

# Onshore Petroleum Activity – NT EPA Advice

## SANTOS QNT PTY LTD – AMADEUS BASIN: JACKO BORE 1DW1 DRILL AND TEST PROGRAM ENVIRONMENT MANAGEMENT PLAN (EMP), EP125 (STO5-5)

### 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	Santos QNT Pty Ltd (Santos) (as Operator) on behalf of: <ul style="list-style-type: none"> <li>• Santos QNT Pty Ltd</li> <li>• Peak Helium (Amadeus Basin) Pty Ltd</li> <li>• Ordiv Petroleum Pty Ltd</li> </ul>
Petroleum interest(s)	Exploration Permit 125
Environment Management Plan (EMP) title	Amadeus Basin: Jacko Bore 1DW1 Drill and Test Program , prepared by inGauge Energy Australia, dated 28 June 2024
EMP document reference	STO5-5
Regulated activity	<ul style="list-style-type: none"> <li>• The re-establishment of the previously cleared well pad and campsite.</li> <li>• Civil construction associated with the expansion of the existing well site and associated infrastructure (laydown yard, overburden spoil stockpile, tank pads, fire breaks, effluent irrigation area, access tracks and water bores).</li> <li>• Drilling, completion, monitoring and maintenance, and suspension and decommissioning of a horizontal helium appraisal well.</li> </ul>

	<ul style="list-style-type: none"> <li>Extended production testing of a horizontal helium appraisal well for a period of up to 365 days.</li> <li>Rehabilitation of area utilised for the Activity and previously disturbed areas associated with the Interest Holder’s exploration and appraisal activities.</li> <li>The use and maintenance of public roads, existing access tracks and pre-existing gravel pits along the access track to the well pad.</li> </ul>
Public consultation	Public consultation on the EMP was undertaken in accordance with regulation 8A(1)(b) from 27 February 2023 to 27 March 2023.

## 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 2025.

Table 1: Key components of the proposed work program

Component/aspect	Proposed
AAPA certificate	C2023/054 (variation to C2023/018).
Total area of EP125	12800 km <sup>2</sup> (1280000 ha)
Total area of surface disturbance	8.8 ha of new disturbance
Access tracks	~1 km (2 ha)
Number of exploration wells	1 well
Groundwater usage	Up to 30.3 ML per annum, 73.2 ML total (Total including 20% contingency)
Groundwater extraction/monitoring bores	2 new bores
Extended production testing	Up to 365 days
Camp	~80-person camp
Peak traffic movements	263 vehicles per week
Average traffic movements (for the duration of the project)	45 vehicles per week
Volume of drilling mud and cuttings generated	~800 m <sup>3</sup>
Flowback volume generated	Predicted 0.08 ML with contingency to manage up to-1 ML
Flowback/wastewater volume predicted for treatment and offsite disposal	0.05 ML (total)
Enclosed wastewater tank capacity	0.16 ML with capacity to expand to 1 ML using tanks with removable lids
Open treatment tank capacity	As above
Greenhouse gas emissions	~5100 tCO <sub>2</sub> -e

#### 1.1 Activity Scope and Duration

This EMP proposes the re-establishment and expansion of a previously cleared well site and associated infrastructure; drilling, completion evaluation and testing of a horizontal helium appraisal well; workover, intervention, monitoring and maintenance for the life of the well; well suspension and decommissioning works that may be required; and rehabilitation of the site. The project is located on exploration permit 125 and is located approximately 190km south of Alice Springs and 175km east

of Yulara, on Lyndavale Station. The program is proposed to be carried out between August 2024 and November 2025, with the timing of individual components as follows:

- Drilling water supplies for 31 days during August 2024.
- Civil Construction running for approximately 56 days from August to September 2024.
- Drilling and Completion taking approximately 57 days from September to October 2024.
- Extended Production Test of up to 365 days over a period of 12-18 months from October 2024 to November 2025.

