

Modification Notice - Regulation 22

If the modification to the regulated activity has already occurred, a regulation 22 modification notice is not applicable.

Interest Holder	Central Petroleum	EMP Title	Mereenie Oil and Gas Field Environment Management Plan	Unique EMP ID No.	CTP6-4	Mod No.	10	Date	11 June 2026
Brief Description	This Regulation 22 modification proposes updates to the waste management approaches within the Mereenie Oil and Gas Field EMP to include drill cuttings management and drill sump remediation for the Mereenie Development Wells. The amendment addresses department feedback arising from the Development Wells 29/30 assessment and ensures that equivalent considerations are embedded for future development activities. The timetable, activities proposed, waste management approaches, wastewater management, risk assessments and spill management plan have been updated to document the management and remediation of drilling waste/cuttings. The outcome of this modification is that there is no effecting change in environmental risk as Central Petroleum is just transferring waste obligations from one EMP to another.								
Geospatial Files Included?	No								

Does the proposed change result in a new, or increased, potential or actual environmental impact or risk?	If an INCREASE in an existing potential or actual environmental impact or risk, is the increase provided for in the approved EMP?	Does the proposed change require additional mitigation measures to ensure it is managed to ALARP and acceptable levels?	Has additional stakeholder engagement been conducted?	Does the proposed change require additional environmental performance standards or measurement criteria?	Does the proposed change affect compliance with Sacred Site Authority Certificates?	Does the proposed change affect any sub-plans to the EMP?	Will the environmental outcome continue to be achieved?
<i>Attach supporting information to support all answers to the above questions</i>							
No. The regulation 22 is just moving drill cutting management obligations from the Dev Wells EMP to the Mereenie Field EMP.	N/A	No additional mitigation measures are considered necessary.	No. The update to waste management approaches does not impact any stakeholders and adequate stakeholder engagement has been conducted previously.	No additional environmental performance standards and measurement criteria are required. A review of the existing standards and criteria in the EMP identified that all elements will be able to be met and the proposed works will not impact compliance.	No. All works are conducted on existing operational areas and aligned with existing approvals.	No.	Yes

