

Onshore Petroleum Activity – NT EPA Advice

IMPERIAL OIL AND GAS PTY LTD – CARPENTARIA PILOT PROJECT ENVIRONMENT MANAGEMENT PLAN (EMP), EP187, (IMP5-3)

BACKGROUND

The previous Minister for Environment, Parks and Water Security has formally requested under section 29B of the *Northern Territory Environment Protection Authority Act 2012* (NT EPA Act) that the Northern Territory Environment Protection Authority (NT EPA) provide advice on all Environment Management Plans (EMPs) received under the Petroleum (Environment) Regulations 2016 (the Regulations).

That advice must include a recommendation on whether the EMP should be approved or not, supported by a detailed justification that considers:

- whether the EMP is appropriate for the nature and scale of the regulated activity to which the EMP relates (regulation 9(1)(b))
- the principles of ecologically sustainable development (regulation 2(a)), as set out in sections 18 to 24 of the *Environment Protection Act 2019* (NT)
- whether the EMP demonstrates that the activity will be carried out in a manner by which the environmental impacts and environmental risks of the activity will be reduced to a level that is as low as reasonably practicable (ALARP) and acceptable (regulation 9(1)(c))
- any relevant matters raised through the public submission process.

In providing that advice, the NT EPA Act provides that the NT EPA may also have regard to any other matters it considers relevant.

ACTIVITY

Subject	Description
Interest holder	Imperial Oil and Gas Pty Ltd (Imperial) ABN 92 002 699 578
Petroleum interest(s)	Exploration Permit 187
Environment Management Plan (EMP) title	Carpentaria Pilot Project
EMP document reference	IMP5-3 Prepared by InGauge Energy Australia, dated 17 September 2024
Regulated activity	<ul style="list-style-type: none"> • land clearing and earthworks up to 226 ha; • up to nine gravel pits (plus the use, and potential expansion of three existing gravel pits) to extract 100,000 m³ of gravel; • drilling, completion, testing, maintenance, suspension, and abandonment of wells. This includes up to 12 gas wells (including three existing wells) across up to six well pads (two existing and up to four new well pads);

	<ul style="list-style-type: none"> • up to nine wells will be hydraulically fractured over a period of ~25 months; • well drilling, construction and hydraulic fracturing will generate ~1,500 m³ of drilling by products and ~35 ML of flowback fluids per well; • construction, operation, modification of facilities, and gas and wastewater flowlines (up to 60 km of flowlines) used to recover petroleum, treat water, and treat gas; • a wastewater handling station with up to 110 ML in capacity; • a groundwater extraction licence to extract 750 ML/year; • potential for 475,000 tonnes CO₂ Scope 1 greenhouse gas (GHG) emissions annually, of which >90% is proposed to be mitigated (i.e. net annual GHG emissions of 30,000 tonnes CO₂) by the export of appraisal gas to the McArthur River Gas pipeline (subject to approval of the recovery of appraisal gas); and • decommissioning and rehabilitation.
Public consultation	Public consultation on the EMP was undertaken in accordance with regulation 8A(1)(b) from 22 March 2024 to 19 April 2024.

NT EPA ADVICE

1. Is the EMP appropriate for the nature and scale of the regulated activity (regulation 9(1)(b))

Information relating to the nature and scale of the regulated activity is provided in the EMP in a clear format. Table 1 provides an overview of the key components of the regulated activity. The proposed work program is scheduled to take place from 2024 to 2029.

Table 1: Key components of the proposed work program

Component/aspect	Proposed
AAPA certificate	C2024-062
Total area of EP187	442,700 ha
Total area of surface disturbance	226 ha
Access tracks surface area disturbance	24.2 ha
Number of exploration wells	Up to 12 which includes up to 9 new wells and 3 existing. (over 6 well pads which includes the potential to expand 2 existing well pads and up to 4 new well pads)
Groundwater extraction license	GRF10316 750 ML/year
Groundwater usage	Up to 750 ML/year 950 ML total over 5 year project life
Groundwater extraction/monitoring bores	Up to 9 new extraction bores (plus use of the 5 existing under GRF10316) Up to 8 control and 8 impact monitoring bores
Gravel pits	Up to 9 (plus use, and potential expansion, of three existing gravel pits) to extract 100,000 m ³ of gravel. Covering a total of 57.6 ha.
Extended production testing	Up to 25 months for all wells
Camp	1 camp (1.2 ha, up to 274 people)
Peak traffic movements	~240 light vehicles per week, ~74 heavy vehicles per week
Average traffic movements (first 3 months)	~186 light vehicles per week, ~39 heavy vehicles per week
Average traffic movements (for the balance)	~65 light vehicles per week, ~29 heavy vehicles per week
Volume of drilling mud and cuttings generated	~1,500 m ³ (per well)
Flowback volume generated	35 ML (per well)
Flowback/wastewater volume predicted for treatment and offsite disposal	5% per well
Wastewater storage	Wastewater Handling Station: Main configuration up to 110 ML in capacity. Indicatively planned to be one 55 ML and four smaller above-ground tanks. Well pads and WHS: Up to one contingency 13 ML tank per pad (theoretical max amount of 7 contingency tanks)
Greenhouse gas emissions	~180,381 tonnes of CO ₂ over the 5 year project life

1.1 Activity Scope and Duration

The EMP proposes to undertake regulated activities on exploration permit (EP) 187. It is located within the Barkly region of the Northern Territory approximately 150 km southwest of Borroloola, in the Beetaloo extended survey area on NT Portion 5706, which is Aboriginal land.

Activities previously undertaken on EP187 by the interest holder include the clearing and data acquisition of 166 km of seismic lines, construction of three well pads, construction of two camps, establishment of three gravel pits, drilling of four exploration wells, construction of 50 km of access tracks, installation of 57 km of wastewater flowlines, hydraulic fracturing of three wells and extended production testing.

The regulated activities for this EMP will include civil works to construct 24.2 ha of access tracks, four well pads and expansion of two existing well pads (62.1 ha), wastewater handling station with 110 ML capacity (10.6 ha), gas plant (5.7 ha), workers camp (1.2 ha), nine new and the expansion of three existing gravel pits (57.6 ha), 1.1 ha of pads for extraction bores and the installation of gas flowlines and wastewater flow lines (60 ha). Regulated activities will also include drilling to construct nine new groundwater extraction bores and 16 groundwater monitoring bores, nine new petroleum exploration wells which will also receive hydraulic fracturing and extended production testing including the recovery of appraisal gas. It is expected the activities will create a new disturbance area totalling 226 ha and will use 43.4 ha of existing disturbed area.

