire, police response times may be affected by geological remoteness of the site. See section 4.7 for requesting aviation resources.	
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 flowline 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 flowline, 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;

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 flowline, 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

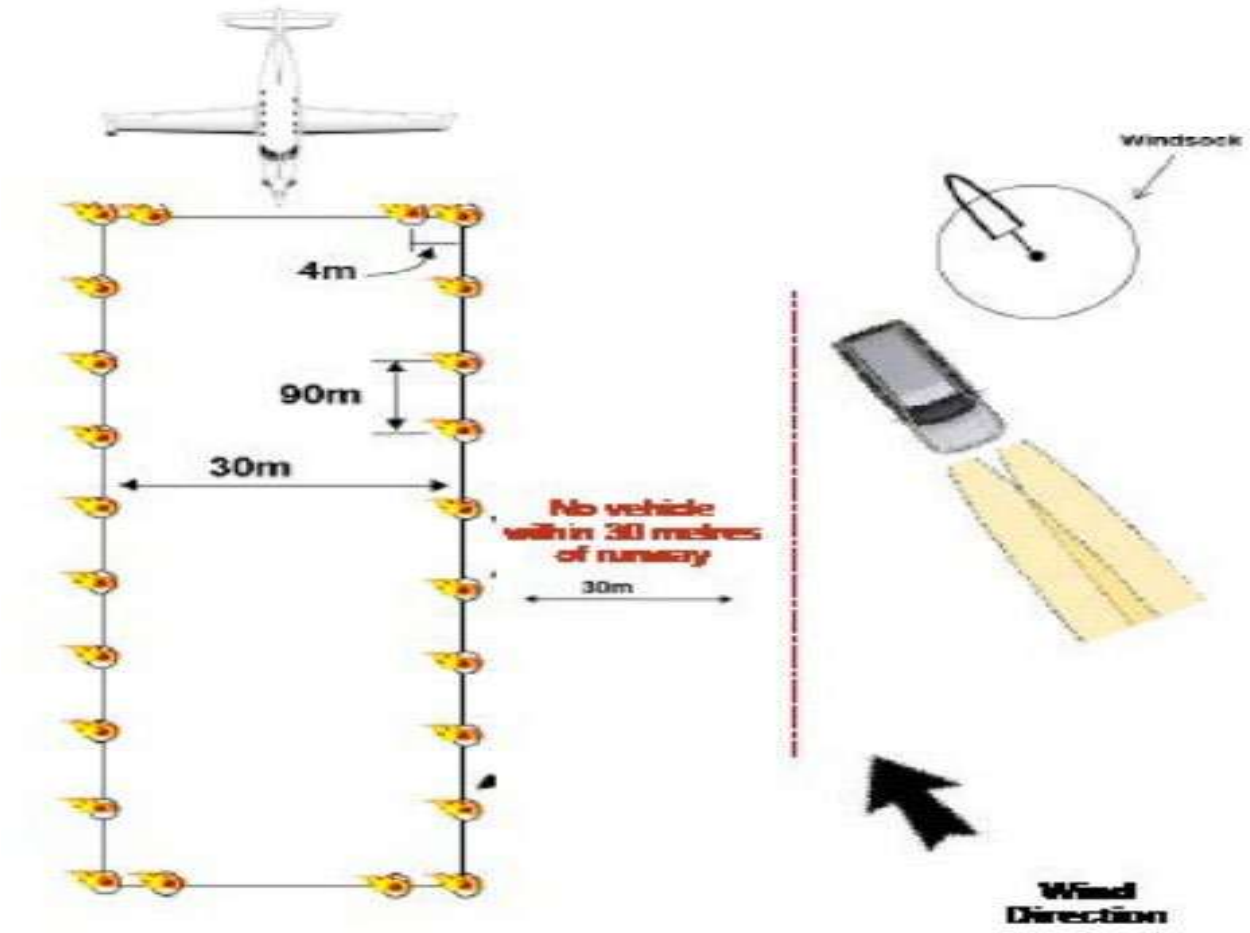
- Park your vehicle so that it is pointing into the wind.
- Turn your headlights on high beam and hazard lights on.
- No vehicle is to be parked at either end of the runway.
- All vehicles must be at least 30 metres from the side of the airstrip.
- If possible, park as close as practicable to the windsock (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>

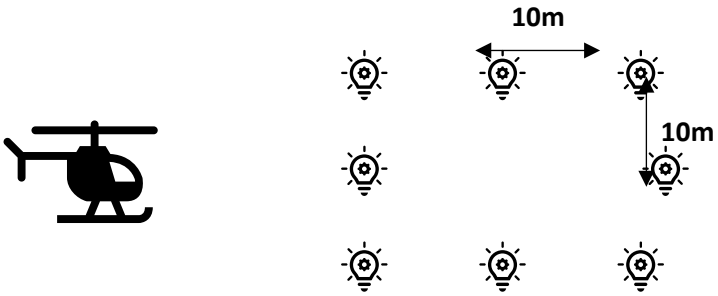
- Helipad is a maintained all-weather dirt pad
- Site coordinates:
  - Latitude/Longitude:
- The helipad is located:
- The pad dimensions are 30 x 30 meters
- Site call sign:
- Frequency:
- Pilot should establish radio communications 30 minutes prior to landing on site to allow for checks and local weather 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

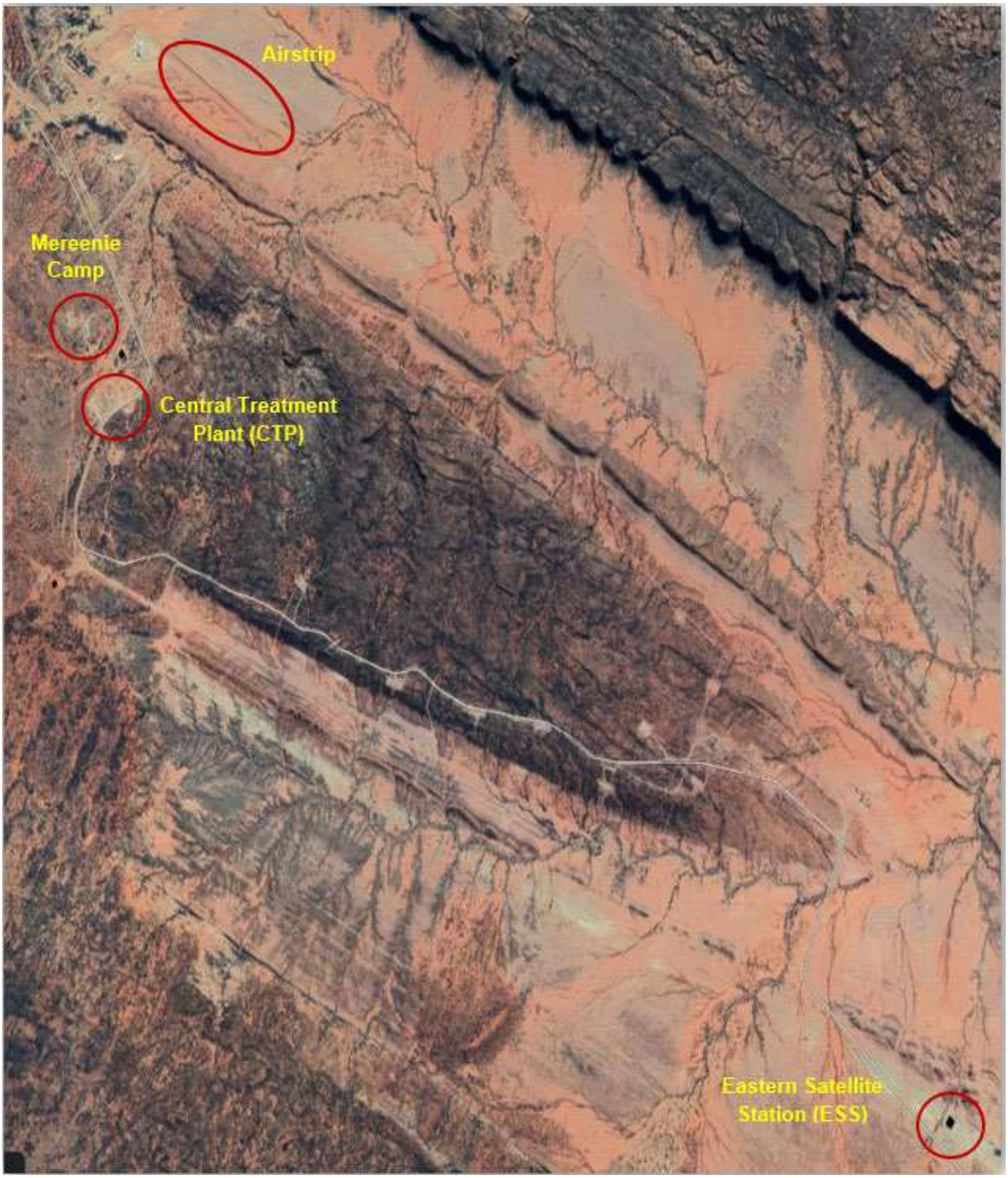
Qualified first aiders	2 per shift
First aid kits	In every vehicle and boxed for use in emergencies
NT Health Medial Kit	Fully equipped drug dispensing kit
Specific equipment	Fully equipped medical room and ambulance on standby

Maps

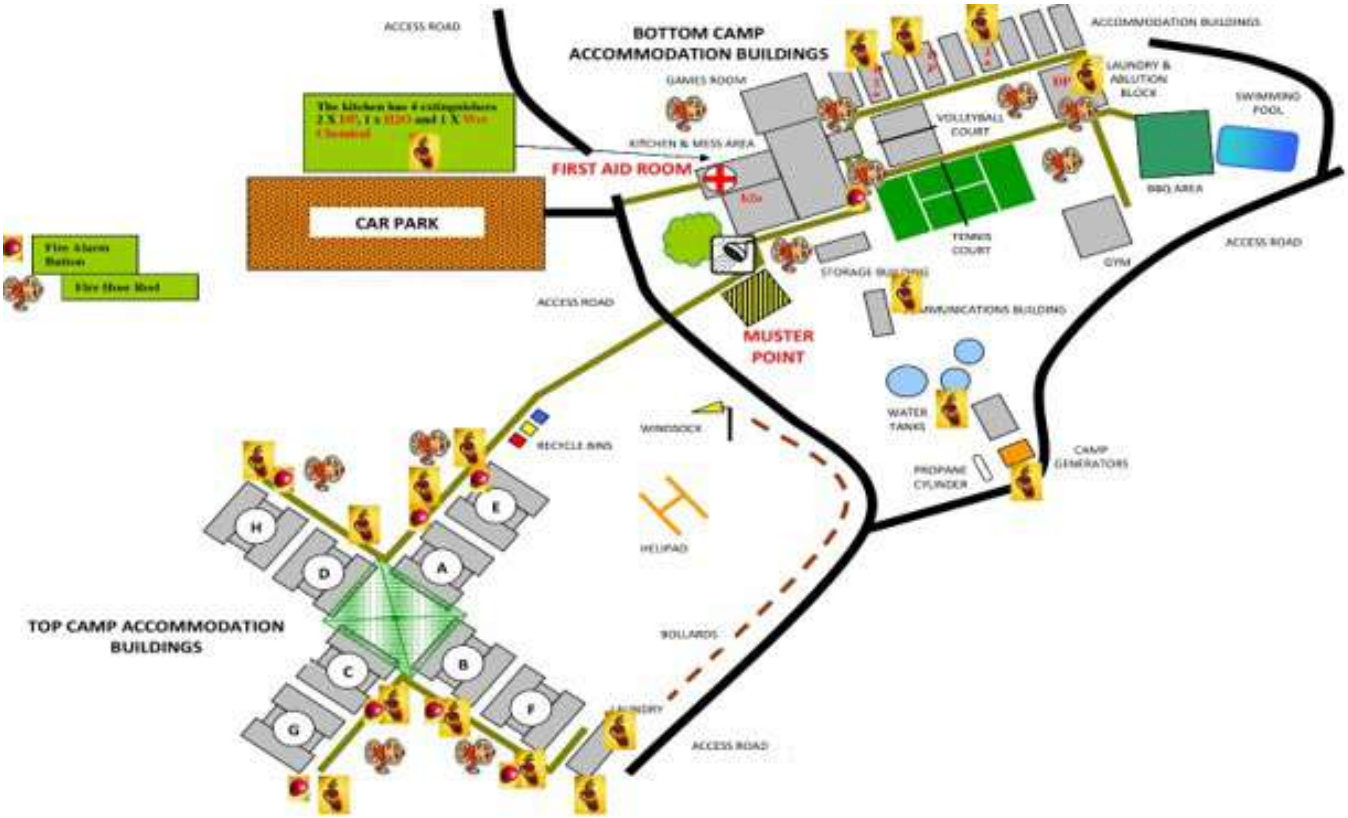
The following maps / pictures are included for use in an emergency:

- Site – showing location of the camp, Central Processing Facility, and airstrip
- Camp maps – showing the location of emergency equipment
- Central Processing Facility
- Major flowline infrastructure map

Mereenie Operation Map



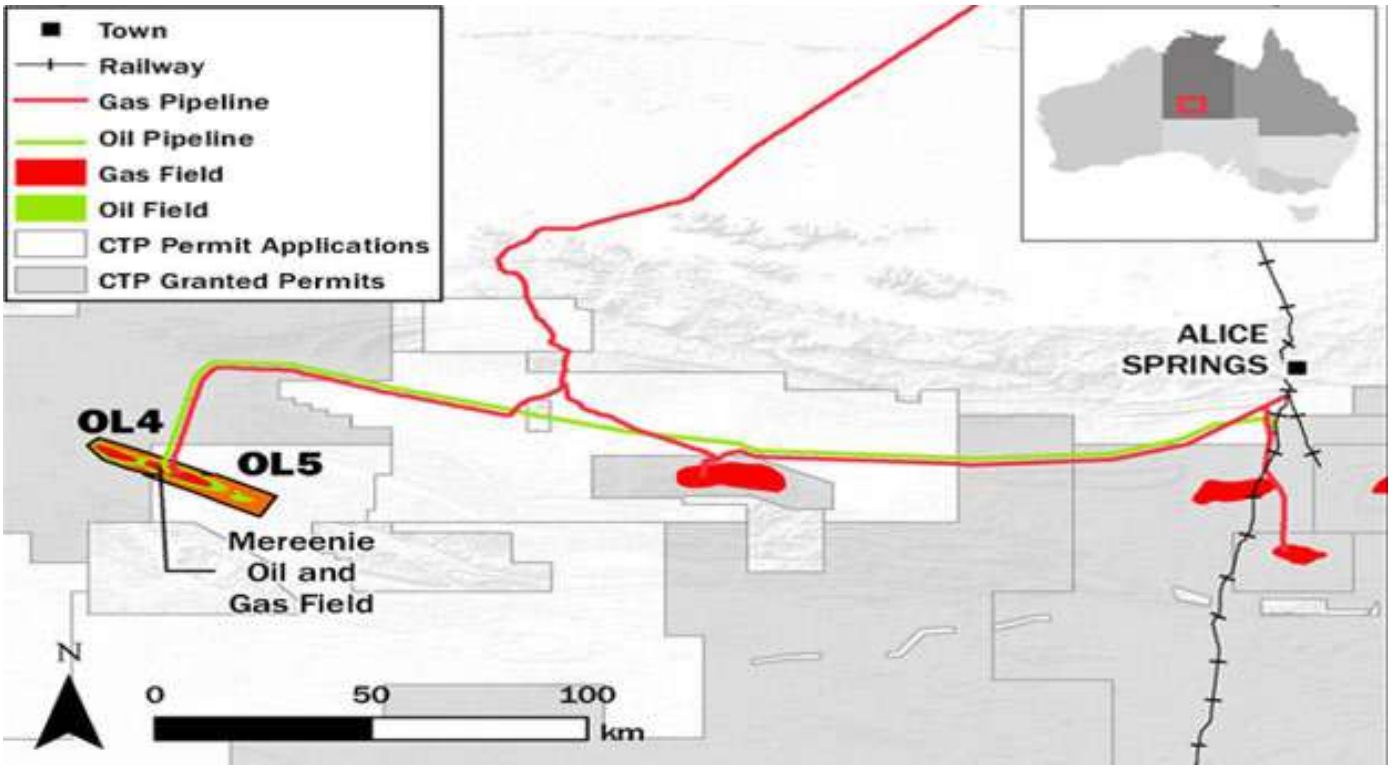
Mereenie Camp Map



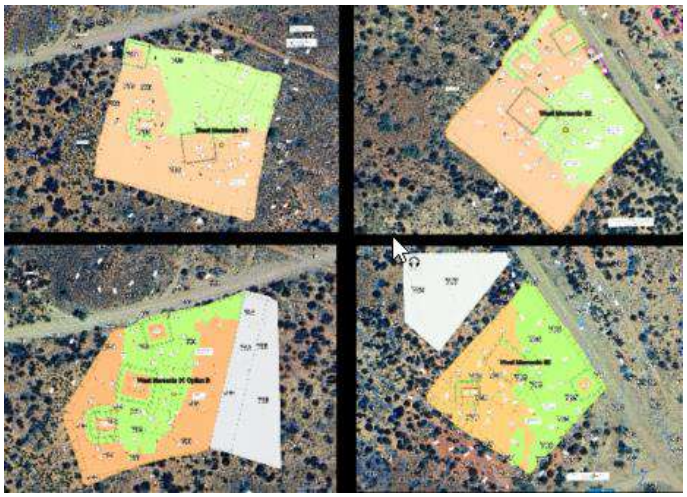
Central Treatment Plant

Eastern Satalitte Station

Major Flowline Infrastructure map



APPENDIX G. Appraisal Well ESC Plans



EROSION AND SEDIMENT CONTROL PLAN

PROPOSED MEREENIE WEST WELL PADS AND OPTIONS (WM31 & 32), ALICE SPRINGS NORTHERN TERRITORY

AQUA REF: 10035

26 August 2024

DOCUMENT CONTROL

Document Title: Erosion and Sediment Control Plan (ESCP) – Proposed Mereenie West Well Pads (WM31 & 32), Alice Springs, Northern Territory

Ref No: 10035

Date: 26 August 2024

Client: Central Petroleum

Prepared by: Anila Cletus

Revision History

Rev No:	Revision Date	Document Status	Authorised	
			Name/Position	Signature
0.1	26 August 2024	Draft	Anila Cletus Principal Environmental Engineer - CPESC, RPEQ	

Contents

1.0 Introduction

1.1 General

Aqua Environmental Consulting has been engaged by Central Petroleum Environmental to prepare an erosion and sediment control plan (ESCP) for the proposed well pads WM31 & WM32 that is to be located at West Mereenie in Alice Springs within the state of Northern Territory (NT). This ESCP presents two options/scenarios for the proposed well pads that will form part of the CEMP and is as detailed below:

- Option A - WM31 (sharing well pad of WM30) and WM32 (sharing well pad of WM29)
- Option B - WM31 on a separate well pad adjacent to WM30 and WM32 on a separate well pad adjacent to WM29.

An overview of the proposed works footprint inclusive of the various options are shown in the Location Plan in **Appendix A.**

1.2 Scope and Requirements

The scope of this ESCP will include but not be limited to the following:

- Assess the erosion and sedimentation risks for the site.
- Stipulate erosion and sediment control measures for the proposed works that will ensure compliance with the erosion and sediment control strategy as prescribed within the Land Clearing Guidelines (NT Planning Scheme), Soil management, erosion and sediment control information as specified within NT.GOV.AU and the *International Erosion Control Association (IECA), Best Practice Erosion and Sediment Control Guidelines.*
- Prepare ESCP that identifies locations of the proposed temporary drainage, erosion and sediment control measures and supporting technical notes.

Note: A detailed environmental assessment of the proposed works area and a Construction Environmental Management Plan (CEMP) do not form part of the scope of this ESCP but is understood to have been prepared by Central Petroleum and/or others. This ESCP will form part of Central Petroleum's CEMP to ensure best practice erosion and sediment controls are implemented by the contractor during construction and thereby mitigate the impacts of erosion and sedimentation as a result of the proposed works.

1.3 Objectives

The purpose of this ESCP is to demonstrate measures to minimise soil erosion and offsite sediment discharge during construction activities associated with the proposed well pad and thereby reduce potential impacts on the receiving environment. Specifically, the primary objective of this ESCP are to:

- Adequately address relevant and applicable legislation and guidelines including Northern Territory specific guidelines and requirements in relation to best practice erosion and sediment control. Note: The Northern Territory guidelines is predominantly an adaptation of the IECA Guidelines and also suggests to adopt the IECA Best Practice Guidelines for high risk or large and complex projects. Where possible, this ESCP has adhered to a combination of both the NT Guidelines and the IECA Guidelines as deemed fit for purpose.

- Identify potential opportunities and environmental constraints (if any) during early stages of the development.
- Propose adequate erosion and sediment control (ESC) measures to protect the receiving environment from the impacts of erosion and sedimentation as a result of the proposed construction activities.

1.4 Guidelines, Project Commitments & Legislation

The erosion and sediment control (ESC) measures adopted in the preparation of this ESCP is in accordance with the following legislation, guidelines and specifications:

- *Land Clearing Guidelines (Northern Territory Planning Scheme).*
- *Soil management, erosion and sediment control information as specified within NT.GOV.AU*
- *International Erosion Control Association (IECA), Best Practice Erosion and Sediment Control Guidelines*, November 2008 (referred to as IECA Guidelines throughout this report) and Appendix B Revision June 2018.
- *Environmental Protection Act 2019 (NT).*

1.4.1 Environmental Protection Act 2019

The *Environmental Protection Act 2019* (EP Act) for NT identifies that all personnel must comply with the general environmental controls under s34 of the EP Act, otherwise of which would be deemed as an environmental offence. This requires all reasonable and practicable measures to be adopted to prevent or minimise environmental harm. As such, any drainage, erosion and sediment control devices proposed or implemented on site must represent current best practice management measures.

Under Part 9, Division 8, s224 &225 of the EP Act, people who become aware of environmental harm or incident has a legal duty to notify as soon as practicable (and in any case within 24 hours) after the person observes or become aware of the incident.

The Northern Territory EPA has a role in preventing pollution of waterways under the *Waste Management and Pollution Control Act 1998* and the *Water Act 1992*. Section 97 of the *Water Act 1992* also stipulates emergency powers to control water pollution which includes subjecting the person who discharges waste into water or places wastes into land with default penalty points where the activity is deemed as an environmental offence.

1.5 Water Quality Objectives

During the pre-construction meeting, the construction contractor and all personnel involved with the project works are to be made aware of the required water quality objectives and monitoring and sampling procedures to ensure that any construction water discharged offsite and/or into the receiving environment meets the water quality objectives stipulated for the proposed works.