The interest holder has conducted activities in the project area since 2013, including 645.8 km of seismic acquisition (645.8 ha) and drilling of the Jacko Bore 1 well (previously named Mt Kitty 1) on the well site to be re-established, involving 53.47 ha of land clearing. During stakeholder engagement, a concern was raised by the Imanpa community's Traditional Owners about the name of the proposed appraisal well; Mt Kitty 2. To better reflect the cultural connection to the location, the original name of this activity, and the previously named Mt Kitty 1 well have been renamed to Jacko Bore 1 DW1 and Jacko Bore 1, respectively. The proposed well will be a horizontal/highly deviated well, which will be drilled from the existing Jacko Bore 1 surface hole. If the casing on Jacko Bore 1 fails, this well will be plugged and abandoned. The horizontal Jacko Bore 2 well will then be drilled approximately 20 metres from the existing well.

The EMP demonstrates there is a good understanding of the existing environment. The proposed activities utilise previously cleared areas and existing access tracks, which limits new clearing requirements and reduces cumulative impacts. A baseline study was undertaken at the well pad location, and the EMP contains a detailed description of the environment. Sensitive receptors are located at a reasonable distance, being 1.6 km from the closest stream (stream order 2), 3.2 km from the closest bore, and 8.5 km away from the closest dwelling. The EMP shows an adequate consideration of potential impacts and risks of the regulated activity and proposes appropriate controls, in line with the Code. Matters of particular interest in this EMP are the nearby Karinga Creek Paleodrainage System, wastewater storage, cumulative impacts and extended production testing.

Karinga Creek Paleodrainage System comprises a site of botanical significance (SOBS), which is part of a larger chain of saline lakes that extend from Lake Hopkins in Western Australia to the Finke River in the Northern Territory. The SOBS contains Karinga Creek, located approximately 20 km north of the well pad, which drains into the Finke River. After substantial rainfall, the lakes, claypans and saltpans that comprise the Karinga Creek Paleodrainage System fill and provide important habitat for more than 10,000 shorebirds and internationally significant numbers of the Banded Stilt, the Red-capped Plover, and the Sharp-tailed Sandpiper. The location of the well pad, gravel pits and campsite will not intersect with the SOBS. The existing access track, which is a public road, traverses the SOBS for 12.3 km.

Wastewater generated from the activities are drilling and completion fluids (~2.5 ML) and produced fluids (up to 1 ML). The drilling fluids will be stored in a lined sump in accordance with the requirements of the Code. Produced fluids will be stored in an aboveground open-topped tank, which has the capacity to be enclosed via a cover. Freeboard to accommodate 1 in 1,000 year rainfall over three months was calculated for both wet and dry season to prevent overtopping of wastewater containment structures. Due to the relatively low rainfall totals and high evaporation, the freeboard for the wet season was calculated to be 127 mm, and for the dry season evaporation exceeded 1:000 year 90-day rainfall totals. A significant rainfall event based on local weather conditions has been defined as greater than 150 mm over 4 days. The freeboard that will be applied to open wastewater containment structures is 400 mm.

The estimated groundwater use for the activities in this EMP is 61 ML. The interest holder has included a 20% contingency to the estimated groundwater usage to account for uncertainties including weather and nature of the road materials taking the total water use to 73.2 ML.

Progressive rehabilitation of significantly disturbed areas will commence within 12 months of cessation of the regulated activity. Borrow pits will be rehabilitated progressively as access tracks are constructed.

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 recommendations 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)
- Weed Management Plan (Appendix 9)
- Bushfire Management Plan (Appendix 8)
- Waste and Wastewater Management Plan (Appendix 6)
- Spill Management Plan (Appendix 7)
- Rehabilitation Management 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)(c).

## **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 27 February 2023 to 27 March 2023.

### **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 clearly demonstrates consideration of 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 were assessed, with no areas of environmental uncertainty identified. The risks of conducting the activity over the wet season are well understood, and the EMP demonstrates adherence to the Code. The information is underpinned by the knowledge gained from previous operations in EP125 and a thorough analysis and assessment of risks so that threat of serious or

irreversible damage from those activities is considered unlikely and potential impacts and risks managed to ALARP and acceptable levels.