Current EMP Text	Amended EMP Text										
Table 0-1 Activities proposed under this EMP <table> <tr> <th>Activity</th><th>Brief description</th></tr> <tr> <td>Civil and project activities</td><td>Includes maintenance of firebreaks, well pads, roads and access tracks, and repair of ESC devices. Also includes installation of new equipment within existing disturbance footprint.</td></tr> </table>	Activity	Brief description	Civil and project activities	Includes maintenance of firebreaks, well pads, roads and access tracks, and repair of ESC devices. Also includes installation of new equipment within existing disturbance footprint.	Table 0-1 Activities proposed under this EMP <table> <tr> <th>Activity</th><th>Brief description</th></tr> <tr> <td>Drill cutting / sump remediation</td><td>Includes removing, treating and rehabilitating drilling waste and sump areas to minimise erosion and restore landform stability.</td></tr> <tr> <td>Civil and project activities</td><td>Includes maintenance of firebreaks, well pads, roads and access tracks, and repair of ESC installation of new equipment within existing disturbance footprint.</td></tr> </table>	Activity	Brief description	Drill cutting / sump remediation	Includes removing, treating and rehabilitating drilling waste and sump areas to minimise erosion and restore landform stability.	Civil and project activities	Includes maintenance of firebreaks, well pads, roads and access tracks, and repair of ESC installation of new equipment within existing disturbance footprint.
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Table 3-7 Waste management approaches <table> <tr> <th>Typical waste</th><th>Waste management approach</th></tr> <tr> <td>Workover fill/ cuttings</td><td>Recycle/Treat/ Dispose Remaining fluids stored in lined sump/flare pit and evaporated. Solids disposed either off site at an approved facility.</td></tr> </table>	Typical waste	Waste management approach	Workover fill/ cuttings	Recycle/Treat/ Dispose Remaining fluids stored in lined sump/flare pit and evaporated. Solids disposed either off site at an approved facility.	Table 3-7 Waste management approaches <table> <tr> <th>Typical waste</th><th>Waste management approach</th></tr> <tr> <td>Workover fill/ cuttings / Drilling cuttings</td><td>Recycle/Treat/ Dispose Remaining fluids stored in lined sump/flare pit and evaporated. Solids disposed either off site at an approved facility.</td></tr> </table>	Typical waste	Waste management approach	Workover fill/ cuttings / Drilling cuttings	Recycle/Treat/ Dispose Remaining fluids stored in lined sump/flare pit and evaporated. Solids disposed either off site at an approved facility.		
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	Drill cutting / sump remediation Recycle/Treat/ Dispose When drilling and associated activities have been completed on the site, the lined sumps (drill sump) and flare pit are left to dry out. The dried cuttings from the flare pit are transferred to the lined drill sump before both the sump and flare pit are backfilled, capped with soil from the site and rehabilitated with vegetation regrowth. Treatment options for drilling wastes/cuttings include mix, bury, cover or remediation through the application of suitable ameliorants as determined through analytical testing and assessment of the material.
3.9.4 Wastewater management 3.9.4.5 Workovers Workover fluids are likely to be the only wastewater produced during workovers at existing well sites. DITT requires the operator to ensure enough workover fluid and a weighting agent at the wellsite is available to “kill” the well in the event of an emergency/loss of containment during workovers. the operator will use water sourced from onsite bores for use in workover fluid, along with a small amount of biodegradable biocide and potassium chloride (KCl). Workover fluid will not be mixed with any oil or BTEX based additives. If the work over fluid is not required at a particular well site, the unused water will be used at another well site in the mud tank or disposed of in one of the field evaporation ponds. The anticipated total volume of workover fluid required is approximately 400bbls (0.063ML) per annum. While undertaking routine¹ air/mist workovers at a well site, retrieved debris/fill/materials will be discharged into a flare tank (via the blooie line) at the well site. Once flaring commences any incidental small volumes of liquid within the flare pit is vaporised (not expecting water to be	3.9.4 Wastewater management 3.9.4.5 Drill Cutting and Workover Waste Management Workover fluids are likely to be the only wastewater produced during workovers at existing well sites. DITT requires the operator to ensure enough workover fluid and a weighting agent at the wellsite is available to “kill” the well in the event of an emergency/loss of containment during workovers. The operator will use water sourced from onsite bores for use in workover fluid, along with a small amount of biodegradable biocide and potassium chloride (KCl). Workover fluid will not be mixed with any oil or BTEX based additives. If the work over fluid is not required at a particular well site, the unused water will be used at another well site in the mud tank or disposed of in one of the field evaporation ponds. The anticipated total volume of workover fluid required is approximately 400bbls (0.063ML) per annum. While undertaking routine² air/mist workovers at a well site, retrieved debris/fill/materials will be discharged into a flare tank (via the blooie line) at the well site. Once flaring commences any incidental small volumes of liquid within the flare pit is vaporised (not expecting water to be discharged as little water is present in gas cap at MRN). For larger workovers (i.e. flow rate > 5TJ/day anticipated) a flare pit will be utilised which will be lined with an impervious clay material and hydrotested prior to operation. Only once the flare pit has passed a hydrotest will workover