Construction Water Quality Objectives

In accordance with the IECA Guidelines, Table 4.5.13, the following is the recommended discharge standard for soil disturbances exceeding 2500m^2 (such as the subject case) during construction activities:

- 90 percentile total suspended solids (TSS) concentration not exceeding 50 mg/L
- pH range from 6.5 to 8.5

Where required, a site-specific correlation between the turbidity and total suspended solids will be developed during construction activities so that an equivalent turbidity value for the above specified TSS limits can be determined. This in turn will allow construction staff to use turbidity meters on site for readily obtaining water quality results as opposed to laboratory testing for TSS, which may pose time delays and waiting period for offsite discharge of treated water.

Operational Water Quality Objectives

Management of water quality for natural and semi-natural water resources is guided by the Australian and New Zealand Water Quality Guidelines. These guidelines are used for establishing performance criteria for waste water discharges under the *Waste Management and Pollution Control Act 1998*.

In the context of Northern Territory, an important part of water quality management is to identify how the community values and uses a water resource. Beneficial uses describe how a water resource benefits the community and these beneficial uses or values have been set for major aquifers and river catchments. These values are then used to set operational water quality targets. Under the Water Act 1992, administered by the Department of Environment, Parks and Water Security, statutory Beneficial Use Declarations have been made for waterways in the Northern Territory. Of the 10 categories used to describe values for groundwater and surface water, the most appropriate value applicable to the subject site is petroleum activity – *the exploration, extraction or processing of petroleum under a NT or Commonwealth Act or related purpose*.

1.6 Limitations

Limitations of this ESCP include the following:

- Where external fill materials are brought to site, the nature of the fill can be vastly different to that of the soil conditions assumed in the preparation of this ESCP. Where insufficient soils information exist on the proposed imported fill materials sourced at the site, appropriate soil testing, analysis and recommendations will be carried out and the ESCP will be amended to reflect the actual soil conditions.
- This report and supporting plans are limited to presenting information based on currently available design drawings as supplied by Client, however where the scope of works (including proposed cut/fill activities) or site conditions change during construction, the ESCP will be amended to reflect any changing risks and site conditions.
- This ESCP design is based on soils information as identified through available geological and soil mapping of the area and as supplied by the Client (e.g Ecological Assessment Mereenie Acceleration project report dated June 2022). Where current soil conditions in the area appear vastly different from that identified from the supplied information, further soils investigation may be required to inform or update the recommendations of this ESCP.

2.0 Site environmental characteristics

2.1 Site Location and Land Use

The proposed Mereenie West well pads WM31 and 32 sites are located approximately 154km and 150km respectively south west of Alice Springs in NT. Both well pads are located within the MacDonnell Region local government area.

The site and immediate surrounding areas are zoned as 'non- pastoral land' under the Northern Territory Natural Resource mapping system. The proposed well pad footprints are currently vacant land containing scattered shrubs and trees comprising of predominantly acacia, desert oak and spinifex grassland.

2.2 Topography and Hydrology

The project footprint and surrounding areas are characterized as having a gently sloping topography and falls within the Victoria River-Wiso River catchment and the Mackay (NT) River basin. The footprint of WM31 generally slopes from south to north and north east draining towards the northern and north eastern boundary of the proposed well pad whereas the footprint of WM32 generally slopes from south to north and to the east draining towards the northern and north eastern boundary of the proposed well pad.

Overland flow from the site (WM31) and surrounding area eventually discharges north towards the flat wetland areas which then discharges into the nearby ephemeral drainage line. Available drawings of the subject site suggests that site elevations range from 783m AHD to 785m AHD.

Overland flow from the site (WM32) and surrounding area eventually discharges north towards the flat wetland areas which then discharges into the upper reaches of Deering Creek and Walkers Creek. Available drawings of the subject site suggests that site elevations range from 764m AHD to 770m AHD.

Works must be undertaken to avoid the high intensity rainfall periods of the region to minimise erosion and sedimentation risks as a result of the proposed construction activities. Alternatively, adequate erosion protection (ground cover) and sediment controls must be implemented and maintained along the disturbed areas prior to any rainfall forecasts for the area.

2.3 Rainfall and Erosion Risks

The rainfall data for the project area (both well pads WM31 and WM32) was obtained from the Bureau of Meteorology's (BOM) closest meteorological station (BOM station number: 015654 – Mereenie) relative to the subject site. The rainfall data as shown in Table 1 below suggests that the area generally experiences a tropical climate with relatively wet months between November to March.

The region receives an average rainfall of approximately 307mm/year with the majority of the rainfall occurring between November to March. Monthly average rainfall in the area ranges from as low as 5.1mm (in August) to 46mm (in December) at its peak. Based on the rainfall data, the risk of runoff and sedimentation to the receiving environments are likely to be the greatest during November to March.

Table 1 below also provides the monthly erosion risks of the subject site based on the BOM rainfall records and as per erosion risk rating in accordance with Table 4.4.2 of the IECA Guidelines. This Table indicates that the site is susceptible to medium erosion risks from rainfall impacts during the month of December and low erosion risk for the months of January, February, March and November. Very low erosion risks prevail for majority of the months and between April to October.

Given the relatively low annual rainfall volumes received in the area, there are no months susceptible to high erosion risk during a year. Nevertheless, it is recommended that high risk construction activities (e.g bulk earthworks and deep excavations) are avoided in case of a forecasted rain event or medium erosion risks months. Alternatively, best practice and stringent ESC measures must be implemented to mitigate erosion and sedimentation impacts as a result of high intensity rainfall events and thereby protect the receiving environment.

Table 1: Rainfall data for Mereenie (Source: BOM Station No: 015654) & Erosion Risk Rating

Mean rainfall data (Source: Bureau of Meteorology)												
Monthly data	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Mean rainfall (mm)	37.3	38.1	34.0	19.9	16.7	17.1	16.8	5.1	13.0	18.4	42.8	46.0
Erosion risk	L	L	L	VL	VL	VL	VL	VL	VL	VL	L	M

Notes: H – indicates high erosion risk (100-225 mm), M – indicates moderate erosion risk (45-100 mm), L – indicates low erosion risk (30-45 mm), VL – indicates very low erosion risk (0 to 30) – Source Table 4.4.2 of IECA Guidelines

2.4 Vegetation Characteristics and Rehabilitation

As indicated above, the project footprint contains scattered shrubs and some trees consisting of predominantly acacia, desert oak and spinifex grassland. Clearing of site vegetation is required to facilitate the proposed well pad and it is understood that Central Petroleum (Client) will obtain the necessary approvals and permits for vegetation clearing within the site. It is noted from the NT Land clearing guidelines that depending on the type of development, a land capability and/or land suitability assessment will need to be undertaken. Permits and approval requirements for vegetation clearing is outside the scope of this ESCP, however, all recommendations in relation to vegetation clearing provided within this ESCP will be implemented by the Contractor during construction.

Land clearing and rehabilitation requirements based on erosion risk rating is detailed within Table 4.4.7 of the IECA Guidelines. The rehabilitation requirements for the proposed works in accordance with Table 4.4.7 of the IECA Guidelines will be to establish a minimum of 60% to 70% ground cover within 30 days of clearing to minimise the impacts of erosion and sediment transportation as a result of vegetation clearing activities. This is further detailed within Table 2 below.

No-go zones and tree protection areas will be established by Contractor to ensure no unauthorised clearing will occur.

Table 2: Land clearing and rehabilitation requirements (Table 4.4.7 of the IECA Manual)

Months	Rainfall (mm)	Erosion Risk Rating	Allowed Advance Land Clearing (Weeks)	Maximum Days to Stabilisation
Jan	37.3	L	8	70% cover within 30 days
Feb	38.1	L	8	70% cover within 30 days
Mar	34.0	L	8	70% cover within 30 days
Apr	19.9	VL	8	60% cover within 30 days
May	16.7	VL	8	60% cover within 30 days
June	17.1	VL	8	60% cover within 30 days
July	16.8	VL	8	60% cover within 30 days
August	5.1	VL	8	60% cover within 30 days
September	13.0	VL	8	60% cover within 30 days
October	18.4	VL	8	60% cover within 30 days
November	42.8	L	8	70% cover within 30 days
December	46.0	M	6	70% cover within 20 days

2.5 Soil Characteristics

No geotechnical investigation reports were available for the preparation of this ESCP, however the surface geology map and the soil maps supplied by the Client (Ecological Assessment Mereenie Acceleration project report dated June 2022) for the area suggest that the proposed well pad location and immediate surrounds are mapped as being underlain by the Mereenie sandstone deposited at least 400 million years ago. The Mereenie sandstone is demonstrated to have been deposited in a wet inland aeolian system, typified by small crescentic sand dunes and extensive interdune flats.

Specifically, for WM31, the land form and soil type for the subject area represents a combination of gently sloping Sandplains (SA2-A), red sands to sandy red earth (SA2-B), red siliceous sands (SA2-C), red earths comprising of heavier clay loam at low points (SA2-D) and shallow sandy red earths over sandstone outcrop (SA2-E). This soil type generally corresponds to Kandosols according to the soils of the NT Fact Sheet which further indicates that Kandosols are often referred to as red, yellow and brown earths. They generally have a sandy to loamy-surface soil, grading to porous sandy-clay subsoils with low fertility and poor water-holding capacity. These massive and earthy soils are important for agricultural and horticultural production. They occur throughout the NT and are widespread across the Top End, Sturt plateau, Tennant Creek and Central Australian regions. In accordance with Table E4 of the IECA Guidelines such soils relate to the code SCL (sandy clay loam), which is further explained in section 3.1.2 below.

For WM32, the soil type represents the BA28 unit which is typical of the bold ranges including broad areas of sandstone plateaux, very extensive areas of bare rock and chief soils are shallow stony sands and small areas of other soils are associated in areas of gentler relief. This soil type is reclassified as a Rudosol under the Australian Soils Classification (ASC). Rudosols are soils with negligible (rudimentary) pedologic organisation apart from minimal development of an A1 horizon or the presence of less than 10% B horizon material (including pedogenic carbonate) in fissures in the parent rock or saprolite. The soils are apedal or only weakly structured in the A1 horizon and show no pedological colour changes apart from the darkening of an A1 horizon. There is little or no texture or colour change with depth unless stratified or buried soils are present. In accordance with Table E5 of the IECA Guidelines such soils relate to the code SP (poorly graded sands, gravelly sands with few fines), which is further explained in section 3.1.2 below.

Previous well installation works undertaken in the Mereenie area suggest that groundwater was observed at depths of between 86-384m TVD. It should however be noted that groundwater depth and soil moisture content are affected by climatic variations and soil permeability and will therefore vary with time. Prolonged rainfall and flood events may saturate the soil and give rise to a temporary perched water table at times and this needs to be considered where construction is to occur during wet weather periods. Given the depth of groundwater occurrence (86-384m TVD), the risk of encountering groundwater as part of the proposed well pad construction activities is expected to be low.

Given the relatively high site elevations (764mAHD to 785mAHD), the risk of encountering any acid sulfate soils at the site are expected to be low. It is also assumed that the site is not known to contain any known contaminated soils. The CEMP will include further requirements on the management of contaminated land soils including an unexpected finds protocol to manage known or unknown presence of contaminated soils. Presence of contaminated soils and their assessments are outside the scope of this ESCP.

2.6 Construction Methodology

A brief outline of the proposed construction methodology/land disturbance activity is summarised below:

- Site establishment including laydown areas and designation of stockpile locations.
- Install downslope erosion and sediment controls as indicated in the attached ESCP (**Appendix B**) prior to any ground cover removal and other earth disturbance activities.
- Carry out grubbing operations across the project footprint prior to bulk earthworks operations. Grubbing and /or removal of ground cover will be carried out in stages and will be kept to the absolute minimum required.
- Install temporary drainage, erosion and sediment control structures such as, diversion bunds, and sediment control measures as shown in the attached ESCP (**Appendix B**).
- Topsoil/Filling stripping – Any topsoil/filling required to be stripped, will be stockpiled adjacent to the works (but at least 20m away from drainage lines and adjacent property boundaries) for any future reuse or disposed of appropriately.
- Undertake construction works in accordance with the design drawings.
- Revegetate and rehabilitate all disturbed areas in accordance with relevant landscaping drawings and specifications.

Based on the above land disturbance activities, where soils are exposed, the proposed works have the potential to be impacted by sheet and rill erosion and hence offsite transportation and sediment deposition into the receiving environment during rainfall events. Therefore, in order to protect the receiving environment, industry best practice ESC measures are to be adopted as part of the proposed works.

2.7 Duration of Works

This ESCP has assumed proposed construction of each of the well pads WM31 and WM32 (regardless of options A and B) a duration of approximately 2 months to complete works and this has been reflected in the proposed drainage calculations. However, if this timeframe is expected to be exceeded, an ESCP that reflects the actual timeframes and other site conditions will be prepared and implemented for completion of construction activities.

3.0 Erosion risk assessment

3.1 Estimated Soil Loss

Erosion risk assessment provides an indication of the erosion potential of a development site which in turn enables the identification of the appropriate ESC standards required during construction works.

Revised Universal Soil Loss Equation (RUSLE) is used to estimate the tonnes per ha per year soil loss rates resulting from sheet and rill erosion from the site if no controls were put in place during construction activities. Quantitative erosion risk assessment for the proposed development based on the RUSLE is as described below.

The soil loss equation is, A = R * K * LS * C * P

Where,

A	=	annual soil loss due to erosion (t/ha/yr)
R	=	rainfall erosivity factor
K	=	soil erodibility factor
LS	=	topographic factor derived from slope length and slope gradient
C	=	ground cover and management factor
P	=	erosion control practice factor

3.1.1 Rainfall Erosivity Factor

The Rainfall Erosivity Factor (R) is a measure of the ability of rainfall to cause erosion. It is a product of the total energy and the maximum intensity of each storm. A site-specific R-factor has been estimated by using the rainfall intensity of the project area and in accordance with page E.3 of the IECA Guidelines. The relevant formula is:

$R = 164.74 (1.1177)^{s} S^{0.6444}$

Where, S is the 2-year ARI (Annual Recurrence Interval) 6-hour rainfall event (mm).

The recent BOM Intensity Frequency Duration (IFD) Table for the project area shows that the equivalent of 2-year ARI (0.5 Exceedances per year (EY)) 6-hour rainfall event for the region is 6.51mm/hr for the site.

Based on the above, a rainfall erosivity factor of 1136.8 has been calculated and adopted in the RUSLE calculations.

3.1.2 Soil Erodibility Factor

The soil erodibility factor (K), is a measure of the susceptibility of the soil particles to detachment and transport by rainfall and runoff. Specifically, for WM31, the soils of the NT Fact Sheet indicates that the soils within the subject site generally corresponds to Kandosols which are often referred to as red, yellow and brown earths. They generally have a sandy to loamy-surface soil, grading to porous sandy-clay subsoils with low fertility and poor water-holding capacity. In accordance with Table E4 of the IECA Guidelines soils in the vicinity of WM31 relate to the code SCL (sandy clay loam), suggesting a k-

factor value of 0.025 and as such, a K-value of 0.025 has been adopted for design purposes in this instance.

For WM32, the soils of the NT Fact Sheet further indicates that Rudosols are very shallow rocky and gravelly soils across rugged terrain such as the Arnhem Plateau but also pure sand soils in deserts. In accordance with Table E5 of the IECA Guidelines such soils relate to the code SP (poorly graded sands, gravelly sands with few fines) suggesting a k-factor value of 0.027 and as such, a K-value of 0.027 has been adopted for design purposes in this instance.

3.1.3 Topographic Factor

The Topographic Factor (LS) is derived from the slope length (L) and slope gradient (S) of each catchment. The erosion risk for any site can be of concern with long slope lengths and steep gradients. The slope length, slope and LS factor for each catchment has been calculated and presented in Table 3 below.

3.1.4 Ground Cover and Management Factor

The cover and management factor (C) measures the combined effect of all the interrelated cover and management variables. Various ground cover factor values can be adopted depending on the type of cover for the site as per Tables E6-E10 of the IECA Guidelines.

A default value of 1.0 is the most widely accepted value for construction sites. Hence a C factor value of 1.0 is adopted for the subject site.

3.1.5 Erosion Control Practice Factor

The erosion control practice factor (P) measures the combined effect of all support practices and management variables.

The P-factor is reduced by practices that reduce both the velocity of runoff and the tendency of runoff to flow directly downhill. At construction sites, it reflects the roughening or smoothing of the soil surface by machinery. The default value for construction phase conditions for the P factor is 1.3 as per Table E11 of the IECA Guidelines.

Hence, the P factor adopted for the subject works is 1.3.

3.2 Catchment Area and Estimated Soil Loss

The catchment area for the purpose of this ESCP will be the disturbance area footprint (proposed well pad footprints for each option/scenario) including any temporary site laydown areas and construction vehicle access areas. All other upslope catchment areas draining to the subject site will be diverted away from the works area in order to minimise the extent of ESC measures required as is the fundamental principle of best practice erosion and sediment control strategy.

Based on the proposed disturbance activities, possible staging of works and manageable slope lengths, the catchment areas for each well pad option/scenario were delineated into separate sub-catchments for estimating the soil loss and thereby establishing adequate and manageable sediment controls for the site.

Based on the above site specific analysis of the RUSLE parameters and determination of approximate sub-catchment areas likely to be subject to disturbance, an estimation of soil loss resulting from each of the sub-catchments based on the two options have been tabulated as shown in Table 3 below:

- Option A - WM31 (sharing well pad of WM30) and WM32 (sharing well pad of WM29)
- Option B - WM31 on a separate well pad adjacent to WM30 and WM32 on a separate well pad adjacent to WM29.

Table 3: Estimate soil loss for the various options and sub-catchments

Sub-catchment Options & Area (m^2)	R factor	K factor	LS factor	P factor	C factor	Annual soil loss in (t/ha/yr)
Option A – WM31 (sharing well pad of WM30)						
Sub-catchment No: 1 (15,118 m^2)	1136.8	0.027	0.52	1.3	1.0	20.7
Sub-catchment No: 2 (17,33 m^2)	1136.8	0.027	0.58	1.3	1.0	23.1
Option A – WM32 (sharing well pad of WM29)						
Sub-catchment No: 1 (14,068 m^2)	1136.8	0.027	0.69	1.3	1.0	27.5
Sub-catchment No: 2 (12,000 m^2)	1136.8	0.027	0.60	1.3	1.0	23.9
Option B – WM31 on a separate well pad						
Sub-catchment No: 1 (10,819 m^2)	1136.8	0.025	0.52	1.3	1.0	19.2
Sub-catchment No: 2 (11,182 m^2)	1136.8	0.025	0.52	1.3	1.0	19.2
Option B – WM32 on a separate well pad						
Sub-catchment No: 1 (8,726 m^2)	1136.8	0.027	0.87	1.3	1.0	34.7
Sub-catchment No: 2 (5,859 m^2)	1136.8	0.027	0.52	1.3	1.0	20.7
Sub-catchment No: 3 (8,257 m^2)	1136.8	0.027	0.87	1.3	1.0	34.7

Based on the above RUSLE value, the erosion risk rating for the project area is identified as **very low** (for soil loss values between 0-150 t/ha/yr) in accordance with Table 4.4.3 of the IECA guidelines. This very low risk is predominantly attributed to the low annual rainfall volumes received in the area.

3.3 Sediment Control Standard

The average annual soil loss calculated for each sub- catchment is used to identify the most appropriate type of sediment control standard required for the catchment based on Table B1 of the updated Appendix B (June 2018) of the IECA Guidelines. Given the annual average soil loss is less than 75 t/ha/yr for both options and their sub-catchments, a Type 3 sediment control standard is only required in accordance with Table B1 of the IECA Guidelines. However, given the area of soil

disturbance, a conservative design approach of adopting a Type 2 sediment control during bulk earthworks (stage 2 ESCP), has also been recommended. Further details are described in section 4.4 below.

It is also to be noted that considering the poorly graded gravelly and rocky outcrop nature of the site soils, inground sediment controls may not be feasible in some locations. Therefore, where possible erosion control measures (any form of ground cover including geotextile, soil binders, mulch or similar) must take precedence over sediment control measures as a means of managing and mitigating the impacts of erosion and sedimentation due to the proposed land disturbances associated with the well pad construction.

4.0 Proposed ESC strategy

4.1 General

In order to minimise the offsite discharge of sediment laden runoff as a result of the proposed works, an integration of drainage, erosion and sediment control practices and techniques are required to be implemented on site during construction.

This section describes the ESC measures for the site based on the construction methodology that is currently stated, however where changes to construction methodology is proposed due to change in scope of works or due to change in site conditions, the ESCP will be updated to reflect the accurate construction methodology prior to commencement of earth disturbance works.

4.2 Drainage Control

During earthworks activities involved with the proposed well pad construction, drainage control measures are essential to appropriately manage the clean and dirty water flows through the site and to also prevent or reduce soil erosion caused by concentrated flows.

The following drainage control measures are indicated/adopted as part of this ESCP:

- Flow diversion bunds to divert clean upslope and non-disturbed catchment flows away from the works area by use of sand bags, earth bunds, mulch bunds or relocatable coir log bunds.
- Dirty water catch drains to convey dirty water flows and direct them to sediment control devices by use of earth drains/bunds.
- Rock outlet structures for temporary drainage systems to minimise erosion and dissipate energy.
- Sandbag /rock check dams wherever required to control flow velocities.

It is noted that the works are estimated to take up to 2 months. Therefore, all temporary drainage structures/controls have been designed to cater for a 1 in 2 year ARI storm event as per Table 4.3.1 of the IECA Guidelines and the anticipated design life to be less than 12 months. If construction activities are likely to exceed 11 months or greater, drainage controls will need to be designed for a 1 in 5 year ARI storm event.

4.3 Erosion Control

Given the extent of soil disturbance activities (greater than a hectare for all options), the ESC strategy for the site is for erosion control to take precedence over sediment control wherever possible. Adequate ground cover (i.e. use of soil binders, erosion control blankets, turf, geotextile, hydro mulch seeding or similar controls) are recommended as the most effective form of erosion control during construction activities for this site.

It may also not be practical to carry out works only during the dry weather periods for completion of the works. Therefore, adequate ground cover and appropriate staging of works can be the most effective form of erosion control during construction activities for this site.

Where possible, all high risk erosion activities including deep excavation works and bulk earth works will be carried out during dry weather periods to minimise the impact of soil erosion as a result of the proposed construction activities.

4.3.1 Vegetation clearing

All clearing and grubbing associated with the proposed works will be carried out in accordance with existing earthworks specifications. The extent of soils exposure and disturbance during construction at any given time will be minimised by dividing the site into sub-catchments and works will be undertaken through staged development activities as indicated in the ESCP drawings (**Appendix B**).

In addition, grassed areas that do not require to be disturbed as part of the works will be kept undisturbed and will serve as grass filter strips for sediment control during construction activities. Alternatively, erosion control measures including alternative temporary ground cover or soil binders will be used as an appropriate measure to minimise erosion impacts as a result of clearing and exposed soil surfaces.