A schedule has been provided in the EMP with civil works, drilling and hydraulic fracturing scheduled to start in 2024 and anticipated to be complete in 2027, with extended production testing continuing to 2029. Civil works will occur progressively, as new well pads are established. Under Regulation 18 of the Petroleum (Environment) Regulations 2016, the interest holder will be required to submit a revised EMP if the activities continue past the 5-year timeframe of an approved EMP.

The EMP states that a total of 950 ML is expected to be extracted over the five-year period of the EMP. The EMP details the potential groundwater extraction volumes by year and by activity and is summarised in Table 2 and Table 3 below. These demonstrate how the interest holder can operate under the GWEL extraction limits in each year of the EMP and how the project will draw approximately 950 ML in total over the five-year life of the EMP.

Table 2 Estimated volume of groundwater to be extracted by activity.

Use	Scope	Estimated Volume (ML)
Civil Construction	Land clearing and construction	20
Drilling & Completions	5 ML per well (noting Carpentaria 4 re-entry will require less water)	48
Hydraulic Fracturing	85 ML per well	850
Operational Activities	Dust suppression, general use, road and site maintenance	14
Camp Usage	200 L per person per day on-site. Note: Potable water will be trucked to the camp.	18
Estimated Total		950

Table 3 Estimated volume of groundwater to be extracted by year.

Year	Estimated Volume to be extracted (ML)
2024 (part)	162
2025	414
2026	278
2027	94
2028	1
2029 (part)	1

Estimated Total	950
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Rehabilitation is not specifically detailed in the schedule however the EMP commits that progressive rehabilitation of significantly disturbed areas will commence within 12 months of an activity no longer being required.

No environmental sensitives, such as Sites of Conservation Significance, Sites of Botanical Significance, National Parks, and habitat for listed species were identified in the EMP.

The potential impacts and risks of the regulated activity have been identified and controls are reflected in the relevant environmental outcomes, performance standards and measurement criteria in the EMP. Mitigations outlined in the risk register are appropriate for the potential impacts identified and the EMP is clear on any uncertainty. Where appropriate, the NT EPA has also provided advice relating to Ministerial conditions at the end of this advice.

1.2 General compliance with the Code

The EMP demonstrates how the interest holder will comply with the relevant requirements of the Code of Practice: Onshore Petroleum Activities in the Northern Territory (the Code) when undertaking the regulated activity. The EMP also provides the following plans, which are compliant with the code:

- Rehabilitation Plan (Appendix 3)
- Weed Management Plan (Appendix 4)
- Erosion and Sediment Control Plan (Appendix 5)
- Waste and Wastewater Management Plan (Appendix 6)
- Spill Management Plan (Appendix 7)
- Emergency Response Plan (Appendix 9)
- Bushfire Management Plan (Appendix 12)
- Methane Emissions Management Plan (Appendix 13).

The current EMP shows an adequate consideration of potential impacts and risks of the regulated activity and proposes appropriate controls, consistent with the Code.

The level of detail and quality of information provided in the EMP is sufficient for the nature and scale of the regulated activity and to inform the evaluation and assessment of potential environmental impacts and risks and meets the EMP approval criteria under Regulation 9(1)(b).

2. Principles of ecologically sustainable development (regulation 2(a))

2.1 Decision-making principle

The EMP adequately assesses the environmental impacts and risks associated with the regulated activity and outlines appropriate avoidance and mitigation measures to avoid long-term impacts to the environment. The EMP includes additional mitigations associated with wet season activities, to mitigate potential impacts associated with erosion and sedimentation, off-site wastewater release, and transport of chemicals and wastewater. These controls have been assessed as adequate.

The interest holder has identified stakeholders and committed to ongoing stakeholder engagement in the EMP. The EMP was also made available for public comment from 22 March 2024 to 19 April 2024.

2.2 Precautionary principle

The NT EPA considers there is a low threat of serious or irreversible damage from the regulated activity. The interest holder's investigations into the physical, biological and cultural environment provide a satisfactory scientific basis to assess potential environmental impacts and risks, and to

identify measures to avoid or minimise those impacts and risks and address scientific uncertainty and avoid the threat of serious or irreversible damage.

The risk assessment demonstrates consideration of risk events in the context of the environment in which the regulated activity is conducted and its values and sensitivities, and the spatial extent and duration of the potential impact. Uncertainty in relation to the environmental features was assessed. The interest holder's investigations into the physical, biological provide a satisfactory basis for understanding and assessing potential impacts and risks. Uncertainty around cultural heritage artifacts was recognised by the interest holder, who has committed to further cultural heritage surveys and has begun working with the Heritage Branch to develop and implement a cultural heritage management plan (CHMP). Ongoing engagement, education, compliance monitoring and oversight by that regulator will ensure the interest holder's activities do not breach the *Heritage Act 2011*.

The Waste and Wastewater Management Plan (WWMP) outlines how the minimum freeboard was calculated for this regulated activity. The predicted 1 in 1000 year average recurrence interval (ARI) over a 90-day period was 1,600 mm and was informed by historical data from two weather stations, Daly Water and McArthur River Airport. The interest holder used a P10 evaporation value of 500 mm over a 90 day period for its freeboard calculations. Freeboard will be set at 500 mm for the dry season and 1,100 mm for the wet season for open top wastewater storage tanks. Enclosed tanks will have a freeboard set at 500 mm for both the wet and dry seasons. HF Fluid will be transferred to the wastewater handling station using the flowline infrastructure. The WWMP indicates, that if required, a contingency tank up to 13 ML will be installed at each well pad to assist with freeboard management.

The EMP includes the assessment of impacts and risks for wet season operations and management strategies, including measures such as inspecting trenched areas after the first rainfall producing runoff and after the first wet season to ensure a stable condition, inspecting access tracks for weather related impacts, ensuring no transfer of chemicals unless risks are ALARP, daily monitoring of predicted significant rainfall events, use of telemetered wastewater level monitoring and inspections to ensure safe operating fluid levels are maintained and assessment of erosion and sediment.

To mitigate potential risks to fauna species caused by the Activity, the EMP commits to having a qualified ecologist on-site prior to any clearing to identify threatened flora and fauna, as well as significant habitat trees.

The EMP complies with the Code requirement to track water use. Groundwater use will be metered and recorded to ensure that extraction does not exceed the GWEL extraction volumes.