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

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

discharged as little water is present in gas cap at MRN). For larger workovers (i.e. flow rate > 5TJ/day anticipated) a flare pit will be utilised which will be lined with an impervious clay material and hydrotested prior to operation. Only once the flare pit has passed a hydrotest will workover activities be able to commence. Upon completion of the workover, discharged materials can be removed from the flare tank / pit and disposed or recycled at an approved facility. In both cases, volume markers will be applied to the flare tank / pit to ensure visual inspections can accurately determine whether a leak has / is occurring. Visual inspections will be undertaken, at minimum, daily.	activities be able to commence. Upon completion of the workover, discharged materials can be removed from the flare tank / pit and disposed or recycled at an approved facility. In both cases, volume markers will be applied to the flare tank / pit to ensure visual inspections can accurately determine whether a leak has / is occurring. Visual inspections will be undertaken, at minimum, daily. When drilling and associated activities have been completed on the site, the lined sumps (drill sump) and flare pit are left to dry out. The dried cuttings from the flare pit are transferred to the lined drill sump before both the sump and flare pit are backfilled, capped with soil from the site and rehabilitated with vegetation regrowth. This management system for on-site burial is based on analyses and reporting from Mereenie development wells drilled in previous years at WM27 and WM28 and provided to DLPE. The drilling waste report was prepared in compliance with the Code by suitably qualified third-party assessors. The report confirmed the classification of the Mereenie drilling sump material, which includes cuttings and residual drilling fluid, as General Solid Waste (inert) with no elevated Contaminants of Potential Concern (CoPC). The Mereenie drilling waste is classified as suitable for unconfined burial, i.e., landfill. Given the remoteness of Mereenie and the inert nature of the material, in situ burial of the drilling waste material, capping with topsoil and revegetation at the well site is both the most practicable and ALARP. Treatment options for drilling wastes/cuttings include mix, bury, cover or remediation through the application of suitable ameliorants as determined through analytical testing and assessment of the material.		
6.2 Biodiversity	6.2 Biodiversity – add highlighted in the relevant sections <table><tr><th>Consequences</th></tr><tr><td> ▪ Soil/land contamination from: - loss of containment, including spills and leaks, of hydrocarbons, chemicals, workover fluids, drilling cuttings, wastewater, including during wet weather - storage, handling, use of fuels, oils and chemicals - wastewater handling, storage and treatment/disposal </td></tr></table>	Consequences	▪ Soil/land contamination from: - loss of containment, including spills and leaks, of hydrocarbons, chemicals, workover fluids, drilling cuttings, wastewater, including during wet weather - storage, handling, use of fuels, oils and chemicals - wastewater handling, storage and treatment/disposal
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Environmental performance measures: Biodiversity					
Activities	▪ Civil and project activities – earthworks, land and vegetation management ▪ Well operations – surface infrastructure ▪ Production facilities – gathering and boosting, oil and gas processing, ▪ Well workover – fluid systems ▪ Rehabilitation ▪ Support activities – chemical storage, workover fluids, waste and wastewater management				
Residual risk	Medium	Code of Practice	A 3.1, A 3.5, A 3.6, A 3.7, A 3.9	Uncertainty	A (Low)
Risk	Consequences		Critical controls		
	▪ Loss of vegetation / fauna habitat values from: - loss of containment, including spills and leaks, of hydrocarbons, chemicals, workover fluids, wastewater, including in wet weather - storage, handling, use and disposal of fuels, oils and chemicals - uncontrolled fires from an ignition source - movement of vehicles and heavy machinery outside of disturbance areas - spread of weed species ▪ Encouragement of native and pest fauna from poor waste handling and storage ▪ Loss of fauna habitat from lack/failure of rehabilitation ▪ Loss of fauna from: - vehicle movements and human interaction - injury or death from access to ponds, pits, sumps or trenches or similar		▪ Weed Management Plan ▪ Progressive Rehabilitation and Closure Plan ▪ Fire Management Plan ▪ Wastewater Management Plan ▪ Spill Management Plan ▪ Erosion and Sediment Control Plan		
ALARP And Acceptability	The residual risk remains medium based on moderate impacts of loss of conservation significant fauna. The operator considers that the risk has been reduced to APLARP and acceptable based on the following: ▪ Vehicle movements are a necessary part of operations controls are aligned with industry practice and consistent with ESD principles to co-exist without any long-term impacts to the local environment. ▪ No WoNS or declared weeds in Mereenie so risk of weed spread between well sites minimised. Best practice weed management in place and the operator seeks to achieve the requirements of key legislation and strategies as outlined in Section 2.				

- waste generation, segregation and disposal ▪ Land disturbance and exposure of soils increasing erosion hazard from movement and use of heavy machinery/earthworks - wet weather including flooding and high rainfall events resulting in erosion - Loss of soil viability and productivity from soil stockpiling or compaction - Failure of rehabilitation			
ALARP and Acceptability	The operator considers that the risks have been reduced to ALARP and no further risk reduction is warranted as: • Drill cuttings are remediated and disposed of in accordance with 3.9.4.5 and Table 3-7		
Environmental performance standards		Measurement criteria	
Land no longer required for active operations is stabilised and progressively rehabilitated		▪ Records show full rehabilitation has been initiated for areas no longer required for the operator's activities ▪ Records show progressive rehabilitation has been initiated to reinstate/reduce areas no longer required ▪ Drill cuttings are remediated and disposed of in accordance with 3.9.4.5 and Table 3-7	

6.3 Land

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

6.3 Land – add highlighted in the relevant sections

Consequences

- Soil/land contamination from:
 - loss of containment, including spills and leaks, of hydrocarbons, chemicals, workover fluids, **drilling cuttings**, wastewater, including during wet weather
 - storage, handling, use of fuels, oils and chemicals
 - wastewater handling, storage and treatment/disposal
 - waste generation, segregation and disposal
- Land disturbance and exposure of soils increasing erosion hazard from movement and use of heavy machinery/earthworks
 - wet weather including flooding and high rainfall events resulting in erosion
 - Loss of soil viability and productivity from soil stockpiling or compaction
 - Failure of rehabilitation

