Appendix 1. Environmental Risk Assessment

No.	Environmental Aspect	Potential impact	Field	Causes	Consequence	Unmitigated Risk			Existing Control Measures (Control Type)	Mitigated Risk			Uncertainty Level	ALARP Discussion
						C	L	RR		C	L	RR		
1.	**Biodiversity**	Activities adversely affect Flora and Fauna	PVGF	Civil / maintenance works: • Earthworks • Light and heavy machinery operation • Maintenance of assets (e.g. wells, access tracks, pipeline, etc) • Rehabilitation • Unintended introduction and / or spread of weeds and invasive species	• Injury or death of fauna • Loss of vegetation and fauna habitat • Increased occurrence of weeds (including invasive species)	Serious	Likely	High	**Biodiversity management** • Avoid driving on access roads after sunset or before sunrise where possible (administrative) • Limit speed on unsealed access roads to 60km/hr (administrative) • Fauna spotters to be present at any vegetation clearing (administrative) • Permit to work to specify that no clearing of previously undisturbed vegetation to occur (elimination) • Conduct earthworks in accordance with the permit to work (administrative) • Drive on designated vehicle access tracks only (administrative) • All vehicles, equipment and machinery from known weed infested areas are to be cleaned and inspected for weeds prior to attending either the DGF or SOF (engineering) • Implement the Weed Management Plan (elimination, engineering, administrative)	Serious	Unlikely	Medium	A	• Control measure partially eliminates hazard. • Vehicle movements are a necessary part of operations. • It is not reasonable or practicable to implement additional engineering, substitution or elimination controls
2.	**Land**	Activities adversely affect soils and topography	PVGF	• Erosion due to maintenance work • Earthworks required for maintenance • Movement of heavy machinery and vehicles • Loss of containment (including spills or leaks) – facilities and well sites	• Disruption to land use (e.g. grazing and cultural) and exposure of pipeline • Disturbance to natural drainage patterns • Inversion of soil profile • Soil erosion and siltation of watercourses • Soil compaction • Contamination of soils	Serious	Likely	High	**Erosion and sediment control** • Requirement for erosion and sediment control structures is determined during site audits. Where determined from the audit that they are necessary they will be in line with best practice guidelines by DENR and IECA (engineering) • Conduct Job Hazard Analysis for any new task or new use of equipment to ensure appropriate control measures are identified (administrative) • Avoid driving on access tracks for 24 hours following significant rainfall events (i.e. >10mm in 24 hours) (administration) • Site inspections including unsealed roads critical for operations to be undertaken prior to wet season, quarterly and within 5 business days of a significant rainfall event to assess erosion issues. (administrative) • Drive on designated vehicle access tracks only (administrative) **Asset Integrity** • Asset integrity management system which includes: o Ensure that where drips and leaks occur, corrective actions are raised, and repairs are undertaken in a timeframe commensurate with the risk of environmental harm escalating if not repaired (administrative) o Ensure all fittings and equipment are checked and maintained o Monitor facility pressure for quick identification of any source of leak or rupture (administrative) o Ensure that any spills, leaks or points of excessive wear are reported, and the necessary maintenance work and control measures undertaken (administrative) o Install, maintain and routinely test blow-out preventers (BOPs) and related well control equipment on all workover rigs (administrative) o Well inspections to include tubing and annulus pressures checks and evidence of communication (administrative) • If contamination detected, implement emergency response plan (administrative). • Well to be managed in accordance with a Well Operation Management Plan (engineering, administrative)	Moderate	Unlikely	Medium	A	• Elimination or substitution controls not possible • Maintenance activities (including along access tracks) are aimed at ensuring the facilities remain erosion free • Based on historical site inspections, from 2014, maintenance activities have been effective in ensuring that any signs of erosion is rectified before control devices have been required • There is no new planned ground disturbance other than maintenance of already disturbed areas under this EMP • Landforms are stable and have been since operations at the sites commenced • Facilities are not located within the path of ephemeral streams or drainage lines • No additional controls are considered reasonable or practicable

No.	Environmental Aspect	Potential impact	Field	Causes	Consequence	Unmitigated Risk			Existing Control Measures (Control Type)	Mitigated Risk			Uncertainty Level	ALARP Discussion
						C	L	RR		C	L	RR		
3.	**Surface water**	Activities adversely affect surface water	PVGF	• Spill or leak from the use, transportation, handling and storage of workover fluids, diesel, fuel, oils and chemicals • Spill or leak from the use, transportation, handling and storage of formation water, chemicals and wastes • Earthworks required for maintenance	• Contamination of surface water resources • Erosion and siltation of watercourses	Critical	Remote	High	**Produced water management** • Minimum 500mm freeboard to be available (administrative) • Pond level to be inspected each quarter and after a significant rainfall event. Where the freeboard is less than 500mm, it is to be reduced by offsite transportation and disposal by a licensed waste transporter • Relevant staff trained and inducted into the storage, handling and transport of formation water. • Transport of waste under the requirements of the Waste Management and Pollution Control Act • Ensure appropriate measures are in place (e.g. lining, bunding) to prevent fluids or other waste chemical and/or hydrocarbon fluids from contaminating water or land not approved for waste disposal (engineering) • In the event of a spill or leak, follow the emergency response plan (administrative) **Erosion and sediment control** • Install erosion and sediment control structures (e.g. berms, sediment fences) where necessary in accordance with best practice principles and guidelines by DENR and IECA (engineering) • Conduct Job Hazard Analysis for any new task or new use of equipment to ensure appropriate control measures are identified (administrative) • Permit to work where required (administrative) • Site inspections to be undertaken quarterly and within 5 business days of a significant rainfall event to assess erosion issues (administrative) • Ensure construction operation and final constructed surface account for 1 in 100-year flooding events (engineering) **Chemical/hazardous material storage** • Liquid wastes to be stored in a secured container in a bunded and impervious area (engineering) • Ensure appropriate measures are in place (e.g. lining, bunding) to prevent fluids or other waste chemical and/or hydrocarbon fluids from contaminating water or land not specifically designated for waste disposal (engineering) • Ensure that where drips and leaks occur, corrective actions are raised, and repairs are undertaken in a timeframe commensurate with the risk of environmental harm escalating if not repaired (administrative) • Transport of hazardous material within the NT by a licensed NT EPA contractor (administrative) • Any transport across State or Territory borders to abide by the NEPM 2013 guidelines (administrative) • Handle, store and otherwise manage all hazardous goods in accordance with relevant Australian Standards and Codes of Practice (administrative) • Where applicable, ensure pumps, tanks and transfer lines are located within suitably bunded and impervious areas (engineering) • In the event of a spill or leak, follow emergency response plan (administrative)	Serious	Remote	Medium	A	• Elimination and substitution not possible as other water sources in the region are all groundwater based • Residual risk cannot be reduced any further • No additional controls are considered reasonable or practicable

No.	Environmental Aspect	Potential impact	Field	Causes	Consequence	Unmitigated Risk			Existing Control Measures (Control Type)	Mitigated Risk			Uncertainty Level	ALARP Discussion
						C	L	RR		C	L	RR		
4.	**Groundwater**	Activities adversely affect groundwater	PVGF	Subsurface loss of containment	• Contamination of watercourses • Contamination of groundwater	Critical	Remote	High	**Asset Integrity** • Asset integrity management system which includes o Ensure that where drips and leaks occur, corrective actions are raised, and repairs are undertaken in a timeframe commensurate with the risk of environmental harm escalating if not repaired (administrative) o Ensure all fittings and equipment are checked and maintained o Monitor facility pressure for quick identification of any source of leak or rupture (administrative) o Ensure that any spills, leaks or points of excessive wear are reported, and the necessary maintenance work and control measures undertaken (administrative) o Install, maintain and routinely test blow-out preventers (BOPs) and related well control equipment on all workover rigs (administrative) o Well inspections to include tubing and annulus pressures checks and evidence of communication (administrative) • If contamination detected, implement emergency response plan (administrative). • Well to be managed in accordance with a Well Operation Management Plan (engineering, administrative)	Serious	Remote	Medium	A	• Elimination and substitution controls not possible • Carry out groundwater monitoring as per the developed program • No additional controls are considered reasonable or practicable
5.	**Air and noise**	Activities adversely affect air quality and climate	PVGF	• Movement of heavy machinery and vehicles • Leak from flowlines or wellheads	• Dust generation • Fugitive methane emissions	Moderate	Likely	Medium	**Air Quality Protection Measures** • The PVGF is located in a remote area with no local sensitive receptors for dust and is unlikely to impact on surrounding users. • PVGF roads are primarily rock and gravel and therefore limited dust is generated through vehicle movements. • Vegetation in no-use area to be left undisturbed (engineering) • Low ground cover (<10cm) to be maintained on low traffic areas and around well heads to maintain fire safety while minimising dust (engineering) • Machinery and vehicles to stick to designated speed limits (administrative) **Asset Integrity** • Asset integrity management system which includes o Ensure that where leaks occur, corrective actions are raised, and repairs are undertaken in a timeframe commensurate with the risk of environmental harm escalating if not repaired (administrative) o Ensure all fittings and equipment are checked and maintained o Monitor facility pressure for quick identification of any source of leak or rupture (administrative) o Ensure that any spills, leaks or points of excessive wear are reported, and the necessary maintenance work and control measures undertaken (administrative) o Install, maintain and routinely test blow-out preventers (BOPs) and related well control equipment on all workover rigs (administrative) o Well inspections to include tubing and annulus pressures checks and evidence of communication (administrative) • Well to be managed in accordance with a Well Operation Management Plan (engineering, administrative)	Minor	Likely	Medium	A	• Residual risk cannot be reduced any further • No additional controls are considered reasonable or practicable

No.	Environmental Aspect	Potential impact	Field	Causes	Consequence	Unmitigated Risk			Existing Control Measures (Control Type)	Mitigated Risk			Uncertainty Level	ALARP Discussion
						C	L	RR		C	L	RR		
6.	**Greenhouse gas emissions**	Increase in air pollutants in areas surrounding activities	PVGF	Emissions from gas releases / diesel combustion	• Contribution to greenhouse gas emissions	Minor	Likely	Medium	**Methane emissions management** • No planned venting of hydrocarbons to occur (administrative) • All diesel used onsite is to be compliant with the Federal Government's Fuel Quality Standards (Automotive Diesel) Determination 2019 (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) • All pollutant emissions, including unplanned events and emissions from wastewater storage tanks will be reported via the National Pollutant Inventory (NPI) Emission Estimation Technique Manual for Oil and Gas Extraction and Production Version 2.0 • All Greenhouse gas emissions shall be measured and reported in accordance with the National Greenhouse and Energy Reporting Scheme (NGERS) National Greenhouse and Energy Reporting (Measurement) Determination 2008	Minor	Possible	Low	A	• Residual risk cannot be reduced any further • No additional controls are considered reasonable or practicable
7.	**Hazards**	Activities adversely affect sensitive receptors	PVGF	• Bushfire as a result of accidental ignition at site • Accumulation of NORMs in equipment and flowline • Logistics during the wet season s	• Loss of flora / fauna habitat • Adverse impact on human health	Moderate	Unlikely	Medium	**Fire and emergency response** • Fire extinguishers to be available at each site (PPE) • All staff and visitors accessing the facilities must be inducted into the emergency response plan for each facility (administrative) • 4m fire breaks around fixed surface assets (engineering) • Hazardous zones for each well determined in accordance with the relevant Australian Standard (administrative) • Only equipment authorised within the hazardous zone is used whilst on site (administrative) • In case of emergency, activate emergency response plan (administrative) **Chemical/hazardous material storage** • Transport of hazardous material within the NT by a licensed NT EPA contractor (administrative) • Handle, store and otherwise manage all hazardous goods in accordance with relevant Australian Standards and Codes of Practice (administrative) • In the event of a spill or leak, follow emergency response plan (administrative)	Minor	Possible	Low	A	• Infrastructure at all sites is contained and isolated from the surrounding environment by means of fire breaks and related controls. This includes monitoring of containment and isolation. Potential impacts to the existing fire regime are considered remote. • Residual risk cannot be reduced any further • No additional controls are considered reasonable or practicable
8.	**Heritage**	Activities adversely affect cultural heritage sites	PVGF	• Earthworks required for maintenance • Movement of heavy machinery and vehicles within each site • Ignition of fire along assets	• Disturbance to cultural heritage sites	Serious	Possible	High	**Cultural Heritage and Sacred Sites Preservation** • Site inductions to include information on location of known cultural and heritage sites and process for unexpected finds (administrative) • Where known cultural heritage sites are within 50m of maintenance earthworks, the site will be delineated with bunting or similar (engineering) • No earthworks to be conducted after sunset or before sunrise (administrative) • Journey management plan filled in and approved by CP (administrative) • Personnel access to the facility and any site/area by permit approved by the CLC and CP (administrative) • If fire detected, implement emergency response plan (administrative) • Annual reduction of weed and vegetation at operational sites to reduce ignition load (engineering) • Conduct Job Hazard Analysis for any new task or new use of equipment to ensure appropriate control measures are identified and to take account of variation in fire danger ratings (administrative) • Prior to attending site, each day obtain information on current fire danger, presence of fire in the area and current weather condition from government websites (administrative)	Serious	Unlikely	Medium	A	• Residual risk cannot be reduced any further • No additional controls are considered reasonable or practicable

No.	Environmental Aspect	Potential impact	Field	Causes	Consequence	Unmitigated Risk			Existing Control Measures (Control Type)	Mitigated Risk			Uncertainty Level	ALARP Discussion
						C	L	RR		C	L	RR		
9.	**Community - traffic**	Activities adversely affect sensitive receptors	PVGF	Traffic increase due to activities	• Local community and landowners' discontent and activism • Increased potential for vehicle accidents and damage to infrastructure • Increased occurrence and diversity of weed species • Disturbance or impedance of surrounding stakeholder's regular activities	Moderate	Possible	Medium	**Traffic and Transport Management** • Implement dust control measures where appropriate including water trucks (engineering) • Remote location unlikely to impact on surrounding users (engineering) • Vegetation in no-use area to be left undisturbed (engineering) • Low ground cover (<10cm) to be maintained on low traffic areas and around well heads to maintain fire safety while minimising dust (engineering) • Machinery and vehicles to stick to designated speed limits (administrative)	Medium	Unlikely	Low	A	• Residual risk cannot be reduced any further • No additional controls are considered reasonable or practicable
10.	**Community – tourism**	Activities adversely affect sensitive receptors	PVGF	• Noise generated during routine operations, maintenance and civils work. • Artificial lighting required for safety during 24-hour operation	• Loss of visual amenity impacting landholder, tourists or the wider community • Noise generation causing a nuisance	Moderate	Possible	Medium	**Community Impact Minimisation** • All activities to stay within the approved area (administrative) • A full stakeholder consultation log will be maintained by CP (administrative) • Early and ongoing Community consultation and engagement approach • Local communities and stakeholders advised of CP contact number through multiple channels (administrative) • Site is remote from any community members or sensitive receptors (administrative)	Moderate	Unlikely	Low	A	• Residual risk cannot be reduced any further • No additional controls are considered reasonable or practicable
11.	**Community – visual impact**	Activities adversely affect sensitive receptors	PVGF	• Artificial lighting required for safety during 24-hour operation	• Light pollution impacting sensitive receptors	Moderate	Possible	Medium	**Community Impact Minimisation** • All activities to stay within the approved area (administrative) • A full stakeholder consultation log will be maintained by CP (administrative) • Early and ongoing Community consultation and engagement approach • Local communities and stakeholders advised of CP contact number through multiple channels (administrative) • Site is remote from any community members or sensitive receptors (administrative)	Moderate	Unlikely	Low	A	• Residual risk cannot be reduced any further • No additional controls are considered reasonable or practicable
12.	**Rehabilitation**	Activities adversely affect soils and topography	PVGF	• Loss of soil productivity from rehabilitation failure • Loss of soil productivity due to soil compaction	• Loss or endangerment of threatened species • Loss of fauna and flora habitat • Rehabilitation failure, leads to future land degradation and flow on effects to the surrounding environment	Moderate	Possible	Medium	**Decommission and Rehabilitation Management** • Rehabilitation to be implemented 12 months post decommissioning of the infrastructure • When rehab is to occur topsoil will be spread and area re-seeded with local native seed. If germination does not occur after appropriate rainfall over several years re-seeding will be conducted. • Vegetation survey conducted before disturbance to provide baseline reference to determine post revegetation success • Location of top soil mounds clearly marked and less than 1.5m high to protect the biological activity of the top soil • All compacted hardstands and laydown areas deep ripped to encourage infiltration and water retention • Return all disturbed landforms to as close as possible the natural terrain • Photographic point monitoring established before disturbance and continued after to identify any areas requiring further rehabilitation work • Appropriate management and control of waste materials on and off-site • No new weeds or non-native plants introduced, and appropriate weed management implemented	Possible	Minor	Low	A	• Residual risk cannot be reduced any further • No additional controls are considered reasonable or practicable

No.	Environmental Aspect	Potential impact	Field	Causes	Consequence	Unmitigated Risk			Existing Control Measures (Control Type)	Mitigated Risk			Uncertainty Level	ALARP Discussion
						C	L	RR		C	L	RR		
13.	**Biodiversity**	Activities adversely affect Flora and Fauna	DGF	Civil / maintenance works: • Earthworks • Light and heavy machinery operation • Maintenance of assets (e.g. wells, access tracks, pipeline, etc) • Rehabilitation • Unintended introduction and / or spread of weeds and invasive species	• Injury or death of fauna • Loss of vegetation and fauna habitat • Increased occurrence of weeds (including invasive species)	Serious	Likely	High	**Biodiversity management** • Avoid driving on access roads after sunset or before sunrise where possible (administrative) • Limit speed on unsealed access roads to 60km/hr (administrative) • Fauna spotters to be present at any vegetation clearing (administrative) • Permit to work to specify that no clearing of previously undisturbed vegetation to occur (elimination) • Conduct earthworks in accordance with the permit to work (administrative) • Drive on designated vehicle access tracks only (administrative) • All vehicles, equipment and machinery from known weed infested areas are to be cleaned and inspected for weeds prior to attending either the DGF or SOF (engineering) • Implement the Weed Management Plan (elimination, engineering, administrative)	Serious	Unlikely	Medium	A	• Control measure partially eliminates hazard. • Vehicle movements are a necessary part of operations. • It is not reasonable or practicable to implement additional engineering, substitution or elimination controls
14.	**Land**	Activities adversely affect soils and topography	DGF	• Erosion due to maintenance work • Earthworks required for maintenance • Movement of heavy machinery and vehicles • Loss of containment (including spills or leaks) – facilities and well sites	• Disruption to land use (e.g. grazing and cultural) and exposure of pipeline • Disturbance to natural drainage patterns • Inversion of soil profile • Soil erosion and siltation of watercourses • Soil compaction • Contamination of soils	Serious	Likely	High	**Erosion and sediment control** • Requirement for erosion and sediment control structures is determined during site audits. Where determined from the audit that they are necessary they will be in line with best practice guidelines by DENR and IECA (engineering) • Conduct Job Hazard Analysis for any new task or new use of equipment to ensure appropriate control measures are identified (administrative) • Avoid driving on access tracks for 24 hours following significant rainfall events (i.e. >10mm in 24 hours) (administration) • Site inspections including unsealed roads critical for operations to be undertaken prior to wet season, quarterly and within 5 business days of a significant rainfall event to assess erosion issues. (administrative) • Drive on designated vehicle access tracks only (administrative) **Asset Integrity** • Asset integrity management system which includes: o Ensure that where drips and leaks occur, corrective actions are raised, and repairs are undertaken in a timeframe commensurate with the risk of environmental harm escalating if not repaired (administrative) o Ensure all fittings and equipment are checked and maintained o Monitor facility pressure for quick identification of any source of leak or rupture (administrative) o Ensure that any spills, leaks or points of excessive wear are reported, and the necessary maintenance work and control measures undertaken (administrative) o Install, maintain and routinely test blow-out preventers (BOPs) and related well control equipment on all workover rigs (administrative) o Well inspections to include tubing and annulus pressures checks and evidence of communication (administrative) • If contamination detected, implement emergency response plan (administrative). • Well to be managed in accordance with a Well Operation Management Plan (engineering, administrative)	Moderate	Unlikely	Medium	A	• Elimination or substitution controls not possible • Maintenance activities (including along access tracks) are aimed at ensuring the facilities remain erosion free • Based on historical site inspections, from 2014, maintenance activities have been effective in ensuring that any signs of erosion is rectified before control devices have been required • There is no new planned ground disturbance other than maintenance of already disturbed areas under this EMP • Landforms are stable and have been since operations at the sites commenced • Facilities are not located within the path of ephemeral streams or drainage lines • No additional controls are considered reasonable or practicable

No.	Environmental Aspect	Potential impact	Field	Causes	Consequence	Unmitigated Risk			Existing Control Measures (Control Type)	Mitigated Risk			Uncertainty Level	ALARP Discussion
						C	L	RR		C	L	RR		
15.	**Surface water**	Activities adversely affect surface water	DGF	• Spill or leak from the use, transportation, handling and storage of workover fluids, diesel, fuel, oils and chemicals • Spill or leak from the use, transportation, handling and storage of formation water, chemicals and wastes • Earthworks required for maintenance	• Contamination of surface water resources • Erosion and siltation of watercourses	Moderate	Unlikely	Medium	**Produced water management** • Minimum 500mm freeboard to be available (administrative) • Pond level to be inspected each quarter and after a significant rainfall event. Where the freeboard is less than 500mm, it is to be reduced by offsite transportation and disposal by a licensed waste transporter • Relevant staff trained and inducted into the storage, handling and transport of formation water. • Transport of waste under the requirements of the Waste Management and Pollution Control Act • Ensure appropriate measures are in place (e.g. lining, bunding) to prevent fluids or other waste chemical and/or hydrocarbon fluids from contaminating water or land not approved for waste disposal (engineering) • In the event of a spill or leak, follow the emergency response plan (administrative) **Erosion and sediment control** • Install erosion and sediment control structures (e.g. berms, sediment fences) where necessary in accordance with best practice principles and guidelines by DENR and IECA (engineering) • Conduct Job Hazard Analysis for any new task or new use of equipment to ensure appropriate control measures are identified (administrative) • Permit to work where required (administrative) • Site inspections to be undertaken quarterly and within 5 business days of a significant rainfall event to assess erosion issues (administrative) • Ensure construction operation and final constructed surface account for 1 in 100-year flooding events (engineering) **Chemical/hazardous material storage** • Liquid wastes to be stored in a secured container in a bunded and impervious area (engineering) • Ensure appropriate measures are in place (e.g. lining, bunding) to prevent fluids or other waste chemical and/or hydrocarbon fluids from contaminating water or land not specifically designated for waste disposal (engineering) • Ensure that where drips and leaks occur, corrective actions are raised, and repairs are undertaken in a timeframe commensurate with the risk of environmental harm escalating if not repaired (administrative) • Transport of hazardous material within the NT by a licensed NT EPA contractor (administrative) • Any transport across State or Territory borders to abide by the NEPM 2013 guidelines (administrative) • Handle, store and otherwise manage all hazardous goods in accordance with relevant Australian Standards and Codes of Practice (administrative) • Where applicable, ensure pumps, tanks and transfer lines are located within suitably bunded and impervious areas (engineering) • In the event of a spill or leak, follow emergency response plan (administrative)	Moderate	Remote	Low	A	• Elimination and substitution not possible as other water sources in the region are all groundwater based • Residual risk cannot be reduced any further • No additional controls are considered reasonable or practicable

No.	Environmental Aspect	Potential impact	Field	Causes	Consequence	Unmitigated Risk			Existing Control Measures (Control Type)	Mitigated Risk			Uncertainty Level	ALARP Discussion
						C	L	RR		C	L	RR		
16.	**Groundwater**	Activities adversely affect groundwater	DGF	Subsurface loss of containment	• Contamination of watercourses • Contamination of groundwater	Critical	Remote	High	**Asset Integrity** • Asset integrity management system which includes o Ensure that where drips and leaks occur, corrective actions are raised, and repairs are undertaken in a timeframe commensurate with the risk of environmental harm escalating if not repaired (administrative) o Ensure all fittings and equipment are checked and maintained o Monitor facility pressure for quick identification of any source of leak or rupture (administrative) o Ensure that any spills, leaks or points of excessive wear are reported, and the necessary maintenance work and control measures undertaken (administrative) o Install, maintain and routinely test blow-out preventers (BOPs) and related well control equipment on all workover rigs (administrative) o Well inspections to include tubing and annulus pressures checks and evidence of communication (administrative) • If contamination detected, implement emergency response plan (administrative). • Well to be managed in accordance with a Well Operation Management Plan (engineering, administrative)	Serious	Remote	Medium	A	• Elimination and substitution controls not possible • Carry out groundwater monitoring as per the developed program • No additional controls are considered reasonable or practicable
17.	**Air and noise**	Activities adversely affect air quality and climate	DGF	• Movement of heavy machinery and vehicles • Leak from flowlines or wellheads	• Dust generation • Fugitive methane emissions	Moderate	Likely	Medium	**Air Quality Protection Measures** • The DGF is located in a remote area with no local sensitive receptors for dust and is unlikely to impact on surrounding users. • DGF is accessed via council road and internal field roads are owned and managed by pastoralist. Dust suppression is not required. • Vegetation in no-use area to be left undisturbed (engineering) • Low ground cover (<10cm) to be maintained on low traffic areas and around well heads to maintain fire safety while minimising dust (engineering) • Machinery and vehicles to stick to designated speed limits (administrative) **Asset Integrity** • Asset integrity management system which includes o Ensure that where leaks occur, corrective actions are raised, and repairs are undertaken in a timeframe commensurate with the risk of environmental harm escalating if not repaired (administrative) o Ensure all fittings and equipment are checked and maintained o Monitor facility pressure for quick identification of any source of leak or rupture (administrative) o Ensure that any spills, leaks or points of excessive wear are reported, and the necessary maintenance work and control measures undertaken (administrative) o Install, maintain and routinely test blow-out preventers (BOPs) and related well control equipment on all workover rigs (administrative) o Well inspections to include tubing and annulus pressures checks and evidence of communication (administrative) • Well to be managed in accordance with a Well Operation Management Plan (engineering, administrative)	Moderate	Remote	Low	A	• Residual risk cannot be reduced any further • No additional controls are considered reasonable or practicable

No.	Environmental Aspect	Potential impact	Field	Causes	Consequence	Unmitigated Risk			Existing Control Measures (Control Type)	Mitigated Risk			Uncertainty Level	ALARP Discussion
						C	L	RR		C	L	RR		
18.	**Greenhouse gas emissions**	Increase in air pollutants in areas surrounding activities	DGF	Emissions from gas releases / diesel combustion	• Contribution to greenhouse gas emissions	Minor	Likely	Medium	**Methane emissions management** • No planned venting of hydrocarbons to occur (administrative) • All diesel used onsite is to be compliant with the Federal Government's Fuel Quality Standards (Automotive Diesel) Determination 2019 (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) • All pollutant emissions, including unplanned events and emissions from wastewater storage tanks will be reported via the National Pollutant Inventory (NPI) Emission Estimation Technique Manual for Oil and Gas Extraction and Production Version 2.0 • All Greenhouse gas emissions shall be measured and reported in accordance with the National Greenhouse and Energy Reporting Scheme (NGERS) National Greenhouse and Energy Reporting (Measurement) Determination 2008	Minor	Possible	Low	A	• Residual risk cannot be reduced any further • No additional controls are considered reasonable or practicable
19.	**Hazards**	Activities adversely affect sensitive receptors	DGF	• Bushfire as a result of accidental ignition at site • Accumulation of NORMs in equipment and flowline • Logistics during the wet season s	• Loss of flora / fauna habitat • Adverse impact on human health	Moderate	Unlikely	Medium	**Fire and emergency response** • Fire extinguishers to be available at each site (PPE) • All staff and visitors accessing the facilities must be inducted into the emergency response plan for each facility (administrative) • 4m fire breaks around fixed surface assets (engineering) • Hazardous zones for each well determined in accordance with the relevant Australian Standard (administrative) • Only equipment authorised within the hazardous zone is used whilst on site (administrative) • In case of emergency, activate emergency response plan (administrative) **Chemical/hazardous material storage** • Transport of hazardous material within the NT by a licensed NT EPA contractor (administrative) • Handle, store and otherwise manage all hazardous goods in accordance with relevant Australian Standards and Codes of Practice (administrative) • In the event of a spill or leak, follow emergency response plan (administrative)	Minor	Possible	Low	A	• Infrastructure at all sites is contained and isolated from the surrounding environment by means of fire breaks and related controls. This includes monitoring of containment and isolation. Potential impacts to the existing fire regime are considered remote. • Residual risk cannot be reduced any further • No additional controls are considered reasonable or practicable
20.	**Heritage**	Activities adversely affect cultural heritage sites	DGF	• Earthworks required for maintenance • Movement of heavy machinery and vehicles within each site • Ignition of fire along assets	• Disturbance to cultural heritage sites	Serious	Possible	High	**Cultural Heritage and Sacred Sites Preservation** • Site inductions to include information on location of known cultural and heritage sites and process for unexpected finds (administrative) • Where known cultural heritage sites are within 50m of maintenance earthworks, the site will be delineated with bunting or similar (engineering) • No earthworks to be conducted after sunset or before sunrise (administrative) • Journey management plan filled in and approved by CP (administrative) • Personnel access to the facility and any site/area by permit approved by the CLC and CP (administrative) • If fire detected, implement emergency response plan (administrative) • Annual reduction of weed and vegetation at operational sites to reduce ignition load (engineering) • Conduct Job Hazard Analysis for any new task or new use of equipment to ensure appropriate control measures are identified and to take account of variation in fire danger ratings (administrative) • Prior to attending site, each day obtain information on current fire danger, presence of fire in the area and current weather condition from government websites (administrative)	Serious	Unlikely	Medium	A	• Residual risk cannot be reduced any further • No additional controls are considered reasonable or practicable

No.	Environmental Aspect	Potential impact	Field	Causes	Consequence	Unmitigated Risk			Existing Control Measures (Control Type)	Mitigated Risk			Uncertainty Level	ALARP Discussion
						C	L	RR		C	L	RR		
21.	**Community - traffic**	Activities adversely affect sensitive receptors	DGF	Traffic increases due to activities	• Local community and landowners' discontent and activism • Increased potential for vehicle accidents and damage to infrastructure • Increased occurrence and diversity of weed species • Disturbance or impedance of surrounding stakeholder's regular activities	Moderate	Possible	Medium	**Traffic and Transport Management** • Implement dust control measures where appropriate including water trucks (engineering) • Remote location unlikely to impact on surrounding users (engineering) • Vegetation in no-use area to be left undisturbed (engineering) • Low ground cover (<10cm) to be maintained on low traffic areas and around well heads to maintain fire safety while minimising dust (engineering) • Machinery and vehicles to stick to designated speed limits (administrative)	Medium	Unlikely	Low	A	• Residual risk cannot be reduced any further • No additional controls are considered reasonable or practicable
22.	**Community – tourism**	Activities adversely affect sensitive receptors	DGF	• Noise generated during routine operations, maintenance and civils work. • Artificial lighting required for safety during 24-hour operation	• Loss of visual amenity impacting landholder, tourists or the wider community • Noise generation causing a nuisance	Moderate	Possible	Medium	**Community Impact Minimisation** • All activities to stay within the approved area (administrative) • A full stakeholder consultation log will be maintained by CP (administrative) • Early and ongoing Community consultation and engagement approach • Local communities and stakeholders advised of CP contact number through multiple channels (administrative) • Site is remote from any community members or sensitive receptors (administrative)	Moderate	Unlikely	Low	A	• Residual risk cannot be reduced any further • No additional controls are considered reasonable or practicable
23.	**Community – visual impact**	Activities adversely affect sensitive receptors	DGF	• Artificial lighting required for safety during 24-hour operation	• Light pollution impacting sensitive receptors	Moderate	Possible	Medium	**Community Impact Minimisation** • All activities to stay within the approved area (administrative) • A full stakeholder consultation log will be maintained by CP (administrative) • Early and ongoing Community consultation and engagement approach • Local communities and stakeholders advised of CP contact number through multiple channels (administrative) • Site is remote from any community members or sensitive receptors (administrative)	Moderate	Unlikely	Low	A	• Residual risk cannot be reduced any further • No additional controls are considered reasonable or practicable
24.	**Rehabilitation**	Activities adversely affect soils and topography	DGF	• Loss of soil productivity from rehabilitation failure • Loss of soil productivity due to soil compaction	• Loss or endangerment of threatened species • Loss of fauna and flora habitat • Rehabilitation failure, leads to future land degradation and flow on effects to the surrounding environment	Moderate	Possible	Medium	**Decommission and Rehabilitation Management** • Rehabilitation to be implemented 12 months post decommissioning of the infrastructure • When rehab is to occur topsoil will be spread and area re-seeded with local native seed. If germination does not occur after appropriate rainfall over several years re-seeding will be conducted. • Vegetation survey conducted before disturbance to provide baseline reference to determine post revegetation success • Location of top soil mounds clearly marked and less than 1.5m high to protect the biological activity of the top soil • All compacted hardstands and laydown areas deep ripped to encourage infiltration and water retention • Return all disturbed landforms to as close as possible the natural terrain • Photographic point monitoring established before disturbance and continued after to identify any areas requiring further rehabilitation work • Appropriate management and control of waste materials on and off-site • No new weeds or non-native plants introduced, and appropriate weed management implemented	Possible	Minor	Low	A	• Residual risk cannot be reduced any further • No additional controls are considered reasonable or practicable

No.	Environmental Aspect	Potential impact	Field	Causes	Consequence	Unmitigated Risk			Existing Control Measures (Control Type)	Mitigated Risk			Uncertainty Level	ALARP Discussion
						C	L	RR		C	L	RR		
25.	**Biodiversity**	Activities adversely affect Flora and Fauna	SOF	Civil / maintenance works: • Earthworks • Light and heavy machinery operation • Maintenance of assets (e.g. wells, access tracks, pipeline, etc) • Rehabilitation • Unintended introduction and / or spread of weeds and invasive species	• Injury or death of fauna • Loss of vegetation and fauna habitat • Increased occurrence of weeds (including invasive species)	Serious	Possible	High	**Biodiversity management** • Avoid driving on access roads after sunset or before sunrise where possible (administrative) • Limit speed on unsealed access roads to 60km/hr (administrative) • Fauna spotters to be present at any vegetation clearing (administrative) • Permit to work to specify that no clearing of previously undisturbed vegetation to occur (elimination) • Conduct earthworks in accordance with the permit to work (administrative) • Drive on designated vehicle access tracks only (administrative) • All vehicles, equipment and machinery from known weed infested areas are to be cleaned and inspected for weeds prior to attending either the DGF or SOF (engineering) • Implement the Weed Management Plan (elimination, engineering, administrative)	Serious	Unlikely	Medium	A	• The SOF is currently in care and maintenance. • As it is not currently operational, risk to land is considered low
26.	**Land**	Activities adversely affect soils and topography	SOF	• Erosion due to maintenance work • Earthworks required for maintenance • Movement of heavy machinery and vehicles • Loss of containment (including spills or leaks) – facilities and well sites	• Disruption to land use (e.g. grazing and cultural) and exposure of pipeline • Disturbance to natural drainage patterns • Inversion of soil profile • Soil erosion and siltation of watercourses • Soil compaction • Contamination of soils	Serious	Possible	High	**Erosion and sediment control** • Site inspections including unsealed roads critical for operations to be undertaken quarterly and within 5 business days of a significant rainfall event to assess erosion issues (administrative) **Asset Integrity** • Asset integrity management system which includes: o Site inspections to be undertaken quarterly (administrative) • Well to be managed in accordance with a Well Operation Management Plan (engineering, administrative)	Moderate	Unlikely	Medium	A	• The SOF is currently in care and maintenance. • As it is not currently operational, risk to land is considered low
27.	**Surface water**	Activities adversely affect surface water	SOF	• Spill or leak from the use, transportation, handling and storage of workover fluids, diesel, fuel, oils and chemicals • Spill or leak from the use, transportation, handling and storage of formation water, chemicals and wastes • Earthworks required for maintenance	• Contamination of surface water • Erosion and siltation of watercourses	Moderate	Unlikely	Medium	**Produced water management** • Pond level to be inspected each quarter and after a significant rainfall event. Where the freeboard is less than 500mm, it is to be reduced by offsite transportation and disposal by a licensed waste transporter **Erosion and sediment control** • Site inspections to be undertaken quarterly and within 5 business days of a significant rainfall event to assess erosion issues (administrative) **Chemical/hazardous material storage** • Liquid wastes to be stored in a secured container in a bunded and impervious area (engineering) • Ensure appropriate measures are in place (e.g. lining, bunding) to prevent fluids or other waste chemical and/or hydrocarbon fluids from contaminating water or land not specifically designated for waste disposal (engineering) • Handle, store and otherwise manage all hazardous goods in accordance with relevant Australian Standards and Codes of Practice (administrative) • In the event of a spill or leak, follow emergency response plan (administrative)	Minor	Remote	Low	A	• The SOF is currently in care and maintenance. • As it is not currently operational, risk to land is considered low

No.	Environmental Aspect	Potential impact	Field	Causes	Consequence	Unmitigated Risk			Existing Control Measures (Control Type)	Mitigated Risk			Uncertainty Level	ALARP Discussion
						C	L	RR		C	L	RR		
28.	**Groundwater**	Activities adversely affect groundwater	SOF	Subsurface loss of containment	• Contamination of watercourses • Contamination of groundwater	Moderate	Unlikely	Medium	**Asset Integrity** • Asset integrity management system which includes: o Site inspections to be undertaken quarterly (administrative) • Well to be managed in accordance with a Well Operation Management Plan (engineering, administrative)	Moderate	Remote	Low	A	• The SOF is currently in care and maintenance. • Carry out groundwater monitoring as per the developed program • As it is not currently operational, risk to land is considered low
29.	**Air and noise**	Activities adversely affect air quality and climate	SOF	• Movement of heavy machinery and vehicles • Leak from flowlines or wellheads	• Dust generation • Fugitive methane emissions	Moderate	Unlikely	Medium	**Air Quality Protection Measures** • The SOF is located in a remote area with no local sensitive receptors for dust and is unlikely to impact on surrounding users. • SOF is in care and maintenance and therefore vehicle movements a very limited (do not warrant dust suppression activities). • Vegetation in no-use area to be left undisturbed (engineering) • Low ground cover (<10cm) to be maintained on low traffic areas and around well heads to maintain fire safety while minimising dust (engineering) • Machinery and vehicles to stick to designated speed limits (administrative) **Asset Integrity** • Asset integrity management system which includes: o Site inspections to be undertaken quarterly (administrative) • Well to be managed in accordance with a Well Operation Management Plan (engineering, administrative)	Moderate	Remote	Low	A	• The SOF is currently in care and maintenance. • As it is not currently operational, risk to land is considered low
30.	**Greenhouse gas emissions**	Increase in air pollutants in areas surrounding activities	SOF	Emissions from gas releases / diesel combustion	• Contribution to greenhouse gas emissions	Moderate	Unlikely	Medium	**Methane emissions management** • No planned venting of hydrocarbons to occur (administrative) • All diesel used onsite is to be compliant with the Federal Government's Fuel Quality Standards (Automotive Diesel) Determination 2019 (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) • All pollutant emissions, including unplanned events and emissions from wastewater storage tanks will be reported via the National Pollutant Inventory (NPI) Emission Estimation Technique Manual for Oil and Gas Extraction and Production Version 2.0 • All Greenhouse gas emissions shall be measured and reported in accordance with the National Greenhouse and Energy Reporting Scheme (NGERS) National Greenhouse and Energy Reporting (Measurement) Determination 2008	Minor	Possible	Low	A	• The SOF is currently in care and maintenance. • As it is not currently operational, risk to land is considered low

No.	Environmental Aspect	Potential impact	Field	Causes	Consequence	Unmitigated Risk			Existing Control Measures (Control Type)	Mitigated Risk			Uncertainty Level	ALARP Discussion
						C	L	RR		C	L	RR		
31.	**Hazards**	Activities adversely affect sensitive receptors	SOF	• Bushfire as a result of accidental ignition at site • Accumulation of NORMs in equipment and flowline • Logistics during the wet season s	• Loss of flora / fauna habitat • Adverse impact on human health	Moderate	Unlikely	Medium	**Fire and emergency response** • Fire extinguishers to be available at each site (PPE) • All staff and visitors accessing the facilities must be inducted into the emergency response plan for each facility (administrative) • 4m fire breaks around fixed surface assets (engineering) • Hazardous zones for each well determined in accordance with the relevant Australian Standard (administrative) • Only equipment authorised within the hazardous zone is used whilst on site (administrative) • In case of emergency, activate emergency response plan (administrative) **Chemical/hazardous material storage** • Transport of hazardous material within the NT by a licensed NT EPA contractor (administrative) • Handle, store and otherwise manage all hazardous goods in accordance with relevant Australian Standards and Codes of Practice (administrative) • In the event of a spill or leak, follow emergency response plan (administrative)	Minor	Possible	Low	A	• Infrastructure at all sites is contained and isolated from the surrounding environment by means of fire breaks and related controls. This includes monitoring of containment and isolation. Potential impacts to the existing fire regime are considered remote. • The SOF is currently in care and maintenance. • As it is not currently operational, risk to land is considered low
32.	**Heritage**	Activities adversely affect cultural heritage sites	SOF	• Earthworks required for maintenance • Movement of heavy machinery and vehicles within each site • Ignition of fire along assets	• Disturbance to cultural heritage sites	Moderate	Unlikely	Medium	**Cultural Heritage and Sacred Sites Preservation** • Site inductions to include information on location of known cultural and heritage sites and process for unexpected finds (administrative) • Where known cultural heritage sites are within 50m of maintenance earthworks, the site will be delineated with bunting or similar (engineering) • No earthworks to be conducted after sunset or before sunrise (administrative) • Journey management plan filled in and approved by CP (administrative) • Personnel access to the facility and any site/area by permit approved by the CLC and CP (administrative) • If fire detected, implement emergency response plan (administrative) • Annual reduction of weed and vegetation at operational sites to reduce ignition load (engineering) • Conduct Job Hazard Analysis for any new task or new use of equipment to ensure appropriate control measures are identified and to take account of variation in fire danger ratings (administrative) • Prior to attending site, each day obtain information on current fire danger, presence of fire in the area and current weather condition from government websites (administrative)	Moderate	Remote	Low	A	• The SOF is currently in care and maintenance. • As it is not currently operational, risk to land is considered low
33.	**Community - traffic**	Activities adversely affect sensitive receptors	SOF	Traffic increase due to activities	• Local community and landowners' discontent and activism • Increased potential for vehicle accidents and damage to infrastructure • Increased occurrence and diversity of weed species • Disturbance or impedance of surrounding stakeholder's regular activities	Moderate	Possible	Medium	**Traffic and Transport Management** • Implement dust control measures where appropriate including water trucks (engineering) • Remote location unlikely to impact on surrounding users (engineering) • Vegetation in no-use area to be left undisturbed (engineering) • Low ground cover (<10cm) to be maintained on low traffic areas and around well heads to maintain fire safety while minimising dust (engineering) • Machinery and vehicles to stick to designated speed limits (administrative)	Medium	Unlikely	Low	A	• The SOF is currently in care and maintenance. • As it is not currently operational, risk to land is considered low

No.	Environmental Aspect	Potential impact	Field	Causes	Consequence	Unmitigated Risk			Existing Control Measures (Control Type)	Mitigated Risk			Uncertainty Level	ALARP Discussion
						C	L	RR		C	L	RR		
34.	**Community – tourism**	Activities adversely affect sensitive receptors	SOF	• Noise generated during routine operations, maintenance and civils work. • Artificial lighting required for safety during 24-hour operation	• Loss of visual amenity impacting landholder, tourists or the wider community • Noise generation causing a nuisance	Moderate	Unlikely	Medium	**Community Impact Minimisation** • All activities to stay within the approved area (administrative) • A full stakeholder consultation log will be maintained by CP (administrative) • Early and ongoing Community consultation and engagement approach • Local communities and stakeholders advised of CP contact number through multiple channels (administrative) • Site is remote from any community members or sensitive receptors (administrative)	Moderate	Unlikely	Low	A	• The SOF is currently in care and maintenance. • As it is not currently operational, risk to land is considered low
35.	**Community – visual impact**	Activities adversely affect sensitive receptors	SOF	• Artificial lighting required for safety during 24-hour operation	• Light pollution impacting sensitive receptors	Moderate	Unlikely	Medium	**Community Impact Minimisation** • All activities to stay within the approved area (administrative) • A full stakeholder consultation log will be maintained by CP (administrative) • Early and ongoing Community consultation and engagement approach • Local communities and stakeholders advised of CP contact number through multiple channels (administrative) • Site is remote from any community members or sensitive receptors (administrative)	Moderate	Unlikely	Low	A	• The SOF is currently in care and maintenance. • As it is not currently operational, risk to land is considered low
36.	**Rehabilitation**	Activities adversely affect soils and topography	SOF	• Loss of soil productivity from rehabilitation failure • Loss of soil productivity due to soil compaction	• Loss or endangerment of threatened species • Loss of fauna and flora habitat • Rehabilitation failure, leads to future land degradation and flow on effects to the surrounding environment	Moderate	Possible	Medium	**Decommission and Rehabilitation Management** • Rehabilitation to be implemented 12 months post decommissioning of the infrastructure • When rehab is to occur topsoil will be spread and area re-seeded with local native seed. If germination does not occur after appropriate rainfall over several years re-seeding will be conducted. • Vegetation survey conducted before disturbance to provide baseline reference to determine post revegetation success • Location of top soil mounds clearly marked and less than 1.5m high to protect the biological activity of the top soil • All compacted hardstands and laydown areas deep ripped to encourage infiltration and water retention • Return all disturbed landforms to as close as possible the natural terrain • Photographic point monitoring established before disturbance and continued after to identify any areas requiring further rehabilitation work • Appropriate management and control of waste materials on and off-site • No new weeds or non-native plants introduced, and appropriate weed management implemented, as per CP "Biosecurity Management" under this EMP	Possible	Minor	Low	A	• The SOF is currently in care and maintenance. • As it is not currently operational, risk to land is considered low

Appendix 2. Stakeholder Engagement Register

PALM VALLEY

Outlined below is a record of engagement undertaken in relation to the Palm Valley Field operations and workovers activities over the past 12 months.

Date	Topics	Engagement	the Operator Representative	Stakeholders	Information Provided	Outcome	Objections / Claims	Response to Objections / Claims
07/12/2023	Palm Valley operations, future plans, and HSE performance.	Face to face on-site at the LCM	Chief Executive Officer, Chief Financial Officer, Drilling Manager, Operations Manager	Traditional Owners, CLC representatives - see note 1	LCM presentation - see note 2	The T/O's and CLC were satisfied that sufficient information was provided. No additional clarifications were requested.	Nil	N/A

Note 1 –

Central Land Council

27 Stuart Highway Alice Springs, NT, 0870; Phone: 08 8951 6211

Contacts: [redacted]

Traditional Owners – Contact details: via Central Land Council

In attendance at LCM: [redacted]

Note 2 – See Appendix 3 for the presentation provided at the at the Palm Valley LCM

DINGO GAS FIELD

Outlined below is a record of engagement undertaken in relation to the Dingo Gas Field operations and workovers activities over the past 12 months.

Date	Topics	Engagement	the Operator Representative	Stakeholders	Information Provided	Outcome	Objections / Claims	Response to Objections / Claims
06/12/2023	Dingo operations, future plans, and HSE performance.	Face to face on-site at the LCM	Chief Executive Officer, Chief Financial Officer, Drilling Manager, Operations Manager	Traditional Owners, CLC representatives - see note 1	LCM presentation - see note 2	The T/O's and CLC were satisfied that sufficient information was provided. No additional clarifications were requested.	Nil	N/A

Note 1 –

Central Land Council

27 Stuart Highway Alice Springs, NT, 0870; Phone: 08 8951 6211

Contacts: [redacted].

Traditional Owners – Contact details: via Central Land Council

In attendance at LCM: [redacted]

Note 2 – See Appendix 3 for the presentation provided at the at the Dingo LCM

SURPRISE OIL FIELD

Outlined below is a record of engagement undertaken in relation to the Surprise Oil Field activities over the past 12 months.

Date	Topics	Engagement	FOG Representative	Stakeholders	Information Provided	Outcome	Objections / Claims	Response to Objections / Claims
15/07/2021	Exploration programs and Mamlambo wells	Face to face in Kintore facilitated by the CLC	General Manager Exploration, Drilling Manager	Traditional Owners, CLC representatives - see note 1	Extract from LCM presentation (see Appendix 4)	The T/O's and CLC were satisfied that sufficient information was provided. No additional clarifications were requested.	Nil	N/A

Note 1 –

Central Land Council

27 Stuart Highway Alice Springs, NT, 0870; Phone: 08 8951 6211

Central Land Council Contacts: [redacted]

Traditional Owners in attendance at LCM: [redacted], no names were provided in minutes supplied by the CLC

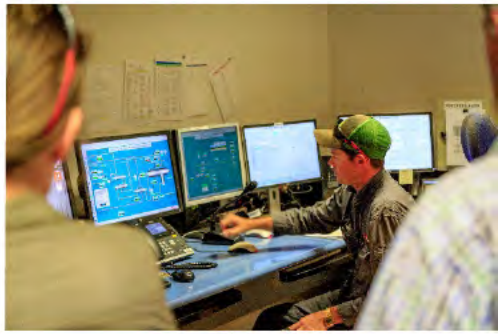
Note 2 – See Appendix 3 for the presentation provided at the Surprise LCM

Appendix 3. Community consultation presentations









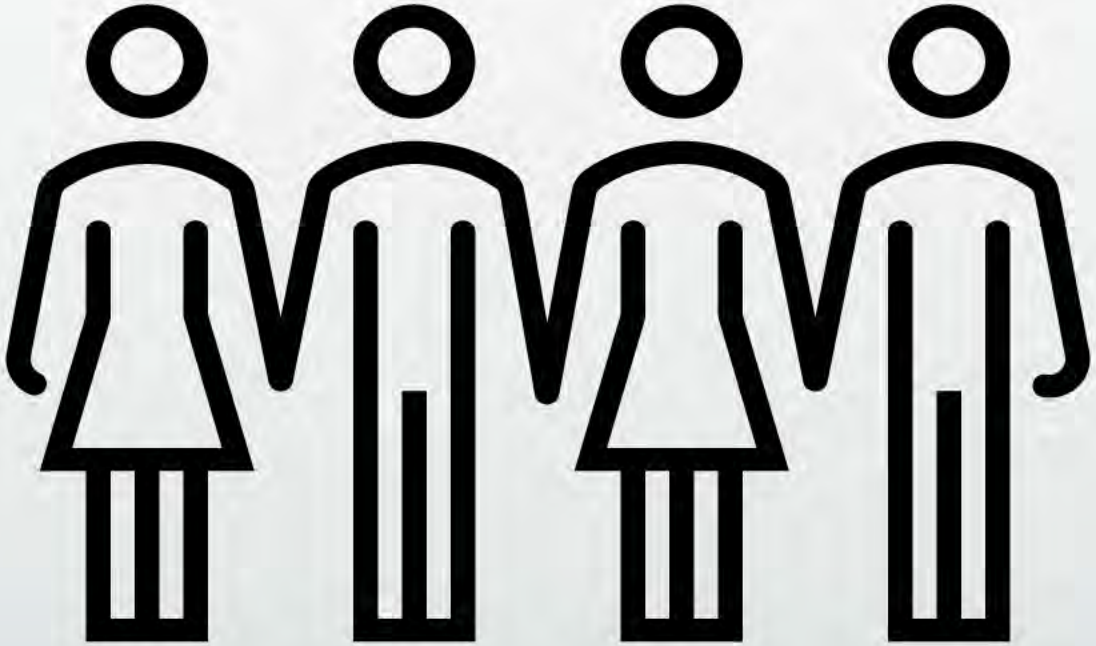
Palm Valley LCM
07 December 2023

Central Petroleum

Agenda

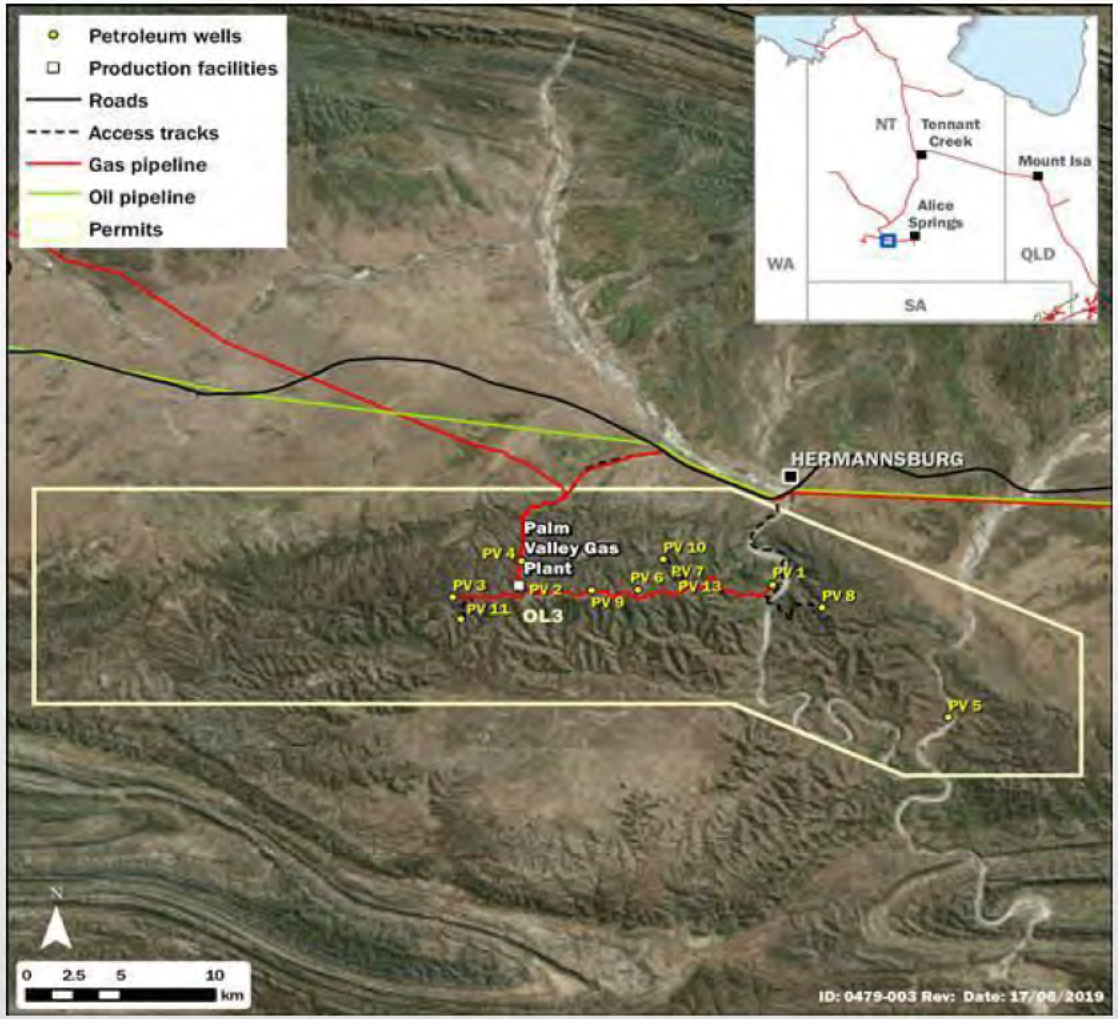
1. Introductions / Welcome
2. CLC – LCM process and procedures
3. Central / Palm Valley Performance
4. HSE Performance
5. Environmental Management
6. Social Management
7. Development Activities undertaken
8. Future Development Activities
9. Indigenous / Local Employment
10. Community Engagement / Sponsorships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

Introduction / Welcome



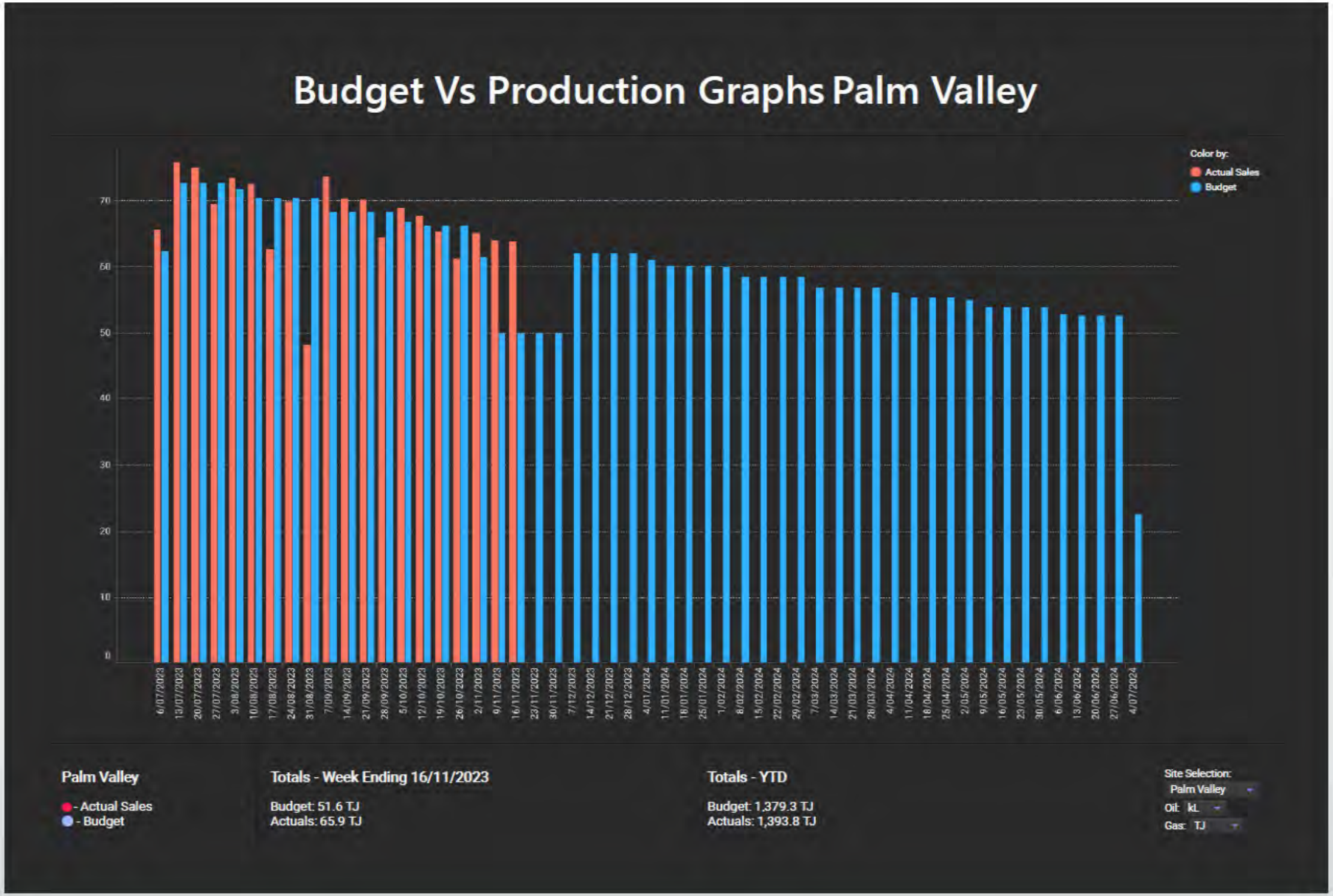
Palm Valley

1. The Palm Valley Field is located West of Alice Springs,
2. The field comprises of thirteen wells (PV1-13)
3. Minor processing (trace water removal) occurs at Palm Valley before the gas is transported via pipeline to the market
4. The pipeline transports gas from the field through to either Alice Springs or the main pipeline to the North to NT and Australian consumers.



Palm Valley Production

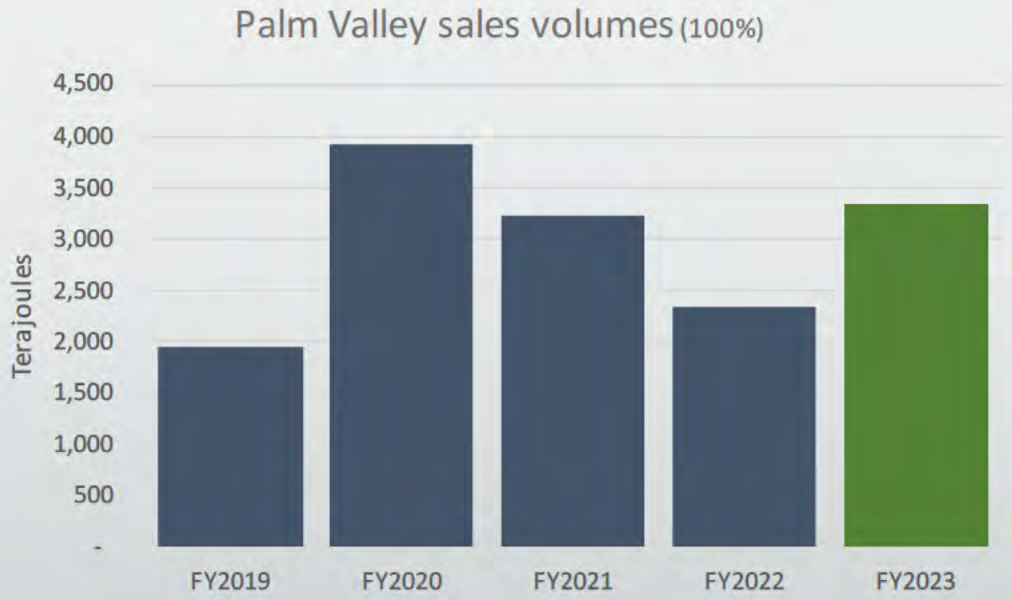
- Field production is currently tracking to forecast.
- The partial drop in production is for maintenance in Feb 2024.