The EMP commits to undertaking groundwater monitoring in compliance with the Code. As a precautionary measure, so that the Department receives timely confirmation of aquifer protection during hydraulic stimulation, the NT EPA recommends a condition to undertake pressure monitoring at intervals and for a duration specified by the Department, with data submitted to the Department in a timely manner.

The NT EPA is of the view that the precautionary principle has been considered in assessing the regulated activity and has not been triggered due to the low threat of serious or irreversible damage existing and the presence of a satisfactory scientific basis to assess potential impacts and risks. In addition, the existing wide environmental monitoring commitments contained in the EMP are compliant with the Code and provide measurable performance measures to ensure that the environmental outcomes are met. The EMP commits to the preparation and submission of an annual environmental performance report, however the NT EPA recommends a Ministerial condition outlining the timing and form of the submission.

2.3 Principle of evidence-based decision-making

The existing environment is demonstrated through a combination of desktop assessment and field-based survey. These assessments have informed the assessment of risk to listed species and their

habitats and assisted in selection of sites for conduct of the regulated activity such that potential impacts may be minimised.

The EMP includes a detailed risk assessment related to chemical handling, storage and use. The chemical risk assessment in Appendix 8 the risk of impact to the environment can be managed. The proposed management measures for wastewater are satisfactory, with secondary containment proposed to be used as well as satisfactory spill response procedures. As a precautionary step the NT EPA recommends a Ministerial condition for this activity relating to the recording of spills.

New well pads will be located such that they will not be affected by inundation as indicated by preliminary flood modelling using a 1:100 annual exceedance probability flood event. Transport, handling, storage and use of chemicals is to be undertaken in accordance with the Code.

The information in the EMP indicates there are no potential exposure pathways from drilling chemicals to impact potable groundwater sources in proximity to the regulated activity. The NT EPA has assessed the potential for spills from chemicals and hydrocarbons (e.g. diesel) stored in designated bunded areas at each location and concluded that the proposed management measures are satisfactory. The mitigations described in the EMP include bunding around chemical storage areas, containment of hydrocarbons in double-lined storage tanks and spill prevention and response procedures for hazardous spill prevention, monitoring, assessment, response and clean-up. The NT EPA recommends the interest holder maintain a register for all spills of contaminants or hazardous substances that is provided to the Department of Lands, Planning and Environment (DLPE).

The EMP includes an assessment of traffic impacts on other road users and concludes traffic impacts are manageable, based on the staging of the regulated activity and the short duration of peak traffic periods.

The proposed environmental outcomes are likely to be achieved based on the best available information on the environment in which the regulated activity will be conducted. The studies undertaken by the interest holder to inform the EMP and the Strategic Regional Environmental and Baseline Assessment (SREBA) affords the interest holder with a detailed and reliable knowledge of the potential environmental impacts and risks and the most appropriate measures for mitigation of those impacts and risks. Further ground-truthing prior to ground disturbance will ensure site-specific values are considered and the location of activities and controls adjusted accordingly. As a precautionary step, the NT EPA recommends a Ministerial condition for as-built documentation be provided during the life of the project to show designs, specifications and layouts such that DLPE has a record of on-ground implementation to assist DLPE compliance officers.

The NT EPA is of the view that the evidence-based decision-making principle has been considered in assessing the regulated activity and that in the circumstances, decisions can be based on best available evidence that is relevant and reliable. As data availability on the composition of geogenic compounds in the Beetaloo Sub-basin is scarce in the current stage of exploration, the NT EPA recommends the interest holder be required to undertake a risk assessment of the flowback fluid returned to surface.

2.4 Principle of intergenerational and intra-generational equity

The potential environmental impacts and risks associated with the regulated activity can be adequately avoided or managed through the management measures and ongoing monitoring programs proposed in the EMP.

Protection of cultural interests can be achieved through compliance with the requirements of Authority Certificate issued by the Aboriginal Areas Protection Authority under the *Northern Territory Aboriginal Sacred Sites Act 1989* (NT) and an archaeological assessment of disturbance areas to avoid archaeological heritage impacts.

The water required to support this exploration and appraisal program will be taken from Gum Ridge Formation (GRF) aquifer under the GWEL number GRF10316 at a maximum extraction volume of 750 ML/yr. This is 9.38% of the onshore petroleum industry cap in the Georgina Basin in the

Georgina Basis Water Allocation Plan 2023-2031, which is 8,000 ML/yr and approximately 0.4% of the Georgina Basin beneficial groundwater allocation of 186.154 GL/yr. The Waste and Wastewater Management Plan aligns with the waste management hierarchy in the Code.

Total greenhouse gas (GHG) emissions predicted to be generated by all the regulated activities covered by this EMP is approximately 180,381 tonnes of CO₂ over the 5 year project life. IMP5-3 forecasts emissions in 2025/26 to be 31,878 tonnes CO₂.

The NT EPA considers that environmental values will be protected in the short and long term from the activities outlined in the EMP and that the health, diversity and productivity of the environment will be maintained for the benefit of future generations.

2.5 Principle of sustainable use

Exploration activities are necessary to enable commercial appraisal of resources. In the absence of reliable data regarding the shale resource, exploration will take a number of years to complete, in order to assess the viability of the resource prior to production. The use of multi-well pads allows this assessment to take place under a reduced clearing footprint.

Cumulative impacts of groundwater extraction have been assessed under the *Water Act 1992* (NT). The interest holder held a groundwater extraction licence GRF10316 with a maximum water entitlement of 75 ML per annum from the Gum Ridge aquifer for activities undertaken under previous EMPs. The interest holder has received a new GWEL (GRF10316) with an increase maximum water entitlement to 750 ML/yr. This is 9.38% of the onshore petroleum industry cap of 8,000 ML/yr for the Georgina Basin, which is and approximately 0.4% of the Georgina Basin beneficial groundwater allocation of 186.154 GL/yr. The interest holder is using a centralised wastewater handling station that accepts wastewater from all petroleum exploration wells across EP187, maximising the opportunity to recycle wastewater, minimising the volume of fresh water required for the project.

As greenhouse gas emissions in the EMP are estimates, the interest holder in the EMP has committed to provide an annual emission report to the Department that summarises GHG emissions reported under the Australian Government's *National Greenhouse and Energy Reporting Act 2007* versus the predicted emissions in the EMP. The NT EPA recommends that a condition be included that require the interest holder to submit and comply with a GGAP if it triggers the Large Emitters policy.

The NT EPA is of the view that the sustainable use principle has been considered in assessing the regulated activity.