ALARP and Acceptability

The operator considers that the risks have been reduced to ALARP and no further risk reduction is warranted as:

- Drill cuttings are remediated and disposed of in accordance with 3.9.4.5 and Table 3-7**

Environmental performance standards	Measurement criteria
Land no longer required for active operations is stabilised and progressively rehabilitated	- Records show full rehabilitation has been initiated for areas no longer required for the operator's activities - Records show progressive rehabilitation has been initiated to reinstate/reduce areas no longer required

Environmental management strategy: Land			
Environmental outcome	Environmental performance standards	Measurement criteria	Records
No significant long-term impacts on soil stability, soil quality and land formations from the operator's activities	Erosion and sediment controls in place, including wet weather response	- Records show the erosion and sediment control measures are being implemented - Records show inspections of erosion and sedimentation issues after significant rainfall events - Records show all active work sites inspected for evidence of erosion and sedimentation, including after significant rain events, and that where erosion/sedimentation is identified, remedial actions are taken - The incident management system shows no incidents relating to the failure of ESCP controls (within the design parameters) - Records show restricted use of roads and tracks to operational safety activities across the field after significant rainfall event (>10mm in 24 hours)	- Inspection records - Incident records - Weather records
	Disturbance of land remains within existing cleared and operational areas.	- Records show that earthworks and upgrade/project activities remain within previously disturbed areas - Records show vehicles and machinery remain within designated areas - Records show that personnel, visitors and contractors are aware of designated work areas	- Incident records - Induction records - Permit to work records
	No releases of contaminants (including wastes, wastewater, chemicals, hydrocarbons or workover fluids) resulting in long-term contamination of the soil	- Records show all spills remediated immediately on discovery, and where necessary contamination assessment undertaken - The incident management system indicates no releases of contaminants incidents related to wet weather operations - The incident management system indicates no releases from the re-use, recycling, treatment, handling, storage of wastewater - The incident management system indicates no release of contaminant incidents related to a control failure of the Wastewater Management Plan - The incident management system indicates no Level 3 spills as per the Spill Management Plan - Records show emergency response plan implemented in the event of a Level 3 spill or leak	- Incident records - Soil monitoring results - Inspection records - Wet weather records
	Land no longer required for active operations is stabilised and progressively rehabilitated	- Records show full rehabilitation has been initiated for areas no longer required for the operator's activities - Records show progressive rehabilitation has been initiated to reinstate/reduce areas no longer required	- Rehabilitation success monitoring - Incident records

- Drill cuttings are remediated and disposed of in accordance with 3.9.4.5 and Table 3-7

6.4 Surface water

Consequences
- Surface water contamination from: - loss of containment, including spills and leaks, of hydrocarbons, workover fluids, drill cuttings, wastewater from assets, including during wet weather - spill or leak from the storage, handling, use of fuels, oils and chemicals - flooding from significant rainfall events - earthworks/civil activities including heavy machinery use - poor waste handling and disposal

Environmental performance measures: Surface water				
Activities	- Civil and project activities – earthworks, land and vegetation management, project, borrow pits, mobilisation/demobilisation - Well operations – surface infrastructure, well maintenance and integrity - Production facilities – gathering and boosting, oil and gas processing, condensate and oil storage and loadout - Well workover – fluid systems - Wellhead equipment, safety systems and gathering network replacement - Rehabilitation - Support activities – chemical storage, workover fluids, waste and wastewater management			
Residual risk	Medium	Code of Practice	A 3.4, A 3.8, C 3, C 4.1, C 4.2, C 5, C 7.1, C 7.2	Uncertainty A (Low)
Risk	Consequences		Critical controls	
	- Surface water contamination from: - loss of containment, including spills and leaks, of hydrocarbons, workover fluids, wastewater from assets, including during wet weather - spill or leak from the storage, handling, use of fuels, oils and chemicals - flooding from significant rainfall events - earthworks/civil activities including heavy machinery use - poor waste handling and disposal		- Asset Management System - Wastewater Management Plan - Spill Management Plan - Wet Season Management Plan	
ALARP and Acceptability	The operator considers that the risks have been reduced to <u>ALARA</u> and no further risk reduction is warranted as: - Operation of flowlines in accordance with legislative and best practice guides/codes (refer Section 2) - Operation of wastewater storage and disposal as per the Code. The ponds were developed prior to the implementation of the <u>Code</u>, no leak detection is in place but a program of regular inspections as part of the Asset Management System has been successfully implemented. - Secondary containment (when in use) will be inspected weekly, unless being operated through the wet season during which period it will be monitored daily. - Operation and maintenance of the gathering network and the MASP in accordance legislative and with best practice industry standards (refer Section 2).			
Environmental outcome	Environmental performance standards	Measurement criteria		Records
No significant impact on surface water quality from the operator's activities	No release of contaminants resulting in long term contamination of surface waters, including during wet	- Records show all spills remediated immediately on discovery, and where necessary contamination assessment undertaken - The incident management system indicates no release of contaminant incidents related to storage, handling, use or disposal of chemicals, fuels, wastes		- Inspection records - Incident Records - Chemical Register