4.3.2 Stockpile management

All reasonable and practical measures will be taken to obtain the maximum benefit from the excavated material (including topsoil if any) within the subject site. The following soil and stockpile management practices will be adopted during construction:

- Appropriately protected from wind, rain, concentrated surface flow and excessive up-slope stormwater surface flows.
- Located at least 20 m from any hazardous areas, retained vegetation, or concentrated drainage line.
- Located up-slope of an appropriate sediment control system.
- Provided with an appropriate protective cover (synthetic, mulch or vegetative) if the materials are likely to be stockpiled for more than 28 days.
- Provided with an appropriate protective cover (synthetic, mulch or vegetative) if the materials are likely to be stockpiled for more than 5 days during those months that have a high erosion risk.
- A suitable flow diversion system will be established immediately up-slope of a stockpile of erodible material that has the potential to cause environmental harm if displaced, if the up-slope catchment area draining to the stockpile exceeds 1500 m^2.

4.3.3 Revegetation and landscaping

The revegetation works (if any) will be carried out in accordance with the revegetation specifications and all project requirements. Revegetation or rehabilitation of the site to compacted hardstand areas will be progressively implemented throughout the life of the project works and preferably in stages including primary rehabilitation and secondary rehabilitation stage. Primary rehabilitation will involve good soil preparation and stabilisation of the soil surface. Once primary revegetation works are well stabilised and established, secondary rehabilitation works including compacted hard stand surfaces or landscaping works (if any) will be carried out. Following secondary rehabilitation works, the ESC structures retained during the primary rehabilitation stage will be removed and the areas stabilised.

4.4 Sediment Control

Sediment control techniques will be applied across the construction site to limit and settle the mobilisation of soil particles across the site and thereby protect the receiving environment. Best practice sediment control measures in conjunction with adequate drainage and erosion control measures will be adopted upfront during construction activities to achieve desired and compliant outcomes (i.e comply with the water quality objectives as shown in **Appendix B**).

4.4.1 Type 2 Sediment Control

The project areas for all options trigger Type 3 sediment controls, however for conservative design purpose a Type 2 sediment control such as a rock filter dam or sediment trench is recommended during bulk earth works stage (Stage 2 ESCP). A rock filter dam serves the purpose of sediment trapping and filtration through rock/aggregate and is suitable on sandy and/or clayey soils such as the site soils.

Type 2 sediment traps (e.g. rock filter dam, sediment trench or similar) will be installed where appropriate to capture sediment runoff within the disturbed area catchments prior to offsite discharge into the receiving environment. Indicative locations of Type 2 sediment devices and their required surface areas are as shown in **Appendix B**. No sediment fences will be installed across concentrated flow paths or within any drainage lines.

4.4.2 Type 3 Sediment Control

Type 3 sediment traps (e.g. U-shaped sediment fences, excavated sediment trap or similar) will be installed where appropriate during clear and grub stage (Stage 1 ESCP) to capture sediment runoff within the disturbed area catchments prior to offsite discharge into the receiving environment and as indicated in the ESCP drawings in **Appendix B**.

4.4.3 Dust Suppression

Where rehabilitation or stabilisation is not immediately possible following earth disturbance works, water tankers will be deployed to suppress dust on site during construction periods and other times as necessary. Alternatively, erosion control using soil binders or similar will be used as appropriate to minimise dust emissions. Exposed channel surfaces will be rehabilitated as soon as possible to minimise the entry of sediment laden runoff into the receiving environment. Where dust emissions are visible, site activities will be temporarily stopped and reassessed to minimise those emissions.

4.4.4 Stabilised Site Access

Where required, stabilised all weather entry and exit points will be established within the works area to minimise the risk of construction and other vehicles transporting sediment onto public roads. It is noted that Mereenie Field Road is a dirt road and therefore a stabilised entry/exit is not warranted to minimise offsite sediment transportation, however a designated entry/exit (location on the ESCP drawings indicative only) can be installed for ease of identification of vehicle entry/exit area and the exact location is to be confirmed on site. The site entry/exit points shall be constructed in accordance with Section 4.5.10 of the IECA Guidelines and is also indicated in the standard design drawing shown in Appendix B.

4.5 Construction Staging

Staging of works can be the most effective tool to minimise erosion risk, by progressively disturbing earth works activities and the site soils and thereby protect the receiving environment from sediment deposition. The Contractor will be responsible for determining appropriate construction staging to ensure the area of soil disturbance at any given time is kept to a minimum. The daily works schedule will take into consideration the expected and predicted rainfall forecast for the area. In particular, deep excavation and bulk earthwork activities are to avoid periods of predicted significant rainfall.

5.0 Monitoring and maintenance

A formal monitoring and maintenance program is to be prepared prior to site establishment given the area of soil disturbance likely to occur as a result of the proposed works. Prior to the commencement of site works, the location of the site access point(s) and hold points must be established.

5.1 Site Inspections

In accordance with Section 7.4 of the IECA Guidelines, best practice site management requires all ESC measures to be inspected by the site manager, responsible ESC officer, or nominated representative:

- At least daily when rain is occurring;
- At least weekly (even if work is not occurring on-site);
- Within 24 hours prior to expected rainfall; and
- Within 18 hours of a rainfall event of sufficient intensity and duration to cause on-site runoff.

Daily site inspections, during periods of runoff-producing rainfall must check:

- All drainage, erosion and sediment control measures;
- Occurrences of excessive sediment deposition (whether on-site or off-site); and
- All site discharge points.

Weekly site inspections must check:

- All drainage, erosion and sediment control measures;
- Occurrences of excessive sediment deposition (whether on-site or off-site);
- Occurrences of construction materials, litter or sediment placed, deposited, washed or blown from the site, including deposition by vehicular movements; and
- Litter and waste receptors.

Site inspections immediately prior to anticipated runoff producing rainfall must check:

- All drainage, erosion and sediment control measures; and
- All temporary (e.g. overnight) flow direction and drainage works.

Site inspections immediately following to anticipated runoff producing rainfall must check:

- Treatment and de-watering requirements of sediment traps;
- Sediment deposition within sediment traps and the need for its removal;
- All drainage, erosion and sediment control measures;
- Occurrences of excessive sediment deposition (whether onsite or offsite);
- Occurrences of construction materials, litter or sediment placed, deposited, washed or blown from the site, including deposition by vehicular movements; and
- Occurrences of excessive erosion, sedimentation or mud generation around the site.

In addition to the above, monthly site inspections must check:

- Surface coverage of finished surfaces (both area and percentage cover);
- Health of recently established vegetation; and
- Proposed staging of future land clearing, earthworks and site/soil stabilisation.

5.2 Inspections & Test Plans (ITP)

Inspection and Test Plans (refer Section 7.8 of IECA Guidelines & Page 7.15 for a typical example of Inspection & Test Plan) are to be prepared to detail the inspection, testing and performance criteria for key site and construction activities, including site revegetation. The ITPs should identify:

- The construction activity to be monitored;
- Method of inspection or testing, including testing standard;
- Frequency and/or timing of inspections/testing;
- "Witness" and "hold points" required during the construction processes;
- Performance criterion/criteria;
- Responsible officer;
- Required documentation or inspection report;
- Procedure for preparation of non-conformance reports (NCRs); and
- Procedure for the lodgement of the documentation and inspection reports.

5.3 Maintenance of ESC Measures

The following maintenance measures will be adopted as a minimum throughout the project duration:

- Ensure all ESC measures are maintained in proper working order at all times;
- Ensure all materials, whether solid or liquid, removed from ESC devices during maintenance are disposed of in a manner that does not cause ongoing soil erosion or environmental harm; and
- Ensure appropriate written records are kept on the site's monitoring and maintenance activities.

5.4 Non-conformance and Corrective Actions

Where an environmental non-conformance occurs (i.e. loss of sediment from the site and/or offsite disposal of sediment laden runoff), the Contractor will immediately notify the Principal of the incident.

Where an environmental incident occurs, the following mitigation strategies shall be adopted as a minimum:

- Containment of the incident/spill using bunds and containment areas on site; and
- Where water quality appears non-complaint, the contractor will immediately notify relevant authorities.

6.0 Conclusion

This ESCP has demonstrated that the potential impacts of erosion and sediment deposition as a result of the proposed well pad (WM31 and WM32) construction activities including the various options designed for can be adequately managed provided industry best practice drainage and ESC measures as stipulated in this ESCP are adopted and implemented during construction.

The soil loss calculations for both options of the well pads suggest that the erosion risk rating for the project area is identified as **very low** which is predominantly attributed to the low annual rainfall volumes received in the area. The proposed earthworks activities are likely to occur in the low to very low erosion risk months of the year. Nevertheless, stringent drainage, erosion and sediment controls will be installed to treat the sediment laden runoff generated from high-risk activities including bulk earthworks during construction.

A conservative design approach to the type of sediment controls required have been adopted within this ESCP for certain catchments and options (Type 3 requirement upgraded to Type 2) although determination of controls from soil loss estimations may have warranted a lower control.

Where construction methodology or scope of works are likely to change, this ESCP will be updated to take into account the changing risks and site conditions. Wherever practical, rehabilitation works will be carried out progressively and as soon as possible to avoid the presence of any exposed loose soil surfaces and minimise the risk of soil erosion and sedimentation as a result of the proposed works.

Available plans/drawings supplied by the Client may not currently indicate the full extent of the proposed disturbance activities and as such, where required the ESCP will be progressively updated to ensure the installation of adequate temporary and permanent stabilisation measures in accordance with the project requirements in order to minimise erosion and sedimentation risks from land disturbance activities.

7.0 Appendices

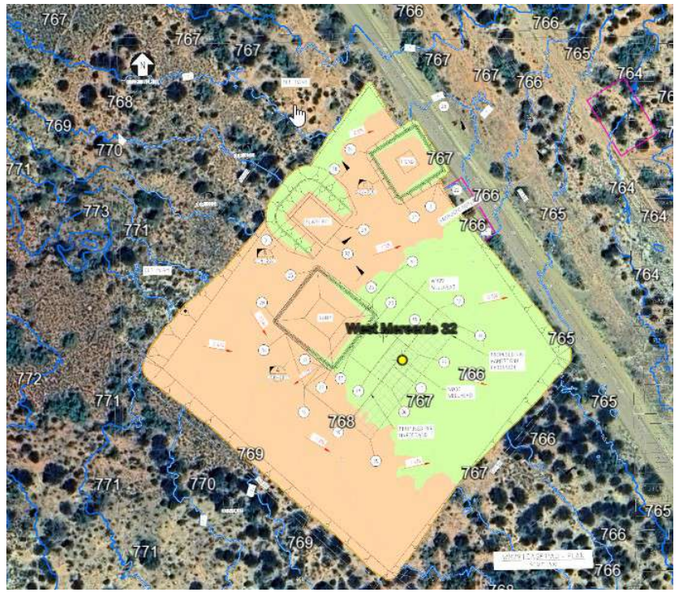
Appendix A – Location Plan

EROSION AND SEDIMENT CONTROL PLAN WEST MEREENIE WELL PADS WM31 & 32 (OPTION A - SHARED WELL PAD & OPTION B SEPARATE WELL PAD) - LOCATION PLAN

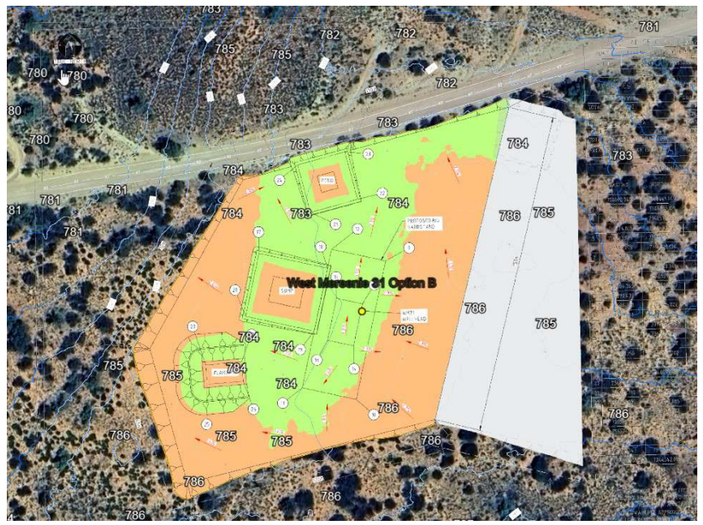
NOTES:

The imagery in these drawings has been reproduced from the drawings supplied from the client and Google Earth.

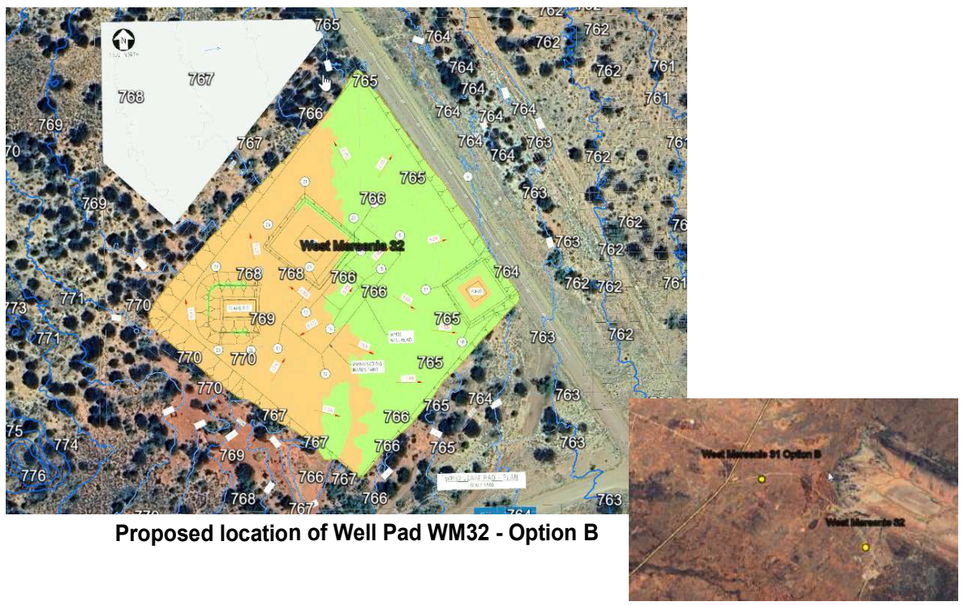
Proposed location of Well Pad WM31 - Option A



Proposed location of Well Pad WM32 - Option A



Proposed location of Well Pad WM31 - Option B



Proposed location of Well Pad WM32 - Option B

AQUA Environmental Consulting

Central Petroleum

EROSION AND SEDIMENT CONTROL PLAN

SCALE 1:1250@A3

0 25 50 75 100 125 M

			WEST MEREENIE WELL PADS WM31 & 32
			ALICE SPRINGS, NORTHERN TERRITORY
Issue 1	AC	August 2024	LOCATION PLAN
Revision	Prepared by / Approved by	Date	NOT FOR CONSTRUCTION

Appendix A

Certified by: AC

CPESC 8333/RPEQ 28786

Appendix B – ESCP Drawings

EROSION AND SEDIMENT CONTROL PLAN
WEST MEREENIE WELL PAD WM31 (OPTION A SHARED WELL PAD WM31/30) - COVER PAGE

NOTES:

This drawing is reproduced by Aqua Environmental Consulting from the design plans supplied by Central Petroleum.

Proposed Mereenie Well Pad - Option A - Shared Well Pad WM31 - Source: Client supplied

PROPOSED WATER QUALITY OBJECTIVES

In accordance with the IECA Guidelines,Table 4.5.13, the following is the recommended discharge standard for soil disturbances exceeding 2500m2 (such as the subject case) during construction activities:

- 90 percentile total suspended solids (TSS) concentration not exceeding 50 mg/L
- pH range from 6.5 to 8.5

DESIGN SIZING OF PROPOSED DRAINAGE AND SEDIMENT CONTROL MEASURES

Drainage & Sediment Controls	Design Storm Event
Dirty Water Drains	1 in 2 year ARI (63.21% Annual Exceedance Probability (AEP) or 1.0 Exceedances per year (EY)
Type 2 Sediment Controls	Peak discharge of 0.5 X 1 in 1 year ARI (95.02% Annual Exceedance Probability (AEP)

AQUA Environmental Consulting

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EROSION AND SEDIMENT CONTROL PLAN			OPTION A - SHARED WELL PAD WM31	DWG No:10035-01
			ALICE SPRINGS, NORTHERN TERRITORY	Certified by: AC
NOT TO SCALE	Issue 1	AC	July 2024	COVER PAGE	CPESC 8333/RPEQ 28786
	Revision	Prepared by / Approved by	Date	NOT FOR CONSTRUCTION	

EROSION AND SEDIMENT CONTROL PLAN - WEST MEREENIE WELL PAD WM31 (OPTION 1 SHARED WELL PAD WM31/30) - SUB-CATCHMENT PLAN

NOTES:

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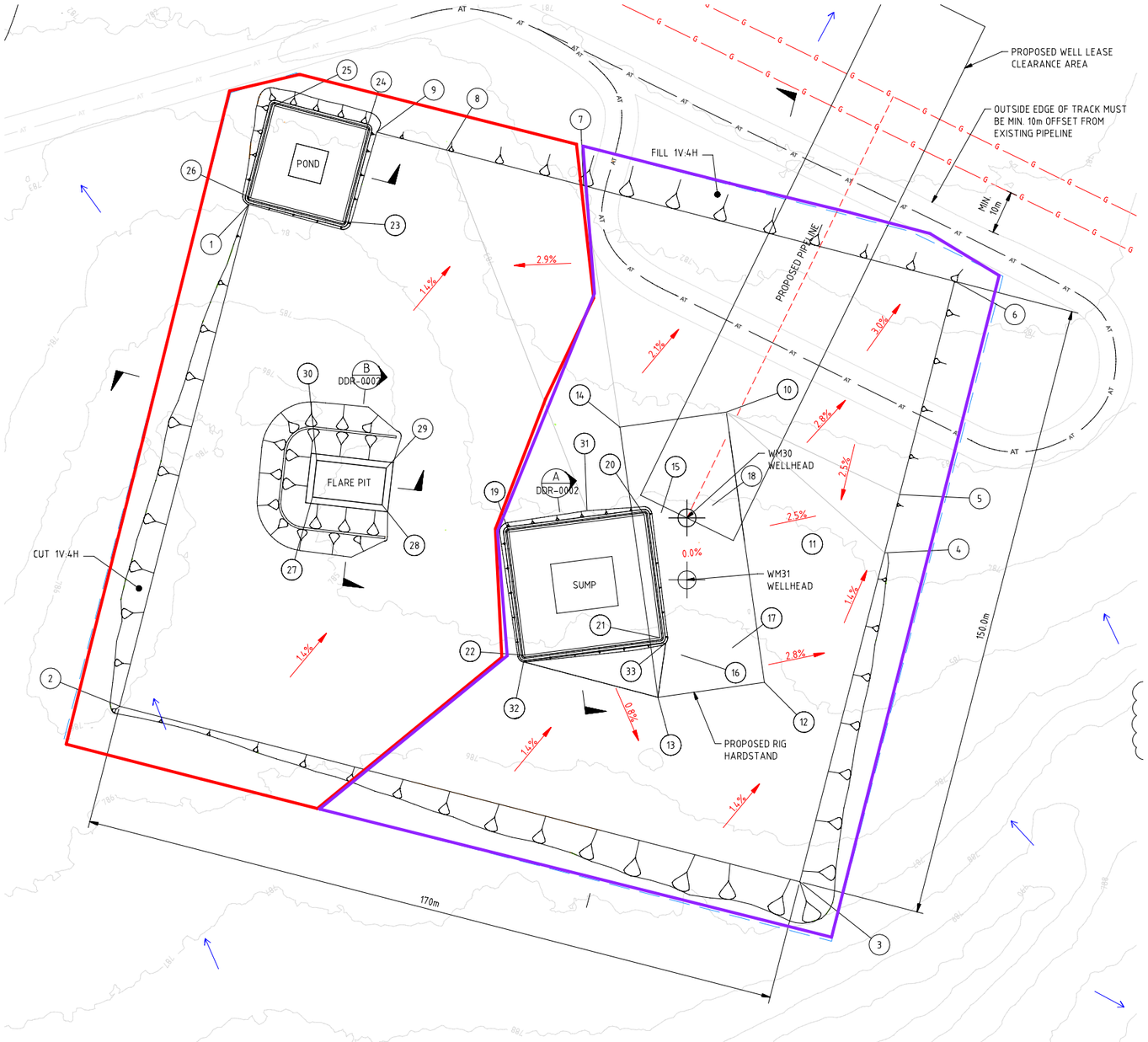

Estimated soil loss (RUSLE) values for each sub-catchments

Sub-catchment Options & Area (m^2)	R factor	K factor	LS factor	P factor	C factor	Annual soil loss in (t/ha/yr)
Option A – WM31 (sharing well pad of WM30)						
Sub-catchment No: 1 (15,118 m^2)	1136.8	0.027	0.52	1.3	1.0	20.7
Sub-catchment No: 2 (17,33 m^2)	1136.8	0.027	0.58	1.3	1.0	23.1

Note: RUSLE values for each sub-catchments indicate very low erosion risk in accordance with the IECA Guidelines

LEGEND

- direction of surface water flows
- Sub-catchment 1
- Sub-catchment 2

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EROSION AND SEDIMENT CONTROL PLAN

SCALE 1:1250@A3

0 25 50 75 100 125 M

			OPTION A - SHARED WELL PAD WM31
			ALICE SPRINGS, NORTHERN TERRITORY
Issue 1	AC	August 2024	SUB-CATCHMENT PLAN
Revision	Prepared by / Approved by	Date	NOT FOR CONSTRUCTION

DWG No:10035-02

Certified by: AC

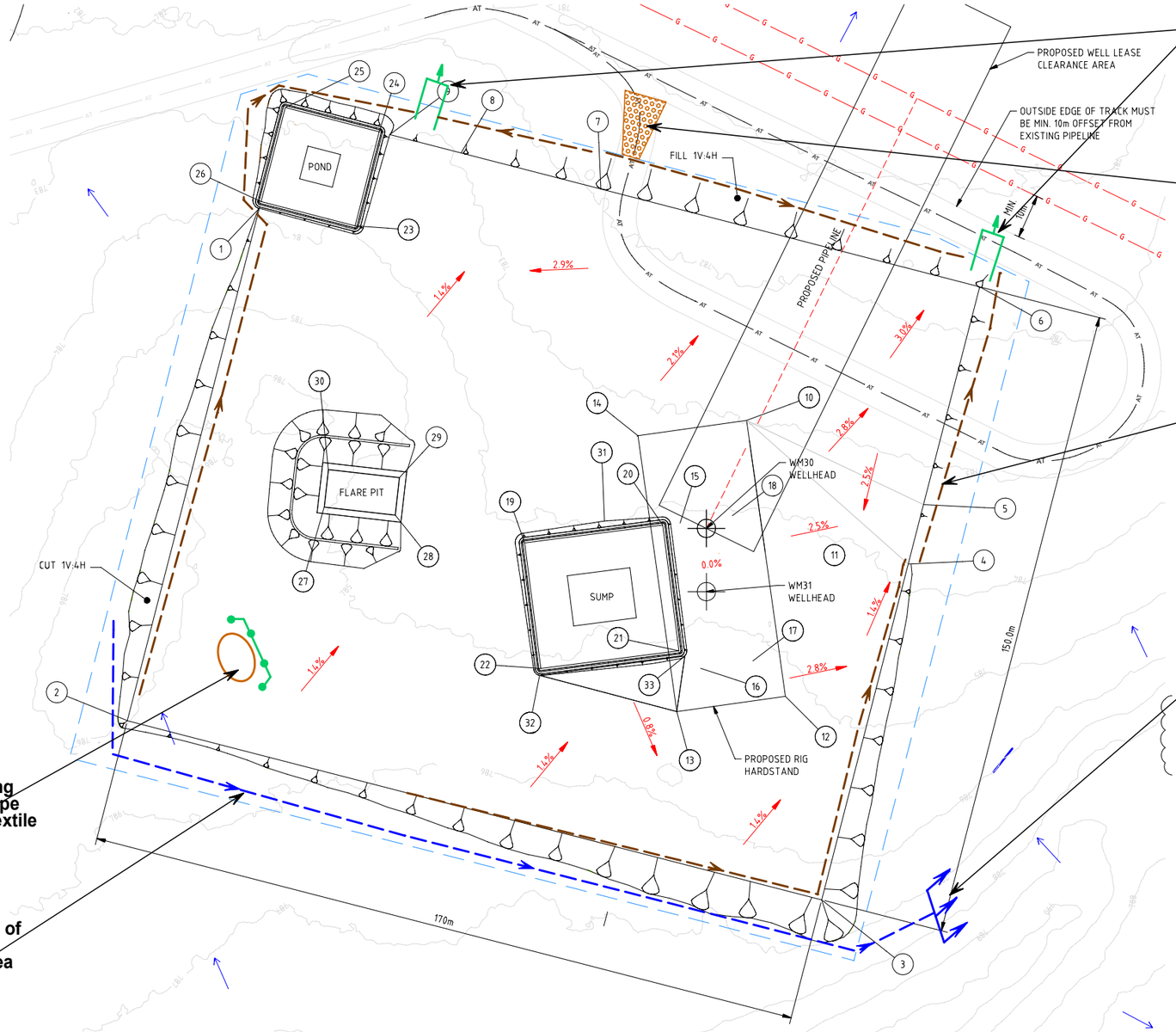
CPESC 8333/RPEQ 28786

EROSION AND SEDIMENT CONTROL PLAN - WEST MEREENIE WELL PAD WM31 (OPTION A SHARED WELL PAD WM31/30) - STAGE 1 ESCP CLEAR AND GRUB WORKS

NOTES:

This drawing is reproduced by Aqua Environmental Consulting from the design plans supplied by Central Petroleum.