2.6 Principle of conservation of biological diversity and ecological integrity

The proposed location for the regulated activity does not include groundwater dependent ecosystems; nor is it within proximity to a declared ecological community under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

The regulated activity poses a low risk to the ecosystem within the Sturt Plateau and Gulf Falls and Upland bioregions. Given the relatively small area of impact (approximately 226 ha), and the large area of similar habitat within the region, the regulated activity does not pose a significant risk to any regional populations of listed species.

Avoidance and mitigation measures identified in the EMP are adequate to reduce risks from, for example, vehicle-strike, dust, erosion and/or spills to ALARP and acceptable levels, in relation to potential impacts on biodiversity.

The EMP outlines measures to minimise impacts on affected environmental values, including the management of threatening processes such as erosion, weeds and fire. The proposed management plans are consistent with the requirements of the Code, the NT Land Clearing Guidelines, and the Weed Management Planning Guideline: Onshore Petroleum Projects. Specific precautions to

ensure interaction with wildlife is avoided are included in the EMP. These include inspections for fauna presence, speed limits on access roads, above ground tanks with raised walls, and daily checks of infrastructure.

The NT EPA considers that implementation of, and compliance with, the EMP will ensure the conservation of biological diversity and ecological integrity is not impacted by the regulated activity.

2.7 Principle of improved valuation, pricing and incentive mechanisms

The interest holder is required to prevent, manage, mitigate and make good any contamination or pollution arising from the regulated activity, including contamination of soils, groundwater and surface waters through accidental spills.

All stages of the regulated activity, including disposal of waste, commercial purchase of groundwater, and progressive rehabilitation of all disturbed areas to an acceptable standard, are at the cost of the interest holder. The interest holder is required to provide an environmental security, that may be accessed to remediate disturbance in the event an interest holder does not or cannot fulfil remediation and rehabilitation requirements.

The NT EPA is of the view the principle of improved valuation, pricing and incentive mechanisms has been considered in assessing the regulated activity and is based on the interest holder bearing any environmental costs for the activity.

3. Environmental impacts and risks reduced to a level that is as low as reasonably practicable (ALARP) and acceptable (regulation 9(1)(c))

The interest holder commits to identified measures to avoid or minimise impacts on environmental values, informed by a baseline studies, desktop assessments and data derived from previous operations in the area. The EMP systematically identifies and assesses environmental impacts and risks associated with the regulated activity.

The EMP demonstrates why the controls to be implemented are considered ALARP and acceptable. Of the 67 environmental risks identified by the interest holder, 59 are considered 'low' risk and therefore are considered to manage impacts and risks to ALARP and acceptable levels. The remaining 8 risks are considered 'medium' and the interest holder has included mitigations that can/will be implemented such that the risks will therefore be managed at levels that are ALARP and acceptable.

The EMP also considers cumulative impacts related to groundwater use, land clearing, GHG emissions and traffic and concludes these have been managed to ALARP and acceptable levels.

The NT EPA considers that all reasonably practicable measures will be used to control the environmental impacts and risks, considering the level of consequence and the resources needed to mitigate them, and the nature, scale and location of the regulated activity. The NT EPA considers that the environmental impacts and risks will be reduced to a level that is ALARP and acceptable, considering the sensitivity of the local environment, relevant standards and compliance with the Code.

4. Summary of monitoring and inspections

Table 4 provides a summary of the monitoring and inspections committed to in the EMP. These programs are used to meet prescribed requirements and to confirm the effectiveness of mitigations and management actions detailed in the EMP.

Table 4 Monitoring and inspections relevant to the scope of the regulated activity

Aspect	Records/Reports & Type of Monitoring/Inspection		Frequency
Flora and fauna	Record	Routine fauna inspections of tanks and pits	Weekly
	Record	Decision tree clearing records	As required

Aspect	Records/Reports & Type of Monitoring/Inspection		Frequency
	Record	Spatial analysis of final disturbance footprint confirms clearing levels are within approved limits and areas	As required
	Record	Waste stored correctly to limit attractants for wildlife	Weekly
	Report	Mortality of threatened fauna species if any	Weekly
	Report	Reports, photographs and/or GPS logs of ground truthing by ecologist prior to or during any new clearing	As required
	Record	Undertake pre-clearance surveys prior to clearing works to identify significant habitat trees that should be avoided.	Prior to new site clearing
	Record	Maintain buffer distances measured from the outer edge of riparian vegetation as outlined in the Land Clearing Guidelines.	Prior to new site clearing and annually
	Record	Gouldian Finch - The CPP Area layout is designed to minimise impacts to potential habitat (snappy gum woodland) in the landscape.	Prior to new site clearing
Erosion and sediment control	Record	ESC controls in place for the wet weather events and maintenance works carried out based on monitoring results.	As required
	Record	All drainage, erosion and sediment control measures. Occurrences of excessive sediment deposition (whether on-site or off-site). All site discharge points (including dewatering activities as appropriate).	Daily site inspections (during rainfall) during clearing activity
	Record	All drainage, erosion and sediment control measures. Occurrences of excessive sediment deposition (whether on-site or off-site). All site discharge points (including dewatering activities as appropriate)	Monthly site inspections (even if work is not occurring on-site)
	Record	Drainage, erosion, and sediment control measure inspection. Temporary flow diversion and drainage network inspection.	Prior to significant forecasted rain events eg. >50% of more than 20mm (or based on local rainfall/runoff assessment)
	Record	All drainage, erosion and sediment control measures Occurrences of excessive sediment deposition (whether on-site or off-site). Occurrences of construction materials, litter or sediment placed, deposited, washed or blown from the site, including deposition by vehicular movements.	Following significant rainfall eg. 20mm (or based on local rainfall/runoff assessment) – NOTE: May be impacted by access constraints following rainfall.
	Report	Assurance audits demonstrate compliance with ESC plan	Monthly