ALARP and Acceptability

The operator considers that the risks have been reduced to ALARP and no further risk reduction is warranted as:

- Drill cuttings are remediated and disposed of in accordance with 3.9.4.5 and Table 3-7

Corrective actions

- Soil remediation where spills occur to reduce impact to nearby surface water
- Drill cuttings are remediated and disposed of in accordance with 3.9.4.5 and Table 3-7
- Review of wet weather procedures and response
- Review of storage and handling practices of contaminants
- Increased awareness and training

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Environmental performance measures: Surface water						
	weather operations	- The incident management system indicates no release of contaminant incidents related to wet weather operations - The incident management system indicates no releases from the re-use, recycling, treatment, handling, storage of wastewater - The incident management system indicates no release of contaminant incidents related to a control failure of the Wastewater Management Plan - The incident management system indicates no Level 3 spills as per the Spill Management Plan - Records show emergency response plan implemented in the event of a Level 3 spill or leak				
	Erosion and sediment controls in place	- Records show the erosion and sediment control plan is implemented - Records show all active work site inspected for evidence of erosion and sedimentation, including after significant rain events, and that where erosion/sedimentation is identified, remedial actions are taken - The incident management system shows no incidents relating to the failure of ESCP controls (within the design parameters)		- Inspection records - Incident records - Job hazard analysis		
	No long-term impacts on surface water from operation of evaporation ponds	- Records show freeboard is maintained - No incidents of overtopping from evaporation ponds recorded within the incident management system - Records show inspections of integrity are maintained - Records show production needs consider available holding capacity within evaporation ponds, particularly during wet weather		- Inspection records - Daily production reports - Incident records		
Environmental monitoring	- Water sampling, where available following a Level 3 spill, to determine extent of contamination of surface water and following removal of contamination source (as required as part of Level 3 spill response) - Secondary containment (when in use) will be inspected weekly, unless being operated through the wet season during which period it will be monitored daily. - Evaporation ponds: freeboard levels and fauna interactions (daily) - Visual monitoring of erosion and sediment controls: - Civil activities and workovers: Daily - Operational areas: Monthly - Field: within 5 days of significant rainfall					
Corrective actions	- Soil remediation where spills occur to reduce impact to nearby surface water - Review of wet weather procedures and response - Review of storage and handling practices of contaminants - Increased awareness and training					

6.5 Groundwater

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

6.5 Groundwater

Consequences

- Contamination of groundwater resources from:
 - Subsurface loss of contaminants during workovers
 - Groundwater inflow from workover activities
 - Well integrity
 - Spill or leak from the use, transportation, treatment, handling and storage of, workover fluids, **drill cuttings**, wastewater, and, diesel, fuel, oils and chemicals, including during wet season
 - Loss of containment from wastewater ponds
- Reduced groundwater availability for wider community from use of groundwater resources to support the operator's activities

ALARP and Acceptability

The operator considers that the risks have been reduced to ALARP and no further risk reduction is warranted as:

- Well operations and workovers will be conducted using extensive best practice controls as outlined in the DITT approved WOMPs for each well. The subsurface loss of containment risks of operations and workovers are generally lower than drilling a new well because cement casing is already in place and there are no open zones, which provides some protection against hydrocarbon migration. Multiple well barriers are used across aquifers to minimise interaction.
- The residual risk has been reduced to the greatest extent possible due to the consequence of impacts on groundwater from subsurface losses remaining as serious if an event did occur. We consider that this risk has been reduced to ALARP and no further risk reduction is warranted.
- We also note that part of the rationale for conducting the workover activities is to improve well integrity in an aging field. Workovers will ensure well barriers are in-tact so that subsurface loss of containment risks are reduced during the operation of the well.
- Drill cuttings are remediated and disposed of in accordance with 3.9.4.5 and Table 3-7**

