

Onshore Petroleum Activity – NT EPA Advice

IMPERIAL OIL & GAS A PTY LIMITED– ENVIRONMENT MANAGEMENT PLAN (EMP) FOR THE EP167/168 EMP ON NT EXPLORATION PERMIT (EP) 167/168 (IMA1-4)

BACKGROUND

The Minister for Environment 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 & Gas A Pty Limited
Petroleum interest(s)	Exploration Permit 167 and 168 (EP167/168)
Environment Management Plan (EMP) title	EP167/168 EMP
EMP document reference	IMA1-5
Regulated activity	<p>This EMP covers the activities to progress EP167 and EP168 exploration and evaluation appraisal pilot stage, north of Daly Waters within the Carpentaria and McArthur Basin. The proposed activities are located in the northern part of EP168 and the southern part of EP167, south-west of Larrimah, and include:</p> <ul style="list-style-type: none"> • acquisition of 377.5 km of 2D seismic data • clearing of 222 hectares of land for civil works including: <ul style="list-style-type: none"> ○ construction of up to 6 well pads (single/multi), 2 camp sites and 6 gravel pits. ○ construction of 42.9 km of new access tracks

	<ul style="list-style-type: none"> ○ construction of 76.7 km of buried low-pressure wastewater flowlines ● construction of up to 48 monitoring and production water bores ● drilling of 6 wells (made up of vertical/horizontal wells plugged back and drilled out of vertical/dedicated new horizontal wells) ● evaluation, logging, testing and coring of each well ● hydraulic fracturing of 6 wells ● completion, workover and maintenance of each well ● extended production testing of ≤90 days per well for 6 wells ● maintenance and monitoring related to the above activities.
Public consultation	Public consultation on the EMP was required under regulation 8A(1)(b) was undertaken from 20 January 2022 to 17 February 2022.

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	2022/092
Total area of exploration permits (EP167/168)	26,446 km ² (2,644,600 ha)
Total area of EP167	10,604 km ² (1,060,400 ha)
Total area of EP168	15,837 km ² (1,583,700 ha)
Total area of regulated activities	402.4 ha
Total area of existing disturbance	180.5 ha
Total area of new surface disturbance	~ 222 ha
Seismic lines	377.5 km (120.3 ha of clearing)
Microseismic/Tiltmeters	3 ha of clearing
New access tracks (includes widening of repurposed seismic lines and contingency tracks)	42.9 km (11.8 ha of clearing)
Number of exploration wells	6
Water license	JS10363 (250 ML/annum)
Estimated groundwater usage	410.9 ML Peak water use - 135.87 ML/annum
Groundwater monitoring bores and production bores	48
Gravel pits	6 (6 ha of clearing)
Activity duration	2024 - 2029
Duration of well testing (appraisal) operations (months)	≤ 90 days per well
Workforce: operational (list separately over activity phase)	30 for seismic acquisition 10 for civil construction 40 for drilling 25 for hydraulic fracturing 5 for completions 4 for extended production testing
Workforce peak	94
Number of camps for workforce	2
Traffic: peak traffic movements - Commencement of drilling and fracking operations	14 light vehicle movements and 110 heavy vehicle movements per week
Flowlines	76.7 km (30.7 ha of clearing)
Drilling fluid and cuttings	3,645 m ³ per well
Water use for HF	60 ML per well
Flowback fluid expected	30 ML per well
Flowback/wastewater final predicated for treatment	1.5 ML per well

	and offsite disposal (ML)
Enclosed wastewater /open treatment tank capacity	42.4 ML (maintaining freeboard requirement)
Greenhouse gas emissions	Total: 227,432 tCO ₂ -e, Maximum annual: 75,261 tCO ₂ -e

1.1 Activity Scope and Duration

This EMP proposes to undertake a series of exploration and appraisal activities over a period of five years on exploration titles EP167 and EP168. These titles are situated on the Sturt Plateau west of the Stuart Highway, Northern Territory, and cover an expansive area from Mataranka in the north to near Elliot in the south. These titles are located approximately 1 km south and 20 km south of Larrimah respectively. The project area for this regulated activity is located on Tarlee, Cow Creek, Middle Creek, Birdum Creek and Sunday Creek pastoral properties.

Activities undertaken by previous operators of EP167 and EP168 included drilling of seven petroleum exploration wells, 1,800 km of 2D seismic lines, 29,000 km of airborne gravity surveys, 3,539 m of core and two vertical well stimulations.

The EMP describes the scope of the activity and its duration. The regulated activity is expected to commence in 2024 and continue to 2029. 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 total area of new surface disturbance included in the EMP is 222 ha, Imperial A have provided detail of how the disturbance footprint is being minimised including through the use of 150 km of existing pastoral tracks with wastewater flowlines to be co-located with existing disturbed areas or areas disturbed under this EMP.