Aspect	Records/Reports & Type of Monitoring/Inspection		Frequency
Surface water	Record	All surface water crossings will use horizontal drilling to install gathering lines unless trenching is deemed suitable using the decision tree for buried service waterway crossing. For trenching to occur, the geomorphic assessment must confirm that: <ul style="list-style-type: none"> • There is no flowing water. • The proposed location doesn't contain any pools, alluvial GDEs or retention basins within 15 m downstream of the trenching location. • The bank being trenched has gradual sloping (≤ 30 degrees) and no steep, vertical or undercut banks. • The proposed location is not on an outside bend but on a straight section. • The proposed location minimises the construction footprint and proposed extent of disturbance (to soil and vegetation). • No large trees (DBH > 25 cm, height > 1.3 m) will be cleared. 	As required during gathering line construction
	Report	Report containing pre-trenching, and post-trenching rehabilitation at each of the creek crossing locations including drone acquisition of High-Resolution Ortho Photography with corresponding high precision Digital Surface Model (DSM) for baseline geomorphic fluvial features.	As required
Groundwater	Record	Six months of monitoring data prior to hydraulic fracturing, if six months sampling is not possible pre-drilling.	As events occur
	Record and Report	Bore water tested for analytes and water volume extracted recorded.	Quarterly for a minimum of 3 years from spud date, and yearly thereafter
	Record and Report	Groundwater volume extracted	Continuous flow meter
	Report	Well reports demonstrate no ecologically toxic additives were used when drilling through aquifers.	As required
	Record and Report	All water bores will be drilled, commissioned, and tested according to the issued Bore Work Permit conditions by appropriately licensed drillers.	As required
	Report	Well reports demonstrate shallow aquifers are isolated behind cemented casings	As required
Emissions	Record	Well head inspections and leak detection monitoring	Ongoing during well testing, six monthly during non-well testing periods.
		Flowlines visual inspection of the High Point Valves (HPV).	Weekly
		Records demonstrate that flaring is used except when venting is required for safety and or operational reasons.	As required
		Calibration records for flow meters	As required

Aspect	Records/Reports & Type of Monitoring/Inspection		Frequency
	Report	Emissions related data (fuel use, flaring volumes, venting volumes, wastewater volumes etc.) reported in accordance with NGERs requirements	As required
	Report	Audit report on emissions to DLPE	Annually
	Record	Leak inspections will be conducted on above ground facility – petroleum well pad equipment.	6 monthly
	Record	Leak inspections will be conducted on low pressure pipeline and fittings.	Annually
	Record	Leak inspections will be conducted on steel or high-pressure pipelines.	Annually
	Record	Leak inspections will be conducted on compressor stations and pneumatic devices.	Quarterly
	Record	Leak inspections will be conducted on processing plant.	Annually
	Record	Leak inspections will be conducted on all gas containing equipment following major maintenance (e.g., repacking, replacement of seals).	Within 48 hrs of recommissioning.
	Record	Leak inspections of individual operating plant will be undertaken at an increased frequency as determined by the risk assessment and in consideration of previous audit/inspection findings for those specific facilities.	On-going
	Record	Where the operator uses optical gas imaging for leak detection, an annual inspection using US EPA Method 21 will also be performed on the facility.	Annually
	Report	Comply with Section D.5.6 of the Code requirements for leak remediation and notifications.	As required
	Report	Any identified leak that reports above the threshold level for reporting significant leaks, or if the leak is too large or not safe to measure, will be recorded and reported as per Section D.5.6.2 of the Code.	As required
Bushfire	Record	Weather monitoring records during declared fire danger periods show action is taken when hotspots identified	Daily as events occur
	Record	Weather monitoring during non-declared fire danger periods	Weekly
	Record	The fuel load exclusion zone is in place during flaring	As events occur
	Record	Fire response equipment maintained as required by manufacturer's instructions	Monthly
	Record	Post wet season fire load and fire break assessment	Annual
	Record	Fire access trails and fire breaks approximately 8 m wide will be established throughout the CPP around facilities as part of the civil construction works. These fire access trails and fire breaks will be maintained during operations as required. Access roads and tracks may also act as fire breaks.	Ongoing, as required
	Records	Seasonal fire load assessment updates using NAFI information will be carried out at Activity sites project throughout the duration of the project. These assessments will inform maintenance requirements to ensure that the fire breaks are effective.	Ongoing, as required

Aspect	Records/Reports & Type of Monitoring/Inspection		Frequency
	Record	The Site Supervisor will monitor the NAFI website and Secure NT website daily in the dry season and weekly in the wet season. The Site Supervisor will liaise with relevant land holders/pastoralists if a fire on adjacent properties threatens the CPP Area or infrastructure.	Daily in dry season Weekly in wet season
	Record and report	Annual mapping utilizing the available information from the NAFI database will be conducted for the CPP Area to monitor changes to fire frequency.	Annual
	Record and report	If a fire occurs in the CPP Area during the Activity, the interest holder (in consultation with land managers) will map the extent of the fire effects within the immediate area and provide DEPWS with the information.	as required
	Record	Fire access trails will be monitored for grassy weeds and controlled where necessary.	Ongoing, as required
	Record	Fire breaks will be monitored, maintained and inspection records will demonstrate that fire breaks are routinely checked and cleared of fire-risk material for the duration of the Activity.	Ongoing, as required
	Record	Any reduced fuel load areas between fire breaks and the w Record and CGA area fence lines will be monitored and maintained, to ensure any regrow of large vegetation is removed.	Ongoing, as required
	Record	The Site Supervisor will monitor the NAFI website and Secure NT website daily in the dry season and weekly in the wet season and liaise with relevant land holders/pastoralists about potential fire control measures if a fire threatens the CPP Area or infrastructure.	Ongoing, as required
	Record	During the operation of the Activity, the Site Supervisor will liaise with relevant land holders/pastoralists if it is considered any CPP activities may affect their fire management practices.	Ongoing, as required
	Record	<p>All personnel will be trained at site inductions and annually in:</p> <ul style="list-style-type: none"> • Activity fire prevention and management measures. • Firefighting equipment location, and operation and communication requirements. • Use of hot work permits for any equipment that has the potential to create heat, sparks, or flames, and which could initiate a fire, such as welding, angle grinding, etc. • Restricted smoking areas and requirements. • The Bushfire Management Plan and Emergency Response (Contingency) Plan procedures. • Familiarity with the Bushfire Management Plan one pager. 	As required and then annually
Weeds	Records	Requirement that all equipment/machinery arrives on site clean of plant and soil matter. All vehicles to undertake and complete Weed Hygiene self-declaration prior to arriving onsite.	Ongoing, as required