Table A.1 Risk Assessment – potential Impact to Land (contamination of Soil)						Table A.1 Risk Assessment – add highlighted in yellow	
Potential Impact	Causes	Consequence	Inherent Risk			Existing Control Measures (Control Type)	
			I	L	R		
	Spill or leak from the use, transportation, treatment, handling and storage of diesel, fuel, oils, including during wet season	Contamination of soil	Moderate	Possible	Medium	- Asset integrity management system which includes: - Store minimal volumes of fuels, oils and other chemicals on site while the site is not operational (administrative) - Ensure appropriate measures are in place (e.g. lining, bunding) to prevent fluids or other waste chemical and/or hydrocarbon fluids from contaminating water or land not specifically designated for waste disposal (engineering) - Ensure that where drips and leaks occur, corrective actions are raised, and repairs are undertaken in a timeframe commensurate with the risk of environmental harm escalating if not repaired (administrative) - Implement fuel and chemical handling and storage procedure (administrative) - Site specific risk assessment of road conditions for heavy vehicle transport will be conducted prior to mobilisation on unsealed roads using detailed weather forecasting (administrative) - Provide spill response kits appropriate for the types of spills possible at each facility (engineering) - Follow the appropriate Australian Standards and Code for the fuel / chemical being stored and used at the facility (engineering, administrative) - On-site SDS and handling procedures for fuel / chemicals to be available at each facility (administrative) - Secondary containment of chemicals and hazardous materials as per Code - The required volumes of chemicals plus contingency will be transported to site from offsite locations at the minimum frequency possible to minimise transportation risks while allowing the necessary quantities to be appropriately stored onsite for access as required - Implement Spill Management Plan (administrative) - Implement Wet Season Management Plan (administrative)	
						Causes	
						Existing Control Measures (Control Type)	
						Spill or leak from the use, transportation, treatment, handling and storage of, workover fluids, drill cuttings, wastewater, and, diesel, fuel, oils and chemicals, including during wet season	
						- Workovers and drill cuttings - Workover fluid stored in steel tanks surrounded by trench/drain to flare pit. Spills of workover fluid contained to the disturbed operational areas using bunding and immediately managed (engineering). - Minimising handling/transfer activities during rainfall or high wind conditions - Remediate and dispose of drill cuttings in accordance with 3.9.4.5 and Table 3-7	
Table A.1 Risk Assessment – Potential Impact to water (Contamination of surface and groundwater)						Table A.1 Risk Assessment – add highlighted in yellow in the relevant sections	
						Causes	
						Existing Control Measures (Control Type)	

Spill or leak from the use, transportation, treatment, handling and storage of, workover fluids, wastewater, and, diesel, fuel, oils and chemicals, including during wet season	Contamination of surface water Contamination of groundwater	Moderate	Unlikely	Medium General - Liquid wastes (other than workover fluid) to be stored in a secured container in a bunded area (engineering) - Ensure appropriate measures are in place (e.g. lining, bunding) to prevent fluids or other waste chemical and/or hydrocarbon fluids from contaminating water or land not specifically designated for waste disposal (engineering) - Ensure that where drips and leaks occur, corrective actions are raised, and repairs are undertaken in a timeframe commensurate with the risk of environmental harm escalating if not repaired (administrative) - Transport of hazardous material within the NT by a licensed NT EPA contractor (administrative) - Any transport across State or Territory borders to abide by the NEPM 2013 guidelines (administrative) - Handle, store and otherwise manage all hazardous goods in accordance with relevant Australian Standards and Codes of Practice (administrative) - Where applicable, ensure pumps, tanks and transfer lines are located within suitably bunded areas (engineering) - Implement Spill Management Plan (administrative) - Implement Wet Season Management Plan (administrative) - Implement Wastewater Management Plan (administrative) Workovers - Trench/drain to be constructed around workover fluid tanks to direct overflow to flare pit (engineering) and tanks to be monitored hourly during shift (administrative)
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Spill or leak from the use, transportation, treatment, handling and storage of, workover fluids, **drill cuttings**, wastewater, and, diesel, fuel, oils and chemicals, including during wet season