The EMP covers activities to progress EP167 and EP168's exploration and evaluation appraisal stage. The 222 ha of new disturbance includes the acquisition of 377.5 km of 2D seismic data, 2 camp sites, 6 gravel pits, construction of access tracks, buried low-pressure wastewater flowlines, construction of up to 6 well pads, drilling and hydraulic fracturing of 6 wells and extended production testing. Disturbed areas will be rehabilitated in accordance with the Code and Rehabilitation Management Plan.

Drilling waste material will either be evaporated in the drill cuttings sumps and buried onsite in accordance with clause C.4.1.2 of the Code or will be transported offsite. Offsite disposal will be undertaken in accordance with the NT *Waste Management and Pollution Control Act 1998* (WMPC Act).

Extended production testings will be conducted to validate the well production rates for up to 90 days per well. Depending on the composition, gas is directed to flare, water to flowback storage and treatment tanks, and condensate is directed to storage tanks or flare. The EMP has identified in the risk assessment the potential for bushfires caused by radiant heat from the flare reaching vegetation but has not considered the risk from condensate leaving the flare causing fires. Flaring of condensate introduces a risk of burning liquid being ejected from the flare resulting in a bushfire. As the EMP notes the condensate will potentially be flared, it is recommended that a Ministerial condition be included, requiring the interest holder to complete a risk assessment prior to flaring condensate. Flaring of gas and condensate will result in combustion efficiencies which may vary from the tip combustion efficiency described in the EMP. This variation in combustion efficiency will be capture by the recommendation that the annual greenhouse gas emissions are reported and actual emissions are verified by an independent auditor. All gas, water and condensate volumes are measured and recorded.

The EMP proposes to construct flowlines, to facilitate the movement of wastewater between well sites. The beneficial outcomes of installing and operating the flowlines include reduced land clearing for storage tanks at each wellsite, increased capability and capacity for recycling and reuse of fluids between well sites and reduced wastewater disposal volumes and truck movements.

The EMP shows adequate consideration of potential impacts and risks of the regulated activity and proposes appropriate controls. To ensure that the regulated activities are not carried out in sensitive areas, an ecologist will be onsite to undertake ground-truthing prior to any ground disturbance to ensure the identification of riparian zones, potential unmapped sinkholes, sensitive habitat or other areas of unmapped environmental sensitivities. The ecologist will ensure that all the recommended buffers as per the Land Clearing Guidelines are implemented.

The anticipated water demand for this regulated activity is 410.9 ML. The peak estimated water use will be 134.95 ML per annum, which is less than the interest holder's maximum water entitlement (250ML/annum).

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. Appendix 4 of the EMP demonstrates how the relevant sections of the Code have been applied to the mitigation and management of impacts and risks. The EMP also provides the following plans, which are compliant with the Code:

- Erosion and Sediment Control Plan (Appendix 5)
- Waste and Wastewater Management Plan (Appendix 6)
- Spill Management Plan (Appendix 7)
- Fire Management Plan (Appendix 8)
- Weed Management Plan (Appendix 9)
- Methane Emissions Management Plan (Appendix 11)
- Rehabilitation Plan (Appendix 12)
- Emergency Response 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 20 January 2022 to 17 February 2022.

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 the risk events in the context of the environment in which the regulated activity is conducted and its particular 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 and cultural environment provide a satisfactory basis for understanding and assessing potential impacts and risks.

The EMP commits to avoiding heavy operation activities during the wet season and includes the assessment of impacts and risks for wet season operations and management strategies, including measures such as 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.

The EMP outlines the measures to ensure that wetlands and sinkholes will be identified and avoided, this includes an ecologist being on site to ensure that all buffers are appropriately implemented in line with the Land Clearing Guidelines.

The EMP 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 informed by historical data. The ARI estimate was calculated as 1,575 mm. A conservative evaporation rate of 10% occurring over a 90-day period is 466 mm. Imperial used a more conservative P10 value of 450 mm for its freeboard calculations. During the wet season a freeboard minimum of 1.3 m will be implemented which is sufficient to contain a 1 in 1000 ARI coinciding with an evaporation rate of P10. During wet season flowback activities the freeboard will be increased to 1.6 m which is based the storage requirement for a 1 in 17,600 year ARI event. The Waste and Wastewater Management Plan commits to the shutting in of a well by on-site personnel in the event that the 1.6 m freeboard limit is reached during wet season flowback activities involving open-topped above ground tanks.

The risks of conducting the activity over the wet season are well understood, and the EMP demonstrates adherence to the Code. The EMP includes the assessment of impacts and risks for wet season operations and management strategies, including measures such as halting activities if there is significant rainfall and the inspection of erosion and sediment control measures.

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 water take volumes.

The groundwater monitoring program will be conducted in accordance with the *Groundwater Monitoring Bores for Exploration Petroleum Wells in the Beetaloo Sub-basin* guideline. 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 has firstly formed the view that the precautionary principle has been considered by the interest holder in assessing the regulated activity and secondly that the precautionary trigger has not been triggered due to the low threat of serious or irreversible damage and the presence of a satisfactory scientific basis to assess potential impacts and risks. In addition, the existing comprehensive 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

A good understanding of the existing environment is demonstrated through a combination of desktop assessment and field-based survey of the proposed activity location undertaken in 2021, as well as through using data from Strategic Regional Environmental and Baseline Assessment (SREBA). 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 6.01 demonstrates 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.