Aspect	Records/Reports & Type of Monitoring/Inspection		Frequency
	Records	Weed identification material to be made available to staff and contractors while working on the lot. Problem weeds can be defined during pre-work toolboxes.	Ongoing, as required
	Records	Compulsory site inductions will present information to staff and contractors working on site on problem weed species and protocols to minimise risk of introduction including wash down locations and procedures, certification of plant and machinery before entering site, weed hygiene measures, non-compliance, and reporting procedures.	Ongoing, as required
	Records	Use existing and designated tracks where possible. Restrict access to areas outside of the cleared footprint to limit the disturbance area to within the approved footprint.	Ongoing, as required
	Records and Report	Conduct post-wet season weed surveys to determine whether any weed introductions have occurred and to monitor existing weed populations. Take the appropriate and government authority preferred corrective actions where necessary.	Post wet season
	Report	Monitoring data of weed populations and weed free areas based on preconstruction data.	Annually
Chemicals	Record	Visual inspections. Secondary containment monitored weekly during the dry season and daily during the Wet Season in accordance with A.3.8.(i) of the Code.	Daily during operation, weekly during non-operational periods
	Record	Wet season transport of chemicals or wastewater will not be authorised until site supervisor has undertaken the checklist of the key controls.	As events occur during the wet season
Wastes	Record and Report	<p>Waste and wastewater disposal will be managed only by licensed contractors. The requirements for waste tracking include:</p> <ul style="list-style-type: none"> • A controlled waste consignment authorisation (CA) must be completed for all controlled waste transported into, within or out of the Northern Territory (NT). • For controlled waste leaving the NT to another State or Territory, a CA must also be obtained from the destination jurisdiction. • For every movement of a controlled waste, within, into or out of the NT, a Waste 	As required

Aspect	Records/Reports & Type of Monitoring/Inspection		Frequency
	Record and Report	<p>Off-site disposal must be undertaken following the Waste Management and Pollution Control Act, 1998 (NT).</p> <ul style="list-style-type: none"> All listed waste transportation shall be undertaken by licensed contractors and be tracked and disposed of at approved waste management facilities. Waste containers should be labelled in accordance with Globally Harmonized System of Classification and Labelling of Chemicals (GHS) based on type of hazard spill material. Materials that escape from primary containment or are otherwise spilled onto secondary containment will be removed as soon as possible and returned to containment if able to be reused or disposed in accordance with this subsection. Quantities of contaminated material too large for sealed containers must be dealt with by engaging licensed contractors as soon as practicable. 	On-going as required
	Record and Report	To meet compliance outcomes, flow meters, tank level indicators and weigh scales on waste transport vehicles will be installed or required by transport contractors to provide an accurate annual water balance report for regulatory review.	As required and annual reporting
	Record and Report	Level sensors will be installed in the above-ground tanks and wastewater sumps to measure freeboard and will be calibrated to ensure accuracy.	On-going as required
Drilling/completion fluids	Record	Wastewater sump at well pads available freeboard visual inspection and/or remote telemetry.	Daily during drilling otherwise weekly while operational
	Record	Incident register confirms that no overflow events from pits occurred, if overflow occurs it is investigated and remediated	As events occur
	Record and Report	Monitor freeboard in wastewater sumps. They will be equipped with a remote telemetry system. This will be either a water level sensor and/or a camera. If only a camera is setup, the sump must have water level markers that provide accurate water level estimates.	On-going
	Record and Report	Sampling and analysis of the drilling waste assessed using analyte testing standards for drill cuttings and drilling mud. Total and leachability concentration testing, in accordance with Table 9 of the Code, performed to assess and classify the waste.	As required
	Record and Report	Drilling pits are appropriately lined.	As events occur
Hydraulic fracturing fluids	Record	HF flowback water storage - water handling station and/or well pad - stored volume and available freeboard visual inspection and/or remote telemetry.	Weekly in dry season and daily in wet season while operational.

Aspect	Records/Reports & Type of Monitoring/Inspection		Frequency
	Record	HF flowback water storage - water handling station and/or well pad – leak detection - remote telemetry with alarm and and/or visual inspection for permanently staffed sites.	Continuous, while operational
	Record and Report	Water accumulated on tank lids – EC, pH.	As required before release to erosion and sediment control.
	Record	Visual inspections of storage systems	Daily during wet season, weekly during dry season
	Record	Incident register confirms that no overflow events from tanks occurred, if overflow occurs it is investigated and remediated	As events occur
	Report	Tank construction	As events occur
Flowback fluid	Record(s)	Construction reports that tanks are built to OEM specifications.	As events occur
		Freeboard level Remote telemetry systems will be installed to allow for remote monitoring and response to alarm activation on HF flowback tanks. These will include a water level sensor, a leak detection sensor and possibly a camera.	Ongoing
		Visual inspections of storage systems	Daily during wet season, weekly during dry season
		Records of weather forecast checks demonstrate significant rainfall events that could breach freeboard level are being monitored	Daily during wet season and weekly during operations
		Incident register confirms that no overflow events from tanks occurred, if overflow occurs it is investigated and remediated	As events occur
		During the flowback period, fluid will be monitored in accordance with section C.5.4 (b) ii of the Code by field testing for EC.	During flowback, field test once every 24 hours during flowback activities until results stabilize.
	Record and report	Cumulative flowback fluid volume for each well.	At 1, 3, 6 and 12 months after flowback has commenced.
	Record and report	A sample from all produced water and flowback fluid storages must be taken and tested for the analytes listed in Section C.8. by SQP and NATA Laboratory.	Once every 6 months
	Report	Report about flowback fluid	Within six months of flowback commencing
	Report	Tank construction	As events occur

Aspect	Records/Reports & Type of Monitoring/Inspection		Frequency
Gathering lines	Record	Flowmeters at inlet and outlet points with telemetry to compare the inflow and outflow volumes	Continuous while in use
	Record and Report	LPD Water - LPD IBC (multiple locations) – EC, pH, and volume.	Conditionally sampled monthly for 12 months
	Record	The flowline networks will be subject to testing to validate mechanical strength and to detect leaks before commissioning. Safety precautions will be implemented during testing.	Prior to commissioning
	Record and Report	A survey will be carried out to locate the flowlines and related infrastructure relative to permanent marks and benchmarks that conform to the Mapping Grid of Australia (MGA 94).	During flowline construction
Produced water	Record	Report about produced fluid	Within six months of water being extracted
	Record	Stored volume and available freeboard for all produced water fluid storage facilities	At least weekly, daily when operated through the wet season
	Report	Tank construction	As events occur
Cultural Heritage	Record	Cultural monitors present on site as per the EMP and cultural heritage management plan	As events occur
	Record	Survey was conducted to identify artefacts prior to civil construction	As events occur
	Record	Planned works approved are compliant with AAPA certificate conditions. GIS files demonstrate the activities were conducted within the appropriate AAPA land types	As events occur
	Record	Induction training records	As events occur
	Record	Vehicles remain on approved access tracks	As events occur
Rehabilitation	Record	Survey vegetation ground cover and canopy height at analogue sites for cleared areas.	No more than 12 months prior to construction
	Record	Commence progressive rehabilitation on disturbed land	Within 12 months if no longer required for the regulated activity.
		Stabilisation and maintenance - Inspect / monitor cleared areas and/or areas being progressively rehabilitated.	On-going as required
	Record	Inspect areas being progressively rehabilitated annually at the end of the defined wet season.	Ongoing annual/post local wet season inspections until success criteria are met.
	Record	Annually following end of the dry season	Annually following end of the dry season

