Modification Notice - Regulation 22

Interest Holder	Imperial Oil and Gas Pty Ltd	EMP Title	2021-2025 EP187 Work	Unique EMP ID No.	IMP4-3	Mod No.	8	Date	3/9/24
Brief Description	Imperial proposes to modify the regulated activity in IMP4-3 as it relates to the use of open or closed-topped wastewater storage tanks on its wellpads. IMP4-3 currently allows for up to 4 storage tanks on each wellpad, of which a maximum of 2 can be closed-topped. Imperial proposes to modify this so that of the 4 tanks on each wellpad, up to 3 may be closed-topped. This amendment will allow for greater utilisation of closed-topped tanks where appropriate to assist with the management of freeboard levels during the wet season. **The EMP currently specifies the following tank volume, number, and covering for wellpads:** • Closed top storage tanks: Up to 50ML (per wellpad) • Maximum number of closed-topped storage tanks: Up to 2 (per wellpad) • Open topped treatment tanks: Up to 50ML (per wellpad) • Maximum number of open-topped treatment tanks: Up to 2 (per wellpad) **Imperial proposes to amend this and subsequent references to tank number and covering to:** • Total tank storage of both open and closed-topped tanks: Up to 100ML per wellpad. • Maximum number of total tanks: Up to 4 per wellpad. • Closed top storage tanks: Up to 100ML (per wellpad) • Maximum number of closed-topped storage tanks: Up to 4 (per wellpad) • Open topped treatment tanks: Up to 50ML (per wellpad)								

	• Maximum number of open-topped treatment tanks: Up to 2 (per wellpad) While there are many references to wastewater storage tanks in the approved EMP IMP 4-3, there are only 2 references to the allowable number of open and closed-topped tanks on each wellpad. Imperial proposes to amend these references to align with the modification that "There will be a maximum of 4 storage tanks on each well pad, of which up to 3 will be closed-topped tanks" The proposed modification is consistent with the requirements of the Code of Practice: Onshore Petroleum Activities (the Code), the Petroleum (Environment) Regulations 2016 and the IMP4-3 Appendix 06.01 – Hydraulic Fracturing (HF) Chemical Risk Assessment. This is demonstrated in Section A and B of this submission. The proposed modification does not inadvertently change the risk profile which remains at a residual risk level of 1 (see Section C on page 11 for risk profile). Assessment of the risks from a scenario where fluids were to overflow an earthen bund are addressed in Appendix 0.01 HF Chemical Risk Assessment of the approved IMP 4-3 and remain applicable with the proposed modification. ALARP is maintained through meeting requirements of the Code and implementing all reasonably practicable site-specific controls as outlined in Section D of this submission. Environmental outcomes as stated in the EMP remain achievable when implementing the proposed modification as per Section E on Page 13 and aligns with existing IMP4-3 environmental performance standards and measurement criteria (see Section F of this submission). The proposed modification does not have implications for either the Waste and Wastewater Management Plan or the Spill Management Plan.
Geospatial Files Included?	NA

Does the proposed change result in a new, or increased, potential or actual environmental impact or risk?	If an INCREASE in an existing potential or actual environmental impact or risk is it provided for in the approved EMP?	Does the proposed change require additional mitigation measures to be included?	Has additional stakeholder engagement been conducted?	Does it require additional environmental performance standards and measurement criteria?	Does it affect compliance with Sacred Site Authority Certificates?	Does it affect current rehabilitation, weed, fire, wastewater, erosion and sediment control, spill or emergency response plans?	Will the environmental outcome continue to be achieved and will the impacts and risks be managed to ALARP and acceptable?
No. See Section C below.	-	No	No	No. See Section F below.	No	No	Yes. See Section D below.

Current EMP Text	Amended EMP Text
IMP 4-3 Section 3.1 **Table 5: Key components of the regulated activity**	**IMP 4-3 Section 3.1** **Table 5: Key components of the regulated activity** *Amend EMP table to insert additional line items under 'Tanks':*

Component	Proposed
Tanks:	
Closed topped storage tanks	Up to 50ML (per wellpad)
Maximum number of closed topped storage tanks	Up to 2 (per wellpad)
Open Topped treatment tanks	Up to 50ML (per wellpad)

Component	Proposed
Tanks:	
Maximum storage of both open and closed-topped tanks:	Up to 100ML (per wellpad)
Maximum number of tanks	Up to 4 (per wellpad)

Maximum number of open-topped treatment tanks	Up to 2 (per wellpad)

Closed Topped storage tanks	Up to 100ML (per wellpad)
Maximum number of closed-topped storage tanks:	Up to 4 (per wellpad)
Open Topped treatment tanks	Up to 50ML (per wellpad)
Maximum number of open-topped treatment tanks	Up to 2 (per wellpad)

IMP 4-3 Section 3.1.1, Table 6,
Row 5, Closed topped Storage tanks

Will establish up to 12 closed topped storage tanks, with up to 2 per wellpad.