There are two Sites of Conservation Significance (SOCS) and three Sites of Botanical Significance (SOBS) within or intersecting the EP boundaries. The Karinga Creek Paleodrainage System (KCPS) is located 200km south of Alice Springs. It comprises both a Site of Conservation Significance and a Site of Botanical Significance. The KCPS is rated as internationally significant. The interest holder has designed the works program to ensure that there will be no construction activity, new access construction or use of pre-existing gravel pits within the KCPS SOCS or SOBS area or buffer.

The EMP has taken a precautionary approach when calculating required freeboard. The calculated freeboard for a 1 in 1000 ARI rainfall event was 127 mm, however a minimum operational freeboard of 300 mm has been adopted to address the risk of spills during extreme wind events.

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 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 measureable 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 October 2022. 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. Knowledge gained during previous operations in the project area has also been incorporated where relevant.

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 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 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 understanding of the composition of geogenic compounds in the Amadeus Sub-basin is scarce, the NT EPA recommends the interest holder be required to undertake testing of the produced water 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 Certificates 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.

Surface disturbance of the proposed activity is minimised by drilling a horizontal well on an existing well location.

Total greenhouse gas (GHG) emissions predicted to be generated by the regulated activity are approximately 5100 tCO<sub>2</sub>-e, assuming a well testing period of 365 days. The project does not exceed the threshold for becoming a large emitter under the Large Emitters Policy, and no Greenhouse Gas Abatement Plan is required.

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 an existing well pad allows this assessment to take place under a reduced clearing footprint.

Santos will be required to obtain a groundwater extraction licence to cover the water use requirements of the proposed exploration activities. The application for a groundwater extraction licence is covered under the Water Act 1992 and is separate to this EMP. The sustainability of the increase in groundwater take will be assessed as part of the application under the Water Act 1992.

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 Finke bioregion. Given the relatively small area of impact (approximately 8.8 ha), 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 in the project area, but two listed threatened 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 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 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 key potential environmental impacts and risks considered in the EMP are impacts on air quality from emissions generated by vehicles and well infrastructure, impacts on groundwater quality and aquifers from a loss of well control and impacts to flora and fauna from the spread of weeds.

The EMP demonstrates why the controls to be implemented are considered ALARP and acceptable. Of the 32 environmental risks identified by the interest holder, ten are considered 'very low' risk and 18 are considered 'low' risks. These are considered to manage impacts and risks to ALARP and acceptable levels. Of the remaining four risks, all are considered 'medium'. The interest holder has included mitigations that will be implemented such that the risks will therefore be managed at levels that are ALARP and acceptable. Specifically:

1. A reduction in air quality due to emissions from well infrastructure during and post activity, including flaring. The interest holder has committed to risk management controls including completing well design in accordance with the Code of Practice and American Petroleum Institute (API) standards, flaring gas wherever possible using a flare designed and operated to achieve 98% combustion efficiency and identifying and rectifying leaks as per the Methane management plan. The residual risk ranking is concluded to be **moderate** based on the likelihood being considered 'possible' and the consequence of the event occurring being 'severe harm'.
2. Emissions from machinery cause a reduction in air quality. The interest holder has committed to risk management controls including maintaining vehicles and stationary machinery in accordance with the Original Equipment Manufacturer's procedures and reducing vehicle movements by locating sites and infrastructure near each other. The residual risk ranking is concluded to be **moderate** based on the likelihood being considered 'remote' and the consequence of the event occurring being 'extensive impact'.
3. Reduced quality of groundwater and contamination of aquifers through the loss of well control. The interest holder has committed to risk management controls including following the approved

Well Operations Management Plan (WOMP), fluid additives are mixed on-site to increase mud weight if required, the use of industry recognised fluid suppliers, well control training and well control procedures will be undertaken and in place. The interest holder's well control standard is based on conventional well control methods using the Driller's Method to remove an influx and counter an overbalance, is adequate to manage any situation that can be realistically expected to arise in terms of well control. Well control-related Emergency Response Drills to be conducted in line with the Emergency Response Plan. The residual risk ranking is concluded to be **moderate** based on the likelihood being considered 'possible' and the consequence of the event occurring being 'severe harm'.