Note: where inground excavation for catch drains and sediment controls prove challenging due to rocky ground conditions, install erosion controls (any form of ground cover including soil binders, geotextile or mulch as a means to minimise the impacts of erosion and sedimentation as a result of the proposed works.



Install U-shaped sediment trap (in the lowest point of the catchment during clear and grub to filter out coarse sediments from the dirty water drain prior to any offsite discharge. Alternatively install rock check dam to filter out the sediments prior to offsite discharge of any sediment laden runoff.

Where required, install stabilsed rock pad entry exit to identify vehicle entry/exit points. Note: Entrance Road appears to be dirt road, therefore a stabilised rock pad or rumble grid entry/exit is not warranted as a means to minimise sediment transporation onto the Road. Instead regular dust supppresion using water tankers are to be undertaken to minimse wind erosion and offsite sediment transportation.

Install dirty water catch drains/bund to intercept dirty water runoff prior to clearing and grubbing works and direct to the Type 3 sediment control device. (refer to typical design details attached for catch drain and Type 3 sediment control). Note: where soils are gravelly and rocky, install earth bunds/sand bags (as opposed to excavated catch drains) to direct dirty water runoff into the Type 3 sediment control device.

In case of rainfall events during clearing and grubbing,install a level spreader at the outlet of the clean water diversion drain. This wiill divert concentrated flows into sheet flows for offsite discharge in a manner that minimses the risk of any erosion/scouring in the adjacent offsite discharge areas.

Ensure any material stockpiles from clearing and grubbing are protected with a downslope bund/sediment fence or covered with geotextile or similar.

Prior to clearing and grubbing, and in case of any forecast rain events, divert all upslope clean water runoff away from the works area using earth bunds, sand bags, or similar.

Note: site laydown area and site amenities/office location to be confirmed. Assumed to be outside of the well pad footprint.

LEGEND

- direction of surface water flows
- indicative location of stockpile
- upslope clean water diversion bunds
- dirty water catch drain
- Type 3 sediment fence or similar
- Rock pad or rumble grid site entry exit (TBC)
- Type 3 U-shaped sediment control device
- proposed well pad footprint

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EROSION AND SEDIMENT CONTROL PLAN

SCALE 1:1250@A3

0 25 50 75 100 125 M

			OPTION A - SHARED WELL PAD WM31	DWG No:10035-03
			ALICE SPRINGS, NORTHERN TERRITORY	Certified by: AC
Issue 1	AC	August 2024	CLEAR & GRUB WORKS - STAGE 1 ESCP	CPESC 8333/RPEQ 28786
Revision	Prepared by / Approved by	Date	NOT FOR CONSTRUCTION	

EROSION AND SEDIMENT CONTROL PLAN - WEST MEREENIE WELL PAD WM31 (OPTION A SHARED WELL PAD WM31/30) - STAGE 2 ESCP BULK EARTHWORKS

NOTES:

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Note: where inground excavation for catch drains and sediment controls prove challenging due to rocky ground conditions, install erosion controls (any form of ground cover including soil binders, geotextile or mulch as a means to minimise the impacts of erosion and sedimentation as a result of the proposed works.

Stabilise all fill batter slopes with geotextile or soil binders as soon as they are formed to minimise erosion and sedimentation risks from exposed slope batters.

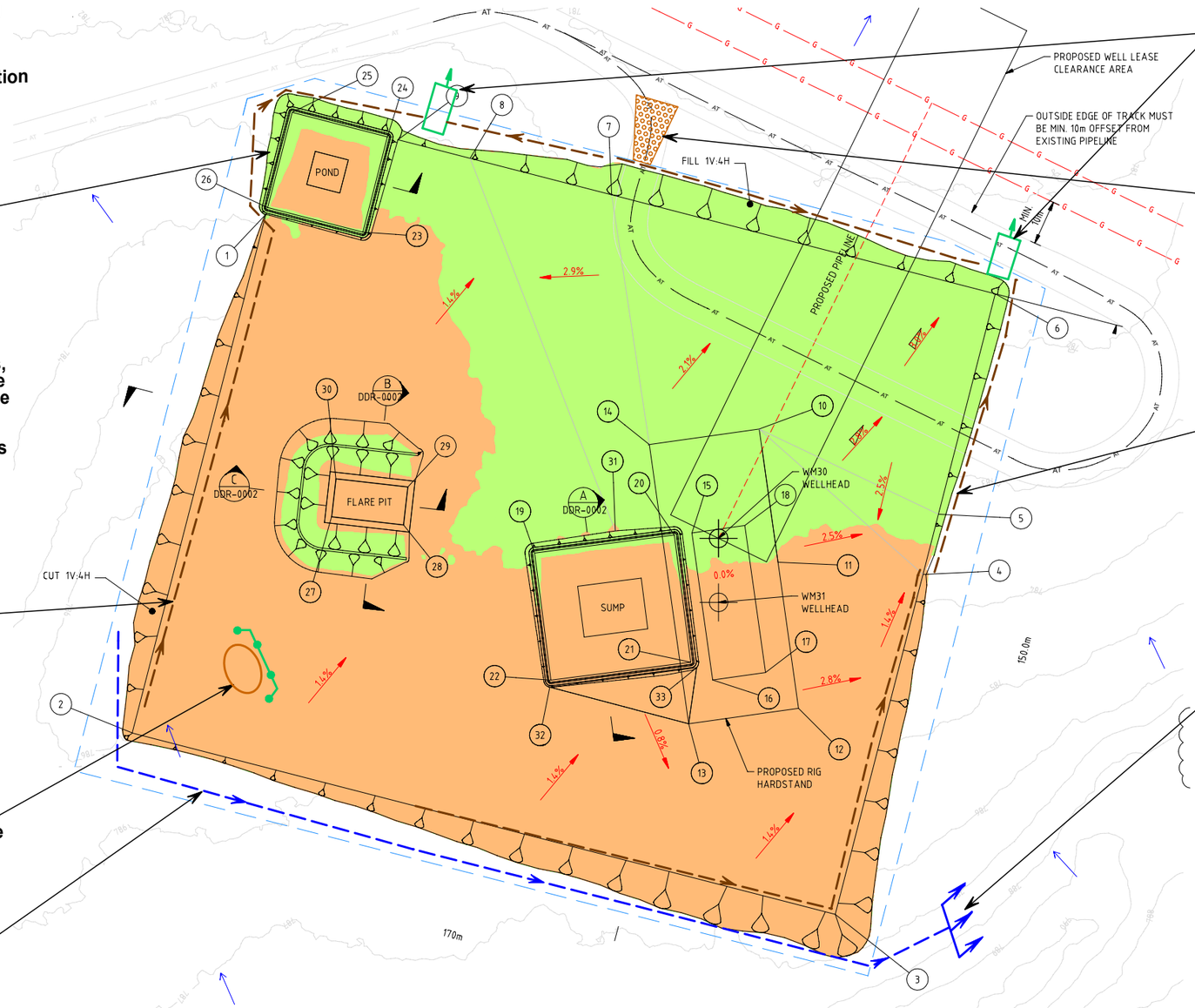
Where the proposed sump, flare pit and pond are constructed before the bulk excavation works, then utilise these where possible as an alternative to inground sediment controls during and until the completion of bulk earthworks. Any dewatering operations from inground sediment control must meet the water quality objectives stipulated in this ESCP prior to offsite discharge

Form proposed cut batters as soon as possible during bulk earthworks and utlilise as dirty water catch drains to convey dirty water runoff and direct to the inground sediment control device. (refer to typical design details attached for catch drain and sediment trench/rock filter dam). Note: Alterantively dirty water drain to also act as inground sediment control provided rock checks are installed at approximately 40m intervals along the cut drain.

Ensure any material stockpiles from clearing and grubbing are protected with a downslope bund/sediment fence or covered with geotextile or similar.

Divert all upslope clean water runoff away from the works area using earth bunds, sand bags, or similar. Refer to attachments for diversion bund design details).

Note: site laydown area, site amenities and office location to beconfirmed. Assumed to be outside of the well pad footprint.



Install sediment trap/trench with a rock filter dam (in the lowest point of the catchment) outlet to allow the settlement and filtration of sediments from the dirty water drain prior to any offsite discharge. Refer to sediment trench/rock filter dam design details for installation procedures. Note: where soil conditions are gravelly and rocky and unable to excavate inground sediment controls, install a rock pad to allow for the settlement and filtration of sediments prior to offsite discharge.

Where required, install stabilsed rock pad entry exit to identify vehicle entry/exit points. Note: Entrance Road appears to be dirt road, therefore a stabilised rock pad or rumble grid entry/exit is not warranted as a means to minimise sediment transporation onto the Road. Instead regular dust supppresion using water tankers are to be undertaken to minimse wind erosion and offsite sediment transportation.

Install dirty water catch drains/bund to intercept dirty water runoff prior to clearing and grubbing works and direct to the Type 3 sediment control device. (refer to typical design details attached for catch drain and Type 3 sediment control). Note: where soils are gravelly and rocky, install earth bunds/sand bags (as opposed to excavated catch drains) to direct dirty water runoff into the Type 3 sediment control device.

In case of rainfall events during clearing and grubbing,install a level spreader at the outlet of the clean water diversion drain. This wiill divert concentrated flows into sheet flows for offsite discharge in a manner that minimses the risk of any erosion/scouring in the adjacent offsite discharge areas.

LEGEND

- direction of surface water flows
- indicative location of stockpile
- upslope clean water diversion bunds
- dirty water catch drain
- Type 3 sediment fence or similar
- Rock pad or rumble grid site entry exit (TBC)
- Type 2 sediment control (sediment trench, rock filter dam or similar)
- proposed well pad footprint
- proposed fill footprint
- proposed cut footprint

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EROSION AND SEDIMENT CONTROL PLAN

SCALE 1:1250@A3

0 25 50 75 100 125 M

			OPTION A - SHARED WELL PAD WM31	DWG No:10035-04
			ALICE SPRINGS, NORTHERN TERRITORY	Certified by: AC
Issue 1	AC	August 2024	BULK EARTH WORKS - STAGE 2 ESCP	CPESC 8333/RPEQ 28786
Revision	Prepared by / Approved by	Date	NOT FOR CONSTRUCTION	

EROSION AND SEDIMENT CONTROL PLAN
WEST MEREENIE WELL PAD WM32 (OPTION A SHARED WELL PAD WM32/29) - COVER PAGE

NOTES:

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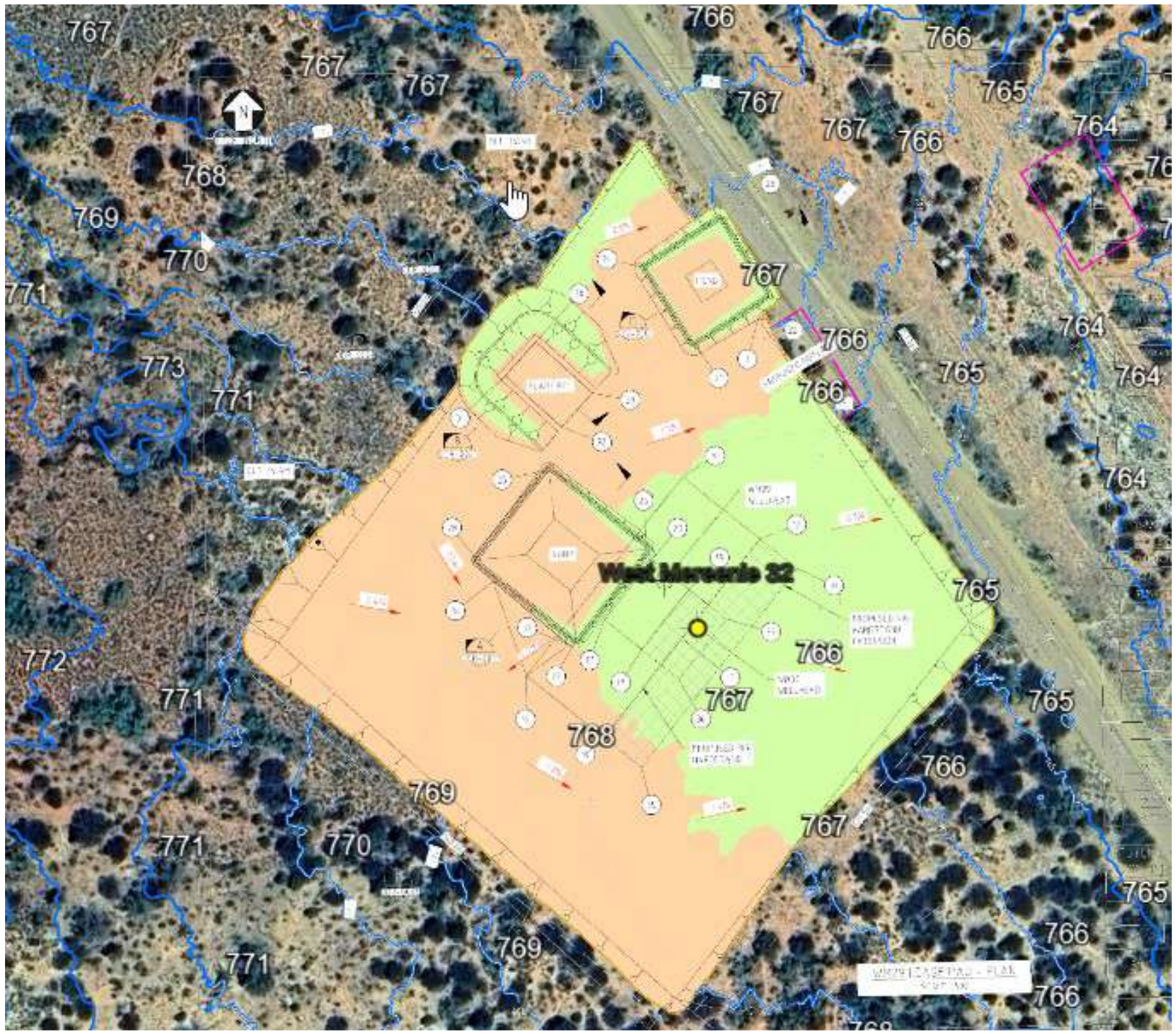

Proposed Mereenie Well Pad - Option A - Shared Well Pad WM32 - Source: Client supplied

PROPOSED WATER QUALITY OBJECTIVES

In accordance with the IECA Guidelines,Table 4.5.13, the following is the recommended discharge standard for soil disturbances exceeding 2500m2 (such as the subject case) during construction activities:

- 90 percentile total suspended solids (TSS) concentration not exceeding 50 mg/L
- pH range from 6.5 to 8.5

DESIGN SIZING OF PROPOSED DRAINAGE AND SEDIMENT CONTROL MEASURES

Drainage & Sediment Controls	Design Storm Event
Dirty Water Drains	1 in 2 year ARI (63.21% Annual Exceedance Probability (AEP) or 1.0 Exceedances per year (EY)
Type 2 Sediment Controls	Peak discharge of 0.5 X 1 in 1 year ARI (95.02% Annual Exceedance Probability (AEP)

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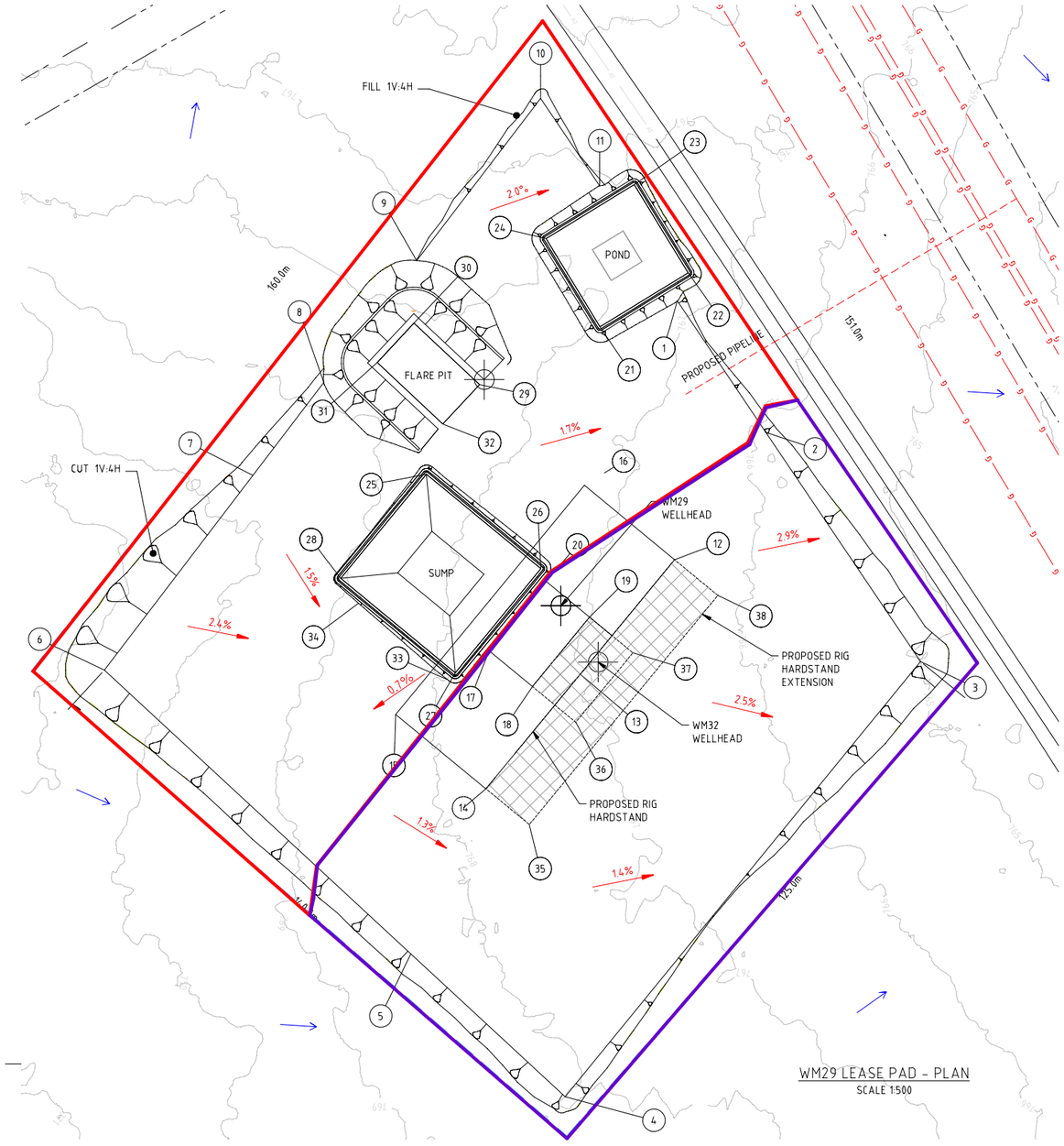
EROSION AND SEDIMENT CONTROL PLAN			OPTION A - SHARED WELL PAD WM32	DWG No:10034-05
			ALICE SPRINGS, NORTHERN TERRITORY	Certified by: AC
NOT TO SCALE	Issue 1	AC	August 2024	COVER PAGE	CPESC 8333/RPEQ 28786
	Revision	Prepared by / Approved by	Date	NOT FOR CONSTRUCTION	

EROSION AND SEDIMENT CONTROL PLAN - WEST MEREENIE WELL PAD WM32 (OPTION A SHARED WELL PAD WM32/29) - SUB-CATCHMENT PLAN

NOTES:

This drawing is reproduced by Aqua Environmental Consulting from the design plans supplied by Central Petroleum.



