ntepa Northern Territory Environment Protection Authority

Onshore Petroleum Activity – NT EPA Advice

SANTOS QNT PTY LTD – EP161 2D SEISMIC AND GROUND GRAVITY SURVEY PROGRAM ENVIRONMENT MANAGEMENT PLAN (EMP), EP161 (STO7-4)

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	Santos QNT Pty Ltd (Santos) Tamboran Resources Limited
Petroleum interest(s)	Exploration Permit 161
Environment Management Plan (EMP) title	EP161 2D Seismic and Ground Gravity Survey Program, prepared by inGauge Energy Australia, dated 6 August 2024
EMP document reference	STO7-4
Regulated activity	Exploration Permit 161 (EP161) is located approximately 130 km east of Daly Waters within the Beetaloo Sub-basin of the Northern Territory. The regulated activity includes: • Mobilisation and establishment of a temporary camp, including an equipment parking and fuelling area. • Maintenance and monitoring of pre-existing access tracks. • Where necessary, line preparation of 5 m wide seismic lines and any required connection lines between seismic lines with a mulcher.

	• Conducting a 2D seismic and ground gravity survey • Demobilisation of temporary camp and monitoring of rehabilitation of seismic and connection lines prepared under this EMP that are not along pre-existing tracks.
Public consultation	Public consultation on the EMP was not required under regulation 8A(1)(b) as the EMP does not propose drilling of petroleum wells or hydraulic fracturing.

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 in 2024.

Table 1: Key components of the proposed work program

Component/aspect	Proposed
AAPA certificate	C2020/011 C2019/043 variation to C2014/053 C2018/105 variation to C2018/102 C2013/142
Total area of EP161	10,582 km^2 (1,058,200 ha)
Total area of surface disturbance	125 ha (1.25 km^2)
Seismic lines	240 km x 5 m (120 ha) (1.2 km^2)
New Connection lines/Access tracks	10 km x 5 m (5 ha) (0.05 km^2)
Groundwater extraction licence	GRF10280 (193.5 ML/annum)
Groundwater usage	5 ML (~2.6% of GWEL)
Camp	~ 46 person camp
Peak traffic movements	44 vehicles mobilised (27 light vehicles and 17 heavy vehicles)
Greenhouse gas emissions	~7.1 $ktCO_2$-e

1.1 Activity Scope and Duration

This EMP proposes to undertake a 2D seismic and ground gravity survey involving a temporary camp, maintenance and monitoring of pre-existing access tracks and establishment of connection lines on exploration title EP161. This title is located approximately 130 km east of Daly Waters, on Tanumbirini Station.

There are a number of approved EMPs for EP161 including seismic, drilling and hydraulic fracturing operations. The EMP estimates less than 1% cumulative disturbance across EP161 with 125 ha of disturbance attributed to these activities.

The regulated activity is expected to commence in 2024, over a period of 9 to 10 weeks, utilising 46 personnel and 44 vehicle mobilisations, 17 of which are heavy vehicle mobilisations. A temporary camp will be established on the existing Tanumbirini well pad. Grey water and sewage from the temporary camp will be managed with port-a-loos and/or a fully self-contained portable sewage treatment system. It is estimated that 5 ML of groundwater will be required for activities with potable water sourced offsite.

Existing access to the 240 km of 5m wide seismic lines will be used wherever possible, with 10 km of connection lines to be prepared between seismic lines where necessary. A working corridor of 50 m will be used for the seismic and connection lines (25 m either side of the line) to allow deviations as necessary to minimise impact. Mulchers will be used to cut vegetation above ground and mulch and spread the cut material to promote rapid rehabilitation. While most of the areas will naturally regenerate following the Regulated Activity, there is the possibility that specific areas (areas subject to erosion or where compacted) may require active rehabilitation works following the first wet season.

There are no National Parks, conservation areas, or Sites of Conservation Significance near the Project Area however the seismic lines go through riparian vegetation and Groundwater Dependent Ecosystems (GDE).

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. Table 6.1-1 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 (Section 7.1)
- Weed Management Plan (Section 7.2)
- Fire Management Plan (Section 7.3)
- Rehabilitation Management Plan (Section 7.4)
- Waste and Wastewater Management Plan (Section 7.5)
- Spill Management Plan (Section 7.7)
- Emergency Response Plan (Appendix 05)

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 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 interest holder has identified stakeholders and committed to ongoing stakeholder engagement in the EMP.