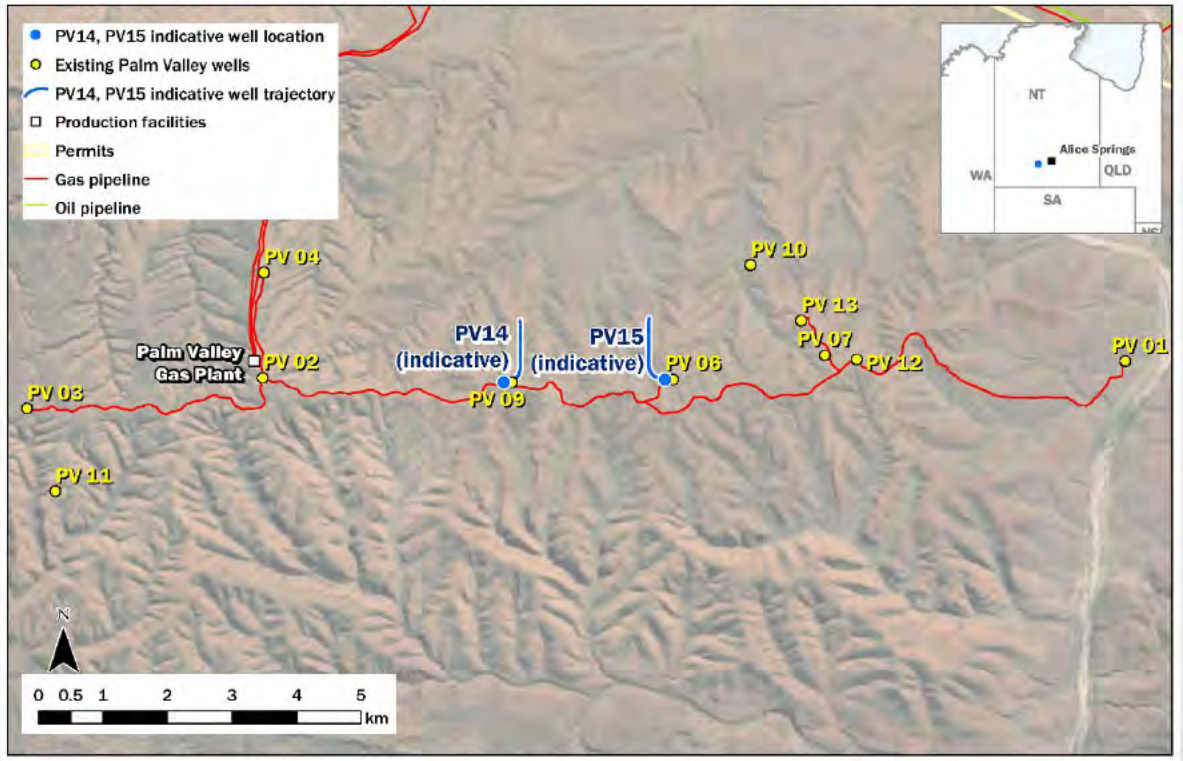
Palm Valley production and reserves boost

PV12 (NEW) well: 12 months on production

- Produced at over 10 TJ/day, doubling PV field production
- Total 12 months production circa 2.7 PJ
- Increased Palm Valley 2P gas reserves by 5 PJ (100% JV)
- Performance supports further drilling at Palm Valley to counteract natural decline



Possible new Palm Valley development well locations[1]



1 Subject to CLC/AAPA and JV approvals

Palm Valley Operations / Performance

- Central has operated continuously during the year and plans on maintaining full production throughout next year
- Palm Valley field continues to supply gas to NT consumers including the Alice Springs power station.
- Major areas of activities include:
  - Continue to investigate opportunities to enhance safety and environmental performance
  - Continue with ongoing routine operations
  - Maintain full Government and internal compliance for all operations
  - Continue to ensure integrity of the wells and facilities are maintained.
  - Plan for future development activities

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.

Health, Safety & Environmental Performance

- Central has operated the Palm Valley facilities since September 2015 (over 8 years):
- Strong performance with Field HSE, working in the field and offices without an injury requiring medical treatment or time off for over 400 days.
- Proven environmental performance – high level of compliance with environmental conditions in 2023
- Implemented comprehensive groundwater monitoring program – No issues identified
- Annual weed Surveys undertaken – No issues identified
- Developing progressive rehabilitation and closure plans
- PV 13 / 11 Progressive rehabilitation conducted
- Minimising greenhouse gas emissions and sustainability initiatives

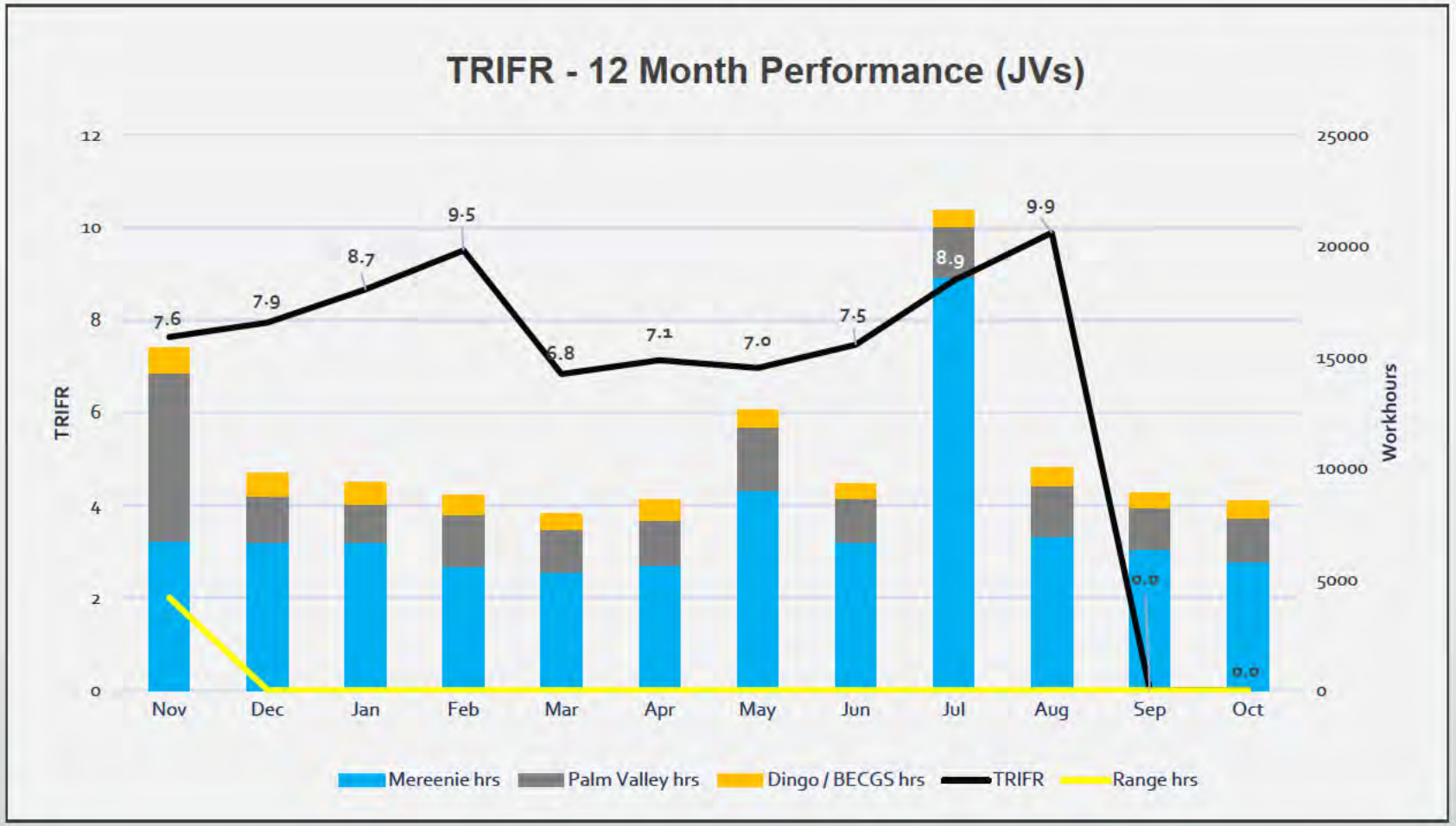
Environmental Management

- Ongoing activities
  - Quarterly environmental inspections.
  - Annual environmental performance audits conducted and submitted to NTG in April 23

Compliance Indicator	Number	Percentage
Compliant	107	70%
Non-Compliant	0	0%
Not Applicable	46	30%

- Water management
  - Quarterly monitoring of water quality, standing water levels in surrounds bores and springs in Palm Valley
- Environmental Management Plans (EMP)
  - All activities approved and conducted under an EMP aims to ensure minimal impacts on ground water, flora and fauna, soils, weeds, etc. as well protect any sacred / historical sites.
  - All new activities require an EMP

Total Recordable Injury Frequency Rate



Days without an LTI / MTI:	
Dingo	1,659
Palm Valley	397

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.

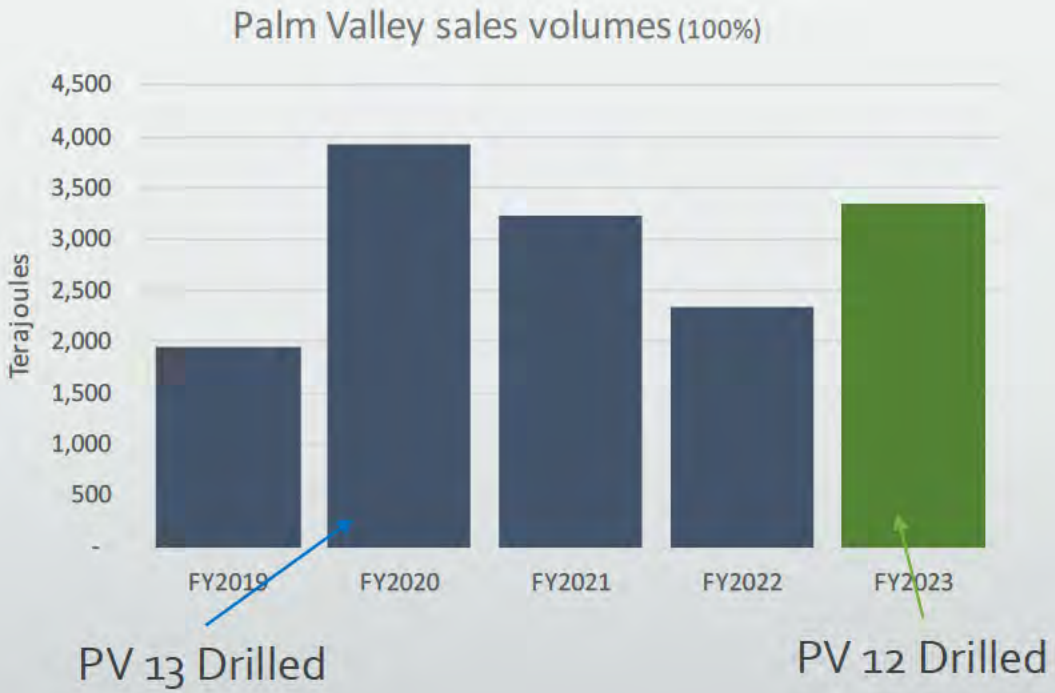
Indigenous Employees by Location				
	Indigenous		Total	Indigenous
Location	Female	Male	Employees	%
Mereenie	0	4	26	15%
Palm Valley	0	2	9	22%
BECGS	0	3	6	50%
Northern Territory	0	9	41	22%

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.

Development activities

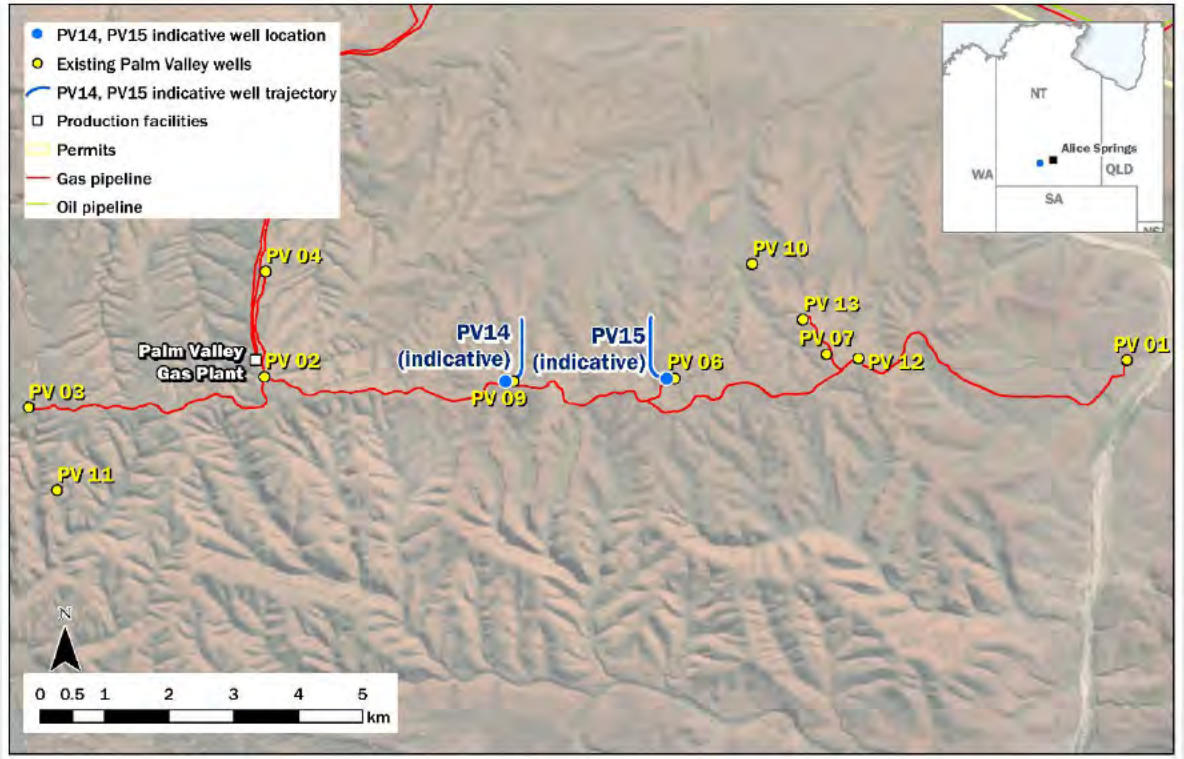
- Sub surface (new wells):
- If new wells are successful, they can extend the life of the field.



- Power generation
- Integrity maintenance
- Planned well integrity programs.
- Keep the existing plant running optimally and in compliance.

Development Wells – New Opportunities

- As shown in previous slides. New wells can extend the life of the field. This results in prolonged production, royalties and benefits for the community.
- Central has commenced planning for two new wells in the PV field.
- Discussions and relevant approvals will be sought from the PV T/O's and relevant authorities in the next 6 months.
- Drilling late 2024 or early 2025 pending approvals.



Development Activities – New Well 2024/5

- Palm Valley 14/15 may commence in 2024/ 2025 involving:
  - Civil Construction of well pad and access tracks
  - Mobilisation of drilling rig, equipment, mobile camp and personnel
  - Drilling of 2 wells
  - Construct new pipe line from well to existing field gathering network
  - Well is commissioned and handed over to production operations
  - Currently no plans for fracking



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 up for renewal in November 2024
- Central / CLC have commenced the process to renew the agreement
- Further engagement and discussions to support the renewal to occur during 2024

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.

Contact and Further Information

Level 7, 369 Ann Street
Brisbane QLD 4000
Australia

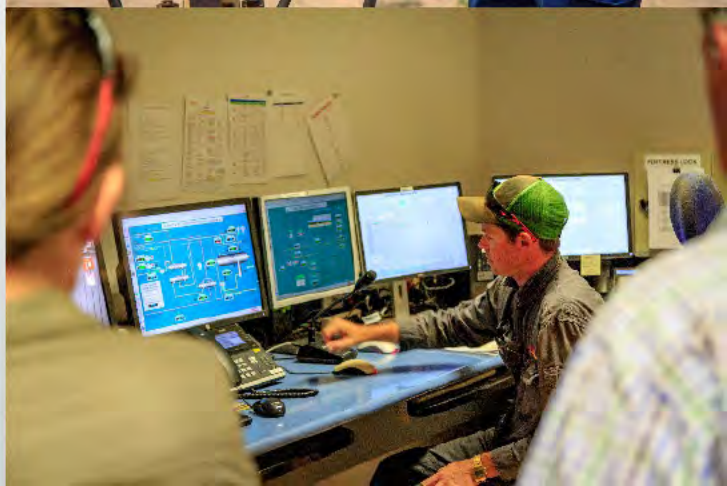
+61 (0)7 3181 3800

info@centralpetroleum.com.au

www.centralpetroleum.com.au



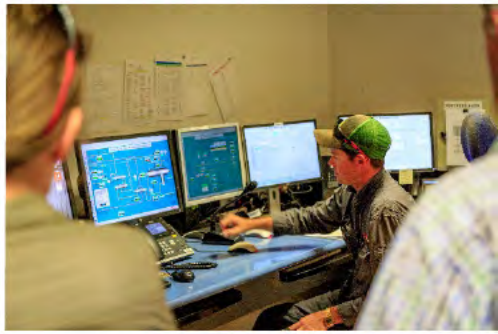












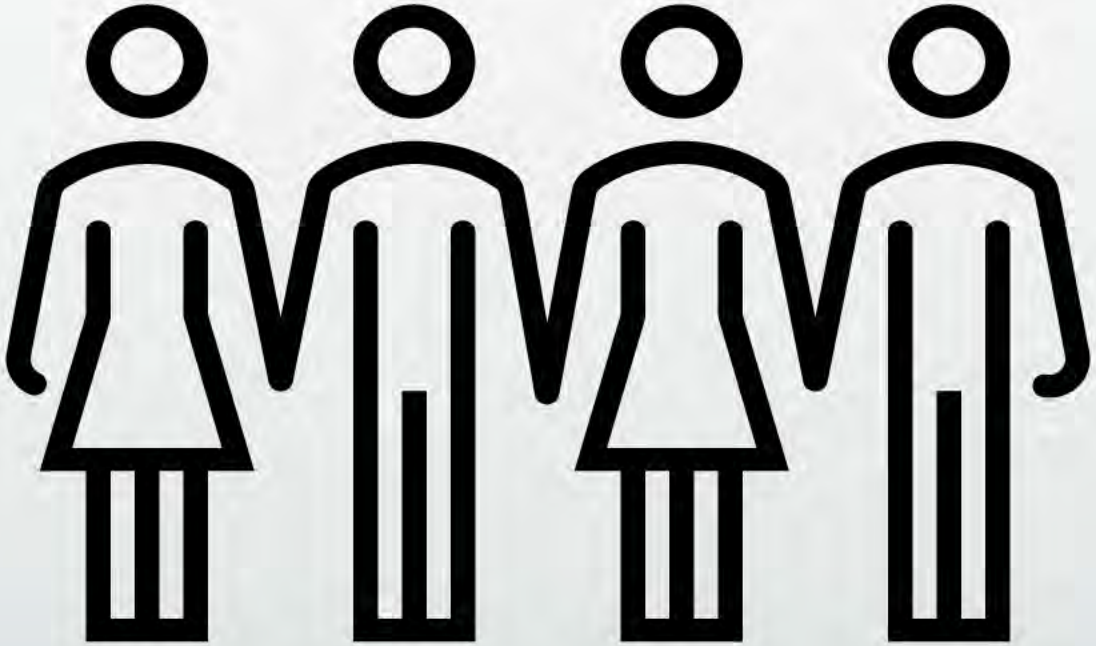
Dingo LCM
06 December 2023

Central Petroleum

Agenda

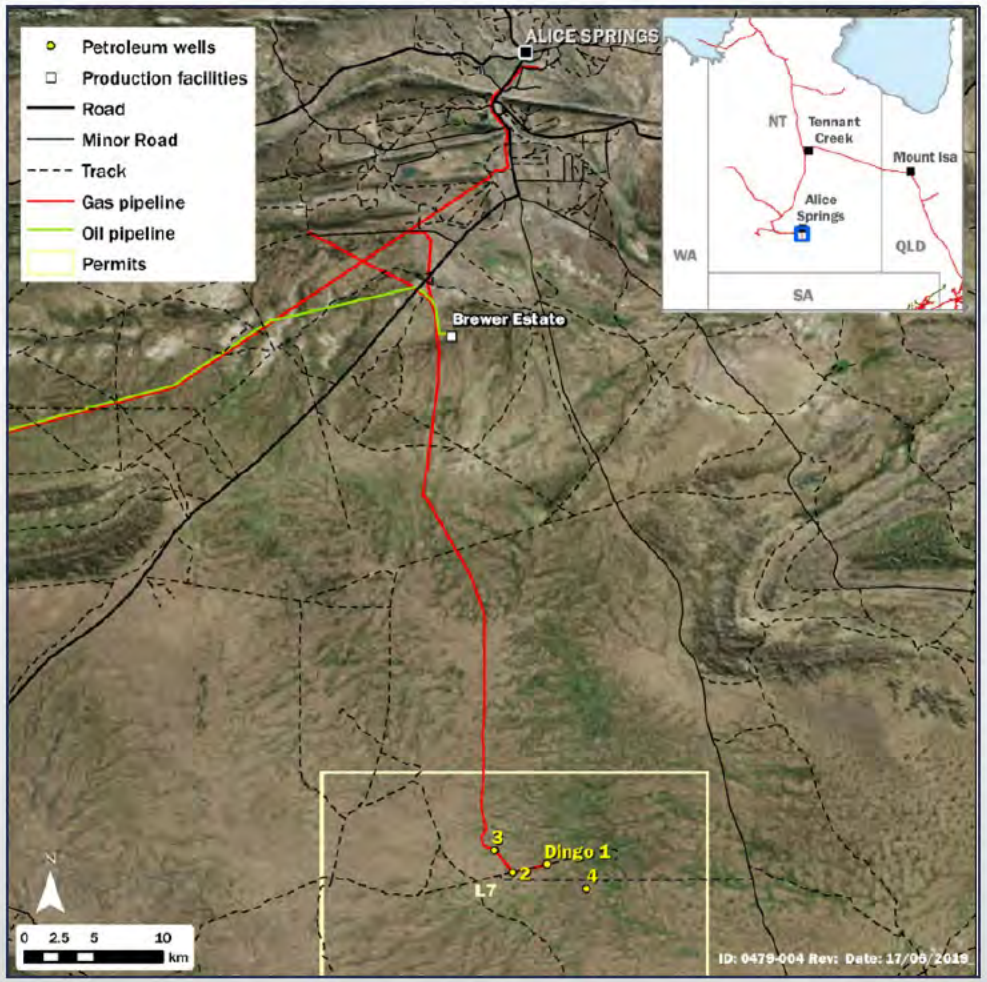
1. Introductions / Welcome
2. CLC – LCM process and procedures
3. Central / Dingo Performance
4. HSE Performance
5. Environmental Management
6. Social Management
7. Development Activities undertaken
8. Future Development Activities
9. Indigenous / Local Employment
10. Community Engagement / Sponsorships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

Introduction / Welcome



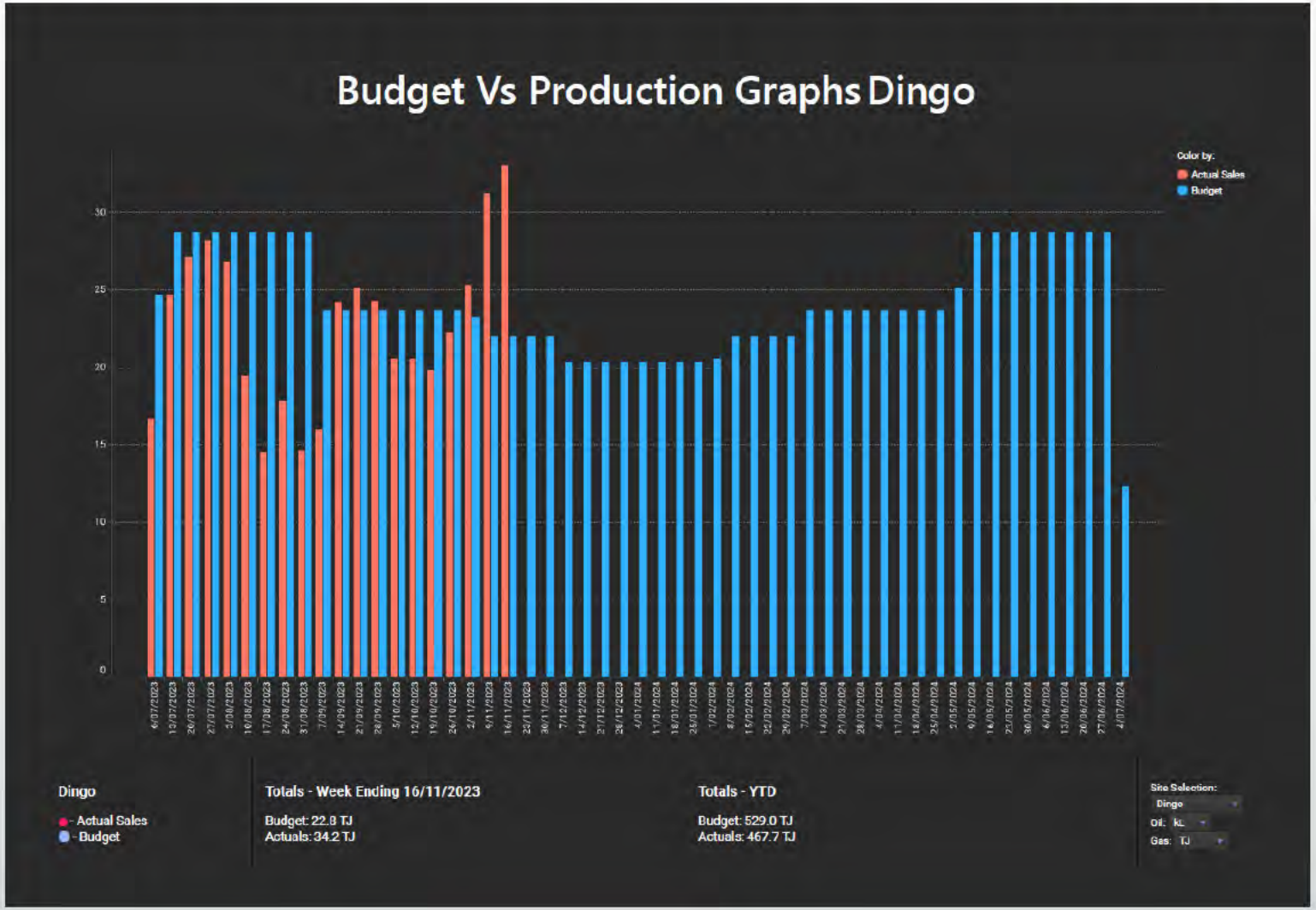
Dingo / BECGS– Location

1. Dingo Field South of Alice Springs, located in the Orange Creek pastoral station.
2. The field comprises of:
    1. Two Active wells (Dingo 2/3)
    2. 1 fully decommissioned well
    3. 1 suspended well
3. A 40Km pipeline supplies gas from the field to Brewers Estate City Gas Station (BECGS)
4. Minor processing (trace water removal) occurs at BECGS before the gas is transported to the Owen Springs power station to supply electricity for Alice Springs



Dingo / BECGS– CY 23 Production Highlights

1. As BECGS is connected directly to the power station our production is limited by electricity demand.
2. Higher in Summer to assist the solar and meet the demands
3. Lower demand for electricity in Winter.
4. The power station assists the solar generation. Especially in peak times and evenings.



Dingo Operations / Performance

- Central has operated continuously during the year and plans on maintaining full production throughout next year
- Dingo field continues to supply gas to NT consumers including the Alice Springs power station.
- Major areas of activities include:
  - Continue to investigate opportunities to enhance safety and environmental performance
  - Continue with ongoing routine operations
  - Maintain full Government and internal compliance for all operations
  - Continue to ensure integrity of the wells and facilities are maintained.
  - Plan for future development activities / upgrades

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

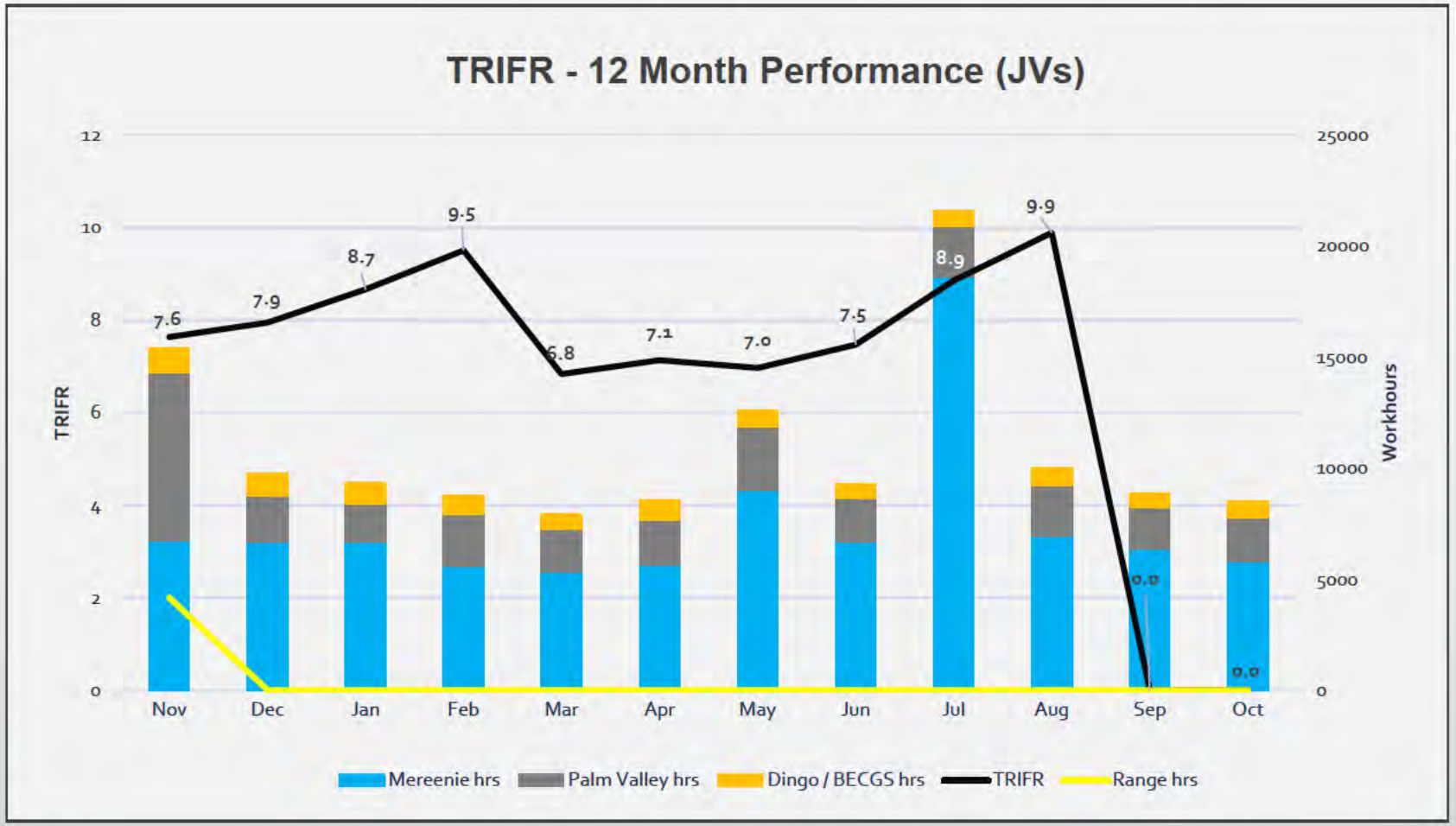
DO

- 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.

Health, Safety & Environmental Performance

- Central has operated the Dingo / BECGS facilities since September 2015 (over 8 years):
- Operated for 4.5 years over 1659 days, worked in the field and offices without an injury requiring medical treatment or time off.
- Central have operated the field without a reportable environmental incident since taking over operatorship which is an outstanding result.
  - Proven environmental performance – high level of compliance with environmental conditions
  - Implemented comprehensive groundwater monitoring program – No issues identified
  - Annual weed Surveys undertaken – No issues identified
  - Developing progressive rehabilitation and closure plans – Dingo 4 fully rehabilitated working with DEPWS to classify area as rehabilitated
  - Minimising greenhouse gas emissions and sustainability initiatives

Total Recordable Injury Frequency Rate



Days without an LTI / MTI:	
Dingo	1,659
Palm Valley	397

Environmental Management

- Ongoing activities
  - Quarterly environmental inspections.
  - Annual audits recently – high level of compliance with environmental outcomes and performance standards with only minor administrative opportunities identified
- Water management
  - Quarterly monitoring of water bores to ensure aquifer is protected including measuring water quality, standing water levels
- Environmental Management Plans (EMP)
  - All activities approved and conducted under an EMP 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

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
- Offered indigenous trade apprenticeships
- There may be opportunities in the proposed works over the coming year.

Indigenous Employees by Location

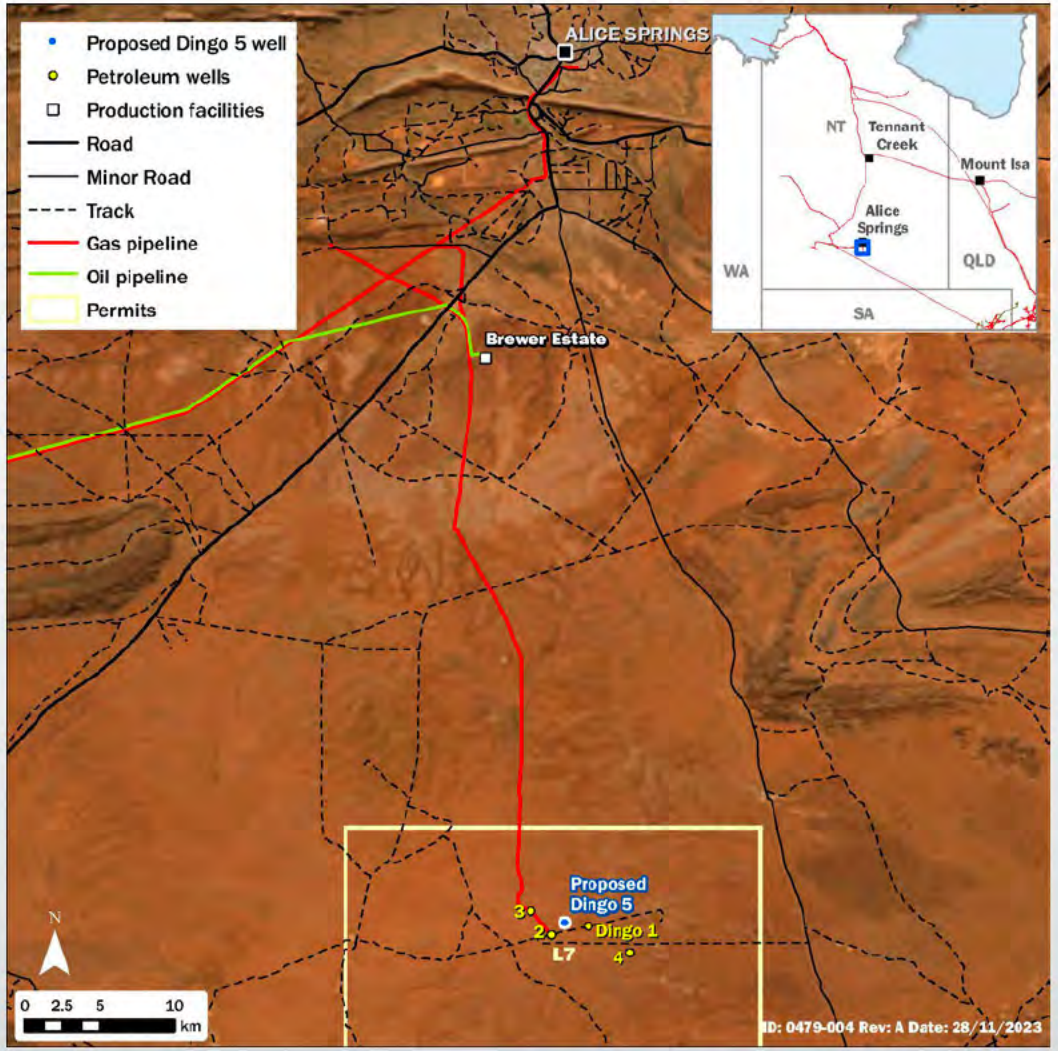
	Indigenous		Total	Indigenous
Location	Female	Male	Employees	%
Mereenie	0	4	26	15%
Palm Valley	0	2	9	22%
BECGS	0	3	6	50%
Northern Territory	0	9	41	22%

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.

Development

- The Dingo field is market constrained with gas being sold to power generator PWC
- Further large-scale development will likely require another export route which could be facilitated by exploration success
- Current plans for development activities are conservative and only maintain current capacity and could include:
  - Well head compression (compressor located in the field at Dingo)
  - Earliest additional well in 2025 (Dingo 5) already permitted with the CLC.



Development Activities – New Well 2025

- 1 new well may be drilled – Dingo 5
- Dingo 5 may commence in 2025 involving:
  - Civil Construction of well pad and access tracks
  - Mobilisation of drilling rig, equipment, mobile camp and personnel
  - Drilling of the well
  - Construct new pipe line from well to existing field gathering network
  - Well is commissioned and handed over to production operations
  - Currently no plans for fracking



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:
  - 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

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.

Contact and Further Information

Level 7, 369 Ann Street
Brisbane QLD 4000
Australia

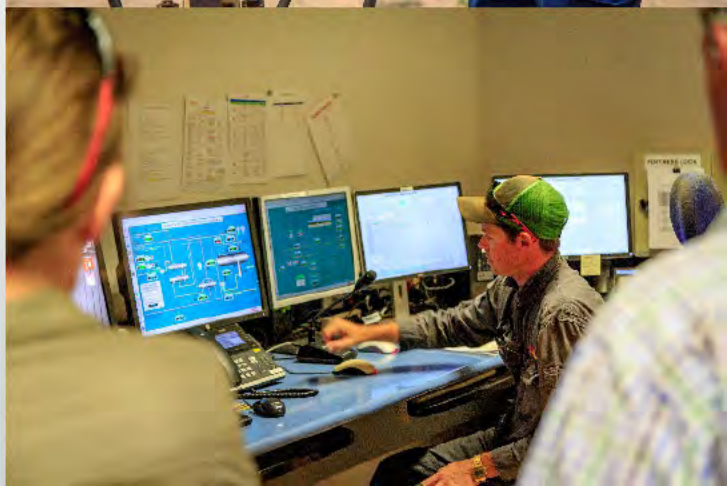
+61 (0)7 3181 3800

info@centralpetroleum.com.au

www.centralpetroleum.com.au



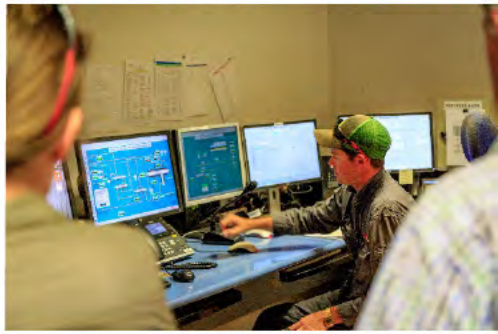












CY2021 Central Work Program

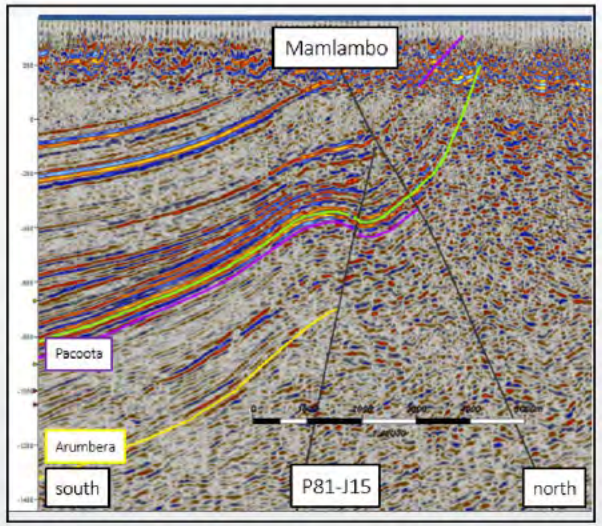
Kintore Presentation July 2021

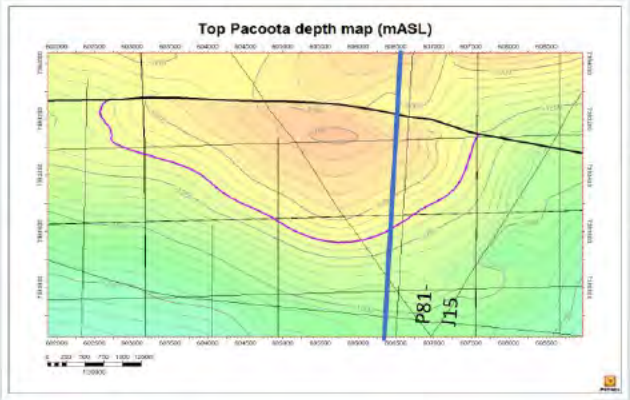
Central Petroleum Limited (ASX: CTP)

Central Petroleum

Mamlambo Oil Technical Summary



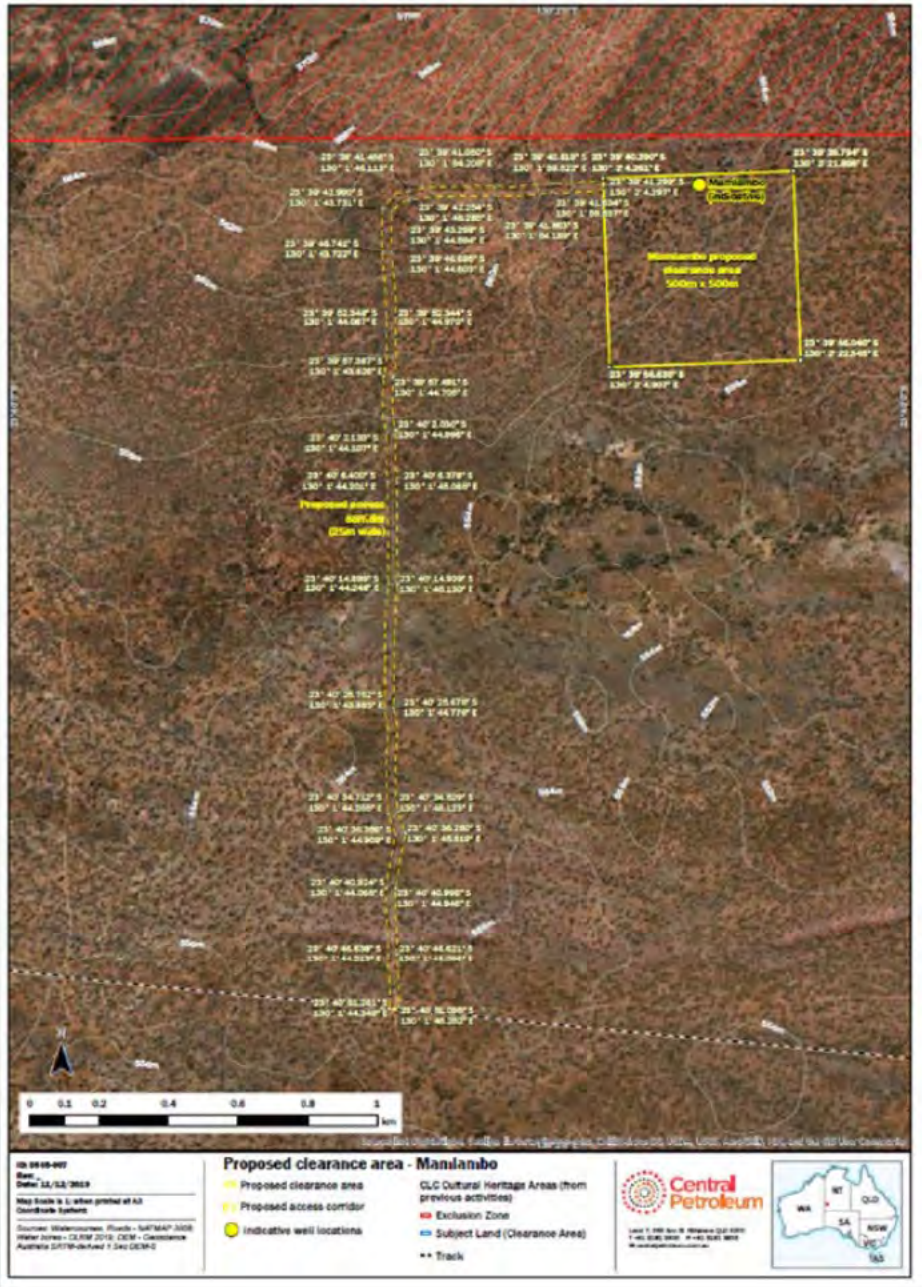




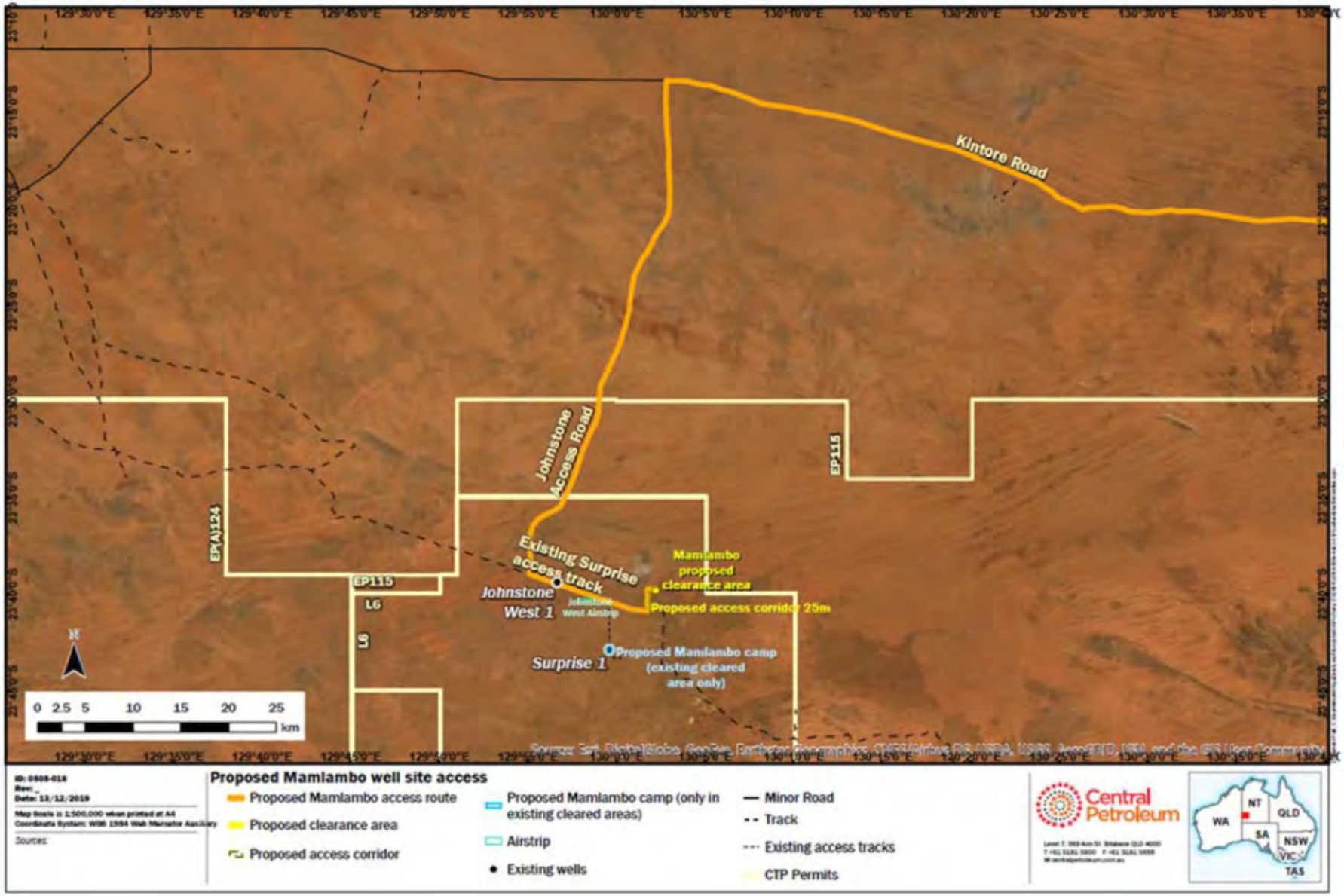
- Mamlambo is an oil prospect located in L6 approximately 8 km to the north-east of the Surprise oil field
- Large prospect in the oil prone section of the Amadeus Basin
- Mean Recoverable Resource is calculated to be 29 mmbbls
- Shallow target (1,300m) and investigating the use of large mineral rig for drilling to reduce exploration drilling costs
- Primary objective at Mamlambo is the Pacoota Sandstone with secondary objectives in the Lower Stairway Sandstone.
- Mamlambo is currently defined by 12 x 2D seismic lines
- 1 x well planned initially.
- In a success case Mamlambo would open multiple commercial opportunities and could be upto 8 wells.

Mamlambo 1 Location

- New Drill pad will be required.
- This will be ~ 150m x 150m for the rig.
- 500x500m has been applied for so that we have some degree of flexibility within the area if needed. It also allows for the provision of truck turning circles.
- Access is via a new access track (that is predominantly an old cleared seismic track with a small new section.
- A rig camp will be set up established at the Surprise production area.

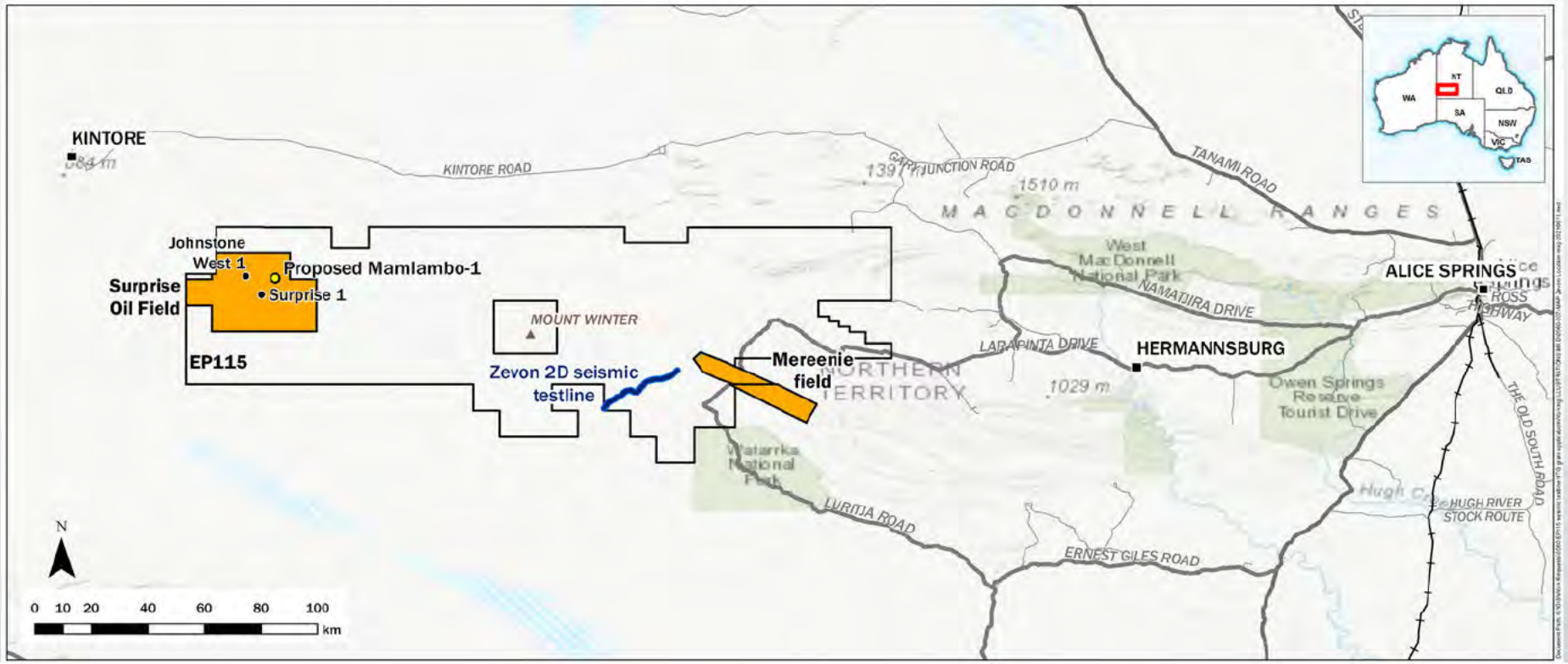


Mamlambo 1 Location

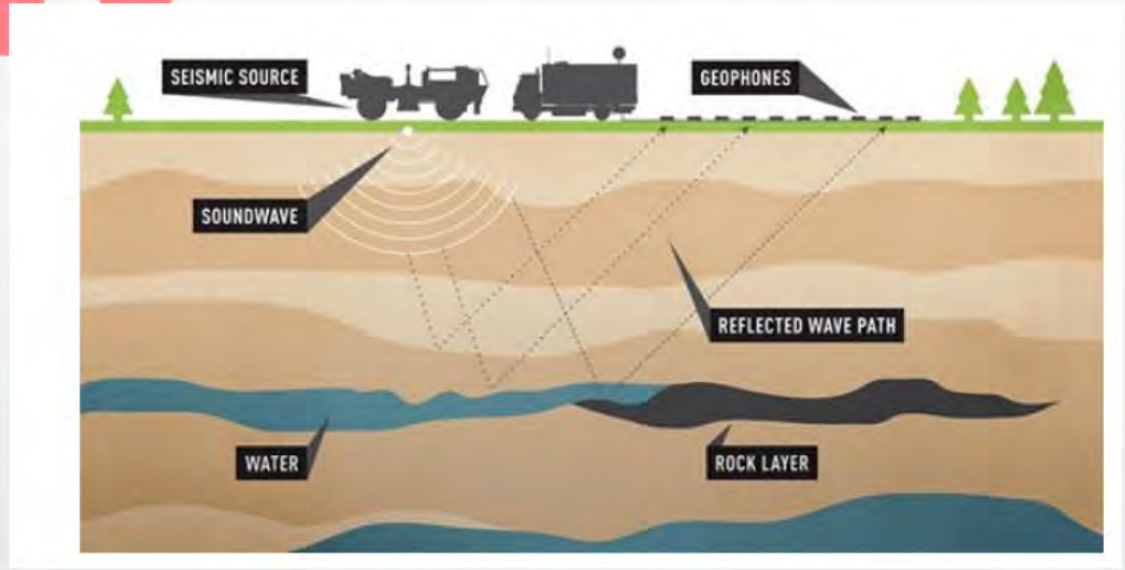


Zevon – Seismic Line

- In September we will acquire 30km of seismic near Mt Winter, starting at Mereenie
- Crew will stay at Mereenie Camp
- Should take about 18 days in the field including set-up and close out
- Using existing track and old seismic line, very limited interference with environment
- Late next year we will return to undertake a 700 km seismic survey
- We plan to drill a well in late 2023 to test the seismic we record next year



What is seismic?



- Specialised trucks drive along a predetermined path and stop every 10m to vibrate the ground for 12 seconds
- Geophones which are laid out every 5m record the amount of time it takes for the sound signal to penetrate the earth be reflected of the rock layers and return to the surface



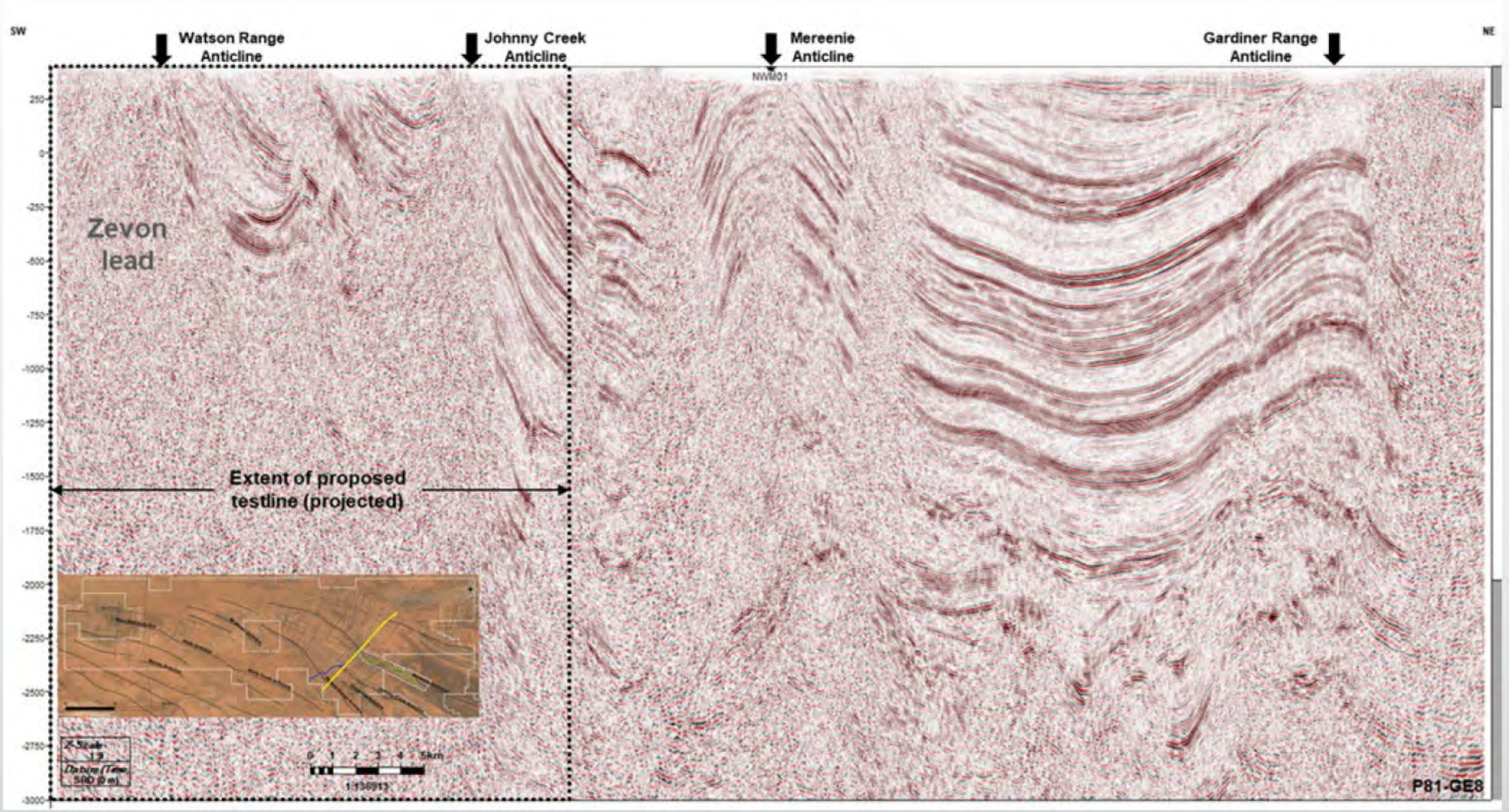
We will use 3 Vibroseis trucks like these to put vibrations into the ground



Geophones (microphones) will be laid out on the ground to record the seismic (sound) waves as they return to the surface

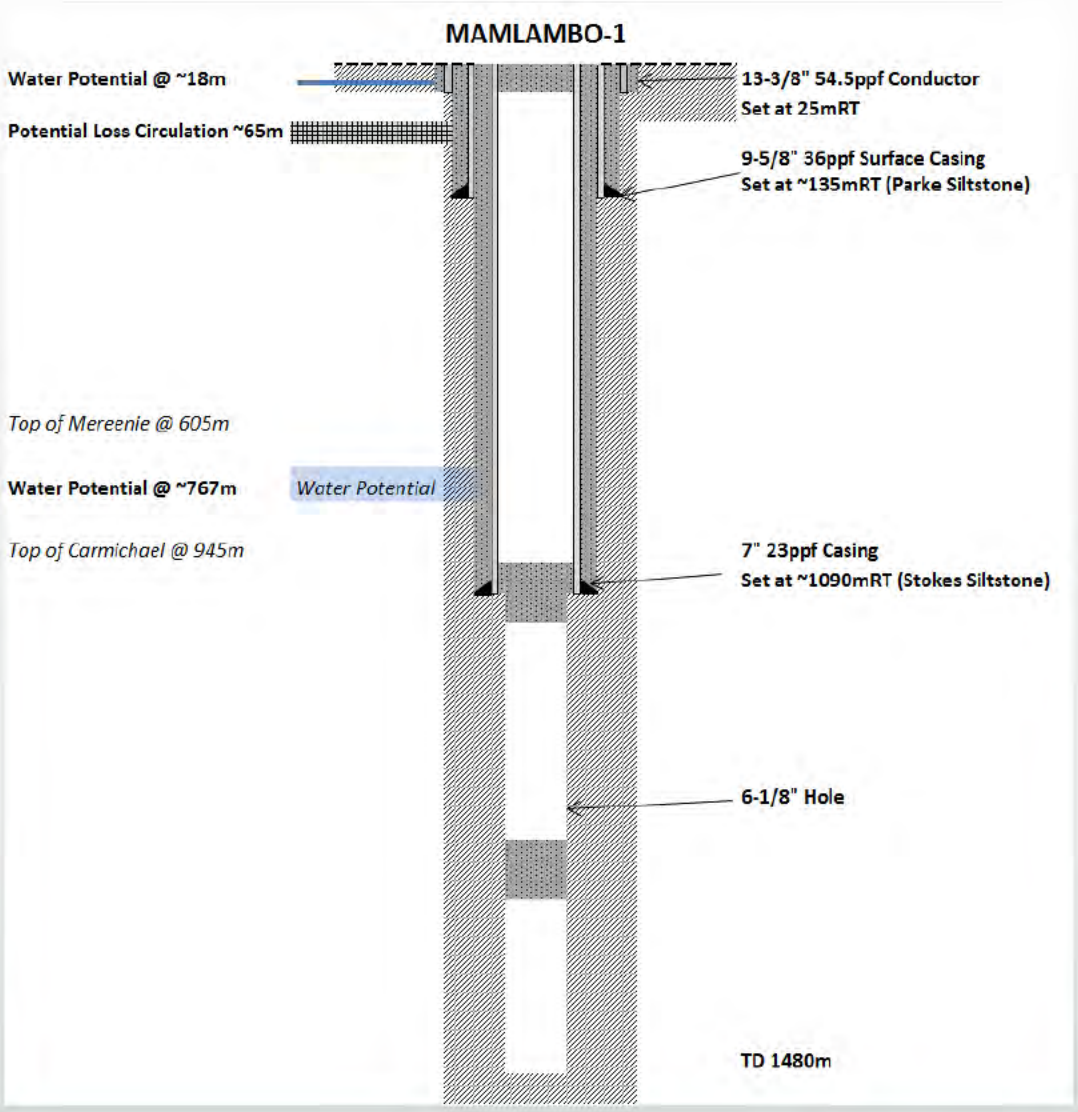


Seismic example



Mamlambo 1 Drilling

- Vertical well to be drilled by drilling rig with mud
- Surface casing to Stokes Formation to cover entire Mereenie Sandstone aquifer is protected with steel casing and cement.
- All works are reviewed and approved by NT government.
- All risks to the environment are as low as reasonably practical.
- Well will be either plugged and abandoned or cased and suspended if successful
- Drilling – not approved, but possible in 2022.
- No Fracking.



Surprise Operations

- Surprise production has been suspended now for several years due to many factors:
  - Low oil price
  - Covid
  - Profitability
- Ongoing Maintenance Activities are being routinely performed
  - Site Inspections
  - Ground water monitoring recently commenced and will be ongoing for 3 years
  - Routine Environmental inspections
- Start up of Surprise is linked to the success of Mamlambo.

Sponsorship

- Central Petroleum continues to look for sponsorship opportunities.
- Recently sponsored the Organ and P.A system at Kintore

- Questions or Answers :

- Contacts
- James van Rooyen or Duncan Lockhart
- Phone– 07 3181 3800
- Email: info@centralpetroleum.com.au.

Contact and Further Information

Level 7, 369 Ann Street
Brisbane QLD 4000
Australia

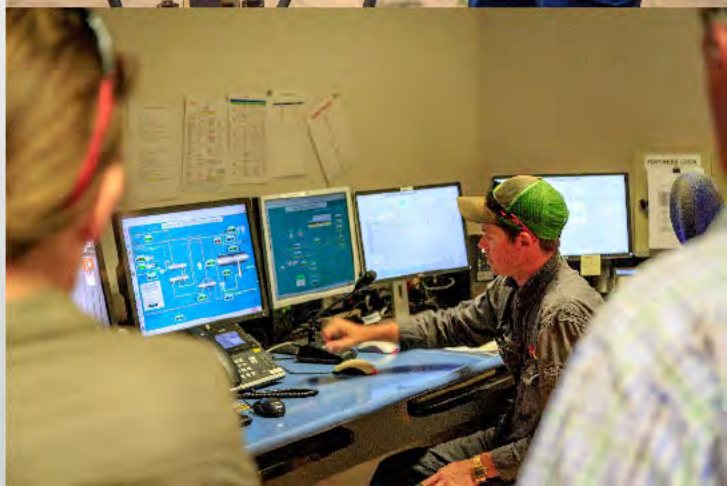
+61 (0)7 3181 3800

info@centralpetroleum.com.au

www.centralpetroleum.com.au







Appendix 4. EPBC self-assessment and Protected Matters Search Tool Results

Amadeus EMP – *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) self-assessment for significant impacts to Matters of National Environmental Significance (MNES)

To support the Operators' conclusion that the activities outlined in the Amadeus EMP will not have a significant impact on MNES a comprehensive self-assessment of significant impacts as stipulated by the Environment Protection and Biodiversity Conservation (EPBC) Act has been undertaken below. This self-assessment is designed to evaluate and transparently communicate the potential impacts of activities outlined in the Amadeus EMP and demonstrate how they cumulatively avoid having a significant impact on MNES and why a referral process under the EPBC Act is not required.