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 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.

The EMP demonstrates an adequate understanding of the environment in which the regulated activity will be undertaken, and considers all relevant aspects of the environment that have potential to be affected. As the EMP proposes to establish multiple wells at each well pad, it includes a consideration of potential environmental impacts and risks associated with increased storage requirements for chemicals and wastewater. If implemented, the proposed use of low pressure flowlines further reduces the potential for impacts associated with loss of containment of wastewater by reducing the number of locations where wastewater would be treated or stored.

The 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 EMP includes a detailed risk assessment related to transport, use and storage of chemicals, including an assessment of potential impacts to human receptors and avian fauna interacting with open treatment tanks. The assessment concludes that there is a low risk of environmental harm with implementation of the proposed management measures.

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 proposed environmental outcomes are likely to be achieved based on the best available information on the nature and scale of the activity, and the environment in which the regulated activity will be conducted. The studies undertaken by the interest holder to inform the EMP 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 will be adjusted accordingly.

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 is achieved through compliance with the requirements of Authority Certificate (C2022/092) issued by the Aboriginal Areas Protection Authority under the *Northern Territory Aboriginal Sacred Sites Act 1989* (NT) and the previously completed archaeological assessment at the site to avoid archaeological heritage impacts.

The water required to support this exploration and appraisal program will be taken under the Jamison Sandstone Groundwater Extraction Licence JS10363 (annual volume of 250 ML) from the groundwater bores proposed under this EMP. This regulated activity is anticipated to require approximately 410.9 ML or 0.3 % of the aquifer's storage volume, assuming no hydraulic fracturing fluid is reused. The Waste and Wastewater Management Plan aligns with the waste management hierarchy in the Code.

The EMP proposes the use of flowlines to enable the reuse of fluids between sites. The proposed reuse of flowback fluid will significantly reduce groundwater take for the proposed activities, as well as reduce the total wastewater volume for offsite disposal. Reduced wastewater volume shortens the treatment time on-site and reduced the required storage capacity, with less tanks being required for wastewater storage, tank pad sizes (and therefore the clearing footprint) may be reduced.

Total greenhouse gas (GHG) emissions predicted to be generated by all the regulated activities covered by this EMP is approximately 227,432 tCO₂-e and assumes a testing period of 90 days per well. The project does not exceed the threshold for becoming a large emitter under the Large Emitters Policy as the maximum annual emissions for the project are expected to reach 75,261 tCO₂-e in the 2026/2027 financial year. No Greenhouse Gas Abatement Plan is required.

Progressive rehabilitation of significantly disturbed land, which is not required for the ongoing conduct of the approved regulated activities or future activities, will commence as soon as practicable but no longer than 12 months following the cessation of activities on the land. A Ministerial condition is recommended that requires the rehabilitation plan to be reviewed by a suitably qualified person prior to regulated activities occur.

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 EMP has identified 10 potential well sites, a maximum of 6 well sites will be cleared under this EMP. The final selection of well sites will be informed by the seismic survey data. If the seismic data suggests multi-well pads are suitable, then all 6 wells may be drilled across only two well sites. The land clearing resulting from well sites will be minimised by using multi-well pads (up to 4 wells per site) where practicable.

Cumulative impacts of groundwater extraction have been assessed under the *Water Act 1992* (NT). The interest holder has a groundwater extraction licence (GWEL JS10363). The approved licence permits a maximum water entitlement of 250 ML per annum from the Jamison Sandstone aquifer. The anticipated water demand for this regulated activity is 410.9 ML or 0.3 % of the aquifers storage volume, assuming no hydraulic fracturing fluid is reused. The peak estimated water use will be 135.87 ML per annum, which is less than the interest holder's maximum water entitlement. Water will be managed to minimise environmental impacts.

The interest holder is not considered a large emitter and no greenhouse gas abatement plan is required.

As emissions in the EMP are estimates, a Ministerial condition is recommended that requires the interest holder 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 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 bioregion. Given the relatively small area of impact (approximately 222 ha of new disturbance), and the very large area of similar habitat within the region, the regulated activity does not pose a significant risk to any regional populations of listed species. No critical habitat for listed fauna was identified during the surveys, but 14 listed species potentially occur in the wider landscape. Due to the management strategies outlined in the EMP and the relatively small area of impact, it is unlikely that the regulated activity will pose a risk to the identified 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, SREBA 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 key potential environmental impacts and risks considered in the EMP are:

- Chemicals impacting human health
- Loss of containment of hydraulic fracturing fluid impacts on soil and surface water
- Loss of containment of chemicals and fluids stored on the well pad impacting on soil and groundwater contamination.