IMP 4-3 Section 3.1.1, Table 6,
Row 5, Closed topped Storage tanks

Will establish up to 24 closed topped storage tanks, with up to 4 per wellpad.

IMP 4-3 Table 30 Environmental Outcomes, Performance & Measurement

Environmental Performance Outcome:
Local inland water quality is not permanently affected by the conduct of the regulated activity.

Activity: Vehicle and plant movements

Environmental Performance Standard: *No instances of loss of containment of wastewater*

Measurement Criteria:

- Incident management system includes records of loss of containment of wastewater
- Site induction records show all personnel inducted, and induction materials include requirements related to wastewater storage.
- All tanks marked with freeboard levels as per seasonal requirements
- Daily inspections confirm wastewater levels do not exceed freeboard

IMP 4-3 Table 30 Environmental Outcomes, Performance & Measurement

Environmental Performance Outcome:
Local inland water quality is not permanently affected by the conduct of the regulated activity.

Activity: Vehicle and plant movements

Environmental Performance Standard: *No instances of loss of containment of wastewater*

Amend EMP text to include:

Modify **Measurement Criteria:**

- A minimum of 1.1m freeboard will be maintained in all tanks/ pits that contain Flowback Fluid and Produced Water throughout the wet season

To:

• Records of exceedance of the freeboard are included in the incident management system and evidence of corrective actions and preventative measures implemented • A minimum of 1.1m freeboard will be maintained in all tanks/ pits that contain Flowback Fluid and Produced Water throughout the wet season	• *A minimum of 1.1m freeboard will be maintained in all open-topped tanks/ pits that contain Flowback Fluid and Produced Water throughout the wet season* **Add additional Measurement Criteria:** • *A minimum of 0.5m freeboard will be maintained in all closed-topped tanks/ pits that contain Flowback Fluid and Produced Water throughout the wet season*
IMP 4-3 Table 30 Current Environmental Performance Standards and Measurement Criteria **Environmental Performance Outcome:** Terrestrial environmental quality, including surface waters, are not permanently affected by the regulated activity's conduct. **Activity:** Storage and handling of hazardous substances, including HF fluid and flowback wastewater. **Environmental Performance Standard:** *Freeboard for all pits, Flowback Water and Produced Water tanks maintained at all times* **Measurement Criteria:** • Site induction records show all personnel inducted, and induction materials include requirements related to the storage of wastewater. • All tanks marked with freeboard levels as per seasonal requirements • Daily inspections confirm wastewater levels do not exceed freeboard • Records of exceedance of the freeboard are included in the incident management system and evidence of corrective actions and preventative measures implemented	**IMP 4-3 Table 30 Current Environmental Performance Standards and Measurement Criteria** **Environmental Performance Outcome:** Terrestrial environmental quality, including surface waters, are not permanently affected by the regulated activity's conduct. **Activity:** Storage and handling of hazardous substances, including HF fluid and flowback wastewater. **Environmental Performance Standard:** *Freeboard for all pits, Flowback Water and Produced Water tanks maintained at all times* **Modify Measurement Criteria** • A minimum of 1.1m freeboard will be maintained in all tanks/ pits that contain Flowback Fluid and Produced Water throughout the wet season To: • *A minimum of 1.1m freeboard will be maintained in all open-topped tanks/ pits that contain Flowback Fluid and Produced Water throughout the wet season*

• A minimum of 1.1m freeboard will be maintained in all tanks/pits that contain Flowback Fluid and Produced Water throughout the wet season	Add • *A minimum of 0.5m freeboard will be maintained in all closed-topped tanks/ pits that contain Flowback Fluid and Produced Water throughout the wet season*

Section A - Code of Practice: Onshore Petroleum Activities (the Code)

The proposed modification is consistent with the requirements of the Code of Practice: Onshore Petroleum Activities (the Code) in the NT.

Environment Management Plans are required by law to demonstrate how the Code will be complied with in the proposed activities. This modification to IMP4-3 brings are in alignment with the Code which states:

A.3.8 Containment of contaminants:
(e) Sites and facilities here petroleum activities are undertaken must be designed and constructed to prevent spills of potentially harmful chemicals or those that may cause harm to the ground surface or their release from site.

C.4.2.2 Mandatory requirements
(b) All above-ground tanks must:
ii. limit the ingress of rainwater into the tank to an amount that is ALARP and acceptable.
iv. be designed and operated to prevent overtopping
vi. be designed to reduce the risk of a build-up of explosive gasses to a level that is ALARP and acceptable.

It is Imperial's intention to always adhere to the Code as best industry practice.

Section B - Petroleum (Environment) Regulations 2016

The proposed modification is consistent with the requirements of the Petroleum (Environment) Regulations 2016.