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 was assessed, with no areas of environmental uncertainty identified.

The risks of conducting the activity are well understood, and the EMP demonstrates adherence to the Code that establishes best practice management measures for operations, as set out in the risk assessment, wastewater management plan and spill management plan.

Whilst the interest holder commits to a yearly monitoring regime to identify rehabilitation success and undertake corrective actions, the NT EPA recommends a Ministerial condition that requires provisions of an annual progressive rehabilitation report as a precautionary measure.

The potential impacts to listed fauna and flora and their habitats are well understood. The regulated activity will use a previously cleared area for the temporary camp. The regulated activity will, where possible make use of existing access tracks and roads to minimise disturbance.

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 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, including the use of the Strategic Regional Environmental and Baseline Assessment (SREBA) and field-based survey of the proposed activity location undertaken July 2023 and July 2024. 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 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 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.

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. The regulated activity will be subject to requirements of existing Aboriginal Areas Protection Authority (AAPA) Authority Certificates C2013/142, C2020/011,

C2019/043 variation to C2014/053 and C2018/105 variation to C2018/102, which are sufficient to cover the activities in the current EMP.

Total greenhouse gas (GHG) emissions predicted to be generated by the regulated activity are approximately 7.1 tCO_2-e. 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.

Cumulative impacts of groundwater extraction have been assessed. The interest holder has a groundwater extraction licence GRF10280 with a maximum water entitlement of 193.5 ML per annum from the Gum Ridge Formation. The anticipated water demand for this regulated activity is 5 ML, which is less than the interest holder's maximum water entitlement and represents ~ 2.6% of the total sustainable yield of the aquifer.

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

Based on the SREBA and the ecological assessment, groundwater dependent ecosystems are considered likely to occur within the proposed location of the regulated activity. The proposed location of the regulated activity is not in proximity to a declared ecological community under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*.

The regulated activity poses a low risk to the ecosystem within the Sturt Plateau and the Gulf Fall and Upland bioregions. Given the relatively small area of impact (approximately 125 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. 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, fauna spotter during line preparation, speed limits on unsealed roads, restricting activities to daylight hours and secure storage of waste. The EMP also commits to implementing a

no mulching boundary around the main confluence of Tanumbirini Creek and Snake Creek to ensure additional protection of vegetation in this area. In areas outside of the no mulching boundary, mulching will be minimised through use of the Tree Mulching Decision Tree, Riparian Vegetation Decision Tree and existing tracks and creek crossings.

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

2.7 Principle of improved valuation, pricing and incentive mechanisms

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

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

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

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

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

- impact on flora from physical disturbance or fire
- impact on fauna from physical disturbance, vehicles, fire or creation of dust/noise/light
- impact on drainage lines and soil from physical disturbance, erosion or chemical spills, spread of weeds
- disturbance of or damage to culturally sensitive areas such as sacred sites from physical disturbance,
- reduction in water quality or quantity from groundwater extraction or chemical spills and
- impact on air quality from dust and particulate emissions from vehicles/plant and impact on landholders from noise/vibration/light.

The EMP demonstrates why the controls to be implemented are considered ALARP and acceptable. Of the 32 environmental risks identified by the interest holder, 24 are considered ‘low’ risk and therefore are considered to manage impacts and risks to ALARP and acceptable levels. The remaining 8 risks are considered ‘medium’ and the interest holder has included mitigations that can/will be implemented such that the risks will therefore be managed at levels that are ALARP and acceptable. Specifically:

1. *Physical Disturbance - Adversely affect habitat critical to the Yellow-spotted Monitor. Merten’s Water Monitor:* The EMP includes measures to minimise impacts, including the commitment for seismic lines to be ground-truthed and for a 50 m working corridor to be implemented to maximise traversability without mulching. The residual risk ranking is based on the likelihood being considered ‘possible’, but the consequence of the event occurring being considered to be ‘minor’.