The EMP demonstrates why the controls to be implemented are considered ALARP and acceptable. The risk assessment framework in the EMP identifies that level 1 residual risks are considered acceptable, and it is assumed that risks have been managed to ALARP levels. Level 2-4 residual risks are considered acceptable, provided that ALARP has been achieved and demonstrated. Level 5 residual risk are considered intolerable and must not be accepted or approved.

Of the 51 environmental risks identified by the interest holder, 16 are considered 'level 1' residual risks and therefore are considered to manage impacts and risks to ALARP and acceptable levels. 32 environmental risks identified are considered to be 'level 2' residual risk and 3 are considered to be 'level 3' risks. 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. Specifically for the environmental risk level 3 hazards:

1. *Operational activities resulting in chemicals impacting on human health:* The EMP includes measures to control the risk of chemicals impacting on human health through requiring chemicals to be evaluated and approved prior to use, restrictions on wet season transport and personnel training and education. The residual risk ranking is based on the likelihood being considered 'unlikely', but the consequence of the event occurring being 'major'.
2. *Loss of large tank fluid containment or tank failure resulting in soil and surface water contamination:* The EMP commits to appropriate wastewater management measure and tank construction. The residual risk ranking is based on the likelihood being considered 'unlikely', but the consequence of the event occurring being 'major'.
3. *Loss of containment of chemicals and fluids stored on the well pad resulting in soil and groundwater contamination:* The EMP commits to appropriate containment methods including secondary containment and includes a spill management plan. The residual risk ranking is based on the likelihood being considered 'unlikely', but the consequence of the event occurring being 'major'.

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, and that it fulfils the requirements of 9(1)(c) of the Regulations, considering the sensitivity of the local environment, relevant standards and compliance with the Code.

4. Summary of monitoring and inspections

Table 2 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 committed to.

Table 2: Monitoring and inspections relevant to the scope of the regulated activity

Aspect	Records/Reports & Type of Monitoring/Inspection		Frequency
Flora and fauna	Record(s)	Routine fauna inspections of tanks and pits	Weekly
		Decision tree clearing records	As required
		Spatial analysis of final disturbance footprint confirms clearing levels are within approved limits and areas	As required
		Waste stored correctly to limit attractants for wildlife	Weekly
	Report(s)	Mortality of threatened fauna species if any	Weekly
		Reports, photographs and/or GPS logs of ground truthing by ecologist prior to or during any new clearing	As required
Erosion and sediment control	Record(s)	ESC controls in place for the wet weather events and maintenance works carried out based on monitoring results	As required
	Report(s)	Drainage, erosion and sediment control measures Occurrence of excess sediment deposition All site discharge points	Daily site inspections during clearing works (rainfall > 10 mm)
		Drainage, erosion, and sediment control measure inspection Temporary flow diversion and drainage network inspection	24 hrs. prior to forecasted rain events
		Drainage, erosion, and sediment control measure inspection Occurrence of excess sediment deposition Occurrence of construction materials, litter or sediment placed, deposited, washed, or blown from the site	Following > 20 mm of rainfall
		Spatial data demonstrates that seismic lines, access tracks and flowlines cross watercourses at right angles	As events occur
		Inspection records demonstrate infrastructure conducted as per ESC plan	Quarterly during wet season and post wet season inspection
		Assurance audits demonstrate compliance with ESC plan	Monthly
Groundwater	Record(s)	Six months of monitoring data prior to hydraulic fracturing, if six months sampling is not possible pre-drilling.	As events occur
		Bore water tested for analytes and water volume extracted recorded.	Quarterly for a minimum of 3 years from spud date, and yearly thereafter

Aspect	Records/Reports & Type of Monitoring/Inspection		Frequency
		Groundwater volume extracted	Continuous flow meter
	Report(s)	Well reports demonstrate no ecologically toxic additives were used when drilling through aquifers.	As required
		Well reports demonstrate shallow aquifers are isolated behind cemented casings	As required
Emissions	Record(s)	Well head inspections and leak detection monitoring	Ongoing during well testing, six monthly during non-well testing periods.
		Monitor flowline highpoints vents for leaks	Weekly while flowline contain wastewater
		Extended production testing 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
	Report(s)	Emissions related data (fuel use, flaring volumes, venting volumes, wastewater volumes etc.) reported in accordance with NGRS requirements	As required
		Audit report on emissions to DLPE	Annually
Bushfire	Record(s)	Weather monitoring records during declared fire danger periods show action is taken when hotspots identified	Daily as events occur
		Weather monitoring during non-declared fire danger periods	Weekly
		The 20 m fuel load exclusion zone is in place during flaring	As events occur
		Fire response equipment check	Monthly
		Post wet season fire load and fire break assessment	Annual
Weeds	Record(s)	Weed monitoring completed post wet season for all disturbed areas	Post wet season
	Report(s)	Records of vehicles biosecurity risk material inspections	As events occur
		Annual weed monitoring and management report	Annually
Chemicals	Record(s)	Visual inspections	Daily during operation, weekly during non-operational periods
		Transport of the chemical or wastewater checklist	As events occur during the wet season
Wastes	Record(s)	Listed waste transport records demonstrate contractors are licensed	As events occur
Drilling/completion fluids	Record(s)	Visual inspections of storage systems	Daily during operation, weekly during non-operational periods