It is imperial's intention to provide a modification which changes the details of the original IMP4-3 submission as they relate to wastewater tank storage facilities. The modifications are proposed to reduce the risk posed by wet season rain events and the exceedance of freeboard levels by reducing the ingress of rainwater into the tanks and increasing the number of closed topped tanks which are permitted per wellpad. This is consistent with the Regulations which states:

Schedule 1 Information to be included in environment management plan
Part 1 Regulated activity and environment
1 Description of regulated activity
A plan must give a comprehensive description of the regulated activity to which it relates and include:
(b) general details of the construction and layout of any facility associated with the activity;

Section C – Risk Profile

The proposed modification does not inadvertently change the risk profile, as the use of closed-topped tanks are already appropriately controlled and mitigated. Risk Management Controls for closed-topped tanks remain unchanged as per below.

Current risk profile of risks in IMP4-3 Appendix 04 – Risk Assessment which refer to bunded wastewater tanks.

Risk #	Risk Source	Potential Impact	Risk Management Controls	Consequence	Likelihood	Residual Risk	ALARP statement
49	Overflow of fluid storage/ Leaching from storage tanks	Impact to soil quality	*As per Appendix 04 text*	II (Minor)	D (Unlikely)	1	*As per Appendix 04 text*
57	Surface activities	Contamination of aquifer impacting a receptor	*As per Appendix 04 text*	IV (Major)	E (Remote)	1	*As per Appendix 04 text*

The residual risk rating remains at 1. When applying the Natural Environment Risk Assessment Framework from Table 1 IMP4-3 Appendix 03 – the consequence remains the same.

Section D – ALARP Demonstration

The proposed modification maintains that impacts and risks remain at ALARP and acceptable levels.

ALARP is maintained through meeting requirements of the Code and implementing all reasonably practicable site-specific controls. Imperial deems the environmental impacts and risks associated with the containment of contaminants in closed-topped wastewater with individual secondary containment as per the Code of Practice: Onshore Petroleum Activities As Low As Reasonably Practicable (ALARP) based on:

- Good Practice Control Measures: the proposed modification complies with the Code.
- Good Industry Practice: Engineering control standards include:
  - Above ground tanks designed and constructed following the relevant Australian Standards (including AS1554.1 and AS3990)
  - Fitted with a secondary liner to prevent leakage if the primary liner develops a leak
  - Fitted with a leak detection system between the primary and secondary liner to notify of any potential leaks in the primary liner.
  - Fitted with level monitoring equipment that includes a high-level alarm that is calibrated for the appropriate freeboard for the season.
  - Fitted with a system to remove rainwater from above the floating cover
  - Fitted with vents that prevent the build-up of explosive gasses
  - Limiting the ingress of rainwater into the tank.
- Professional Judgement:
  - Daily inspections of tank integrity and weather by competent and experienced personnel.
- Risk-based tools:
  - Appendix 06.01 HF Chemical Risk Assessment is based on berm walls and / or double lined above ground tanks.
  - IMP 4-3 Reg 22 Modification #7 confirms that “Bunded tank pad will accommodate 110% of the volume of the largest tank, unless the container is equipped with individual secondary containment as per the Code of Practice: Onshore Petroleum Activities. If the container is equipped with individual secondary containment, a 1m earthen bund will surround any in-ground treatment tanks and / or double lined above ground tanks.” This Reg 22 does not negate the requirement to have a 1m earthern bund around all tanks.
- Precautionary approach:
  - A conservative freeboard approach is undertaken. Closed-topped wastewater treatment tanks and pits will be marked and operated with 0.5 metres of freeboard in accordance with IMP 4-3 Table 6.
  - Open topped wastewater storage tanks are fitted with fauna ladders.
  - Constructed 1m earthen bund to divert overland flow from undermining the tank liner and prevent vehicles from approaching.

Section E – Environmental Outcomes

The proposed modification maintains that the Environmental outcomes as stated in the EMP remain achievable.

IMP 4.3 Section f. outlines the key environmental outcomes which remain achievable with the proposed modification:

- Conduct of the regulated activity does not create safety risks for the public or landholders.
- Sensitive receptors, significant conservation areas, or listed species or their habitat is not permanently affected by the conduct of the regulated activity.
- Terrestrial environmental quality, including surface waters, is not permanently affected by the regulated activity's conduct.
- The conduct of the regulated activity does not result in the over-extraction or contamination of groundwater resources.
- Local inland water quality is not permanently affected by the conduct of the regulated activity.
- Minimise emissions, including greenhouse gases, created by the conduct of the regulated activity.

Utilising closed-topped wastewater bunded tanks will not compromise these performance outcomes.

Section F – Environmental Performance Standards

The proposed modification aligns with IMP4-3 existing environmental performance standards and measurement criteria.

Utilising closed-topped wastewater tanks where possible aligns with environmental performance standards, if the above modifications are applied to bring the Measurement Criteria in line with other areas of the EMP. Closed-topped tanks will assist in the maintenance of wet season freeboard levels in both tanks and pits by:

- Limiting the ingress of rainwater into tanks and therefore assisting in maintaining freeboard.
- The provision freeboard in closed-top tanks allows the transfer of wastewater from open-topped tanks and pits in the event where a significant rainfall even indicates it is required as described in IMP 4-3 Appendix 6 Waste and Wastewater Management Plan.