The EPBC Act plays a pivotal role in ensuring the protection of Australia's most significant environmental values, including threatened species, ecological communities, migratory species, and other critical aspects of our nation's natural heritage. Our commitment to compliance with this legislation is rooted in a deep respect for the environment and a recognition of the importance of sustainable development.

In this self-assessment, we will provide a detailed overview of MNES that are *known* or *likely* to be within the footprint of activities outlined in the EMP as identified by searches conducted using the EPBC Protected Matters Search Tool (PMST), the Northern Territory flora and fauna atlas (NR Maps) and findings from ecological investigations undertaken across the lease areas of the Palm Valley Gas Field (PVGF), Dingo Gas Field (DGF) and Surprise Oil Field (SOF). The assessment provides justification as to why a significant impact either is or isn't expected on each of the nine (9) MNES.

This document serves to support the conclusions reached around having no significant impacts to MNES and provides a transparent and accountable communication tool outlining our findings and commitments with relevant regulatory authorities, stakeholders, and the wider community.

What is a Significant Impact and when is it likely?

The Department of Climate Change, Energy, the Environment and Water (DCCEEW) defines a significant impact as the following:

"An impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts".

Therefore a significant impact will depend on the current status of the matter being impacted as well as its sensitivity to change in the surrounding environment. This assessment will assess the likelihood of each of the MNES identified as *known* or *likely* to occur within the relevant petroleum leases being significantly impacted by the activities outlined in the Amadeus EMP

A significant impact is considered likely when it has a 50% or greater chance of taking place (DCCEEW, 2023).

Relevant MNES

The assessment will initially assess each of the nine (9) MNES and rule out those that are either not present or not applicable within each of the petroleum leases and associated activities listed in the Amadeus EMP. The outcome of this part of the assessment is detailed Table 111 and relevant MNES are discussed further below.

MNES #4 - Nationally threatened species and ecological communities

The DCCEEW Significant Impact Guidelines stipulate that an action will require approval if the action has, will have, or is likely to have a significant impact on a species listed in any of the following categories:

- extinct in the wild
- critically endangered

- endangered, or
- vulnerable.

An action will also require approval if the action has, will have, or is likely to have a significant impact on an ecological community listed in any of the following categories:

- critically endangered, or
- endangered.

A list of all flora, fauna and ecological communities matching the above categories, that were identified as *likely* or *known* to occur within a PMST search undertaken using the footprint of each applicable petroleum lease, is provided in Table 114. Of the species likely and known to occur, there were only vulnerable and endangered species listed. The relevant significant impact criteria for these species are presented in Table 112 and the justification for why no significant impact expected is provided in Table 114.

MNES #5 - Migratory species

The DCCEEW Significant Impact Guidelines stipulate that an action is likely to have a significant impact on a migratory species if there is a real chance or possibility that it will:

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

A list of migratory fauna species *likely* or *known* to occur within a PMST search undertaken using the footprint of each applicable petroleum, is provided in Table 114. As above, Table 113 provides the relevant significant impact criteria for migratory species and Table 4 provides the justification for why no significant impact is expected.

NB: It should be noted that no buffer was applied to the lease shapefiles used in the PMST search as water quality, flora and fauna impacts are all regularly assessed within each lease area and the potential impacts to MNES are well understood in these areas. Using data acquired through regular monitoring undertaken in each field, justification is provided for each species and community as to why a significant impact is not expected.

Table 111: MNES applicable to the Amadeus EMP

MNES	Applicable	Justification
1. World heritage properties	No	The activities being undertaken within the Amadeus EMP are not located near or linked to and listed world heritage properties.
2. National heritage places	No	The PMST report for the Palm Valley Gas Field (PVGF) lists the Hermannsburg Historic Precinct s a National Heritage Place however, it is located within Hermannsburg and is not impacted by any PVGF operational activities.
3. Wetlands of international importance (often called 'Ramsar' wetlands after the international treaty under which such wetlands are listed)	No	The activities being undertaken within the Amadeus EMP are not located near or linked to Ramsar wetlands.
4. Nationally threatened species and ecological communities	**Yes**	Some migratory species have been identified within PMST searches. Further discussion on the likelihood of impacts to threated species and ecological communities' species is provided in this self-assessment.
5. Migratory species	**Yes**	Some migratory species have been identified within PMST searches. Further discussion on the likelihood of impacts to migratory species is provided in this self-assessment.
6. Commonwealth marine areas	No	The activities being undertaken within the Amadeus EMP are not located near or linked to Commonwealth marine areas.
7. The Great Barrier Reef Marine Park	No	The activities being undertaken within the Amadeus EMP are not geographically linked to the Great Barrier Reef.
8. Nuclear actions (including uranium mining)	No	The activities being undertaken within the Amadeus EMP are not linked to nuclear actions.
9. A water resource, in relation to coal seam gas development and large coal mining development.	No	The activities being undertaken within the Amadeus EMP are not linked to coal seam gas or large-scale coal mining.

Table 112: Significant impact criteria for vulnerable and endangered species

Significant impact criteria	Applicable
Lead to a long-term decrease in the size of an important population of a species	No
Reduce the area of occupancy of an important population	No
Fragment an existing important population into two or more populations	No
Adversely affect habitat critical to the survival of a species	No
Disrupt the breeding cycle of an important population	No
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	No
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	No
Introduce disease that may cause the species to decline, or	No
Interfere substantially with the recovery of the species.	No

Table 113: Significant impact criteria for migratory species

Significant impact criteria	Applicable
Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species	No
Result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species, or	No
Seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.	No

Table 114: PMST likely and known flora and fauna species - Significant impact reasoning

Scientific Name	Common Name	Class	TPWC Status	EPBC Status	Prescence (within PMST)	Likelihood of Significant Impact
PALM VALLEY						
Minuria tridens	Minnie Daisy	Plant	Vulnerable	Vulnerable	Known	Minuria tridens, exhibits a narrower geographic range and greater habitat specificity than many of its arid zone congeners. In the NT it is closely associated with high pH soils derived from dolomite, limestone and calcrete parent materials (National Recovery Plan, 2008). It is typically located on the southern side of ranges and rises in low shrubland habitat. The recovery plan suggests Minuria tridens is highly susceptible to competition from hummock grasses and aggressive invasive species such as buffel grass as well as fire, climate change, low seed set habitat degradation around Alice Springs and the collection of wild stock. Its preferred habitat and other listed threats in the recovery plan suggests the operational activities included in the EMP are highly unlikely to cause a significant impact to the species. Further, there have been no instances of Minuria tridens recorded within the Palm Valley operational lease area and given the lease is regularly treated for weed species and no additional clearing outside of previously disturbed areas are proposed no significant impact to the species is expected.
Livistona mariae subsp. mariae	Red Cabbage Palm	Plant	Endangered	Endangered	Known	Livistona mariae is restricted to the Finke River and its tributaries in the southern arid region of the Northern Territory. The species is almost wholly contained within Finke Gorge National Park in the West MacDonnell Ranges. It is the only palm in central Australia and is separated by 1000 km from any other Livistona species. The extent of occurrence is less than 60 km2 and the area occupied is less than 50 ha (National Recovery Plan, 2008). The operational activities do not extend into this highly restricted habitat and regular water quality monitoring is undertaken within the Finke Gorge National Park to ensure water quality is not being impacted by the operation of the Palm Valley Gas Field (PVGF). To date there has been no decline or reduction in the size of the Livistona mariae population that existing in the Finke Gorge and consequently no significant impact is expected to the species.
Macrozamia macdonnellii	MacDonnell Ranges Cycad	Plant	Near threatened	Endangered	Known	Macrozamia macdonnellii is endemic to the arid southern region of the Northern Territory of Australia. This cycad is almost wholly restricted to the MacDonnell Ranges Bioregion where it occurs up to 200 km east and west of Alice Springs. It is the only cycad occurring in central Australia and is situated 1400 km from any other member of the genus. This species is strongly associated with steep south-facing ridge slopes and protected gorges, gullies and river edges. It sometimes occurs on exposed slopes where highly flammable spinifex (Triodia spp.) grasses are abundant. Known and potential threats include; loss of genetic variation, pollinators and seed dispersers, fire, weed invasion, climate change, and removal of seeds from the wild (National Recovery Plan, 2008). The known population of Macrozamia macdonnellii proximate to PVGF is restricted to the Finke Gorge National Park to the south of the operational area of the field. As the PVGF operational lease area sits on a ridge above the population of Macrozamia macdonnellii and is regularly maintained to address fire and weed risk, the likelihood of a significant impact from the ongoing operation of the field is expected to be negligible.
Petrogale lateralis centralis	Warru, Central Australian Rock-wallaby	Mammal	Vulnerable	Vulnerable	Known	As their common name suggests, rock wallabies show a pronounced preference for rocky habitats, especially those with extensive development of caves, crevices and overhangs that allow the animals to escape extremes of weather and to hide from predators (National Recovery Plan, 2008). The PVGF and surrounding topography provide ideal habitat for Petrogale lateralis centralis and individuals have been seen on occasion within the operational lease. The ongoing operation of the PVGF however, is not seen as a threat to the species as the existing habitat is not planned to be impacted and specific mitigation measures have been included in the EMP to avoid fauna mortality such as restricted speed limits around site, ongoing water quality monitoring and preservation of habitat areas by restricting clearing of vegetation to previously disturbed areas within the lease. Further the progressive rehabilitation plan associated with the EMP seeks to reinstate old well pads back to original form within the wider landscape. Consequently, no significant impact is expected to this local species.
Polytelis alexandrae	Princess Parrot, Alexandra's Parrot	Bird	Vulnerable	Vulnerable	Known	There is no current national recovery plan in place for Polytelis alexandrae or any specific conservation advice within the Northern Territory. It has a patchy and irregular distribution in arid Australia. In the Northern Territory (NT), it occurs in the southern section of the Tanami Desert south to Angas Downs and Yulara and east to Alice Springs however, the exact distribution within this range is not well understood. The species usually occupies swales between sand dunes and is occasionally seen on the slopes and crests of dunes (DEPWS, 2021). The common habitat areas described by the literature for Polytelis alexandrae are not reflected within the operational lease areas of the PVGF however, some of the favoured flora of the species can be found within the lease boundary (eg. red river gum and Grevillia spp).

Scientific Name	Common Name	Class	TPWC Status	EPBC Status	Prescence (within PMST)	Likelihood of Significant Impact
						There have been no recorded sightings in the PVGF (Atlas of Living Australia) and no clearing of potential habitat is proposed within the EMP. The likelihood of a significant impact to this species is therefore considered to be negligible.
Aphelocephala leucopsis	Southern Whiteface	Bird	-	Vulnerable	Known	There is no current national recovery plan for Aphelocephala leucopsis however, the DCCEEW conservation advice states the species has been listed as vulnerable due to the population declining substantially by an estimated 30% to 50% every ten years since 1999 with no indication of declines slowing. Aphelocephala leucopsis lives in a wide range of open woodlands and shrublands where there is an understorey of grasses or shrubs, or both. These areas are usually in habitats dominated by acacias or eucalypts on ranges, foothills and lowlands, and plains. The species forages almost exclusively on the ground, favouring habitat with low tree densities and an herbaceous understorey litter cover. Birds mainly feed on insects, spiders, and seeds, largely gleaned from the bare ground or leaf litter. The PVGF contains habitat matching that stipulated in the conservation advice however, it is not cleared beyond approved areas and other day to day activities associated with the operation of the plant are not listed as key threatening factors to the species. A significant impact to the survival and/or recovery of this vulnerable species it not considered likely by the operation of the PVGF.
Falco hypoleucos	Grey Falcon	Bird	Vulnerable	Vulnerable	Known	The DCCEEW conservation advice for Falco hypoleucos states the species is distributed across arid and semi-arid Australia, including the Murray-Darling Basin, Eyre Basin, central Australia and Western Australia. It is mainly found where annual rainfall is less than 500 mm, except when wet years are followed by drought, when the species might become marginally more widespread, although it is generally confined to the arid and semi-arid zones at all times. The species frequents timbered lowland plains, particularly acacia shrublands that are crossed by tree-lined water courses. The species has been observed hunting in treeless areas and frequents tussock grassland and open woodland, especially in winter. Given the species' propensity for timbered areas and tree-lined watercourses it is more likely to be confined to the Finke Gorge National Park area and accordingly no individuals have been noted during ecological investigations within the PVGF lease area. The ongoing operation of the PVGF is therefore considered to be a negligible risk to the long-term survival of Falco hypoleucos.
Apus pacificus	Fork-tailed swift	Migratory bird	-	-	Likely	There is no current national recovery or conservation plan for the Apus pacificus. It is not listed as threatened under Territory or Commonwealth law in Australia however, is recognised as a migratory species with critical links to Australia as it winters in warmer climates that include arid areas of Australia. Given its least concern status, large population numbers and a lack of records within the PVGF (Atlas of Living Australia) the ongoing operation of PVGF is considered a negligible impact to this migratory species.
Pandion haliaetus	Osprey	Migratory bird	-	-	Likely	The Pandion haliaetus is the second most widely distributed raptor species, after the peregrine falcon, and is one of only six land-birds with a worldwide distribution. It is found in temperate and tropical regions of all continents, except Antarctica. In Australia it is mainly sedentary and found patchily around the coastline however, there is a 1,000 km gap, corresponding with the coast of the Nullarbor Plain, between its westernmost breeding site in South Australia and the nearest breeding sites to the west in Western Australia – likely resulting in its inclusion in these search results. Ultimately Pandion haliaetus is a coastal dwelling species and the lack of favoured habitat within or near the PVGF suggest there is little to no risk of significant impact to this migratory species from the ongoing operation of the field.
Liopholis slateri	Slater's skink	Reptile	Vulnerable	Endangered	Known	There is no national recovery plan for the Liopholis slateri however, DCCEEW conservation advice states the species is endemic to the southern part of the Northern Territory, where it is known from locations in the Finke and MacDonnell Ranges bioregions: (1) 5 km south of Alice Springs; (2) at the junction of Ellery Creek and Jerimah Creek, adjacent tributaries of the Finke River near Hermannsburg; (3) along the Palmer River on Tempe Downs Station; (4) Illamurta Springs Conservation Reserve; (5) Owen Springs Reserve; and (6) Henbury Station. These localities include other land managed for conservation, such as Finke Gorge National Park and West MacDonnell National Park. Suspected burrows of the species have also been found within the PVGF during ecological investigations in an unlikely mountain habitat downslope from PVGF compressor site 13km south of the known population on Finke River flood plain. Given the species is suspected to exist proximate to the field and create burrows in soil embankments, specific measures have been implemented to ensure access road maintenance does not impact the species. This involves visual checks prior to maintenance and ongoing ecological monitoring during annual vegetation / rehabilitation assessments. Consequently, significant impacts to the species are not considered likely.
DINGO						
Eremophila prostrata	Rainbow Valley Fuchsia Bush	Plant	Vulnerable	Vulnerable	Known	The DCCEEW conservation advice for *Eremophila prostrata* states the species is known from seven populations in the Northern Territory. Two populations from the Mt Ooramina area, four from between Deepwell Station and Mt

Scientific Name	Common Name	Class	TPWC Status	EPBC Status	Prescence (within PMST)	Likelihood of Significant Impact
						Ooramina and another from the Rainbow Valley area. The locations above straddle the Dingo Gas Field (DGF) in some cases and suggest there is potential for the species to be present within the field. The ongoing operation of DGF is however, not expected to have a significant impact to the species as activities such as clearing which may present a risk are only undertaken in previously cleared areas and regular rehabilitation and weed assessments across the field have not identified any occurrence of *Eremophila prostrata.* Consequently, no significant impact is expected to the species through the ongoing operation of the DGF.
Petrogale lateralis centralis	Warru, Central Australian Rock-wallaby	Mammal	Vulnerable	Vulnerable	Likely	As above, the *Petrogale lateralis centralis* prefers rocky habitats, especially those with extensive development of caves, crevices and overhangs that allow the animals to escape extremes of weather and to hide from predators. While there may be isolated areas which foster such habitats proximate to the DGF this habitat is not common through the field and accordingly no records of the species have been noted during ecological investigations. It's therefore concluded that due to a lack of suitable habitat in the DGF the likelihood of significant impact to the species through ongoing operations is considered negligible.
Polytelis alexandrae	Princess Parrot, Alexandra's Parrot	Bird	Vulnerable	Vulnerable	Likely	As *Polytelis alexandrae* usually occupies dune swales, and occasionally slopes and crests of dunes and can sometime be found nesting in Desert oaks there is potential habitat present within the DGF which may support the species. The activities outlined within the EMP for the ongoing operation of the DGF is however, unlikely to cause a significant impact to the species as no clearing is involved and required weed management is likely to improve current buffel grass infestations through the region which out compete other grasses and preferred food sources.
Aphelocephala leucopsis	Southern Whiteface	Bird	-	Vulnerable	Known	While the DGF contains habitat matching that stipulated in the conservation advice for the species the EMP stipulates no clearing beyond approved areas and the day-to-day activities associated with the operation of the plant are not listed as key threatening factors to the species. A significant impact to the survival and/or recovery of this vulnerable species it not considered likely by the operation of the DGF.
Falco hypoleucos	Grey Falcon	Bird	Vulnerable	Vulnerable	Likely	Given the species' propensity for timbered areas and tree-lined watercourses there is limited preferential habitat within the DGF. Any potential habitat for the species will not be cleared as part of the ongoing operation of the DGF and is therefore not considered to have a significant impact to the long-term survival of *Falco hypoleucos.*
Apus pacificus	Fork-tailed swift	Migratory bird	-	-	Likely	There is no current national recovery or conservation plan for the *Apus pacificus.* It is not listed as threatened under Territory or Commonwealth law in Australia however, is recognised as a migratory species with critical links to Australia as it winters in warmer climates that include arid areas of Australia. Given its least concern status, large population numbers and limited records within the DGF (Atlas of living Australia) the ongoing operation of DGF is considered a negligible impact to this migratory species.
SURPRISE						
Polytelis alexandrae	Princess Parrot, Alexandra's Parrot	Bird	Vulnerable	Vulnerable	Likely	As *Polytelis alexandrae* usually occupies dune swales, and occasionally slopes and crests of dunes and can sometime be found nesting in Desert oaks there is potential habitat present within the Surprise Oil Field (SOF) which may support the species. It should be noted that the SOF is in care and maintenance and therefore the activities associated with its ongoing care are extremely limited. Further there is very little vehicular or human movements around the site. Consequently, the ongoing care and maintenance of the SOF is unlikely to cause a significant impact to the species.
Aphelocephala leucopsis	Southern Whiteface	Bird	-	Vulnerable	Likely	While the SOF contains habitat matching that stipulated in the conservation advice for the species the EMP activities are extremely limited due to the site being in care and maintenance. Further the EMP stipulates no clearing beyond approved (previously cleared) areas and the day to day activities associated with the operation of the plant are not listed as key threatening factors to the species. A significant impact to the survival and/or recovery of this vulnerable species it not considered likely by the care and maintenance of the SOF.
Falco hypoleucos	Grey Falcon	Bird	Vulnerable	Vulnerable	Likely	Given the species' propensity for timbered areas and tree-lined watercourses there is limited preferential habitat within the SOF. Any potential habitat for the species will not be cleared as part of the ongoing care and maintenance of the SOF and is therefore not considered to have a significant impact to the long-term survival of *Falco hypoleucos.*
Apus pacificus	Fork-tailed swift	Migratory bird	-	-	Likely	There is no current national recovery or conservation plan for the *Apus pacificus.* It is not listed as threatened under Territory or Commonwealth law in Australia however, is recognised as a migratory species with critical links to Australia as it winters in warmer climates that include arid areas of Australia. Given its least concern status, large population numbers and no records within the SOF (Atlas of living Australia) the ongoing care and maintenance of the SOF is considered a negligible impact to this migratory species.

Conclusion

The preceding self-assessment under the EPBC Act, evaluating potential significant impacts associated with the listed activities outlined in the Amadeus Environmental Management Plan (EMP), is a transparent endeavour aimed at thoroughly assessing cumulative impacts of the operation of the PVGF, DGF and SOF and the genuine likelihood of long-term effects on EPBC-listed flora and fauna.

Drawing upon existing ecological field data, the current state of each lease and the commitments stipulated within the EMP, which prohibits further unauthorised clearing, outlines fauna-specific management measures, promotes progressive rehabilitation, and commits to ongoing water quality and ecological monitoring, the Operator anticipates that the continuous operation of each petroleum lease will, in fact, mitigate further impact on identified species and their respective habitats within each lease.

Moreover, the Operator maintains a firm commitment to sustainable development across all operational fields, directing efforts toward identifying additional opportunities to elevate the current environmental status in which it operates.

Appendix 5. Emergency Response Plan

Palm Valley

Emergency Response Plan



Central Petroleum

Palm Valley – Emergency Response Plan: MSTD13-PV-PL001
Revision: 7 / Effective: 5th June 2023/ Revalidation: 5th June 2025
Document Owner: Production Supervisors

Table of Contents

1 INTRODUCTION 1
1.1 Purpose 1
1.2 Scope 1
1.3 Emergency response Training 1
1.4 Emergency Management Approach 2
1.5 Response Priorities 2
1.6 Related Documents 2
2 SITE EMERGENCY RESPONSE TEAM 3
2.1 Roles and Responsibilities 3
3 EMERGENCY RESPONSE PROCESS 4
3.1 Identification 4
3.2 Notification 5
3.3 Assessment 6
3.4 Activation 7
3.5 Response 7
3.6 Stand-down and recovery 8
4 EMERGENCY RESPONSE RESOURCES 9
4.1 Role Cards 9
4.2 Emergency Action Guides 9
4.3 Chemical Response Guidance 9
4.4 Plant and Pipeline Shutdown / Isolation 9
4.5 Emergency Equipment 9
4.6 Medical Support 9
4.7 Aviation Resources 10
4.8 Site Emergency Response Room 10
4.9 Communication 10
4.10 Emergency Management Team / Plan 11
5 STAKEHOLDER MANAGEMENT AND COMMUNICATIONS 12
6 POST EMERGENCY REVIEW 13
7 EMERGENCY CONTACTS 14
7.1 Central Emergency Contacts 14
7.2 Site Contact Information 14
7.3 Emergency Services 14
8 ROLE CARDS 16
8.1 First Responder 16
8.2 Site Emergency Response Team leader (SERTL) 17
8.3 Site Emergency Response Team Coordinator 21
8.4 Emergency Response Team Member 23
8.5 Emergency Response First Aid 24
9 EMERGENCY EVENT GUIDES 25
9.1 Emergency Event Guide 1 – Vehicle Accident 25

9.2 EMERGENCY EVENT GUIDE 2 – TRANSPORTING INCIDENT – ROLLOVER/INJURIES 27
9.3 EMERGENCY EVENT GUIDE 3 – SECURITY INCIDENT 28
9.4 EMERGENCY EVENT GUIDE 4 – BUSHFIRE / FLOOD 30
9.5 EMERGENCY EVENT GUIDE 5 – ELECTRIC SHOCK 31
9.6 EMERGENCY EVENT GUIDE 6 – FIRE / EXPLOSION 32
9.7 EMERGENCY EVENT GUIDE 7 – CONFINED SPACE 33
9.8 EMERGENCY EVENT GUIDE 8 – SPILL / RELEASE – ROAD HAULAGE – WET WEATHER 34
9.9 EMERGENCY EVENT GUIDE 9 – SPILL / RELEASE SITE RELATED 35
9.10 EMERGENCY EVENT GUIDE 10 – MEDICAL TRAUMA 36
9.11 EMERGENCY EVENT GUIDE 11 – WELL BLOWOUT 37
9.12 EMERGENCY EVENT GUIDE 12 – BITES / STINGS 38
9.13 EMERGENCY EVENT GUIDE 13 – PIPELINES 40
9.14 EMERGENCY EVENT GUIDE 14 – GAS LEAK (MINOR) 41
9.15 EMERGENCY EVENT GUIDE 15 – GAS LEAK (MAJOR) 42
9.16 EMERGENCY EVENT GUIDE 16 – MASP (LOPC) 43
10 ADDITIONAL INFORMATION 44
10.1 AVIATION GUIDANCE 44
10.2 SITE INFORMATION / MAPS 47

Revision History

Revision	Date	Changes
7	5 June 2023	• Risk Guides 9.13 & 9.15 updated Response Guide order • Next of Kin notification in the event of a fatality
6	1 Feb 2023	Revision: • Contact details Updated (Names Removed where possible) • MASP Event Guide – section 9.16 PIC and or, Delegate (On site)
5	12 Feb 2021	Emergency contacts table updated. Refer to Section 7.
4	4 Dec 2020	Revision was a major update: ▪ Overhaul of Introduction section. Scope section integrated into the introduction. ▪ Created Site Emergency Response Team section which describes the roles of individuals in an emergency. ▪ Created the Emergency Response Process section. ▪ Created the Emergency Response Resources section. ▪ Emergency Contact list moved to its own section in the document

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 Palm Valley and the following assets and associated infrastructure operated by Central Petroleum (CTP):

- well sites
- gathering lines
- MASP
- gas processing facilities
- oil storage tanks
- site offices, camp and workshops

This plan is to be used in conjunction with CTP's Emergency Management Plan (MSTD-PLN001).

Areas under the control of a principal contractor are not covered under this plan however CTP's contract manager/owner 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 and/or if changes to plant and conditions occur.

1.3 Emergency response Training

All personnel shall receive Emergency Response training in an ongoing manner at each operational site. This training shall consist of both in field and desktop scenarios. Each site shall ensure the training is held (where operational viable) every 6 weeks.

1.4 Emergency Management Approach

CTP uses a two-tiered approach to emergency management as outlined in Figure 1.

Figure 1

Level	Examples	Document	Owner
Level 1 – Emergency Response	▪ Control of the situation does not require external support ▪ Non-life-threatening ▪ Not expected to escalate ▪ Limited damage to the environment, assets or reputation	Site Emergency Response Plan	Site Emergency Response Team leader
Level 2 - Emergency Management	▪ Control of the situation requires external support ▪ Life is at risk ▪ Major damage to the environment, assets ▪ or reputation ▪ Situation may have personnel, technical, operational or public affairs implications ▪ Highly likely to impact CTP's reputation	Emergency Management Plan	Emergency Management Team leader

In addition to and supporting this plan, the Emergency Management Team (EMT) and Emergency Management Plan (EMP) outlines the responsibilities, actions and resources available at head office to support site in the event of a significant emergency.

1.5 Response Priorities

In managing an incident, the SERT will focus their response to ensure:

- our **people** are accounted for and safe.
- we minimise impact on the **environment**
- our **assets** are protected
- CTP's **reputation** is safeguarded.

1.6 Related Documents

Whilst this plan has been designed to be a standalone document, references are made throughout to various other documents which may be useful in the event of an emergency. It is the responsibility of all SERT members to be familiar with the processes and standards within their area of responsibility, and conduct regular exercises to ensure readiness

2 Site Emergency Response Team

2.1 Roles and Responsibilities

The following specific roles and responsibilities are essential to ensure effective management and accountability during an emergency:

- first responder
- SERT leader – the Person in Charge (PIC) or Delegate on site
- SERT coordinator (supported by a log keeper)
- SERT first aider

Operators, technicians and logistics personnel will assist the SERT leader and may be required to undertake multiple roles depending on the nature of the emergency, its duration and complexity.

If for some reason the SERT leader is unable / unavailable to perform their duties, an alternate person must be identified. Should for some reason SERT members be unable to perform their duties, the SERT leader will allocate other suitably trained persons. On shift SERT role information is to be displayed on the notice board or in the site emergency response room.

Depending on the nature and severity of the emergency, the EMT may be activated to support issues such as:

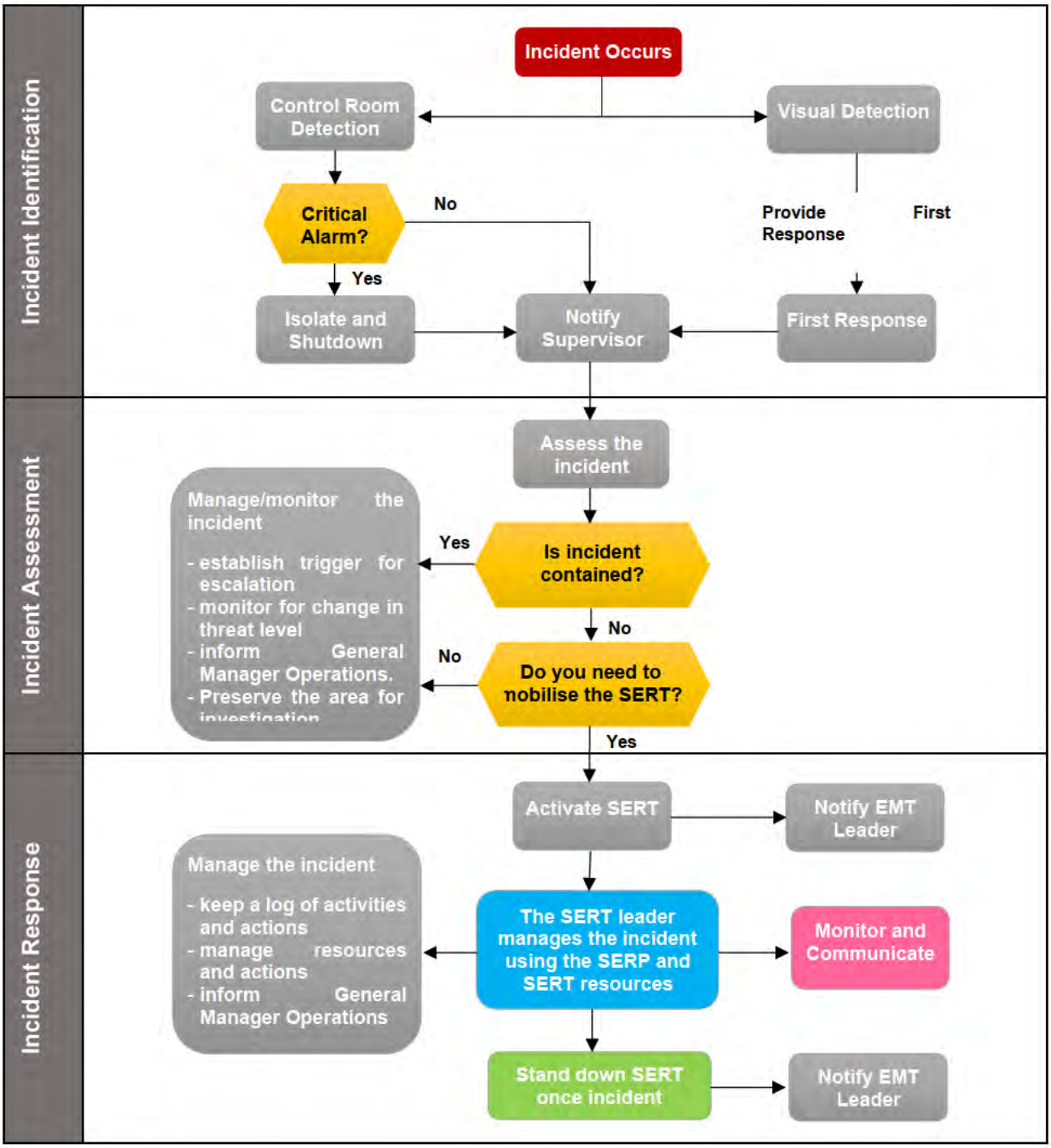
- regulatory and stakeholder notifications
- additional manning
- sourcing assets required to support the site, such as aviation
- medical or other emergency services
- mutual aid or contractor resources.

For more detailed information regarding the above SERT roles, refer to the role cards in Section 4.1.

3 Emergency Response Process

Identification, assessment and response processes are outlined in Figure 2 below. Further guidance is available in the role cards in Section 4.1.

Figure 2



3.1 Identification

When an event (actual or imminent) endangers or threatens to endanger life, property or the environment, the first responder must, if safe to do so, take action aligned with the first responder role card. It's important everyone is familiar with the responsibilities and initial actions of the first responder.

3.2 Notification

Once immediate action is taken, the first responder must raise the alarm and advise the production supervisor as to the nature of the emergency and any assistance required. An alarm can be raised:

- in person
- by radio (using prefix ‘Emergency, Emergency, Emergency)
- by landline or mobile phone (not in restricted areas)
- by SOS alarm on a tracker.

3.3 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
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

3.4 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.

3.5 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 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.

3.6 Stand-down and recovery

An emergency response ends when the SERT leader is satisfied that objectives have been met and priority shifts to achieving business continuity and recovery. Only the SERT leader can decide to 'stand-down' the SERT and switch the focus to recovery. The stand-down should be undertaken in consultation with the General Manager Operations.

When external emergency services are involved, stand-down must be done in consultation with the relevant agencies.

When standing down, the SERT leader must:

- ensure that all teams are informed of the stand down
- identify and document outstanding issues that need to be addressed after the team is deactivated and assign responsible personnel to address these issues
- ensure evidence is preserved to aid in any investigation
- ensure affected areas are barricaded
- that witness accounts are taken
- where possible, photograph evidence
- capture lessons learned as soon as possible after the event (debrief)
- ensure the site emergency response room is immediately re-stocked.

In addition, before recommencing operations the following questions should be asked:

- has all plant and equipment been tested and confirmed safe?
- have relevant emergency service providers confirmed that normal activities can recommence?
- have relevant government agencies/departments agreed that normal activities can recommence?
- could employees be suffering from the effects of the incident?
- are there any unauthorised personnel remaining on site?

4 Emergency Response Resources

4.1 Role Cards

Role cards act as prompts and are used as an aid in the event of an emergency. A set of role cards to support this plan are provided in Section 6.

4.2 Emergency Action Guides

Emergency Action Guides have been developed and outline typical responses for specific types of emergencies. A set of Emergency Action Guides to support this plan are provided in section D.

4.3 Chemical Response Guidance

All chemicals stored and used on site are to be managed in accordance with the corresponding Safety Data Sheets. Hard copies of Safety Data Sheets are stored in the warehouse with electronic copies available via the Chemwatch website.

4.4 Plant and Pipeline Shutdown / Isolation

In the event of a loss of containment event, emergency shutdown devices (ESDs) are to be used, however if isolation identification is not clear then the SERT members can access Piping and Instrument Diagrams (P&IDs) on M: files. In these instances, the isolation should be undertaken, and any associated documentation should be completed post event and prior to restart. In the event of a power outage there are master sets of PID's in the control room, supervisor's office & ESS control room.

4.5 Emergency Equipment

Emergency equipment is provided at Palm Valley 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 Phones
- Portable gas detectors
- First aid equipment (Inc Defibrillator)
- Fire extinguishers
- 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 centre
    - MRACC (Royal Flying Doctors) Telehealth Doctor service
- secondary Emergency Advice:

- Alice Springs Hospital
- Hermannsburg medical 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 centre or the doctor associated with the treatment.

4.7 Aviation Resources

Sites may have the capacity to facilitate both Helicopters (rotary) and Planes (fixed wing) in the event of an emergency, however, the preferred option is fixed wing aircraft.

Further details regarding the airstrip / helipad and its safety protocols are outlined in section E.

4.8 Site Emergency Response Room

The site conference room has been established for use if the SERT is activated. This room will be the coordination centre 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 ▪ 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. 2 (PV Local) or
- Emergency channel No. 1 (Wide Area).

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 or delegate will determine when to switch to channel 1 (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/Duty Manager	[redacted] / 07 3181 3830
Engineering Manager/Duty Manager	[redacted] / 07 3181 3806
Chief Operating Officer	[redacted]
Risk and HSE Manager	[redacted]
Health & Safety Specialist	[redacted]
Brisbane emergency phone - To be used whilst emergencies are in progress	07 3181 3860

7.2 Site Contact Information

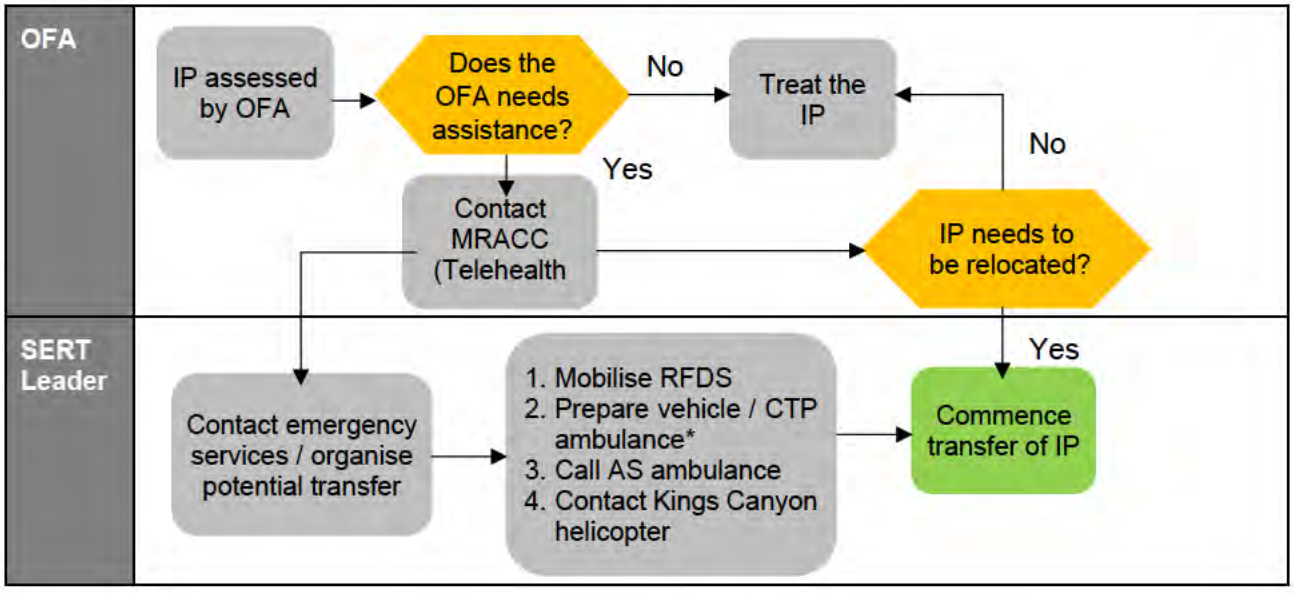
Role / Detail	Contact Details	
Production Supervisor	[redacted]	Supervisor Mobile Phone
Logistics and Administration Coordinators	[redacted]	
Emergency Alert Number	**1300 134 406**	**ISS First Response (24/7)**
Palm Valley Emergency Number	[redacted]	

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 an ambulance is needed contact AS ambulance and plan to meet halfway if possible.

Service		Contact Details	Response Time
Police / Fire / Ambulance (Emergency)		**000**	
Medical	Remote Health & Royal Flying Doctors Service[1]	08 89517840 or 08 8951 7777 (24/7)	1hr 30 min
	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	1hrs 50 min drive
	Ntaria Health Clinic (Hermannsburg)[2]	08 8954 8888 or 08 8951 6040	30 min drive
	St John Ambulance - Alice Springs Office	08 8959 6600	Potential to meet IP halfway to Palm Valley
Police	Police - Alice Springs Station	08 8951 8822	
	Police (non-emergency)	131 444	
Fire	Fire and Rescue (non-emergency)	08 8999 3473	
Emergency	Emergency Services (flood, storms, etc)	132 500	

In the event of an emergency, the SERT leader is authorised to contact the above, however, **any contact with government, regulatory bodies, etc., must be undertaken centrally by the Brisbane based EMT leader**.

[1] Doctor on call for all Medical Evacuations via Alice Springs
[2] Clinic can be dispatched by 000 if required

8 Role Cards

8.1 First Responder

Role Card

Section 1 – Responsibilities	
In the event of an incident, please remain calm and be prepared to assist where possible (depending on your experience and competency). Please provide as much information as possible to the production supervisor.	
Immediate Actions	**Complete**
▪ Raise the alarm ▪ Check for DANGER - do not put yourself at risk - Is the scene safe? ▪ Implement appropriate actions to prevent or contain the situation, if possible ▪ Provide assistance e.g. assess for life threatening injuries - Are they responsive? - Are they breathing? - Any bleeding? ▪ If safe and appropriate to do so, shut down any equipment ▪ Evacuate or leave the scene, if warranted ▪ Notify the production supervisor providing as much detail as possible e.g. - Location - Incident details - Number of casualties and their condition	
During an Emergency	**Complete**
▪ Follow the production supervisor/SERT leader's instructions	
Post Incident	**Complete**
▪ Participate in the SERT post-emergency review ▪ Propose changes to the Site Emergency Response plan and any procedures, as a result of the incident	

8.2 Site Emergency Response Team leader (SERTL)

Role Card

Section 1 – Responsibilities

The SERT leader is responsible for:
- activation and stand-down of the SERT
- notifying the EMT leader upon activation
- overall management of the emergency response including recovery.

The SERT leader is the final decision maker in relation to analysis, option development, selection and execution of the incident response

Immediate Actions		Complete
▪ Review the first responder's brief ▪ Take immediate action, if necessary ▪ Work through the SERT leader activation checklist (Section 2) ▪ Using your knowledge and experience and the Emergency Assessment Matrix (Section 3), determine if the SERT should be activated		
Activate	**Not Activate**	
▪ Determine which SERT members (Section 4) are required ▪ Engage SERT coordinator to contact SERT members ▪ Notify the EMT leader of activation and provide a situation update ▪ Proceed to the designated site emergency response room ▪ Conduct an initial team brief using information from section 2 ▪ Confirm the SERT member roles and activities	▪ Await updates from operations personnel and reassess the incident as required	
During an Emergency		**Complete**
▪ Authorise any immediate assistance and specialist support (internal or external) ▪ Consolidate assumptions and identify the worst case and most likely impacts ▪ Decide on the priority objectives. ▪ Manage and lead the SERT to ensure the efficient and effective resolution of the emergency, ensuring the impact on people, assets, environment, value and reputation is minimised ▪ Facilitate open communication and ensure regular updates are provided ▪ Ensure the General Manager Operations is regularly updated on the incident ▪ Approve necessary expenses related to the management of the emergency ▪ Facilitate and support the implementation of any business continuity plans by the respective teams ▪ Ensure an accurate record is kept of all SERT actions and decisions ▪ Declare the emergency is over and stand-down teams ▪ Coordinate transition to recovery stage ▪ Decide on the team structure to manage the recovery process		
Post Incident		**Complete**
▪ Determine the level of investigation required and initiate the process – GM ops ▪ Debrief the SERT ▪ Conduct a post-emergency review – GM ops. ▪ Propose changes to the site emergency response framework and any procedures, as a result of the incident. – ALL		

Section 2 – Activation checklist					
Date		Time		Name	
Incident Description					
What happened?					
Where did it happen?					
When did it happen?					
How did it happen?					
Is everybody accounted for?					
Are there any casualties?					
How have you been notified and how accurate is the information?					
Incident Status					
Is the incident contained or escalating?					
What is potentially at risk?					
What are your objectives?					
What actions are being taken?					
Who is taking action?					
What resources / equipment / manpower is being used?					
Initial incident assessment					
What are the likely impacts on health, safety, environment and/or community?					
What are the likely community, government, media or reputational impact?					
What is the operational impact (short, medium or long term)?					
How effective is the response?					
What support is needed?					
What support does the SERT need from the EMT (in the longer term)?					
Follow up					
Exchange / confirm contact details for first responder					
Decision					
Based on the information provided, assistance requested and your experience, consider the actual or potential impacts and determine whether to activate the SERT using the 'Emergency Assessment Matrix (see section 3).					
Yes				No	
Rationale					

Section 3 – Assessment and Escalation Matrix

The SERT leader will:

- use this guide to quickly assess actual or potential incident consequences and notification thresholds. Note that you may choose to activate / notify at levels lower than those detailed;
- Contact the EMT leader if the SERT is activated;

	Site Emergency Response Team	Emergency Management Team
Activation	The SERT may activate if any of the criteria below is met	The EMT may activate if any of the below criteria is met
Escalation / Notification	If this team is activated, the SERT leader notifies and provides a summary to the EMT leader	If the EMT is activated, the EMT leader contacts EMT members and notifies the CEO
Risk Impact	Minor to Serious	Critical or Extreme
Injury / Illness to workers	Injury or ill health requiring medical treatment	Fatality or Injury/ill health requiring extensive medical treatment (e.g. amputation, spinal injuries, etc.)
Loss of workforce capacity (pandemic or industrial action)	Loss of key staff impacting operational output or threat of industrial action	Operations compromised due to staff being unavailable
Personnel and asset security	Non-specific threat to CTP staff e.g. protests, suspicious packages, bomb threat, etc.	Community protest action e.g. threats to CTP staff, bomb threat, suspicious packages, security incidents
Environment and / or Community	Localised and/or short-term environmental and/or community incident/emergency	Extensive environmental or community incident such as significant contamination, offsite pollution or fatality
Natural Disaster	Predicted or localised damage to facilities/assets e.g. storms, external fires, flooding	Storm, fire, flood damage. Forecast natural disaster (widespread). Multiple locations impacted
Fire and Explosion	Small localised fires or explosions extinguishable by site resources	Uncontrolled fire/explosion requiring external emergency support
Property Damage	Serious damage to CTP assets/third party property	Major damage to CTP assets/third party property
Loss of Containment (LOC) – chemical spill, solid, vapor, liquid.	Major accident event, or event requiring HAZMAT response, or non-hazardous substance spill that meets response activating SERP scenario. Any spill to water	Uncontrolled release unable to be isolated and contained within an hour after activating SERT scenario
Laws, regulations, civil actions	Breach of regulations regarding investigations and reporting to authorities. Possible prosecution/fine	Litigation/prosecution by regulator which could lead to temporary plant closure
Stakeholders / Media	Local media coverage. Health and/or safety concerns to local community	State/national or social media with potential to impact performance of site/team operations
Facility, Plant or System failure / Cyber attack	Significant breach/IT incident affecting one site/location. Loss of access to single location <4hrs	Significant breach/IT incident affecting more than one site/location. Loss of access to single location for >4hrs
Customer interruption / Supply disruptions	Customer service interruption up to 1 day. Product shortfall at facility or supply point >10 TJ per day	Potential customer service interruption up to 3 days. Supply shortage impacting major customer >25TJ per day
Third party failure (inc. contractor, supplier or partner	Restricted impact which can be rectified in the normal course of business. e.g. haulage contract	Supply or services potentially disrupted with threat of serious impacts e.g. customers or critical functions
Financial	Cash flow: <$1m	Cash flow: >$1m

Section 4 – SERT Member Details		
Role	Name	Engaged
Mandatory		
SERT leader		
Coordinator		
Log keeper		
SERT Members		
First aid		
Team member		
Team member		
Team member		
Team member		
Team member		

8.3 Site Emergency Response Team Coordinator

Role Card

Section 1 – Responsibilities	
The SERT coordinator's primary role is to support the SERT leader. The function of the coordinator is to: ▪ manage and coordinate staff while providing quality control and coordination of the SERT's planning process ▪ ensure that staff have the information, guidance and facilities required to fulfil their roles ▪ manage the SERT's time, coordinate briefings, and manage the site emergency response room ▪ align the planning of the functional areas with the direction and intent of the SERT leader ▪ assume the role of SERT leader should the SERT leader be unavailable ▪ The SERT coordinator will be the primary contact p for all communications	
Immediate Actions	**Complete**
▪ Respond to the activation ▪ Contact SERT members ▪ Confirm the arrival of all SERT members ▪ Facilitate the initial team brief to the SERT	
During an Emergency	**Complete**
▪ Record and monitor all response actions (Section 2) ▪ Establish communications ▪ Provide regular situation updates to the SERT leader ▪ Implement routines and procedures in the site emergency response room ▪ including security of information, control of access, and equipment ▪ Coordinate and synchronise staff in the site emergency response room ▪ Ensure an accurate record is kept of all SERT actions and decisions ▪ Program and facilitate SERT update briefs ▪ Coordinate SERT requests for assistance ▪ Coordinate the regular update of the SERT ▪ Monitor and ensure that activities are in accordance with SERT objectives ▪ Supervise the completion of an accurate SERT log ▪ Be prepared to act as the SERT leader if required	
Post Incident	**Complete**
▪ Support recovery operations, as required ▪ Ensure SERT members attend the debriefing ▪ Coordinate and participate in the post-emergency review ▪ Carry-out all relevant SERT coordinator actions identified in the post-emergency review ▪ Propose changes to the site emergency response framework and any procedures, as a result of the incident.	

Section 2 – Site Response Activity / Event Log				
Time	Action	Owner	Due	Status

8.4 Emergency Response Team Member

Role Card

Section 1 – Responsibilities	
The SERT member's primary role is to support the SERT leader	
Immediate Actions	**Complete**
▪ Respond to the activation ▪ Proceed to muster point **and respond to the situation as directed by the SERT leader** ▪ Attend the initial brief	
During an Emergency	**Complete**
▪ If instructed & safe to do so, participate in incident response, which could include: - rescuing personnel if there is no danger - extinguishing small fires around the plant using a range of extinguishers - using a fire blanket to extinguish small fires - provide basic first aid - containing minor spills • If required (e.g. after hours when admin staff re not on site), undertake the role and responsibility of: - log keeper – documenting incoming/outgoing information and maintaining incident log sheet - coordinator – providing support to the SERT leader and coordinating movement of personnel and delivery of equipment resources and liaison with the response team - coordinate any resources/assistance required by the SERT or EMT ▪ Consider any secondary impacts as a result of the incident ▪ Assist in the development of the SERT's responses, objectives and priorities ▪ Cooperate with emergency services ▪ Prepare for the stand-down of the SERT and recovery of site	
Post Incident	**Complete**
▪ Provide ongoing advice to the recovery operations, as required ▪ Participate in the SERT post-emergency review ▪ Propose changes to the site emergency response framework and any procedures, as a result of the incident	

8.5 Emergency Response First Aid

Role Card

Section 1 – Responsibilities	
Assess and provide first aid assistance to injured people	
Immediate Actions	**Complete**
▪ Respond to the activation ▪ Proceed to muster point and respond to the situation as directed by the SERT leader ▪ Attend the initial briefing and consider the incident	
During an Emergency	**Complete**
▪ Perform triage on injured personnel ▪ Assess medical response ▪ Direct/manage medical personnel and supplies ▪ Activate external resources, if needed ▪ Consider any secondary impacts as a result of the incident ▪ Assist in the development of the SERT's response, objectives and priorities ▪ Cooperate with emergency services ▪ Prepare for stand-down and recovery of SERT	
Post Incident	**Complete**
▪ Be prepared to provide ongoing advice to the recovery operations, as required ▪ Participate in the SERT post-emergency review ▪ Propose changes to the site emergency response framework and any procedures as a result of the incident	

9 Emergency Event Guides

9.1 Emergency Event Guide 1 – Vehicle Accident

Incident	
Nature of the incident: ☐ Vehicle/Vehicle Collision ☐ Vehicle/Structure Collision ☐ Vehicle Roll Over ☐ Pedestrian Hit/Run Over ☐ Other ……	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
• Call for assistance as soon as possible • Assess and ensure the scene is safe – withdraw personnel from danger (if required) • Prioritise causalities – undertake a primary assessment of any causalities • Mobilise SERT, if additional resources are needed • Mobilise competent first aider to treat injured persons (if required) at scene or first-aid station • Mobilise the following if necessary - electrician if there is an electrical risk, equipment to stabilise vehicle, fire control equipment	
Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Call a medical facility for assistance/guidance	
Arrange escort for external emergency support / back-up	
Notify General Manager Operations	
What to Do	
Consider the following, to **minimise danger:** 1. **Other traffic**: - use hazard lights on vehicles to warn oncoming traffic - switch headings on if at night - ask bystander/s to extend the warning perimeter to at least 100mts away to warn & control oncoming traffic - Battery disconnect 2. **Fire:** - switch off the vehicle's motor and, for diesel vehicles, shut off any emergency fuel switches - stop people from smoking nearby - if there is a fire under the bonnet, and you have a fire extinguisher and it safe to do so, release the bonnet catch (but don't open fully) and aim the extinguisher through the gap 3. **Fumes**: - stay clear of fumes if petrol/diesel is leaking and ensure there are no naked flames or people smoking nearby 4. **Damaged vehicles:** - if airbags have not been activated, stay clear of the steering wheel and front dashboard - if not in gear, apply the handbrake or put the vehicle in gear 5. **Spilt fuel or chemicals:** - if the accident involves a vehicle carrying hazardous material, stay clear. Take note of the signs indicating what is being carried e.g. type of sign and code number and call 000 for advice - if there are clouds of vapour, spilt liquids, bottles, gas cylinders or unusual odors, avoid contact with these substances and have everyone stay upwind if possible, to avoid fumes 6. **Fallen or damaged powerlines** - remain at least 6m from any fallen power lines and don't attempt to move the cables - do not go near a vehicle if it is being touched by electrical cables advise the patient not to move and wait for emergency services to arrive	

What to Do

Prioritise Causalities

1. Once safe to do so, assess casualties as follows: (Using the vehicle medical booklet to assist)
   - Are they conscious?
   - Are their airways clear and open?
   - Are they breathing?
   - Are they bleeding?

Injuries and Ongoing Management

- Common injury types:
  - airway blockages
  - head injuries
  - chest injuries
  - spinal injuries

1. Unless necessary (for example if the vehicle could explode), do not move a patient until help arrives as it could lead to further injury;
2. Continue to monitor their breathing as this can rapidly deteriorate. Be ready to perform CPR should this occur - Do not use mouth-to-mouth method if victim ingested or inhaled any substance;
3. Record observations (if possible) until help arrives e.g. breathing, pulse, skin colour and temperature. Any changes could indicate a serious change in their condition;
4. If the patient is conscious, continue to reassure them. Let them know that help is on the way.

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.

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.
- In the case of a Fatality, authorities (Police) must notify Next of Kin before the EMT leader commences communication (with Next of Kin)

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: this is a 2-person task (OFA to support the patient and a Driver trained in 1st Aider/CPR.

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)

9.6 Emergency Event Guide 6 – Fire / Explosion

Incident		
Nature of the incident:		
☐ Building	☐ Plant and Equipment	☐ Bulk Fuel/Oil
☐ Electrical	☐ Chemical	☐ Other ……

Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Call for assistance as soon as possible; ▪ Assess and ensure the scene is safe – withdraw personnel from danger (if required); ▪ Shut down plant and systems that may be affected by the fire or provide first response fire-fighting, if safe to do so; ▪ Mobilise the SERT if additional resources are needed; ▪ Mobilise competent first-aider(s) to treat injured persons (if required) at scene or first-aid station; ▪ Establish exclusion zones if required (800 mtrs – 1600 mtrs – as required); ▪ Arrange isolation of energy sources; ▪ Assess work permit (where applicable) at job site and refer to emergency plan; ▪ Consult signage/labelling to identify hazardous materials and any response requirements.	

Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Arrange escort for external back-up	
Notify General Manager Operations	

What to Do

Treatment Plant

NOTICE

NOTE: Major plant fires will not be fought using firefighting equipment, plant ESD will be used.

- Only provide basic firefighting on small fires (wastepaper bin size), if close enough or safe to do so.

1. Shut down and depressurise plant and systems that may be affected by the fire
2. If possible, isolate all energy sources and keep ignition sources clear of the hazardous area
3. Evacuate to the muster point, ensuring it is at a safe distance (up to 800 mts) and upwind and conduct head count of all POB.
4. Notify the EMT leader
   - discuss and determine if any additional assistance is required
5. Initiate search and rescue for the missing personnel, if and when safe to do so, and only after confirmation with the SERT leader

Tanks

1. Stop pumps, close valves, if safe to do so, and activate alarm
2. Don't go into bunded areas or onto tanks, or areas where escape may be limited
3. Activate foam generators if safe to do so – SERTL. (*SOP number* for site:).
4. Do not attempt to remove vehicles/road tankers unless action approved by SERTL

Post Event Actions

- Secure the scene for incident investigation

9.7 Emergency Event Guide 7 – Confined Space

Incident	
Nature of the incident: ☐ Person Trapped ☐ Person Injured ☐ Fire ☐ Toxic Atmosphere ☐ Electrical ☐ Engulfment ☐ Other ……	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Call for assistance as soon as possible ▪ Assess and ensure the scene is safe – withdraw all unnecessary personnel from area ▪ Mobilise the SERT if additional resources are needed ▪ Mobilise competent first-aider to treat injured persons (if required) at scene or first-aid station ▪ Mobilise electrician – arrange isolations (if required) ▪ Access Work Permit at job site and refer to the emergency plan	
Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Check gas monitoring results on work permit	
Test atmosphere with monitor before entering the confined space – check wind direction	
Arrange escort for external back-up	
Notify General Manager Operations	
What to Do	
1. If personnel are trapped or unable to escape the CS – STOP all persons from entering the location unless authorised and fitted with appropriate lifesaving equipment / PPE 2. SERT Leader shall ensure that isolations remain intact and that no other oxygen depleting events may unfold during the extraction. 3. The Rescue plan for the task would indicate the requirement to have BA, first aid, a method of extraction and suitable numbers to complete the task – ensuring this is correct and the gear is available, then; 4. SERT Leader shall order the insertion of team members in BA only when prepared, and ready to respond 5. Other team members shall be waiting in support including the SERT first aider with a Satellite phone with access to medical support online (if required) 6. Vehicle (ambulance if possible) is at the ready to remove patient as required 7. Ambulance has oxygen with mask and defibrillator available 8. Spotters shall be used to ensure that all persons remain clear of the situation unless required to assist	
Post Event Actions	
▪ Secure the scene for incident investigation	

9.8 Emergency Event Guide 8 – Spill / Release – Road Haulage – Wet Weather

Incident	
Nature of the incident: ☐ Heavy Haulage / Road transport ☐ Bulk transport vessel ☐ Bulk Chemical Load ☐ Other	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Site responder - Call for assistance as soon as possible ▪ If on scene -Assess and cautiously approach from upwind - ensure the scene is safe – withdraw personnel from danger (as required), use available extinguishers, shielding, breathing support; ▪ Mobilise the SERT for additional resources as needed – carry ELSA gear, extinguishers, tools, spill gear. ▪ Mobilise competent first-aider(s) to treat injured persons (if required) at scene or first-aid station ▪ Assist external personnel with notifications and calls for assistance	
Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Arrange escort for external back-up	
Notify General Manager Operations	

What to Do

1. Ensure vehicles can safely navigate to and from areas of concern – provide alternate routes if possible;
2. Ensure all personnel are safe and clear of area -Stay clear of Vapour, Fumes, Smoke and Spills;
3. Use safety related equipment as required, to safely extract personnel if in immediate danger;
4. Different PPE (Face shields, goggles, heavy gloves, Gum boots) may be required in Wet weather situations to safely perform any task;
5. Extricate personnel and team to a safe distance and clear of potential hazardous fumes (Upwind);
6. Attempt to Identify the spill - refer to the HAZCHEM code, Truck Placarding, Driver or SDS for methods of control / management;
7. Alert Management / SES / Police or 000 of situation ASAP, note location, HAZCHEM concerned, areas of impact;
8. Divert or stop traffic (do not start vehicles if a low flash-point product has been split) if tanker truck or Chemical event is involved in a fire, ISOLATE for 800 metres in all directions;
9. Consider equipment – dependent on location, proximity or safety – what can or should be saved?
10. Interacting personnel enter only when wearing appropriate PPE;
11. If fluid form, attempt to prevent spread of spilled product from the vehicle itself (shut valves – internal / external) if safe to do so, using hazard specific PPE;
12. Remove all sources of ignition to reduce any potential of fire;
13. Notify EMT and advise situation and request assistance if needed – advise SES, Police – update as required;
14. Never attempt to perform a rescue without support or adequate forethought;

Refer to: MSTD13-PL002 ERP Spill response procedure for assistance with methods of containment or prompts during the containment process (if fluid) or the ***Australian-Emergency-Response-Guide-Book-2018*** in M-Files.

Post Event Actions

- Secure the scene for incident investigation;
- Team debrief / Mental anguish and concerns.

9.9 Emergency Event Guide 9 – Spill / Release Site related

Incident	
Nature of the incident: ☐ Warehousing movements ☐ Plant Failure ☐ Bulk site storage vessel ☐ Evaporation Pond ☐ Other	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Call for assistance as soon as possible; ▪ Assess and cautiously approach from upwind - ensure the scene is safe – withdraw personnel from danger (if required or able); ▪ Mobilise the SERT if additional resources are needed - carry ELSA gear, extinguishers, tools, spill gear; ▪ Mobilise competent first-aider to treat injured persons (if required) at scene or first-aid station; ▪ Assist external personnel with notifications and calls for assistance.	
Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Arrange escort for external back-up	
Notify General Manager Operations	

What to Do

1. Notify EMT (radio) and advise situation and request assistance if needed;
2. Consider ESD of plant – dependent on location, proximity or safety need;
3. Ensure all personnel are safe and clear of area -Stay clear of Vapour, Fumes, Smoke and Spills;
4. Interacting personnel consider wearing ELSA gear if attempting to extract any personnel – advise ERTL of intent – obtain support and clearance;
5. Different PPE (Face shields, goggles, heavy gloves, Gum boots) may be required to safely perform the task;
6. Remove all sources of ignition to reduce the potential fire hazard;
7. Establish source of spill/leak, and determine the extent of pollution;
8. Stop further leakage (e.g. stop pumping or in case of pipeline leak give warnings to stop the flow), close valves, attempt to stop leaks, move object on its side;
9. Isolate spill or leak area for at least 100 metres (330 feet) in all directions to prevent spread of spilled product (if the situation requires- i.e. block drains, dam ditches, boom watercourses, close water intakes);
10. Divert or stop traffic (do not start vehicles if a low flash-point product has been split);
11. Attempt to collect spilled and ponding hydrocarbon and return product to safe containment;
12. Use safety related equipment as required, to safely extract personnel if in immediate danger;
13. Consider decontamination of personnel – clothing / footwear / equipment – water to dilute substance;
14. Never attempt to perform a rescue without support or adequate forethought;

Refer to: MSTD13-PL002 ERP Spill response procedure for assistance with methods of containment or prompts during the containment process (if fluid) or the ***Australian-Emergency-Response-Guide-Book-2018*** in M-Files.

Post Event Actions

- Secure the scene for incident investigation;
- Team debrief / Mental anguish and concerns.

9.10 Emergency Event Guide 10 – 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; 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)		

9.11 Emergency Event Guide 11 – 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

9.12 Emergency Event Guide 12 – 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.

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)

9.13 Emergency Event Guide 13 – Pipelines

Incident	
Nature of the incident: ☐ **Rupture** ☐ **Leak** ☐ **Blowout** ☐ **Other**	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Mobilise the SERT if additional resources are needed ▪ Assess and ensure the scene is safe – withdraw personnel from danger (if required) ▪ Call for assistance as soon as possible ▪ Mobilise competent first-aider to treat injured persons (if required) at scene or first-aid station ▪ Access Work Permit at job site and refer to the emergency plan	
Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Check gas monitoring results on work permit	
Test atmosphere with gas monitor before entering the confined space	
Arrange escort for external back-up	
Notify General Manager Operations	

What to Do

Leak

NOTE: If there is a leak, the response should be consistent with the information presented in the spill/release Emergency Action Guide.