Aspect	Records/Reports & Type of Monitoring/Inspection		Frequency
		Incident register confirms that no overflow events from pits occurred, if overflow occurs it is investigated and remediated	As events occur
		Drilling pits are appropriately lined	As events occur
Hydraulic fracturing fluids	Record(s)	Visual inspections of storage systems	Daily during wet season, weekly during dry season
		Incident register confirms that no overflow events from tanks occurred, if overflow occurs it is investigated and remediated	As events occur
	Report(s)	Tank construction	As events occur
Flowback fluid	Record(s)	Construction reports that tanks are built to OEM specifications.	As events occur
		Freeboard level	Continuous telemetry monitoring and quarterly visual inspection during non-operational periods
		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
	Report(s)	Report about flowback fluid	Within six months of flowback commencing
		Tank construction	As events occur
Gathering lines	Record(s)	Flowmeters at inlet and outlet points with telemetry to compare the inflow and outflow volumes	Continuous while in use
Produced water	Record(s)	Report about produced fluid	Within six months of water being extracted
		Stored volume and available freeboard for all produced water fluid storage facilities	At least weekly Daily when operated through the wet season
	Report(s)	Tank construction	As events occur
Heritage	Record(s)	Survey was conducted to identify artefacts prior to civil construction	As events occur
		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

Aspect	Records/Reports & Type of Monitoring/Inspection		Frequency
		Induction training records	As events occur
		Vehicles remain on approved access tracks	As events occur
Rehabilitation	Record(s)	Commence progressive rehabilitation on disturbed land	Within 12 months if no longer required for the regulated activity.
		Rehabilitation monitoring	Immediately after any rehabilitation work and annually after the wet season until the rehabilitation is completed.
Community	Record(s)	Complaints register - reports of unsafe project vehicle operations actioned	As events occur
	Report(s)	Assurance audits or inspections of well site fence and sign posting	Monthly audits or weekly inspections

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. Alternatively, in accordance with section 53(1) the NT EPA may provide a written notice (a call-in notice) to the proponent requesting the proponent refer the action, if it is believed on reasonable grounds that a proponent is taking an action that should be referred to the NT EPA for assessment.

The NT EPA has had regard to sections 10 and 11 of the EP Act and its published guidance, referring a proposal to the NT EPA, and has determined that:

- a) The industry type or activity proposed is not inherently hazardous, nor is it likely to give rise to multiple or unacceptable risks or impacts on the environment, with the proposed controls implemented.
- b) The location of the regulated activity has avoided impacts to sensitive environmental values and receptors to the greatest extent possible and where unable to be avoided, any potential impacts have been mitigated so they would not be significant.
- c) At no stage of its lifecycle, including post closure, would the activity, on its own or cumulatively with other activities, have a significant impact on the environment.

On this basis, the NT EPA has elected to not require the proponent refer the action.

6. Relevant matters raised through public submissions

The EMP was made available for public comment for 28 days from 20 January 2022 to 17 February 2022. A total of 1340 public submissions were received with 1325 (98.9%) of the submissions being proforma submissions originating from the advocacy website Do Gooder. There were also other 15 (1.1%) unique submissions made.

A total of 18 submissions (1.3%) originated in the NT and 593 submissions (44.2%) did not identify their origin. **Error! Reference source not found.** summarises the relevant matters raised in public submissions, and how these have been addressed.

All submissions were opposed to onshore petroleum development and raised substantially similar issues as those addressed through the *Scientific Inquiry into Hydraulic Fracturing in the Northern*

Territory (HFI) and subsequent implementation of the 135 HFI recommendations. Where new matters were raised, these have been addressed.