WM29 LEASE PAD - PLAN
SCALE 1:500

Estimated soil loss (RUSLE) values for each sub-catchments

Sub-catchment Options & Area (m^2)	R factor	K factor	LS factor	P factor	C factor	Annual soil loss in (t/ha/yr)
Option A – WM32 (sharing well pad of WM29)						
Sub-catchment No: 1 (14,068 m^2)	1136.8	0.027	0.69	1.3	1.0	27.5
Sub-catchment No: 2 (12,000 m^2)	1136.8	0.027	0.60	1.3	1.0	23.9

Note: RUSLE values for each sub-catchments indicate very low erosion risk in accordance with the IECA Guidelines

LEGEND

- direction of surface water flows
- Sub-catchment 1
- Sub-catchment 2

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EROSION AND SEDIMENT CONTROL PLAN

SCALE 1:1250@A3

0 25 50 75 100 125 M

			OPTION A - SHARED WELL PAD WM32
			ALICE SPRINGS, NORTHERN TERRITORY
Issue 1	AC	August 2024	SUB-CATCHMENT PLAN
Revision	Prepared by / Approved by	Date	NOT FOR CONSTRUCTION

DWG No:10035-06

Certified by: AC
CPESC 8333/RPEQ 28786

EROSION AND SEDIMENT CONTROL PLAN - WEST MEREENIE WELL PAD WM32 (OPTION A SHARED WELL PAD WM32/29) - STAGE 1 ESCP CLEAR AND GRUB WORKS

NOTES:

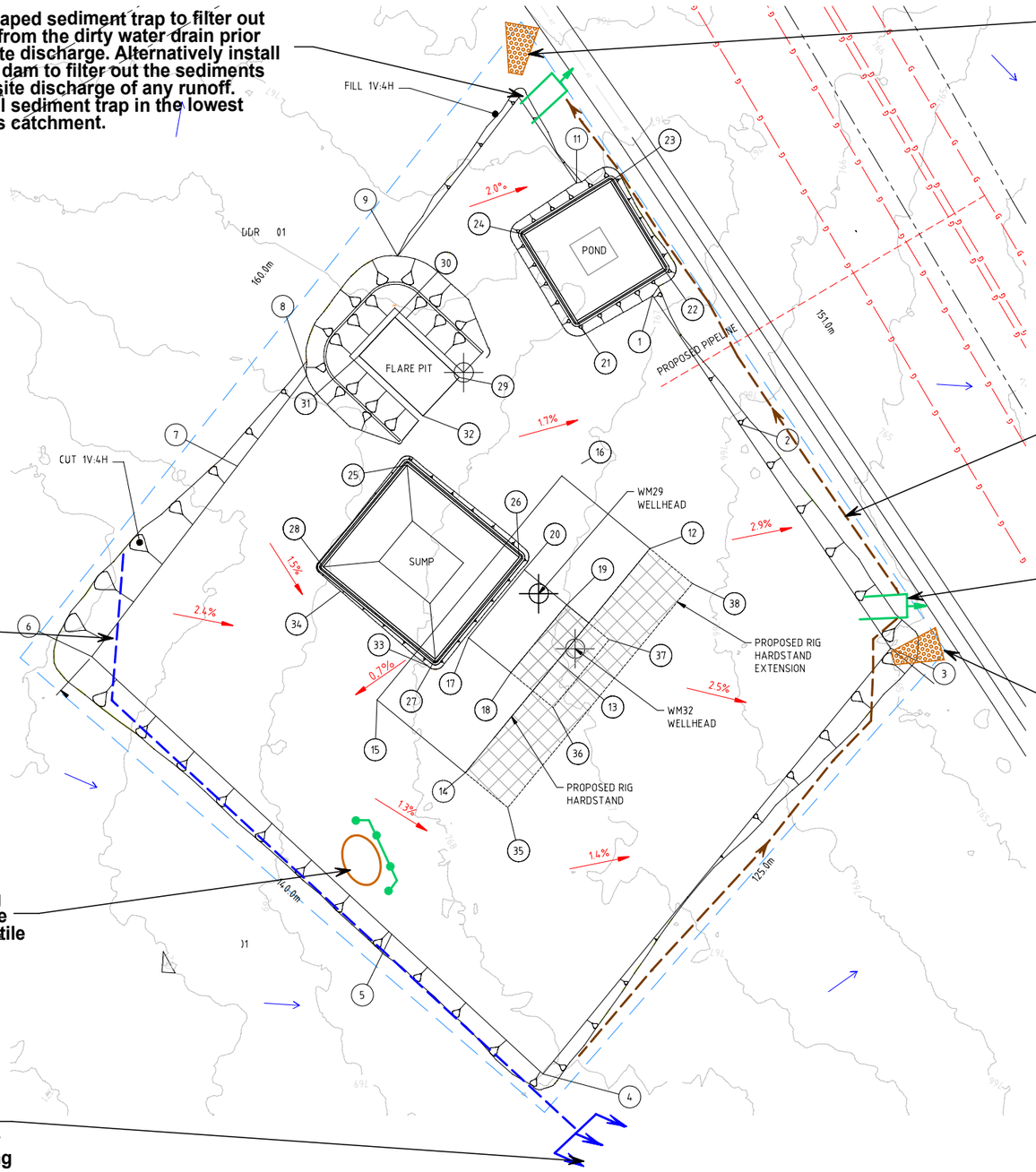
This drawing is reproduced by Aqua Environmental Consulting from the design plans supplied by Central Petroleum.

Install U-shaped sediment trap to filter out sediments from the dirty water drain prior to any offsite discharge. Alternatively install rock check dam to filter out the sediments prior to offsite discharge of any runoff. Note: Install sediment trap in the lowest point of this catchment.

Where required, install stabilsed rock pad entry exit to identify vehicle entry/exit points. Note: Entrance Road appears to be dirt road, therefore a stabilised rock pad or rumble grid entry/exit is not warranted as a means to minimise sediment transporation onto the Road. Instead regular dust supppresion using water tankers are to be undertaken to minimse wind erosion and offsite sediment transportation.

Note: site laydown area and site amenities/office location to be confirmed. Assumed to be outside of the well pad footprint.

Note: where inground excavation for catch drains and sediment controls prove challenging due to rocky ground conditions, install erosion controls (any form of ground cover including soil binders, geotextile or mulch as a means to minimise the impacts of erosion and sedimentation as a result of the proposed works.



Install dirty water catch drains/bund to intercept dirty water runoff prior to clearing and grubbing works and direct to the Type 3 sediment control device. (refer to typical design details attached for catch drain and Type 3 sediment control). Note: where soils are gravelly and rocky, install earth bunds/sand bags (as opposed to excavated catch drains) to direct dirty water runoff into the Type 3 sediment control device.

Install U-shaped sediment trap to filter out sediments from the dirty water drain prior to any offsite discharge. Alternatively install rock check dam to filter out the sediments prior to offsite discharge of any runoff. Note: Install sediment trap in the lowest point of this catchment.

Where required, install stabilsed rock pad entry exit to identify vehicle entry/exit points. Note: Entrance Road appears to be dirt road, therefore a stabilised rock pad or rumble grid entry/exit is not warranted as a means to minimise sediment transporation onto the Road. Instead regular dust supppresion using water tankers are to be undertaken to minimse wind erosion and offsite sediment transportation.

Prior to clearing and grubbing, and in case of any forecast rain events, divert all upslope clean water runoff away from the works area using earth bunds, sand bags, or similar.

Ensure any material stockpiles from clearing and grubbing are protected with a downslope bund/sediment fence or covered with geotextile or similar.

In case of rainfall events during clearing and grubbing,install a level spreader at the outlet of the clean water diversion drain. This wiill divert concentrated flows into sheet flows for offsite discharge in a manner that minimses the risk of any erosion/scouring in the adjacent offsite discharge areas.

LEGEND

- direction of surface water flows
- indicative location of stockpile
- upslope clean water diversion bunds
- dirty water catch drain
- Type 3 sediment fence or similar
- Rock pad or rumble grid site entry exit (TBC)
- Type 3 U-shaped sediment control device
- proposed well pad footprint

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EROSION AND SEDIMENT CONTROL PLAN

SCALE 1:1250@A3

0 25 50 75 100 125 M

			OPTION A - SHARED WELL PAD WM32	DWG No:10035-07
			ALICE SPRINGS, NORTHERN TERRITORY	Certified by: AC
Issue 1	AC	August 2024	CLEAR & GRUB WORKS - STAGE 1 ESCP	CPESC 8333/RPEQ 28786
Revision	Prepared by / Approved by	Date	NOT FOR CONSTRUCTION	

EROSION AND SEDIMENT CONTROL PLAN - WEST MEREENIE WELL PAD WM32 (OPTION A SHARED WELL PAD WM32/29) - STAGE 2 ESCP BULK EARTHWORKS

NOTES:

This drawing is reproduced by Aqua Environmental Consulting from the design plans supplied by Central Petroleum.

Note: where inground excavation for catch drains and sediment controls prove challenging due to rocky ground conditions, install erosion controls (any form of ground cover including soil binders, geotextile or mulch as a means to minimise the impacts of erosion and sedimentation as a result of the proposed works.

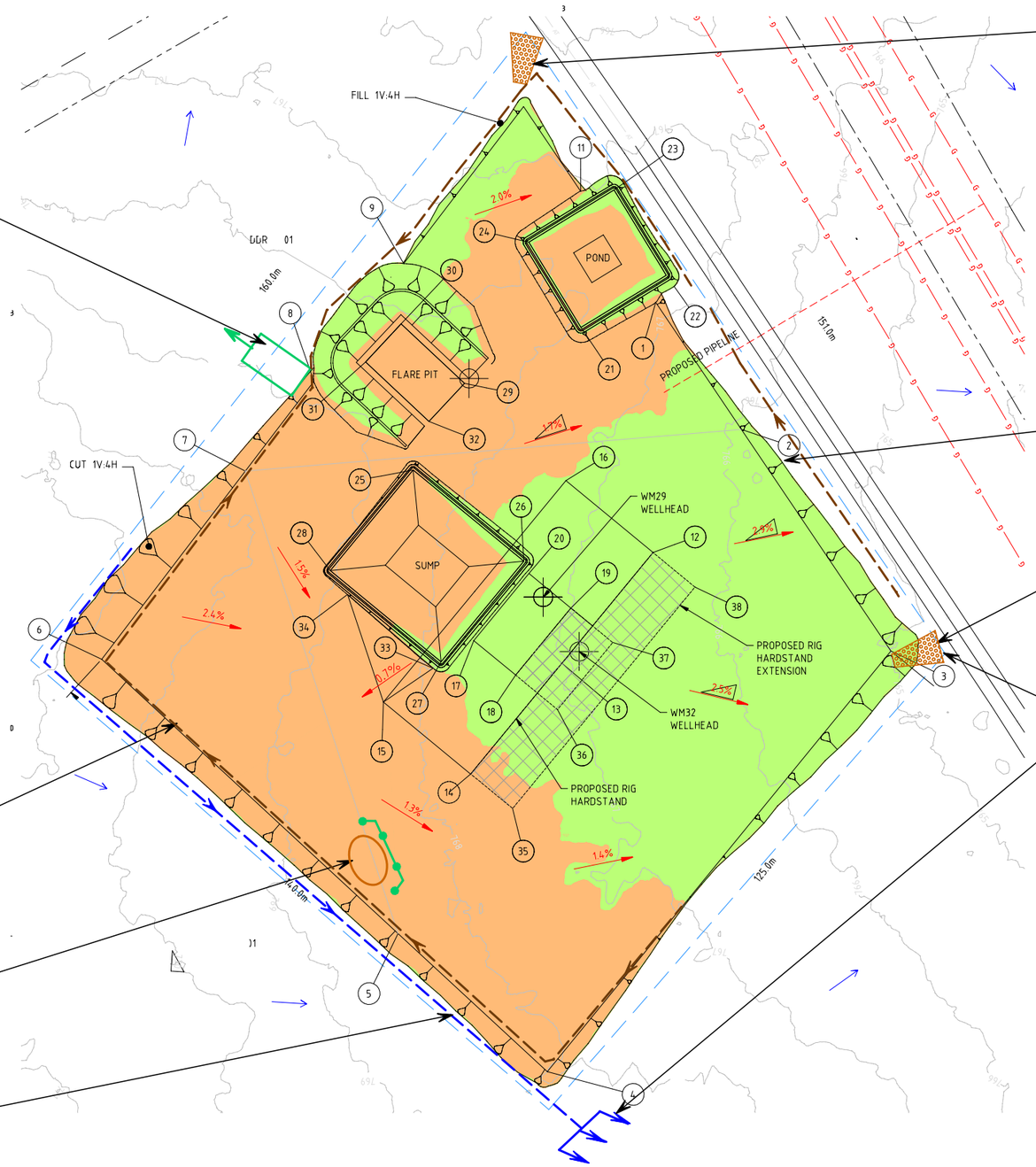
Install sediment trap/trench with a rock filter dam (in the lowest point of the catchment) outlet to allow the settlement and filtration of sediments from the dirty water drain prior to any offsite discharge. Refer to sediment trench/rock filter dam design details for installation procedures. Note: where soil conditions are gravelly and rocky and unable to excavate inground sediment controls, install a rock pad to allow for the settlement and filtration of sediments prior to offsite discharge.

Note: site laydown area and site amenities/office location to be confirmed. Assumed to be outside of the well pad footprint.

Form proposed cut batters as soon as possible during bulk earthworks and utlilise as dirty water catch drains to convey dirty water runoff and direct to the inground sediment control device. (refer to typical design details attached for catch drain and sediment trench/rock filter dam). Note: Alterantively dirty water drain to also act as inground sediment control provided rock checks are installed at approximately 40m intervals along the cut drain.

Ensure all material stockpiles are protected with a downslope bund/sediment fence or covered with geotextile or similar to minimise soils exposure and the resultant erosion and offsite discharge of sediment laden runoff.

Divert all upslope clean water runoff away from the works area using earth bunds, sand bags, or similar. Refer to attachments for diversion bund design details).



Where required, install stabilsed rock pad entry exit to identify vehicle entry/exit points. Note: Entrance Road appears to be dirt road, therefore a stabilised rock pad or rumble grid entry/exit is not warranted as a means to minimise sediment transporation onto the Road. Instead regular dust supppresion using water tankers are to be undertaken to minimse wind erosion and offsite sediment transportation.

Where the proposed sump, flare pit and pond are constructed before the bulk excavation works, then utilise these where possible as an alternative to inground sediment contriols during and until the completion of bulk earthworks. Any dewatering operations from inground sediment control must meet the water quality objectives stipulated in this ESCP prior to offsite discharge

Stabilise all fill batter slopes with geotextile or soil binders as soon as they are formed to minimise erosion and sedimentation risks from exposed slope batters.

Where required, install stabilsed rock pad entry exit to identify vehicle entry/exit points. Note: Entrance Road appears to be dirt road, therefore a stabilised rock pad or rumble grid entry/exit is not warranted as a means to minimise sediment transporation onto the Road. Instead regular dust supppresion using water tankers are to be undertaken to minimse wind erosion and offsite sediment transportation.

Install a level spreader at the outlet of the clean water diversion drain. This will divert concentrated flows into sheet flows for offsite discharge in a manner that minimses the risk of any erosion/scouring in the adjacent offsite discharge areas.

LEGEND

- direction of surface water flows
- indicative location of stockpile
- upslope clean water diversion bunds
- dirty water catch drain
- Type 3 sediment fence or similar
- Rock pad or rumble grid site entry exit (TBC)
- Type 2 sediment control (sediment trench, rock filter dam or similar)
- proposed well pad footprint
- proposed fill footprint
- proposed cut footprint

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EROSION AND SEDIMENT CONTROL PLAN

SCALE 1:1250@A3

0 25 50 75 100 125 M

			OPTION A - SHARED WELL PAD WM32	DWG No:10035-08
			ALICE SPRINGS, NORTHERN TERRITORY	Certified by: AC
Issue 1	AC	August 2024	BULK EARTH WORKS - STAGE 2 ESCP	CPESC 8333/RPEQ 28786
Revision	Prepared by / Approved by	Date	NOT FOR CONSTRUCTION	

EROSION AND SEDIMENT CONTROL PLAN
WEST MEREENIE WELL PAD WM31 (OPTION B SEPARATE WELL PAD WM31) - COVER PAGE

NOTES:

This drawing is reproduced by Aqua Environmental Consulting from the design plans supplied by Central Petroleum.

Proposed Mereenie Well Pad - Option B - Separate Well Pad WM31 - Source: Client supplied

PROPOSED WATER QUALITY OBJECTIVES
In accordance with the IECA Guidelines,Table 4.5.13, the following is the recommended discharge standard for soil disturbances exceeding 2500m2 (such as the subject case) during construction activities: • 90 percentile total suspended solids (TSS) concentration not exceeding 50 mg/L • pH range from 6.5 to 8.5

DESIGN SIZING OF PROPOSED DRAINAGE AND SEDIMENT CONTROL MEASURES	
Drainage & Sediment Controls	**Design Storm Event**
Dirty Water Drains	1 in 2 year ARI (63.21% Annual Exceedance Probability (AEP) or 1.0 Exceedances per year (EY)
Type 2 Sediment Controls	Peak discharge of 0.5 X 1 in 1 year ARI (95.02% Annual Exceedance Probability (AEP)

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EROSION AND SEDIMENT CONTROL PLAN

SCALE 1:1250@A3

0 25 50 75 100 125 M

			OPTION B - SEPARATE WELL PAD WM31
			ALICE SPRINGS, NORTHERN TERRITORY
Issue 1	AC	August 2024	COVER PAGE
Revision	Prepared by / Approved by	Date	NOT FOR CONSTRUCTION

DWG No:10035-09

Certified by: AC

CPESC 8333/RPEQ 28786

EROSION AND SEDIMENT CONTROL PLAN - WEST MEREENIE WELL PAD WM31 (OPTION B SEPARATE WELL PAD WM31) - SUB-CATCHMENT PLAN

NOTES:

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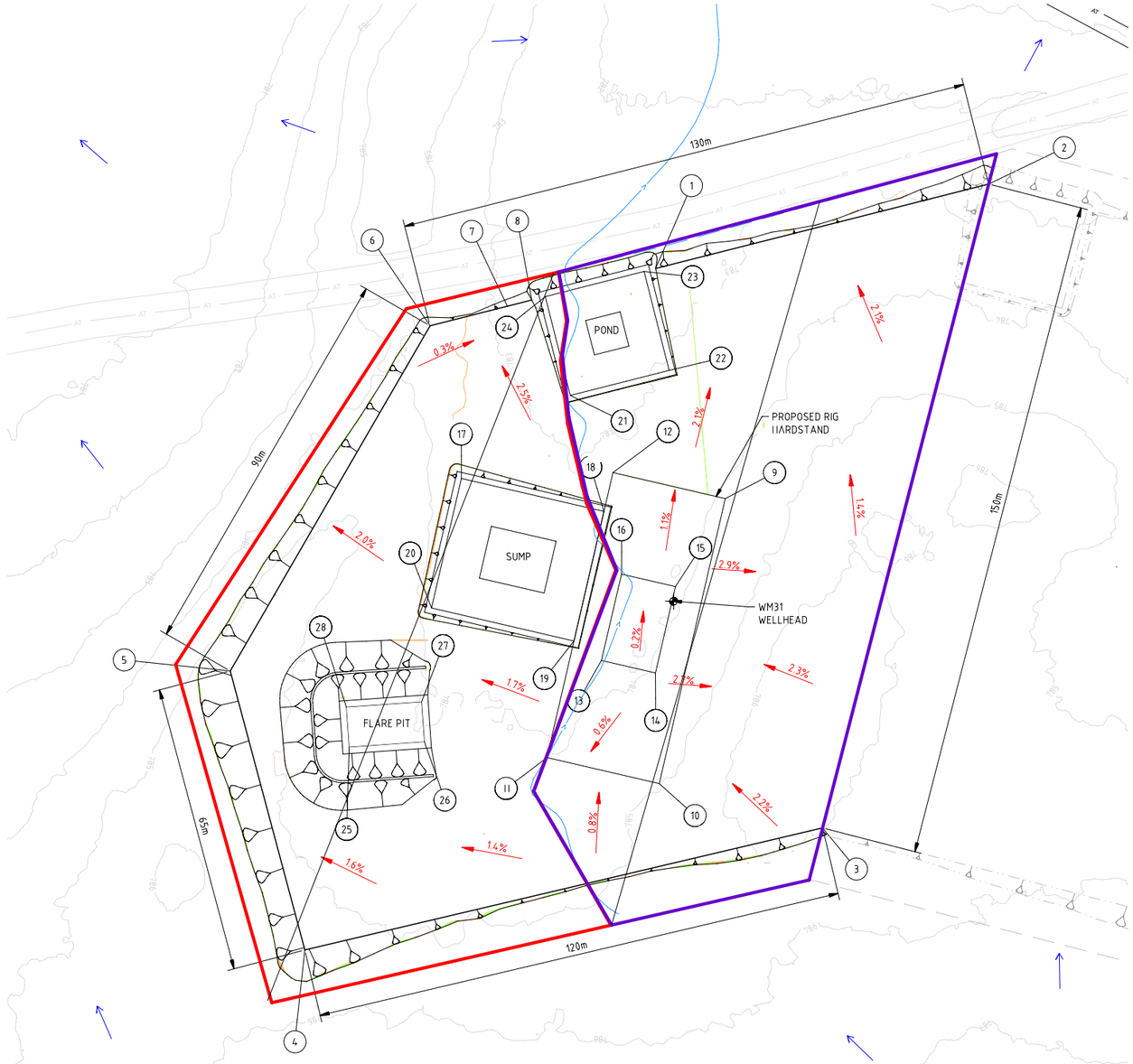

Estimated soil loss (RUSLE) values for each sub-catchments

Sub-catchment Options & Area (m^2)	R factor	K factor	LS factor	P factor	C factor	Annual soil loss in (t/ha/yr)
Option B – WM31 on a separate well pad						
Sub-catchment No: 1 (10,819 m^2)	1136.8	0.025	0.52	1.3	1.0	19.2
Sub-catchment No: 2 (11,182 m^2)	1136.8	0.025	0.52	1.3	1.0	19.2

Note: RUSLE values for each sub-catchments indicate very low erosion risk in accordance with the IECA Guidelines

LEGEND

- direction of surface water flows
- Sub-catchment 1
- Sub-catchment 2

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EROSION AND SEDIMENT CONTROL PLAN

SCALE 1:1250@A3

0 25 50 75 100 125 M

			OPTION B - SEPARATE WELL PAD WM31
			ALICE SPRINGS, NORTHERN TERRITORY
Issue 1	AC	August 2024	SUB-CATCHMENT PLAN
Revision	Prepared by / Approved by	Date	NOT FOR CONSTRUCTION

DWG No:10035-10

Certified by: AC

CPESC 8333/RPEQ 28786

EROSION AND SEDIMENT CONTROL PLAN - WEST MEREENIE WELL PAD WM31 (OPTION B SEPARATE WELL PAD WM31) - STAGE 1 ESCP CLEAR AND GRUB

NOTES:

This drawing is reproduced by Aqua Environmental Consulting from the design plans supplied by Central Petroleum.