Ruptures

1. Identify the location of the failure and isolate the affected section of the pipeline, suspend operations if necessary;
2. Arrange for the safe shutdown of plant, equipment, vehicles in the affected area;
3. Establish a perimeter around the affected area, evacuate or restrict access;
4. Determine if any outside assistance is required;
5. Establish gas or other testing protocols prior to entering the area or introducing any potential ignition sources e.g. equipment;
6. If the spill has leaked into any water courses, install booms/barriers to limit any flows. Establish spoon drains/berms/dirt bunds to contain any flow or runoff;
7. Review forecast weather information;
8. Monitor and manage the leaked product ensuring personnel remain safe.

Post Event Actions

- Secure the scene for incident investigation;
- Determine the likely amount of spillage.

9.14 Emergency Event Guide 14 – Gas Leak (Minor)

Incident	
Nature of the incident: ☐ Rupture ☐ Leak ☐ Blowout ☐ Other ……	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Communicate to personnel to vacate the area and notify SERT Coordinator and SERT Leader ▪ Mobilise the SERT if additional resources are needed ▪ Shut down or isolate plant as required, cease vehicle / equipment movements, cordon off the area ▪ Organise Work Permit and or Initiate immediate repairs or other actions as required. ▪ Monitor progress of repairs or situation until condition made safe ▪ Advise team members of satisfactory completion of repairs or of safe condition	
Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Check gas monitoring during process of repairs or making safe	
Test atmosphere with monitor before entering the area	
Log details of condition, time and task progress	
Notify General Manager Operations	

What to Do

Leak

NOTE: The ESD systems provide the main control mechanism for all Gas escapes: no attempt should be made to disperse or extinguish a Gas cloud or fire unless the extinguisher is readily at hand and the fire smaller than a waste bin in size.

1. Identify the location of the leak and isolate the affected section of the pipeline, suspend operations if necessary;
2. Arrange for the safe shutdown of plant, equipment, vehicles in the affected area;
3. Establish a perimeter around the affected area, evacuate or restrict access;
4. Determine if any outside assistance is required;
5. Establish gas or other testing protocols prior to entering the area or introducing any potential ignition sources e.g. equipment;
6. Make emergency repairs to eliminate gas escaping from the affected area;
7. Review forecast weather information;
8. Prepare a Permit and work order to finalise after immediate repairs undertaken;
9. Prepare and enter information to incident report in INX;
10. Determine the likely amount of release.

Post Event Actions

- Secure the scene for incident investigation
- De-brief team re incident, non-dissemination or disclosure of information to friends or media

9.15 Emergency Event Guide 15 – Gas Leak (Major)

Incident	
Nature of the incident: ☐ Rupture ☐ Leak ☐ Blowout ☐ Other ……	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Mobilise the SERT ▪ Assess the scene – move personnel further from danger (if required) ▪ Shut down or isolate plant as required, cease vehicle / equipment movements, cordon off the area ▪ Activate the ESD system – as required ▪ Call for assistance as soon as possible ▪ 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	

9.16 Emergency Event Guide 16 – 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	
1. Identify the location of the failure and isolate the affected section of the MASP (if possible). 2. SERT leader to nominate site first responder to mobilise to reported leak/strike location. 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. Consult with GM Operations or Duty Manager regarding escalation to Emergency Management Team (Brisbane). 6. Establish gas or other testing protocols prior to entering the area or introducing any potential ignition sources e.g., equipment; 7. 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; 8. Monitor and manage the leaked product ensuring personnel remain safe.	
Post Event Actions	
▪ Secure the scene for incident investigation. ▪ Determine the likely amount of spillage.	

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

Hermannsburg Airstrip Basic Information

- Airstrip is a maintained “S” designated surface.
- Site coordinates:
  - Latitude: 23°55'32.6"S / Longitude: 132°48'19.4"E
  - Elevation 1945 Ft MSL
- The runway directions are 11 and 29. The strip dimensions are 1129 x 90 metres.
- Pilot should establish radio communications with Hermannsburg 30 minutes from site to allow for runway checks and local weather condition reports

Hermannsburg Airstrip Night Landing

This is a public strip but is unmanned.

Lighting – Runway edge lights are stated as “Intensity” type.

1. When arriving at night (or following periods of wet weather), the RFDS pilot may determine that an airstrip inspection is required prior to landing.
2. 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.
3. The pilot must be able to contact a person at the airfield to confirm the runway is serviceable and free of hazards.
4. Contact between the aircraft and the ground will be made via **UHF Channel 13.**
5. 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

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 may be communicated to the pilot.

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.

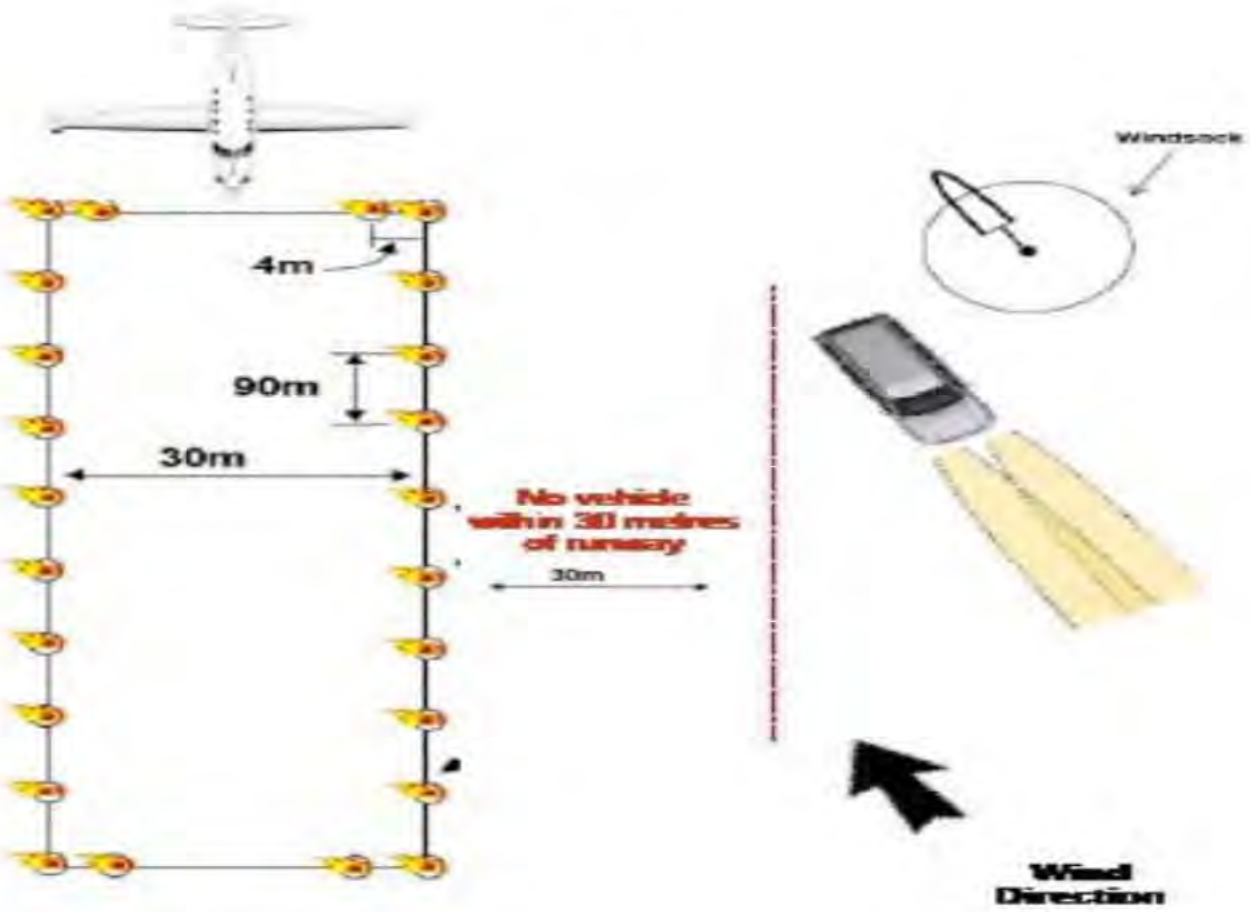
Stay listening to UHF channel 13

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.

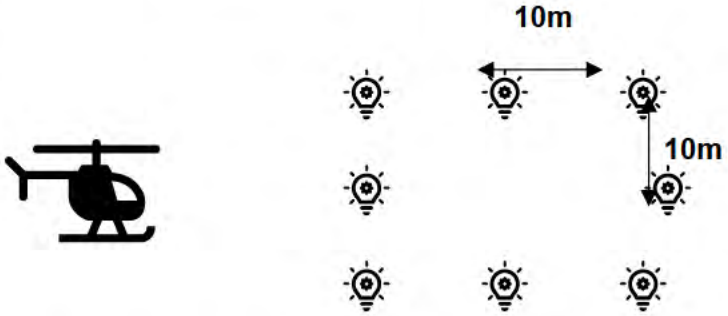
Figure 5



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>Hermannsburg Helicopter landings - basic information</u>

Figure 6



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.

Palm Valley site Helicopter landings

Palm Valley has no dedicated landing area. There are areas within the site that could provide adequate space to accommodate an emergency landing.

These are:

- PV09
- PV13

10.2 Site Information / Maps

Location

Site Name	Palm Valley	
Site Address	Off Larapinta Drive	
Site Grid Reference	Latitude: 23°59'54.3" South Longitude: 132°39'00.9" East	
Site Location and Accessibility Relevant to Local Community	**Item**	**Details**
	Nearest Town	Hermannsburg (15 kms)
	Nearest Major Road	Larapinta Drive
	Nearest Major Airport/town	Alice Springs (130 kms)
	Nearest Airstrip	Hermannsburg

Operation

Core Site Business	Gas Production
Operating Hours	365 days per year, 24 hours per day
Staffing arrangements	Operations staff workday 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

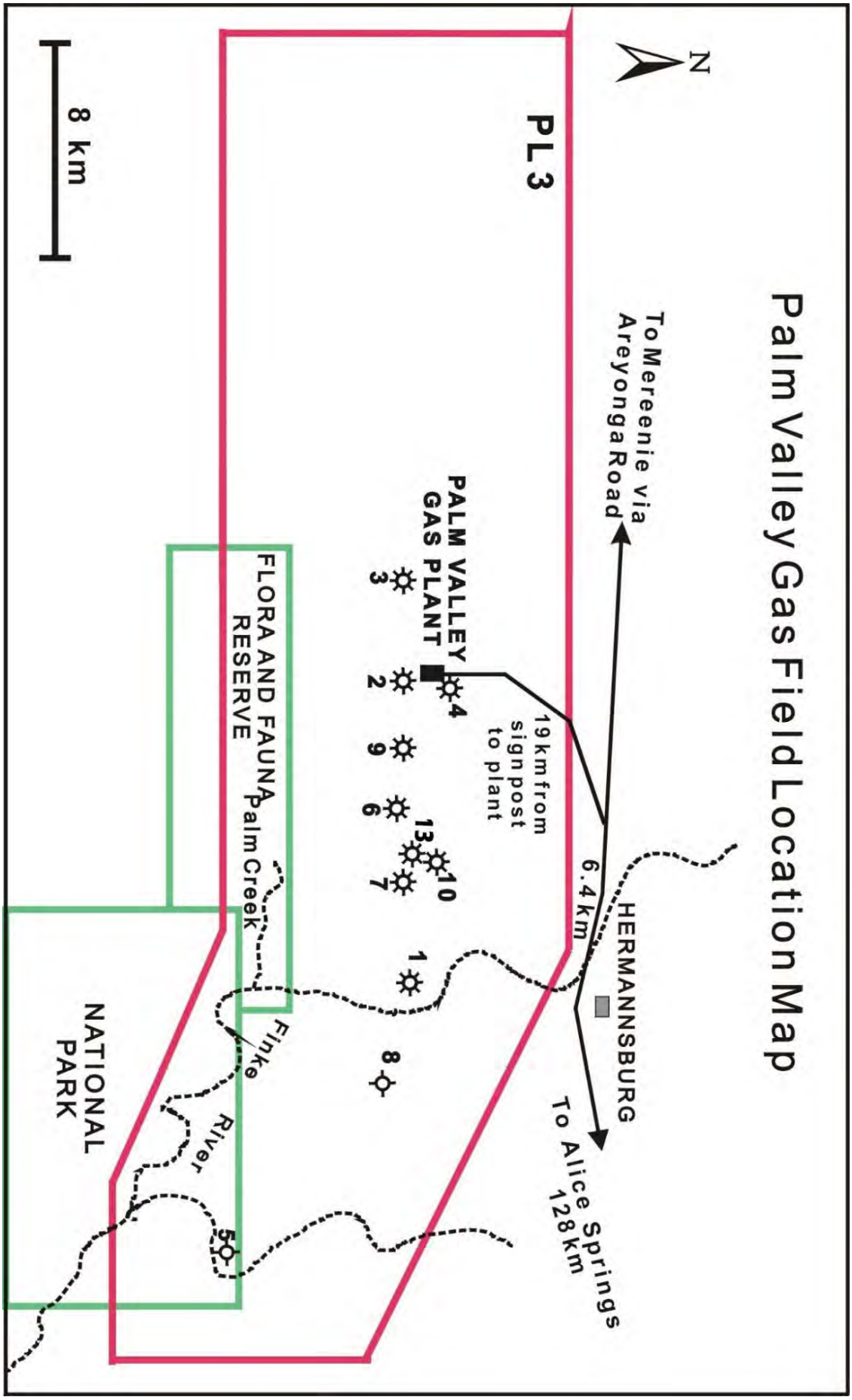
Qualified first aiders	1 per shift
First aid kits	In every vehicle and boxed for use in emergencies
NT Health Medical Kit	Not available on site
Specific equipment	Defibrillator and basic medical supplies

Maps

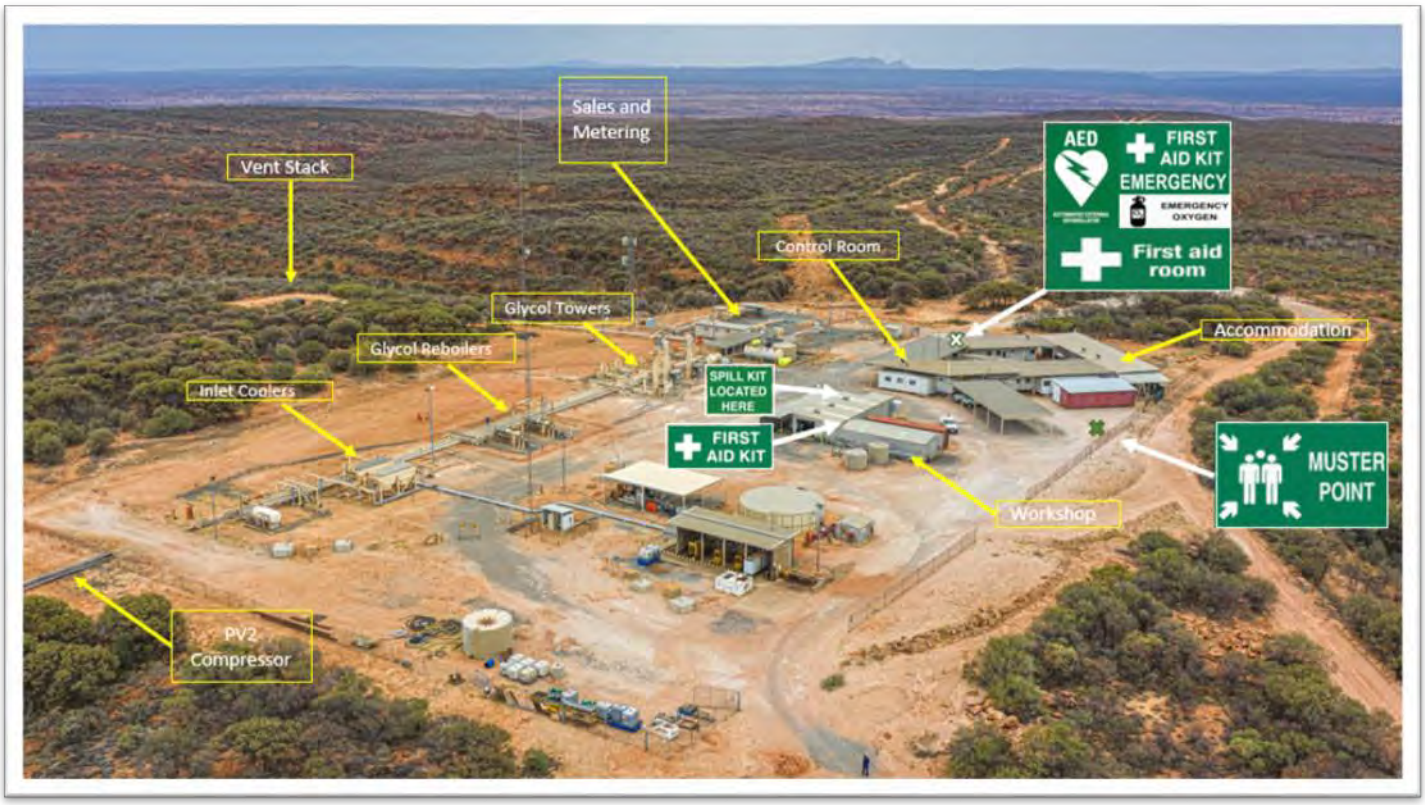
The following maps / pictures are included for use in an emergency:

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

Palm Valley Operation Map



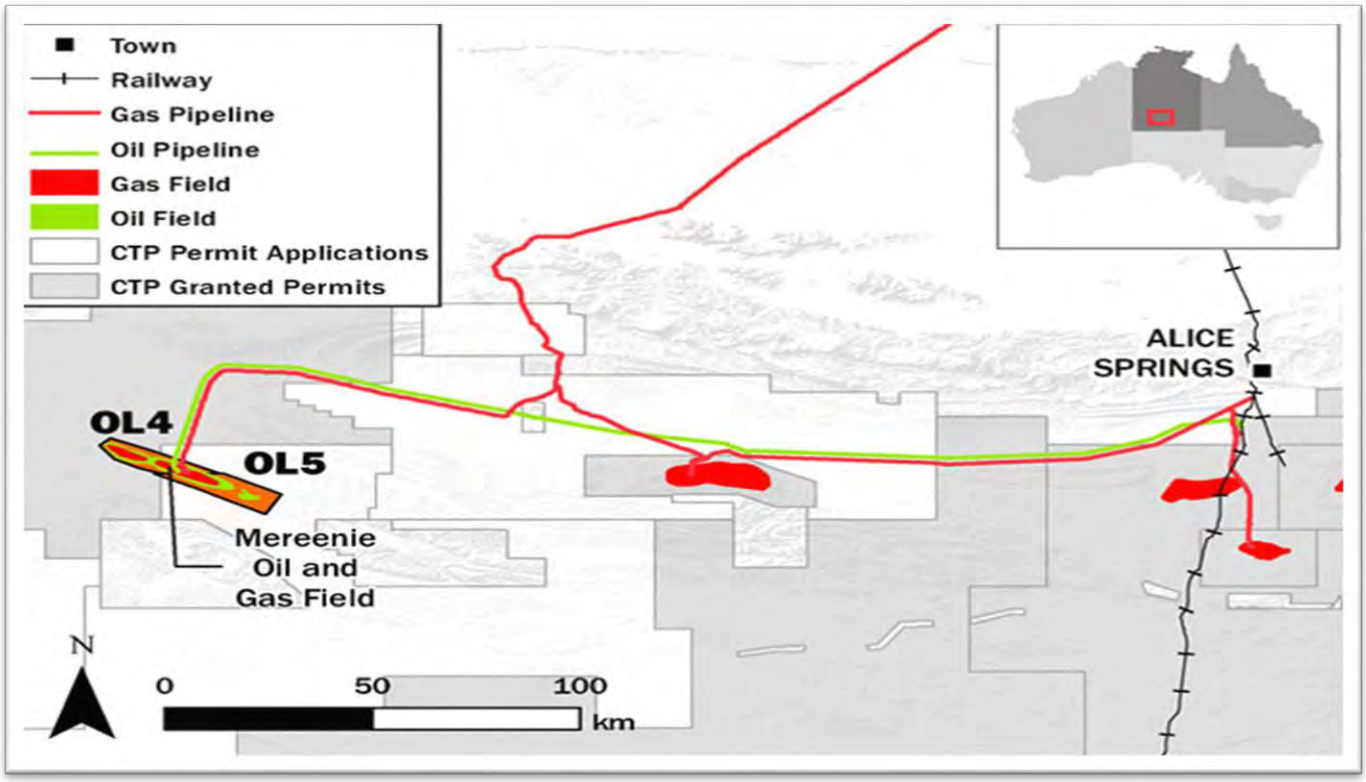
Palm Valley Camp Map



Central Treatment Plant



Major Pipeline Infrastructure map



Dingo and BECGS

Emergency Response Plan



Central Petroleum

Dingo and BECGS – Emergency Response Plan: MSTD13-DI-PL003
Version: 11 / Effective: 5th June 2023 / Revalidation: 5th June 2025
Document Owner: Production Supervisor

1. INTRODUCTION 3
1.1 Purpose 3
1.2 Scope 3
1.3 Emergency response Training 3
1.4 Emergency Management Approach 3
1.5 Response Priorities 4
1.6 Related Documents 4
2. SITE EMERGENCY RESPONSE TEAM 4
2.1 Roles and Responsibilities 4
3. EMERGENCY RESPONSE PROCESS 4
3.1 Identification 5
3.2 Notification 5
3.2 Assessment 6
3.3 Activation 7
3.4 Response 7
3.5 Stand-down and recovery 7
4. EMERGENCY RESPONSE RESOURCES 8
4.1 Role Cards 8
4.2 Emergency Action Guides 8
4.3 Chemical Response Guidance 8
4.4 Plant and Pipeline Shutdown / Isolation 8
4.5 Emergency Equipment 8
4.6 Medical Support 9
4.7 Aviation Resources 9
4.8 Site Emergency Response Room 9
4.9 Communication 10
4.10 Emergency Management Team / Plan 10
5. STAKEHOLDER MANAGEMENT AND COMMUNICATIONS 10
6. POST EMERGENCY REVIEW 11
7. EMERGENCY CONTACTS 11
7.1 Central Emergency Contacts 11
7.2 Site Contact Information 11
7.3 Emergency Services 11
7.4 Local / Landholder Contacts 13
8. ROLE CARDS 13
8.1 First Responder 13
8.2 Site Emergency Response Team leader (SERTL) 14
8.3 Site Emergency Response Team Coordinator 18
8.4 Emergency Response Team Member 20
8.5 Emergency Response First Aid 21
9. EMERGENCY EVENT GUIDES 22
9.1 Emergency Event Guide 1 – Vehicle Accident 22
9.2 Emergency Event Guide 2 – Transporting Incident – Rollover/Injuries 24
9.3 Emergency Event Guide 3 – Security Incident 25
9.4 Emergency Event Guide 4 – Bushfire / Flood 27
9.5 Emergency Event Guide 5 – Electric Shock 28
9.6 Emergency Event Guide 6 – Fire / Explosion 29
9.7 Emergency Event Guide 7 – Confined Space 30
9.8 Emergency Event Guide 8 – Spill / Release – Road Haulage – Wet Weather 31
9.9 Emergency Event Guide 9 – Spill / Release Site related 32
9.10 Emergency Event Guide 10 – Medical Trauma 33
9.11 Emergency Event Guide 11 – Well Blowout 34
9.12 Emergency Event Guide 12 – Bites / Stings 35
9.13 Emergency Event Guide 13 – Pipelines 37
9.14 Emergency Event Guide 14 – Gas Leak (Minor) 38
9.15 Emergency Event Guide 15 – Gas Leak (Major) 39
9.16 Emergency Event Guide 16 – MASP (LOPC) 40

10. ADDITIONAL INFORMATION 41
10.1 AVIATION GUIDANCE 41
10.2 SITE INFORMATION / MAPS 42

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 Dingo/BECGS and the following assets and associated infrastructure operated by Central Petroleum (CTP):

- well sites
- gathering lines
- MASP
- gas processing facilities
- oil storage tanks
- site offices, workshops and camp.

This plan is to be used in conjunction with CTP's Emergency Management Plan (MSTD-PLN001).

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 ERPs shall be reviewed every 2 years and/or if changes to plant and conditions occur.

1.3 Emergency response Training

All personnel shall receive Emergency Response training in an ongoing manner at each operational site. This training shall consist of both in field and desktop scenarios. Each site shall ensure the training is held (where operational viable) every 6 weeks.

1.4 Emergency Management Approach

CTP uses a two-tiered approach to emergency management as outlined in Figure 1.

Figure 1

Level	Examples	Document	Owner
Level 1 – Emergency Response	▪ Control of the situation does not require external support ▪ Non-life-threatening ▪ Not expected to escalate ▪ Limited damage to the environment, assets or reputation	Site Emergency Response Plan	Site Emergency Response Team leader

Level 2 - Emergency Management	▪ Control of the situation requires external support ▪ Life is at risk ▪ Major damage to the environment, assets or reputation ▪ Situation may have personnel, technical, operational or public affairs implications ▪ Highly likely to impact CTP's reputation	Emergency Management Plan	Emergency Management Team leader

In addition to and supporting this plan, the Emergency Management Team (EMT) and Emergency Management Plan (EMP) outlines the responsibilities, actions and resources available at head office to support site in the event of a significant emergency.

1.5 Response Priorities

In managing an incident, the SERT will focus their response to ensure:
- our **people** are accounted for and safe.
- we minimise impact on the **environment**
- our **assets** are protected
- CTP's **reputation** is safeguarded.

1.6 Related Documents

Whilst this plan has been designed to be a standalone document, references are made throughout to various other documents which may be useful in the event of an emergency. It is the responsibility of all SERT members to be familiar with the processes and standards within their area of responsibility, and conduct regular exercises to ensure readiness

2. Site Emergency Response Team

2.1 Roles and Responsibilities

The following specific roles and responsibilities are essential to ensure effective management and accountability during an emergency:
- first responder
- SERT leader – the Person in Charge (PIC) or Delegate on site
- SERT coordinator (supported by a log keeper)
- SERT first aider

Operators, technicians and logistics personnel will assist the SERT leader and may be required to undertake multiple roles depending on the nature of the emergency, its duration and complexity.

If for some reason the SERT leader is unable / unavailable to perform their duties, an alternate person must be identified. Should for some reason SERT members be unable to perform their duties, the SERT leader will allocate other suitably trained persons. On shift SERT role information is to be displayed on the notice board or in the site emergency response room.

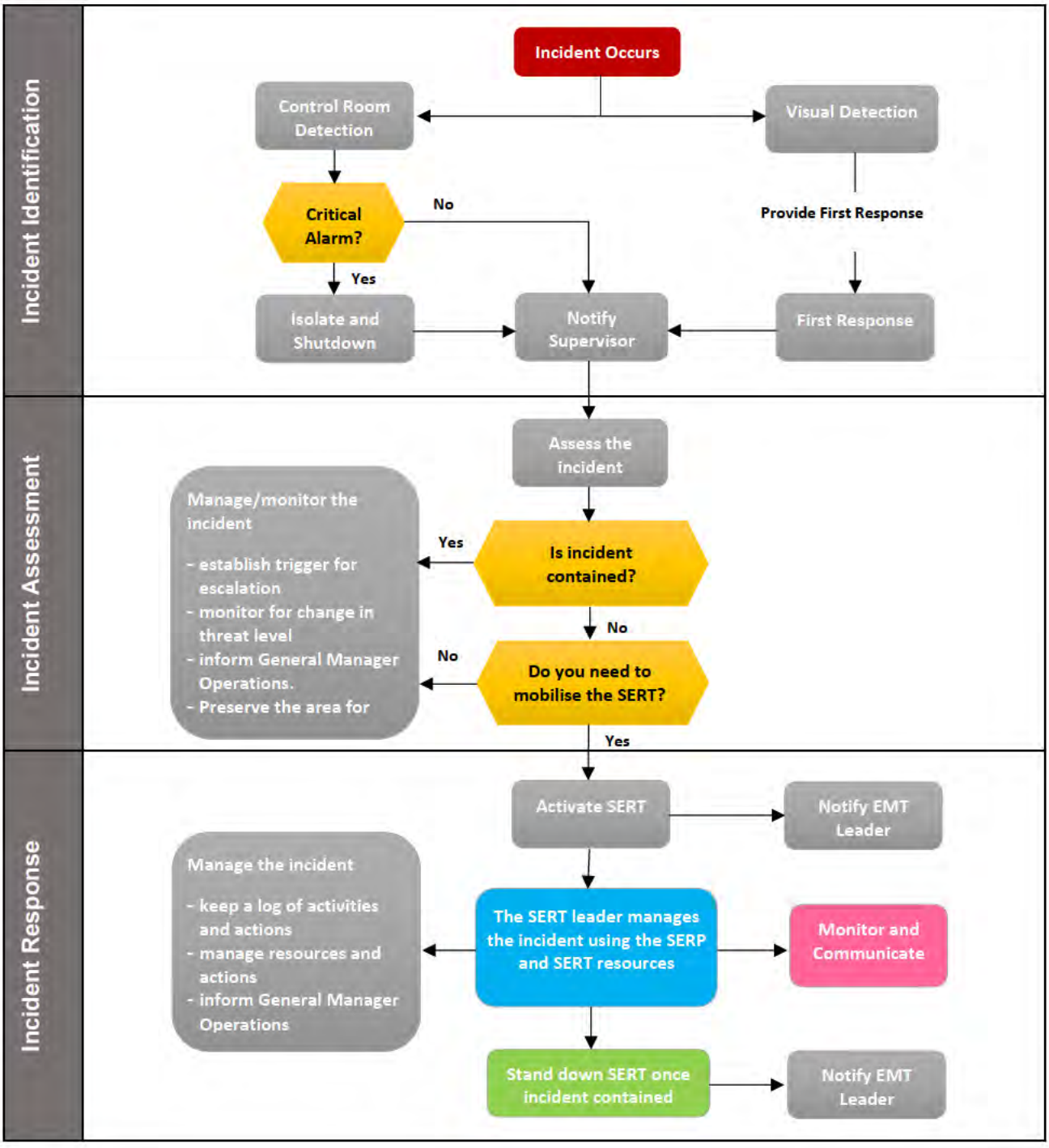
Depending on the nature and severity of the emergency, the EMT may be activated to support issues such as:
- regulatory and stakeholder notifications
- additional manning
- sourcing assets required to support the site, such as aviation
- medical or other emergency services
- mutual aid or contractor resources.

For more detailed information regarding the above SERT roles, refer to the role cards in Section 4.1.

3. Emergency Response Process

Identification, assessment and response processes are outlined in Figure 2 below. Further guidance is available in the role cards in Section 4.1.

Figure 2



3.1 Identification

When an event (actual or imminent) endangers or threatens to endanger life, property or the environment, the first responder must, if safe to do so, take action aligned with the first responder role card. It's important everyone is familiar with the responsibilities and initial actions of the first responder.

3.2 Notification

Once immediate action is taken, the first responder must raise the alarm and advise the production supervisor as to the nature of the emergency and any assistance required. An alarm can be raised:

- in person
- by radio (using prefix 'Emergency, Emergency, Emergency)

- by landline or mobile phone (not in restricted areas)
- by SOS alarm on a tracker.

3.2 Assessment

Once notified and briefed, the production supervisor will assess the incident in line with the Emergency Assessment and Escalation Matrix (Figure 3) and call on their experience to determine if the SERT should be activated. Note that even if the thresholds are not met, the SERT may still be activated at the discretion of the PIC on site.

Figure 3

	Site Emergency Response Team	Emergency Management Team
Activation	The SERT may activate if any of the below criteria is met	The EMT may be activated if any of the below criteria are met
Escalation/Notification	If the team is activated, the SERT leader notifies and provides a summary to the EMT leader	If the EMT is activated, the EMT leader contacts the EMT members and notifies the CEO
Risk Impact	Serious	Critical or Extreme
Injury / Illness to workers	Injury or ill health requiring medical treatment	Fatality or injury/ill health requiring extensive medical treatment (e.g. amputation, spinal injuries, etc.)
Loss of workforce capacity (pandemic or industrial action)	Loss of key staff impacting on operational output or threat of industrial action	Operations compromised due to staff being unavailable
Personnel and asset security	Non-specific threat to CTP staff e.g. protests, suspicious packages, bomb threats, etc.	Community protest action e.g. threats to CTP staff, bomb threat, suspicious packages, security incidents
Environment and / or Community	Localised and / or short-term environment and/or community incident/emergency	Extensive environmental or community incident such as significant contamination, offsite pollution or fatality
Natural Disaster	Predicted or localised damage to facilities/assets e.g. storms, external fires, flooding	Storm, fire, flood damage. Forecast natural disaster (widespread). Multiple locations impacted
Fire and Explosion	Small localised fires or explosions extinguishable by site resources	Uncontrolled fire/explosion requiring external emergency support
Property Damage	Serious damage to CTP assets / third party property	Major damage to CTP assets / third party property
Loss of Containment (LOC) – chemical spill, solid, vapor, liquid.	Major accident event or event requiring HAZMAT response, or non-hazardous substance spill that meets response activating SERP scenario. Any spill to water	Uncontrolled release unable to be isolated and contained within an hour after activating SERT scenario
Laws, regulations, civil actions	Breach of regulations regarding investigations and reporting to authorities. Possible prosecution/fine	Litigation/prosecution by regulator which could lead to temporary plant closure
Stakeholders / Media	Local media coverage. Health and / or safety concerns to local community	State/ national or social media with potential to impact performance of site/team operations
Facility, Plant or System failure / Cyber attack	Significant breach/IT incident affecting one site/location. Loss of access to single location <4hrs	Significant breach /IT incident affecting more than one site/location. Loss of access to single location for >4hrs
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 unauthorized personnel remaining on site?

4. Emergency Response Resources

4.1 Role Cards

Role cards act as prompts and are used as an aid in the event of an emergency. A set of role cards to support this plan are provided in section 6.

4.2 Emergency Action Guides

Emergency Action Guides have been developed and outline typical responses for specific types of emergencies. A set of Emergency Action Guides to support this plan are provided in section D.

4.3 Chemical Response Guidance

All chemicals stored and used on site are to be managed in accordance with the corresponding Safety Data Sheets. Hard copies of Safety Data Sheets are stored in the warehouse with electronic copies available via the Chemwatch website.

4.4 Plant and Pipeline Shutdown / Isolation

In the event of a loss of containment event, emergency shutdown devices (ESDs) are to be used, however if isolation identification is not clear then the SERT members can access Piping and Instrument Diagrams (P&IDs) on M: files. In these instances, the isolation should be undertaken, and any associated documentation should be completed post event and prior to restart. In the event of a power outage there are master sets of PID's in the control room, supervisor's office & ESS control room.

4.5 Emergency Equipment

Emergency equipment is provided at Dingo and BECGS 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
- Fire extinguishers
- 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.
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

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.

4.7 Aviation Resources

Sites may have the capacity to facilitate both Helicopters (rotary) and Planes (fixed wing) in the event of an emergency, however, the preferred option is fixed wing aircraft.

Further details regarding the airstrip / helipad and its safety protocols are outlined in section E.

4.8 Site Emergency Response Room

The site Control 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 – Dingo and BECGS ▪ 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 are via site digital radios on the:
- Main field channel No. 4; or
- Emergency channel No. 1 (Wide Area).

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 or delegate will determine when to switch to channel 1 (Wide Area - 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/Duty Manager	[redacted] / 07 3181 3830
Engineering Manager/Duty Manager	[redacted] / 07 3181 3806
Chief Operating Officer	[redacted]
Risk and HSE Manager	[redacted]
Health & Safety Specialist	[redacted]
Brisbane emergency phone -To be used whilst emergencies are in progress	07 3181 3860

7.2 Site Contact Information

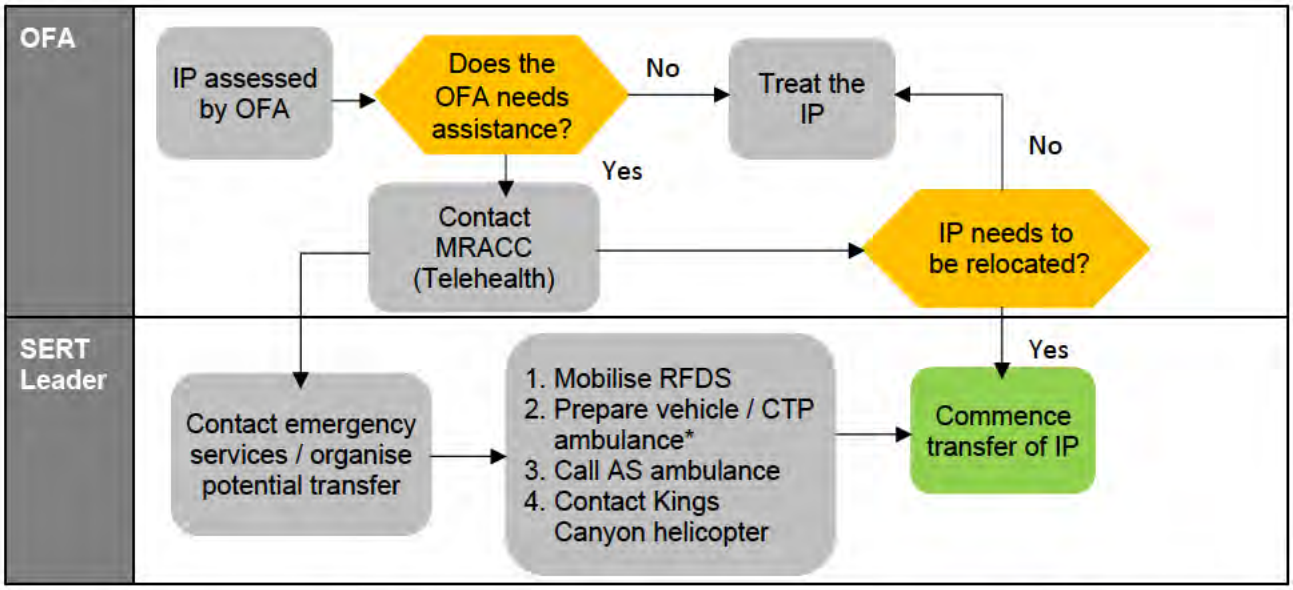
Role / Detail	Contact Details
Production Supervisor	[redacted] 08 8968 5800 Supervisor Office
Logistics and Administration Coordinators	[redacted] 08 8968 5805
Control Room	08 8968 5801 08 8968 5803
Emergency Alert Number	**1300 134 406 ISS First Response (24/7)**
Dingo and BECGS Emergency Number	[redacted]

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 an ambulance is needed contact AS ambulance and plan to meet halfway if practical.

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)	
	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	20 min drive BECGS / 1hr drive Dingo
	St John Ambulance - Alice Springs Office	08 8959 6600	Potential to meet IP halfway to incident
	Mall Medical Clinic - Alice Springs	08 8952 2744	20 min drive BECGS / 1hr drive Dingo
Police	Police - Alice Springs Station	08 8951 8822	
	Police (non-emergency)	131 444	
Fire	Fire and Rescue (non-emergency)	08 8999 3473	
Emergency	Emergency Services (flood, storms, etc)	132 500	

In the event of an emergency, the SERT leader is authorised to contact the above, however, **any contact with government, regulatory bodies, etc., must be undertaken centrally by the Brisbane based EMT leader**.

[1] Doctor on call for all Medical Evacuations via Alice Springs

7.4 Local / Landholder Contacts

Landholder	Contact Details
Alice Springs Metal Recyclers (Brewer Estate)	[redacted]
Central Energy Power Pty. Ltd	Site Office, (08) 8952 2577 [redacted]
[redacted]	[redacted]
[redacted]	[redacted]

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	
Post Incident	**Complete**
▪ Be prepared to provide ongoing advice to the recovery operations, as required ▪ Participate in the SERT post-emergency review ▪ Propose changes to the site emergency response framework and any procedures as a result of the incident	

9. Emergency Event Guides

9.1 Emergency Event Guide 1 – Vehicle Accident

Incident	
Nature of the incident: ☐ Vehicle/Vehicle Collision ☐ Vehicle/Structure Collision ☐ Vehicle Roll Over ☐ Pedestrian Hit/Run Over ☐ Other ……	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
• Call for assistance as soon as possible • Assess and ensure the scene is safe – withdraw personnel from danger (if required) • Prioritise causalities – undertake a primary assessment of any causalities • Mobilise SERT, if additional resources are needed • Mobilise competent first aider to treat injured persons (if required) at scene or first-aid station • Mobilise the following if necessary - electrician if there is an electrical risk, equipment to stabilise vehicle, fire control equipment	
Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Call a medical facility for assistance/guidance	
Arrange escort for external emergency support / back-up	
Notify General Manager Operations	

What to Do

Consider the following, to **minimise danger:**

1. **Other traffic**:
- use hazard lights on vehicles to warn oncoming traffic
- switch headings on if at night
- ask bystander/s to extend the warning perimeter to at least 100mts away to warn & control oncoming traffic
- Battery disconnect

2. **Fire:**
- switch off the vehicle's motor and, for diesel vehicles, shut off any emergency fuel switches
- stop people from smoking nearby
- if there is a fire under the bonnet, and you have a fire extinguisher and it safe to do so, release the bonnet catch (but don't open fully) and aim the extinguisher through the gap

3. **Fumes**:
- stay clear of fumes if petrol/diesel is leaking and ensure there are no naked flames or people smoking nearby

4. **Damaged vehicles:**
- if airbags have not been activated, stay clear of the steering wheel and front dashboard
- if not in gear, apply the handbrake or put the vehicle in gear

5. **Spilt fuel or chemicals:**
- if the accident involves a vehicle carrying hazardous material, stay clear. Take note of the signs indicating what is being carried e.g. type of sign and code number and call 000 for advice
- if there are clouds of vapour, spilt liquids, bottles, gas cylinders or unusual odors, avoid contact with these substances and have everyone stay upwind if possible, to avoid fumes

6. **Fallen or damaged powerlines**
- remain at least 6m from any fallen power lines and don't attempt to move the cables
- do not go near a vehicle if it is being touched by electrical cables advise the patient not to move and wait for emergency services to arrive

What to Do

Prioritise Causalities

1. Once safe to do so, assess casualties as follows: (Using the vehicle medical booklet to assist)
   - Are they conscious?
   - Are their airways clear and open?
   - Are they breathing?
   - Are they bleeding?

Injuries and Ongoing Management

- Common injury types:
  - airway blockages
  - head injuries
  - chest injuries
  - spinal injuries

1. Unless necessary (for example if the vehicle could explode), do not move a patient until help arrives as it could lead to further injury;
2. Continue to monitor their breathing as this can rapidly deteriorate. Be ready to perform CPR should this occur - Do not use mouth-to-mouth method if victim ingested or inhaled any substance;
3. Record observations (if possible) until help arrives e.g. breathing, pulse, skin colour and temperature. Any changes could indicate a serious change in their condition;
4. If the patient is conscious, continue to reassure them. Let them know that help is on the way.

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.

Post Event Actions

- Secure the scene for incident investigation;
- Team debrief / Mental anguish and concerns.
- In the case of a Fatality, authorities (Police) must notify Next of Kin before the EMT leader commences communication (with Next of Kin)

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: this is a 2-person task (OFA to support the patient and a Driver trained in 1st Aider/CPR.

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)

9.6 Emergency Event Guide 6 – Fire / Explosion

Incident		
Nature of the incident:		
☐ Building	☐ Plant and Equipment	☐ Bulk Fuel/Oil
☐ Electrical	☐ Chemical	☐ Other .....

Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Call for assistance as soon as possible; ▪ Assess and ensure the scene is safe – withdraw personnel from danger (if required); ▪ Shut down plant and systems that may be affected by the fire or provide first response fire-fighting, if safe to do so; ▪ Mobilise the SERT if additional resources are needed; ▪ Mobilise competent first-aider(s) to treat injured persons (if required) at scene or first-aid station; ▪ Establish exclusion zones if required (800 mtrs – 1600 mtrs – as required); ▪ Arrange isolation of energy sources; ▪ Assess work permit (where applicable) at job site and refer to emergency plan; ▪ Consult signage/labelling to identify hazardous materials and any response requirements.	

Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Arrange escort for external back-up	
Notify General Manager Operations	

What to Do

Treatment Plant

NOTICE

NOTE: Major plant fires will not be fought using firefighting equipment, plant ESD will be used.

- Only provide basic firefighting on small fires (wastepaper bin size), if close enough or safe to do so.

1. Shut down and depressurise plant and systems that may be affected by the fire
2. If possible, isolate all energy sources and keep ignition sources clear of the hazardous area
3. Evacuate to the muster point, ensuring it is at a safe distance (up to 800 mts) and upwind and conduct head count of all POB.
4. Notify the EMT leader
   - discuss and determine if any additional assistance is required
5. Initiate search and rescue for the missing personnel, if and when safe to do so, and only after confirmation with the SERT leader

Tanks

1. Stop pumps, close valves, if safe to do so, and activate alarm
2. Don't go into bunded areas or onto tanks, or areas where escape may be limited
3. Activate foam generators if safe to do so – SERTL. (*SOP number* for site:).
4. Do not attempt to remove vehicles/road tankers unless action approved by SERTL

Post Event Actions

- Secure the scene for incident investigation

9.7 Emergency Event Guide 7 – Confined Space

Incident	
Nature of the incident: ☐ Person Trapped ☐ Person Injured ☐ Fire ☐ Toxic Atmosphere ☐ Electrical ☐ Engulfment ☐ Other ……	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Call for assistance as soon as possible ▪ Assess and ensure the scene is safe – withdraw all unnecessary personnel from area ▪ Mobilise the SERT if additional resources are needed ▪ Mobilise competent first-aider to treat injured persons (if required) at scene or first-aid station ▪ Mobilise electrician – arrange isolations (if required) ▪ Access Work Permit at job site and refer to the emergency plan	
Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Check gas monitoring results on work permit	
Test atmosphere with monitor before entering the confined space – check wind direction	
Arrange escort for external back-up	
Notify General Manager Operations	
What to Do	
1. If personnel are trapped or unable to escape the CS – STOP all persons from entering the location unless authorised and fitted with appropriate lifesaving equipment / PPE 2. SERT Leader shall ensure that isolations remain intact and that no other oxygen depleting events may unfold during the extraction. 3. The Rescue plan for the task would indicate the requirement to have BA, first aid, a method of extraction and suitable numbers to complete the task – ensuring this is correct and the gear is available, then; 4. SERT Leader shall order the insertion of team members in BA only when prepared, and ready to respond 5. Other team members shall be waiting in support including the SERT first aider with a Satellite phone with access to medical support online (if required) 6. Vehicle (ambulance if possible) is at the ready to remove patient as required 7. Ambulance has oxygen with mask and defibrillator available 8. Spotters shall be used to ensure that all persons remain clear of the situation unless required to assist	
Post Event Actions	
▪ Secure the scene for incident investigation	

9.8 Emergency Event Guide 8 – Spill / Release – Road Haulage – Wet Weather

Incident	
Nature of the incident: ☐ Heavy Haulage / Road transport ☐ Bulk transport vessel ☐ Bulk Chemical Load ☐ Other ……	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Site responder - Call for assistance as soon as possible ▪ If on scene -Assess and cautiously approach from upwind - ensure the scene is safe – withdraw personnel from danger (as required), use available extinguishers, shielding, breathing support; ▪ Mobilise the SERT for additional resources as needed – carry ELSA gear, extinguishers, tools, spill gear. ▪ Mobilise competent first-aider(s) to treat injured persons (if required) at scene or first-aid station ▪ Assist external personnel with notifications and calls for assistance	
Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Arrange escort for external back-up	
Notify General Manager Operations	

What to Do

1. Ensure vehicles can safely navigate to and from areas of concern – provide alternate routes if possible;
2. Ensure all personnel are safe and clear of area -Stay clear of Vapour, Fumes, Smoke and Spills;
3. Use safety related equipment as required, to safely extract personnel if in immediate danger;
4. Different PPE (Face shields, goggles, heavy gloves, Gum boots) may be required in Wet weather situations to safely perform any task;
5. Extricate personnel and team to a safe distance and clear of potential hazardous fumes (Upwind);
6. Attempt to Identify the spill - refer to the HAZCHEM code, Truck Placarding, Driver or SDS for methods of control / management;
7. Alert Management / SES / Police or 000 of situation ASAP, note location, HAZCHEM concerned, areas of impact;
8. Divert or stop traffic (do not start vehicles if a low flash-point product has been split) if tanker truck or Chemical event is involved in a fire, ISOLATE for 800 metres in all directions;
9. Consider equipment – dependent on location, proximity or safety – what can or should be saved?
10. Interacting personnel enter only when wearing appropriate PPE;
11. If fluid form, attempt to prevent spread of spilled product from the vehicle itself (shut valves – internal / external) if safe to do so, using hazard specific PPE;
12. Remove all sources of ignition to reduce any potential of fire;
13. Notify EMT and advise situation and request assistance if needed – advise SES, Police – update as required;
14. Never attempt to perform a rescue without support or adequate forethought;

Refer to: MSTD13-PL002 ERP Spill response procedure for assistance with methods of containment or prompts during the containment process (if fluid) or the ***Australian-Emergency-Response-Guide-Book-2018*** in M-Files.

Post Event Actions

- Secure the scene for incident investigation;
- Team debrief / Mental anguish and concerns.

9.9 Emergency Event Guide 9 – Spill / Release Site related

Incident	
Nature of the incident: ☐ Warehousing movements ☐ Plant Failure ☐ Bulk site storage vessel ☐ Evaporation Pond ☐ Other ……	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Call for assistance as soon as possible; ▪ Assess and cautiously approach from upwind - ensure the scene is safe – withdraw personnel from danger (if required or able); ▪ Mobilise the SERT if additional resources are needed - carry ELSA gear, extinguishers, tools, spill gear; ▪ Mobilise competent first-aider to treat injured persons (if required) at scene or first-aid station; ▪ Assist external personnel with notifications and calls for assistance.	
Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Arrange escort for external back-up	
Notify General Manager Operations	

What to Do

1. Notify EMT (radio) and advise situation and request assistance if needed;
2. Consider ESD of plant – dependent on location, proximity or safety need;
3. Ensure all personnel are safe and clear of area -Stay clear of Vapour, Fumes, Smoke and Spills;
4. Interacting personnel consider wearing ELSA gear if attempting to extract any personnel – advise ERTL of intent – obtain support and clearance;
5. Different PPE (Face shields, goggles, heavy gloves, Gum boots) may be required to safely perform the task;
6. Remove all sources of ignition to reduce the potential fire hazard;
7. Establish source of spill/leak, and determine the extent of pollution;
8. Stop further leakage (e.g. stop pumping or in case of pipeline leak give warnings to stop the flow), close valves, attempt to stop leaks, move object on its side;
9. Isolate spill or leak area for at least 100 metres (330 feet) in all directions to prevent spread of spilled product (if the situation requires- i.e. block drains, dam ditches, boom watercourses, close water intakes);
10. Divert or stop traffic (do not start vehicles if a low flash-point product has been split);
11. Attempt to collect spilled and ponding hydrocarbon and return product to safe containment;
12. Use safety related equipment as required, to safely extract personnel if in immediate danger;
13. Consider decontamination of personnel – clothing / footwear / equipment – water to dilute substance;
14. Never attempt to perform a rescue without support or adequate forethought;

Refer to: MSTD13-PL002 ERP Spill response procedure for assistance with methods of containment or prompts during the containment process (if fluid) or the ***Australian-Emergency-Response-Guide-Book-2018*** in M-Files.

Post Event Actions

- Secure the scene for incident investigation;
- Team debrief / Mental anguish and concerns.

9.10 Emergency Event Guide 10 – 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; 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)		

9.11 Emergency Event Guide 11 – 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	

9.12 Emergency Event Guide 12 – 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)

9.13 Emergency Event Guide 13 – Pipelines

Incident	
Nature of the incident: ☐ **Rupture** ☐ **Leak** ☐ **Blowout** ☐ **Other** ……	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Mobilise the SERT if additional resources are needed ▪ Assess and ensure the scene is safe – withdraw personnel from danger (if required) ▪ Call for assistance as soon as possible ▪ Mobilise competent first-aider to treat injured persons (if required) at scene or first-aid station ▪ Access Work Permit at job site and refer to the emergency plan	
Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Check gas monitoring results on work permit	
Test atmosphere with gas monitor before entering the confined space	
Arrange escort for external back-up	
Notify General Manager Operations	

What to Do

Leak

NOTE: If there is a leak, the response should be consistent with the information presented in the spill/release Emergency Action Guide.

Ruptures

1. Identify the location of the failure and isolate the affected section of the pipeline, suspend operations if necessary;
2. Arrange for the safe shutdown of plant, equipment, vehicles in the affected area;
3. Establish a perimeter around the affected area, evacuate or restrict access;
4. Determine if any outside assistance is required;
5. Establish gas or other testing protocols prior to entering the area or introducing any potential ignition sources e.g. equipment;
6. If the spill has leaked into any water courses, install booms/barriers to limit any flows. Establish spoon drains/berms/dirt bunds to contain any flow or runoff;
7. Review forecast weather information;
8. Monitor and manage the leaked product ensuring personnel remain safe.

Post Event Actions

- Secure the scene for incident investigation;
- Determine the likely amount of spillage.

9.14 Emergency Event Guide 14 – Gas Leak (Minor)

Incident	
Nature of the incident: ☐ Rupture ☐ Leak ☐ Blowout ☐ Other ……	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Communicate to personnel to vacate the area and notify SERT Coordinator and SERT Leader ▪ Mobilise the SERT if additional resources are needed ▪ Shut down or isolate plant as required, cease vehicle / equipment movements, cordon off the area ▪ Organise Work Permit and or Initiate immediate repairs or other actions as required. ▪ Monitor progress of repairs or situation until condition made safe ▪ Advise team members of satisfactory completion of repairs or of safe condition	
Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Check gas monitoring during process of repairs or making safe	
Test atmosphere with monitor before entering the area	
Log details of condition, time and task progress	
Notify General Manager Operations	

What to Do

Leak

NOTE: The ESD systems provide the main control mechanism for all Gas escapes: no attempt should be made to disperse or extinguish a Gas cloud or fire unless the extinguisher is readily at hand and the fire smaller than a waste bin in size.

1. Identify the location of the leak and isolate the affected section of the pipeline, suspend operations if necessary;
2. Arrange for the safe shutdown of plant, equipment, vehicles in the affected area;
3. Establish a perimeter around the affected area, evacuate or restrict access;
4. Determine if any outside assistance is required;
5. Establish gas or other testing protocols prior to entering the area or introducing any potential ignition sources e.g. equipment;
6. Make emergency repairs to eliminate gas escaping from the affected area;
7. Review forecast weather information;
8. Prepare a Permit and work order to finalise after immediate repairs undertaken;
9. Prepare and enter information to incident report in INX;
10. Determine the likely amount of release.

Post Event Actions

- Secure the scene for incident investigation
- De-brief team re incident, non-dissemination or disclosure of information to friends or media

9.15 Emergency Event Guide 15 – Gas Leak (Major)

Incident	
Nature of the incident: ☐ Rupture ☐ Leak ☐ Blowout ☐ Other ……	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Mobilise the SERT ▪ Assess the scene – move personnel further from danger (if required) ▪ Shut down or isolate plant as required, cease vehicle / equipment movements, cordon off the area ▪ Activate the ESD system – as required ▪ Call for assistance as soon as possible ▪ 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	

9.16 Emergency Event Guide 16 – 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	
1. Identify the location of the failure and isolate the affected section of the MASP (if possible). 2. SERT leader to nominate site first responder to mobilise to reported leak/strike location. 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. Consult with GM Operations or Duty Manager regarding escalation to Emergency Management Team (Brisbane). 6. Establish gas or other testing protocols prior to entering the area or introducing any potential ignition sources e.g. equipment; 7. 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; 8. Monitor and manage the leaked product ensuring personnel remain safe.	
Post Event Actions	
▪ Secure the scene for incident investigation; ▪ Determine the likely amount of spillage.	

10. Additional Information

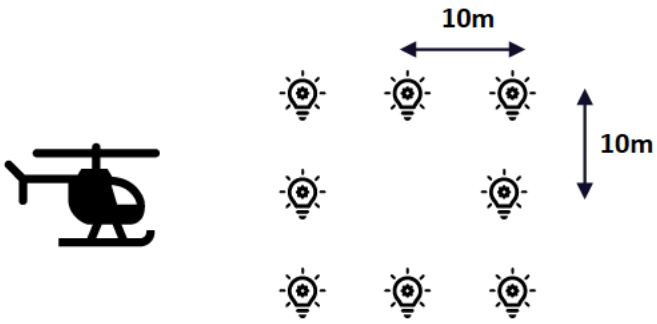
10.1 Aviation Guidance

Fixed wing aircraft will not be used at BECGS in an emergency.

Emergency responses using a Helicopter may be used, provided a safe landing position is declared.

Helicopter landings - basic information

Figure 1



Helicopters can land safely near to BECGS or the Dingo well sites should the need arise. In this case, five (5) minutes before the helicopter is due to arrive, inspect the landing area to ensure the site is free of loose objects that could be blown away or become harmful projectiles.

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

BECGS Location

Site Name	BECGS	
Site Address	Off Stuart Highway - Brewer Road - Brewer Industrial Estate	
Site Grid Reference	Latitude: 23°52'41.3" South Longitude: 133°49'34.6" East	
Site Location and Accessibility Relevant to Local Community	**Item**	**Details**
	Nearest Town	Alice Springs (15 kms)
	Nearest Major Road	Stuart Highway
	Nearest Major Airport/town	Alice Springs (10 kms)
	Nearest Airstrip	Alice Springs

Dingo Locations

All of the Dingo wells are located off Maryvale road (old south road). The location / coordinates of the wells are outlined in the below table

Well	Latitude	Longitude	Latitude (GDA94)	Longitude (GDA94)
Dingo 1	-24.224931	133.897658	24° 13' 29.750" S	133° 53' 51.568" E
Dingo 2	-24.23016	133.875259	24° 13' 48.576" S	133° 52' 30.931" E
Dingo 3	-24.21569	133.863251	24° 12' 56.483" S	133° 51' 47.705" E
Dingo 4	-24.240798	133.922936	24 14' 26.873" S	133 55' 22.570" E

Operation

Core Site Business	Gas Production
Operating Hours	365 days per year, 24 hours per day
Staffing arrangements	Operations staff workday shift only. 24-hour support is provided via an on-call roster.
Site Internal Emergency Radio Channel	No. 2 Not monitored 24hrs.