Table 3: Consideration of relevant matters raised in public submissions

Theme	Issues raised	Response
Chemicals	<ul style="list-style-type: none"> • Impact of toxic chemicals on environment and human health • Adequacy of chemical risk assessment: <ul style="list-style-type: none"> ○ No information about actual hydraulic fracturing and drilling fluid composition. ○ No drilling fluids included in chemical risk assessment. 	<p>The EMP commits to safe chemical handling practices and secondary impermeable containment for liquid chemicals and hazardous substances, so that exposure pathways for environment and human health are minimised to a level that is ALARP and acceptable.</p> <p>The chemical risk assessment was undertaken for hydraulic fracturing chemicals in accordance with the Environment Management Plan Content Guideline¹ and included in the EMP.</p> <ul style="list-style-type: none"> • The majority of the chemicals were identified to be of low human health and environmental concern. • When standard chemical handling, storage and disposal practices are utilised, all chemicals are considered low concern. <p>All chemicals proposed to be used for hydraulic fracturing and drilling fluids are included in the EMP.</p> <p>An assessment as to whether drilling fluids could be considered to be hazardous is included in the Waste and Wastewater Management Plan.</p>
Climate change	<ul style="list-style-type: none"> • Transition towards renewable energy • Contribution to national greenhouse gas emissions (GHG) • Lack of greenhouse gas abatement plan (GGAP) • Greenhouse gas emissions assessment methodology (exclusion scope 1 emissions) • Exclusion of land clearing emissions • Fugitive methane emissions from well • Inconsistent GHG emission numbers 	<p>The <i>Greenhouse Gas Emissions Management for New and Expanding Large Emitters</i> (Large Emitters Policy) has been developed in recognition of the Northern Territory's target of net zero GHG emissions by 2050.</p> <p>Imperial A through this EMP is not considered a large emitter in accordance with the Large Emitters Policy. A GGAP is therefore not required to be developed and implemented.</p> <p>The emissions are calculated using National Greenhouse and energy Reporting (NGER) Emissions and Energy Threshold Calculator. Scope 1 emissions (inclusive of vegetation clearing) and assumptions are provided in the EMP.</p> <p>Fugitive emissions are estimated and monitoring of leaks will be conducted.</p> <p>The EMP has been updated to provide a consistent number for the GHG emissions</p>
Flora and fauna (environment)	<ul style="list-style-type: none"> • Adequacy of baseline assessment • Clearing of riparian vegetation communities • Lack of a rehabilitation plan • Erosion and Sediment Control Plan is generic • Impacts to stygofauna • Impacts to threatened species • Impact to insects (from flaring) • Description of vertical interplays between aquifers • Acknowledgement of Territory Conservation Agreement 	<p>A comprehensive Strategic Regional Environmental and Baseline Assessment (SREBA) has been conducted. The SREBA covers the Beetaloo Region², inclusive of the location of the regulated activity.</p> <p>A precautionary approach is applied to clearing of vegetation through engaging an ecologist on site prior to clearing operations to undertake ground-truthing. Regulated activities are avoided in sensitive areas and a decision tree is applied prior to clearing of larger trees.</p> <p>The EMP has been updated to include a rehabilitation plan.</p> <p>A site-specific Erosion and Sediment Control plan cannot be developed until the exact site location has been determined. Well pad erosion and sediment control drawings will be updated via a Management of Change during construction to ensure the actual site conditions and controls are reflected in the plans.</p>

¹ https://depws.nt.gov.au/_data/assets/pdf_file/0015/1030038/emp-content-guideline.PDF

² [Strategic regional environmental and baseline assessment \(SREBA\) fact sheet](#)

Theme	Issues raised	Response
	<ul style="list-style-type: none"> Soil contamination impacting plant growth through wastewater spills. 	<p>Impacts to stygofauna are mitigated by avoiding water extraction near anticipated stygofauna presence, utilising low toxicity drilling fluid systems, and monitoring of changes to groundwater quality.</p> <p>The EMP has been updated to provide information about threatened species in the project area, and how impacts will be avoided. There are no insects identified as threatened species in the project area.</p> <p>The potential aquifers in the project area have been identified, and will be isolated from each other and the surface and any hydrocarbon-bearing zones by appropriate well barriers. This minimises the pathway of aquifer contamination to a level that is ALARP and acceptable.</p> <p>The <i>Petroleum Reserved Block Policy</i> sets out the areas where drilling for petroleum resources is not permitted. The Territory Conservation Agreement on the south-eastern corner of EP167 is not a reserved block.</p> <p>The EMP commits to safe handling practices of chemicals and waste, and to using secondary impermeable containment for liquid chemicals and hazardous substances. This minimises the pathway of soil contamination to a level that is ALARP and acceptable.</p>
Human health	<ul style="list-style-type: none"> Impact to nearby residents from nitrogen oxides and volatile organic compounds 	<p>The petroleum wells will have a setback distance of at least 8.2 kilometres from existing dwellings. All petroleum infrastructure will have a setback distance of at least 2 km from existing or proposed habitable dwellings. This fulfills Code requirement A.3.1(f). Based on expected emission rates and a minimum distance of at least 2 km from the nearest sensitive receptor the risk to human health from emissions is considered acceptable and therefore is ALARP.</p>
Regulation and compliance	<ul style="list-style-type: none"> The EMP does not meet the approval criteria – lack of detail, inconsistencies, risks not ALARP and acceptable. No Authority Certificate for the proposed regulated activity. Cumulative impacts to consider future activities and habitat loss of threatened species. Referral under the <i>Environment Protection Act 2019</i> (NT) (EP Act) Transparency of the Well Operations Management Plan (WOMP) Flowlines breaching the Petroleum Act Fit and proper person test (Empire's oil and wastewater spill in the US) 	<p>The EMP has been updated to meet the approval criteria, improve the level of detail, remove inconsistencies and ensure environmental impacts and risks are reduced to a level that is ALARP and acceptable.</p> <p>The interest holder has received an Authority Certificate which covers the activities covered in the EMP</p> <p>The EMP considered cumulative impacts in conjunction with other activities near the permit area. Whilst in the exploration stage, there is no certainty about future development activities. As such, future activities are not included in the cumulative impacts. The proportion of riparian vegetation disturbed compared to the total available riparian vegetation in the project area has been included in the EMP.</p> <p>The EMP is considered by the NT EPA, and was subject to review by a full range of NT government agencies. The interest holder undertook a self-assessment against both the EP Act and the EPBC Act, and concluded a referral is not required.</p> <p>WOMPs are assessed by petroleum engineers in the Department of Mining and Energy (DME). These officers have the technical expertise necessary to evaluate well construction and integrity and ensure that WOMPs comply with the relevant sections of the Code. There can be no drilling or hydraulic fracturing before a WOMP has been accepted by DME.</p> <p>Activities that are not included in the Code are not by default prohibited. The fact that flowlines are not part of the Code, does not mean the proposed regulated activity does not manage the environmental impacts and risks to a level that is ALARP and acceptable. Compliance with relevant Australian Standards is a sound way to demonstrate activities will be undertaken in a safe manner and that relevant risks are considered and managed.</p> <p>Section 15A of the <i>Petroleum Act 1984</i> requires the Minister to be satisfied the applicant of a permit or licence is an appropriate person to hold a permit or licence. Administration and regulation of</p>