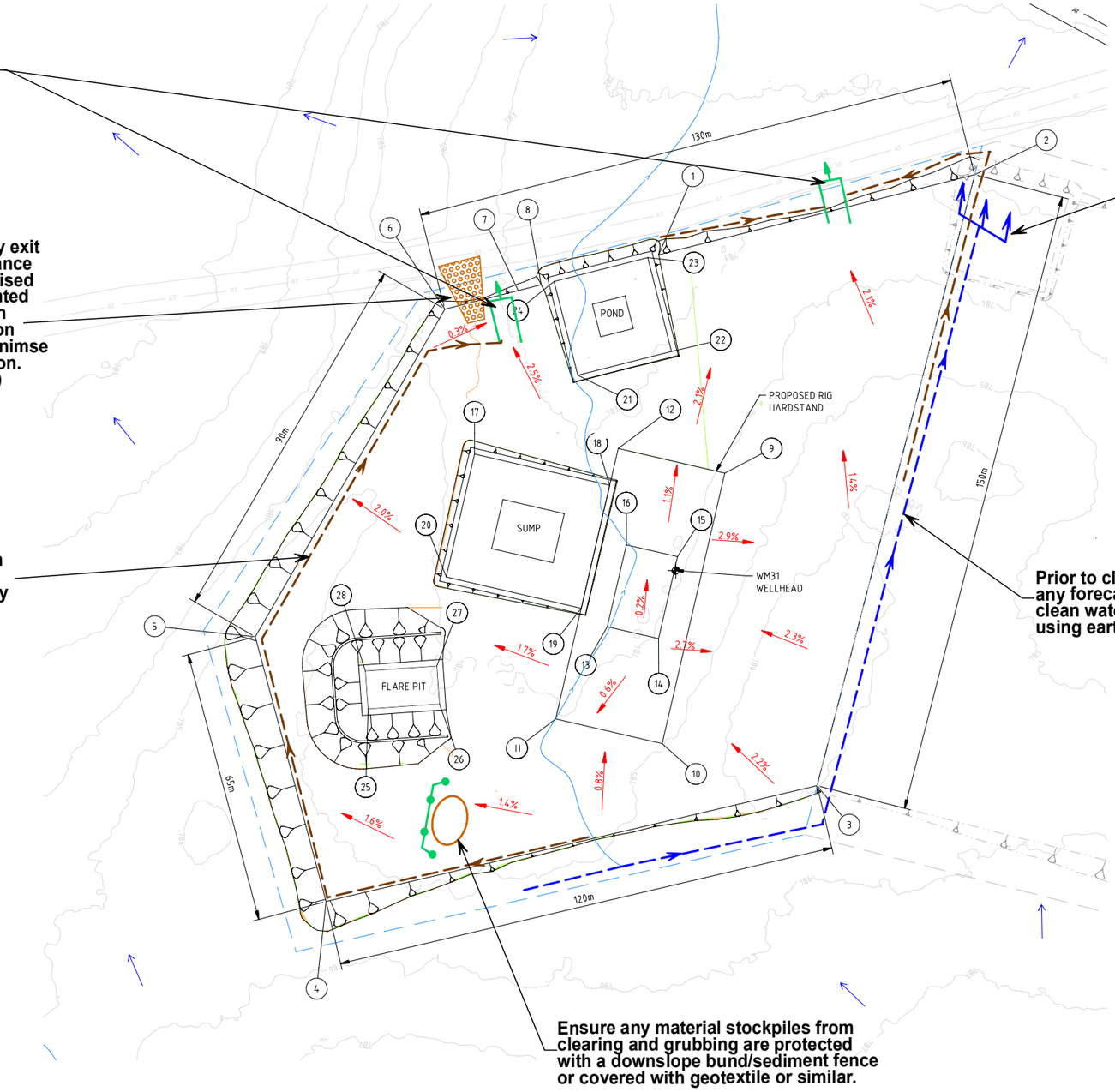
Install U-shaped sediment trap (in the lowest point of the catchment during clear and grub to filter out coarse sediments from the dirty water drain prior to any offsite discharge. Alternatively install rock check dam to filter out the sediments prior to offsite discharge of any sediment laden runoff.

Where required, install stabilsed rock pad entry exit to identify vehicle entry/exit points. Note: Entrance Road appears to be dirt road, therefore a stabilised rock pad or rumble grid entry/exit is not warranted as a means to minimise sediment transporation onto the Road. Instead regular dust supppresion using water tankers are to be undertaken to minimse wind erosion and offsite sediment transportation. (Proposed location indicative only, TBC onsite)

Install dirty water catch drains/bund to intercept dirty water runoff prior to clearing and grubbing works and direct to the Type 3 sediment control device. (refer to typical design details attached for catch drain and Type 3 sediment control). Note: where soils are gravelly and rocky, install earth bunds/sand bags (as opposed to excavated catch drains) to direct dirty water runoff into the Type 3 sediment control device.

Note: where inground excavation for catch drains and sediment controls prove challenging due to rocky ground conditions, install erosion controls (any form of ground cover including soil binders, geotextile or mulch as a means to minimise the impacts of erosion and sedimentation as a result of the proposed works.

Note: site laydown area, site amenities and office location to beconfirmed. Assumed to be outside of the well pad footprint.



In case of rainfall events during clearing and grubbing,install a level spreader at the outlet of the clean water diversion drain. This wiill divert concentrated flows into sheet flows for offsite discharge in a manner that minimses the risk of any erosion/scouring in the adjacent offsite discharge areas.

Prior to clearing and grubbing, and in case of any forecast rain events, divert all upslope clean water runoff away from the works area using earth bunds, sand bags, or similar.

Ensure any material stockpiles from clearing and grubbing are protected with a downslope bund/sediment fence or covered with geotextile or similar.

LEGEND

- direction of surface water flows
- indicative location of stockpile
- upslope clean water diversion bunds
- dirty water catch drain
- Type 3 sediment fence or similar
- Rock pad or rumble grid site entry exit (TBC)
- Type 3 U-shaped sediment control device
- proposed well pad footprint

AQUA Environmental Consulting

Central Petroleum

EROSION AND SEDIMENT CONTROL PLAN

SCALE 1:1250@A3

0 25 50 75 100 125 M

			OPTION B - SEPARATE WELL PAD WM31	DWG No:10035-11
			ALICE SPRINGS, NORTHERN TERRITORY	Certified by: AC
Issue 1	AC	August 2024	CLEAR & GRUB WORKS - STAGE 1 ESCP	CPESC 8333/RPEQ 28786
Revision	Prepared by / Approved by	Date	NOT FOR CONSTRUCTION	

EROSION AND SEDIMENT CONTROL PLAN - WEST MEREENIE WELL PAD WM31 (OPTION B SEPARATE WELL PAD WM31) - STAGE 2 ESCP BULK EARTHWORKS

NOTES:

This drawing is reproduced by Aqua Environmental Consulting from the design plans supplied by Central Petroleum.

Stabilise all fill batter slopes with geotextile or soil binders as soon as they are formed to minimise erosion and sedimentation risks from exposed slope batters.

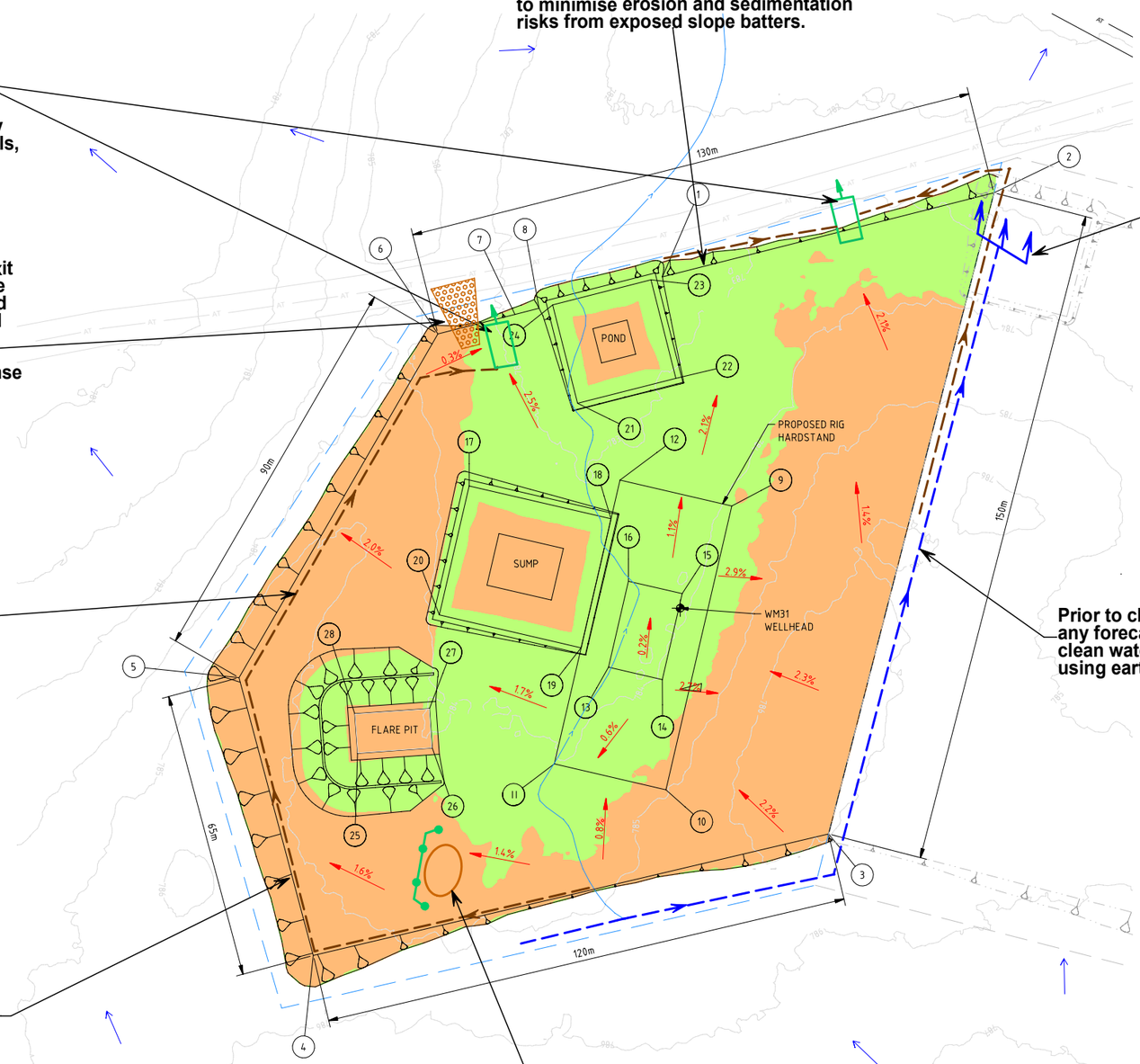
Install sediment trap/trench with a rock filter dam (in the lowest point of the catchment) outlet to allow the settlement and filtration of sediments from the dirty water drain prior to any offsite discharge. Refer to sediment trench/rock filter dam design details for installation procedures. Note: where soil conditions are gravelly and rocky and unable to excavate inground sediment controls, install a rock pad to allow for the settlement and filtration of sediments prior to offsite discharge.

Where required, install stabilsed rock pad entry exit to identify vehicle entry/exit points. Note: Entrance Road appears to be dirt road, therefore a stabilised rock pad or rumble grid entry/exit is not warranted as a means to minimise sediment transporation onto the Road. Instead regular dust supppresion using water tankers are to be undertaken to minimse wind erosion and offsite sediment transportation. (Proposed location indicative only, TBC onsite)

Install dirty water catch drains/bund to intercept dirty water runoff prior to clearing and grubbing works and direct to the Type 3 sediment control device. (refer to typical design details attached for catch drain and Type 3 sediment control). Note: where soils are gravelly and rocky, install earth bunds/sand bags (as opposed to excavated catch drains) to direct dirty water runoff into the Type 3 sediment control device.

Note: where inground excavation for catch drains and sediment controls prove challenging due to rocky ground conditions, install erosion controls (any form of ground cover including soil binders, geotextile or mulch as a means to minimise the impacts of erosion and sedimentation as a result of the proposed works.

Form proposed cut batters as soon as possible during bulk earthworks and utlilise as dirty water catch drains to convey dirty water runoff and direct to the inground sediment control device. (refer to typical design details attached for catch drain and sediment trench/rock filter dam). Note: Alterantively dirty water drain to also act as inground sediment control provided rock checks are installed at approximately 40m intervals along the cut drain.



In case of rainfall events during clearing and grubbing,install a level spreader at the outlet of the clean water diversion drain. This wiill divert concentrated flows into sheet flows for offsite discharge in a manner that minimses the risk of any erosion/scouring in the adjacent offsite discharge areas.

Where the proposed sump, flare pit and pond are constructed before the bulk excavation works, then utilise these where possible as an alternative to inground sediment controls during and until the completion of bulk earthworks. Any dewatering operations from inground sediment control must meet the water quality objectives stipulated in this ESCP prior to offsite discharge

Prior to clearing and grubbing, and in case of any forecast rain events, divert all upslope clean water runoff away from the works area using earth bunds, sand bags, or similar.

Ensure any material stockpiles from clearing and grubbing are protected with a downslope bund/sediment fence or covered with geotextile or similar.

Note: site laydown area, site amenities and office location to beconfirmed. Assumed to be outside of the well pad footprint.

LEGEND

- direction of surface water flows
- indicative location of stockpile
- upslope clean water diversion bunds
- dirty water catch drain
- Type 3 sediment fence or similar
- Rock pad or rumble grid site entry exit (TBC)
- Type 2 sediment control (sediment trench, rock filter dam or similar)
- proposed well pad footprint
- proposed fill footprint
- proposed cut footprint

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EROSION AND SEDIMENT CONTROL PLAN

SCALE 1:1250@A3

0 25 50 75 100 125 M

			OPTION B - SEPARATE WELL PAD WM31
			ALICE SPRINGS, NORTHERN TERRITORY
Issue 1	AC	August 2024	BULK EARTH WORKS - STAGE 2 ESCP
Revision	Prepared by / Approved by	Date	NOT FOR CONSTRUCTION

DWG No:10035-12

Certified by: AC

CPESC 8333/RPEQ 28786

EROSION AND SEDIMENT CONTROL PLAN
WEST MEREENIE WELL PAD WM32 (OPTION B SEPARATE WELL PAD WM32) - COVER PAGE

NOTES:

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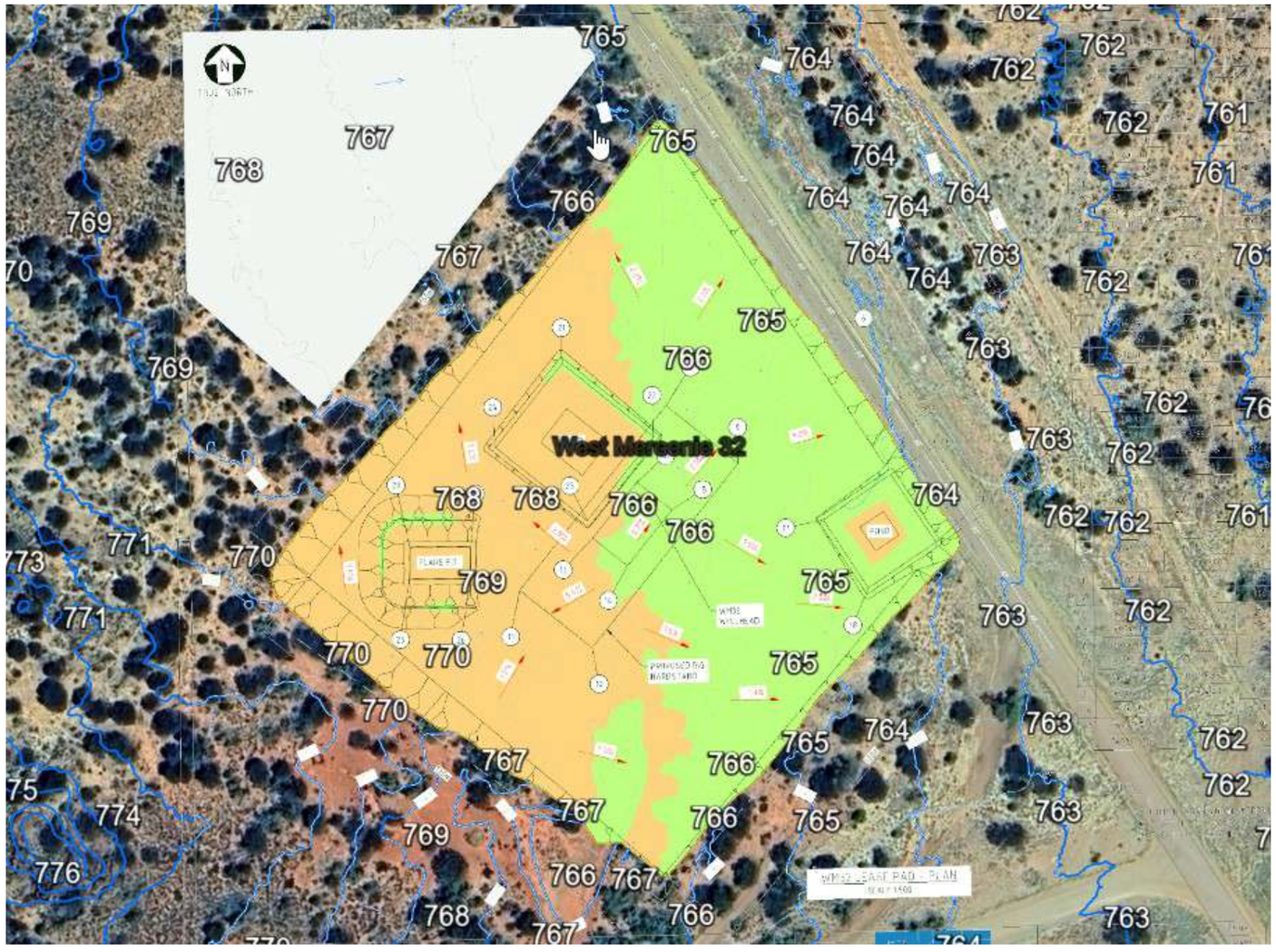

Proposed Mereenie Well Pad - Option B - Separate Well Pad WM32 - Source: Client supplied

PROPOSED WATER QUALITY OBJECTIVES

In accordance with the IECA Guidelines,Table 4.5.13, the following is the recommended discharge standard for soil disturbances exceeding 2500m2 (such as the subject case) during construction activities:

- 90 percentile total suspended solids (TSS) concentration not exceeding 50 mg/L
- pH range from 6.5 to 8.5

DESIGN SIZING OF PROPOSED DRAINAGE AND SEDIMENT CONTROL MEASURES

Drainage & Sediment Controls	Design Storm Event
Dirty Water Drains	1 in 2 year ARI (63.21% Annual Exceedance Probability (AEP) or 1.0 Exceedances per year (EY)
Type 2 Sediment Controls	Peak discharge of 0.5 X 1 in 1 year ARI (95.02% Annual Exceedance Probability (AEP)

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EROSION AND SEDIMENT CONTROL PLAN

SCALE 1:1250@A3

0 25 50 75 100 125 M

			OPTION B - SEPARATE WELL PAD WM32	DWG No:10035-13
			ALICE SPRINGS, NORTHERN TERRITORY	Certified by: AC
Issue 1	AC	August 2024	COVER PAGE	CPESC 8333/RPEQ 28786
Revision	Prepared by / Approved by	Date	NOT FOR CONSTRUCTION	

EROSION AND SEDIMENT CONTROL PLAN - WEST MEREENIE WELL PAD WM32 (OPTION B SEPARATE WELL PAD WM32) - SUB-CATCHMENT PLAN

NOTES:

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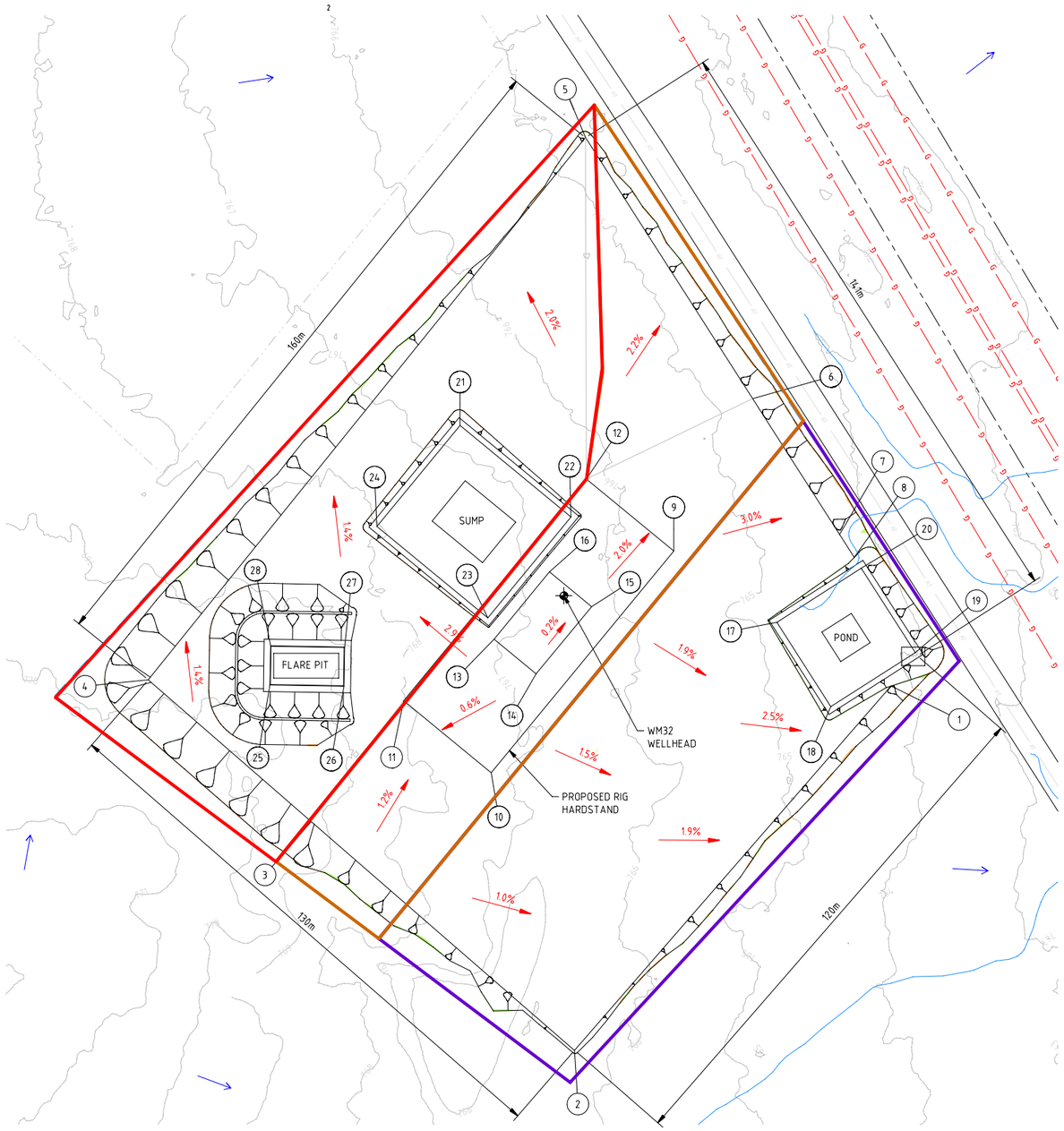