Onsite Medical Support

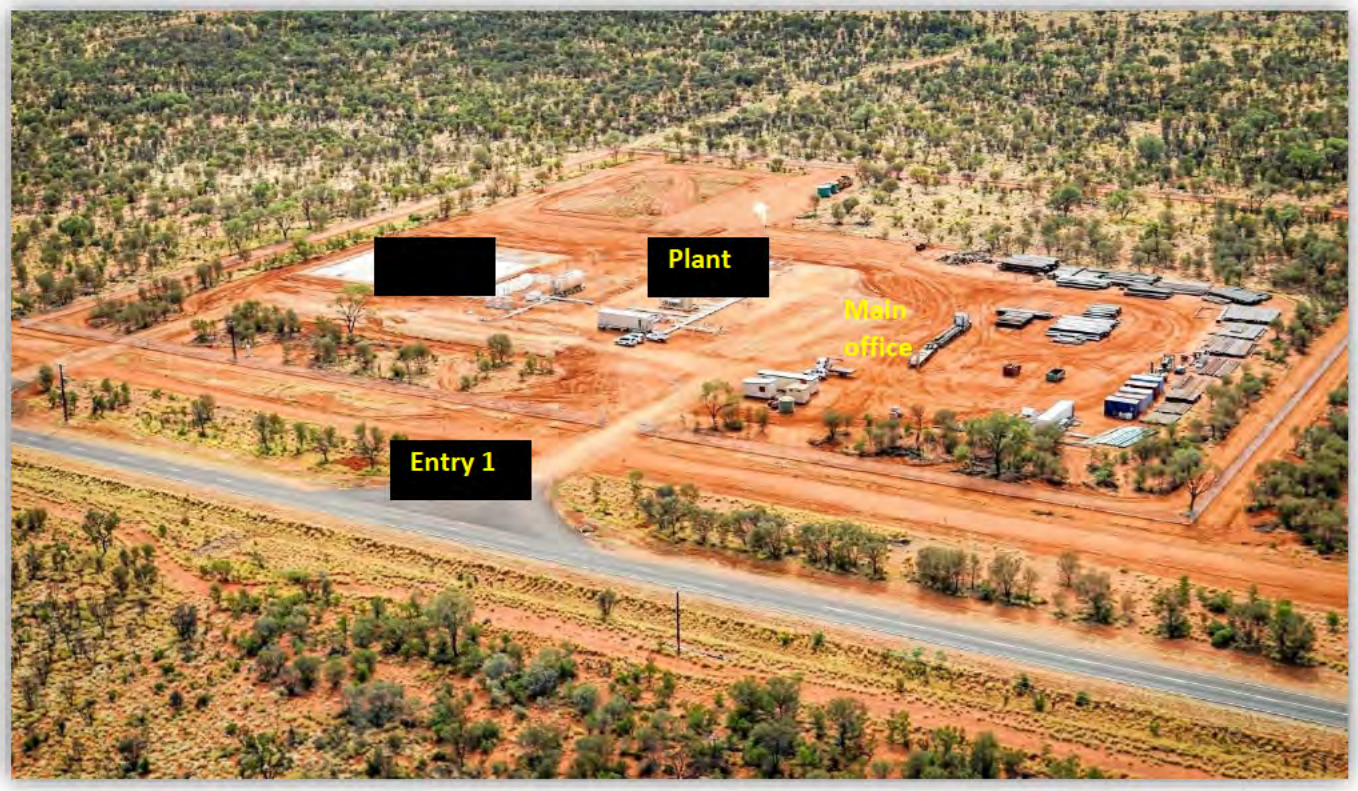
Qualified first aiders	1 per shift
First aid kits	In every vehicle and boxed for use in emergencies
NT Health Medical Kit	Not available on site
Specific equipment	Defibrillator and basic medical supplies

Maps

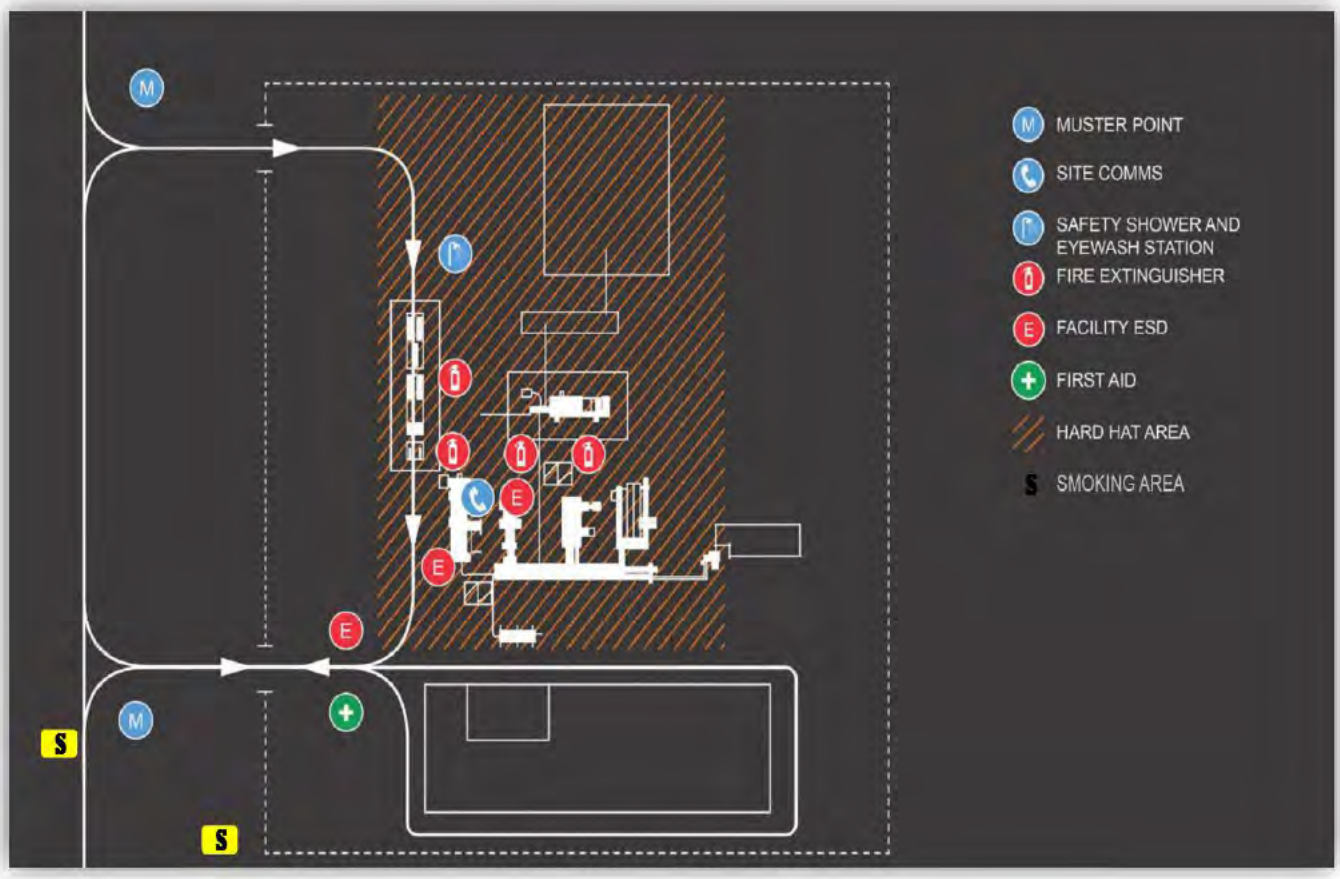
The following maps / pictures are included for use in an emergency:

- BECGS – showing location of the main offices and buildings, plant as well as key safety equipment and points
- BECGS / Dingo location – showing proximity of BECGS to wells as well as to Alice Springs
- Location of the Dingo wells

BECGS Local Operation Map



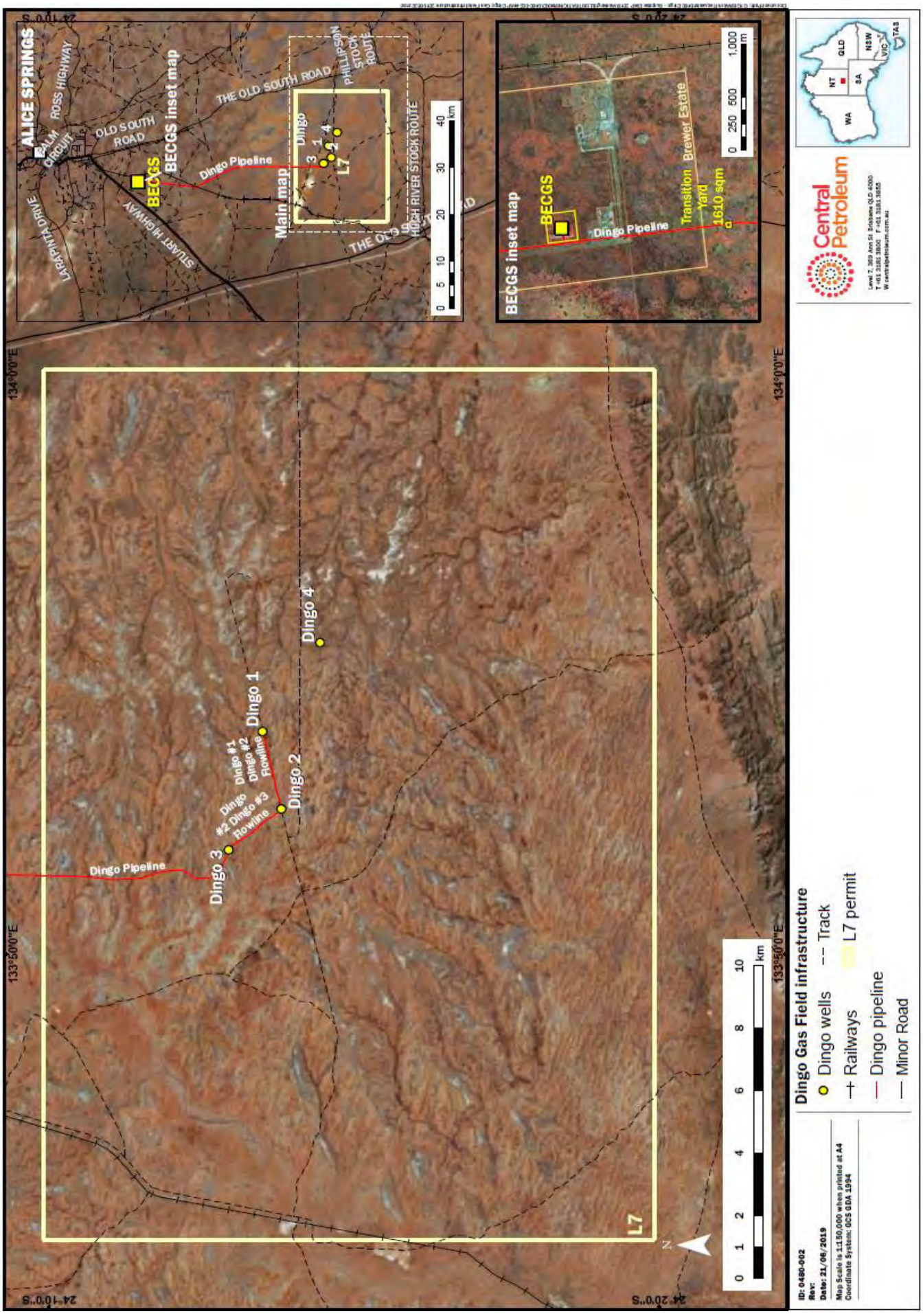
BECGS Layout Map



BECGS / Dingo Location Map



Dingo Wells Location Map



Surprise

Emergency Response Plan



Surprise – Emergency Response Plan: MSTD13-SU-PL001
Revision: 2 / Effective: 5th June 2023/ Revalidation: 5th June 2025
Document Owner: Production Supervisors

Central Petroleum

Table of Contents

1 INTRODUCTION 1
1.1 Purpose 1
1.2 Site Description 1
1.3 Scope 1
1.4 Emergency response Training 1
1.5 Emergency Management Approach 2
1.6 Response Priorities 2
1.7 Related Documents 2
2 SITE EMERGENCY RESPONSE TEAM 3
2.1 Roles and Responsibilities 3
3 EMERGENCY RESPONSE PROCESS 4
3.1 Identification 4
3.2 Notification 5
3.3 Assessment 6
3.4 Activation 7
3.5 Response 7
3.6 Stand-down and recovery 8
4 EMERGENCY RESPONSE RESOURCES 9
4.1 Role Cards 9
4.2 Emergency Action Guides 9
4.3 Chemical Response Guidance 9
4.4 Plant and Pipeline Shutdown / Isolation 9
4.5 Emergency Equipment 9
4.6 Medical Support 9
4.7 Aviation Resources 10
4.8 Site Emergency Response Room 10
4.9 Communication 10
4.10 Emergency Management Team / Plan 11
5 STAKEHOLDER MANAGEMENT AND COMMUNICATIONS 12
6 POST EMERGENCY REVIEW 13
7 EMERGENCY CONTACTS 14
7.1 Central Emergency Contacts 14
7.2 Site Contact Information 14
7.3 Emergency Services 14
8 ROLE CARDS 16
8.1 First Responder 16
8.2 Site Emergency Response Team leader (SERTL) 17
8.3 Site Emergency Response Team Coordinator 21
8.4 Emergency Response Team Member 23
8.5 Emergency Response First Aid 24
9 EMERGENCY EVENT GUIDES 25

9.1 EMERGENCY EVENT GUIDE 1 – VEHICLE ACCIDENT 25
9.2 EMERGENCY EVENT GUIDE 2 – TRANSPORTING INCIDENT – ROLLOVER/INJURIES 27
9.3 EMERGENCY EVENT GUIDE 3 – SECURITY INCIDENT 28
9.4 EMERGENCY EVENT GUIDE 4 – BUSHFIRE / FLOOD 30
9.5 EMERGENCY EVENT GUIDE 5 – ELECTRIC SHOCK 31
9.6 EMERGENCY EVENT GUIDE 6 – FIRE / EXPLOSION 32
9.7 EMERGENCY EVENT GUIDE 7 – CONFINED SPACE 33
9.8 EMERGENCY EVENT GUIDE 8 – SPILL / RELEASE – ROAD HAULAGE – WET WEATHER 34
9.9 EMERGENCY EVENT GUIDE 9 – SPILL / RELEASE SITE RELATED 35
9.10 EMERGENCY EVENT GUIDE 10 – MEDICAL TRAUMA 36
9.11 EMERGENCY EVENT GUIDE 11 – WELL BLOWOUT 37
9.12 EMERGENCY EVENT GUIDE 12 – BITES / STINGS 38
9.13 EMERGENCY EVENT GUIDE 14 – OIL LEAK 39
10 ADDITIONAL INFORMATION 40
10.1 AVIATION GUIDANCE 40
10.2 SITE INFORMATION / MAPS 43

Revision History

Revision	Date	Changes
2	5 June 2023	• Risk Guides updated • Next of Kin notification in the event of a fatality
1	16 Feb 2023	Revision: • Contact details • New ERP Document format • PIC and or, Delegate (On site) Event guides revised and applicable to Surprise
0	8 Jan 2019	Emergency Response Plan Developed

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 Site Description

The site currently is unmanned and not in operation.

When in operation, Central extracts crude oil utilising a surface mounted pump and delivery line feeding a series of surface bulk storage tanks. The process removes all waste elements allowing the final product to pass all necessary tests required for sales. A fit for purpose Load out facility and tank farm was constructed for Central's long-term operations.

Central aims to undertake works in a safe, efficient, and environmentally sensitive manner.

Central deploys operational personnel to site on a regular basis to perform site inspections thereby maintaining safe conditions and control.

1.3 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 Surprise and the following assets and associated infrastructure operated by Central Petroleum (CTP):

- well sites
- processing facilities
- oil storage tanks
- site offices, camp, and workshops

This plan is to be used in conjunction with CTP's Emergency Management Plan (MSTD-PLN001).

Areas under the control of a principal contractor are not covered under this plan however CTP's contract manager/owner 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 and/or if changes to plant and conditions occur.

1.4 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 or as scheduled (Surprise is non-operational)

1.5 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.

1.6 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.

1.7 Related Documents

Whilst this plan has been designed to be a standalone document, references are made throughout to various other documents which may be useful in the event of an emergency. It is the responsibility of all SERT members to be familiar with the processes and standards within their area of responsibility, and conduct regular exercises to ensure readiness

2 Site Emergency Response Team

2.1 Roles and Responsibilities

The following specific roles and responsibilities are essential to ensure effective management and accountability during an emergency:

- first responder
- SERT leader – the Person in Charge (PIC) or Delegate on site
- SERT coordinator (supported by a log keeper)
- SERT first aider

Operators, technicians, and logistics personnel will assist the SERT leader and may be required to undertake multiple roles depending on the nature of the emergency, its duration and complexity.

If for some reason the SERT leader is unable / unavailable to perform their duties, an alternate person must be identified. Should for some reason SERT members be unable to perform their duties, the SERT leader will allocate other suitably trained persons. On shift SERT role information is to be displayed on the notice board or in the site emergency response room.

Depending on the nature and severity of the emergency, the EMT may be activated to support issues such as:

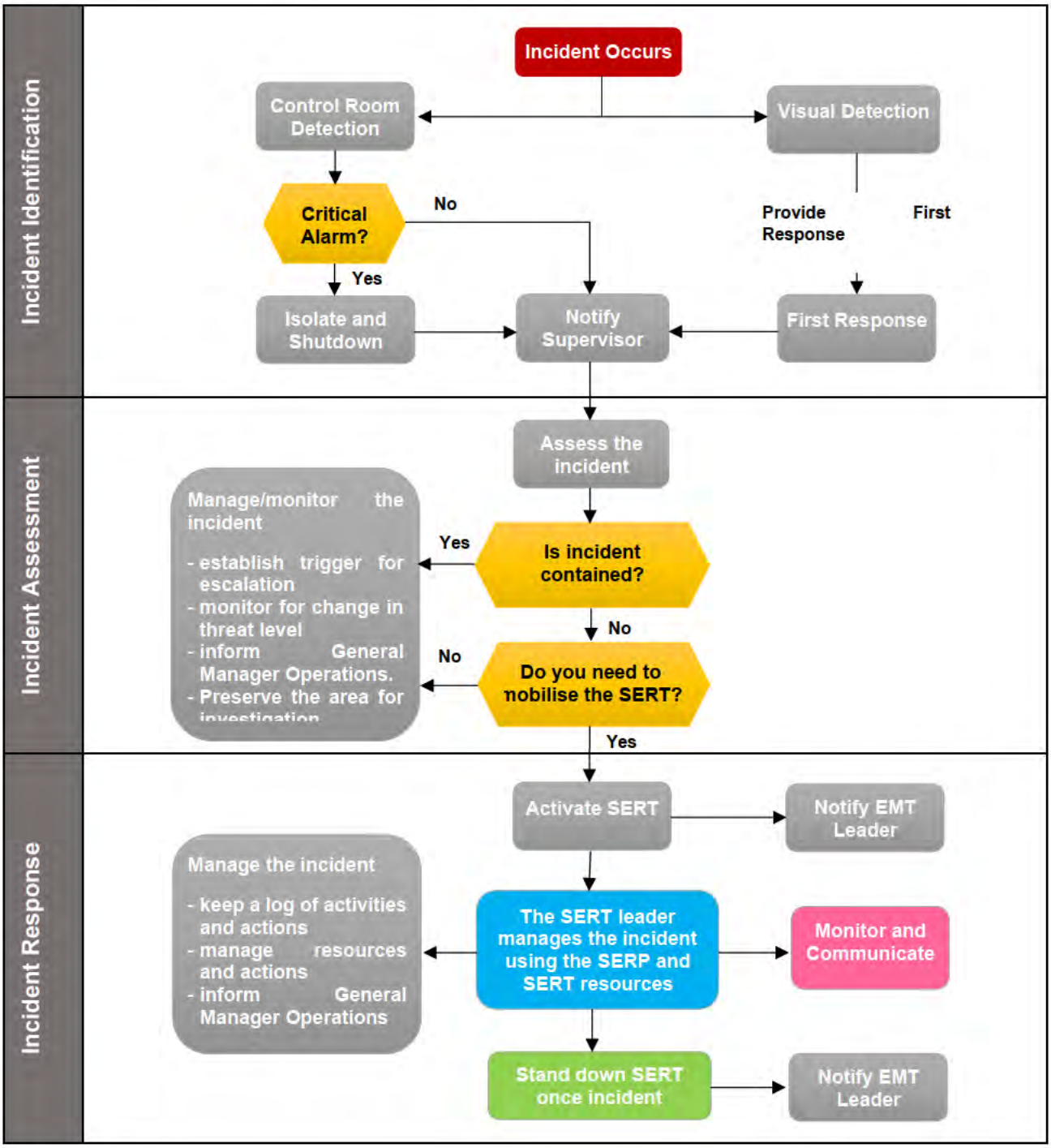
- regulatory and stakeholder notifications
- additional manning
- sourcing assets required to support the site, such as aviation
- medical or other emergency services
- mutual aid or contractor resources.

For more detailed information regarding the above SERT roles, refer to the role cards in Section 4.1.

3 Emergency Response Process

Identification, assessment, and response processes are outlined in Figure 2 below. Further guidance is available in the role cards in Section 4.1.

Figure 2



3.1 Identification

When an event (actual or imminent) endangers or threatens to endanger life, property or the environment, the first responder must, if safe to do so, take action aligned with the first responder role card. It's important everyone is familiar with the responsibilities and initial actions of the first responder.

3.2 Notification

Once immediate action is taken, the first responder must raise the alarm and advise the production supervisor or delegate 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.

3.3 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
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

3.4 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.

3.5 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 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.

3.6 Stand-down and recovery

An emergency response ends when the SERT leader is satisfied that objectives have been met and priority shifts to achieving business continuity and recovery. Only the SERT leader can decide to 'stand-down' the SERT and switch the focus to recovery. The stand-down should be undertaken in consultation with the General Manager Operations.

When external emergency services are involved, stand-down must be done in consultation with the relevant agencies.

When standing down, the SERT leader must:

- ensure that all teams are informed of the stand down
- identify and document outstanding issues that need to be addressed after the team is deactivated and assign responsible personnel to address these issues
- ensure evidence is preserved to aid in any investigation
- ensure affected areas are barricaded
- that witness accounts are taken
- where possible, photograph evidence
- capture lessons learned as soon as possible after the event (debrief)
- ensure the site emergency response room is immediately re-stocked.

In addition, before recommencing operations the following questions should be asked:

- has all plant and equipment been tested and confirmed safe?
- have relevant emergency service providers confirmed that normal activities can recommence?
- have relevant government agencies/departments agreed that normal activities can recommence?
- could employees be suffering from the effects of the incident?
- are there any unauthorised personnel remaining on site?

4 Emergency Response Resources

4.1 Role Cards

Role cards act as prompts and are used as an aid in the event of an emergency. A set of role cards to support this plan are provided in Section 6.

4.2 Emergency Action Guides

Emergency Action Guides have been developed and outline typical responses for specific types of emergencies. A set of Emergency Action Guides to support this plan are provided in section D.

4.3 Chemical Response Guidance

All chemicals stored and used on site are to be managed in accordance with the corresponding Safety Data Sheets. Hard copies of Safety Data Sheets are stored in the warehouse with electronic copies available via the Chemwatch website.

4.4 Plant and Pipeline Shutdown / Isolation

In the event of a loss of containment event, emergency shutdown devices (ESDs) are to be used, however if isolation identification is not clear then the SERT members can access Piping and Instrument Diagrams (P&IDs) on M: files. In these instances, the isolation should be undertaken, and any associated documentation should be completed post event and prior to restart. In the event of a power outage there are master sets of PID's in the control room, supervisor's office & ESS control room.

4.5 Emergency Equipment

When in operation, Emergency equipment is provided at Surprise 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 Phones
- Portable gas detectors
- First aid equipment (Inc Defibrillator)
- Fire extinguishers
- 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 Kintore or Papunya Health Centre 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 centre
    - MRACC (Royal Flying Doctors) Telehealth Doctor service

- secondary Emergency Advice:
    - Kintore Health Centre
    - Papunya Health Centre

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 centre or the doctor associated with the treatment.

4.7 Aviation Resources

Sites may have the capacity to facilitate both Helicopters (rotary) and Planes (fixed wing) in the event of an emergency, however, the preferred option is fixed wing aircraft.

Further details regarding the airstrip / helipad and its safety protocols are outlined in section E.

4.8 Site Emergency Response Room

When in operation, a site room will be established for use if the SERT is activated. This room will be the coordination centre 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 ▪ 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 Production Surpriser/ or Delegate. The room will be regularly inspected, and equipment tested every time an emergency exercise is undertaken (scheduled for when operational).

4.9 Communication

On-site communications during emergency situations are via site digital radios on the:

- Main field channel No. 2 (PV Local) or
- Emergency channel No. 1 (Wide Area).

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 or delegate will determine when to switch to channel 1 (emergency channel) if at all.

The designated phone (satellite) in the emergency response room should be used to communicate with the EMT and other sites. Emergency contacts are detailed in section 6.

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/Duty Manager	[redacted] / 07 3181 3830
Engineering Manager/Duty Manager	[redacted] / 07 3181 3806
Chief Operating Officer	[redacted]
Risk and HSE Manager	[redacted]
Health & Safety Specialist	[redacted]
Brisbane emergency phone - To be used whilst emergencies are in progress	07 3181 3860

7.2 Site Contact Information

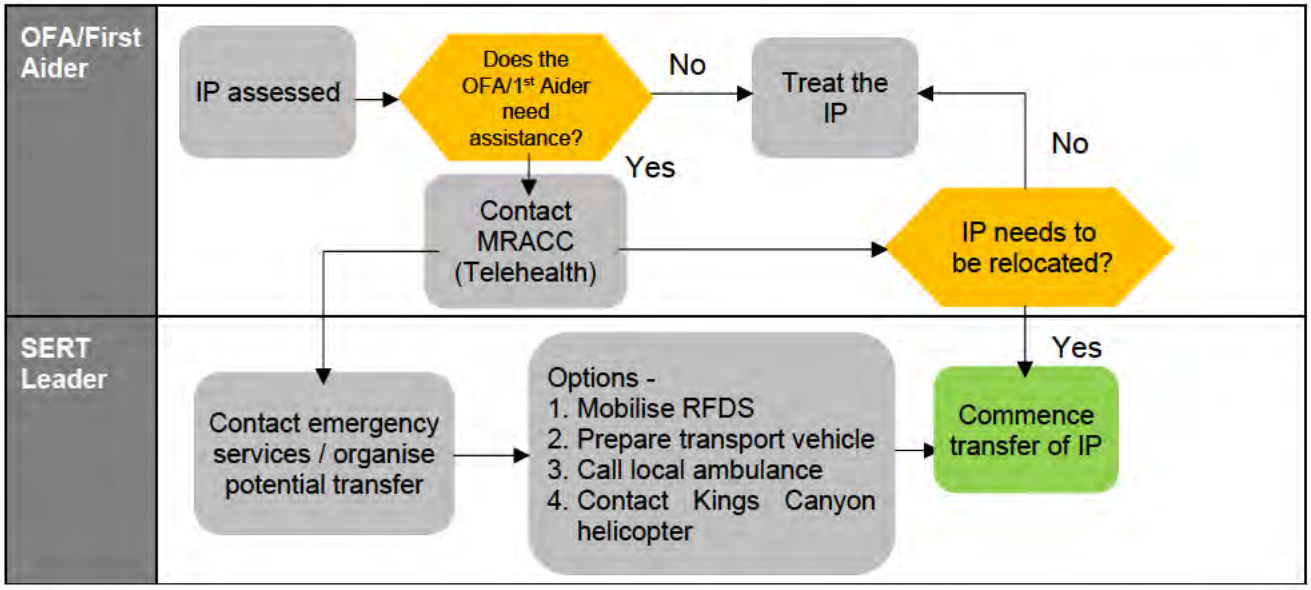
Role / Detail	Contact Details	
Production Supervisor	[redacted]	Supervisor Mobile Phone
Palm Valley Lead Ops BECGS on call	[redacted]	
Emergency Alert Number	**1300 134 406**	**ISS First Response (24/7)**
Palm Valley Emergency Number	[redacted]	

7.3 Emergency Services

Decision tree

The assessment and response to a medical emergency is outlined in Figure 4 below. The on-site OFA/First Aider 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, Local Hospital, etc.

Figure 4



*Where an ambulance is needed contact Kintore or Papunya Health clinic and plan to meet their ambulance halfway if possible.

Service		Contact Details	Response Time
Police / Fire / Ambulance (Emergency)		**000**	
Medical	Remote Health & Royal Flying Doctors Service[1]	08 89517840 or 08 8951 7777 (24/7)	2hrs minimum (Fly Time)
	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	6hr min drive
	Kintore - Pintupi Homelands Health Service	08 8956 8577	2hr min drive
	Papunya Health Clinic	08 8956 8505	3hrs min drive
	Kings Canyon (PHS Helicopter)	08 8956 7873	45min (Fly time)
Police	Police - Kintore	08 8956 8488	
	Police (non-emergency)	131 444	
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

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	
Post Incident	**Complete**
▪ Be prepared to provide ongoing advice to the recovery operations, as required ▪ Participate in the SERT post-emergency review ▪ Propose changes to the site emergency response framework and any procedures as a result of the incident	

9 Emergency Event Guides

9.1 Emergency Event Guide 1 – Vehicle Accident

Incident	
Nature of the incident: ☐ Vehicle/Vehicle Collision ☐ Vehicle/Structure Collision ☐ Vehicle Roll Over ☐ Pedestrian Hit/Run Over ☐ Other ……	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
• Call for assistance as soon as possible • Assess and ensure the scene is safe – withdraw personnel from danger (if required) • Prioritise causalities – undertake a primary assessment of any causalities • Mobilise SERT, if additional resources are needed • Mobilise competent first aider to treat injured persons (if required) at scene or first-aid station • Mobilise the following if necessary - electrician if there is an electrical risk, equipment to stabilise vehicle, fire control equipment	
Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Call a medical facility for assistance/guidance	
Arrange escort for external emergency support / back-up	
Notify General Manager Operations	
What to Do	
Consider the following, to **minimise danger:** 1. **Other traffic**: - use hazard lights on vehicles to warn oncoming traffic - switch headings on if at night - ask bystander/s to extend the warning perimeter to at least 100mts away to warn & control oncoming traffic - Battery disconnects 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.

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.

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.
- In the case of a Fatality, authorities (Police) must notify Next of Kin before the EMT leader commences communication (with Next of Kin)

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: this is a 2-person task (OFA to support the patient and a Driver trained in 1st Aider/CPR)

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)

9.6 Emergency Event Guide 6 – Fire / Explosion

Incident		
Nature of the incident:		
☐ Building	☐ Plant and Equipment	☐ Bulk Fuel/Oil
☐ Electrical	☐ Chemical	☐ Other ……

Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Call for assistance as soon as possible; ▪ Assess and ensure the scene is safe – withdraw personnel from danger (if required); ▪ Shut down plant and systems that may be affected by the fire or provide first response fire-fighting, if safe to do so; ▪ Mobilise the SERT if additional resources are needed; ▪ Mobilise competent first-aider(s) to treat injured persons (if required) at scene or first-aid station; ▪ Establish exclusion zones if required (800 mtrs – 1600 mtrs – as required); ▪ Arrange isolation of energy sources; ▪ Assess work permit (where applicable) at job site and refer to emergency plan; ▪ Consult signage/labelling to identify hazardous materials and any response requirements.	

Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Arrange escort for external back-up	
Notify General Manager Operations	

What to Do

Treatment Plant

NOTICE

NOTE: Major plant fires will not be fought using firefighting equipment, plant ESD will be used.

- Only provide basic firefighting on small fires (wastepaper bin size), if close enough or safe to do so.

1. Shut down and depressurise plant and systems that may be affected by the fire
2. If possible, isolate all energy sources and keep ignition sources clear of the hazardous area
3. Evacuate to the muster point, ensuring it is at a safe distance (up to 800 mts) and upwind and conduct head count of all POB.
4. Notify the EMT leader
   - discuss and determine if any additional assistance is required
5. Initiate search and rescue for the missing personnel, if and when safe to do so, and only after confirmation with the SERT leader

Tanks

1. Stop pumps, close valves, if safe to do so, and activate alarm
2. Don't go into bunded areas or onto tanks, or areas where escape may be limited
3. Activate foam generators if safe to do so – SERTL. (*SOP number* for site:).
4. Do not attempt to remove vehicles/road tankers unless action approved by SERTL

Post Event Actions

- Secure the scene for incident investigation

9.7 Emergency Event Guide 7 – Confined Space

Incident	
Nature of the incident: ☐ Person Trapped ☐ Person Injured ☐ Fire ☐ Toxic Atmosphere ☐ Electrical ☐ Engulfment ☐ Other ……	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Call for assistance as soon as possible ▪ Assess and ensure the scene is safe – withdraw all unnecessary personnel from area ▪ Mobilise the SERT if additional resources are needed ▪ Mobilise competent first-aider to treat injured persons (if required) at scene or first-aid station ▪ Mobilise electrician – arrange isolations (if required) ▪ Access Work Permit at job site and refer to the emergency plan	
Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Check gas monitoring results on work permit	
Test atmosphere with monitor before entering the confined space – check wind direction	
Arrange escort for external back-up	
Notify General Manager Operations	
What to Do	
1. If personnel are trapped or unable to escape the CS – STOP all persons from entering the location unless authorised and fitted with appropriate lifesaving equipment / PPE 2. SERT Leader shall ensure that isolations remain intact and that no other oxygen depleting events may unfold during the extraction. 3. The Rescue plan for the task would indicate the requirement to have BA, first aid, a method of extraction and suitable numbers to complete the task – ensuring this is correct and the gear is available, then; 4. SERT Leader shall order the insertion of team members in BA only when prepared, and ready to respond 5. Other team members shall be waiting in support including the SERT first aider with a Satellite phone with access to medical support online (if required) 6. Vehicle (ambulance if possible) is at the ready to remove patient as required 7. Ambulance has oxygen with mask and defibrillator available 8. Spotters shall be used to ensure that all persons remain clear of the situation unless required to assist	
Post Event Actions	
▪ Secure the scene for incident investigation	

9.8 Emergency Event Guide 8 – Spill / Release – Road Haulage – Wet Weather

Incident
Nature of the incident: ☐ Heavy Haulage / Road transport ☐ Bulk transport vessel ☐ Bulk Chemical Load ☐ Other ……

Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Site responder - Call for assistance as soon as possible ▪ If on scene -Assess and cautiously approach from upwind - ensure the scene is safe – withdraw personnel from danger (as required), use available extinguishers, shielding, breathing support; ▪ Mobilise the SERT for additional resources as needed – carry ELSA gear, extinguishers, tools, spill gear. ▪ Mobilise competent first-aider(s) to treat injured persons (if required) at scene or first-aid station ▪ Assist external personnel with notifications and calls for assistance	

Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Arrange escort for external back-up	
Notify General Manager Operations	

What to Do

1. Ensure vehicles can safely navigate to and from areas of concern – provide alternate routes if possible;
2. Ensure all personnel are safe and clear of area -Stay clear of Vapour, Fumes, Smoke and Spills;
3. Use safety related equipment as required, to safely extract personnel if in immediate danger;
4. Different PPE (Face shields, goggles, heavy gloves, Gum boots) may be required in Wet weather situations to safely perform any task;
5. Extricate personnel and team to a safe distance and clear of potential hazardous fumes (Upwind);
6. Attempt to Identify the spill - refer to the HAZCHEM code, Truck Placarding, Driver or SDS for methods of control / management;
7. Alert Management / SES / Police or 000 of situation ASAP, note location, HAZCHEM concerned, areas of impact;
8. Divert or stop traffic (do not start vehicles if a low flash-point product has been split) if tanker truck or Chemical event is involved in a fire, ISOLATE for 800 metres in all directions;
9. Consider equipment – dependent on location, proximity or safety – what can or should be saved?
10. Interacting personnel enter only when wearing appropriate PPE;
11. If fluid form, attempt to prevent spread of spilled product from the vehicle itself (shut valves – internal / external) if safe to do so, using hazard specific PPE;
12. Remove all sources of ignition to reduce any potential of fire;
13. Notify EMT and advise situation and request assistance if needed – advise SES, Police – update as required;
14. Never attempt to perform a rescue without support or adequate forethought;

Refer to: MSTD13-PL002 ERP Spill response procedure for assistance with methods of containment or prompts during the containment process (if fluid) or the ***Australian-Emergency-Response-Guide-Book-2018*** in M-Files.

Post Event Actions

- Secure the scene for incident investigation;
- Team debrief / Mental anguish and concerns.

9.9 Emergency Event Guide 9 – Spill / Release Site related

Incident	
Nature of the incident: ☐ Warehousing movements ☐ Plant Failure ☐ Bulk site storage vessel ☐ Evaporation Pond ☐ Other	
Response Guide	
Apply Emergency Action Guide and prepare for escalation	
▪ Call for assistance as soon as possible; ▪ Assess and cautiously approach from upwind - ensure the scene is safe – withdraw personnel from danger (if required or able); ▪ Mobilise the SERT if additional resources are needed - carry ELSA gear, extinguishers, tools, spill gear; ▪ Mobilise competent first-aider to treat injured persons (if required) at scene or first-aid station; ▪ Assist external personnel with notifications and calls for assistance.	
Additional Response – as required	
Ambulance – Fire – Police (Dial 000)	
Arrange escort for external back-up	
Notify General Manager Operations	

What to Do

1. Notify EMT (radio) and advise situation and request assistance if needed;
2. Consider ESD of plant – dependent on location, proximity or safety need;
3. Ensure all personnel are safe and clear of area -Stay clear of Vapour, Fumes, Smoke and Spills;
4. Interacting personnel consider wearing ELSA gear if attempting to extract any personnel – advise ERTL of intent – obtain support and clearance;
5. Different PPE (Face shields, goggles, heavy gloves, Gum boots) may be required to safely perform the task;
6. Remove all sources of ignition to reduce the potential fire hazard;
7. Establish source of spill/leak, and determine the extent of pollution;
8. Stop further leakage (e.g. stop pumping or in case of pipeline leak give warnings to stop the flow), close valves, attempt to stop leaks, move object on its side;
9. Isolate spill or leak area for at least 100 metres (330 feet) in all directions to prevent spread of spilled product (if the situation requires- i.e. block drains, dam ditches, boom watercourses, close water intakes);
10. Divert or stop traffic (do not start vehicles if a low flash-point product has been split);
11. Attempt to collect spilled and ponding hydrocarbon and return product to safe containment;
12. Use safety related equipment as required, to safely extract personnel if in immediate danger;
13. Consider decontamination of personnel – clothing / footwear / equipment – water to dilute substance;
14. Never attempt to perform a rescue without support or adequate forethought;

Post Event Actions

- Secure the scene for incident investigation;
- Team debrief / Mental anguish and concerns.

9.10 Emergency Event Guide 10 – 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; 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)		

9.11 Emergency Event Guide 11 – 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	

9.12 Emergency Event Guide 12 – 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.

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)

9.13 Emergency Event Guide 14 – Oil Leak

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)	
Test atmosphere with monitor before entering the area	
Log details of condition, time, and task progress	
Notify General Manager Operations	

What to Do

Leak

1. Identify the location of the leak and isolate the affected section, 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 testing protocols prior to entering the area or introducing any potential ignition sources e.g. equipment;
6. Make emergency repairs to eliminate oil escaping from the affected area;
7. Prepare a Permit and work order to finalise after immediate repairs undertaken.
8. Prepare and enter information to incident report in INX;
9. 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

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.

- Pilot should establish radio communications with First Responder/PIC 30 minutes from site to allow for runway checks and local weather condition reports etc

Airstrip Details			
Airstrip 1 (Are Flares & or Lighting available for emergencies?)			
Airstrip Name:	Johnstone 1	**Location:**	Surprise Asset
Longitude:	129° 59' 02.9 E	**Latitude:** 23° 40' 15.5 S	
Strip Type:	☐ Gravel ☐ Bitumen ☒ Dirt ☐ Grass ☐ Other:		
Length:	1600mtrs	**Width:**	TBC
Runway Direction:	11/29	**Contact Number:**	N/A
Airstrip 2			
Airstrip Name:	Kintore Airport	**Location:**	Kintore
Longitude:	129.3789° or 129° 22' 44" east	**Latitude:** -23.2647° or 23° 15' 53" south	
Strip Type:	☐ Gravel ☒ Bitumen ☐ Dirt ☐ Grass ☐ Other:		
Length:	1350mtrs	**Width:**	TBC
Runway Direction:	10/28	**Contact Number:**	N/A

Kintore Airstrip Night Landing

This is a public strip but is unmanned.

Lighting – Runway edge lights are stated as "Intensity" type.

1. When arriving at night (or following periods of wet weather), the RFDS pilot may determine that an airstrip inspection is required prior to landing.
2. 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.
3. The pilot must be able to contact a person at the airfield to confirm the runway is serviceable and free of hazards.
4. Contact between the aircraft and the ground will be made via **UHF Channel 13**
5. If verbal confirmation via **UHF Channel 13** is not forthcoming, the pilot will independently assess the situation and may not land.

Johnstone 1 Airstrip Night Landing

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 may be communicated to the pilot.

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.

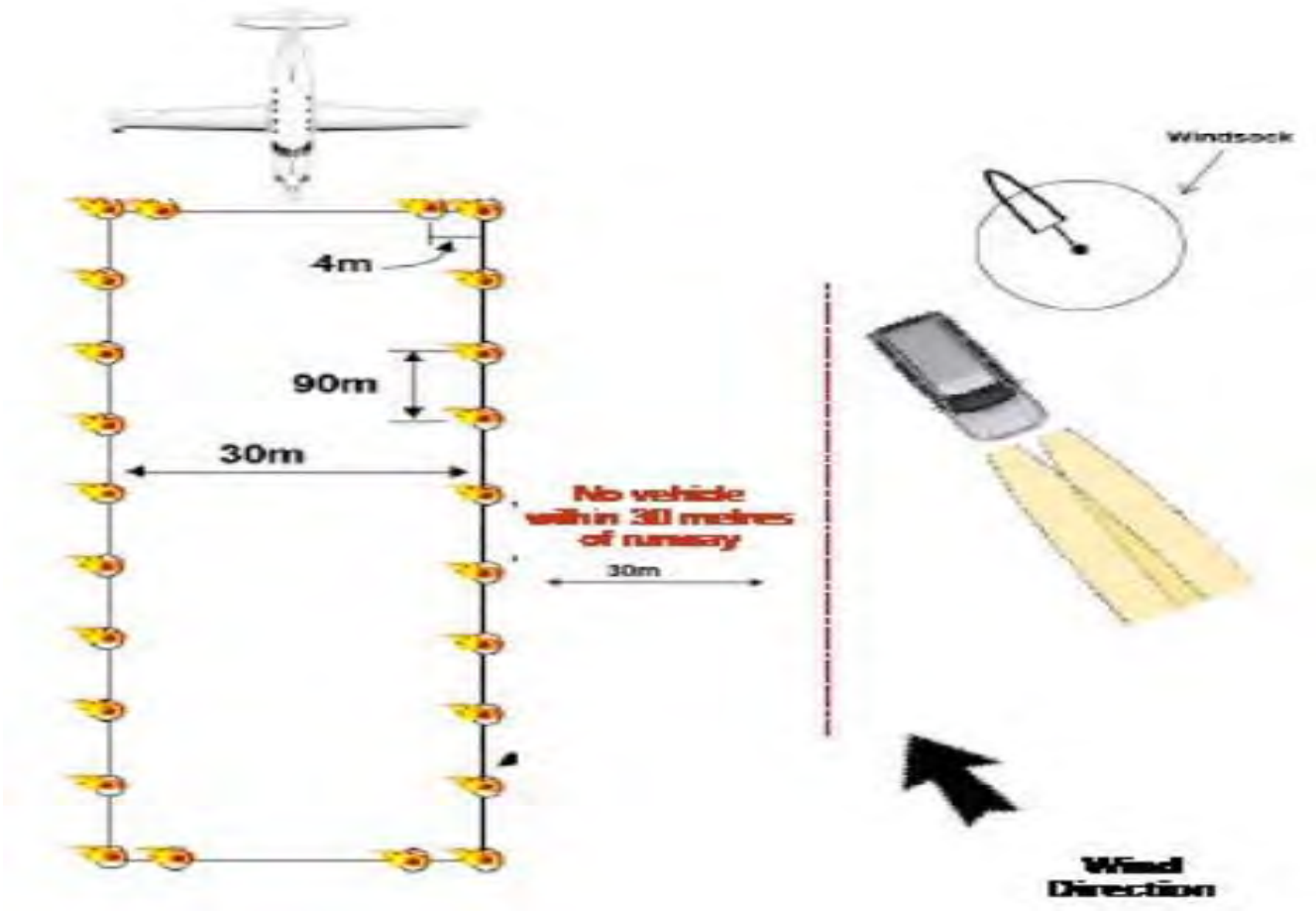
Stay listening to UHF channel 13

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.

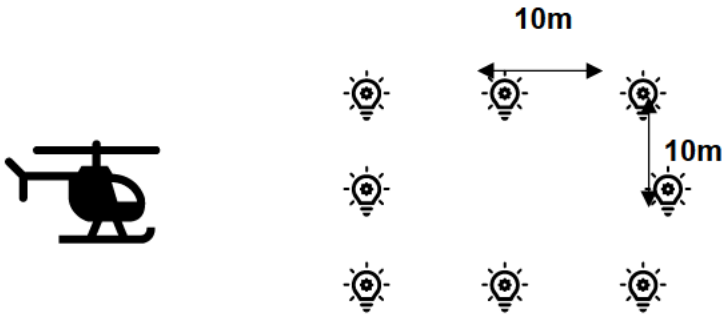
Figure 5



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.

Helicopter landings - basic information

Figure 6



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.

Helicopter landings sites

Surprise has no dedicated landing area. There are areas within the site that could provide adequate space to accommodate an emergency landing.

These are:

- Johnstone 1 Airstrip - (Longitude: 129.59.02.9E Latitude: 23.40.15.5 S)
- Surprise 1 West – (Longitude: 129.59.35E Latitude: 23.42.49S)

10.2 Site Information / Maps

Location

Site Name	Surprise	
Site Address	Off Kintore Road	
Site Grid Reference	Latitude: 23° 42' 49" South Longitude: 129° 59' 35" East	
Site Location and Accessibility Relevant to Local Community	**Item**	**Details**
	Nearest Town	Kintore (140 kms) Papunya (270kms)
	Nearest Major Road	Tanami Road
	Nearest Major Airport/town	Alice Springs (500 kms)
	Nearest Airstrip	Johnstone 1 or Kintore

Operation

Core Site Business	Oil Production
Operating Hours	Non-operational
Staffing arrangements	Unmanned operations – routine site inspection and maintenance carried out ONLY
Site Internal Emergency Radio Channel	No. 2 Not monitored 24hrs.

Onsite Medical Support

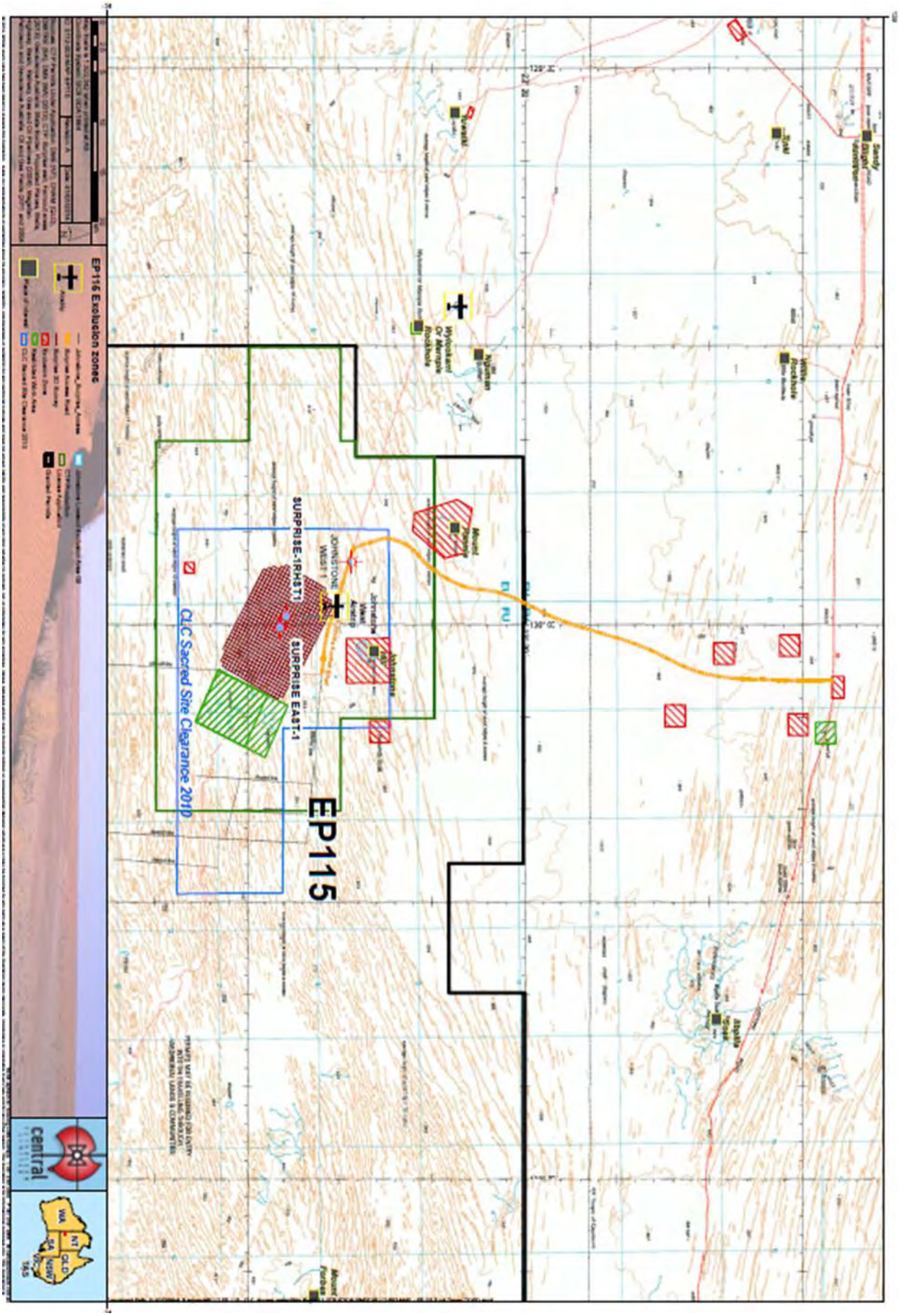
Qualified first aiders	When manned/operational
First aid kits	In every vehicle and boxed for use in emergencies
Specific equipment	When in operation - Defibrillator and basic medical supplies

Maps

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

- Site – showing location of Well, Central Processing Facility, and airstrip
- Central Processing Facility – Aerial shot – main building and camp

Surprise Operation Map



Surprise Well & Facilities



Appendix 6. Measurement Scheme

Measurement Scheme

Document Number: 1000-070-PLN-0003

Revision History

Rev	Date	Description	Reviewed by	Approved by
A	27/01/2021	Issued for Review	AL, RH, NJR, KQ, JD, BV	-
0	16/02/2021	Issued for Use	AL	NJR

Contents

Contents **2**
1. Introduction **3**
1.1. Terms/Abbreviations 4
1.1 Reference Documents 5
2. Compliance Requirements **6**
2.1. Statutory Requirements 6
2.1.1. Statutory Requirements 6
2.1.2. Standards and Codes of Practice 7
3. Scope **8**
4. Description of Operations and Associated Metering Equipment **9**
4.1. East Mereenie and West Mereenie 9
4.2. Palm Valley 10
4.3. Dingo and Brewer Estate City Gate Station (BECGS) 11
5. Back-allocation methods for Petroleum Leases **12**
6. Meter Maintenance **13**
6.1. Ultrasonic Meters 13
6.1.1. Validation and Certification 13
6.1.2. Correction Factor Calculation 13
6.2. Coriolis Meter 13
6.3. Magnetic Flow Meter 13
6.4. Orifice Plate DP Flow meter 14
6.5. Gas Chromatographs 14
6.6. Calibration and Traceability of Test Equipment 14
7. Estimated metering **15**
7.1. Meter malfunction 15
7.2. Reasons for estimations 15
7.3. Estimated meter readings, actual vs. estimated reconciliation 15
8. Conversion **16**
8.1. Barometric pressure 16
8.2. Engineering Units 16
9. Gas Quality **17**
9.1. Gas Chromatographs 17
9.2. Site Specific Gas Quality 17
10. Documentation **18**
10.1. Meter Anomalies 18
10.2. Competency Assessment 18
10.3. List of Measuring Instruments 19
11. Record keeping **19**
12. Key Performance Indicators for Measurement Scheme Monitoring **19**
13. Updates of the Measurement Scheme **20**

1. Introduction

This Measurement Scheme is prepared to comply with the requirements of the:

- Northern Territory Schedule of Onshore Petroleum Exploration and Production Requirements (the Schedule), particularly sections 411 and 412
- Northern Territory Petroleum (Environment) Regulations
- Northern Territory Water Act
- National Greenhouse and Energy Reporting Scheme

This Measurement Scheme is for meters used to (a) measure the production of natural gas, petroleum liquids and water across operating assets, (b) for royalty purposes, and (c) for measurement of emissions.

This Measurement Scheme provides instructions for the installation, validation, and maintenance of both fiscal and production flow measurement systems for natural gas, petroleum liquids and produced water for Central Petroleum's operating assets in the Northern Territory and is based on relevant Regulations and Standards.

The scheme also addresses the following where relevant:

a) Meter calibration methods and frequency
b) Correction factor calculation
c) Calibration and traceability of meter test equipment
d) Process for estimated meter readings, reasons for estimation, and procedures for reconciling
e) Procedures for meter failure, incorrect operation or meter bypass
f) Levels of competency for persons working on the meters, and
g) Record keeping

1.1. Terms/Abbreviations

The following terms and abbreviations have been used throughout this document.

Table 1-1- List of Abbreviations

Term/Abbreviation	Meaning
Accuracy	The ability of a measuring instrument to indicate values closely approximating the true value of the quantity measured. It can be defined as the limit or error under specific reference conditions.
AGA	American Gas Association
AGP	Amadeus Gas Pipeline
Anomaly	Any measurement performed outside the meter tolerance limits or with failed meter system
ANSI	American National Standards Institute
API	American Petroleum Institute
AS	Australian Standard
BS&W	Basic Sediment and Water
BUA	Beneficial Use Approval
Calibrate	To ascertain outputs of a device corresponding to a series of values of a quantity that the device is to measure, receive, or transmit. Data obtained are used to: Adjust the output, to bring it to the desired value within a specified tolerance. Ascertain the error by comparing the device output reading against a standard.
Check Meter	Meter used to flow in series (prove) with Custody Transfer meter to confirm measurement uncertainty. It is a meter that is only used in this mode and therefore deemed to be in as new condition
Controller (of a meter)	The controller of a meter is the person who owns the meter, normally the Person-In-Charge of the operating lease
Deviation	Any departure from a true value
DN	Diameter Nominal (a nominal bore)
DP	Differential Pressure
Error	Error in process instrumentation is the algebraic difference between the indication and the ideal value of the measured signal. It is the quantity that algebraically subtracted from the indication, gives the ideal value. Note a positive error denotes that the indication is greater than the ideal value.
Flare	Gas which cannot be sold for production, ignited and released to atmosphere
Fuel	Gas which is consumed for fuel for the purpose of petroleum production
Fiscal	A process involving the transfer of money in relation to the ownership or transport costs associated with a product. Also referred to as 'custody transfer'.
GPA	Gas Process Association
GC	Gas Chromatograph
H2S	Hydrogen Sulphide
ISO	International Standards Organisation
LACT	Lease Automatic Custody Transfer
Meter	A meter is a device used to work out, by direct measurement, the energy, mass or volume of petroleum or fuel gas transferred from one place to another. A meter includes (a) a measuring device and its ancillary equipment; and (b) a measurement method

Term/Abbreviation	Meaning
Meter Proving	The process of verifying the performance of a measurement system against a defined and traceable standard
Meter Tolerance	The tolerance for error, for a meter, is its tolerance for error in accuracy – As prescribed under a regulation; or If the tolerance is not prescribed under a regulation, as provided for under – The measurement scheme for the meter; or An Australian standard or similar standard that the measurement scheme for the meter requires the meter to comply with.
Modbus	Serial Communications Protocol developed by Modicon
MPMS	Manual of Petroleum Measurement Standards
NATA	National Association of Testing Authority
OP	Orifice Plate
P&ID	Piping and Instrumentation Diagram
Repeatability	The closeness of the agreement between the results of successive measurements of the same quantity carried out by the same method, with the same measuring instrument / equipment at the same location over a short period of time. Specifically, it would be the ability of a meter and prover system to repeat its registered volume during a series of consecutive proving runs under stable operating conditions to obtain the same result three times in succession
RSH	A Sulphur content parameter required for quantity measurement in some applications
RTD	Resistance Temperature Device
SCADA	Supervisory Control and Data Acquisition
SI Units	International System of Units
Uncertainty	The closeness of agreement between the result of a measurement and the true value of the parameter being measured
UPS	Uninterruptible Power Supply
Validation	The process of confirming that the performance of a system meets the original specification
Vent	Gas which is released to atmosphere without flaring
Verification	The process of confirming that the performance of a system meets the original design intent

1.1 Reference Documents

Table 1-2 - Reference Documents

Document Number	Title
MSTD01-01	Environment, Health & Safety Policies
MSTD11-PL001	Mereenie Oil and Gas Field Environmental Management Plan
MSTD11-PL004	Palm Valley Field Environmental Management Plan
1000-070-GDE-0001	Instrumentation Maintenance Guidelines
9900-435-PRO-0001	Mereenie Production Allocation Workflow
PVL-435-PRO-0001	Palm Valley Production Allocation Workflow
DIN-435-PRO-0001	Dingo Production Allocation Workflow

2. Compliance Requirements

This Scheme provides the framework to comply with the relevant National and State legislations, applicable Standards and Central Petroleum HSEMS. Where there is a conflict among various requirements, the most stringent requirement should prevail.

2.1. Statutory Requirements

2.1.1. Statutory Requirements

National:

- National Greenhouse and Energy Reporting Act 2007
- National Greenhouse and Energy Reporting Regulations 2008
- National Greenhouse and Energy Reporting (Measurement) Determination 2008

Northern Territory:

- Petroleum Act 2016
- Petroleum Regulations 2020
- Schedule of Onshore Petroleum Exploration and Production Requirements 2019
- Petroleum (Environment) Regulations 2016
- National Gas (Northern Territory) Act 2008
- Water Act 1992
- Work Health and Safety (National Uniform Legislation) Act 2011
- Work Health and Safety Regulation (National Uniform Legislation) 2011

2.1.2. Standards and Codes of Practice

The following standards and codes are directly applicable to this Measurement Scheme and form the basis for Central Petroleum's requirements for the measurement and totalisation of gas quantities, petroleum liquids and produced water. These standards shall not take precedence over the requirements of industry or regulatory standards, local laws or regulations applicable to a particular installation or special fiscal contract requirements.

AGA Report 3 –2018	Orifice Metering of Natural Gas and Other Related Hydrocarbon Fluids
AGA Report 4A - 2009	Natural Gas Contract Measurement and Quality Clauses
AGA Report 5 - 2009	Natural Gas Energy Measurement
AGA Report 6 - 2013	Field Proving of Gas Meters Using Transfer Methods
AGA Report 8 - 2003	Compressibility Factors for Natural Gas and Other Related Hydrocarbon Gases.
AGA Report 9 - 2017	Measurement of Gas by Multi-path Ultrasonic Meters
AGA Report 10 - 2003	Speed of Sound in Natural Gas and other related Hydrocarbon Gases.
AGA Report 11 - 2003	Measurement of Natural Gas by Coriolis Meter
API MPMS Chapter 14.9	Measurement of Natural Gas by Coriolis Mass Meters
ANSI/API MPMS 14.5 – 1996 GPA STD 2172-1996	Calculation of Gross Heating Value, Specific Gravity and Compressibility of Natural Gas Mixtures from Compositional Analysis.
AS 2360 – 1993	Measurement of Fluid Flow in Closed Conduits – Pressure Differential Methods.
AS 2649 - 2007	Petroleum Liquids and Gases – Measurement standard reference conditions.
AS 2885 - 2008	Gas and Liquid Petroleum Pipelines
AS 4564 - 2011	Specification for general purpose natural gas
AS 4747-2013	Meters for non-urban water supply
ASTM D1945 - 2003	Standard Test Method for Analysis of Natural Gas by Gas Chromatography.
ISO 5024 - 1999	Petroleum Liquids and Liquefied Petroleum Gases- Measurement Standard Reference Conditions
ISO 6974 – 2002	Natural Gas – Determination of Composition with Defined Uncertainty by Gas Chromatography.
ISO 6976 – 1995	Natural Gas Calculation of Calorific Values, density, relative density and Wobbe Index from Composition.

3. Scope

This Measurement Scheme specifies the installation, validation and maintenance of both fiscal and production flow measurement systems for natural gas and produced liquids of Central Petroleum's operating facilities in the Northern Territory.

Central Petroleum's operations span fields in Central Australia including:

- Mereenie (including OL4 and OL5),
- Palm Valley (OL3),
- Dingo (L7, PL30), and
- Surprise (L6)

4. Description of Operations and Associated Metering Equipment

4.1. East Mereenie and West Mereenie

Natural gas, petroleum liquids and water are produced from approximately 50 wells across the East Mereenie and West Mereenie fields. Orifice plate metering is installed at each producing wellhead, except for EM14, EM21, EM29, EM36, EM42, WM03, WM05, WM12 which are unmetered. Produced liquids are commingled and entrained in the gas stream and are not separately measured at the wellsite.

Natural gas, petroleum liquids and water are gathered in a multi-phase pipeline network either to the Central Treatment Plant (CTP) or the Eastern Satellite Station (ESS).

Produced oil, water and gas are separated at each facility. Oil is stabilised and measured by Coriolis meter before storage. At the CTP the oil stream includes stabilised condensate. Water is measured by Ultrasonic meter before transfer to evaporation pond.

Gas is compressed, dehydrated and heavy hydrocarbons are removed in the processing facilities. Orifice plate meters are used for sales gas measurement at the custody transfer point. These meters are operated by APA group (3rd party pipeline operator).

Off-gas from oil and condensate stabilisation is measured by orifice plate meter and is locally flared.

Other metering is installed throughout the facility for surveillance – e.g. compressor and separator flow measurement equipment.

Metering Location	Meter Type	Relevant Standard	Accuracy	Validation / Calibration frequency	Validation Procedure
Raw gas	Orifice Plate	AGA Report 3	+/- 2%	12M	9900-070-WIS-0001
Raw gas (multiphase)	Orifice Plate	AGA Report 3	+/- 5%	12M	9900-070-WIS-0002
Fuel Gas	Orifice Plate	AGA Report 3	+/- 1.5%	12M	9900-070-WIS-0003
Flare Gas	Thermal Dispersion		+/- 1.5%	12M	9925-070-WIS-0002
Stabilised Oil and Condensate	Coriolis	AGA Report 11	+/- 1%	12M	9900-070-WIS-0004
Water (facility)	Ultrasonic	AGA Report 9	+/- 1%	12M	9900-070-WIS-0005
Water (test separator)	Coriolis	AGA Report 11	+/- 2%	12M	9900-070-WIS-0006
Condensate Off-gas	Orifice Plate	AGA Report 3	+/- 2%	12M	9900-070-WIS-0007
Sales Gas	Orifice Plate	AGA Report 3	+/- 1%	3M	3rd party
Groundwater Extracted	Positive Displacement		+/- 2%	60M	N/A*

***Meter to be replaced, not revalidated/calibrated**

4.2. Palm Valley

Natural gas and water are produced from four wells across the Palm Valley field. Water and gas are separated at the wellhead. Water is locally stored in tanks which are dipped daily to measure produced volumes. Gas is measured by orifice plate meter at each wellhead (after water separation).

Gas is gathered in a pipeline network to the compression station and then to the Central Treatment Plant (CTP). Gas is compressed and dehydrated. Orifice plate meters are used for sales gas measurement at the custody transfer point. These meters are operated by APA group (3rd party pipeline operator).

Metering Location	Meter Type	Relevant Standard	Accuracy	Validation / Calibration frequency	Validation Procedure
Raw gas (multiphase)	Orifice Plate	AGA Report 3	+/- 5%	12M	PVL-070-WIS-0001
Fuel Gas	Positive Displacement		+/- 1.5%	12M	PVL-070-WIS-0002
Water (reinjected)	Positive Displacement		+/- 2%	60M	N/A*
Sales Gas	Orifice Plate	AGA Report 3	+/- 1%	3M	3rd party

*Meter to be replaced, not revalidated/calibrated

4.3. Dingo and Brewer Estate City Gate Station (BECGS)

Natural gas, water and a small amount of petroleum liquids are produced from two wells in the Dingo field. Orifice plate metering is installed at each producing wellhead. Produced liquids are commingled and entrained in the gas stream and are not separately measured at the wellsite. A water bath heater is installed at Dingo 2 which is gas fuelled.

Natural gas, petroleum liquids and water are gathered in a multi-phase pipeline (PL30) to the Brewer Estate City Gate Station (BECGS).

Gas is dehydrated and heavy hydrocarbons are removed in the processing facilities at BECGS. Production of petroleum liquids is measured by level monitoring of the condensate stored in the oily water tank. A Coriolis meter is used for sales gas measurement at the custody transfer point (operated by Central Petroleum).

Produced water is measured by Coriolis meter before disposal in an evaporation pond.

Metering Location	Meter Type	Relevant Standard	Accuracy	Validation / Calibration frequency	Validation Procedure
Raw gas (multiphase)	Orifice Plate	AGA Report 3	+/- 5%	12M	DIN-070-WIS-0001
Fuel Gas (Dingo 2)	Orifice Plate	AGA Report 3	+/- 1.5%	12M	DIN-070-WIS-0002
Water	Coriolis	AGA Report 11	+/- 1%	12M	DIN-070-WIS-0003
Sales Gas	Coriolis	AGA Report 11	+/- 1%	3M	MNT-DIN-WIS-0008
	Gas Chromatograph	ASTM D1945	+/- 5%		

5. Back-allocation methods for Petroleum Leases

Central Petroleum uses a back-allocation procedure to apportion plant flow volumes back to the producing wells at a well level. The primary function is to align the volumes produced at the plant back to the well. This results in a higher accuracy measurement for the field as an aggregate than relying on the lower accuracy meters for the wellheads alone.

Refer to the following for more details on the definition of the back-allocation process for each site:

- 9900-435-PRO-0001 Mereenie Production Allocation Workflow
- PVL-435-PRO-0001 Palm Valley Production Allocation Workflow
- DIN-435-PRO-0001 Dingo Production Allocation Workflow

6. Meter Maintenance

All Meters shall be maintained in accordance with the manufacturer's recommendations, in particular metering devices with mechanical moving components.

6.1. Ultrasonic Meters

6.1.1. Validation and Certification

It is expected that the manufacturer of the device will have available extensive software for detailed evaluation of the meter installation. These checks shall have as a minimum, the following:

- Indication of the Flow Velocity Ratio of the different chords
- Comparison of the SoS of the chords
- Pressure and Temperature transmitters and Flow Computer accuracy tests
- Zero flow test
- Physical removal and inspection

6.1.2. Correction Factor Calculation

Diagnostics on the UFM will form part of the validation procedure and can be carried out while the meter is flowing and measuring flow.

This is done using the UFM Manufacturers' diagnostic software and comparing the Measured Velocity of Sound against the Calculated Velocity of Sound (calculated offline or in the flow computer).

The difference is then logged and compared again at the next validation date.

6.2. Coriolis Meter

- Meter Transmitter Verification
    - The sensor calibration and correction factors in the configuration of the transmitter to be unchanged from most recent calibration
    - Transmitter diagnostic indicators to be in the normal state
- Coriolis Sensor Verification
    - Sensor diagnostics indicators to be in normal state
    - Structural integrity verification
- Temperature Verification
    - The temperature indicated by the Coriolis Meter to be within the published uncertainty of the Coriolis meter's temperature measurement plus the accuracy of the temperature reference
- Meter Zero Verification
    - The Meter Zero needs to be checked at flowing pressure and temperature.
    - Need to close upstream and downstream block valves to ensure zero flow condition exists under line pressure conditions.
    - The meter Zero value to be within Manufacturer specification limit
    - Record the as-left meter Zero Value

6.3. Magnetic Flow Meter

The magnetic Flow Meter needs to be verified on the installed condition with associated verification tool / software. Software will check the magnetic circuit, excitation circuit, calculation circuit and associated variables to compare with original factory set values and generate a report of verification.

Electrode resistance, insulation resistance (Coil & Signal) and fluid impedance need to be checked to understand the health of the meter.

6.4. Orifice Plate DP Flow meter

As a part of Field verification, the physical Orifice plate needs to be inspected and the associated Pressure, Temperature and DP Transmitter/s checked/calibrated to validate operation within tolerance.