Theme	Issues raised	Response
		petroleum tenure is managed by DME. The fit and proper person test is therefore a consideration for the Minister for Mining and Industry.
Spills	<ul style="list-style-type: none"> Contamination of aquifers from spills through sinkholes Risks of flowline spills through corrosion, soil instability and erosion. 	<p>Any potential unmapped sinkholes will be identified during ground-truthing surveys. The ecologist will ensure that all recommended buffers as per the Land Clearing Guidelines are implemented.</p> <p>Flowlines will be constructed, operated and maintained in an appropriate manner. In the event of leaks in the flowline system they will be identified within 24 hours for a slow leak, and 2 hours for a high-pressure leak. This ensures the risk associated with spills are reduced to a level that is ALARP and acceptable.</p>
Social and cultural	<ul style="list-style-type: none"> Adequacy of stakeholder engagement: <ul style="list-style-type: none"> Traditional Owners not consulted other authorised land users in the project area not identified lack of information provided to stakeholders no copies of written responses lack of free, prior and informed consent. Protection of archaeological sites Adequacy of archaeological survey (methodology and lack of consultation with Aboriginal traditional owners and custodians) Lack of social baseline assessment as part of the social impact assessment 	<p>An On Country Meeting was held during the assessment of the EMP. The updated EMP includes an updated stakeholder engagement log, which demonstrates that the interest holder has engaged about the environmental impacts and risks of the proposed activities with a range of stakeholders including direct engagement with leaseholders, Aboriginal stakeholders and the Northern Land Council.</p> <p>Archaeological sites have been identified and will be avoided in the regulated activity.</p> <p>The NT Government's Heritage Branch has reviewed the archaeological report and determined that the methodology was of a sufficient standard to identify Aboriginal archaeological places within the subject land, and thereby assist the proponent in ensuring compliance with the <i>Heritage Act 2011</i> (Heritage Act). While it is good practice for Aboriginal traditional owners and custodians to be involved in archaeological surveys, it is not mandated under the Heritage Act. The Heritage Branch recognises that there may be obligations on the proponent to consult more broadly about the project, but the Heritage Branch distinguishes between surveys using a scientific approach to locate archaeological sites that are protected by the Heritage Act, and broader ethnographic cultural surveys.</p> <p>A strategic Social Impact Assessment is not required for exploration approvals. A Strategic Regional Environmental and Baseline Assessment (SREBA) has been completed which includes social, cultural and economic studies.</p>
Traffic	<ul style="list-style-type: none"> Increased traffic causing increased road deaths and wildlife injuries 	A Traffic Impact Assessment was undertaken for the activities covered by this EMP and concludes that the extra daily vehicle movements associated with the regulated activities is very low, and will readily be accommodated on the road network. Appropriate sight distances can be established at each of the recommended access points.
Uncertainty in regulated activity	<ul style="list-style-type: none"> Numerous errors, inconsistencies and omissions Flowline installation and decommissioning (how and when) Location, number and design of proposed wells unknown, making a realistic risk assessment impossible. Centralised processing of wastewater 	<p>The EMP has been updated to be more consistent, elaborate on matters where necessary, and remove errors.</p> <p>The EMP was updated to provide more information about flowlines. Installation will be done using a lowest impact approach with flowlines to be co-located with new and existing access tracks and seismic lines.</p> <p>No more than 6 wells will be drilled under this EMP. The potential locations for these wells are described in the EMP, and the site-specific environmental impacts and risks, such as presence of waterways and threatened species, have been addressed.</p> <p>Centralised processing facilities wastewater are not proposed in the EMP.</p>
Waste	<ul style="list-style-type: none"> Wastewater transport through flowlines – lack of description of quantity or composition. Reuse of flowback fluids 	<p>Estimates of the flowback volumes are provided in the EMP.</p> <p>A risk assessment on the reuse of wastewater has been completed and the reuse of wastewater is acceptable when carried out in the manner described in the EMP. The reuse of flowback water and</p>