Estimated soil loss (RUSLE) values for each sub-catchments

Sub-catchment Options & Area (m²)	R factor	K factor	LS factor	P factor	C factor	Annual soil loss in (t/ha/yr)
Option B – WM32 on a separate well pad						
Sub-catchment No: 1 (8,726 m²)	1136.8	0.027	0.87	1.3	1.0	34.7
Sub-catchment No: 2 (5,859 m²)	1136.8	0.027	0.52	1.3	1.0	20.7
Sub-catchment No: 3 (8,257 m²)	1136.8	0.027	0.87	1.3	1.0	34.7

Note: RUSLE values for each sub-catchments indicate very low erosion risk in accordance with the IECA Guidelines

LEGEND

- direction of surface water flows
- Sub-catchment 1
- Sub-catchment 2
- Sub-catchment 3

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EROSION AND SEDIMENT CONTROL PLAN

SCALE 1:1250@A3

0 25 50 75 100 125 M

			OPTION B - SEPARATE WELL PAD WM32
			ALICE SPRINGS, NORTHERN TERRITORY
Issue 1	AC	August 2024	SUB-CATCHMENT PLAN
Revision	Prepared by / Approved by	Date	NOT FOR CONSTRUCTION

DWG No:10035-14

Certified by: AC

CPESC 8333/RPEQ 28786

EROSION AND SEDIMENT CONTROL PLAN - WEST MEREENIE WELL PAD WM32 (OPTION B SEPARATE WELL PAD WM32) - STAGE 1 ESCP CLEAR AND GRUB WORKS

NOTES:

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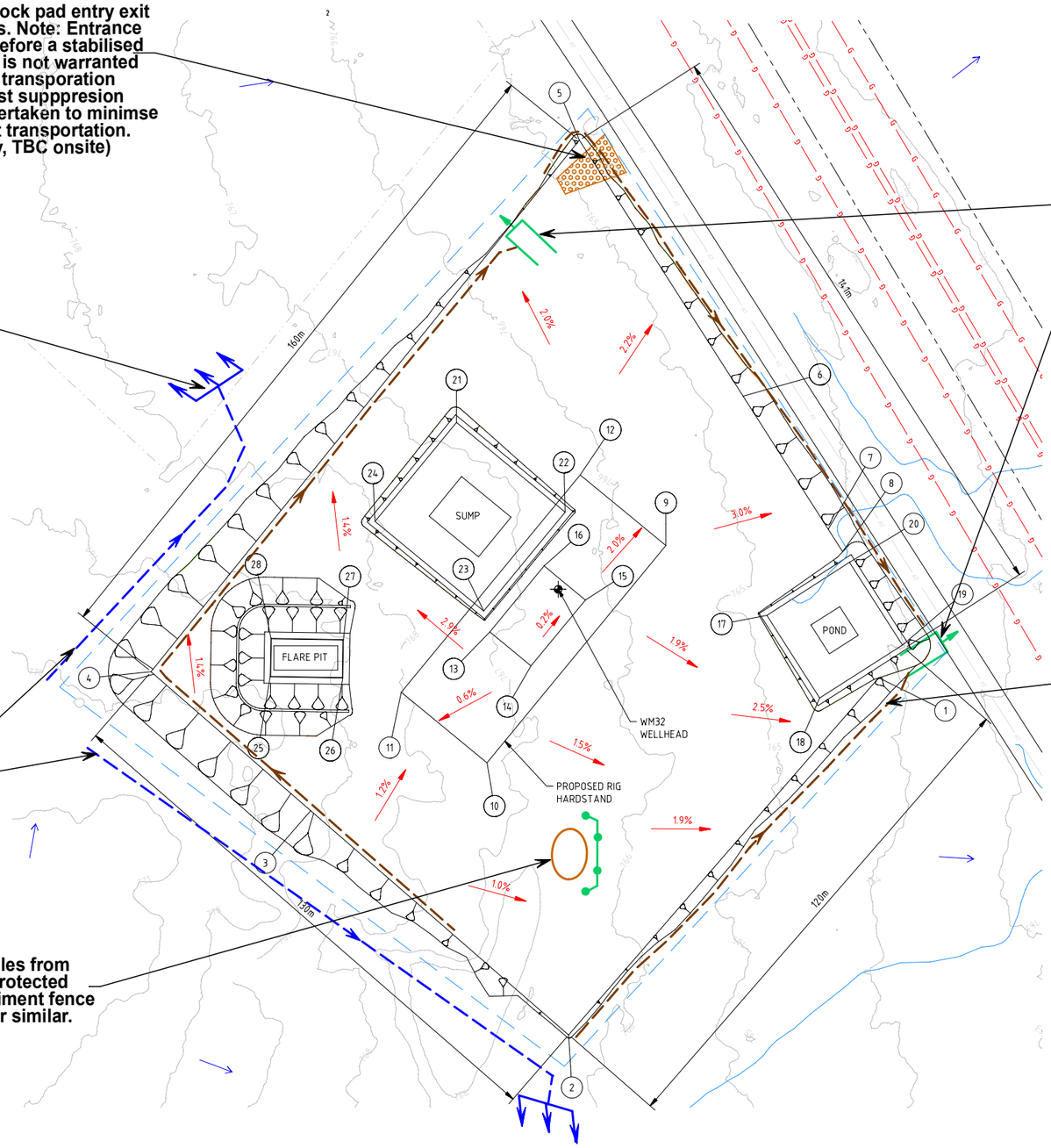
Where required, install stabilsed rock pad entry exit to identify vehicle entry/exit points. Note: Entrance Road appears to be dirt road, therefore a stabilised rock pad or rumble grid entry/exit is not warranted as a means to minimise sediment transporation onto the Road. Instead regular dust supppresion using water tankers are to be undertaken to minimse wind erosion and offsite sediment transportation. (Proposed location indicative only, TBC onsite)

In case of rainfall events during clearing and grubbing,install a level spreader at the outlet of the clean water diversion drain. This wiill divert concentrated flows into sheet flows for offsite discharge in a manner that minimses the risk of any erosion/scouring in the adjacent offsite discharge areas.

Note: site laydown area, site amenities and office location to beconfirmed. Assumed to be outside of the well pad footprint.

Prior to clearing and grubbing, and in case of any forecast rain events, divert all upslope clean water runoff away from the works area using earth bunds, sand bags, or similar.

Ensure any material stockpiles from clearing and grubbing are protected with a downslope bund/sediment fence or covered with geotextile or similar.



Install U-shaped sediment trap (in the lowest point of the catchment during clear and grub to filter out coarse sediments from the dirty water drain prior to any offsite discharge. Alternatively install rock check dam to filter out the sediments prior to offsite discharge of any sediment laden runoff.

Note: where inground excavation for catch drains and sediment controls prove challenging due to rocky ground conditions, install erosion controls (any form of ground cover including soil binders, geotextile or mulch as a means to minimise the impacts of erosion and sedimentation as a result of the proposed works.

Install dirty water catch drains/bund to intercept dirty water runoff prior to clearing and grubbing works and direct to the Type 3 sediment control device. (refer to typical design details attached for catch drain and Type 3 sediment control). Note: where soils are gravelly and rocky, install earth bunds/sand bags (as opposed to excavated catch drains) to direct dirty water runoff into the Type 3 sediment control device.

LEGEND

- direction of surface water flows
- indicative location of stockpile
- upslope clean water diversion bunds
- dirty water catch drain
- Type 3 sediment fence or similar
- Rock pad or rumble grid site entry exit (TBC)
- Type 3 U-shaped sediment control device
- proposed well pad footprint

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EROSION AND SEDIMENT CONTROL PLAN

SCALE 1:1250@A3

0 25 50 75 100 125 M

			OPTION B - SEPARATE WELL PAD WM32	DWG No:10035-15
			ALICE SPRINGS, NORTHERN TERRITORY	Certified by: AC
Issue 1	AC	August 2024	CLEAR & GRUB WORKS - STAGE 1 ESCP	CPESC 8333/RPEQ 28786
Revision	Prepared by / Approved by	Date	NOT FOR CONSTRUCTION	

EROSION AND SEDIMENT CONTROL PLAN - WEST MEREENIE WELL PAD WM32 (OPTION B SEPARATE WELL PAD WM32) - STAGE 2 ESCP BULK EARTHWORKS

NOTES:
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Where required, install stabilsed rock pad entry exit to identify vehicle entry/exit points. Note: Entrance Road appears to be dirt road, therefore a stabilised rock pad or rumble grid entry/exit is not warranted as a means to minimise sediment transporation onto the Road. Instead regular dust supppresion using water tankers are to be undertaken to minimse wind erosion and offsite sediment transportation. (Proposed location indicative only, TBC onsite)

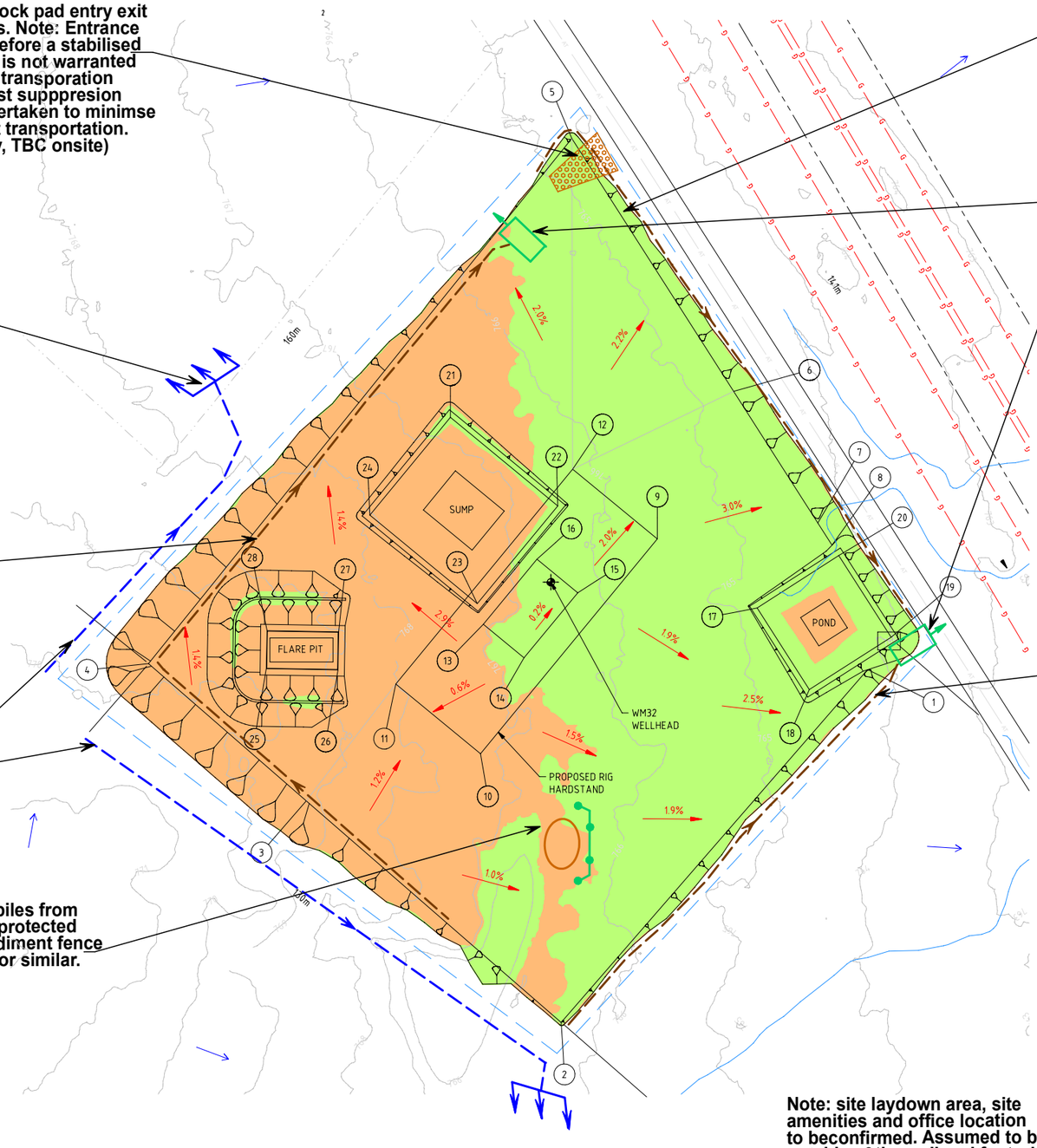
In case of rainfall events during clearing and grubbing,install a level spreader at the outlet of the clean water diversion drain. This wiill divert concentrated flows into sheet flows for offsite discharge in a manner that minimses the risk of any erosion/scouring in the adjacent offsite discharge areas.

Form proposed cut batters as soon as possible during bulk earthworks and utlilise as dirty water catch drains to convey dirty water runoff and direct to the inground sediment control device. (refer to typical design details attached for catch drain and sediment trench/rock filter dam). Note: Alterantively dirty water drain to also act as inground sediment control provided rock checks are installed at approximately 40m intervals along the cut drain.

Prior to clearing and grubbing, and in case of any forecast rain events, divert all upslope clean water runoff away from the works area using earth bunds, sand bags, or similar.

Ensure any material stockpiles from clearing and grubbing are protected with a downslope bund/sediment fence or covered with geotextile or similar.

Note: where inground excavation for catch drains and sediment controls prove challenging due to rocky ground conditions, install erosion controls (any form of ground cover including soil binders, geotextile or mulch as a means to minimise the impacts of erosion and sedimentation as a result of the proposed works.



Stabilise all fill batter slopes with geotextile or soil binders as soon as they are formed to minimise erosion and sedimentation risks from exposed slope batters.

Install sediment trap/trench with a rock filter dam (in the lowest point of the catchment) outlet to allow the settlement and filtration of sediments from the dirty water drain prior to any offsite discharge. Refer to sediment trench/rock filter dam design details for installation procedures. Note: where soil conditions are gravelly and rocky and unable to excavate inground sediment controls, install a rock pad to allow for the settlement and filtration of sediments prior to offsite discharge.

Where the proposed sump, flare pit and pond are constructed before the bulk excavation works, then utilise these where possible as an alternative to inground sediment controls during and until the completion of bulk earthworks. Any dewatering operations from inground sediment control must meet the water quality objectives stipulated in this ESCP prior to offsite discharge

Install dirty water catch drains/bund to intercept dirty water runoff prior to clearing and grubbing works and direct to the Type 3 sediment control device. (refer to typical design details attached for catch drain and Type 3 sediment control). Note: where soils are gravelly and rocky, install earth bunds/sand bags (as opposed to excavated catch drains) to direct dirty water runoff into the Type 3 sediment control device.

LEGEND

- direction of surface water flows
- indicative location of stockpile
- upslope clean water diversion bunds
- dirty water catch drain
- Type 3 sediment fence or similar
- Rock pad or rumble grid site entry exit (TBC)
- Type 2 sediment control (sediment trench, rock filter dam or similar)
- proposed well pad footprint
- proposed fill footprint
- proposed cut footprint

Note: site laydown area, site amenities and office location to beconfirmed. Assumed to be outside of the well pad footprint.

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EROSION AND SEDIMENT CONTROL PLAN

SCALE 1:1250@A3

0 25 50 75 100 125 M

			OPTION B - SEPARATE WELL PAD WM32
			ALICE SPRINGS, NORTHERN TERRITORY
Issue 1	AC	August 2024	BULK EARTH WORKS - STAGE 2 ESCP
Revision	Prepared by / Approved by	Date	NOT FOR CONSTRUCTION

DWG No:10035-16

Certified by: AC
CPESC 8333/RPEQ 28786

EROSION AND SEDIMENT CONTROL PLAN WEST MEREENIE WELL PADS WM31 & 32 (OPTION A - SHARED WELL PAD & OPTION B SEPARATE WELL PAD) - STANDARD DESIGN DETAILS

NOTES:
These standard design drawings are reproduced and sourced from IECA Guidelines and Catchments & Creeks Pty Ltd.

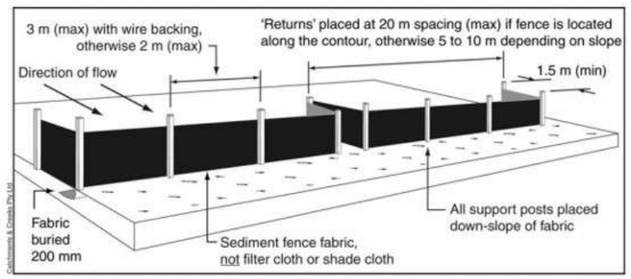
Sediment Fences

Materials

1. Fabric: polypropylene, polyamide, nylon, polyester or polyethylene woven or non-woven fabric, at least 700mm in width and a minimum unit weight of 140GSM.
2. Support posts/stakes and steel star pickets suitable for attaching fabric.

Installation

1. Where possible install sediment fence at least 2m from the toe of any filling operations that may result in shifting soil/fill damaging the fence.
2. Ensure the extreme ends of the fence are turned up the slope at least 1.5m or as necessary to minimise water bypassing around the fence.
3. Ensure the sediment fence is installed in a manner that avoids the concentration of flow along the fence and the undesirable discharge of water around the ends of the fence.
4. If the sediment fence is to be installed along the edge of the existing trees, ensure care is taken to protect the trees and their root systems during installation of the fence.
5. Unless directed by the site supervisor or the approved plans, excavate a 200mm wide by 200mm deep trench along the proposed fence line, placing the excavated material on the up-slope side of the trench.
6. Along the lower side of the trench, appropriately secure the stakes into the ground spaced no greater than 3m if supported by a top support wire or weir mesh backing, otherwise no greater than 2m.
7. Wherever possible, construct the sediment fence from a continuous roll of fabric. To join fabric attach each end of two overlapping stakes with the fabric folding around the associated stake one turn and with two stakes tied together with the wire method or overlap the fabric to the next adjacent support post.
8. Securely attach the fabric to the support posts using 25 x 12.5mm staples, or tie wire at maximum 150mm spacing.
9. Securely attach the fabric to the support wire/mesh (if any) at a maximum spacing of 1m.
10. Ensure the completed sediment fence is at least 450mm, but not more than 700mm high. If a spill through weir is installed, ensure the crest of the weir is at least 300mm above ground level.
11. Backfill the trench and tamp the fill to firmly anchor the bottom of the fabric and mesh to prevent water from flowing under the fence.
12. If it is not possible to anchor the fabric in an excavated trench, then use a continuous layer of sand or aggregate to hold the fabric firmly on the ground.



Typical installation of a sediment fence

Maintenance

1. Inspect the sediment fence at least weekly and after any significant rain. Make necessary repairs immediately.
2. Repair any torn sections with a continuous piece of fabric from post to post.
3. When making repairs, always restore the system to its original configuration unless an amended layout is required or specified.
4. If the fence is sagging between stakes, install additional support posts.
5. Remove accumulated sediment if the sediment deposit exceeds a depth of 1/3 the height of the fence.
6. Dispose of sediment in a suitable manner that will not cause an erosion or pollution hazard

Typical Design Details of Sediment Fence (Type 3 Control)

Photo 1 – U-shaped sediment trap within a wide drainage swale

Photo 2 – U-shaped sediment trap within a mild gradient table drain

Key Principles

1. Primarily used to collect the coarser sediment particles. Provides limited collection of clay-sized particles and thus there is usually no measurable change in the colour of water passing through the fence.
2. Functions by temporarily ponding sediment-laden water within the chamber to allow the coarser sediment particles to settle.
3. Critical design parameters are the design flow rate, which determines the size (width) of the spill-through weir, and the shape and fall of the drain, which determines the length and/or width of the sediment trap.
4. It is critical that the ends of each wing wall extends to a location that is higher (at least 100mm) than the crest elevation of the spill-through weir (see Figures 5 and 10).
5. When located within a table drain, the allowable width of the sediment trap may be governed by restrictions placed on the location of support posts within the road shoulder. Typically, it is not advisable to disturb the compacted shoulder of a road, thus the trenching of a sediment fence, or the placement of support posts close to the road may not be allowed. In such cases, a sandbag flow diversion bank can be used to direct flow into a narrow U-shaped sediment trap (refer to Figure 5).
6. Critical operational issues include:
   (i) ensuring the width of the sediment trap is sufficient to allow maintenance (clean-out) by a backhoe; and
   (ii) ensuring all flow is directed into the sediment trap, thus avoiding flow bypass.

Typical Design Details of U-shaped Sediment Trap (Type 3 Control)

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EROSION AND SEDIMENT CONTROL PLAN

SCALE 1:1250@A3

0 25 50 75 100 125 M

			WEST MEREENIE WELL PADS WM31 & 32	DWG No:10035-17
			ALICE SPRINGS, NORTHERN TERRITORY	Certified by: AC
Issue 1	AC	August 2024	STANDARD DESIGN DETAILS	CPESC 8333/RPEQ 28786
Revision	Prepared by / Approved by	Date	NOT FOR CONSTRUCTION	

EROSION AND SEDIMENT CONTROL PLAN WEST MEREENIE WELL PADS WM31 & 32 (OPTION A - SHARED WELL PAD & OPTION B SEPARATE WELL PAD) - STANDARD DESIGN DETAILS

NOTES:
These standard design drawings are reproduced and sourced from IECA Guidelines and Catchments & Creeks Pty Ltd.

Design Information

The design of a sediment trench is effectively the same as the design of a rock filter dam or excavated sediment trench. In effect, a sediment trench is just an excavated sediment trench placed transverse to the slope. A rock filter dam is often used as the outlet structure; however, the outlet may be replaced by a sediment weir, filter tube dam, modular units, or sediment fence.

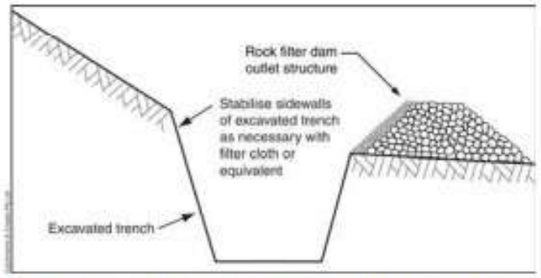

Figure 1 – Sediment trench with rock filter dam outlet structure

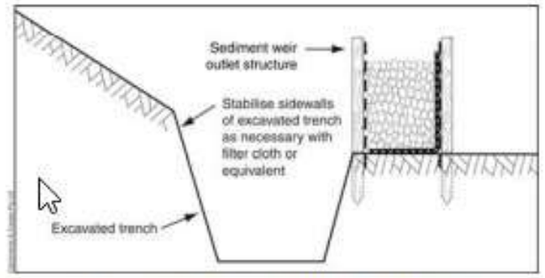

Figure 2 – Sediment trench with sediment weir outlet structure

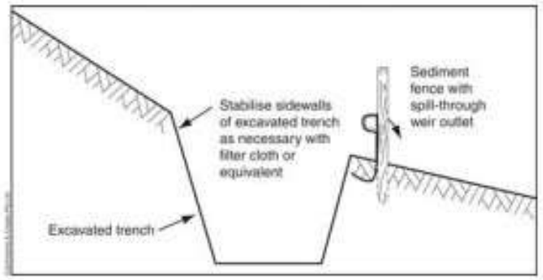

Figure 3 – Sediment trench with sediment fence outlet structure

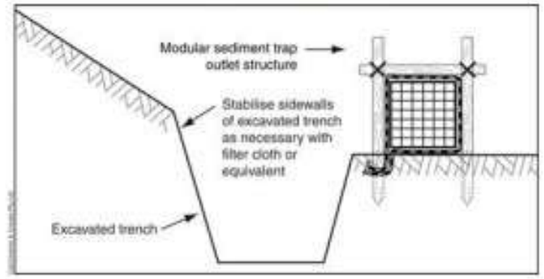

Figure 4 – Sediment trench with modular system outlet structure

A sediment trench, however, can also be used to collect and treat 'sheet' flows discharging down exposed slopes, in which case the design procedure follows that of an excavated sediment trap. If the trench needs to be formed down a slight slope, then rock check dams can be used to form individual sediment collection chambers within the trench (Figure 5).