6.5. Gas Chromatographs

All gas chromatographs shall be factory tested and calibrated using a Certified Natural Gas Calibration standard and shall perform with an accuracy of ±0.15% for Gross Heating Value and ±0.15% for Real Relative Density. The sample cycle time for all gas chromatographs shall be less than 6 minutes.

All gas chromatographs shall include the facility for automatic re-calibration against a certified calibration gas. C6+ Calibration gas must be used for C6+GC. Calibration gas must be selected to have minimum tolerance to get the most accurate Heating Value.

6.6. Calibration and Traceability of Test Equipment

All reference test equipment use in the validation process shall have independent calibration certification, such as NATA. The certification currency shall be as per NATA guidelines or the relevant standard. Reference calibration records shall be retained, as per Section 11 of this scheme.

Working test equipment may be “field calibrated” against reference test equipment. Field calibration records shall be retained, as per Section 11 of this scheme.

7. Estimated metering

7.1. Meter malfunction

In the event of a meter system malfunction, the controller shall investigate reason for the malfunction.

This process should involve reviewing meter performance trends on the SCADA system followed up by detailed on-site checks.

Following rectification of any identified fault, a meter validation shall be performed to confirm the function of the meter.

7.2. Reasons for estimations

The reasons for any estimation may be due to:

- Failure including out-of-calibration of pressure transmitters
- Failure including out-of-calibration of temperature transmitters
- Communications or Network issues
- The calibration of the associated gas chromatograph (if applicable)
- The failure of the measurement device or associated electronics.

7.3. Estimated meter readings, actual vs. estimated reconciliation

The process for estimation of meter readings comprises:

a) At the commencement of a “reason” event, the raw values of the last valid dataset will be recorded.
b) As far as possible, the steady state flow conditions before and after the event should be compared with actual flows during a “reason” event.

The totalised flow over the duration of the event will be calculated and this flow compared with the flow recorded.

a) If there is an estimation method that is superior in accuracy to a steady state assumption, that will be used to estimate the flow instead.
b) The values of this data, together with an assessment of any discrepancy will be recorded

Record the estimation in accordance with Section 11.

8. Conversion

All custody transfer meters compliant to this scheme shall have, as part of the scheme, a flow correcting device (Flow Computer). Conversions from "Actual" volume or mass, at flowing conditions, to volume and energy flow at Standard Conditions shall be calculated in these flow computers. This device will use standard calculations for the conversion to Standard Conditions of all primary metering data. The Higher Heating Value (HHV) will be used in all conversions from Volume to Energy. (Mass flow may be calculated as an addendum to the volumetric flow. However, the primary conversion shall be to volumetric flow.)

Standard Conditions are contained in the Table below.

Condition	Value
Standard Pressure	101.325 kPaa
Standard Temperature	15.0 Deg C
Combustion Reference Pressure	101.325 kPaa
Combustion Reference Temperature	15.0 Deg C
Density of Air at Standard Temperature and Pressure	1.2255 kg/m^3

8.1. Barometric pressure

Local barometric pressure for metering calculations shall be determined by calculation in the flow correcting device, using known elevation above sea level and Latitude coordinates.

8.2. Engineering Units

Flow calculations, including volume, energy and mass, shall be calculated or converted where necessary, to deliver results in SI units.

9. Gas Quality

9.1. Gas Chromatographs

Gas quality values, including heating value and real relative density, of gas passing through the meters in this scheme, shall be sourced from a Gas Chromatograph (GC) on-site or at a nearby representative metering facility. Alternatively, this Gas Quality may be sourced from a Gas Chromatograph at another location proven to be representative of the gas passing through the Meter within the tolerances allowable for Composition Analysis. In the absence of a Gas Chromatograph the gas quality shall be determined by regular samples and analysis by an independent testing laboratory.

All samples must be analysed in accordance with ASTM D1945 “Standard Method for Analysis of Natural Gas by Gas Chromatography”. The calculations for Gross Heating Value and Real Relative Density must be determined in accordance with ISO6976 Natural Gas – Calculation of calorific values (HV), density, relative density and Wobbe index from composition, or in accordance with equivalent standards.

All gas chromatographs shall provide instantaneous outputs of dry Gross Heating Value in mega-joules per cubic metre (MJ/m3), real relative density, base density, base compressibility, Wobbe Index and component mole percentages of carbon dioxide, nitrogen and all hydro-carbon gases to a minimum of C6+. These values shall be generated for the “Stream Gas” and if possible, for the “Calibration Stream”. The un-normalised total of all streams shall also be provided. Active alarm and unacknowledged alarm indications shall also be supplied.

The gas chromatograph data should be made available to the SCADA system.

9.2. Site Specific Gas Quality

The Amadeus Gas Pipeline - Gas Specification and AS 4564-2011 “Specification for General Purpose Natural Gas” further defines the limits of Gas Characteristics and components e.g. Wobbe Index, Oxygen, Hydrogen Sulphide, Total Sulphur, Hydrocarbon Dewpoint, Total Inert gases and Carbon Dioxide.

AS 4564-2011 also states that the gas shall not contain:

- Materials, dust, and other solid or liquid matter, waxes, gums, gum forming constituents, and unsaturated or aromatic hydrocarbons to an extent which might cause damage to, or interference with the proper operation of, pipes, meters, regulators, control systems, equipment or appliances;
- Unsaturated or aromatic hydrocarbons to an extent which causes unacceptable sooting; and
- Other substances that cause damage to, or problems in operation of, pipelines or appliances or that cause the products of combustion to be toxic or hazardous to health, other than substances that are usually found in natural gas combustion products.

10. Documentation

10.1. Meter Anomalies

A corrective work order shall be raised for repair or re-calibration for any meter anomalies.

Meter shall be tested if inaccuracy is suspected.

10.2. Competency Assessment

The following personnel shall have adequate competency, qualifications, and experience to perform the metering related activities as approved by the Person-In-Charge of the operating asset.

a) Persons who carry out measurement activities
b) Persons who perform calibration/validation
c) Persons who remove/replace meters
d) Persons who commission the meters

The competencies required for perform the above tasks are:

For activity (a) - Work in Accordance with an Issued Permit

For activity (b), (c) and (d):

- Certificate III or above in Electrical – Instrumentation (or equivalent)
- Certificate or above in Hazardous Areas – Electrical

Competency assessment or records containing the levels of competency for persons employed or engaged to carry out measurement activities under the scheme and activities relating to the meters shall be made available.

Notes:

1. Central Petroleum will only install meters that have (a) maintenance manual or materials easily assessable and (b) product support service available for ongoing maintenance advice. Operations may wish to engage the meter manufacturer to conduct training courses to enhance Central Petroleum technicians' competency.

2. The competency records is managed under Central Petroleum's Training Matrix.

10.3. List of Measuring Instruments

A list of all flow measuring instruments shall be maintained in electronic format (in Central Petroleum's CMMS) or in the engineering document management system. The list should contain the following information as a minimum requirement:

- Tag number
- Meter type
- Location
- P&ID reference
- Make and model (optional)
- Tolerances for error (accuracy)
- Calibration/validation date
- Calibration/validation frequency or due date

11. Record keeping

The following records shall be maintained for a period of 5 years:

- Reference-instrument calibration certification, to be attached to the relevant validation record.
- Field-calibration instrument calibration certification, to be attached to the relevant validation record.
- Validation records, including "as found" and "as left".
- Reconciliation of Actual and Estimated Reading Reports.
- Records deemed as "Necessary Operational Data" in line with AS2885.
- Maintenance records.
- Design and construction records.

12. Key Performance Indicators for Measurement Scheme Monitoring

This Measurement Scheme shall be reviewed at least once every 12 months against the key performance indicators listed below:

- Ensure the Flow Meter information is kept updated in CMMS.
- Ensure new projects involving installation of new meters adopt the requirements set in this Measurement Scheme.
- Maintenance Planner to ensure that the meters are tested or calibrated within the required timeframe as set in CMMS.

13. Updates of the Measurement Scheme

This Measurement Scheme must be revised in any of the following circumstances—

- Central Petroleum has installed, or proposes to install, a meter to which the scheme does not apply or that does not comply with the Scheme
- the making or amendment of an Australian standard or other standard that makes it appropriate to revise the Scheme
- the happening of an event relevant to the meter of which Central Petroleum is aware, or ought reasonably to have been aware
- proposed modifications to the meter or activities under the scheme that make it appropriate to revise the Scheme
- it is proposed to change competencies required for persons carrying out activities under the Scheme
- Central Petroleum becomes aware of a significant anomaly in the Scheme
- there is a likelihood of measurements outside of tolerance under the Scheme.

Appendix 7. Commonwealth Buffel Grass abatement strategy

Australian Government
Department of the Environment



THREAT ABATEMENT ADVICE FOR ECOSYSTEM DEGRADATION, HABITAT LOSS AND SPECIES DECLINE IN ARID AND SEMI-ARID AUSTRALIA DUE TO THE INVASION OF BUFFEL GRASS (*Cenchrus ciliaris* AND *C. pennisetiformis*)

This threat abatement advice reflects the best available information at the time of development (October 2014)
Last updated April 2015
To provide information updates please email weeds@environment.gov.au

Purpose

The purpose of this threat abatement advice is to identify key actions and research to abate the threat of ecosystem degradation, habitat loss and species decline in arid and semi-arid Australia due to the invasion of buffel grass (*Cenchrus ciliaris* and *C. pennisetiformis*[1]). Buffel grass comprises a suite of species and ecotypes native to Africa, Western and Southern Asia that are now rapidly colonising arid ecosystems in Australia. Abatement of this threat can help ensure the conservation of biodiversity assets including threatened species and ecological communities listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), Ramsar sites and properties on the World Heritage List. Other significant assets such as Indigenous cultural sites, state and territory listed assets and remnant vegetation would also be better protected.

This advice provides information and guidance for stakeholders at national, state, regional and local levels. It suggests on-ground activities that can be implemented by local communities, natural resource management groups or interested individuals such as landholders. It also suggests actions that can be undertaken by government agencies, local councils, research organisations, industry bodies or non-government organisations.

The intention of this advice is to highlight those actions considered through consultation to be of highest priority and which may be feasible, rather than to comprehensively list all actions which may abate the threat and impacts posed by buffel grass. Relevant groups or individuals may determine their capacity to undertake the abatement activities included in this advice. The Australian Government acknowledges the complexity of dealing with this threat, as many pastoralists in rangeland Australia still value buffel grass for its production and economic values.

[1] This advice includes *Cenchrus pennisetiformis* (Cloncurry, white or slender buffel grass) on the basis that it may become a greater threat than *C. ciliaris* in southern Australia. Other *Cenchrus* species with potentially major impacts in Western Australia include *C. setiger* (birdwood), *C. echinatus* (burrgrass) and *C. biflorus* (Gallon's curse).

Description of the threat

Buffel grass species are high-biomass tussock grasses that are generally long-lived, deep-rooted and able to out-compete native vegetation. They can flower and fruit rapidly following rainfall for prolonged periods and produce a large amount of seed which disperses easily. They can be tolerant to drought, fire and grazing and can naturalise on a wide range of soil types and landscapes.

Because of these qualities, buffel grass is important to many rangeland pastoralists. Unfortunately, it can impact directly on biodiversity values, for example through competition, and indirectly through increasing the frequency and intensity of fires. These hotter fires can affect groundcover vegetation (including bush foods important to Indigenous communities) and carry into the canopy of keystone arid zone trees such as river red gums (*Eucalyptus camaldulensis*), corkwoods (*Hakea* species) and beefwoods (*Grevillea striata*) with flow-on effects to other plants and animals. They can also increase the risk of damage to infrastructure and cultural sites.

When buffel grass is dense it can dominate light and space, reducing opportunities for native vegetation establishment. Even at lower densities buffel grass may reduce soil nitrogen, exhaust the mineral pool and inhibit plant regeneration and growth through competition and allelopathic suppression. Buffel grass can aggressively colonise riparian habitats, displacing native vegetation. Infestation of water points such as soakages and rock holes can impede access to sites of Indigenous cultural significance. Buffel grass is considered a 'transformer weed' of the Australian rangelands due to its ability to transform the basic attributes of habitats. Many consider it to be the most debilitating weed of natural ecosystems in arid and semi-arid Australia where it can directly or indirectly displace and threaten a large number of native and endemic plants and animals.

Detail on buffel grass biology, growing conditions, establishment and spread can be sourced from items in the resources section of this document.

Outside of arid and semi-arid Australia, other high biomass and flammable introduced grasses, including gamba grass (*Andropogon gayanus*) and perennial mission grass (*Cenchrus polystachios*), have been listed under the EPBC Act as part of a key threatening process in northern Australia. A threat abatement plan has been prepared for this key threatening process.

Buffel grass and legislation in Australia

Commonwealth legislation

Ecosystem degradation, habitat loss and species decline in arid and semi-arid Australia due to the invasion of buffel grass (*Cenchrus ciliaris* and *C. pennisetiformis*) was nominated as a key threatening process under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The Threatened Species Scientific Committee considered the nomination in 2012 and 2013 and noted that this threat is recognised in the overarching key threatening process 'Novel biota and their impact on biodiversity' and therefore will not be listed as a separate key threatening process. The

Committee recommended the development of a specific threat abatement advice to address the threat.

Novel biota and their impact on biodiversity is listed as a key threatening process under the EPBC Act. Novel biota refers to organisms that are new to an ecosystem, and the scope of this broader key threatening process covers all invasive species including weeds. It is eligible for listing because:

- it could cause native species to become eligible for listing as threatened under the EPBC Act, and
- it adversely affects the population numbers, habitat quality and geographic distribution of listed threatened species and ecological communities through predation, herbivory, competition, mortality and habitat loss and degradation.

State/territory legislation

The South Australian Government has declared buffel grass a weed under the *Natural Resources Management Act 2004*.

In New South Wales it is included in the key threatening process listed under the *Threatened Species Conservation Act 1995*, Invasion of native plant communities by exotic perennial grasses.

Threat abatement actions

This threat abatement advice aims to provide information and guidance to abate the threat of ecosystem degradation, habitat loss and species decline in arid and semi-arid Australia due to the invasion of buffel grass (*Cenchrus ciliaris* and *C. pennisetiformis*). To most efficiently use available resources, it is necessary to identify the important ecosystems, habitats and species that need protecting. For the purposes of the Australian Government, these are the biodiversity assets listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). There may also be Indigenous cultural sites and state/territory, regional and/or local biodiversity assets that should be identified to help prioritise management activities.

To manage the threat, improving our understanding of the extent, spread pathways and impacts of buffel grass is essential, as is the design of tools, systems and guidelines to help protect areas containing high priority biodiversity assets. All stakeholders will need to work together to implement coordinated, cost-effective on-ground management strategies. This should include habitat restoration, monitoring and reporting on the effectiveness of management programmes where resources allow. Raising awareness of the impacts of buffel grass among stakeholders and building capability to implement solutions will improve the likelihood of successful abatement of the threat. Some actions that have been identified through consultation as being most relevant and necessary are listed below.

Actions

Responsible parties:

- Australian Government through coordination, communication, funding and policy development
- State and territory governments through coordination, communication, funding and policy development
- Land managers – includes all managers of land from national to local scale, indigenous groups, councils, Natural Resource Management groups, pastoralists.
- Research organisations.
- Industry groups – includes the pastoral and tourism industries and any other relevant industry.

General/overarching actions	Responsible parties
Implement the 2015 Australian Weeds Strategy.	Australian Government / state and territory governments / land managers
Implement priority actions in state and territory strategies related to asset protection and weed management.	State and territory governments
Establish, maintain and participate in a national buffel grass taskforce to coordinate management at a national level.	Australian Government / state and territory governments / land managers / industry groups

1. Prevent further introductions of buffel grass	
Work with the Invasive Plants and Animals Committee to encourage state and territory weed declarations for *Cenchrus ciliaris*, *C. pennisetiformis* and any new varieties or strains of buffel grass.	Australian Government / state and territory governments
Seek national restriction of the development, introduction, release, sale, movement and propagation of *Cenchrus ciliaris*, *C. pennisetiformis* and any new varieties or strains of buffel grass.	Australian Government / state and territory governments
Investigate harmonisation of legislation, strategies and procedures for monitoring and surveillance of inter/intra-jurisdictional invasion pathways and management of outbreaks.	Australian Government / state and territory governments
Prevent the introduction and development of new genetic material (including closely related species that may hybridise with buffel grass) which would increase the invasive potential of existing buffel grass populations.	Australian Government / state and territory governments
2. Guide and support relevant buffel grass research	
Improve knowledge of national buffel grass distribution and potential future distribution using a standardised mapping methodology.	Australian Government / state and territory governments / research organisations
Increase understanding of the extent and impact of buffel grass infestations.	Australian Government / state and territory governments / research organisations

Promote and support research comparing the productivity of native pasture grasses with buffel grass in different landscapes and seasons e.g. pasture rundown, decline in nutritional value and cattle productivity over the long term.	State and territory governments / research organisations / industry groups
Promote and support research on buffel grass biology and management, including biological control. Focus particularly on the development of optimal techniques for excluding, limiting or removing buffel grass from areas containing biodiversity assets.	State and territory governments / research organisations / industry groups
Promote and support research into limiting the competitive advantage of buffel grass over undisturbed native vegetation.	State and territory governments / research organisations / industry groups
Develop tools, systems and guidelines for effective management of buffel grass and protection of assets, including early detection, eradication where feasible and restoration of areas once buffel is removed.	State and territory governments / research organisations / industry groups
Promote and support research to identify species that buffel grass threatens with extinction in the wild and the timeframe within which extinction could occur. This will provide critical information about which species need to be considered for in-situ and ex-situ conservation efforts.	Australian Government / state and territory governments / research organisations
3. Identify and prioritise key assets and areas for strategic management	
Identify and prioritise geographic areas requiring protection, based on the presence of biodiversity and Indigenous cultural assets and the current level of threat from buffel grass in combination with other	Australian Government / state and territory

threats.	governments / land managers
4. Reduce the establishment and spread of buffel grass, particularly into areas containing biodiversity assets	
Promote information on weed spread prevention to Traditional Owners, pastoralists, the mining and petroleum sector, tourists, managers of transport corridors and other land users i.e. promote vehicle, fodder, stock and plant hygiene. Develop guidelines for roadworks around communities for reducing the risk of buffel grass spread.	State and territory governments / land managers / industry groups
Encourage/undertake early, persistent eradication where this is still feasible.	State and territory governments / land managers / industry groups
Implement state, territory and regional priorities related to invasive species or to the recovery of threatened species and ecological communities where the impacts of buffel grass pose a threat.	State and territory governments / land managers / industry groups
Minimise the spread of buffel grass by natural means, especially water.	Land managers / industry groups
Identify and prioritise areas for exclusion, elimination or control of buffel grass across Australia and prioritise invasion pathways for surveillance and control.	State and territory governments / land managers / industry groups
Keep buffel grass out of conservation reserves and Indigenous Protected Areas where it is absent or sparse, prioritising areas where there is a significant risk of incursion and where important biodiversity or	State and territory governments / land

Indigenous cultural assets are/would be threatened by buffel grass.	managers
5. Support and facilitate coordinated on-ground management in high-priority areas	
Develop guidelines to minimise the inadvertent spread of buffel grass by human activity and stock movements. Implement recommended actions, particularly in areas of high conservation value.	State and territory governments / land managers
Destroy and monitor outliers, new incursions and infestations threatening biodiversity and Indigenous cultural assets.	State and territory governments / land managers
Contain populations of buffel grass that cannot be eradicated to protect biodiversity and Indigenous cultural assets.	State and territory governments / land managers
Implement relevant actions in national and state/territory recovery plans.	Australian Government / state and territory governments / land managers
Implement relevant actions in conservation advices for ecological communities listed under the *Environment Protection and Biodiversity Conservation Act 1999.*	Australian Government / state and territory governments / land managers
Conduct ex-situ protection of threatened flora and fauna species through the National Seed Bank, Australian Seed Bank Partnership, zoos and wildlife sanctuaries.	Australian Government / state and territory governments

Conduct in-situ protection of threatened flora and fauna species through conservation agreements, bush regeneration and buffel grass control activities (integrated approach).	Australian Government / state and territory governments / land managers
Improve management of remnant vegetation to help prevent the establishment of buffel grass.	Land managers
Support Traditional Owners, community groups and others that are effectively controlling buffel grass to search for, document and manage existing and new infestations of buffel grass.	State and territory governments / land managers
6. Raise awareness of the impacts of buffel grass	
Promote awareness of the impacts of buffel grass to Traditional Owners, land managers (including the mining and petroleum sector, managers of transport corridors), community groups, tourists, industry stakeholders and the general public and encourage their advocacy of the issue. Do so in a way that is relevant to the community and the local context, i.e. using culturally appropriate language and materials.	Australian Government / state and territory governments / land managers / industry groups
Inform land owners, users and managers of the urgent need to address buffel grass incursions immediately through determined and thorough mapping and treatment, particularly in riparian zones (once established, buffel grass is very difficult/impossible to control).	State and territory governments / land managers
Support land managers to identify threatened biodiversity and Indigenous cultural assets on their land and support the preparation and implementation of management plans for buffel grass and recovery of the asset.	State and territory governments / land managers
Promote awareness within the pastoral industry of the risks and costs associated with the use of buffel grass, including risk to life, property and tree fodder, depletion of soil nutrients, decline in buffel grass	Australian Government / state and territory governments / land

nutritional value over the long term and transformation of pastoral land to a buffel grass monoculture.	managers / industry groups
Promote awareness to policy-makers, decision-makers and others of the impacts of buffel grass on Traditional Owners and on their cultural practices.	Australian Government / state and territory governments / land managers / industry groups
7. Build capability among stakeholders to abate the threat	
Develop and maintain capability to detect and manage local infestations promptly.	State and territory governments / land managers / industry groups
Develop and promote integrated weed management to maximise benefits of buffel grass control.	State and territory governments / land managers / industry groups
Actively involve Traditional Owners, land managers and the community in buffel grass management.	Australian Government / state and territory governments / land managers / industry groups
Work collaboratively with stakeholders and Traditional Owners to expand and support positive actions in their progress to address the buffel grass threat.	Australian Government / state and territory governments / land

	managers / industry groups
Support community groups, Indigenous groups, land managers and other stakeholders that are effectively controlling buffel grass, share information on best practice management and promote success stories to other communities and stakeholders.	State and territory governments / land managers / industry groups
Ensure threat abatement methods and weed control operations do not themselves threaten biodiversity or Indigenous cultural assets.	State and territory governments / land managers / industry groups
8. Monitor, evaluate and report on the efficacy of management programmes	
Encourage monitoring and reporting at all levels to help with understanding the efficacy of programmes and to share success and areas for improvement.	State and territory governments / land managers / industry groups

Resources

Author	Year	Title or description	Further details
Biosecurity SA, Department of Primary Industries and Regions South Australia	2012	South Australia Buffel Grass Strategic Plan 2012–17: A plan to reduce the weed threat of buffel grass in South Australia	
Bonney S	2013	The effect of buffel grass (*Cenchrus ciliaris*) invasion on ant communities in central Australia	BSc (Hons) thesis, Charles Darwin University, Alice Springs.
Director of National Parks	2010	Uluru-Kata Tjuta National Park Management Plan 2010–2020	Acknowledges buffel grass as the most threatening weed in the park and includes relevant policies and actions.
Fensham RJ, Donald S and Dwyer JM	2013	Propagule pressure, not fire or cattle grazing, promotes invasion of buffel grass *Cenchrus ciliaris*	Journal of Applied Ecology 2013, 50, 138–146
Ferdinands K, Setterfield S, Clarkson J, Grice A and Friedel M	2010	Embedding economics in weed risk management to assess contentious plants	
Firn J, Martin T, Walters B, Hayes J, Nicol S, Chades I, and Carwardine J	2013	Priority threat management of invasive plant species in the Lake Eyre Basin	CSIRO Climate Adaptation Flagship Working paper No. 17 (CSIRO and Queensland University of Technology). http://www.csiro.au/organisation-structure/flagships/climate-adaptation-flagship/caf-working-papers

Friedel M, Bastin G, Brock C, Butler D, Clarke A, Eyre T, Fox J, Grice A, van Leeuwen S, Pitt J, Puckey H and Smyth A		Developing a research agenda for the distribution and rate of spread of buffel grass (*Cenchrus ciliaris*) and identification of landscapes and biodiversity assets at most risk from invasion	
Friedel M, Marshall N, van Klinken R and Grice A	2009	Quantifying costs and benefits of buffel grass	http://lwa.gov.au/node/2585
Friedel M, van Klinken R, Grice A and Marshall N	2009	Benefits and costs of buffel grass: Understanding perceptions can contribute to policy development	Land & Water Australia (based on the report *Quantifying costs and benefits of buffel grass*)
Friedel M, Puckey H, O'Malley C, Waycott M, Smyth A & Miller G	2006	Buffel grass: both friend and foe: An evaluation of the advantages and disadvantages of buffel grass use, and recommendations for future research	A report to the Desert Knowledge Cooperative Research Centre on the dispersal, impact and management of buffel grass (*Cenchrus ciliaris*) in desert Australia
Friedel MH, Grice AC, Marshall NA, van Klinken RD	2011	Reducing contention amongst organisations dealing with commercially valuable but invasive plants: The case of buffel grass	
Grice A, Friedel M, Marshall N and van Klinken R	2012	Tackling contentious invasive plant species: a case study of buffel grass in Australia	
Grice A, Friedel M, Setterfield S, Ferdinands K, Clarkson J, Rolfe J, MacLeod N	2011	Best Practice for Making Strategic Decisions About Invasive Plants of Commercial Value	

Marshall NA, Friedel M, van Klinken RD, Grice AC	2010	Considering the social dimension of invasive species: the case of buffel grass	
van Klinken R, Friedel M and Grice A	2006	Perennial pasture conflicts: is there a way through?	
Government of South Australia	2015	Declared Plant Policy – Buffel Grass (*Cenchrus ciliaris and C. pennisetiformis*)	
Government of the Northern Territory – Department of Land Resource Management		Buffel Grass Management Guide for Central Australia	
Marshall V, Ostendorf B and Lewis M	2013	Habitat suitability and susceptibility modelling for strategic control of invasive buffel grass, South Australia	Spatial Information Group, School of Earth and Environmental Sciences, The University of Adelaide
McKinney MA, Schlesinger CA and Pavey CR	2014	Foraging behaviour of the endangered Australian skink (*Liopholis slateri*)	Australian Journal of Zoology, 2014, 62, 477–482
Miller G, Friedel M, Adam P and Chewings V	2010	Ecological impacts of buffel grass (*Cenchrus ciliaris* L.) invasion in central Australia – does field evidence support a fire-invasion feedback?	The Rangeland Journal, 2010, 32, 353–365
Schlesinger C, White S and Muldoon S	2013	Spatial pattern and severity of fire in areas with and without buffel grass (*Cenchrus ciliaris*) and effects on native vegetation in central Australia	Austral Ecology 2013, 38, 831–840
Smyth A, Friedel M and O'Malley C	2009	The influence of buffel grass (*Cenchrus*	The Rangeland Journal, 2009, 31, 307–

		ciliaris) on biodiversity in an arid Australian landscape	320
Tschirner K, Read JL, Graham JK and Ward MJ	2012	Alinytjara Wilurara Buffel Grass Operational Strategy	Department of Environment, Water and Natural Resources, South Australia
Young L	2011	The effects of the invasive grass, *Cenchrus ciliaris* (buffel grass), on the habitat use and behaviour of birds in semi-arid Central Australia	BSc (Hons) thesis, Charles Darwin University, Alice Springs
Young L and Schlesinger C	2014	Habitat use and behaviour of birds in areas invaded by buffel grass (*Cenchrus ciliaris* L.) and in restored habitat	Wildlife Research, 2014, 41, 379–394
Australian Government		Species of National Environmental Significance	The Species of National Environmental Significance Database contains map summaries which provide general information on the distribution of species related to the *Environment Protection and Biodiversity Conservation Act 1999* Species covered by the database include threatened and migratory species.
Australian Government		Species Profile and Threats (SPRAT) Database (recovery plans adopted under the EPBC Act)	
Australian Government		Threatened species and ecological	

		communities – publications	

Appendix 8. Well site layouts – PVGF, DGF & SOF



Palm Valley field: Palm Valley 1

- Well
- Gas pipeline
- Fences
- Access track

ID: 0622-303
Rev:
Date: 30/04/2024

Map Scale is 1:1,500 when printed at A4
Coordinate System: GDA 1994 MGA Zone 53



Central Petroleum

Level 7, 369 Ann St Brisbane QLD 4000
T +61 3181 3800 F +61 3181 3855
W centralpetroleum.com.au

© 2024. Whilst every care has been taken to prepare this illustration, Central Petroleum Limited make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and does not accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the illustration being inaccurate, incomplete or unsuitable in any way and for any other reason. This illustration is for informational purposes only. This illustration is subject to change. This illustration is not for publication. Author: Central Petroleum Limited.

Document Path: G:\GIS\Mxds\Requested\622 Palm Valley Dingo Surprise 2023 EM\Working\ILLUSTRATION\EM\0622-303-MAP Palm Valley well issues 20240430.mxd



Palm Valley field: Palm Valley 2

- Well
- Gas pipeline
- Fences
- Access track

ID: 0622-303
Rev:
Date: 30/04/2024

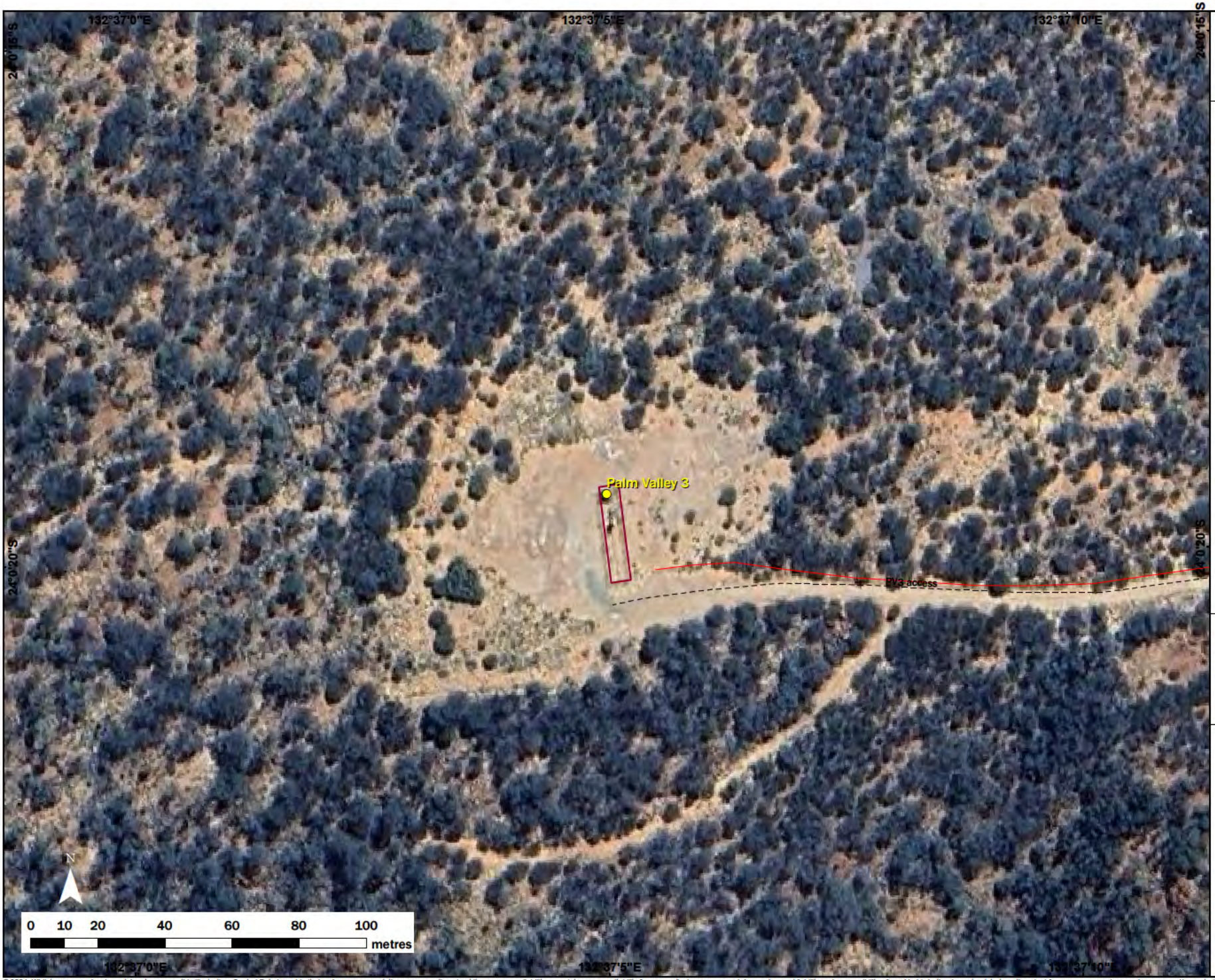
Map Scale is 1:1,500 when printed at A4
Coordinate System: GDA 1994 MGA Zone 53



Central Petroleum
Level 7, 369 Ann St Brisbane QLD 4000
T +61 3181 3800 F +61 3181 3855
W centralpetroleum.com.au

© 2024. Whilst every care has been taken to prepare this illustration, Central Petroleum Limited make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and does not accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the illustration being inaccurate, incomplete or unsuitable in any way and for any other reason. This illustration is for informational purposes only. This illustration is subject to change. This illustration is not for publication. Author: Central Petroleum Limited.

Document Path: G:\GIS\Work Requests\622 Palm Valley Dingo Surprise 2023 EM\Working\ILLUSTRATOR\EMAPS\0622-303-MAP Palm Valley well names 20240430.mxd



Palm Valley field: Palm Valley 3

- Well
- Gas pipeline
- Fences
- Access track

ID: 0622-303
Rev:
Date: 30/04/2024

Map Scale is 1:1,500 when printed at A4
Coordinate System: GDA 1994 MGA Zone 53



Central Petroleum

Level 7, 369 Ann St Brisbane QLD 4000
T +61 3181 3800 F +61 3181 3855
W centralpetroleum.com.au

© 2024. Whilst every care has been taken to prepare this illustration, Central Petroleum Limited make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and does not accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the illustration being inaccurate, incomplete or unsuitable in any way and for any other reason. This illustration is for informational purposes only. This illustration is subject to change. This illustration is not for publication. Author: Central Petroleum Limited.

Document Path: G:\GIS\Work Requests\0622 Palm Valley Dingo Surprise 2023 EM\Working\ILLUSTRATOR\[0622-303-MAP Palm Valley well issues 20240430.mxd



Palm Valley field: Palm Valley 4

- Well
- Gas pipeline
- Fences
- Access track

ID: 0622-303
Rev:
Date: 30/04/2024

Map Scale is 1:1,500 when printed at A4
Coordinate System: GDA 1994 MGA Zone 53



Central Petroleum
Level 7, 369 Ann St Brisbane QLD 4000
T +61 3181 3800 F +61 3181 3855
E centralpetroleum.com.au

© 2024. Whilst every care has been taken to prepare this illustration, Central Petroleum Limited make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and does not accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the illustration being inaccurate, incomplete or unsuitable in any way and for any other reason. This illustration is for informational purposes only. This illustration is subject to change. This illustration is not for publication. Author: Central Petroleum Limited.

Document Path: G:\GIS\Work Requests\622 Palm Valley Dingo Survey 2023\BM\Working\ILLUSTRATOR\MXD\0622-303-MAP Palm Valley well leases 20240430.mxd



Palm Valley field: Palm Valley 5

- Well
- Gas pipeline
- Fences
- Access track

ID: 0622-303
Rev:
Date: 30/04/2024

Map Scale is 1:1,500 when printed at A4
Coordinate System: GDA 1994 MGA Zone 53



Central Petroleum

Level 7, 369 Ann St Brisbane QLD 4000
T +61 3181 3800 F +61 3181 3855
W centralpetroleum.com.au

©2024. Whilst every care has been taken to prepare this illustration, Central Petroleum Limited make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and does not accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the illustration being inaccurate, incomplete or unsuitable in any way and for any other reason. This illustration is for informational purposes only. This illustration is subject to change. This illustration is not for publication. Author: Central Petroleum Limited.

Document Path: G:\GIS\Mxds\Requested\622 Palm Valley Cbgs Surprise 2023 EM\Working\ILLUSTRATOR\EMAPS\0622-303-MAP Palm Valley well issues 20240430.mxd



Palm Valley field: Palm Valley 6

- Well
- Gas pipeline
- Fences
- Access track

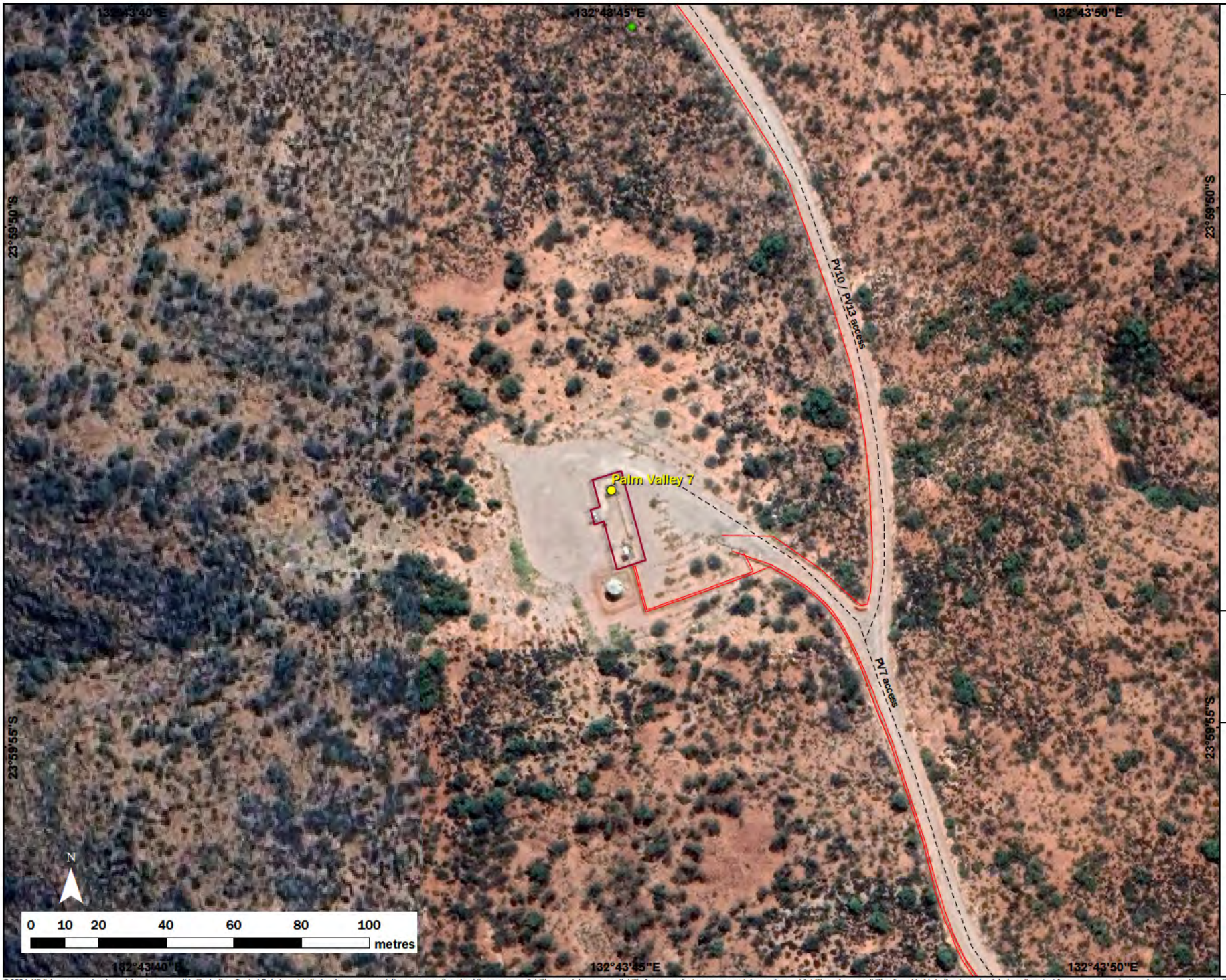
ID: 0622-303
Rev:
Date: 30/04/2024

Map Scale is 1:1,500 when printed at A4
Coordinate System: GDA 1994 MGA Zone 53



Central Petroleum
Level 7, 369 Ann St Brisbane QLD 4000
T +61 3181 3800 F +61 3181 3855
W centralpetroleum.com.au

© 2024. Whilst every care has been taken to prepare this illustration, Central Petroleum Limited make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and does not accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the illustration being inaccurate, incomplete or unsuitable in any way and for any other reason. This illustration is for informational purposes only. This illustration is subject to change. This illustration is not for publication. Author: Central Petroleum Limited.



Palm Valley field: Palm Valley 7

- Well
- Gas pipeline
- Fences
- Access track

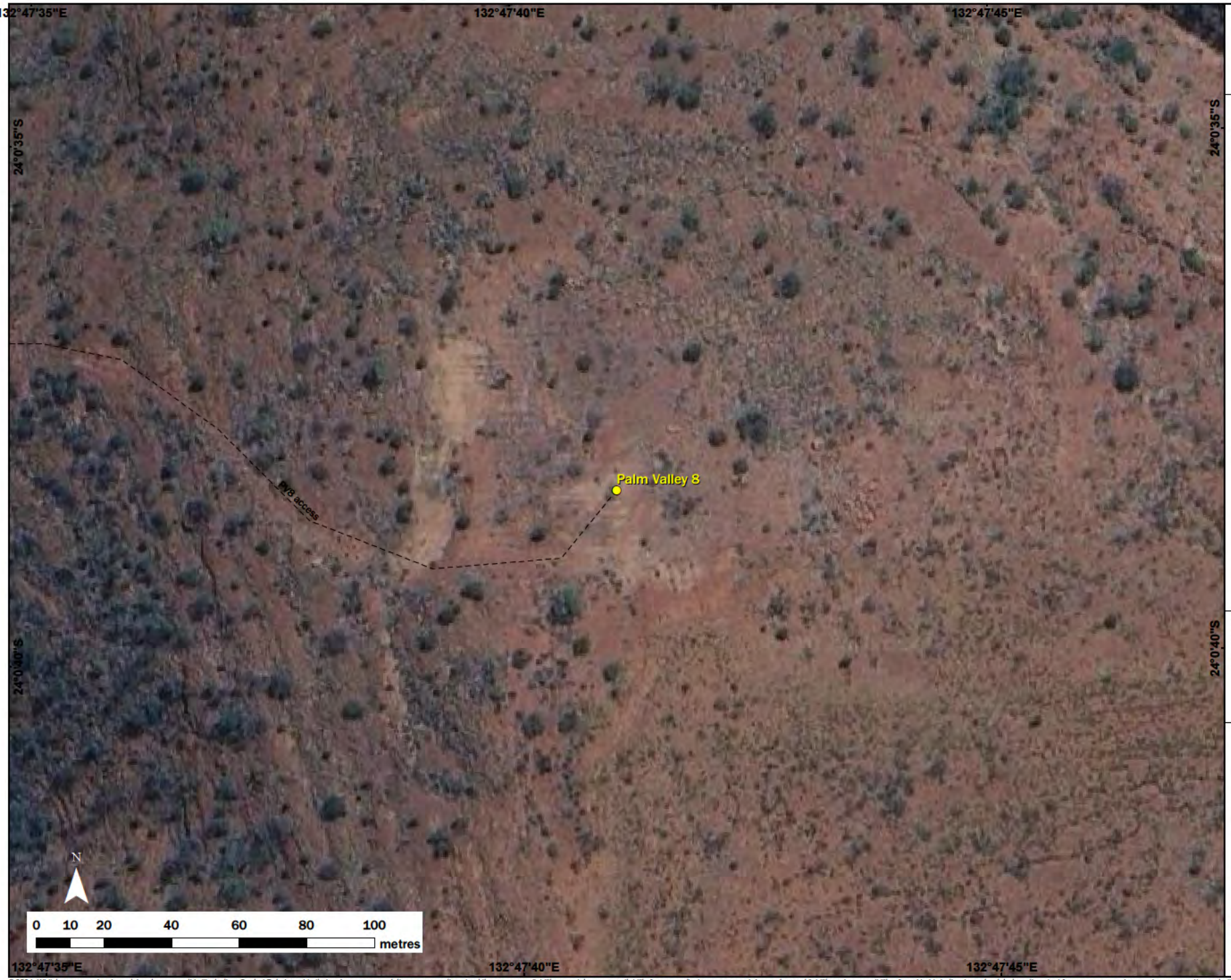
ID: 0622-303
Rev:
Date: 30/04/2024

Map Scale is 1:1,500 when printed at A4
Coordinate System: GDA 1994 MGA Zone 53



Central Petroleum
Level 7, 369 Ann St Brisbane QLD 4000
T +61 3181 3800 F +61 3181 3855
W centralpetroleum.com.au

© 2024. Whilst every care has been taken to prepare this illustration, Central Petroleum Limited make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and does not accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the illustration being inaccurate, incomplete or unsuitable in any way and for any other reason. This illustration is for informational purposes only. This illustration is subject to change. This illustration is not for publication. Author: Central Petroleum Limited.



Palm Valley field: Palm Valley 8

- Well
- Gas pipeline
- Fences
- Access track

ID: 0622-303
Rev:
Date: 30/04/2024

Map Scale is 1:1,500 when printed at A4
Coordinate System: GDA 1994 MGA Zone 53



Central Petroleum
Level 7, 369 Ann St Brisbane QLD 4000
T +61 3181 3800 F +61 3181 3855
W centralpetroleum.com.au

© 2024. Whilst every care has been taken to prepare this illustration, Central Petroleum Limited make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and does not accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the illustration being inaccurate, incomplete or unsuitable in any way and for any other reason. This illustration is for informational purposes only. This illustration is subject to change. This illustration is not for publication. Author: Central Petroleum Limited.

Document Path: G:\GIS\Mxds\Requests\622 Palm Valley Oops Surprise 2023\BM\Working\ILLUSTRATOR\BM\0622-303-MAP Palm Valley well issues 20240430.mxd



Palm Valley field: Palm Valley 9

- Well
- Gas pipeline
- Fences
- Access track

ID: 0622-303
Rev:
Date: 30/04/2024

Map Scale is 1:1,500 when printed at A4
Coordinate System: GDA 1994 MGA Zone 53



Central Petroleum

Level 7, 369 Ann St Brisbane QLD 4000
T +61 3181 3800 F +61 3181 3855
W centralpetroleum.com.au

© 2024. Whilst every care has been taken to prepare this illustration, Central Petroleum Limited make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and does not accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the illustration being inaccurate, incomplete or unsuitable in any way and for any other reason. This illustration is for informational purposes only. This illustration is subject to change. This illustration is not for publication. Author: Central Petroleum Limited.



Palm Valley field: Palm Valley 10

- Well
- Gas pipeline
- Fences
- Access track

ID: 0622-303
Rev:
Date: 30/04/2024

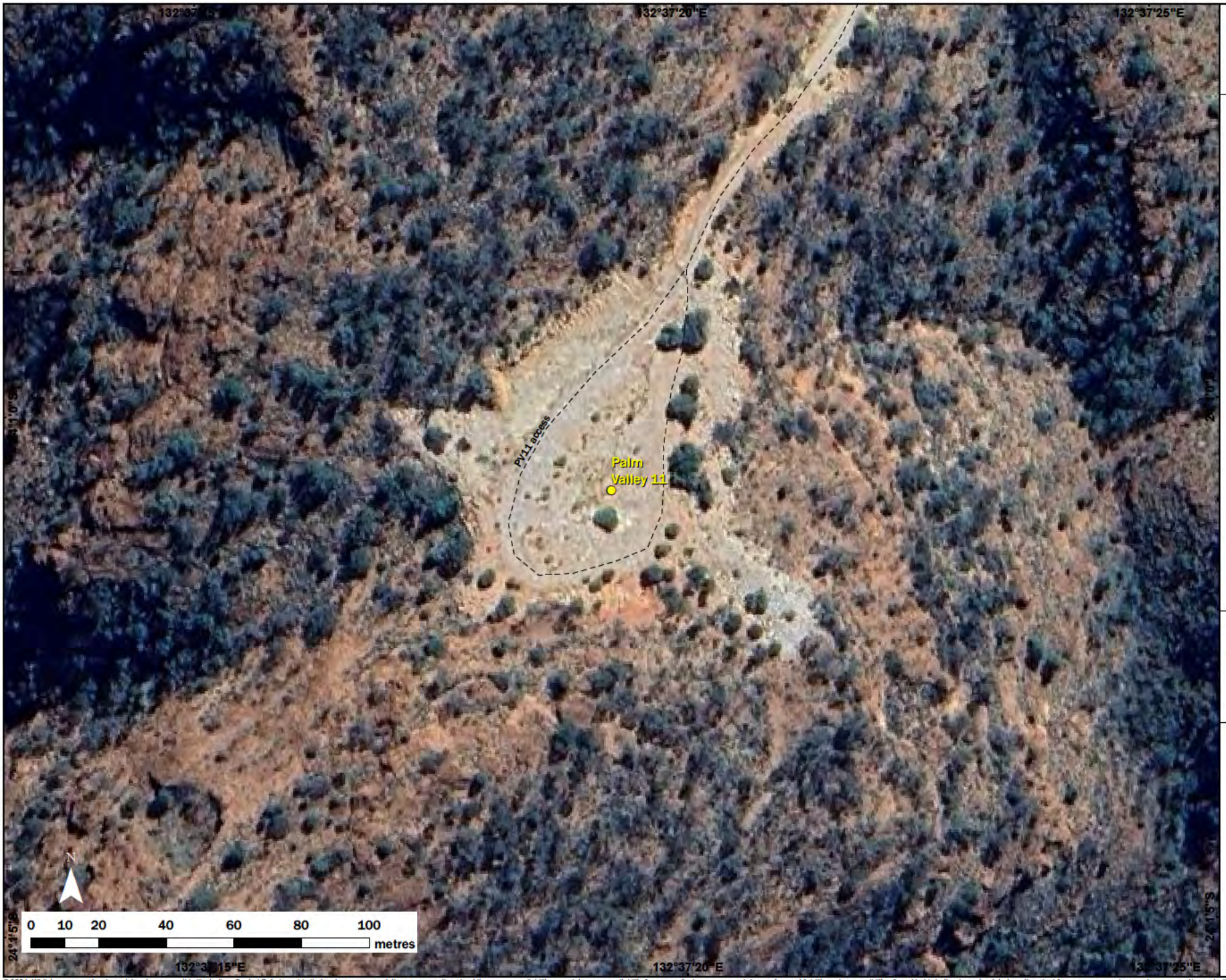
Map Scale is 1:1,500 when printed at A4
Coordinate System: GDA 1994 MGA Zone 53



Central Petroleum
Level 7, 369 Ann St Brisbane QLD 4000
T +61 3181 3800 F +61 3181 3855
W centralpetroleum.com.au

© 2024. Whilst every care has been taken to prepare this illustration, Central Petroleum Limited make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and does not accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the illustration being inaccurate, incomplete or unsuitable in any way and for any other reason. This illustration is for informational purposes only. This illustration is subject to change. This illustration is not for publication. Author: Central Petroleum Limited.

Document Path: G:\GIS\Work Requests\0622 Palm Valley Dingo Surprise 2023\BM\Working\ILLUSTRATOR\[WO0622-303-MAP Palm Valley well names 20240430.mxd



Palm Valley field: Palm Valley 11

- Well
- Gas pipeline
- Fences
- Access track

ID: 0622-303
Rev:
Date: 30/04/2024

Map Scale is 1:1,500 when printed at A4
Coordinate System: GDA 1994 MGA Zone 53



Central Petroleum
Level 7, 369 Ann St Brisbane QLD 4000
T +61 3181 3800 F +61 3181 3855
W centralpetroleum.com.au

© 2024. Whilst every care has been taken to prepare this illustration, Central Petroleum Limited make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and does not accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the illustration being inaccurate, incomplete or unsuitable in any way and for any other reason. This illustration is for informational purposes only. This illustration is subject to change. This illustration is not for publication. Author: Central Petroleum Limited.

Document Path: G:\GIS\Mxds\Requested\622 Palm Valley Dingo Surprise 2023 BM\Working\ILLUSTRATOR\BMOD0622-303-MAP Palm Valley well names 20240430.mxd



Palm Valley field: Palm Valley 12

- Well
- Gas pipeline
- Fences
- Access track

ID: 0622-303
Rev:
Date: 30/04/2024

Map Scale is 1:1,500 when printed at A4
Coordinate System: GDA 1994 MGA Zone 53



Central Petroleum

Level 7, 369 Ann St Brisbane QLD 4000
T +61 3181 3800 F +61 3181 3855
W centralpetroleum.com.au

© 2024. Whilst every care has been taken to prepare this illustration, Central Petroleum Limited make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and does not accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the illustration being inaccurate, incomplete or unsuitable in any way and for any other reason. This illustration is for informational purposes only. This illustration is subject to change. This illustration is not for publication. Author: Central Petroleum Limited.

Document Path: G:\GIS\Work Requests\622 Palm Valley Dingo Surprise 2023\BM\Working\ILLUSTRATOR\[MXD0622-303-A4P Palm Valley well names 20240430.mxd



Palm Valley field: Palm Valley 13

- Well
- Gas pipeline
- Fences
- Access track

ID: 0622-303
Rev:
Date: 30/04/2024

Map Scale is 1:1,500 when printed at A4
Coordinate System: GDA 1994 MGA Zone 53



Central Petroleum
Level 7, 369 Ann St Brisbane QLD 4000
T +61 3181 3800 F +61 3181 3855
W centralpetroleum.com.au

© 2024. Whilst every care has been taken to prepare this illustration, Central Petroleum Limited make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and does not accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the illustration being inaccurate, incomplete or unsuitable in any way and for any other reason. This illustration is for informational purposes only. This illustration is subject to change. This illustration is not for publication. Author: Central Petroleum Limited.

Document Path: G:\GIS\Work Requests\0622 Palm Valley Dingo Survey 2023\BM\Working\ILLUSTRATION\BM\0622-303-MAP Palm Valley well issues 20240430.mxd



Dingo field: Dingo 1

- Well
- Gas pipeline
- Fences
- Access track

ID: 0622-304
Rev:
Date: 29/04/2024

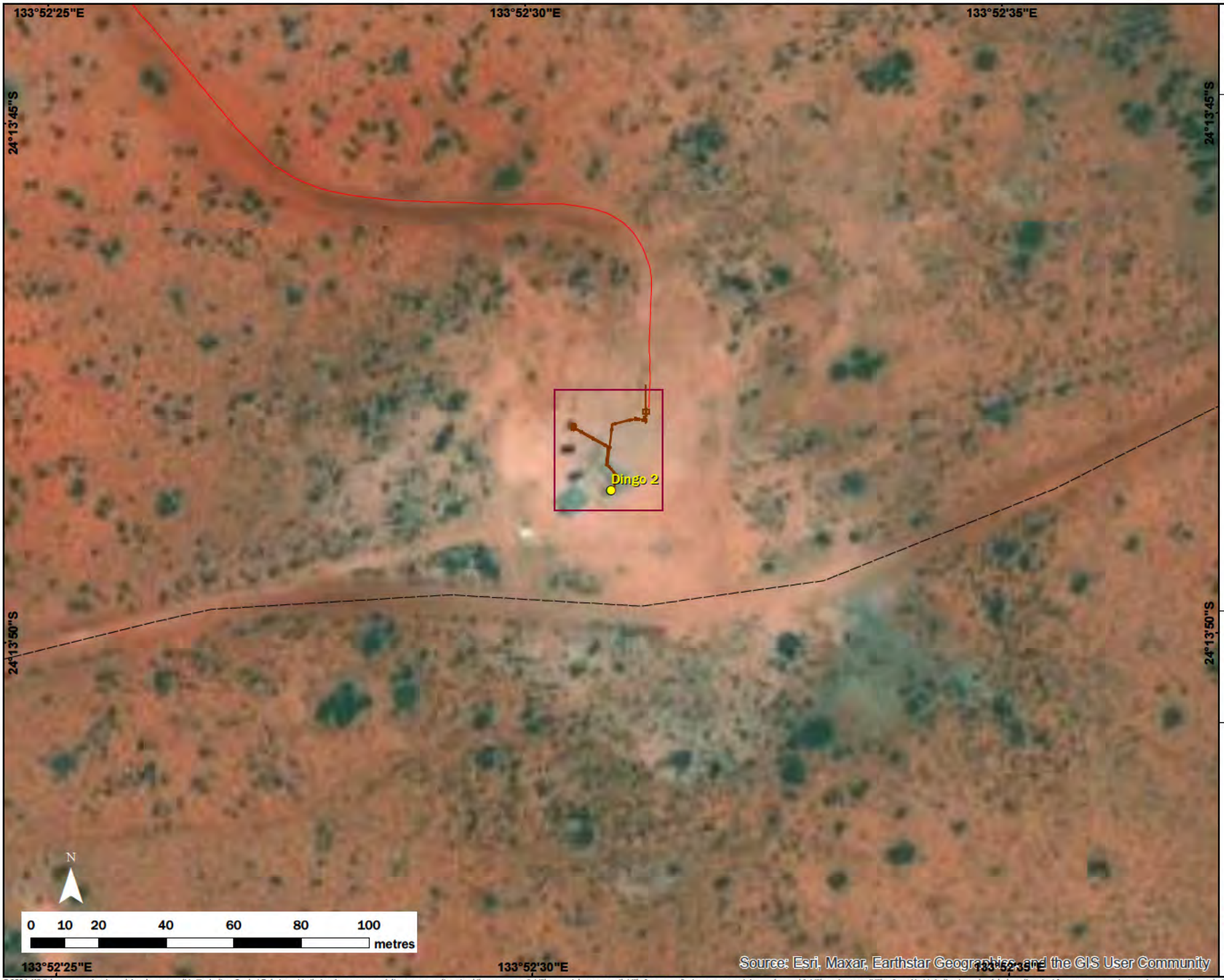
Map Scale is 1:1,500 when printed at A4
Coordinate System: GDA 1994 MGA Zone 53



Central Petroleum
Level 7, 369 Ann St Brisbane QLD 4000
T +61 3181 3800 F +61 3181 3855
W centralpetroleum.com.au

© 2024. Whilst every care has been taken to prepare this illustration, Central Petroleum Limited make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and does not accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the illustration being inaccurate, incomplete or unsuitable in any way and for any other reason. This illustration is for informational purposes only. This illustration is subject to change. This illustration is not for publication. Author: Central Petroleum Limited.

Document Path: G:\GIS\Mxds\Requested\622 Palm Valley Dingo Surprise 2023\GIS\Working\ILLUSTRATION\ENVIRO\0622-304\MXD\0622-304-MXD Dingo well leases 20240429.mxd



Dingo field: Dingo 2

- Well
- Gas pipeline
- Fences
- Access track

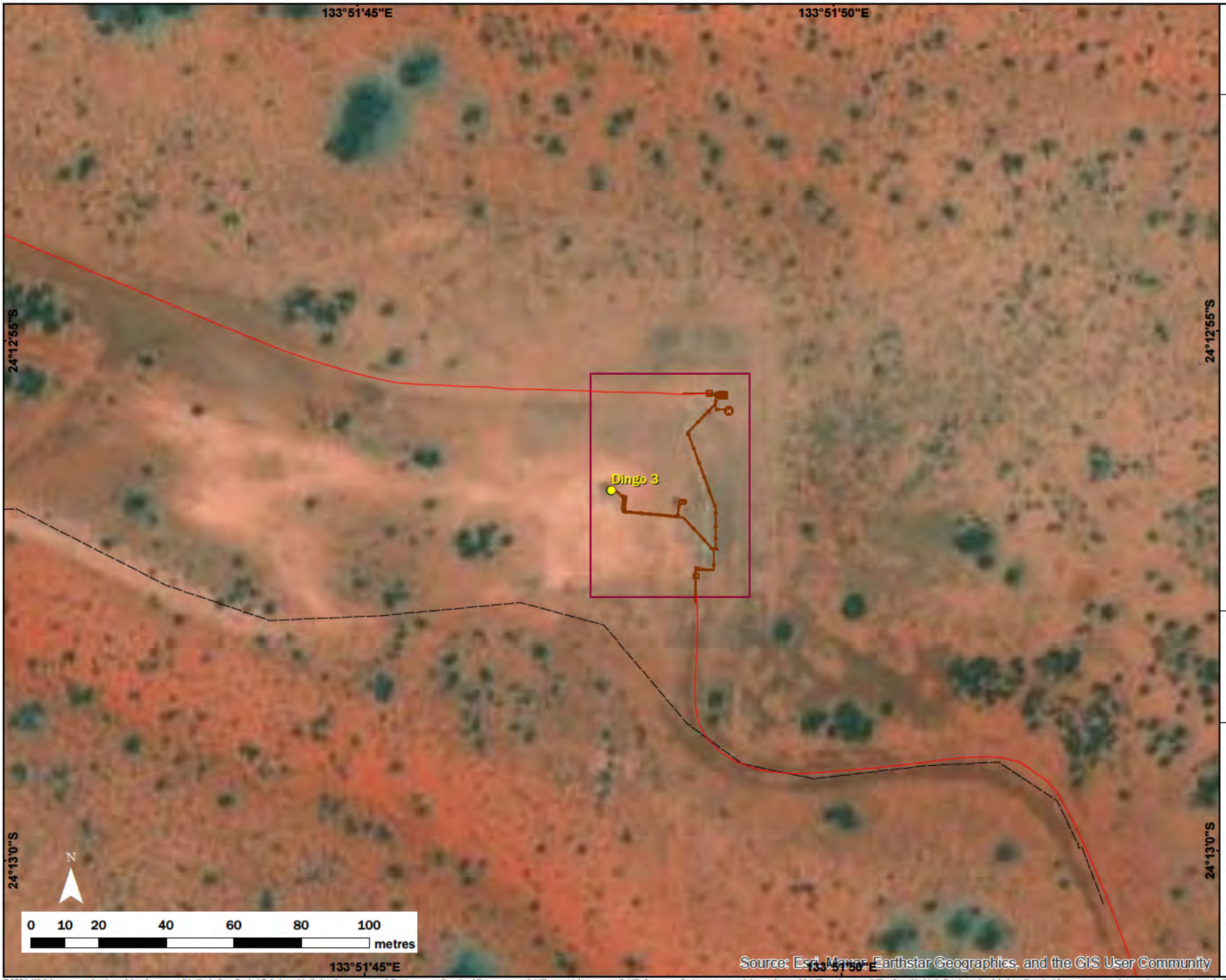
ID: 0622-304
Rev:
Date: 29/04/2024

Map Scale is 1:1,500 when printed at A4
Coordinate System: GDA 1994 MGA Zone 53



Central Petroleum
Level 7, 369 Ann St Brisbane QLD 4000
T +61 3181 3800 F +61 3181 3855
W centralpetroleum.com.au

© 2024. Whilst every care has been taken to prepare this illustration, Central Petroleum Limited make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and does not accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the illustration being inaccurate, incomplete or unsuitable in any way and for any other reason. This illustration is for informational purposes only. This illustration is subject to change. This illustration is not for publication. Author: Central Petroleum Limited.



Dingo field: Dingo 3

- Well
- Gas pipeline
- Fences
- Access track

ID: 0622-304
Rev:
Date: 29/04/2024

Map Scale is 1:1,500 when printed at A4
Coordinate System: GDA 1994 MGA Zone 53



Central Petroleum

Level 7, 369 Ann St Brisbane QLD 4000
T +61 3181 3800 F +61 3181 3855
W centralpetroleum.com.au

© 2024. Whilst every care has been taken to prepare this illustration, Central Petroleum Limited make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and does not accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the illustration being inaccurate, incomplete or unsuitable in any way and for any other reason. This illustration is for informational purposes only. This illustration is subject to change. This illustration is not for publication. Author: Central Petroleum Limited.