Workovers and drill cuttings

- Trench/drain to be constructed around workover fluid tanks to direct overflow to flare pit (engineering) and tanks to be monitored hourly during shift (administrative)
- Minimising handling/transfer activities during rainfall or high wind conditions**
- Remediate and dispose of drill cuttings in accordance with 3.9.4.5 and Table 3-7**

Current Spill Management Plan 2022

SPILL SCENARIOS AND MANAGEMENT						
Type	Activity	Activity duration	Location	Quantity	Approximate Quantity	Key Management Control
Operations	Storage of chemicals in the chemical storage area (e.g. oil, diesel, fuel, etc.)	Operations: ongoing	Chemical storage area	General use chemicals (e.g. oil, diesel, fuel, etc.) as per SDS	100L	- Daily visual checks of the chemical storage area - Secondary containment / bunding - Spill kit available - Emergency transfer of chemicals at well site / temporary location
	Handling / mixing of chemicals (e.g. oil, diesel, fuel, etc.)	Operations: ongoing	Power handling / mixing practices	General use chemicals (e.g. oil, diesel, fuel, etc.) as per SDS	100L	- Daily visual checks of the chemical storage area - Secondary containment / bunding - Spill kit available - Emergency transfer of chemicals at well site / temporary location
	Trucking/vehicle refuelling	Operations: ongoing	Incorrect refuelling set-up	Operations: equipment	As per fuel SDS	- Daily visual checks of the chemical storage area - Secondary containment / bunding - Spill kit available - Emergency transfer of chemicals at well site / temporary location
	Oil loadout/Diesel delivery	Operations: ongoing (up to 10 days)	Oil loadout	Oil loadout	30,000L	- Daily visual checks of the chemical storage area - Secondary containment / bunding - Spill kit available - Emergency transfer of chemicals at well site / temporary location
	Chemical transportation to / from location outside of OIA and OLS	Operations: ongoing	Incorrect storage/incorrect loading / unloading technique/Traffic accident	Vehicle	As per SDS	- Daily visual checks of the chemical storage area - Secondary containment / bunding - Spill kit available - Emergency transfer of chemicals at well site / temporary location
Workover	Operation of blowdown and gathering network across field	Operations: ongoing	Flowline failure	All of field flowlines	Oil, only water, process and produced water	- Daily visual checks of the chemical storage area - Secondary containment / bunding - Spill kit available - Emergency transfer of chemicals at well site / temporary location
	Transfer of waste fluids via truck	Operations: ongoing	Traffic accident/Fitting failure	Vehicle	Oil, only water, process and produced water	- Daily visual checks of the chemical storage area - Secondary containment / bunding - Spill kit available - Emergency transfer of chemicals at well site / temporary location
	Chemical transfers between tanks and rigs on the well lease	Workovers 10-20 days	Coupling, hoisting and pipe failure	Chemical loading area	General use chemicals (e.g. oil, diesel, fuel, etc.) as per SDS	- Daily visual checks of the chemical storage area - Secondary containment / bunding - Spill kit available - Emergency transfer of chemicals at well site / temporary location
	Storage of workover fluid in tanks on the well lease	Workovers 10-20 days	Container rupture/Leak / tank not fitted correctly	Workover fluid tanks	Workover and well suspension fluids	- Daily visual checks of the chemical storage area - Secondary containment / bunding - Spill kit available - Emergency transfer of chemicals at well site / temporary location
	Handling / mixing of chemicals (e.g. oil, diesel, fuel, etc.)	Workovers 10-20 days	Power handling / mixing practices	General use chemicals (e.g. oil, diesel, fuel, etc.) as per SDS	100L	- Daily visual checks of the chemical storage area - Secondary containment / bunding - Spill kit available - Emergency transfer of chemicals at well site / temporary location

Proposed Spill Management Plan 2022 – add line in the Workover type

SPILL SCENARIOS AND MANAGEMENT							
Type	Activity	Activity duration	Mechanism	Location	Quality	Approximate Quantity	Key Management Control
Workover /Drill cuttings	Remediation of drilling waste/cuttings	Ongoing	- Containment failure - Spill during handling/transport	Well pad	Workover/Drill cuttings	Up to 0.10 ML	- Handling/transfer performed by a competent person - Visual assessment during transfers

								Compacted lease and work areas

Submit this notice and supporting information to Onshoregas.DLPE@nt.gov.au