Typical Design Details of Sediment Trench (Type 2 Control)

The use of geotextile filters (minimum 'bidim' A34 or equivalent) is preferred in most construction site situations where the rock filter dam is likely to have an operational life of a few months.

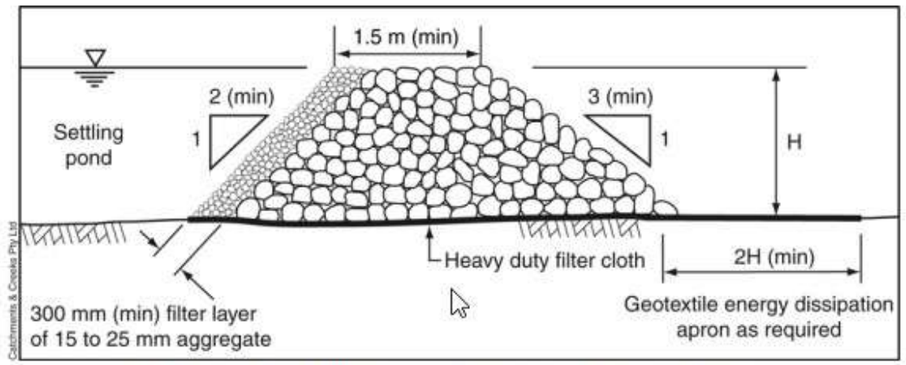

Figure 6 – Rock filter dam outlet system with aggregate filter

Rock filter dams with geotextile filters (Figure 7) usually require the use of an aggregate layer to achieve the desired stage-discharge flow conditions for the embankment for the purpose of achieving the optimum settling pond conditions.

The geotextile fabric wrapped around the rock filter dam also improves the stability of the structure allowing a reduced minimum top width.

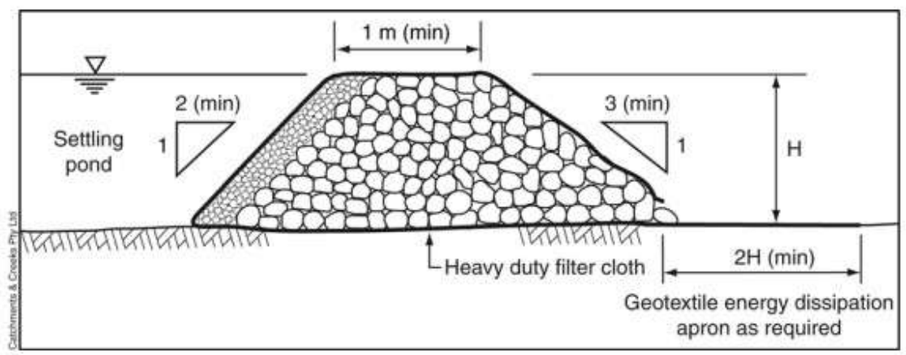

Figure 7 – Rock filter dam outlet system with aggregate and geotextile filter

Typical Design Details of Rock Filter Dam (Type 2 Control)

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EROSION AND SEDIMENT CONTROL PLAN

SCALE 1:1250@A3

0 25 50 75 100 125 M

			WEST MEREENIE WELL PADS WM31 & 32
			ALICE SPRINGS, NORTHERN TERRITORY
Issue 1	AC	August 2024	STANDARD DESIGN DETAILS
Revision	Prepared by / Approved by	Date	NOT FOR CONSTRUCTION

DWG No:10035-18

Certified by: AC
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EROSION AND SEDIMENT CONTROL PLAN WEST MEREENIE WELL PADS WM31 & 32 (OPTION A - SHARED WELL PAD & OPTION B SEPARATE WELL PAD) - STANDARD DESIGN DETAILS

NOTES:
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Rock Pad Entry/Exit

Materials

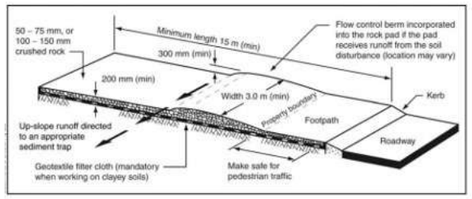
1. Rock: well graded, hard, angular, erosion resistant rock nominal diameter of 50mm to 75mm (small disturbances) or 100 to 150mm (large disturbances). All reasonable measures must be taken to obtain rock of near uniform size.
2. Footpath stabilizing aggregate: 25 to 50mm gravel or aggregate.
3. Geotextile fabric: heavy-duty, needle-punched, non-woven filter cloth ('Mims A24 or equivalent).

Installation

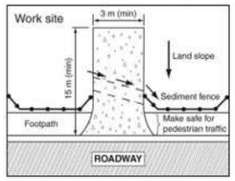
1. Refer to approved plans for location and dimensional details. If there are questions or problems with the location. dimensions, or method of installation, contact the engineer or responsible on-site officer for assistance.
2. Clear the location of the rock pad. removing stumps. roots and other vegetation to provide a firm foundation so that the rock is not pressed Into soft ground. Clear sufficient width to allow passage of large vehicles, but clear only that necessary for the exit. Do not clear adjacent areas until the required erosion and sediment control devices are in place.
3. If the exposed soil is soft, plastic or clayey, place a sub-base of crushed rock or a layer of heavy-duty filter cloth to provide a firm foundation.
4. Place the rock pad forming a minimum 200mm thick layer of clean, open-void rock..
5. If the associated construction site is up-slope of the rock pad, thus causing stormwater runoff to flow towards the rock pad, then form a minimum 300mm high flow control berm across the rock pad to divert such runoff to a suitable sediment trap.
6. The length of the rock pad should be at least 15m where practicable, and as wide as the full width of the entry or exit and at least 3m. The rock pad should commence at the edge of the off-site sealed road or pavement.
7. Flare the end of the rock pad where it meets the pavement so that the wheels of turning vehicles do not travel over unprotected soil.
8. If the footpath is *open* to pedestrian movement, then cover the coarse rock with fine aggregate or gravel. or otherwise take whatever measures are needed to make the area safe.

Removal

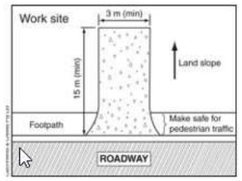
1. Inspect the sediment fence at least weekly and after any significant rain. Make necessary repairs immediately.
2. Repair any tornThe rock pad should be removed only after it is no longer needed as a sediment trap.
3. Remove materials and collected sediment and dispose of in a suitable manner that will not cause an erosion or pollution hazard.
4. Re-grade and stabilise the disturbed ground as necessary to minimize the erosion hazard.



Stabilised entry/exit point detail



Rock pad sloping towards the road

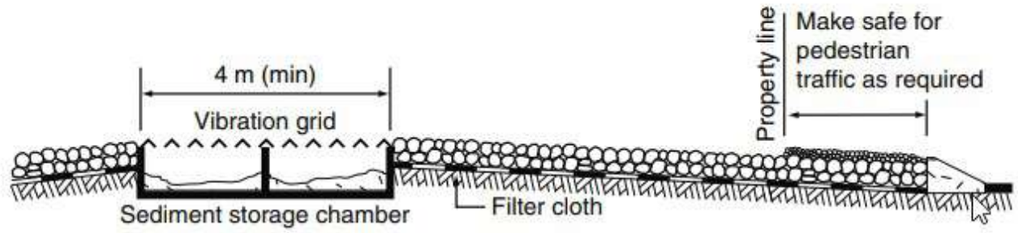


Rock pad sloping away from the road

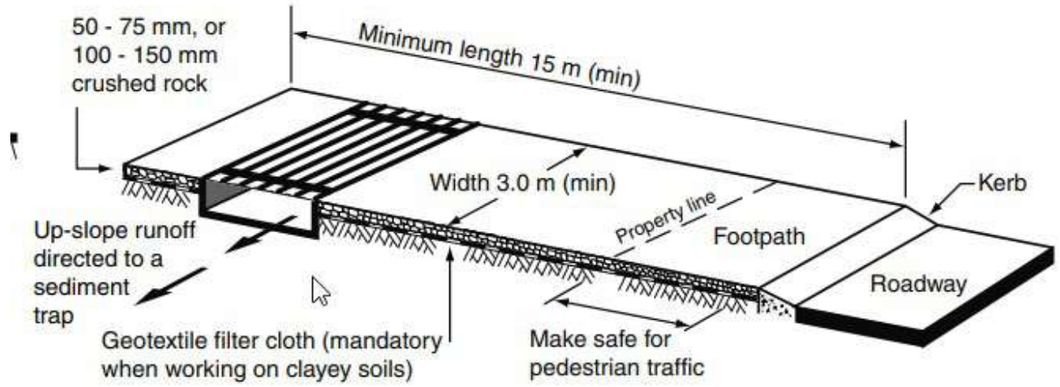
Maintenance

1. Inspect all site entry and exit points prior to forecast rain, daily during extended periods of rainfall. after runoff-producing rainfall, or otherwise at fortnightly intervals.
2. If sand, soil, sediment or mud is tracked or washed onto the adjacent sealed roadway, then such material must be physically removed first using a square-edged shovel and then a stiff-bristled broom and then by a mechanical vacuum unit if available.
3. If necessary for safety reasons, the roadway shall only be washed clean after all reasonable efforts have been taken to shovel and sweep the material from the roadway.
4. When the voids between the rock becomes filled with material and the effectiveness of the rock pad is reduced to a point where sediment is being tracked off the site, a new 100mm layer of rock must be added and/or the rock pad must be extended.
5. Ensure any associated drainage control measures (e.g. flow control berm) are maintained in accordance with their desired operational conditions.
6. Dispose of sediment and debris in a manner that will not create an erosion or pollution hazard.

Typical Design Details of Rock Pad Entry/Exit



(a) Typical profile of a vibration grid



(d) Typical layout of a vibration grid

Typical Design Details of Rumble/Vibration Grid

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EROSION AND SEDIMENT CONTROL PLAN

SCALE 1:1250@A3

0 25 50 75 100 125 M

			WEST MEREENIE WELL PADS WM31 & 32	DWG No:10035-19
			ALICE SPRINGS, NORTHERN TERRITORY	Certified by: AC
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EROSION AND SEDIMENT CONTROL PLAN WEST MEREENIE WELL PADS WM31 & 32 (OPTION A - SHARED WELL PAD & OPTION B SEPARATE WELL PAD) - STANDARD DESIGN DETAILS

NOTES:
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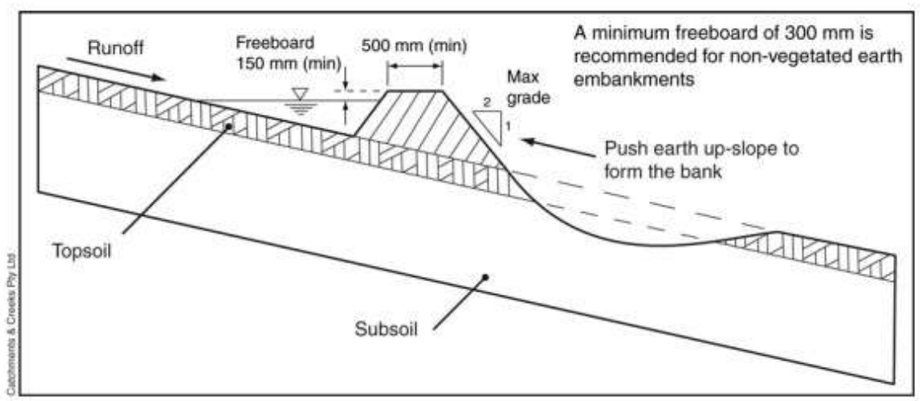
Photo 3 – Flow diversion berm used to minimise road runoff flowing down a steep, unstable section of the embankment

Photo 4 – Sandbag flow diversion berm used to minimise surface flow over a recently seeded embankment

Photo 5 – Earth flow diversion bank used to direct runoff towards the entrance of a *Slope Drain*

Photo 6 – Turf-lined flow diversion bank with grass-lined outlet chutes at regular intervals along the embankment



Typical Design Details of Diversion Bund

DRAINAGE DESIGN DETAILS

Installation

1. Refer to approved plans for location, extent, and construction details. If there are questions or problems with the location, extent, or method of installation, contact the engineer or responsible on-site officer for assistance.
2. Clear the location for the catch drain, clearing only what is needed to provide access for personnel and equipment for installation.
3. Remove roots, stumps, and other debris and dispose of them properly. Do not use debris to build the bank.
4. Grade the drain to the specified slope and form the associated embankment with compacted fill. Note that the drain invert must fall 10cm every 10m for each 1% of required channel gradient.
5. Ensure the sides of the cut drain are no steeper than a 1.5:1 (h:v) slope and the embankment fill slopes no steeper than 2:1.
6. Ensure the completed drain has sufficient deep (as specified for the type of drain) measured from the drain invert to the top of the embankment.
7. Ensure the drain has a constant fall in the desired direction free of obstructions.
8. Ensure the drain discharges to a stable outlet such that soil erosion will be prevented from occurring. Specifically, ensure the drain does not discharge to an unstable fill slope.

Maintenance

1. Inspect all catch drains at least weekly and after runoff-producing storm events and repair any slumps, bank damage, or loss of freeboard.
2. Ensure fill material or sediment is not partially blocking the drain. Where necessary, remove any deposited material to allow free drainage.
3. Dispose of any sediment or fill in a manner that will not create an erosion or pollution hazard.

Removal

1. When the soil disturbance above the catch drain is finished and the area is stabilised, the temporary drain and any associated banks should be removed, unless it is to remain as a permanent drainage feature.
2. Dispose of any sediment or earth in a manner that will not create an erosion or pollution hazard.
3. Grade the area and smooth it out in preparation for stabilisation.
4. Stabilise the area by grassing or as specified within the approved site rehabilitation plan.

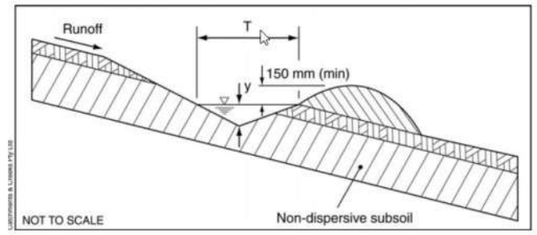


Figure 1- Triangular V-drain with downslope bank

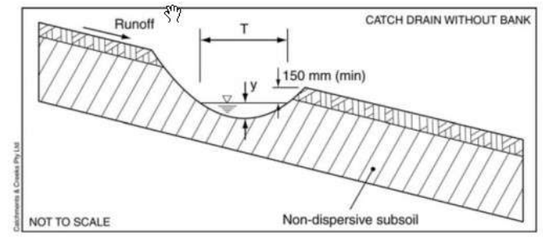
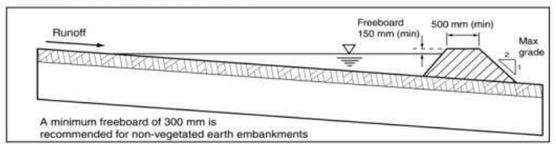


Figure 2- Parabolic catch drain without bank



Typical Design Details of Catch Drain

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EROSION AND SEDIMENT CONTROL PLAN

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			ALICE SPRINGS, NORTHERN TERRITORY
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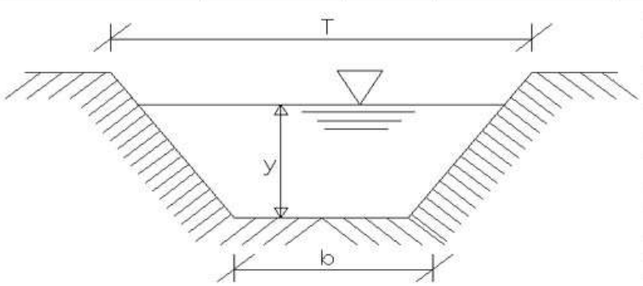
MEREENIE WEST WELL PAD WM30 ESCP

CATCH DRAIN CALCULATIONS BASED ON CONSERVATIVE CATCHMENT AREA - 2YR ARI (0.5 EY) DESIGN STORM

Date	Jul-24			
Flow=	Qy = 0.00278 x C_{10} x F_Y x $I_{y,\ tc}$ x A			m3/sec
Drain Catchment Area (A) =			3.25	ha
Time of Concentration (Tc) = 0.76 x (A/100)^0.38			12	min
Frequency Factor Fy =			0.85	(based on 2 year ARI and Construction site)
Rainfall Intensity C10 (I) =			61	0.5 EY 12min tc, (BOM Data)
Runoff coefficient - C =			0.7	(Page A7 of IECA)
Peak Flow Runoff -Rational Formula (Qy) =			0.328	m3/sec
Mannings formula	Q=	(1/n)*A*R^(2/3)*(s^.5)		
Drain design freeboard	150	mm		
n	0.035		(mannings roughness coefficient)	
Q	0.328	m3/s	(from rational formula)	
s	0.0238		(slope of drain = slope length/fall (m/m)	
V	1.600	m/s	(max allowable velocity unlined Channel)	
A	0.205	m2	(cross sectional area of flow - estimated)	
limit flow depth:	0.050	m	(excluding freeboard)	
estimated flow depth	0.250	m	(excluding freeboard)	
width	0.350	m	Cross sectional area /flow depth	
bank slope 1 in :	3.000		3H: 1V	
cross sectional flow area, A	0.275	m2		
wetted perimeter, P	1.931	m	(Trapezoidal channel)	
Hydraulic radius, R	0.142	m	Cross sectional area /wetted perimeter	
Velocity	1.202	m/s		

Required Trapezoidal Channel Dimensions		
Channel Flow Depth	0.2	m (incl 150mm freeboard)
Channel Base width	0.35	m
Channel Top width	1.55	m



Typical Trapezoidal Channel Cross Section

Note: A unified drain size calculation has been adopted based on a worst case scenario catchment area

Trapezoidal Channel Dimensions - for the two catch drains southand east of well pad footprint		
Channel Flow Depth, y =	0.2	m (incl 150mm freeboard)
Channel Base width, b =	0.35	m
Channel Top width, T =	1.55	m

Design Calculations for Dirty Water Drains/Catch Drains

MEREENIE WEST WELL PAD (WM30), ALICE SPRINGS, NT

ROCK FILTER DAM CALCULATIONS - 3 MONTH ARI DESIGN STORM

Rational Formula, Qy = 0.00278 x C_{10} x F_Y x $I_{y,\ tc}$ x A		m3/sec
Catchment Area (A) =	1.65	ha
Time of Concentration	0.160	hr
Frequency Factor Fy =	0.8	1 yr ARI
Rainfall Intensity/Design Storm C1 (I) =	49.9	1 EY (Exceedance per year) 10min tc, used BOM Data
Runoff coefficient - C =	0.7	
Peak Flow Runoff (Qy) =	0.06	
Desirable settling pond surface area for 0.05 mm particle size	630.00	m2/m3/sec
Surface Area	18.88	
Final Surface Area with 20% Allowance	40	m2

Design storm event adopted is 0.5 x 1 in 1 year ARI Peak Discharge (Page 4.27 IECA)
Side Slope (max) 2:01 H:V
20 % allowance inlcuded in the settling pond surface area adopted
Provide minimum 300mm thick layer of 15 to 25mm aggregate as filter media
Critical sediment particle size for rock filter dams assumed to be 0.05mm
Surface area is the critical component and the minimum that must be achieved
Settling pond to have a minimum length (in the direction of flow) of three times its average width

Design Calculations for Rock Filter Dam

Note: Design Calculations for Catch Drain and Rock Filter Dam based on a conservative catchment area and is to be implemented for both options in the ESCP

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NOTES:
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Site Specific Notes:

1. Ensure alll high risk works incluidng bulk earthworks are carried out preferably within a dry weather period.
2. Adhere to the NT Planning Schement Land Clearing Guidelines for all clearing and grubbing activities and ensure clearing activities are kept to the absolute minimum' required only.
3. Minimise the area of disturbance at any given time and thereby minimise erosion and sediment impacts to the downslope receiving environment.
4. Where dewatering is required from low lying excavations or inground sediment controls following rain events, treat dirty water with (flocculants/coagulants) prior to discharge into the receiving enviornment. Alternatively, allow pumped out water to be treated through a filter bag and drain through grassed areas prior to entering the receiving environment.
5. Stockpile to be covered and protected with geotextile or similar if stored on site for longer than 24 hours.
6. All construction water (ponded or collected within sediment controls) shall be treated prior to discharge to ensure they meet the following water quality objectives:
   - 90 percentile total suspended solids (TSS) concentration not exceeding 50 mg/L
   - pH: 6.5-8.5

General Notes:

1. No oil, scum, grease, litter, floating material, toxic substances or other polluting materials as a result of construction activities are to discharge offsite or into adjacent stormwater systems.
2. Contractor shall maintain all installed erosion and sediment controls to ensure proper functioning of these devices during construction activities .
3. Contractor shall take all necessary precautions to control erosion and sedimentation during the proposed construction activities.
4. The adopted erosion and sediment control measures are appropriately amended if site conditions or scope of works significantly changes, or are expected to significantly change from those conditions assumed during development of the ESCP.
5. The CPESC responsible for the design is to be consulted for any amendments required to the ESCP.

Maintenance Notes:

1. Contractor shall monitor the prevailing weather conditions at all times and ensure that adjacent stormwater systems are protected from sediment intrusion and environmental impacts.
2. All maintenance works shall be carried out in accordance with the International Erosion Control Association (IECA) Guidelines 2008.
   - In particular, establish an appropriate site inspection routine as well as maintenance & reporting procedure.
   - Ensure all erosion and sediment control measures are maintained in proper working order at all times.
3. Inspect all installed erosion sediment control devices at least weekly and soon after any rainfall events causing runoff.
4. All materials removed from erosion and sediment control devices during maintenance or decommissioning, whether solid or liquid, is lawfully disposed of in a manner that does not cause ongoing soil erosion or environmental harm.
5. Ensure appropriate written records are kept on all erosion and sediment control monitoring and maintenance activities conducted during and until completion of the works.

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EROSION AND SEDIMENT CONTROL PLAN

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