4. The introduction or spread of weeds by equipment used for the regulated activities causing competition with native vegetation. The interest holder has committed risk management controls including, undertaking weed surveys before clearing operations, communication of any issues with all personnel and contractors, training and inductions for project staff and contractors the cleaning of vehicle and machinery and inspection before mobilisation to the project area, restriction of vehicles to cleared/formed access tracks unless involved in the clearing, weed control measures in line with Northern Territory Weed Management Handbook, annual weed survey of the well pad, access tracks, campsite and gravel/borrow pits for weeds and implementation of the site-specific Weed Management Plan. The residual risk ranking is concluded to be **moderate** based on the likelihood being considered 'possible' and the consequence of the event occurring being 'severe harm'.

The EMP also considers cumulative impacts related to groundwater use, land clearing, 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, given 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

Item	Location	Purpose	Monitoring Frequency and Method
<b>Drilling By-products</b>	Well pad - Drilling pit/s.	<ul style="list-style-type: none"> <li>• Assess the potential impacts posed by the drilling by-products, and the available disposal options and collect data for Third Party on-site disposal assessments/approvals.</li> <li>• Assess the hazard associated with the drilling by-products including the potential for Naturally Occurring Radioactive Material (NORMs) and leachability.</li> </ul>	<ul style="list-style-type: none"> <li>• Post-drilling activity prior to pit re-instatement or off-site management.</li> <li>• NORMS as per C.5.2 of the Code.</li> <li>• Leachability testing of drill cuttings in accordance with the Australian Standard Leaching Procedures as described in section C.4.1.2 of the Code.</li> <li>• Other analytes as per Table 9 of the Code.</li> </ul>
<b>Freeboard of Pit/s and open-topped tanks (if applicable)</b>	Well pad – Drilling pit/s and tanks	Ensure adequate space for freeboard.	<ul style="list-style-type: none"> <li>• Drilling by-product pit and open-topped treatment tank levels monitored daily.</li> <li>• Minimum freeboard in the drilling pits of 300 mm is maintained by setting a target freeboard of 400 mm.</li> <li>• Where the target 400 mm freeboard</li> </ul>



Item	Location	Purpose	Monitoring Frequency and Method
			<p>is exceeded, an assessment will be conducted to ensure the risk of overtopping or breaching the minimum freeboard requirement does not occur.</p> <ul style="list-style-type: none"> <li>Monitoring of pits and open-topped tanks completed by online telemetry, or photography until closure. All telemetry equipment will be maintained and calibrated in accordance with the manufacturer's specifications.</li> </ul>
<b>Groundwater Extraction</b>	Production water bores.	<ul style="list-style-type: none"> <li>Ensure that the volume of water utilised is less than the authorised licensed volume.</li> <li>As per the NT Water Act.</li> </ul>	<ul style="list-style-type: none"> <li>Extracted water volumes from each bore used to supply water for the Activity will be recorded in accordance with the conditions of the WEL.</li> </ul>
<b>Waste</b>	Construction, Drilling, Completions and EPT operations.	<ul style="list-style-type: none"> <li>Total volume of waste removed from the site and its destination (inc. license number of the transporter).</li> <li>Total volume of water and wastewater re-used during drilling works or for other purposes.</li> <li>Characterisation of waste.</li> <li>Effectiveness of measures to mitigate stock, wildlife, and human interaction.</li> </ul>	<ul style="list-style-type: none"> <li>Wastewater volume and destination recorded at the time of transport by on-site personnel.</li> <li>Wastewater quantity and quality monitoring with 6 monthly wastewater samples analysed at a NATA- accredited laboratory for the analytes listed in the Code.</li> <li>Ongoing monitoring of incident reports for stock, wildlife and human interaction with wastewater and recording of results.</li> <li>At the time of well suspension an assessment of the potential accumulation of NORM in well equipment will be assessed and measures put in place to reduce risks to HSE as per B.4.15.5(b) of the Code.</li> <li>See 'drilling by-products' for monitoring requirements (inc. NORMS)</li> <li>NORMS as per the Code.</li> </ul>
<b>Bushfire</b>	Bureau of Meteorology (BOM)	Hot spot alerts and fire danger is known.	<ul style="list-style-type: none"> <li>Daily checks of BOM fire and weather forecasts during operations.</li> <li>Visual inspections of cleared areas (inc. Fire access trails and breaks) for weeds/bushfire risk material post- wet season/prior to October (typically the start of the high bushfire risk period) in</li> </ul>