Dingo field: Dingo 4

- Well
- Gas pipeline
- Fences
- Access track

ID: 0622-304
Rev:
Date: 29/04/2024

Map Scale is 1:1,500 when printed at A4
Coordinate System: GDA 1994 MGA Zone 53



Central Petroleum
Level 7, 369 Ann St Brisbane QLD 4000
T +61 3181 3800 F +61 3181 3855
W centralpetroleum.com.au

© 2024. Whilst every care has been taken to prepare this illustration, Central Petroleum Limited make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and does not accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the illustration being inaccurate, incomplete or unsuitable in any way and for any other reason. This illustration is for informational purposes only. This illustration is subject to change. This illustration is not for publication. Author: Central Petroleum Limited.



Surprise field: Johnstone West 1

- Well
- Fences
- Access track

ID: 0622-305
Rev:
Date: 29/04/2024

Map Scale is 1:2,200 when printed at A4
Coordinate System: GDA 1994 MGA Zone 52



Central Petroleum
Level 7, 369 Ann St Brisbane QLD 4000
T +61 3181 3800 F +61 3181 3855
W centralpetroleum.com.au

© 2024. Whilst every care has been taken to prepare this illustration, Central Petroleum Limited make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and does not accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the illustration being inaccurate, incomplete or unsuitable in any way and for any other reason. This illustration is for informational purposes only. This illustration is subject to change. This illustration is not for publication. Author: Central Petroleum Limited.



Surprise field: Surprise 1

- Well
- Fences
- Access track

ID: 0622-305
Rev:
Date: 29/04/2024

Map Scale is 1:2,200 when printed at A4
Coordinate System: GDA 1994 MGA Zone 52



Central Petroleum
Level 7, 369 Ann St Brisbane QLD 4000
T +61 3181 3800 F +61 3181 3855
W centralpetroleum.com.au

© 2024. Whilst every care has been taken to prepare this illustration, Central Petroleum Limited make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and does not accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the illustration being inaccurate, incomplete or unsuitable in any way and for any other reason. This illustration is for informational purposes only. This illustration is subject to change. This illustration is not for publication. Author: Central Petroleum Limited.

Appendix 9. PVGF Progressive Rehabilitation & Closure Plan

Palm Valley Gas Field

Progressive Rehabilitation and Closure Plan

Disclaimer

This is a Central Petroleum Limited (CP) document, and it has been prepared by suitably qualified persons using the skill and care expected from professionals to provide factual and technical information and reasonable solutions to identified risks.

The document is based on information available at time and is subject to change based on future planning and development requirements.

This document should be read in conjunction with and forms part of the approved Palm Valley Gas Field, Field Environmental Management Plan

Document Details

Document Number	PVL-630-PLN-0002
Document Title	Progressive Rehabilitation and Closure Plan
EMP	Palm Valley Gas Field
Permit	OL3
Operator Details	Central Petroleum Limited

Document Control

Version	Date	Author	Approver	Description
1	30 June 2022	KL	CL	Issued for Use

Acronyms

Acronym	Description
ALARP	As low as reasonably practicable
CP	Central Petroleum
CoP	Code of Practice
CTP	Central Petroleum
DEPWS	Department of Environment, Parks and Water Security
DITT	Department of Industry, Tourism and Trade
EM	East Mereenie
EMP	Environmental Management Plan
ESC	Erosion Sediment Control
ESS	Eastern Satellite Station
MN	Mereenie
NAFI	North Australia & Rangelands Fire Information
NEMP	National Environmental Management Plan
NEPM	National Environment Protection Measure
NORMS	Naturally Occurring Radioactive Materials
NTG	Northern Territory Government
PIMS	Pipeline Integrity Management System
PRCP	Progressive Rehabilitation and Closure Plan
PV	Palm Valley
P&A	Plugged & Abandoned
WBIV	Well Barrier Independent Verification
WM	West Mereenie
WOMP	Well Operations Management Plan

Table of Contents

1 INTRODUCTION 1
1.1 Purpose 1
1.2 Scope 1
2 ASSET DECOMMISSIONING 1
2.1 Asset identification 1
2.2 Register of surface assets for rehabilitation 2
2.3 Justification for retention of assets 2
3 RISK ASSESSMENT 3
3.1 Risk management approach 3
3.2 Risk assessment 3
4 DECOMMISSIONING APPROACH 6
4.1 Schedule 6
4.2 Approach 6
5 REHABILITATION 7
5.1 Rehabilitation objectives 7
5.2 Rehabilitation strategy 8
5.2.1 Management zones 8
5.2.2 Rehabilitation methods 8
5.2.3 Rehabilitation maintenance and correction 10
5.3 Rehabilitation threats/issues 10
5.4 Performance standards, management and monitoring 11
5.5 Reporting 13
6 CONTAMINATION AND WASTE MANAGEMENT 13
6.1 Potential contamination sources 13
6.2 Waste generation and management 13
7 PALM VALLEY 09 EVAPORATION POND 14
7.1 Background 14
7.2 Code of Practice compliance 14
7.3 End of life assessment 15
8 REFERENCES 16
APPENDICES 17
Appendix A – Assets identified for rehabilitation / decommissioning 17
Appendix B – Central Petroleum Risk Matrix 19

TABLES

Table 2-1 Palm Valley Asset Register 1
Table 3-1 Risk assessment of inactive assets 4
Table 4-1 Approach to decommissioning 6
Table 6-1 Rehabilitation approach 8
Table 5-2 Rehabilitation measurement criteria and monitoring program 12
Table 7-1 Compliance with CoP 15
Table 7-2 Proposed PV09 Evaporation Pond Life Assessment Timeframe 16

1 Introduction

1.1 Purpose

The purpose of this Progressive Rehabilitation and Closure Plan (PRCP) is to outline the risk-based framework for rehabilitation of the Palm Valley Gas Field (PVGF) and highlight potential areas / assets for decommissioning and removal.

This PRCP has been prepared in response to Minister's Direction under s71(1) of the *Petroleum Act 1984*, dated 3 March 2022.

1.2 Scope

The scope of the PRCP is surface and sub-surface assets across the PVGF that will be decommissioned prior to the five-yearly review of the PVGF Environmental Management Plan (EMP) due in late 2023.

The *Code of Practice (CoP): Onshore Petroleum Activities in the Northern Territory* (legislated 11 June 2019) (NTG, 2019) was implemented post approval of the PVGF EMP (approved 15 February 2019). All future activities will be undertaken in alignment with the CoP, however most existing operating activities and infrastructure operate under grandfather provisions.

2 Asset Decommissioning

2.1 Asset identification

The current asset register was reviewed and updated to identify infrastructure for potential decommissioning and inclusion in the PRCP based on information from:

- Asset Management and Maintenance System
- Well Integrity Management System and the outcomes of integrity programs
- Pipeline Integrity Management System
- Well Operations Management Plans
- Future exploration, development, and recompletions programs
- Spatial mapping and review
- Historical records
- Drawings: Civil, Process and Instrumentation

In addition, a process of internal stakeholder engagement, field inspection and verification were also used to identify areas not managed by the above.

Assets have been classified by type, depending on the activity that they support and/or the infrastructure involved. Table 2-1 presents this information.

Table 2-1 Palm Valley Asset Register

Infrastructure Type	Inclusions
Well – Sub surface	All well sub-surface infrastructure below the well head - PV1, PV2, PV3, PV4, PV5, PV6, PV7, PV8, PV9, PV10, PV11, PV13
Well pad drilling fluid sumps, flare pits and water storage	Drilling sumps, flare pits, turkey's nests, PV13, PV11
Well lease area, including surface infrastructure (wellhead, separator)	All well surface infrastructure including cellar, wellhead, well gathering system - PV1, PV2, PV3, PV4, PV5, PV6, PV7, PV8, PV9, PV10, PV11, PV13
Flowlines (surface and sub-surface)	All flowlines and gathering systems between wellhead and Central Treatment Plant

Infrastructure Type	Inclusions
Formation Water Tanks	Formation water storage tanks - PV1, PV2, PV4, PV6, PV7, PV09, PV13
Access Roads and Tracks	All access roads and tracks joining PVGF from Larapinta Drive to far ends of field
Evaporation Ponds	Water treatment and disposal pond via evaporation and salt disposal – PV-9 pond
Gas processing facilities (Compression, power generation, CTP water treatment)	Central Treatment Plant and Central Compression Plant
Administration and Accommodation Facilities	Warehouse, Control Room, Accommodation Facilities
Water and wastewater infrastructure	Potable water storage, greywater treatment and disposal from camp facilities

2.2 Register of surface assets for rehabilitation

The assets identified for decommissioning or rehabilitation are outlined in Appendix A. This register outlines the:

- asset types and locations;
- proposed decommissioning and rehabilitation approaches;
- management zones for rehabilitation characterisation;
- environmental risks associated with decommissioning or rehabilitation; and
- indicative timing for completion of rehabilitation of the asset.

For the duration of this plan final rehabilitation is limited to the PV-11 well lease area as the well has already been decommissioned. CP is also committed to ongoing rehabilitation across the field to actively reduce disturbed areas and return land towards a pre-disturbance state as soon as practicable. PV13 is a focus area for transitional rehabilitation.

2.3 Justification for retention of assets

CP utilise a multi criteria assessment including operational status, integrity, future development, and risk to identify and assess all assets for potential decommissioning. Those assets not considered for decommissioning and subsequent rehabilitation are identified in Table 2-1 (excluding PV11).

Operational status

Operational status areas / assets have not been considered for decommissioning or rehabilitation including wells, flowlines, gas processing facilities, camp, warehouses, administration buildings, water storage and roads. These are needed for ongoing operation of the field.

Future development

Although there are several assets that have not been active in the last two years, all non-operational wells have been assessed as having future operational value e.g. existing wells target certain productive intervals. As results of ongoing drilling and additional geological analysis become available other potentially productive zones have been identified. These wells are prime candidates for re-completion to access un-developed gas resources. In addition, those candidates which are no longer operational represent the best approach to realising potential gains without risking gas supply from current producers. To achieve this, supporting infrastructure, including wells, lease areas, flowlines and access tracks are still required for future field development activities.

The PV-13 well lease has been identified as a potential future location for a replacement water management system. Hence no rehabilitation / decommissioning activities are planned for this

location until the future of the current PV9 evaporation pond has been determined. The plans associated with the PV9 pond are outlined in Section 7.

Integrity

A detailed well integrity campaign is being completed across CP assets, focusing on wells and flowlines. These programs have been underway and will be nearing completion towards the end of Q2 FY23. The information gathered from these campaigns will be conveyed to DITT and will form the basis for the Well Barrier Independent Verification (WBIV) reports. The results of these programs will be considered and used to identify any potential risks and hence assets for potential decommissioning.

Risk

Through the completion of integrity campaigns and future development opportunities, CP engages its Risk Management framework / processes to ensure that decision making considers the ongoing risk of the proposed works or retention of assets. As technologies, best practice and legislative requirements change over time, the risk is reviewed. A risk review of asset retention has supported the development of this PRCP, as outlined in Section 3.

Continual review

In addition to the above, a process of internal stakeholder engagement and field inspection and verification was also used to support the decision making. This process allowed confirmation of future asset needs and redundancies. It should be noted that this process is ongoing and as such, the asset decommissioning and rehabilitation register is subject to continual review and variation.

3 Risk Assessment

3.1 Risk management approach

CP ensures that risks associated with this planned activity are systematically identified, assessed, and managed to mitigate any potential impact to the environment. CP's risk management approach is aligned with all material aspects of ISO 31000 and all environmental risks associated with the project have been:

- Identified to determine the environmental values and / or sensitivities with the potential to occur as a result of the project
- Analysed and evaluated including the assessment of control effectiveness
- Recorded in a risk register
- Treated in a manner commensurate with the level of risk (formal risk management plans, detailed risk treatments, routine management)
- Communicated to key stakeholders
- Monitored and reviewed in a manner commensurate with the level of risk, and the retained consequences.

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

CP's risk management evaluates and reviews the inherent risk from an activity, the residual risk once controls are applied and the likelihood and consequence of a risk event. A key factor in determining the residual risk rating is the effectiveness of controls / mitigation measures. The review includes the effectiveness of the risk controls / mitigation measures to meet CP's objective of ALARP and acceptability.

3.2 Risk assessment

The results of CP's updated risk assessment for the determination of decommissioning priorities are provided in Table 3-1.

Table 3-1 Risk assessment of inactive assets

Environmental Aspect	Potential impact	Causes	Consequence	Inherent Risk			Risk Mitigation Measures	Control Rating	Residual Risk			Uncertainty Level	CoP	ALARP Rationale
				C	L	R			C	L	R			
Groundwater	Decline in water levels due to cross flow of groundwater to another formation	Wellbore failure – delay in decommissioning Legacy well design does not meet CoP	▪ Surrounding production bores suffer impaired capacity ▪ Reduced environmental flows in connected springs / rivers	Critical	Possible	High	▪ Wells Operated in accordance with an approved Well Operations Management Plan (WOMP) ▪ Well Integrity Management System ▪ Well Integrity Campaigns ▪ Multiple barriers maintained across aquifers ▪ Annulus pressure monitoring ▪ Visual inspections	Satisfactory	Serious	Possible	High	Low	B.4.1 / B.4.2 / B.4.3 / B.4.6 / B.4.7 / B.4.11	The residual risk has been reduced to the greatest extent possible due to the consequence remaining as serious if an event did occur.
	Contamination of local aquifer		▪ Groundwater quality unsuitable for current or future use by users or the environment	Critical	Possible	High		Needs attention	Serious	Possible	High	Low	B.4.1 / B.4.2 / B.4.3 / B.4.6 / B.4.7 / B.4.11	The residual risk has been reduced to the greatest extent possible due to the consequence remaining as serious if an event did occur.
Surface water	Contamination of surface water	Overtopping of inactive drilling fluid sumps/formation water storage tanks	▪ Aquatic fauna / flora death ▪ Surface water unsuitable for primary / secondary contact	Moderate	Unlikely	Medium	▪ Lease area inspections ▪ Wastewater management monitoring ▪ Maintain freeboard ▪ Secondary containment of tanks	Effective	Moderate	Remote	Low	Low	A.3.8 / C.7.1 / C.7.2	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable'.
		Discharge of wastewater (grey water tanks)		Moderate	Possible	Medium	▪ Lease area inspections ▪ Wastewater management monitoring	Effective	Moderate	Unlikely	Low	Low	A.3.1 / A.3.4 / 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'.
		Failure of flowlines (hydrocarbon gathering, formation water transfer)		Serious	Likely	High	▪ Asset protection around flowlines ▪ Flowlines are tested for integrity in accordance with AS2885 ▪ Flowline integrity monitored as per Pipeline Integrity Management System	Satisfactory	Serious	Possible	High	Low	A.3.8 / C.7.1 / C.7.2	The residual risk has been reduced to the greatest extent possible due to the consequence remaining as serious if an event did occur.
		Erosion from disturbed areas (well lease areas, access tracks, borrow pits)	▪ Sedimentation of waterways ▪ Aquatic flora/fauna injury, damage, or death	Moderate	Possible	Medium	▪ Inspect locations following significant rainfall events to determine extent of erosion and remedial actions to be taken ▪ Implement erosion and sediment control and maintenance where issued identified.	Effective	Moderate	Unlikely	Low	Low	A.3.1 / A.3.4 / 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'.
Land	Loss in long term soil productivity and viability	Soil compaction from active production areas including well lease areas, access roads and air strips.	▪ Failure of rehabilitation to establish ▪ Additional re-work	Serious	Possible	High	▪ Areas will be deep ripped to promote infiltration & water retention. ▪ Progressive rehabilitation of disturbed areas.	Effective	Serious	Remote	Medium	Low	A.3.9	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.
		Topsoil not preserved from long term disturbance of lease areas		Moderate	Possible	Medium	▪ Areas will be deep ripped to promote infiltration & water retention. ▪ Progressive rehabilitation of disturbed areas.	Effective	Moderate	Remote	Low	Low	A.3.1 / A.3.4	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable'
		Soil erosion from cleared areas such as well lease areas, access roads, air strips	▪ Loss of soil productivity ▪ Increased sedimentation in drainage lines & waterways ▪ Topography changes	Moderate	Possible	Medium	▪ Closure of inactive locations ▪ Reduction of well lease areas to minimum requirements (operation: 75x75m)	Effective	Moderate	Remote	Low	Low	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'
	Contamination of land/soil	Overtopping of inactive drilling fluid sumps/formation water storage tanks	▪ Decrease in value of flora/fauna habitat ▪ Loss of soil productivity	Moderate	Possible	Medium	▪ Existing sumps are lined (PV13) ▪ Regular lease area inspections of sump and tank integrity ▪ Wastewater management processes and procedures in place ▪ Maintenance of freeboard ▪ All fittings and equipment are checked and maintained	Effective	Moderate	Remote	Low	Low	A.3.8 / C.7.1 / C.7.2	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable'.

Environmental Aspect	Potential impact	Causes	Consequence	Inherent Risk			Risk Mitigation Measures	Control Rating	Residual Risk			Uncertainty Level	CoP	ALARP Rationale
				C	L	R			C	L	R			
		Discharge of wastewater (grey water tanks)		Moderate	Possible	Medium	▪ Regular lease area inspections ▪ All fittings and equipment are checked and maintained	Effective	Moderate	Remote	Low	Low	A.3.8 / C.7.1 / C.7.2	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable'.
		Failure of flowlines		Moderate	Possible	Medium	▪ Asset protection around flowlines ▪ Flowlines are tested for integrity in accordance with AS2885 ▪ Flowline integrity monitored as per Pipeline Integrity Management System	Effective	Moderate	Remote	Low	Low	A.3.1	Gas flowlines at Palm Valley are charged with nitrogen. Water gathering system flowlines are located above ground and are regularly inspected for integrity issues.
		Loss of containment from evaporation pond	Loss of soil productivity (hypersaline soils)	Serious	Possible	High	▪ Maintenance for freeboard ▪ Daily inspections ▪ Leak Detection System and regular monitoring ▪ Production planning to monitor formation water production and treatment requirements ▪ Closure assessment (end of life assessment) found that pond has not met design lifetime	Satisfactory	Serious	Unlikely	Medium	Low	A.3.8 / C.7	The residual risk has been reduced to the greatest extent possible due to the consequence remaining as critical if an event did occur.
Terrestrial Flora/Fauna	Reduction in conservation significant species	Access to open sumps, tanks, and storages	Injury or death of native fauna	Minor	Likely	Medium	▪ Sumps temporarily fenced to prevent stock and wildlife access ▪ Regular inspections of tanks and storages	Effective	Minor	Possible	Low	Low	A.3.5	The risk mitigation measures are standard practice across CP'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 & 'acceptable'
	Decrease in value of flora/fauna habitat	Introduction/spread of weeds from ongoing disturbance of exposed surfaces	Increased occurrence of weeds	Moderate	Likely	Medium	▪ Implement Weed Management Plan, including ongoing surveys ▪ All vehicles, plant, and equipment from known weed infested areas to be cleaned and inspected prior to attending site ▪ Vehicles remain on designated tracks	Effective	Moderate	Remote	Low	Low	A.3.5	Baseline weed surveys have been undertaken. Buffel grass was the only weed detected during these surveys. The Weed Management Plan for Palm Valley has been designed to prevent the spread of buffel grass and introduction of new weeds as part of ongoing operations. The residual risk has been reduced to low due to the consequence being considered moderate if an event did occur. Therefore, we consider this risk ALARP and acceptable.
Air	Localised atmospheric nuisance	Well / Wellhead / Surface infrastructure integrity failure/ Flowline integrity failure	Uncontrolled release of gas to atmosphere	Minor	Likely	Medium	▪ Well Integrity Management System ▪ Pipeline Integrity Management System ▪ Regular lease area inspections and flowline inspections ▪ Recording of unplanned air emissions	Effective	Moderate	Remote	Low	Low	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'
	Increased in greenhouse gas emissions		Release of greenhouse inducing gas	Minor	Likely	Medium		Effective	Minor	Remote	Low	Low	D.5.1 / D.5.2 / D.5.3 / D.5.4 / D.5.5 / D.5.6 / D.5.7 / D.5.9	Based upon the risk being ranked as a low, the controls being assessed as effective and a scientific uncertainty score outcome of low, the risk is determined to be ALARP and 'acceptable'
Heritage	Disturbance or continued exposure of sacred sites or culturally sensitive sites	All disturbed areas	Loss or destruction of cultural heritage/sacred sites	Serious	Possible	High	▪ Sacred Site Certificates and Restricted Work Areas clearly defined as "no-go" areas ▪ All personnel and contractors are inducted in Aboriginal Object Find/Stop Work Procedure	Effective	Serious	Remote	Medium	Low	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. The necessary authorisations under NT legislation have been obtained. 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.

4 Decommissioning Approach

4.1 Schedule

A schedule of decommissioning activities proposed between July 2022 and November 2023 (the period covered by this PRCP prior to finalisation of a revised Palm Valley EMP) is outlined in Appendix A. This schedule is indicative only and based on the current project planning.

The assets to be decommissioned are based on the information at hand. Annual reviews of the proposed works program will be confirmed through Quarterly Ministerial Reports outlining regulated activities for the past and future quarterly reporting periods.

4.2 Approach

The general approach to decommissioning asset types is highlighted below. Prior to decommissioning occurring and as part of the Project Delivery Framework, a detailed scope of work will be prepared for implementation. Not all asset types presented here are considered for decommissioning and rehabilitation during the timeframe of this PRCP, but the following table provide the principles that would be applied. All decommissioning would be carried out in accordance with the CoP (NTG, 2019).

Table 4-1 Approach to decommissioning

Infrastructure Type	General Decommissioning Approach
Well – Sub surface	▪ Decommissioned in accordance with the principals of the CoP (NTG, 2019) section B.4.15.1 and specifically the mandatory sections B.4.15.2 and B.4.15.3. ▪ Decommissioning of a well is a regulated activity and this activity will be in an approved Well Operations Management Plan that will be approved by DITT.
Well pad drilling fluid sumps, flare pits and water storage	▪ Dewatering of mud sumps via evaporation (PV13) ▪ Testing of residual drilling materials as per CoP for suitability of mix bury. (PV13) ▪ Mixing and aeration of sump materials with clean soil material at a ratio of 1:3 (PV13) ▪ Backfill of sumps, pits, and water storage, including removal and disposal of liner materials ▪ Contouring of capping to encourage surface runoff and minimise water pooling ▪ Where incompatible with on-site mix bury cover, implement waste management process for off-site disposal
Well lease area, including surface infrastructure (wellhead, separator)	▪ Full decommissioning and rehabilitation: ▪ Wellhead removed and casing cut per the CoP: Surface cement plug detailed in B.4.15.3: Cement plug requirements and validation methods. ▪ A steel marker plate as per the CoP ▪ Filling of cellar ▪ Removal of hardstand materials for use across field or stockpile for future use across field ▪ Assessment of NORMs of down well and surface equipment ▪ Progressive decommissioning and rehabilitation ▪ Reduction in well lease area size to a sizing approximately 75m x 75m or equivalent to accommodate future well development activities.
Flowlines (surface and sub-surface)	▪ Purge of flowline contents. Method depends on material held in flowline (e.g. nitrogen, biocide charged water) ▪ Removal of surface infrastructure (e.g. pipe and struts) ▪ Scraping, grading/re-contour to local landscape and deep ripping to encourage natural regeneration
Formation Water Tanks	▪ Disconnection from water gathering network ▪ Transfer water for disposal/evaporation

Infrastructure Type	General Decommissioning Approach
Access Roads and Tracks	▪ Grading and recontouring in line with adjoining environment where landform permits ▪ Where landform involves extensive cut and fill of rock recontouring will be limited to minimise further erosion or landslip potential ▪ Where landform involves sand dunes, removal of hardstand across dune and re-contouring to blend with existing dune and surrounding landform ▪ Construction of erosion controls ▪ Ripping of compacted soils ▪ Natural regeneration
Evaporation Ponds	▪ Removal of remaining water either via evaporation or vacuum truck disposal to licenced facility ▪ Where off-site disposal proposed: - Removal of salts and residual solids, reviewing opportunities for beneficial re-use - Removal of liner and leak detection - Assess for land contamination and remediate where necessary - Removal of geomembrane - Remove clay base layer for capping/re-use - Deep ripping of base of pond and mixing with clean soil materials - Backfill pond and re-contour in line with surrounding environment, including capping to divert surface water pooling Note: the methodology for decommissioning of PV09 is dependent on the outcomes of the Closure Options Assessment and Feasibility Study and is subject to change.
Gas processing facilities	▪ Decommissioning would be covered under a separate Decommissioning Plan at the end of life of the production facility
Administration and Accommodation Facilities	The following would be considered: ▪ Removal of buildings and foundations ▪ Removal of water and wastewater infrastructure, including pipework and tanks ▪ Removal of concrete surfaces ▪ Removal of communications facilities ▪ Preliminary investigation of site contamination where required
Water and wastewater infrastructure including bores and dams/ponds (excluding evaporation ponds)	Water bores will be retained, and licencing transferred to Traditional Owners or returned to Water Resources: ▪ Dewatering of ponds and dams via evaporation or surface irrigation ▪ Push in banks of dams/ponds ▪ Fill void to surface level ▪ Removal of pipelines (above and below surface) ▪ Removal of wastewater treatment tanks

5 Rehabilitation

5.1 Rehabilitation objectives

The objectives of rehabilitation are to:

- Progressively rehabilitate significantly disturbed land which is not required for ongoing activities
- Return disturbed areas to a safe and stable landform as close as possible to the surrounding environment
- Ensure significantly disturbed land is re-established to its pre-disturbed vegetation condition and land use
- Provide an area free of residual contamination
- Ensure no land management issues for future land managers.

5.2 Rehabilitation strategy

The rehabilitation strategy proposed for the PVGF is outlined below. The strategies and methods presented below will be relevant for each of the disturbance areas across the field in its entirety. Each well and disturbance area will be reviewed at a local level and a clear strategy developed and presented to operators, contractors, and stakeholders via a Plan on a Page approach, as per the Rehabilitation Plan Guide for Surface Disturbance: onshore petroleum exploration (DEPWS, 2020).

The goal of the PRCP is final rehabilitation of decommissioned assets. Regardless, there are opportunities of transitional rehabilitation of assets as outlined below.

Transitional rehabilitation

Transitional (or partial) rehabilitation will be undertaken where a disturbed area can be reduced in size without impacting on operating activities to stabilise land and reduce the risk from ongoing exposure. This may include reduction of a well lease area from a larger size to accommodate exploration and development activities to a smaller size to accommodate production and include recontouring and ripping to support natural regeneration.

Final rehabilitation

Final rehabilitation will be implemented where a well or asset is no longer required and can be decommissioned in full. This will involve removal of all infrastructure and closure of the site from future access, other than activities that support rehabilitation monitoring and maintenance.

5.2.1 Management zones

Management Zones have been defined for rehabilitation to provide a rehabilitation approach that maintains consistency across common landforms and site characteristics. The PVGF is within a uniform landform and natural environment as presenting in the Palm Valley FEMP. As such, the rehabilitation strategy will be consistent across the field for all asset types.

The Palm Valley Management Zone (PVMZ) is characterised by rocky outcrops with shallow red earth soils and hummock grasslands with a sparse shrub over storey. The PVMZ is also characterised by incised drainage lines and ephemeral waterways downstream where sporadic high rainfall events can result in concentrated flows and erosion of the sandstone plateau. These characteristics have been considered in the rehabilitation strategy, methods and performance criteria proposed.

5.2.2 Rehabilitation methods

An outline of the methods to be employed during rehabilitation of redundant and decommissioned assets is provided in Table 6-1. The implementation of these for the identified decommissioning sites is provided in Appendix A.

Table 5-1 Rehabilitation approach

Activity	Proposed rehabilitation approach	Timing
Analogue sites[1]	▪ Identify appropriate analogue sites for each of the disturbance areas prior to decommissioning and rehabilitation for monitoring and measurement of rehabilitation success	▪ Determined as part of PRCP development ▪ Review at first monitoring event and/or first wet season monitoring

[1] Analogue site means an area of land which contains values and characteristics representative of an area to be rehabilitated prior to disturbance. Such values must encompass land use, topographic, soil, vegetation, vegetation community attributes and other ecological characteristics. Analogue sites can be the pre-disturbed site of interest where significant surveying effort has been undertaken to establish benchmark parameters. Analogue sites will be chosen by a suitably qualified person.

Activity	Proposed rehabilitation approach	Timing
Post decommissioning	▪ Remove above ground infrastructure ▪ Remove waste materials ▪ Treat weeds prior to soil disturbance ▪ Allow fluids to evaporate from sumps, pits, and water storage ▪ Backfill and close sumps and pits ▪ Remove temporary fencing	▪ Commence within 12 months of well decommissioning and prior to significant soil disturbance
Landform reinstatement	▪ Reduction in well lease area size to a sizing approximately: - 75m x 75m or equivalent to accommodate future well development activities; or - 2mx2m to accommodate decommissioned well plate. ▪ Any imported gravel material is removed and returned to the source quarry or utilised elsewhere on CP operational sites ▪ Hardstand is deep ripped to relieve compaction, encourage infiltration, and water retention ▪ The site is re-contoured as close as possible to the pre-existing natural landscape ▪ Topsoil is respread evenly over the lease area and lightly scarified to encourage moisture retention and seed capture ▪ Revegetation, refer below ▪ Review weed status and treat as required, refer below	▪ Commence within 12 months of well decommissioning2
Land use	Final land use options will be developed in consultation with the landowners and other relevant stakeholders. These may include: ▪ Pre-disturbance land use ▪ Tourism related activities ▪ Conservation (reserve or park) ▪ Grazing or horticultural activities	▪ Commence within 12 months of well decommissioning
Soil Stability	▪ Remove any flow concentration points that may block overland sheet flow ▪ Re-instate natural drainage channels (i.e. removal of bunds and structures that temporarily altered flow paths) ▪ Return soil profile with topsoil replaced as final layer where possible ▪ Deep ripping and contouring of access roads and well leases to as close to natural landform as possible ▪ Ensure all cleared areas have a rough surface to aid in water, seed, and litter catchment ▪ Erosion and sedimentation devices installed and maintained in accordance with site specific ESC Plan, including temporary and permanent measures	▪ Commence within 12 months of well decommissioning
Contaminated soil (including drilling fluid sumps)	▪ Site Contamination - Preliminary site investigation - Undertake remediation of contaminated soil to ensure rehabilitated area is non-polluting and in accordance with the CP Emergency Response Plan ▪ Drilling Sump - Testing of material as per CoP	▪ Remediation of contamination to be undertaken prior to decommissioning.

[2] Noting 6-month period for monitoring of decommissioned well is required under CoP

Activity	Proposed rehabilitation approach	Timing
Revegetation / Natural regeneration	▪ Revegetation of decommissioned wells to a 2m x 2m lease size ▪ Revegetation of existing active well leases to a maximum of 75m x 75m ▪ Revegetation of closed lease area access tracks, where suitable ▪ Spread of stockpiled vegetation across reinstated areas to promote natural regeneration, act as erosion control and provide habitat ▪ Reliance on natural regeneration from surrounding environment seedbank ▪ Direct broadscale re-seeding, using local seed collection, where natural regeneration success is low	▪ Lease - commence within 12 months of decommissioning ▪ All other areas – at completion of infrastructure / area decommissioning
Maintenance	▪ Weed management via chemical and physical treatment, based on field specific Weed Management Plan prior to rehabilitation activities commencing ▪ Follow-up assessment of weeds via regular surveys and treatment as needed	▪ As required following monitoring and inspection program

5.2.3 Rehabilitation maintenance and correction

Weed management

Weeds will be removed prior to rehabilitation activities commencing. Weed surveys will be conducted during the establishment of rehabilitated areas and as part of ongoing monitoring. Where weeds are identified, a program of treatment and control will be implemented in accordance with the field Weed Management Plan. No weeds of national significance or priority weed species have been identified.

Re-work

Sites not showing achievement of success criteria at the preferred time intervals will undergo additional rehabilitation works such as soil stabilisation and re-profiling, erosion control, re-seeding or weed management as outlined above. In addition, additional works may be required to minimise pest animal species from entering the area (e.g. fencing).

5.3 Rehabilitation threats / issues

There are a range of threatening processes and aspects (environment/economic/social) with the potential to impact on the success of rehabilitation, as outlined below. These have been considered in the development of management actions, monitoring and corrective actions for implementation of this PRCP.

Climate extremes: Lack of rainfall, or alternatively high intensity rainfall, extreme temperatures, high evaporation limiting moisture content of soils has the potential to influence seed germination or result in washouts and erosion removing topsoil and seed stock.

Topsoil: the rocky outcrop nature of the landform at Palm Valley means that a limited topsoil resource is available to support rehabilitation. Previous records across the field have also identified non-indigenous species (flora and fauna) introduction from material has been brought to site.

Landform: rock cuttings to accommodate well pads and access roads with removal of large sections of sandstone to accommodate the well pads and wider lease area and use of material for other activities across the field has left limited material for reinstating landform.

Weeds: Weeds have the potential to be introduced during the decommissioning and rehabilitation process via vehicles and equipment. In addition, the potential exists for weeds to be established within the operational area prior to its decommissioning and rehabilitation. The introduction or further spread of weeds can compromise the regeneration capacity of the area and the overall floristic composition.

Pest animal species: Feral horses, camels and donkeys are prevalent across the operating areas, as are rabbits. These species have the potential to access rehabilitated areas as a food source, reducing establishment of vegetation and increased compaction of soils. In addition, foxes and cats are predators of native fauna recolonising rehabilitated habitat.

Erosion: sandstone plateau prone to erosive forces, particularly in high rainfall

Existing vegetation: Lack of vegetation seedstock to support natural regeneration

Extended exposure of new disturbed surfaces: renewal of disturbance and exposure of topsoils previously covered in hardstand

Fire: Fires have been recorded across the PVGF over the last 20 years of records (NAFI, 2022) with significant fires recorded following high rainfall events in 2002, 2011 and 2018 when vegetation growth was high

Longevity of disturbance: Initial activities commenced at Palm Valley in 1965. Although progressive rehabilitation has been occurring since operation commenced, there are areas across the fields that have been operating for a period of >30 years with a limited seedbank stockpiled, limited soil availability from use elsewhere, or excessive compaction from regular use.

Site contamination: known locations of spills and leaks of hydrocarbons or saline formation water have been recorded in historical environmental records for the field.

5.4 Performance standards, management, and monitoring

As per the CoP clause A.3.9 (a) CP has developed clear outcomes and performance standards. These outcomes and performance standards will be achieved through the supporting measurement criteria presented in Table 5-2 below.

The performance standards within the Palm Valley EMP will also be applied for this PRCP.

Table 5-2 Rehabilitation measurement criteria and monitoring program

	Acceptability Criteria			Annual Monitoring Program			
Rehabilitation Outcome	**Endpoint(s)/Performance Standards**	**Measurement Criteria**	**Rationale**	**Frequency**	**Proposed Methodology (Adaptive depending on seasonal conditions)**	**Rationale**	**Corrective Actions**
▪ The vegetation composition (e.g. type, density, and maturity) of the rehabilitation is recognisable as the target vegetation community and indistinguishable from the surroundings. ▪ The vegetation structure of the rehabilitation is recognisable as or is trending towards the target plant community. ▪ Access tracks and/seismic lines are indistinguishable from the surrounding vegetation. ▪ No adverse erosion	▪ Dominant species in analogue sites are represented in rehabilitated areas ▪ Community structure is substantially the same as the analogue site/s groundcover, shrubs, and trees ▪ Perennials have established, stabilising soils, and reducing erosion potential ▪ Habitat structures and habitat quality are substantially similar to analogue sites, creating connection to the adjacent landform and vegetation allowing for fauna re- use of the site ▪ Completely stable (or in dynamic systems such as dunal landforms, same degree of stability as surrounding terrain)	▪ Ground cover - 70% foliage cover and density of the analogue site ▪ Perennial Cover-recruitment of woody perennial species achieves 70% of the analogue site ▪ Plant species richness achieves 70% of the analogue site ▪ No declared weed species under the Northern Territory Weeds Management Act ▪ 50% of the organic litter and coarse woody debris of the analogue site ▪ No evidence of soil subsidence and <2% erosion across the site (qualitative – photo evidence of scarring, rill/sheet erosion)	▪ Cover equivalent to 70% of the analogue site/s is likely to self-sustain over time and rehabilitated areas become ecologically integrated with surrounding areas ▪ Species richness shows the rehabilitation site can support the full complement of species from analogue sites, even if not all species are yet at the same abundance, noting that in an arid environment, species such as spinifex grow extremely slowly ▪ In arid regions soil stability is critical for the success of rehabilitation	▪ Annually, commencing after the first wet season, and noting the following: ▪ The Amadeus Basin is in an arid region and establishment of vegetation generally is slower than areas with higher rainfall. Therefore, it is unlikely that quantitative assessments will provide meaningful data to determine rehabilitation success in years 1, 2 and 3 ▪ In year 1 the analogue sites will be set-up; the photo monitoring points will be established, and the permanent woody species transect will be established. The site will be assessed for stability and any weed issues. ▪ Year 2 and 3, if there is no evidence of vegetation regeneration but the sites appear to be stable, and free from erosive forces or fire effects, a visual assessment only of cover and structure will be made. ▪ In year 4, and year 5 monitoring against endpoints will be undertaken. An adaptive approach will be taken year on year for the monitoring. A suitably qualified person may adapt the monitoring based on the seasonal conditions (i.e. the wet season). This will be documented in the annual rehabilitation report. ▪ Post 5 years the EMP will need to be updated and the data collected will be used to update the new rehabilitation plan.	**Year 1** ▪ 2 or more analogue sites in nearby undisturbed vegetation community and landforms as per the analogue definition and selected by a suitably qualified person ▪ Establish permanent woody species transects ▪ Establish photo monitoring and collect photos ▪ Record any weather events during the period ▪ Check for subsidence across the rehabilitated area ▪ Assess the % of erosion across the rehabilitated area. ▪ Check for any loss of topsoil through erosion and map areas of concern ▪ Check for soil inversion issues and map areas of concern ▪ Weed Survey **Year 2 and Year 3** ▪ Check for integrity of works and ability for future rehabilitation success ▪ Record any weather events during the period ▪ Photo monitoring ▪ Check for subsidence across the rehabilitated area ▪ Assess the % of erosion across the rehabilitated area. ▪ Check for any loss of topsoil through erosion and map areas of concern ▪ Check for soil inversion issues and map areas of concern ▪ Weed survey **Year 4** ▪ Woody species transects from the permanent transect ▪ Collect ground cover quadrants along a transect. ▪ Photo monitoring collected ▪ Record any weather events during the period ▪ Check for subsidence across the rehabilitated area ▪ Assess the % of erosion across the rehabilitated area ▪ Check for any loss of topsoil through erosion and map areas of concern ▪ Check for soil inversion issues and map areas of concern ▪ Weed survey **Year 5** ▪ Woody species transects from the permanent transect ▪ Collect ground cover quadrants along a transect. ▪ Photo monitoring collected ▪ Record any weather events during the period ▪ Check for subsidence across the rehabilitated area ▪ Assess the % of erosion across the rehabilitated area ▪ Check for any loss of topsoil through erosion and map areas of concern ▪ Check for soil inversion issues and map areas of concern ▪ Weed survey	As per the CoP A3.9 (b) the rehabilitation plan should be appropriate to the scale and nature of the activity. In CPs experience operating in the Amadeus Basin, which is an arid region, the establishment of vegetation takes time. In CPs experience it takes 10+ years for sites to reach the rehabilitation outcomes. The rehabilitation plan has been developed to meet the scale and nature of the rehabilitation (i.e. size of the disturbance and the time to rehabilitation) As per the CoP A3.9 (e) Regular maintenance and at least yearly monitoring of rehabilitated areas must take place to measure compliance with the Rehabilitation Plan. Rehabilitation success relies on good site preparation and rainfall and an adaptive approach for monitoring is required to take in the seasonal conditions. This will rely on a suitably qualified person to assess the seasonal variations and match the appropriate monitoring to undertake each year. This could include the use of technical advances like drones, satellites, remote sensing and lidar to assess the site stability and vegetation cover. The quantitative data is of significant value as the rehabilitation matures and reaches the acceptability criteria and this when the vegetative survey effort should be concentrated. In addition, the year-on-year growth in an arid environment is slow and therefore yearly monitoring of all parameters is not necessary. The key is to assess if the site is on the right trajectory to achieve the acceptability criteria, this aligns with the adaptive management approach	▪ Weeds impacting revegetation success – implement the weed management plan ▪ Pest species impacting the rehabilitation success – Identify the pest species and put in place measures to protect the rehabilitated areas (e.g. fencing) ▪ Poor vegetation germination/re-growth is limited in richness/ or community structure inconsistent with the analogue site ▪ – Infill seeding and/or top dress with a soil additive/topsoil or fertilise ▪ Erosion and sediment control remediation of failed erosion and sediment controls ▪ Review the re-profiling of the site to address any stabilisation issues. Undertake earthworks for re-profiling as necessary.

5.5 Reporting

CP will submit to the DEPWS an annual rehabilitation report with information including:

- Area of disturbed land available for rehabilitation at the start of the reporting period
- Area where rehabilitation commenced during the reporting period
- Area of disturbed land remaining to be rehabilitated at the end of the reporting period (including land not currently available for rehabilitation)
- Photographic monitoring point GPS locations and results of monitoring undertaken during the reporting period
- Geospatial files showing areas under rehabilitation in comparison to areas disturbed
- Outcome of erosion and sedimentation assessments and corrective actions
- Outcome of stakeholder consultations related to rehabilitation
- Any issues that may have affected the rehabilitation success factors noted in Section 5.3 and remedial actions taken or required to be undertaken to allow the success factor to be realised
- Outcome of monitoring of remediated contaminated sites (if any)
- Outcome of weed monitoring in rehabilitated areas
- Recommendations and proposed changes to the PRCP based on improved understanding of field operations and development

6 Contamination and Waste Management

6.1 Potential contamination sources

Sources of potential contamination from rehabilitation activities include:

- Hydrocarbons – well lease areas, flowlines, CTP
- Salt – evaporation pond, formation water storage tanks, reinjection system
- NORMS – well sub-surface infrastructure, evaporation pond, formation water storage tank.

Records of incidents including spill across the Operating Licence areas have been maintained within the Incident Management System and historical records. As part of the rehabilitation works program, a preliminary site investigation will be completed to confirm the likely presence of contaminated materials prior to site disturbance and will include:

- Review of site history including incident and contaminated site register entries
- Inspection of site
- Limited sampling where uncertainty exists on previous contamination and remediation

Should the preliminary site investigation identify the potential for contamination a more detailed assessment will be carried out. Site investigations will be conducted in accordance with the *National Environment Protection (Assessment of Site Contamination) Measure 1999* (NEPM, 2013).

As required in A.3.9(f) of the CoP, where surface contamination is detected during rehabilitation activities, assessment will be conducted to ascertain the extent of contamination and remediation actions developed and implemented.

Where drilling fluids are proposed to be disposed in-situ at well pad sumps, the requirements of C.4.1.2 (e-f) of the CoP will be implemented.

Any residual contaminated material will be disposed offsite via a licenced waste contractor.

6.2 Waste generation and management

The decommissioning and rehabilitation process has the potential to generate a variety of liquid and solid wastes. Examples are identified below. Quantities of waste generation are dependent on the decommissioning and rehabilitation activities. Opportunities will be identified for implementation of

the waste management hierarchy to ensure that beneficial re-use of materials may occur and disposal via landfill is minimised.

Liquid wastes	Solid wastes
Residual oil and condensate / Biocides / Wastewater (grey water) / Unused chemicals	Scrap metal, including well casings and decommissioned flowlines / Oily rags and filters / Sludge / Salt / Timber / Packaging materials / Contaminated soil / Plastics

All waste will be stored and handled appropriately within a designated waste storage area prior to removal from the field.

All listed waste will be removed in accordance with the requirements of the Waste Management and Pollution Control Act 1998.

The CP Waste Management Register will be used to track waste transport and disposal from the field.

7 Palm Valley 09 Evaporation Pond

7.1 Background

The Palm Valley 09 Evaporation Pond 2 (PV09 Pond) was constructed in 2000 to store hypersaline water generated across the PVGF. The pond was constructed after the closure and rehabilitation of the adjacent Evaporation Pond 1, specifically to address the hypersaline water volumes of Palm Valley 9 well.

PV09 Pond is now part of a wider hypersaline water management system incorporating separation of water from gas at each well and either, reinjection at the approved Palm Valley 4 reinjection system, or disposal to the PV09 Pond where the hypersaline water is evaporated leaving salts behind. Reinjection of hypersaline water into the PV4 well started in April 2004 with the approval of the NT DPIR and resulted in the reduction of process water stored in PV09 Pond. When water production exceeds the PV04 reinjection system capacity or the reinjection system is not available, PV09 provides supplementary containment and management via evaporation.

Design

The pond:

- is a single storage approximately 100m long and 25m wide;
- was constructed utilising a double basal liner system (3mm HDPE Liner, Geofabric spider drain and 1mm HDPE liner) and monitoring system;
- generally, contains dry salt with a minor volume of hypersaline water depending on formation water treatment and disposal requirements; and
- has been constructed through cut and fill methods with embankments made of sandstone rock fill, most likely taken from the excavation of the storage.

The integrity of the pond is regularly checked as part of the Palm Valley Maintenance Program, this includes visual monitoring of the banks of the pond and the downward side of the pond for any wetting or salting to indicate leaks. The leak detection system provides Central Petroleum with confidence that PV-09 pond is in good condition and that any integrity issues with the primary liner will go to the collection tank (spider tank) as the preferable path of least resistance of any leak.

7.2 Code of Practice compliance

A review of compliance of the PV09 Pond against Section A.3.8 (g)-(i) of the CoP is outlined in table 7-1. A high level of compliance is demonstrated against the code. The pond maintains a secondary containment system via a dual liner and leak detection system.

Table 7-1 Compliance with CoP

CoP Section A.3.8	Status Against CoP	Actions to achieve CoP compliance
(g) Secondary containment must meet all of the following: *i. sufficient capacity to hold 100% of the volume of the largest container stored in the area plus 10%, unless the container is equipped with individual secondary containment;* *ii. permeability able to contain materials or waste until it can be removed or treated;* *iii. provide for separation of clean and dirty water;* *iv. be compatible with the material or waste stored or used within the containment;* *v. be resistant to physical, chemical and other failure during handling, installation and use; and* *vi. be maintained in good order at all times.*	▪ Double basal liner system (3mm HDPE Liner, Geofabric spider drain and 1mm HDPE liner), able to withstand hypersaline water and salts and resistant to tearing, ripping and exposure to climatic conditions. ▪ Leak detection and capture via geofabric liner to 9,000L spider tank, versus capacity of pond at 5.77ML ▪ Surface flows are directed around the pond to prevent additional runoff inflow ▪ Regular inspections of integrity and follow up maintenance carried out to maintain good working order	▪ Water balance to be conducted to assess volume of flow to evaporation pond, evaporative forces, and minimum requirements of secondary storage tanks for leak capture (due Q2FY23) ▪ Wastewater Management Plan to be developed to meet requirements of CoP for inclusion in revised EMP.
(h) secondary containment requirements can be met with double-lined or double-walled storage tanks.	▪ Double lined pond (3mm and 1mm HDPE) ▪ 9,000L "spider tank" collects water captured through leak detection system and recirculates back via the pond for evaporation.	▪ Project currently underway to replace the spider tank with a double walled tank atop a hardstand area. This project is scheduled for completion prior to end Q2FY23.
(i) All secondary containment (when in use) shall be inspected weekly, unless being operated through the wet season during which they should be monitored daily. If the secondary containment is damaged or compromised, repairs must be carried out as soon as practicable.	▪ PV09 Evaporation Pond and the associated "spider tank" is inspected daily for water volumes. ▪ Visual inspections of the liner and surrounding environment are conducted as part of Monthly and Quarterly Lease Area Inspections. Work orders are raised for any defects. ▪ Incidents are recorded within the Incident Management System	▪ No changes

In 2019 FEMP the risk assessment of the integrity failure of the pond was rated as low following the implementation of mitigation measures. A review of the risk assessment, as presented in Table 3-1 above, indicates that the risk is now considered medium, based on the requirements of the CoP and changes to the CP Risk Matrix.

The operational risk of the PV09 pond continues to be reviewed as part of ongoing risk management procedures and processes.

7.3 End of life assessment

In 2019, CP commenced a closure assessment options study as part of a wider examination of water management within PVGF broader end of life assessment to address the Palm Valley FEMP. The study was conducted as part of Approval Notice Conditions made by DPIR to support the PV

Field Environment Management Plan whereby a plan was to be developed for the appropriate removal and disposal of accumulated salts/sediments from the PV09 evaporation pond.

The longer-term management of the PV09 pond is a significant project and the decision was made to implement the CP Project Delivery Framework to execute the project in its entirety, ensuring robust and cost-effective outcomes were achieved.

The first step was to identify the different options (FEL0 and FEL1) to manage the contents in the PV09 pond to meet the condition and the condition outcomes. To complete the identification step, Central Petroleum engaged experienced consultants to prepare an Options Assessment Process and Report. This examined the following options:

- Excavate and truck to an approved disposal facility;
- Encapsulate in-situ;
- Encapsulate in a purpose-built facility adjacent to the Pond; or
- Expand the current infrastructure.

CP received the Options Assessment Report in December 2019. Since that time, an additional production well (Palm Valley 13) has come online and the formation water management requirements for the PVGF have changed. Prior to progressing any further with the Project Delivery Framework, CP proposes a revision to FEL1, specifically the water balance for the PVGF and review of the options assessment for water management and salt management in the field. This is scheduled for the first half of FY23.

FEL 2 and beyond

Once the Project moves through the FEL 1 decision gate the Project moves to feasibility studies, stakeholder engagement, approvals, and detailed engineering. The revised timeframe from original planning is provided below in Table 7-2.

Table 7-2 Proposed PV09 Evaporation Pond Life Assessment Timeframe

eliverable	Timeframe	Status
Issue Request for Proposal (RFP) to consultants to deliver the Options Study stage of the project	30 April 2019	Complete
Complete Options Study stage (FEL 0&1)	December 2019	Complete
Revise Water Balance and Options Study for water management and disposal (FEL1.1)	Q2 FY23	
Complete Feasibility Study stage (FEL 2)	Q3-Q4FY23	
Seek necessary approvals for the proposed project (under *Petroleum (Environment) Regulations).*	Q4FY23-Q1FY24	
Complete Stakeholder Engagement	Q4FY23	
Complete Detail Engineering (FEL3) stage	Q4 FY23 - Q1FY24	

8 References

Central Petroleum, 2020, NT Drilling Campaign 2020 Environmental Management Plan

Central Petroleum, 2019, Palm Valley Gas Field Environmental Management Plan

DEPWS, 2020, *Rehabilitation Plan Guide for Surface Disturbance: onshore petroleum exploration*

NAFI, 2022, North Australia and Rangelands Fire Information, firenorth.org.au access April 2022

NEPM, 2013, *National Environment Protection (Assessment of Site Contamination) Measure, 1999*

NTG, Northern Territory Government, 2019, *Code of Practice (CoP): Onshore Petroleum Activities in the Northern Territory*

Appendices

Appendix A – Assets identified for rehabilitation / decommissioning

Location	Status	Asset Types	Decommissioning Approach	Rehabilitation Approach[3]	Management Zone	Rehabilitation Risks	Controls	Timing	Comments
PV11	Well decommissioned / Flowlines removed / Sump rehabilitated	Flare pit	Backfill of flare pit	▪ Contouring to encourage surface runoff and minimise water pooling ▪ Post decommissioning ▪ Landform reinstatement ▪ Soil stability ▪ Contaminated soil ▪ Revegetation ▪ Maintenance and monitoring	Palm Valley	▪ Erosion and sedimentation ▪ Failure of natural regeneration ▪ Limited topsoil availability – rocky outcrop ▪ Weed infestation	Maintenance and monitoring as per Table 6-2	Q2FY23	▪ Well plugged and abandoned in 2004. Wellhead is still in place as per request from Traditional Owners. ▪ Very shallow sandy soil, rock, predominant ▪ Area exhibits natural regeneration already occurring on site and some previous rehabilitation efforts including deep ripping. ▪ Evidence of seedbank prevalent from species on site ▪ Limited weed presence. ▪ Rock batters around well lease area to be removed to increase natural flow and reduce concentration of water pooling within PV11 disturbance area ▪ Flare pit walls to be pushed in.
		Well lease	N/A – no surface infrastructure remaining	▪ Post decommissioning ▪ Landform reinstatement ▪ Soil stability ▪ Contaminated soil ▪ Revegetation ▪ Maintenance and monitoring	Palm Valley	▪ Void remaining from excavation of sandstone rock to support the well pad ▪ Erosion and sedimentation ▪ Weeds ▪ Loss of floristic/fauna habitat	Maintenance and monitoring as per Table 6-2	Q2FY23	
		Road / Access Track	N/A	▪ Grading and recontouring in line with adjoining environment where landform permits, including removal of windrows along road edge. ▪ Where landform involves extensive cut and fill of rock recontouring will be limited to minimise further erosion or landslip potential ▪ Construction of erosion controls ▪ Ripping of compacted soils where possible ▪ Natural regeneration ▪ Maintenance and monitoring	Palm Valley	▪ Void remaining from cut of access road in slope edge ▪ Weds ▪ Erosion ▪ Climate ▪ Fire ▪ Topsoil availability ▪ Seedbank/natural regenerative ability	Maintenance and monitoring as per Table 6-2	Q2FY23	▪ Existing excavated batters are stabilised. Limited erosion identified. ▪ Windrows present along access road from ongoing grading. ▪ Natural regeneration present from limited access. ▪ Weed presence is low and limited to buffel grass.
PV13	Well operational/ sump and flare pit non-operational	Flare pit	Backfill of flare pit	▪ Mixing of flare pit materials with a ratio of 1:3 (flare pit materials: clean soil) ▪ Contouring of capping to encourage surface runoff and minimise water pooling ▪ Landform reinstatement consistent with remainder of well pad – ensuring compaction meets long term operational requirements	Palm Valley	Contamination of land and/or surface water	Maintenance and monitoring as per Table 6-2	Q3FY23	▪ Sandstone plateau, shallow pale sands, rocky ▪ No upper strata in surrounding area,5-10% mid strata and 5% hummock and tussock grassland ▪ Scattered buffel requiring pre-treatment prior to rehabilitation works.
		Drilling sump	▪ Dewatering of mud sumps via evaporation ▪ Testing of residual drilling materials as per Code of Practice and NEPM 2013 Contamination Guidelines for suitability of mix bury cover ▪ Mixing and aeration of sump materials with clean soil material at a ratio of 1:3 ▪ Backfill of sump, including removal and disposal of liner ▪ Where incompatible with on-site mix bury cover, implement waste management process for off-site disposal	▪ Contouring of capping to encourage surface runoff and minimise water pooling ▪ Post decommissioning ▪ Landform reinstatement ▪ Soil stability ▪ Contaminated soil ▪ Revegetation ▪ Maintenance and monitoring	Palm Valley	▪ Loss of containment causing soil and/or land ▪ Erosion ▪ Injury or death of fauna	Maintenance and monitoring as per Table 6-2	Q3FY23	

[3] Refer to Table 5-1 for details on proposed rehabilitation approach

Location	Status	Asset Types	Decommissioning Approach	Rehabilitation Approach[3]	Management Zone	Rehabilitation Risks	Controls	Timing	Comments
PV-9	Currently operational	Evaporation ponds	Water balance of formation water system, including PV13	N/A	Palm Valley	▪ Loss of containment causing soil and/or land contamination ▪ Erosion of batters ▪ Injury or death of fauna ▪ Loss of vegetation from spills ▪ Soil viability (hypersaline soils)	▪ Inspection & monitoring ▪ Leak detection system ▪ Maintenance of freeboard	Q2FY23	▪ Water balance to be revised based on PV13 inclusion. ▪ Assessment of end of life based on water balance and needs assessment ▪ End of life closure options/feasibility to be revised in future planning.

Appendix B – Central Petroleum Risk Matrix

Risk Matrix

Impact Level	Impact Type: Health and Safety	Environment	Community	Legal	Reputation	Financial AUD$	Likelihood: Remote – Conceivable, but only in extreme circumstances – <1% chance of occurring within the next year.	Unlikely – Event is very unlikely to occur during the life-span of a project – >1% chance of occurring within the next year	Possible – Event may occur during the life-span of a project – >10% chance of occurring within the next year	Likely – Event likely to occur during the life-span of a project – >30% chance of occurring within the next year	Frequent – Recurring event during the life-span of a project – >60% chance of occurring within the next year
Extreme	Extreme5 or more fatalities or life-threatening injury / illness or total permanent disability.	Extensive permanent impact on / off site or damage to critically endangered species, habitats, ecosystems.	Extensive irreversible impacts to the community or social wellbeing. Long term social unrest. Permanent damage to area/s of cultural significance.	Charges against any director or senior executive involving jail, substantial fine or loss of right to manage the company. Public inquiry – requiring considerable resources and senior executive time. Loss of an asset or loss of licence to operate an asset. Permanent non-voluntary suspension of trading CTP securities on the ASX.	Multiple stakeholder groups confirming coordinated action, as reflected in media channels with significant reach and influence. Negative international or prolonged national media (e.g. 2 weeks).	Loss of value in excess of $20m Cashflow impact in excess of $5m	High	Very High	Very High	Very High	Very High
Critical	1-4 fatalities or life-threatening injury / illness or total permanent or partial disability.	Extensive long term partially reversible impact on / off site or damage to endangered species, habitats, ecosystems.	Extensive reversible impacts to the community or social wellbeing. Prolonged community outrage. Extensive long term partially reversible damage to area/s of cultural significance.	Charges against any director, senior executive or senior manager involving fines, jail or the loss of right to manage the company. Prolonged major litigation – exposure to significant damages, fines or costs. Suspension or restrictions to the benefit of an asset or operate an asset. Prolonged non-voluntary suspension of trading CTP securities on the ASX.	Multiple stakeholder groups mobilising and encouraging other to act, as reflected in media channels with significant reach and influence. Negative media national for 2 days or more.	Loss of value >$10m to $20m Cashflow impact >$1m to $5m	High	High	High	Very High	Very High
Serious	Injury or illness resulting in partial disability, lost time or alternative / restricted duties.	Long term reversible impacts on / off site or to vulnerable or near threatened species, habitats, ecosystems.	Impacts to the community or social wellbeing. High levels of community tension. Long / medium term partially reversible damage to area/s of cultural significance.	Charges against any employee (not described above). Non-compliance with conditions of licence to own or operate an asset or to conduct an activity. Litigation - exposure to damages, fines or costs. Short-term non-voluntary suspension of trading CTP securities on the ASX.	More than one stakeholder group's opinion or view influencing other stakeholders, reported through media channels with some reach and influence. Negative national / state media for 1 day.	Loss of value >$2.5m to $10m Cashflow impact >$500k to $1m	Medium	Medium	High	High	High
Moderate	Injury or illness to 1 or more people resulting in medical treatment.	Medium / short-term impact on / off site or to low risk / least concern / common regional species, habitats, ecosystems.	Small scale impacts to the community or social wellbeing. Isolated examples of community tension. Moderate short-term impact to areas of cultural significance.	Moderate non-compliance with external mandatory obligations or breach of contractual or other legal obligations (not described above). Litigation possible. Non-compliance with internal controls with a moderate impact	A single stakeholder group drawing attention to an incident, issue, or approach conveyed through local media channels.	Loss of value >$500k to $2.5m Cashflow impact >$250k to $500k	Low	Medium	Medium	Medium	Medium
Minor	Injury or illness requiring first aid to 1 or more people, or no treatment recorded.	Minor near source impact on / off site – readily dealt with.	Minor community impact / short-term impact to areas of cultural significance – readily dealt with.	Minor non-compliance with external mandatory obligations or breach of contractual or other legal obligations. Non-compliance with internal controls with a minor impact.	A person or organisation within a stakeholder group signalling an interest in an incident, event or approach, using channels with limited reach or influence. Public concern restricted to local complaints.	Loss of value >$250 to $500K Cashflow impact >$50 to $250k	Low	Low	Low	Medium	Medium

Appendix 10. PVGF, DGF & SOF Groundwater Monitoring Programs



Groundwater Monitoring Plan

Palm Valley Gas Field

May 2021

Disclaimer

This is a Central Petroleum Limited (CP) document and it has been prepared using the skill and care expected from professional scientists to provide factual and technical information and reasonable solutions to identified risks.

Document Details

CP is the custodian of this GMP and has overall responsibility for its implementation, compliance and revision.

CP will ensure that this GMP is reviewed and if necessary revised:

- When there is a significant change to normal operations at the Palm Valley Field not covered by this GMP
- When there is a significant change to the regulatory framework within which the operations are carried out
- When recommendations or comments from the government approval process are made
- If there is a change in circumstances (e.g. a new or increase in environmental impact or risk)
- In the event an incident causing significant environmental harm or loss occurs
- Five yearly after acceptance, unless superseded by another plan.

This document shall not be issued and/or revised without the express approval of the CP General Manager of Operations for the Palm Valley Field. Likewise, any amendments to this document shall be checked and approved by the CP General Manager of Operations for the field.

Document Number	PVL-630-PLN-0001
Document Title	Groundwater Monitoring Plan – Palm Valley Field
EMP	Environment Management Plan Workover and Wellhead Equipment, Safety Systems and Gathering Line Activities EMP
Approved By	Ben Visser – General Manager of Operations
Date Approved	16/05/2021

Document Control

Version	Date	Author	Description
1	14/05/2021	Cameron Lambert	Initial plan

Table of Contents

1.0 Introduction 1

2.0 Site locations, operations and hydrogeological setting 1

3.0 Monitoring Program 4

3.1 Monitoring locations, timing of commencement and frequency of monitoring 4

3.2 Timing and frequency of monitoring 4

3.3 Monitoring parameters and methods 4

4.0 Data management, assessment and reporting 7

4.1 Data management 7

4.2 Site-specific performance standards 7

4.3 Exceedance investigation and response process 7

4.4 Reporting 8

5.0 References 9

Appendix A – Example field forms 10

Figures

Figure 1 Location and layout of the Palm Valley Field 3

Figure 2 Site-specific performance standard exceedance investigation and response framework 8

Tables

Table 1 Hydrostratigraphic summary 2

Table 2 Groundwater monitoring locations 4

Table 3 Groundwater monitoring scope 5

Table 4 Parameters for water quality sample analysis (after NT Government, 2019) 6

1.0 Introduction

Central Petroleum Ltd (CP) operates the Palm Valley Field located in the Northern Territory. It located within the OL3 petroleum tenement.

To ensure consistency with current regulatory requirements for the Mereenie, Dingo and Surprise Fields, CP has elected to voluntarily prepare this groundwater monitoring plan (GMP). This GMP is consistent with the conditions imposed on the Mereenie Field GMP.

2.0 Site locations, operations and hydrogeological setting

The location of the Palm Valley Field is shown on Figure 1. The Palm Valley Field is approximately 125 km west of Alice Springs, and lies to the south of the Hermannsburg Community in a remote part of the Northern Territory.

Geologically, the Palm Valley Field is within the Amadeus Basin, an elongated east-west aligned sedimentary basin that covers an area of approximately 170,000 km in central Australia. Lloyd and Jacobson (1987) define two main hydrogeological domains within the Amadeus Basin: the north-central area has broad folding associated with extensive and mappable sandstone aquifers, elsewhere in the basin greater deformation has resulted in the development of a regional fractured rock groundwater systems. The Palm Valley Field is in the north-central region of the basin and overlies a series of regional scale formations including the Hermannsburg Sandstone, the Mereenie Sandstone and the Pacoota Sandstone that are used for water supplies within the Amadeus Basin (but not necessarily in the vicinity of Palm Valley).