Aspect	Records/Reports & Type of Monitoring/Inspection		Frequency
	Record and Report	Annual Rehabilitation Inspections by a suitably qualified person (SQP).	Starting twelve months after rehabilitation commences until Minister satisfied with rehabilitation outcomes.
Community	Record	Complaints register for; reports regarding light, noise, traffic, local labor & resource competition, loss of community adhesion.	As events occur
	Record	Assurance audits or inspections of well site fence and sign posting.	On-going and as events occur
	Record	Inspections and maintenance should be undertaken to ensure the integrity of both the sealed carriageway and unsealed shoulders is of an appropriate standard in the vicinity of the three access points.	On-going and as events occur
	Record	Continue to ensure water and wastewater is discussed in further information forums and methodologies to build on stakeholder and community understanding.	On-going
	Record	Continue to ensure environmental monitoring is discussed in further information forums and methodologies to build on stakeholder and community understanding.	On-going
	Record	Ongoing consultation as appropriate to meet regulator and stakeholder expectations in relation to rehabilitation.	On-going
Signage and access	Record	The CPP Area will be routinely monitored during operations to ensure signage is legible, controls are maintained, remain effective, and are repaired as required.	On-going
	Record	Full access to the site will be restricted to those inducted, where hazards and risks will be identified, and controls established. All other persons will require an inducted host as escort to ensure exposure to waste and wastewater hazards are minimised.	On-going
	Record	Signage will be installed at the entryway to each well pad and the WHS and will include contact information for the site supervisor.	On-going

5. Considerations under the *Environment Protection Act 2019*

In accordance with section 48 of the Environment Protection Act 2019 (NT) (EP Act), a proponent must refer to the NT EPA, a proposed action (section 5) that has the potential to have a significant impact (sections 10 and 11) on the environment.

The interest holder referred the proposed regulated activity to the NT EPA under the EP Act on 19 February 2024. The NT EPA accepted the referral of a proposed action for standard assessment on 14 March 2024.

On 14 May 2024, the NT EPA determined that the Carpentaria Pilot Project proposed by the interest holder in its EMP (IMP5-1) does not have the potential for a significant impact on the environment and that an environmental impact assessment of the proposed action is not required.

6. Relevant matters raised through public submissions

The EMP was made available for public comment for 28 days from the 22 March 2024 to 19 April 2024. A total of 50 public submissions were received. Table 5 summarises the relevant matters raised in public submissions, and how these have been addressed.

Table 5: Issues raised in public submissions

Theme	Issues raised	Response
Chemicals	<ul style="list-style-type: none"> Impact of chemicals on human health and environment. 	A chemical risk assessment has been completed for all chemicals to be used in drilling and hydraulic fracturing. All chemicals were considered low concern when standard chemical handling, storage and disposal practices were applied. The chemical risk assessment was undertaken in accordance with the Regulations.
Climate change	<ul style="list-style-type: none"> Impact on climate change. Greenhouse gas emissions incomplete as it did not consider downstream emissions. 	Greenhouse gas emissions have been considered in the assessment of the EMP.
Flora and fauna (environment)	<ul style="list-style-type: none"> Adequacy of baseline assessment. Threat to listed species. Impacts to important habitat not adequately addressed. Wastewater storage in open ponds – fauna access. 	<p>A comprehensive Strategic Regional Environmental and Baseline Assessment (SREBA) has been completed in the Beetaloo Sub-basin and surrounding area and has been used to inform the assessment of impacts and risks associated with the regulated activity.</p> <p>The baseline assessment undertaken as part of the EMP provides an adequate understanding of the listed species that may occur in the area of the regulated activities.</p> <p>Implemented mitigation measures, such as visual checks for fauna (habitat) prior to clearing and avoidance of clearing large trees are deemed adequate to minimise potential harm.</p> <p>As the area of suitable habitat proposed to be cleared is very small compared to the area of remaining suitable habitat for the identified listed species, it is considered unlikely the proposed regulated activities pose a significant risk to the listed species.</p> <p>Wastewater is only stored in enclosed tanks. Open treatment tanks do not have a credible pathway for ground dwelling fauna to access them.</p>
Regulation and compliance	<ul style="list-style-type: none"> Referral under the <i>Environment Protection Act 2019</i> (NT) (EP Act) and the <i>Commonwealth Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act). Request for a full EIS 	<p>The interest holder conducted a self-assessment under the EP Act and referred the proposed regulated activity to the NT EPA under the EP Act on 19 February 2024. The NT EPA accepted the referral of a proposed action for standard assessment on 14 March 2024.</p> <p>On 14 May 2024, the NT EPA determined that the Carpentaria Pilot Project proposed by the interest holder in its EMP (IMP5-1) does not have the potential for a significant impact on the environment and that an environmental impact assessment of the proposed action is not required.</p>
Spills	<ul style="list-style-type: none"> Centralised wastewater storage increases the risk of leakage with flowline infrastructure to take wastewater 	<p>The risk of overtopping of wastewater tanks is minimised by the use of enclosed tank storage and conservative freeboard levels. A water balance is provided, which confirms that the wastewater tanks have sufficient capacity to store and treat the wastewater likely to be generated.</p> <p>Flowline infrastructure designed, constructed and operated in accordance with the code and relevant standards.</p>