Theme	Issues raised	Response
	<ul style="list-style-type: none"> • Wastewater quality – no information about composition • Wastewater storage in open ponds – fauna access • Tank pad configuration and management • Wastewater disposal – leaks and spills associated with transportation and reinjection 	<p>produced water for future hydraulic fracturing activities will reduce the amount of groundwater required for hydraulic fracturing activities.</p> <p>The flowback fluid is considered to be hazardous with a high salinity, the exact quality will depend on the target formation and will be monitored post hydraulic fracturing.</p> <p>Flowback fluids and produced water are stored in above-ground tanks with tall, vertical walls which prevent entrapment and breeding of amphibians. Drill cuttings sumps will have fauna ladders installed. Weekly inspections will be done to monitor fauna fatalities. Ongoing fauna mortality will trigger further mitigation measures, such as installation of small fauna-proof barriers or installing reflective flicker-tape.</p> <p>An indicative well pad layout has been provided and may be subject to change based on the ground-truthing activities.</p> <p>Water bores will be monitored quarterly for the analytes in Table 6 of the Code to meets the recommendation of the Hydraulic Fracture Inquiry (Recommendation 7.11).</p> <p>In the weeks prior to, during and after hydraulic fracturing, pressure monitoring of bores will be undertaken at 4-minute intervals. If the well integrity fails during this critical period, it will be detected in a timely manner.</p> <p>Wastewater is proposed to be disposed of off-site and will be transported via trucks. Road conditions will be assessed prior to mobilisation and only licenced waste transporters will be used for listed waste. No transport will occur if road conditions are deemed unsuitable.</p>
Water	<ul style="list-style-type: none"> • Lack of a groundwater extraction licence. • No Water Allocation Plan in place for the proposed activity area. • Water availability • Drawdown from surface water (lakes and rivers across the country) • Contamination of aquifers through drilling fluid losses • Monitoring of dissolved oxygen (important analyte for stygofauna) • Contamination of aquifers through well integrity failure • Monitoring frequency of groundwater post hydraulic fracturing – quarterly is too infrequent to prevent contamination reaching potentially toxic levels. 	<p>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>Imperial A has applied for a groundwater extraction licence for the regulated activities under this EMP.</p> <p>Surface water take is not included as a regulated activity in this EMP.</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>Monitoring of groundwater is done to detect whether the regulated activities are impacting the groundwater quality. This is best traced through electrical conductivity, total dissolved solids, chloride, barium and strontium concentrations, as well as through groundwater pressure monitoring. The purpose of the groundwater monitoring program is not to establish whether the groundwater quality is suitable to sustain aquatic life. Dissolved oxygen is not required to be monitored.</p> <p>Water bores will be monitored quarterly for the analytes in Table 6 of the Code to meets the recommendation of the Hydraulic Fracture Inquiry (Recommendation 7.11).</p> <p>In the weeks prior to, during and after hydraulic fracturing, pressure monitoring of bores will be undertaken at 4-minute intervals. If the well integrity fails during this critical period, it will be detected in a timely manner.</p>

Theme	Issues raised	Response
Well integrity	<ul style="list-style-type: none"> • Corrosion of wells • Impacts of sulphate-reducing bacteria • Impacts of hypersaline, high-temperature aquifers • Risks of leaky wells 	Petroleum wells are designed with multiple barriers, so that a single barrier failure will not lead to a loss of containment. Complete well integrity failure where all barriers fail is an extremely rare occurrence in contemporary petroleum wells including shale wells. Well integrity will be managed under an approved WOMP.

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 Interest holder does not currently hold an approved WOMP for the activities covered by this EMP. The data collected from the seismic activities proposed in this EMP would inform the WOMP. The interest holder has requested that this be managed through the use of ministerial conditions requiring the WOMP to be in place prior to drilling activities.

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 & Gas A Pty Ltd EMP 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, 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 DLPE 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 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.
7. 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.
8. 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.
9. 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.
10. 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.
11. Certainty that the rehabilitation plan has been reviewed by a suitably qualified person prior to regulated activities occurring.
12. Confirmation that the risk of bushfires caused by flaring condensate is appropriately managed through requiring a risk assessment to be undertaken prior to flaring condensate.
13. Certainty that the environmental performance standards are appropriate for the regulated activities.



PAUL VOGEL AM
CHAIRMAN

NORTHERN TERRITORY ENVIRONMENT PROTECTION AUTHORITY

7 OCTOBER 2024