2 & 3. Introduction and Spread of Weeds - Loss of native vegetation, or loss of pasture and native species through competition for resources: The EMP includes an approved Weed Management Plan (Section 7.2) with a dedicated weed officer. This plan requires vehicle inspections are undertaken

and clearance certificates completed, site inductions for staff and contractors, post wet season weed surveys and monitoring of any weed populations. Should any new or detrimental changes in existing weed density and abundance the interest holder will notify DEPWS, determine the cause and implement an appropriate course of action. The residual risk ranking is based on the likelihood being considered 'unlikely', but the consequence of the event occurring being considered to be 'moderate'.

4. Fire - Disturbance to or death of terrestrial fauna: The EMP includes a Fire Management Plan (Section 7.3) which aligns with the requirements of the *Bushfires Management Act 2016* (NT). The interest holder has committed to having firefighting water, equipment and personnel available, fire extinguishers in vehicles, parking in low fire risk areas, spark arresters on petrol vehicles/pumps, equipping vehicles with radios, designated smoking areas, inducting staff in the fire management plan and daily toolbox meetings to include fire risk for the day. The residual risk ranking is based on the likelihood being considered 'unlikely', but the consequence of the event occurring being considered to be 'moderate'.

5. Fire - Injury to or death of livestock, loss of pasture, dwellings, and infrastructure: The EMP includes a Fire Management Plan with the same controls as above for managing disturbance to terrestrial fauna.

6 & 7 Chemical and Fuel Leaks and Spills - Impact to soil quality, reduction in surface water and groundwater quality: The EMP includes a spill management plan (Section 7.7). This plan requires spill kits, use of drip trays, appropriate storage with secondary containment, and daily inspections of chemical storage areas. The residual risk ranking is based on the likelihood being considered 'unlikely', but the consequence of the event occurring being considered to be 'moderate'.

8. Irrigation of Treated Effluent (if needed) - Reduction in surface water quality: The EMP commits to treated effluent being sprayed in an irrigation area away from the camp where it is unlikely to enter waterways, water use at the camp is to be minimised, daily inspections undertaken to confirm controls and fencing to be installed around the irrigation area. The residual risk ranking is based on the likelihood being considered 'unlikely', but the consequence of the event occurring being considered to be 'moderate'.

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)	Riparian vegetation decision tree completed checklist Tree mulching decision tree completed checklist Pre-line preparation survey Fauna Spotter wildlife interaction/relocation	As events occur
		Fauna Spotter survey	Daily during line preparation
	Report(s)	-	
Erosion and sediment control	Record(s)	Seismic lines are inspected to pinpoint potential erosion zones in mulched areas	During demobilisation

Aspect	Records/Reports & Type of Monitoring/Inspection		Frequency
		Weather conditions are checked	Daily
		Fauna Spotter to also ground truth stream crossing location as part of pre-line survey	As event occurs
	Report(s)	-	
Groundwater	Record(s)	Groundwater extraction volumes recorded	In accordance with license
	Report(s)	-	
Emissions	Record(s)	Maintenance for vehicles, plant, and equipment	As per OEM specifications
	Report(s)	-	
Bushfire	Record(s)	Operational reports considering bushfire risk Checks of fire and weather forecasts during operations	Daily
	Report(s)	-	
Weeds	Record(s)	Vehicle hygiene certificates	As events occur
		Conduct post-wet season weed surveys	Annually
	Report(s)	Report on post wet season weed survey	Annually
Chemicals	Record(s)	Daily checklists of chemical storage and spill kits	Daily
	Report(s)	-	
Wastes	Record(s)	Checklist of designated waste areas Inspection of designated effluent irrigation area for leaks or pooling	Daily
		Waste tracking and disposal	As events occur
	Report(s)	-	
Heritage	Record(s)	Incident records to include any sacred sites discovered during construction or seismic Activity Maintain GIS database of Project Area and cultural heritage sites, including details of any works conditions	As events occur
	Report(s)	-	
Rehabilitation	Record(s)	-	
	Report(s)	Annual rehabilitation survey report	Annually 90 days after anniversary of EMP approval date

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. Other relevant matters

Nil.

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.
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 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.
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.
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. Certainty as to the interest holder's compliance with commitments made in relation to mitigation of an impact by requiring the interest holder create and retain records to demonstrate commitments made in relation to mitigation of an impact in an approved environment management plan, whether in the risk assessment or elsewhere in the environment management plan, have been complied with.

PAUL VOGEL AM

CHAIRMAN

NORTHERN TERRITORY ENVIRONMENT PROTECTION AUTHORITY

27 AUGUST 2024