The local surface geology is shown on Figure 1 and Table 1 provides a summary of the formation depths, thickness and groundwater potential of formations beneath the Palm Valley field. Note that exploration of deeper formations is limited in this part of the Amadeus Basin and consequently little is known about the groundwater characteristics of formations below the Pacoota Sandstone.

The Palm Valley Field is located in outcrop of the Hermannsburg Sandstone (Figure 1) - a hard, fine to medium grained poorly sorted sandstone with lithic inclusions. Primary porosity in the formation is low and successful bores typically rely on secondary permeability (i.e. enhanced permeability from intersecting fractures and joints). Although it forms a regional scale groundwater system, the Hermannsburg Sandstone provides poorer supply potential relative to the Mereenie Sandstone. Existing groundwater users in the vicinity of the Palm Valley field include the Hermannsburg community, which sources its water supply from a borefield that roughly aligns with the northern boundary of OL3, and the Palm Valley ranger station and campground, roughly 6 km to the south of the field and adjacent to the southern boundary of OL3. The majority of registered bores in the vicinity of the Palm Valley field (Figure 1 – sourced from NR Maps) are current or historic production bores associated with the Hermannsburg town water supply.

A groundwater source review of the Hermannsburg water supply (Childs, 1990) reports on groundwater trends in the borefield during the late 1980s. The report suggests that water levels show a recharge response to large rainfall events that is consistent with a recharge zone located to the south of the borefield. It also suggests that recharge to the aquifer predominantly occurs where ephemeral drainage lines cut across the outcropping sandstone (Childs, 1990).

The Mereenie Sandstone comprises a fine to very coarse-grained quartz sandstone that reaches thicknesses of over 500 m at the Palm Valley. The Mereenie Sandstone is separated from the overlying Hermannsburg Sandstone by the low permeability Parkes Siltstone. The Mereenie Sandstone is regionally extensive and is of particular significance in the north-east of the Amadeus Basin where it provides the water supply for Alice Springs. The dominant groundwater flow direction in the Mereenie Sandstone is to the east (Lloyd and Jacobson, 1987). There are no bores constructed in the Mereenie Sandstone within 10 km of the Palm Valley field. The Mereenie Sandstone overlies and is in limited hydraulic connection with the Carmichael Sandstone (Lloyd and Jacobson, 1987), which comprises interbedded sandstone, siltstone and mudstone. The formation contains limited groundwater resources and is of notably lower permeability than the overlying Mereenie Sandstone.

The Pacoota Sandstone is the lowermost formation with known groundwater supply potential within the Amadeus Basin sequence. At Palm Valley, the formation hosts a gas reservoir with petroleum drilling indicating groundwater within the formation is saline and over-pressured (Lloyd and Jacobson, 1987). Locally, the permeability of the Pacoota Sandstone is enhanced by fracturing and shows connection with gas resources in the overlying Horn Valley Siltstone and Stairway Sandstone. It is isolated from potential productive groundwater supplies in the Mereenie Sandstone by the Stokes Siltstone. The regional flow direction in the Pacoota Sandstone is from east to west, though local flow directions in the vicinity of the Palm Valley field are complex due to the overpressure conditions.

A series of springs are mapped within the vicinity of OL3 (Figure 1 - sourced from NR Maps). These springs are groundwater discharge features from the Hermannsburg Sandstone and typically occur along prominent fractures and joints in the rock where secondary permeability is enhanced (Wischusen et al, 2002). Of particular significance is the groundwater discharge in Palm Valley, located along the southern boundary of OL3, which supports a rare and relic assemblage of flora including the red cabbage palm (*Livistona mariae*).

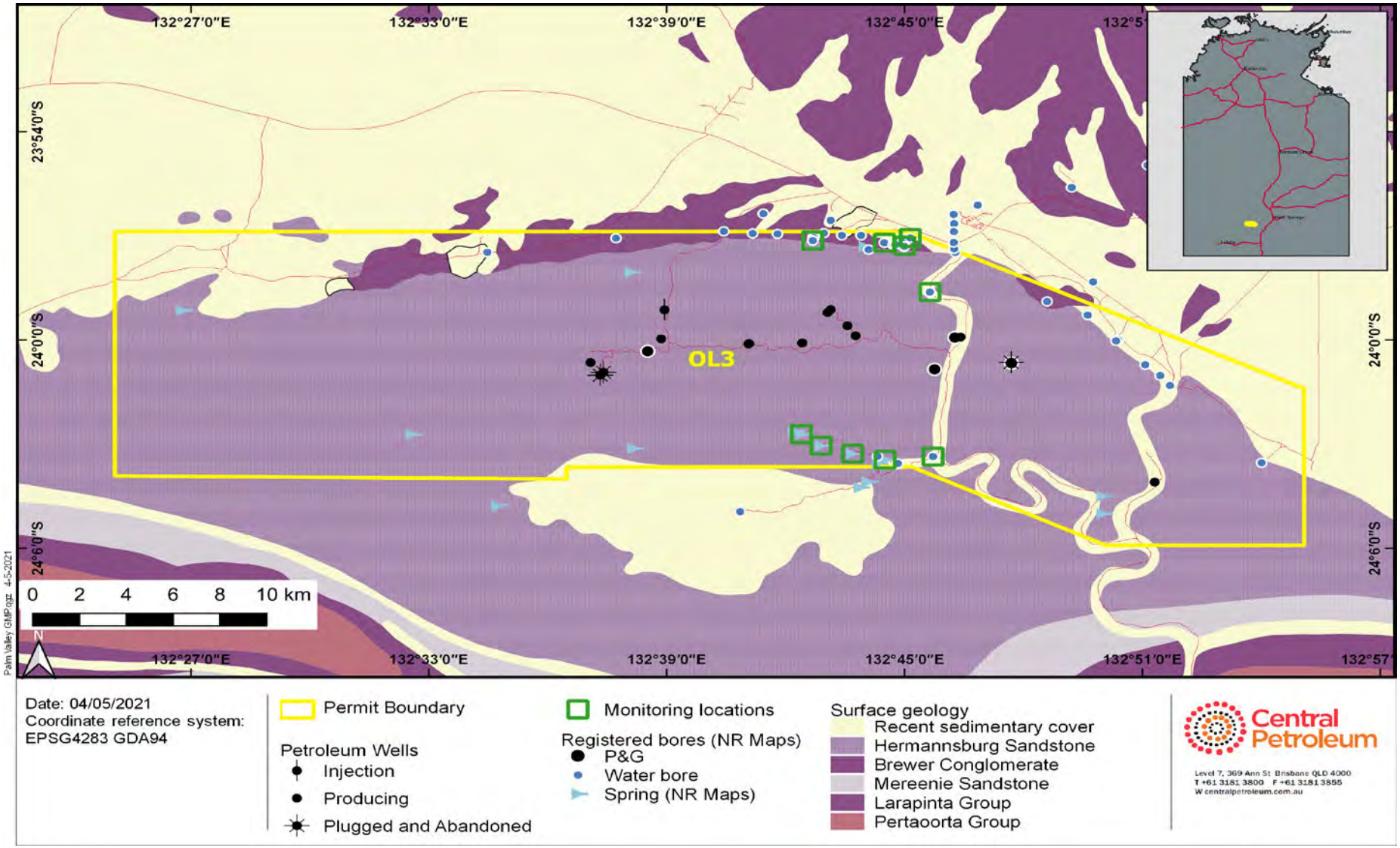
Table 1 Hydrostratigraphic summary

	Formation	Depth* (mBGL)	Thickness* (m)	Lithology	Groundwater Availability	Water Quality^
Pertnjara Group	Brewer Conglomerate	Not present within the Palm Valley field. Adjacent to the northern boundary of OL3 boundary				
	Hermannsburg Sandstone	Surface	395	Hard, silty sandstone	Good potential for useable groundwater supplies across the region	Fresh
	Parke Siltstone	395	35	Siltstone, minor claystone	Poor	Not known
Larapinta Group	Mereenie Sandstone	430	570	Quartz sandstone	Good potential for useable groundwater supplies across the region	Fresh
	Carmichael Sandstone	1000	80	Interbedded sandstone, siltstone and mudstone	Potential for useable groundwater supplies across the region	Not known
	Stokes Siltstone	1080	325	Claystone, siltstone	Poor	Not known
	Stairway Sandstone	1405	285	Silty sandstone with interbedded siltstone	Gas Reservoir	Not known
	Horn Valley Siltstone	1690	90	Claystone with interbedded marl and limestone	Poor	Not known
	Pacoota Sandstone	1780	505	Sandstone with siltstone and shale	Gas Reservoir	Saline
Pertaoorrta Group	Goyder Formation	2285	520	Shale, siltstone and dolomite	Not known	Not known
	Hugh River Shale	2805	340	Siltstone, shale, limestone, dolomite	Not known	Not known
	Chandler Formation	3145	290	Silty halite, minor limestone, mudstone	Poor	Likely hypersaline
	Arumbera Sandstone	3435	555	Interbedded sandstone, siltstone, shale	Gas Reservoir?	Not known

* Depths and thickness based on stratigraphic interpretation in the Palm Valley field in the vicinity of the proposed Palm Valley 12

^Water quality assessment is based on existing bore data and Palm Valley well completion reports

Figure 1 Location and layout of the Palm Valley Field



3.0 Monitoring Program

3.1 Monitoring locations, timing of commencement and frequency of monitoring

The purpose of the monitoring is *to demonstrate there is no impact to sensitive groundwater receptors as a result of activities in the Palm Valley Field*. The sensitive receptors that have been identified include:

- The Hermannsburg water supply
- Water supply to the Palm Valley ranger station and campgrounds
- The springs within Palm Valley

Table 2 summarises the monitoring locations, which includes bores and springs. The monitoring locations relative to the tenement boundaries and gas wells are shown on Figure 1.

Table 2 Groundwater monitoring locations

RN	Name	Latitude*	Longitude*	Formation
-	Palm Valley Area Spring No 9	-24.054508	132.728083	Hermannsburg Sandstone
-	Pimelia Spring	-24.04516	132.706622	Hermannsburg Sandstone
-	Palm Creek Lower Oasis	-24.057419	132.741795	Hermannsburg Sandstone
-	Palm Valley Area Spring No 8	-24.0507	132.714879	Hermannsburg Sandstone
RN006503	Hermannsburg Gr 1 Hermannsburg	-23.976985	132.760606	Hermannsburg Sandstone
RN012024	Palm Valley Rangers Station.	-24.055946	132.761939	Hermannsburg Sandstone
RN007292	Site B Ironwood Prod No 6 Bore Hermannsburg Borefield	-23.954704	132.750009	Hermannsburg Sandstone
RN018732	Unused PWC production bore	-23.95047	132.73621	Hermannsburg Sandstone
RN14165	Observation Bore Hermannsburg Borefield	-23.99505	132.74994	Hermannsburg Sandstone
RN018706	Observation Bore Hermannsburg Borefield	-23.952095	132.711349	Hermannsburg Sandstone
RN018707	Observation Bore Hermannsburg Borefield	-23.952195	132.711338	Hermannsburg Sandstone
RN018708	Observation Bore Hermannsburg Borefield	-23.952276	132.711366	Hermannsburg Sandstone

* Datum = GD94, coordinates measured in field

3.2 Timing and frequency of monitoring

Monitoring will commence in 2021 and will continue while the EMP remains in force (nominally to 2026). Thereafter, groundwater monitoring for the operation will revert to the requirements identified in the Palm Valley Field environmental management plan (MSTD11-PL004).

Monitoring will be undertaken with one month of the beginning and end of the wet season as defined in the Code of Practise (NT Government, 2019). That is, monitoring will be undertaken during May and October each year.

3.3 Monitoring parameters and methods

Monitoring activities to be performed at each location are shown Table 3.

Water levels will be measured with an electronic water level meter (dip meter) to an accuracy of 1cm. The reference point for measurement will be the topmost point of the bore casing.

Water quality samples will be collected from the bores identified in Table 2. Samples will be collected by suitably qualified and trained personnel.

Water quality samples will be collected using the installed water supply pumps or from artesian flow. Samples will only be collected once field water quality parameters have stabilised between successive readings. For the springs, field water quality parameters will be measured as close to the spring vent as possible. Purging and sample collection records will be documented on an appropriate form (Appendix A).

Non-dedicated equipment will be decontaminated between bores by washing with a phosphate-free detergent (e.g. Decon 90) and rinsing with fresh water.

Field water quality (electrical conductivity (EC), pH, temperature) will be measured at the time of sample collection using a calibrated portable water quality meter. The portable water quality meter will be calibrated at the beginning of each sampling event in accordance with the manufacturer's specification. Meter calibration will be recorded on an appropriate form (Appendix A).

Samples for dissolved analyses (metals/metalloids) will be field filtered using new, disposable 0.45µm filters. Samples will be:

- Collected in new, laboratory supplied sample containers, with appropriate preservatives,
- Labelled with the bore Registered Number (RN), date and time of collection. This will be recorded on the field form (Appendix A),
- Stored in a chilled esky and/or refrigerator prior to delivery to the laboratory,
- Submitted under Chain-of-Custody protocols,
- Submitted to a laboratory accredited with the National Association of Testing Authorities (NATA) for the analyses to be conducted, and
- Analysed for the suite of parameters listed in Table 4, with limits of reporting identified therein. The suite of parameters and their associated limits of reporting are consistent with Section B.4.17.1 Table 6 of the Code of Practice (NT Government, 2019).

For quality assurance purposes, one field duplicate sample will be collected during each sampling event. Duplicate samples will be labelled with the following nomenclature: DUP_DDMMYY_hh:mm. The duplicate sample will be analysed for total dissolved solids, chloride and electrical conductivity. These analytes are identified to be of particular interest in relation to drilling fluids, hydraulic fracturing fluids, well suspension fluids and produced formation fluids (DENR, 2018). Duplicate sample results will be assessed against the primary through the calculation of the relative percentage difference.

Table 3 Groundwater monitoring scope

RN / Spring Name	Water Level	Water Quality	Photograph and field parameters
Palm Creek Lower Oasis			✓
Palm Valley Area Spring No 8			✓
Palm Valley Area Spring No 9			✓
Pimelia Spring			✓
RN006503		✓	
RN012024		✓	
RN007292	✓		
RN018732	✓		
RN14165	✓		
RN018706	✓		
RN018707	✓		
RN018708	✓		

Table 4 Parameters for water quality sample analysis (after NT Government, 2019)

Parameter	Limit of reporting	Parameter	Limit of reporting
Field Parameters		**Hydrocarbons**	
Electrical conductivity[!]	1 µS/cm	Total recoverable hydrocarbons (TRH)	100 µg/L
pH[!]	0.01 pH units	PAH Suite	0.5 µg/L
Temperature[!]	0.1°C	Benzene, toluene, ethylbenzene and xylenes (BTEX)	1 µg/L
General Parameters		Dissolved methane, ethane and propane	10 µg/L
pH (laboratory)	0.01 pH units	**Metals/metalloids***	
Electrical conductivity (laboratory)	1 µS/cm	Chromium	0.001 mg/L
Total dissolved solids	10 mg/L	Copper	0.001 mg/L
Total suspended solids	1 mg/L	Lead	0.001 mg/L
Gross alpha	0.05 Bq/L	Manganese	0.001 mg/L
Gross beta	0.1 Bq/L	Mercury	0.001 mg/L
Major Anions and Cations		Silver	0.001 mg/L
Alkalinity (carbonate and bicarbonate)	1 mg/L	Arsenic	0.001 mg/L
Chloride	1 mg/L	Barium	0.001 mg/L
Sulphate	1 mg/L	Boron	0.05 mg/L
Nitrate	0.01 mg/L	Cadmium	0.0001 mg/L
Nitrite	0.01 mg/L	Lithium	0.001 mg/L
Fluoride	0.1 mg/L	Selenium	0.01 mg/L
Sodium	1 mg/L	Silica	0.1 mg/L
Potassium	1 mg/L	Strontium	0.001 mg/L
Calcium	1 mg/L	Zinc	0.005 mg/L
Magnesium	1 mg/L		
Iron	0.05 mg/L		

* Dissolved, i.e. filtered to 0.45µm

[!] Not specifically required by the CoP but required for quality assurance purposes

4.0 Data management, assessment and reporting

4.1 Data management

Data collected as part of this groundwater monitoring program will be stored in a dedicated groundwater database[1], or a company-wide environmental database.

Data will be uploaded into the database within 2 weeks of receipt of final reports from the laboratory and will be assessed against performance standards relevant at that time. If an exceedance is identified the investigation and response process (Section 4.3) will be followed.

Monitoring field forms, calibration records, chain-of-custody documentation and laboratory reports will be provided to DEPWS within 6 weeks of receipt of the final laboratory reports from a monitoring event. These will be provided in PDF format, with laboratory results also provided in Esdat format.

Water level data from Power and Water Corporation (PWC) bores will be provided to PWC at the same time as records are provided to DEPWS.

The Manager Risk and HSE is responsible for all data management, review and reporting.

4.2 Site-specific performance standards

Site-specific performance standards will be developed following the collection of sufficient baseline data. The development of site-specific performance standards for water quality will generally follow the process outlined in DSITI (2017).

In the interim, until site-specific performance standards for water quality have been established, the ANZECC (2000) livestock guidelines will be adopted.

Laboratory results will be directly compared to the interim or site-specific performance standards.

4.3 Exceedance investigation and response process

Should monitoring data fall outside of the site-specific performance standards (or interim standards), response actions will follow the framework shown in Figure 2.

If a value exceeds a site-specific performance standard, the initial response is to validate the value. This will be undertaken by:

- Confirming with the laboratory that the reported value is correct
- Assessing whether there is a consistent trend in the data that indicates an unexpected change in the water chemistry, and
- Potentially resampling the bore

If exceptions are identified, these will be reported to DEPWS within 6 weeks of receiving final laboratory reports.

If the exceedance is found to be false, DEPWS will be notified of the outcome and monitoring will continue in accordance with this monitoring plan. If the exceedance is verified, increasing levels of investigation will be undertaken to assess whether the cause is CP's activities or whether the conceptual understanding of the groundwater system is incorrect and site-specific performance standards need to be updated. These investigations will be situation specific but will include risk assessments (based on the source-pathway-receptor risk model), and the possible need to develop and implement mitigation plans.

CP will engage with DEPWS at all stages through the investigation and response process.

[1] This may be Excel, Access or a commercially available database.

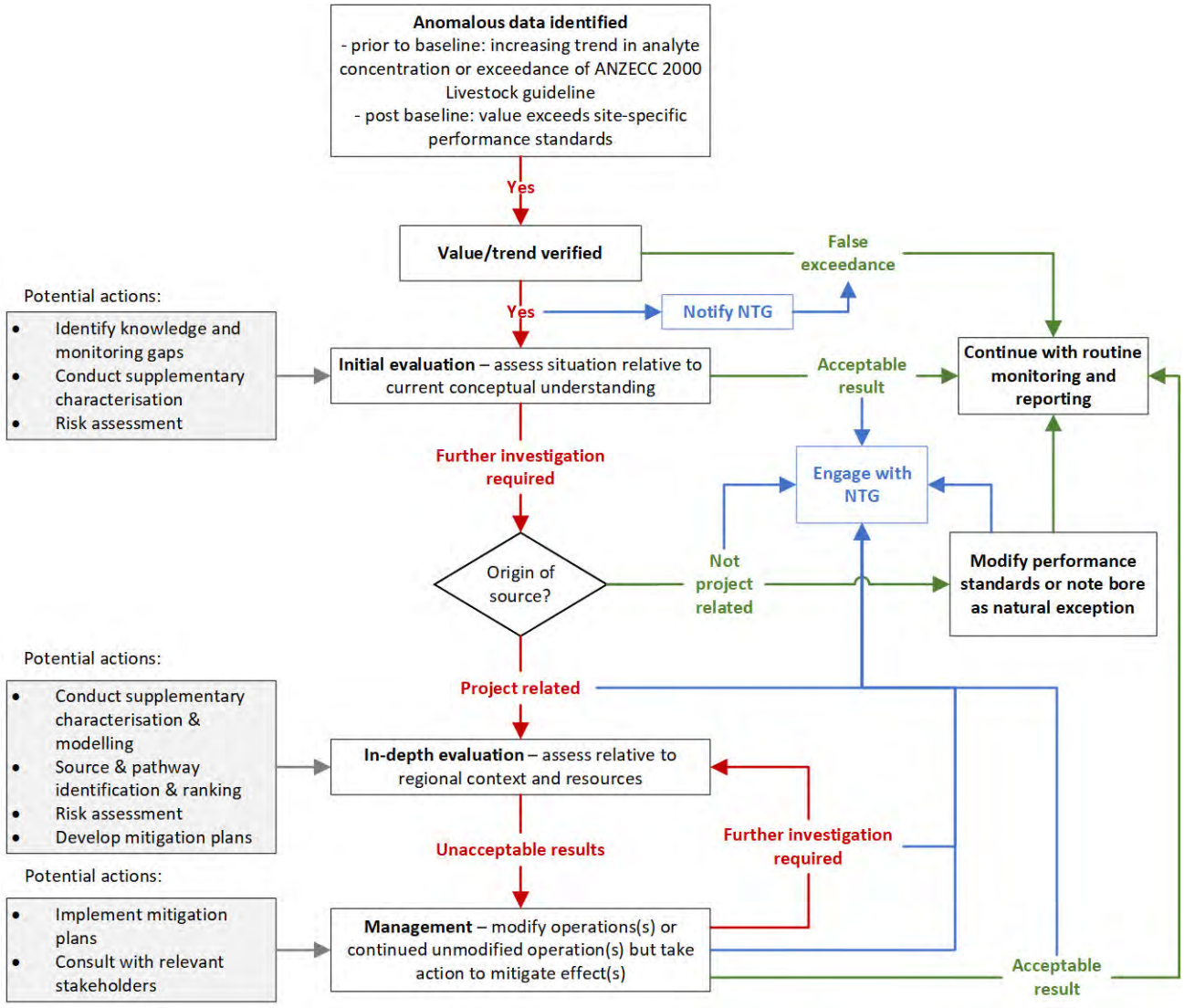
4.4 Reporting

An annual report will be produced to present and assess results of the groundwater monitoring program. The report will include:

- The current monitoring locations (Table 2), scope (Table 3) and any deviations from the scope
- Presentation and discussion of water quality monitoring results, including:
  - Comparison of water quality results with site-specific performance criteria
  - Presentation of results in graphical formats, identification and discussion of any trends in the water quality
  - Tabulation of field and laboratory chemical data from the reporting period
- Investigation and response actions completed since the previous report.

The annual groundwater monitoring report and data will be provided to NT Government annually within six weeks of the anniversary of the approval date of the EMP.

Figure 2 Site-specific performance standard exceedance investigation and response framework



5.0 References

ANZECC & ARMCANZ (2000). Australian and New Zealand Guidelines for Fresh and Marine Water Quality – Volume 1: The Guidelines. Australian and New Zealand Conservation Council, Agriculture Resource Management Council of Australia and New Zealand (ANZECC & ARMCANZ). Commonwealth of Australia, Canberra

Childs, J., 1990. Groundwater Source Review - Hermannsburg. Power and Water Authority, Water Resources Branch. Report No. 20/1990A

DSITI (2017). Using monitoring data to assess groundwater quality and potential environmental impacts. Version 1. Department of Science, Information Technology and Innovation (DSITI), Queensland Government, Brisbane.

Lloyd, J.W. and Jacobson, G. (1987) The Hydrogeology of the Amadeus Basin, Central Australia. Journal of Hydrology, 93 (1987), 1-24.

Macqueen A. D. and Knott, G. G. (1982) Groundwater in the north eastern part of the Amadeus Basin. Project 32. Water Division. Department of Transport and Works. Northern Territory Government.

NHMRC, NRMMC (2011) Australian Drinking Water Guidelines Paper 6 National Water Quality Management Strategy. National Health and Medical Research Council, National Resource Management Ministerial Council, Commonwealth of Australia, Canberra.

NRMaps (2021) https://nrmaps.nt.gov.au/nrmaps.html. Accessed 21 April 2021.

NT Government (2019) Code of Practice: Onshore Petroleum Activities in the Northern Territory. Northern Territory Government, 31 May 2019.

Wischusen, J., Fifield, L., and Cresswell, R., 2000. The Hydrogeology of Palm Valley, Central Australia. Department of Infrastructure, Planning and Environment. Report No. 01/1993A

Appendix A – Example field forms

Water Quality Sample Field Form

Field			Sampled by		
Date			Bore ID		
Sampling Method					
Water Level (mTOC			Screen From (mm)		
Casing Diameter (mm)			Screen To (mm)		
Bore Depth (m)			Well Volumes (L)		
Time	Volume Removed	Ec	Ph	Temp	Comments
Sample ID			Sample Time		
Comments					

Field Water Quality Meter Calibration Record

Field			Time		
Date			Calibrated by		
Field Water Quality Meter Make and Model					
Ph					
	Buffer Ph	Buffer batch	Buffer expiry date	Ph before calibration	Ph after calibration
Buffer 1					
Buffer 2					
Electrical Conductivity					
	Standard value	Standard Batch No.	Standard expiry date	Ec before calibration	Ec after calibration
Buffer 1					
Buffer 2					



Groundwater Monitoring Plan

Dingo Gas Field and Surprise Oil Field
for Operations and Maintenance Activities

October 2020

Disclaimer

This is a Central Petroleum Limited (CP) document and it has been prepared using the skill and care expected from professional scientists to provide factual and technical information and reasonable solutions to identified risks.

Document Details

CP is the custodian of this GMP and has overall responsibility for its implementation, compliance and revision.

CP will ensure that this GMP is reviewed and if necessary revised:

- When there is a significant change to normal operations at the DGF and SOF not covered by this GMP
- When there is a significant change to the regulatory framework within which the operations are carried out
- When recommendations or comments from the government approval process are made
- If there is a change in circumstances (e.g. a new or increase in environmental impact or risk)
- In the event an incident causing significant environmental harm or loss occurs
- Five yearly after acceptance, unless superseded by another plan.

This document shall not be issued and/or revised without the express approval of the CP General Manager of Operations for the DGF and SOF. Likewise, any amendments to this document shall be checked and approved by the CP General Manager of Operations for both fields.

Document Number	DIN-630-PLN-0003
Document Title	Groundwater Monitoring Plan – Dingo and Surprise
EMP	Dingo Gas Field (L7) and Surprise Oil Field (L6), Field Environmental Management Plan
Approved By	Ben Visser – General Manager Operations
Date Approved	16 October 2020

Document Control

Version	Date	Author	Description
1	17 August 2020	RDM Hydro	Submission to the DEPWS
2	16 October 2020	RDM Hydro	Resubmission post DEPWS feedback

Table of Contents

1.0 Introduction 1

2.0 Site locations, operations and hydrogeological setting 1

2.1 Dingo Gas Field 1

2.2 Surprise Oil Field 3

3.0 Monitoring scope 5

3.1 Monitoring locations, timing of commencement and frequency of monitoring 5

3.2 Water Level Monitoring 6

3.1 Pressure Monitoring 6

3.2 Water Quality Monitoring 6

4.0 Data management, assessment and reporting 11

4.1 Data management 11

4.2 Site-specific performance standards 11

4.3 Exceedance investigation and response process 11

4.4 Reporting 12

5.0 References 14

Appendix A – Example field forms 15

Figures

Figure 1 Locations of the DGF and SOF 4
Figure 2 Groundwater monitoring locations relative to permit boundary – Dingo Gas Field 8
Figure 3 Groundwater monitoring locations relative to permit boundary – Surprise Oil Field 9
Figure 4 Site-specific performance standard exceedance investigation and response framework 13

Tables

Table 1 Dingo Gas Field - hydrostratigraphic summary 2
Table 2 Surprise Oil Field - hydrostratigraphic summary 3
Table 3 Groundwater monitoring locations and scope 5
Table 4 Parameters for water quality sample analysis (after NT Government, 2019) 10

1.0 Introduction

Central Petroleum Ltd (Central Petroleum) operates the Dingo Gas Field (DGF) and Surprise Oil Field (SOF) located in the Northern Territory.

The fields are operated under the Field Environment Management Plan Dingo Gas Field and Surprise Oil Field for Operations and Maintenance Activities (CTP2-2) dated 23 March 2020. The five-year revision of the pre-existing plans was approved by the Department of Environment and Natural Resources (DENR) on 3 July 2020 under the Petroleum (Environment) Regulations 2016 (NT).

The approval was subject to a number of conditions. Pertaining to groundwater, Condition 3 of the approval of the EMP required:

The Interest Holder must submit to DENR within one month of the date of this approval a groundwater monitoring plan to demonstrate that there is no change in the groundwater quality as a result of activities at Dingo Gas Field and Surprise Oil Field. The groundwater monitoring plan must include:

i. *A location map (and associated spatial files) for proposed monitoring bores relative to the respective field*
ii. *A commitment to commence groundwater monitoring within six months of the date of EMP approval*
iii. *A commitment to monitor for the range of analytes specified in B.4.17.1 Table 6 of the Code*
iv. *Development of site-specific performance standards for groundwater quality*
v. *A commitment to provide groundwater monitoring reports and data to DENR annually*

This document constitutes the groundwater monitoring plan (GMP) to satisfy Condition 3 of the approval.

2.0 Site locations, operations and hydrogeological setting

The locations of the DGF and SOF are shown on Figure 1. The DGF is approximately 60km south of Alice Springs. The SOF is approximately 60km south of the Kintore Road, and approximately 500km west of Alice Springs.

2.1 Dingo Gas Field

The DGF is located within Production License (L7). Geologically, it is situated in the north-east of the Amadeus Basin. The DGF sources gas from a reservoir within the Arumbera Sandstone at approximately 3,000m depth. Productive aquifers overlie the Arumbera Sandstone, though occurring at significant depth (> 600 m) beneath the surface formation depths at DGF are summarised in Table 1 .

The DGF comprises four gas wells:

- Dingo 1 – suspended
- Dingo 2 and 3 – currently producing
- Dingo 4 – plugged and abandoned at time of drilling

Gas from the DGF is transported via a 50 km gas pipeline (Pipeline Licence PL 30) to Brewer Estate in Alice Springs where there are gas conditioning and custody transfer metering facilities.

The nearest active groundwater bore to the DGF is RN002943 on the western edge of L7 and is constructed within the Quaternary/Tertiary sediments to a depth of 66.4m. Although Dingo 1 (RN014732) and Dingo 2 (RN014733) are registered as water bores, they were drilled, constructed and operated as gas wells. All other registered groundwater bores on L7 were either backfilled or abandoned.

L7 is located within the Alice Springs Water Control District. The Alice Creek town water supply is sourced primarily from the Mereenie Sandstone at the Roe Creek bore field, approximately 45km north of the producing gas wells.

The potential risk to water quality at the DGF is from crossflow of dry gas from the reservoir to an overlying aquifer via a failed wellbore. If this were to occur, it would initially manifest as a pressure change as the reservoir is at significantly greater pressure than the overlying aquifers.

Table 1 Dingo Gas Field - hydro stratigraphic summary

Formation	Depth* (mBGL)	Thickness* (m)	Lithology	Groundwater Availability	Water Quality^
Quaternary/Tertiary aged sediments	Surficial	< 70	Quartz sand, clay/ limestone, calcareous siltstone	Limited, Forms local aquifer where sufficient saturated thickness exists.	Fresh to brackish
Pertnjara Formation	Surface to 70	670	Sandstone, minor shale and siltstone	Poor	Brackish
Mereenie Sandstone	650	350	Quartz sandstone	Regional Aquifer	Fresh
Stairway Sandstone (or equivalent)	1,000	20	Silty sandstone with interbedded siltstone	Local Aquifer (permeability from joints and fractures)	Not known
Horn Valley Siltstone	1,030	30	Shale, siltstone, dolomite	Poor	Not known
Pacoota Sandstone	1,060	360	Sandstone with siltstone and shale	Regional Aquifer	Fresh
Goyder Formation	1,420	110	Shale, siltstone and dolomite	Regional Aquifer	Fresh
Shannon Formation	1,530	390	Dolomite, shale	Regional Aquifer (Cambrian Carbonate Aquifer, after Short, 2018)	Brackish
Hugh River Shale	1,920	240	Siltstone, shale, limestone, dolomite		Brackish
Giles Creek Dolomite	2,160	300	Dolomite, siltstone, shale		Not known
Chandler Formation	2,460	240	Silty halite, minor limestone, mudstone	Poor	Chandler Formation
Todd River Equivalent	2,700	20	Mudstone	Poor	Todd River Equivalent
Arumbera Sandstone	2,720	310	Interbedded sandstone, siltstone, shale	Gas Reservoir	Not known

*Depths and thickness based on Dingo 3 gas well

^ Water quality assessment is made for aquifers under L7 based on bore data or formation water quality from Dingo well completion reports with the exception of the Chandler Formation

2.2 Surprise Oil Field

Production Licence 6 (L6) is located in the north-west of the Amadeus Basin and the lease area straddles the northern edge of the basin. The SOF is a single-well development from a horizontal production well into the Lower Stairway Sandstone. The production interval is in excess of 2,400m depth. The field commenced production in March 2014, producing approximately 87,000 barrels of oil to 30 June 2015. The oil was produced into a small on-site tank farm and transported from site via road transport. Production was suspended from August 2015 onwards. The Johnstone West 1 well is also located in L6. The well was perforated in the Horn Valley Siltstone and Lower Stairway Sandstone was suspended on 20 September 2010 with no production of hydrocarbons.

Table 2 provides a summary of the formation depths, thicknesses and groundwater potential beneath L6 from the surface units down to the Stairway Sandstone.

There are four groundwater bores within L6 (Figure 3), which were drilled for Central Petroleum. RN018851 is equipped and used to supply water for operations and the remaining three are unused. A further eight bores are located within a 25 km radius of L6. The closest production bore (RN014297) is located approximately 10 km north-west of LC6 and is a water supply bore for an indigenous outstation at Nguman. Outside of this, Central Petroleum this is the only active groundwater user within 25 km of L6.

The key potential groundwater quality risks associated with the operations at the SOF are:

- Crossflow of oil from the reservoir to an overlying aquifer via a failed wellbore. If this were to occur, it would initially manifest as a pressure change as the reservoir is at significantly greater pressure than the overlying aquifers.
- Leakage of oil from the tank farm or spillage of crude oil during transfer for road transport.

Table 2 Surprise Oil Field - hydro stratigraphic summary

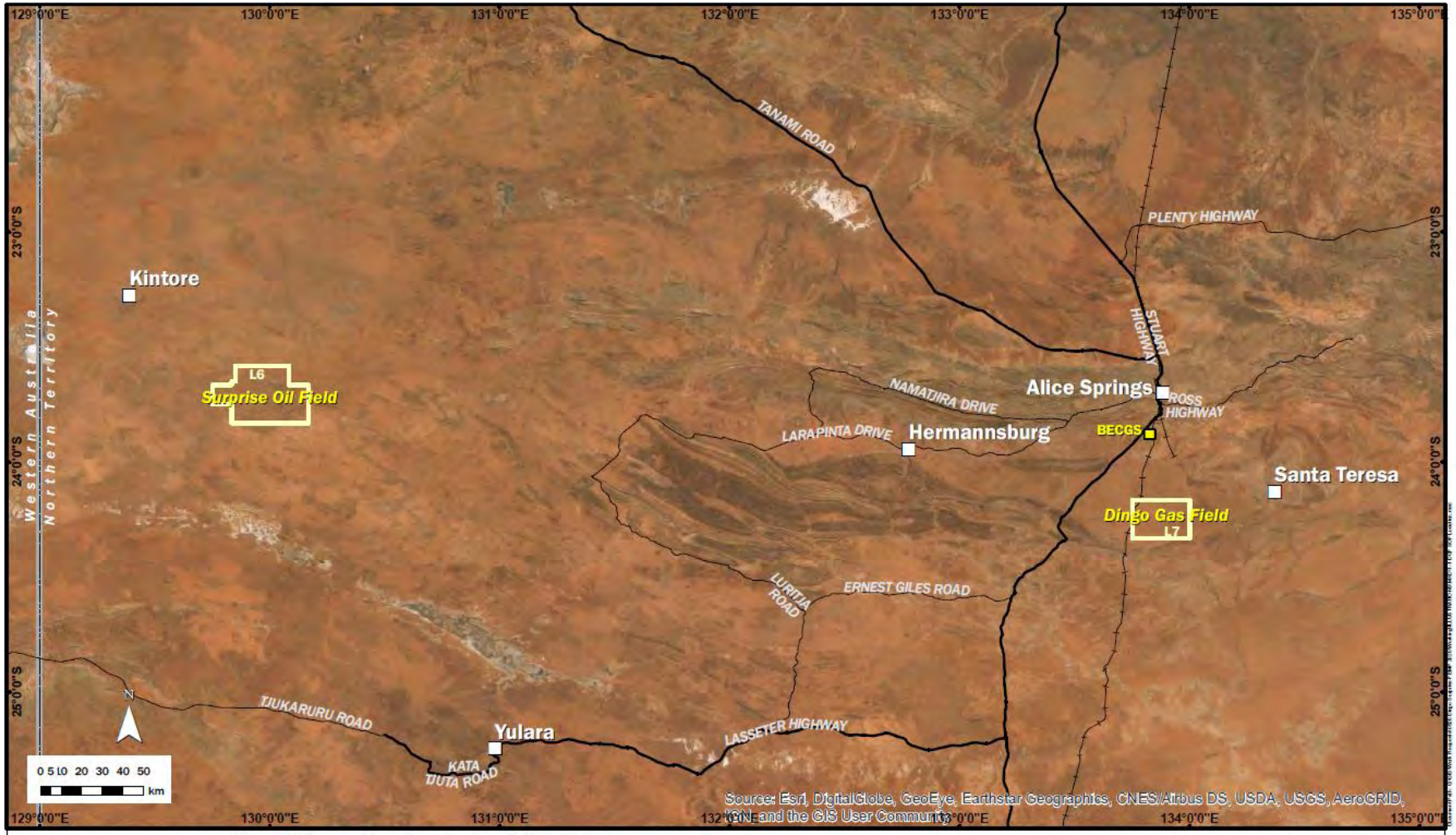
Formation	Depth* (mBGL)	Thickness* (m)	Lithology	Groundwater Availability	Water Quality^
Quaternary aged sediments	Surficial	70	Dune sands, gypsum, calcrete	Local aquifer	Fresh to saline
Pertnjara Formation	70	710	Sandstone, claystone, predominantly siltstone from 230 m	Poor (Aquitard)#	Not known
Brewer Conglomerate / Hermannsburg Sandstone	780	520	Siltstone, claystone, minor sandstone	Poor (Aquitard)#	Not Known
Parkes Siltstone	1300	470	Siltstone, minor claystone	Poor (Aquitard)#	Not Known
Mereenie Sandstone	1770	510	Porous quartz sandstone	Regional Aquifer	Brackish
Stokes Siltstone	2280	170	Claystone, siltstone	Poor (Aquitard)#	Not Known
Stairway Sandstone	2450	> 90 m	Silty sandstone with interbedded siltstone	Oil Reservoir	Not known

*Depths and thickness based on Surprise No. 1 well

^ Water quality assessment is made for aquifers under L6 based on bore data and the Mt Rennie Hydrogeological Map

Designation of aquitard based on dominant lithology

Figure 1 Locations of the DGF and SOF



ID: 0520-1-1
Rev:
Date: 13/03/2020
Map Scale is 1:2,510,824 when printed at A4
Coordinate System: GCS GDA 1994

Figure 1-1: Location - Surprise and Dingo Fields

- Town / Location
- Brewer Estate City Gate Station
- Permits
- Principal Road
- Secondary Road
- Railway

Central Petroleum
Level 7, 369 Ann St Brisbane QLD 4000
T +61 3181 3800 F +61 3181 3855
W centralpetroleum.com.au

© 2020. Whilst every care has been taken to prepare this illustration, Central Petroleum Limited make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and does not accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the illustration being inaccurate, incomplete or unsuitable in any way and for any other reason. This illustration is for informational purposes only. This illustration is subject to change. This illustration is not for publication. Author: Central Petroleum Limited.

3.0 Monitoring scope

3.1 Monitoring locations, timing of commencement and frequency of monitoring

Table 3 summarises the locations of the monitoring bores. The locations of the monitoring bores relative to the operations and the L6 and L7 boundaries are shown on Figure 2 and Figure 3.

The locations of bores for monitoring at both Dingo and Surprise were selected to include the closest existing groundwater bores to the production wells in each of the fields. For groundwater quality, the closest utilised bore would constitute the nearest potential receptor. Water level (pressure) monitoring has been included in a larger number of bores because a loss of well integrity resulting in a potential for cross flow would necessarily result in a change in formation pressure (of both of the cross-connected formations). A pressure change propagates much quicker through the formations than a water quality change and thus provides an early warning indicator of potential water quality impacts. Notwithstanding variability in the hydraulic properties of the formation, a crossflow event would result in essentially radial flow away from (or possibly towards) the compromised well, thus understanding the groundwater flow direction is not critical.

The purposes of monitoring of each bore is to assess potential impacts from oil and gas production to the nearest groundwater receptors. A baseline record will be established with the data collected early in the monitoring program. Since production has already commenced at the sites it is not possible to establish a true baseline, thus potential impacts will be assessed by comparing current data with preceding values to assess for changes that can be attributed to CP's activities. Monitoring will initially be undertaken every six months until a baseline dataset of six samples is established, upon which site-specific triggers can be based. Six samples is currently considered sufficient as the monitored formations are mostly of regional extent, in an environment that receives little active recharge, thus background water quality and water levels are not expected to change rapidly

Following the initial six samples, the monitoring frequency will be reviewed with reference to the frequencies identified *Groundwater Sampling and Analysis – Field Guide* (Sundaram et al., 2009).

Groundwater monitoring will commence in the fourth Quarter of 2020.

Table 3 Groundwater monitoring locations and scope

Field	Bore ID	Latitude*	Longitude*	Formation	Water quality samples	Water level measure ments	Well pressure measure ments
DGF	Dingo 2	-24.230231	133.87516	Arumbera Sandstone			✓
	Dingo 3	-24.215692	133.863334	Arumbera Sandstone			✓
	RN002943	-24.232165	133.752977	Quaternary/ Tertiary sediments	✓	✓	
	RN010853	-24.050847	133.779831	Mereenie Sandstone		✓	
	RN011831	-24.033335	133.797343	Mereenie Sandstone	✓		
	RN017540	-24.0962	134.0003	Mereenie Sandstone[!]		✓	

Field	Bore ID	Latitude*	Longitude*	Formation	Water quality samples	Water level measure ments	Well pressure measure ments
SOF	Surprise 1	-23.7141	129.9934	Stairway Sandstone			✓
	Johnstone West 1	-23.6561	129.9442	Stairway Sandstone			✓
	RN018851	-23.716	129.9916	Quaternary sediments	✓	✓	
	RN018397	-23.6561	129.9422	Quaternary sediments		✓	
	RN018463	-23.6454	130.0536	Mereenie Sandstone#		✓	
	RN018398	-23.6371	130.0536	Cleland Sandstone#		✓	

* Datum = WGS 84, coordinates sourced from NRMaps

! Based on interpretation of the Rodinga 1:250k geological map (BMR, 1969)

Based on interpretation of the Mt Rennie 1:250k geological map (Close et al., 2004)

3.2 Water Level Monitoring

Water levels will be measured in the bores identified in Table 3.

Bores for water level monitoring will be surveyed to ensure a vertical accuracy of 0.1 mAHD.

Water levels will be measured with an electronic water level meter (dip meter) to an accuracy of 1cm. Water levels will always be measured prior to sample collection.

3.1 Pressure Monitoring

Wellhead pressures will be measured on the wells identified in Table 3. Wellhead pressures will be measured using either a:

- A pressure gauge permanently installed on the wellhead; or
- A temporary gauge that is connected to the same valve at each monitoring event; or
- Where instrumentation is fitted for remote monitoring, readings may be obtained from the SCADA system

Casing annulus pressures are routinely monitored in accordance with a Well Operation Management Plan.

3.2 Water Quality Monitoring

Water quality samples will be collected from the bores identified in Table 3. Samples will be collected by suitably qualified and trained personnel.

Water quality samples will be collected using existing pumps (where installed). A minimum of three well volumes will be purged prior to sample collection. Samples will only be collected when field water quality parameters have stabilised. Purging and sample collection records will be documented on an appropriate form (Appendix A).

Non-dedicated equipment will be decontaminated between bores by washing with a phosphate-free detergent (e.g. Decon 90) and rinsing with fresh water.

Field water quality (electrical conductivity (EC), pH, temperature) will be measured at the time of sample collection using a calibrated portable water quality meter. The portable water quality meter will be calibrated at the beginning of each sampling event in accordance with the manufacturer's specification. Meter calibration will be recorded on an appropriate form (Appendix A).

Samples for dissolved analyses will be field filtered using new, disposable 0.45µm filters.

Samples will be:

- Collected in new, laboratory supplied sample containers, with appropriate preservatives,
- Labelled with the bore Registered Number (RN), date and time of collected. This will be recorded on the field form (Appendix A),
- Stored in a chilled esky or refrigerator prior to delivery to the laboratory,
- Submitted under Chain-of-Custody protocols,
- Submitted to a laboratory accredited with the National Association of Testing Authorities (NATA) for the analyses to be conducted, and
- Analysed for the suite of parameters listed in Table 4, with limits of reporting identified therein.

For quality assurance purposes, one field duplicate sample will be collected during each sampling event. The duplicate sample will be analysed for total dissolved solids, chloride and electrical conductivity. These analytes are identified to be of particular interest in relation to drilling fluids, hydraulic fracturing fluids, well suspension fluids and produced formation fluids (DENR, 2018). Duplicate sample results will be assessed against the primary through the calculation of the relative percentage difference.

Figure 2 Groundwater monitoring locations relative to permit boundary – Dingo Gas Field

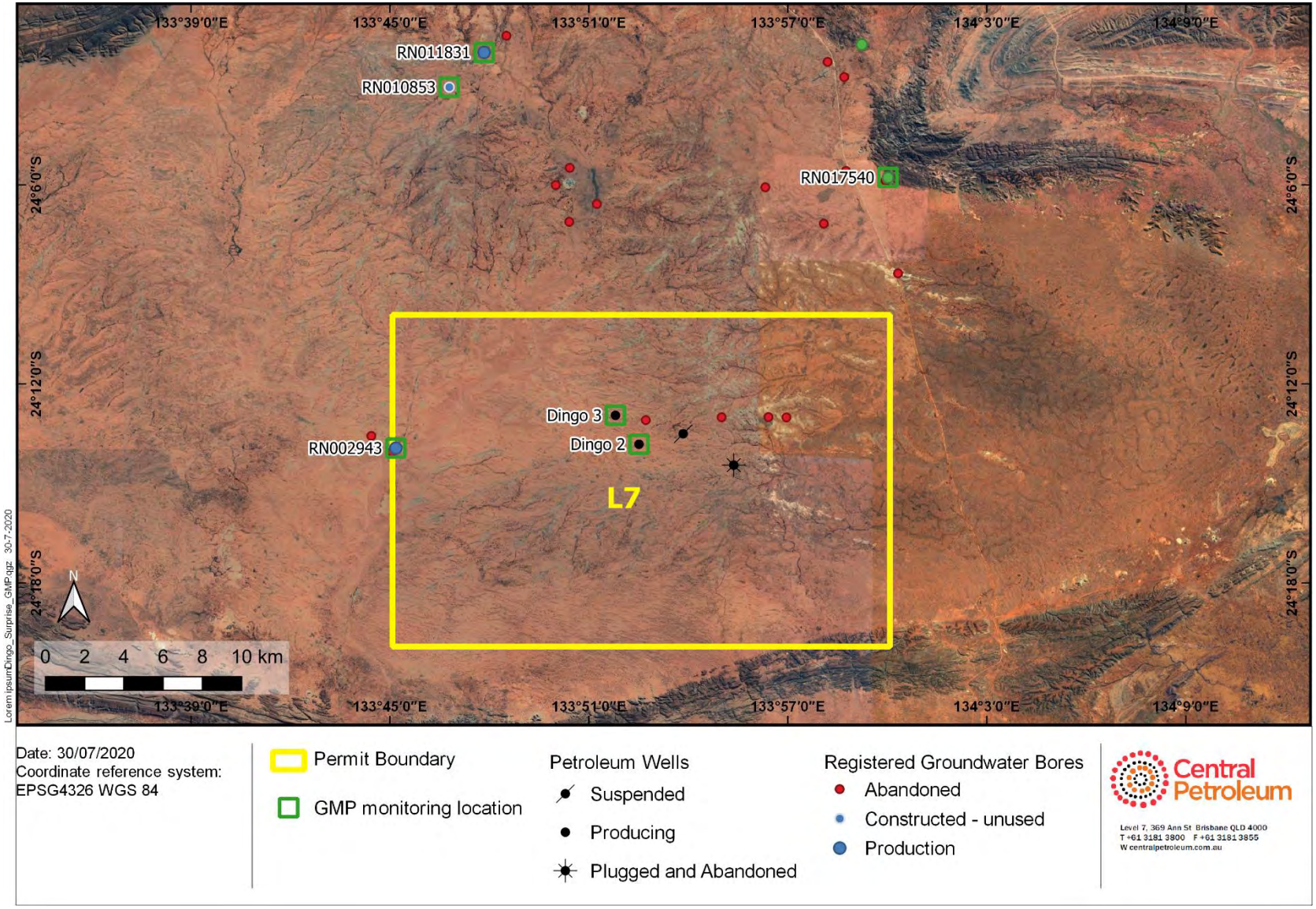


Figure 3 Groundwater monitoring locations relative to permit boundary – Surprise Oil Field7

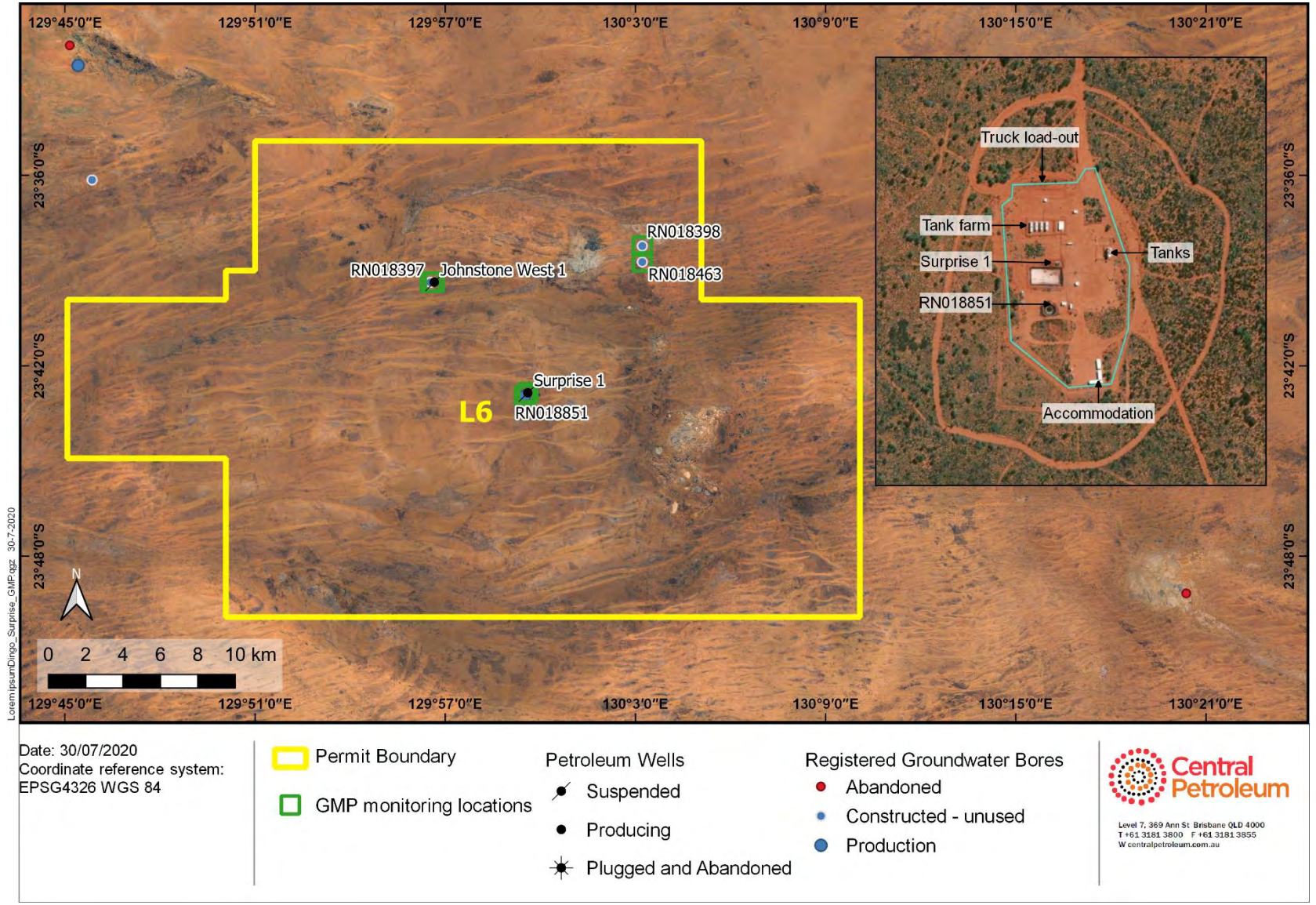


Table 4 Parameters for water quality sample analysis (after NT Government, 2019)

Parameter	Limit of reporting	Parameter	Limit of reporting
Field parameters[!]		**Hydrocarbons**	
Electrical conductivity[!]	1 µS/cm	Total recoverable hydrocarbons (TRH)	100 µg/L
pH[!]	0.01 pH units	PAH Suite	0.5 µg/L
Temperature[!]	0.1°C	Benzene, toluene, ethylbenzene and xylenes (BTEX)	1 µg/L
General Parameters		Dissolved methane, ethane, propane	10 µg/L
pH (laboratory)	0.01 pH units	**Metals/metalloids**	
Electrical conductivity (laboratory)	1 µS/cm	Chromium	0.001 mg/L
Total dissolved solids	10 mg/L	Copper	0.001 mg/L
Total suspended solids	1 mg/L	Lead	0.001 mg/L
Gross alpha	0.05 Bq/L	Manganese	0.001 mg/L
Gross beta	0.1 Bq/L	Mercury	0.001 mg/L
Major Anions and Cations		Silver	0.001 mg/L
Alkalinity (carbonate & bicarbonate)	1 mg/L	Arsenic	0.001 mg/L
Chloride	1 mg/L	Barium	0.001 mg/L
Sulphate	1 mg/L	Boron	0.05 mg/L
Nitrate	0.01 mg/L	Cadmium	0.0001 mg/L
Nitrite	0.01 mg/L	Lithium	0.001 mg/L
Fluoride	0.1 mg/L	Selenium	0.01 mg/L
Sodium	1 mg/L	Silica	0.1 mg/L
Potassium	1 mg/L	Strontium	0.001 mg/L
Calcium	1 mg/L	Zinc	0.005 mg/L
Magnesium	1 mg/L		
Iron	0.05 mg/L		

[!] Not specifically required by the CoP but required for quality assurance purposes

4.0 Data management, assessment and reporting

4.1 Data management

Data collected as part of this groundwater monitoring program will be stored in a dedicated groundwater database[1], or a company-wide environmental database.

Data will be uploaded into the database upon receipt of final reports from the laboratory and will be assessed against performance standards at that time. If an exceedance is identified the investigation and response process (Section 4.3) will be followed.

Monitoring field forms, calibration records, chain-of-custody documentation and laboratory reports will be provided within 6 weeks of receipt of the final laboratory reports from a monitoring event.

The Manager Risk and HSE is responsible for all data management, review and reporting.

4.2 Site-specific performance standards

Site-specific performance standards will be developed following the collection of baseline water quality data, i.e. after minimum of six samples (Section 3). The development of site-specific performance standards for water quality will generally follow the process outlined in DSITI (2017).

In the interim, until site-specific performance standards for water quality have been established, the ANZECC (2000) livestock guidelines will be adopted.

Laboratory results will be directly compared to the interim or site-specific performance standards.

4.3 Exceedance investigation and response process

Should monitoring data fall outside of the site-specific performance standards (or interim standards), response actions will follow the framework shown in Figure 4.

If a value exceeds a site-specific performance standard, the initial response is to validate the value. This will be undertaken by:

- Confirming with the laboratory that the reported value is correct
- Assessing whether there is a consistent trend in the data that indicates an unexpected change in the water chemistry, and
- Potentially resampling the bore

If exceptions are identified, these will be reported to DEPWS within 6 weeks of receiving final laboratory reports.

If the exceedance is found to be false, DEPWS will be notified of the outcome and monitoring will continue in accordance with this monitoring plan. If the exceedance is verified, increasing levels of investigation will be undertaken to assess whether the cause is CP's activities or whether the conceptual understanding of the groundwater system is incorrect and site-specific performance standards need to be updated. These investigations will be situation specific but will include risk assessments (based on the source-pathway-receptor risk model), and the possible need to develop and implement mitigation plans.

CP will engage with DEPWS at all stages through the investigation and response process.

[1] This may be Excel, Access or a commercially available database.

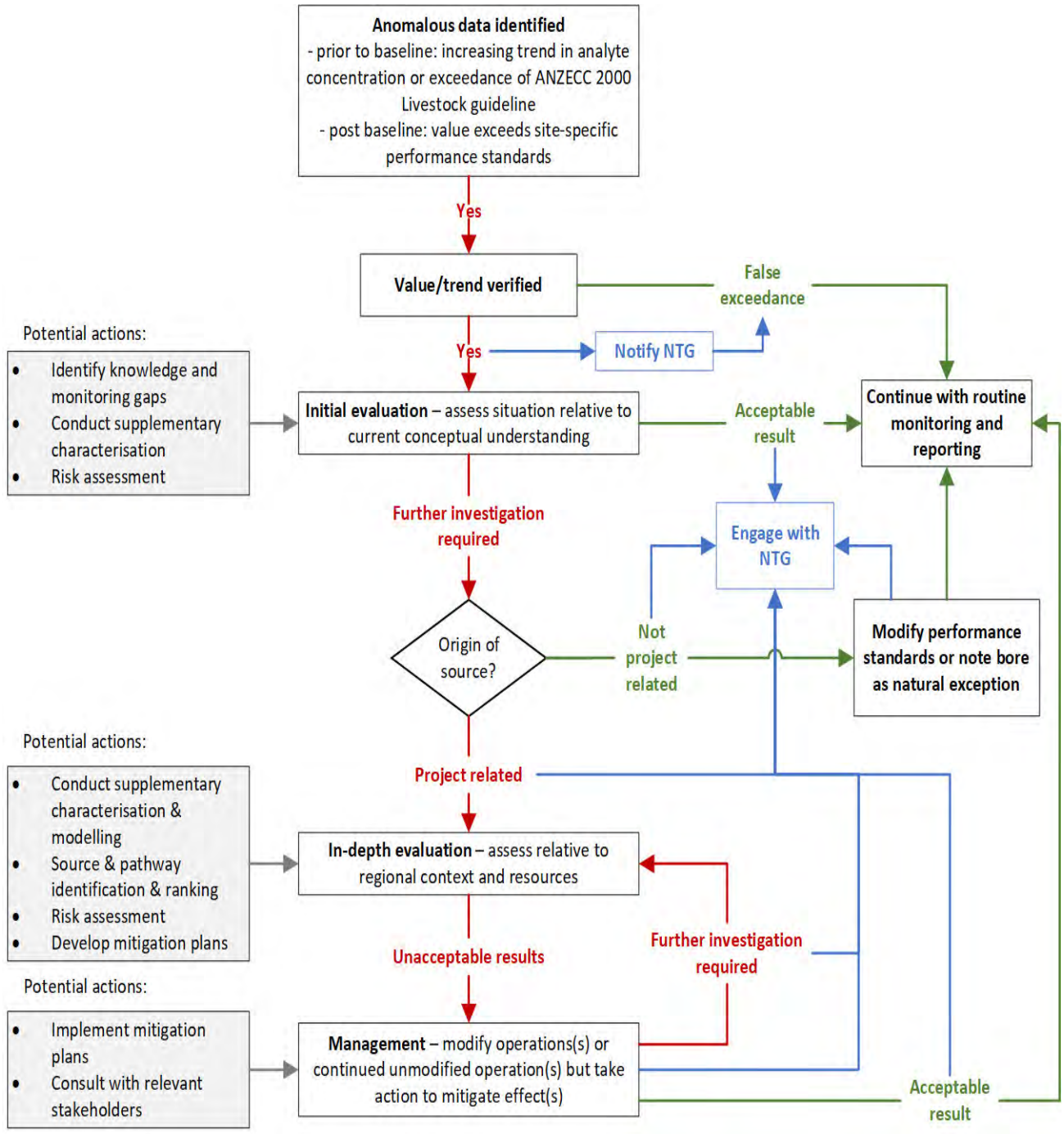
4.4 Reporting

An annual report will be produced to present and assess results of the groundwater monitoring program. The report will include:

- The current monitoring locations, scope (Table 3) and any deviations from the scope
- Presentation and discussion of water level and pressure data, including:
  - Assessment of water level trends
  - Comparison of wellhead pressures and water levels
  - Assessment of casing annulus pressure to confirm well integrity
- Presentation and discussion of water quality monitoring results, including:
  - Comparison of water quality results with site-specific performance criteria
  - Discussion of any changes in water quality
  - Tabulation of field and laboratory chemical data from the reporting period
- Investigation and response actions completed since the previous report.

The annual groundwater monitoring report and data will be provided to DEPWS annually within six weeks of the anniversary of the approval date of the EMP.

Figure 4 Site-specific performance standard exceedance investigation and response framework



5.0 References

ANZECC & ARMCANZ (2000). Australian and New Zealand Guidelines for Fresh and Marine Water Quality – Volume 1: The Guidelines. Australian and New Zealand Conservation Council, Agriculture Resource Management Council of Australia and New Zealand (ANZECC & ARMCANZ). Commonwealth of Australia, Canberra

BMR (1969) Rodinga , Northern Territory : sheet SG5302 (First Edition) 1:250 000 scale. Bureau of Mineral Resources, Geology and Geophysics

Close, D.F., Scrimgeour, I.R. and Edgoose, C.J. (2004) Mount Rennie, Northern Territory (Second Edition). 1:250 000 geological map series, SF 52-15. Northern Territory Geological Survey

DSITI (2017). Using monitoring data to assess groundwater quality and potential environmental impacts. Version 1. Department of Science, Information Technology and Innovation (DSITI), Queensland Government, Brisbane.

NT Government (2019) Code of Practice: Onshore Petroleum Activities in the Northern Territory. Northern Territory Government, 31 May 2019.

Short, M. A. (2018) Orange Creek Groundwater Assessment 2018/19. Preliminary assessment of groundwater storage in the Cambrian Carbonate Aquifers. Technical Report 12/2018D.

Sundaram, B., Feitz, A., Caritat, P. de, Plazinska, A., Brodie, R., Coram, J. and Ransley, T., (2009) Groundwater Sampling and Analysis – A Field Guide. Geoscience Australia, Record 2009/27 95 pp.

Appendix A – Example field forms

Water Quality Sample Field Form

Field		Sampled by	
Date		Bore ID	
Sampling Method			
Water Level (mTOC		Screen From (mm)	
Casing Diameter (mm)		Screen To (mm)	
Bore Depth (m)		Well Volumes (L)	

Time	Volume Removed	Ec	Ph	Temp	Comments

Sample ID		Sample Time	
Comments			

Field Water Quality Meter Calibration Record

Field		Time	
Date		Calibrated by	
Field Water Quality Meter Make and Model			

Ph					
	Buffer Ph	Buffer batch	Buffer expiry date	Ph before calibration	Ph after calibration
Buffer 1					
Buffer 2					

Electrical Conductivity					
	Standard value	Standard Batch No.	Standard expiry date	Ec before calibration	Ec after calibration
Buffer 1					
Buffer 2					