Item	Location	Purpose	Monitoring Frequency and Method
			<p>conjunction with weed surveys.</p> <ul style="list-style-type: none"> <li>• Annual fire mapping.</li> </ul>
<b>Methane Emissions</b>	Drilling, completions EPT (inc. flaring), and ongoing well operations.	<ul style="list-style-type: none"> <li>• No leaks undetected.</li> <li>• Volume of emissions.</li> </ul>	<ul style="list-style-type: none"> <li>• Leak detection tests - in accordance with the Code</li> <li>• Emissions measured in accordance with Section 10.9.2 of Appendix 10.</li> </ul>
<b>Spills</b>	Chemical, fluid, fuel, and additive storage areas.	Sites free of spill-related contamination.	<ul style="list-style-type: none"> <li>• Secondary containment, when in use, to be visually inspected weekly during the dry season and daily during the wet season for damage, spills, or water for management. As per A.3.8.i of the Code.</li> <li>• Note: if secondary containment is found to be damaged, it must be repaired as soon as practicable.</li> </ul>
<b>Erosion and Sediment Control</b>	Access tracks, well pad, campsite and gravel pit/s.	<ul style="list-style-type: none"> <li>• ESC measures in place as per ESC plan.</li> </ul>	<ul style="list-style-type: none"> <li>• Inspection of ESC measures post &gt;10 mm of rain in 24 hours to check that devices are not impacted (if site access available) during operations. Until deemed unnecessary by an (Certified Professional in Erosion and Sediment Controls) CPESC or until commencement of site rehabilitation.</li> <li>• Annually, after the end of the wet season, until rehabilitation success criteria are met, deemed unnecessary by a CPESC or at the completion of rehabilitation. Noting that the responsibility for disturbed areas will continue until the Minister is satisfied that all environmental outcomes and obligations under the EMP are met.</li> </ul>
<b>Weeds</b>	Access tracks, well pad, campsite and gravel pit/s.	<ul style="list-style-type: none"> <li>• Weeds identified and treated.</li> </ul>	Annual survey / visual inspections for maintenance / weed control post-wet season.
<b>Rehabilitation</b>	Access tracks, well pad, campsite and gravel pit/s.	<ul style="list-style-type: none"> <li>• Land disturbance is successfully rehabilitated.</li> </ul>	Annually, starting 12 months after it is determined the disturbed land is no longer required for the Activity or future activities after the end of the local wet season until the Minister is satisfied the environmental outcomes and obligations under the EMP have been met.
<b>Significant Rainfall</b>	Well pad	<ul style="list-style-type: none"> <li>• Significant rainfall event forecast.</li> </ul>	Weather forecast monitored weekly during the wet season while wastewater present in open-topped treatment tanks, pits are open, or chemical/wastewater is planned to be transported.

## **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 the 27 February to 27 March 2023. No public submissions were received.

## **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.

## **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 Santos QNT 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 provision 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 DEPWS 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 the extent of greenhouse gas emissions through provision of an annual emissions report to DEPWS 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.



PAUL VOGEL AM  
CHAIRMAN

NORTHERN TERRITORY ENVIRONMENT PROTECTION AUTHORITY

23 JULY 2024