	<p>back to the central location.</p> <ul style="list-style-type: none"> • Wet season transport and storage risks • Trucking of large quantities (90 ML) of wastewater • Lack of acknowledgement of change in risk profile resulting from multiple wastewater movements • No consideration of the impact of the changing climate (extreme weather events). 	
Social and cultural	<ul style="list-style-type: none"> • Impacts to cultural heritage • Inadequate/lack of consultation with TOs • Informed consent • Economic benefit 	<p>A heritage assessment has been undertaken of the project area and the EMP commits to undertaking an archaeological survey conducted by a suitably qualified person prior to any disturbance. The EMP includes a stakeholder engagement log, which demonstrates that the interest holder has engaged with a range of stakeholders including direct engagement with the relevant leaseholders, Aboriginal stakeholders and the Northern Land Council, as the representative for traditional owners and other affected Aboriginal people.</p> <p>The EMP commits to ongoing stakeholder engagement. Northern Territory businesses have been engaged regarding the scope of the interest holder's activities through information sessions and tender opportunities covering a range of material supply and support services, such as transport and logistics, accommodation and food, provision of temporary camps and camp services, civil construction work, freight and transport, water bore drilling and environmental and civil consulting.</p>
Water	<ul style="list-style-type: none"> • Impact on water availability • Contamination of aquifers (through drilling fluid losses) 	<p>The interest holder has obtained a water extraction licence, which included a detailed assessment of resource availability by DLPE. The Northern Territory Water Allocation Planning Framework outlines how water is allocated outside of a water allocation plan, which notes that contingent allocation rules are applied in the absence of directly related research. A licence decision must consider the water availability, existing and likely future demand for domestic purposes, any adverse effects likely to be created as a result of the activities under the permit and other relevant factors. This supports the sustainability of the proposed water take despite the lack of a water allocation plan.</p> <p>Mitigation measures are in place to minimise any spills or leakages from the activity, and the risk of water pollution has been demonstrated to be ALARP and acceptable.</p> <p>Low toxicity drilling fluids are used during drilling through aquifers, to minimise the impact on groundwater quality during drilling. In the event total losses occur (e.g. in cavernous zones expected in karstic formations), drilling fluid systems are reduced back to water to maintain dynamic well control while minimising drilling additive losses to the formation.</p> <p>Groundwater monitoring will be undertaken in accordance with the Code.</p>
Well integrity	<ul style="list-style-type: none"> • Well integrity threatens aquifers 	<p>Wells are designed to be operated such that all materials and equipment installed in a well must maintain well integrity for the lifespan of its intended use. Well integrity will be validated before</p>

		<p>and after hydraulic fracturing operations and must be maintained at all times.</p> <p>Petroleum wells are designed with multiple barriers, so that a single barrier failure will not lead to a loss of containment.</p> <p>Complete well integrity failure where all barriers fail is an extremely rare occurrence in contemporary petroleum wells including shale wells.</p> <p>Well integrity will be maintained in accordance with the Code using an approved Well Operations Management Plan.</p>
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7. Other relevant matters

The exact timing of each activity is unknown at the time of preparation of an EMP. The NT EPA recommends the interest holder be required by Ministerial condition to submit an updated timetable at regular intervals, as well as regular updates during operational periods.

Ongoing groundwater monitoring is not prescribed in the Code. Whilst the EMP commits to quarterly monitoring of groundwater after stimulation, the NT EPA recommends a Ministerial condition specifying the timing of groundwater monitoring and the form of the groundwater data and should be inclusive of an interpretive report and the development of site-specific performance standards.

The regulations only require general details of construction and layout of any facility associated with the activity. Consequently, there is lack of detail around multiple aspects of the EMP including well pads, water handling stations, gravel pits, the central wastewater handling station, and the flowline network. The NT EPA recommends a condition requiring “as-built” documentation showing designs, specifications and layouts such that DLPE has a record of on ground implementation to assist DLPE compliance officers.

The NT EPA understands that the Cultural Heritage team in the Department has been actively engaging with Imperial in relation to the interest holder’s obligations under the *Heritage Act*. Ongoing engagement, education, compliance monitoring and oversight by that regulator will ensure the interest holder’s activities do not breach that legislation.

CONCLUSION

The NT EPA considers that, subject to the consideration of the recommended EMP approval conditions, the EMP:

- is appropriate for the nature and scale of the regulated activity; and
- demonstrates that the regulated activity can be carried out in a manner that potential environmental impacts and environmental risks of the activity will be reduced to a level that is ALARP and acceptable.

In providing this advice the NT EPA has considered the principles of ecologically sustainable development.

RECOMMENDATIONS

The NT EPA recommends that should the Imperial Oil and Gas Pty Ltd EMP for the Carpentaria Pilot Project be approved, the Minister considers approval conditions to achieve the following outcomes:

1. Certainty of the timing of the regulated activity through provision of an updated timetable prior to commencement, daily to weekly activity reports during conduct of the regulated activity and quarterly timetable updates.
2. Certainty as to the extent and location of clearing through provisions of spatial data for areas cleared.
3. Certainty as to the interest holder’s compliance with the approved EMP through submission of an annual performance report and a rehabilitation progress report to DPLE to demonstrate the

- interest holder has met environmental outcomes and complied with the requirements set out in the Regulations, the Code, the Ministerial conditions and the EMP.
4. Certainty as to the timing of the submission of annual performance reports and rehabilitation progress reports.
 5. Certainty as to the extent of greenhouse gas emissions through provision of an annual emissions report to DLPE that summarises GHG emissions reported under the Australian Government's *National Greenhouse and Energy Reporting Act 2007* versus the predicted emissions in the EMP, with actual emissions to be verified by an independent auditor registered by the Clean Energy Regulator.
 6. Certainty that a GGAP will be provided should the greenhouse gas emissions exceed 100,000 tCO₂-e for the financial year.
 7. Certainty that the land is free from contamination and can meet rehabilitation requirements through recording of all spills in an internal register that includes location, source and volume of the spill and corrective actions.
 8. Certainty as to the details of the proposed regulated activities with submission annually of as-built documentation for all aspects of the project, including but not limited to designs, specifications and technical drawings for well pads, gravel pits, water stations, wastewater handling station, camps and gas plant.
 9. Confirmation that groundwater quality is not impacted through requiring groundwater quality monitoring to be conducted before, during and after hydraulic fracturing and submission of an interpretive report on groundwater quality based on groundwater analytes specified in the Code.
 10. Confirmation that petroleum well integrity is maintained through a requirement that groundwater level/pressure monitoring at impact monitoring bores is conducted before during and after hydraulic fracturing.
 11. Confirmation of the potential impact to downstream environments remains low through a requirement to undertake a flowback fluid risk assessment and reporting to consider the impacts and risks to fauna and potential for soil and water contamination from a loss of containment.
 12. Certainty that well operations are not permitted until a Well Operations Management Plan which fulfills the requirements of Part B of the Code of Practice: Onshore Petroleum Activities in the Northern Territory has been approved for the well operations proposed under this EMP.



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NORTHERN TERRITORY ENVIRONMENT PROTECTION AUTHORITY

1 NOVEMBER 2024