

Approval notice and statement of reasons

Petroleum (Environment) Regulations 2016 (NT) (Regulations)

Interest holder	Santos QNT Pty Ltd (Santos) ABN 33 0830 771 96
Petroleum interest/s	EP161
Environment management plan (EMP) title	McArthur Basin 2019 Drilling Program
EMP document reference	Revision 5 prepared by Santos QNT Pty Ltd dated 15 July 2019
DENR EMP assessment document reference	NTEPA2019/0033-003~0007
Regulated activity	Drilling: construction of two wells and testing of three wells
Is the EMP a new plan submitted under reg 6 or a revision of a current plan submitted in accordance with reg 15?	New plan
Was the regulated activity referred ¹ for consideration whether an environmental impact statement or public environmental report was required?	Yes, in accordance with the <i>Environmental Assessment Act 1982</i>
Was an environmental impact statement or public environmental report required?	No NT EPA decision of 12 July 2019 NTEPA2019/0033-003~0012
Has an Authority Certificate under the <i>Northern Territory Aboriginal Sacred Sites Act 1984</i> (NT) (NTASSA) been issued for the regulated activity?	Yes Authority Certificates C2019/043 NTEPA2019/0033-004~0018
Date an EMP compliant with reg 8 was first submitted under reg 6	9 April 2019
Dates within which the EMP was published for comment under reg 8A, if applicable	12 April 2019 to 9 May 2019
Date further information was required and submitted under reg 10, if applicable	N/A
Date of resubmission notice under reg 11(2)(b), if applicable	N/A
Date EMP was resubmitted under reg 11(3), if applicable	N/A
Date a notice setting out a proposed timetable for consideration of the EMP was issued under reg 11(2A) if applicable	5 July 2019
Proposed timetable given in notice under reg 11(2A) if applicable	Decision under regulation 11 by 19 July 2019
Where provided under s29B of the <i>Northern Territory Environment Protection Authority Act 2012</i> (NT) (NT EPA Act), the dates the Northern Territory Environment Protection Authority (NT EPA) was requested to, and provided, advice on EMP	Date of Minister's request for advice: 25 February 2019 Date of NT EPA Advice: 12 July 2019 NTEPA2019/0033-002~0006

¹ This means a referral under the *Environmental Assessment Act 1982* (NT) or the *Environment Protection and Biodiversity Conservation Act 1994* (Cth) (EPBC Act).

Date of decision

19/ 7/2019

Decision maker

Eva Lawler

Signature

Hon Eva Dina Lawler MLA, Minister for
Environment and Natural Resources

1 Approval notice

1. The EMP is approved.

reg 11(2)(a)

2. The approval is subject to the following conditions:

reg 12(2)

Condition 1: The interest holder must submit a report to the Department of Environment and Natural Resources (DENR), where there is a non-compliance with an approval condition, within 48 hours of becoming aware of the non-compliance.

Condition 2: The interest holder must submit to the DENR, an updated timetable for the regulated activity prior to the commencement of the activity and provide an updated timetable to the DENR each month.

Condition 3: The interest holder must submit to DENR:

- I. from 1 October until work ceases for the remainder of the 2019-2020 wet season, a fortnightly updated weather forecast, informed by meteorological forecasting services
- II. within one month of approval of the EMP, a Rapid Response Site Demobilisation and Stabilisation Plan to manage the risk of early termination of the regulated activity in the event of onset of an early wet season
- III. daily on-site reports that include daily monitoring of fluid levels within sumps and tanks and assessment of freeboard availability and five-day activity forecasts for the duration of the regulated activity

Condition 4: The interest holder must provide to DENR a cementing report for the 13-3/8" steel Conductor casing through the aquifers to DENR as soon as practicable but not more than seven days after completion of the cementing job for Inacumba-1 and Tanumbirini-2 exploration wells.

Condition 5: The interest holder must provide to DENR:

- I. results of on-going groundwater monitoring in accordance with the Code of Practice: Onshore Petroleum Activities in the Northern Territory (the Code) and the Preliminary Guideline: Groundwater Monitoring Bores for Exploration Petroleum Wells in the Beetaloo Sub-basin (DENR, 2018) every quarter for three years from the approval date of the EMP for publishing on the DENR website
- II. data from a minimum of seven groundwater quality sampling events to be completed from the control monitoring bores from each proposed well within 3 months of EMP approval
- III. proposed well-site specific environmental performance standards for groundwater quality. The environmental performance targets must be developed based on the reference dataset for each well site and be submitted to DENR for approval within 3 months of EMP approval.

1 Approval notice

- IV. results of continuous water level monitoring using water level loggers and electrical conductivity loggers installed at the monitoring bores in the Gum Ridge Formation at each well site every quarter for three years for publishing on the DENR website.
- V. A report on any exceedance of monitored parameters above established background levels within five days of discovery.

Condition 6: The interest holder must provide to DENR a report on the assessment and leachability testing of drill cuttings and drilling mud to determine final disposal options, within three months of completion of the drilling program.

Condition 7: The interest holder must provide to DENR:

- I. an incident report for any fauna observed trapped, injured or deceased attributable to interaction with open cuttings pit or open water storage as a requirement of incident reporting under the Petroleum (Environment) Regulations including the information requirements of regulation 34(3)(b)
- II. where incident reporting demonstrates any impacts to fauna, a report on the implementation of additional monitoring and mitigation measures to reduce impacts to fauna, including birds, within 30 days of instruction. These measures should include consideration of additional monitoring (fauna cameras) and/or flagging, netting or screening to deter entry by birds and fauna.

2 Material considered

1. The following material has been taken into account in making this decision:
 - a. Santos McArthur Basin 2019 Drilling Program EP161 Revision 5 dated 15 July 2019
 - b. The principles of ecologically sustainable development set out in reg 4 and the approval criteria.
 - c. The NT EPA decision and Statement of Reasons under the *Environmental Assessment Act 1982* relating to the regulated activity not requiring assessment.
 - d. The NT EPA advice provided at my request under s29B of the NT EPA Act.
 - e. The Authority Certificate issued under the NTASSA and associated response provided by the Aboriginal Areas Protection Authority.
 - f. The Code as set out in reg 4A
 - g. All public comments submitted under reg 8B.

3 Statement of reasons

1. The EMP meets the approval criterion in reg 9(1)(a), because it contains all the information required by Schedule 1 of the Regulations. reg 9(1)(a)
2. The EMP meets the approval criterion in reg 9(1)(b) for the following reasons: reg 9(1)(b)
 - a. The nature of the regulated activity is as follows:
 - i. Drilling of the Inacumba-1H pilot and horizontal well, drilling of the Tanumbirini-2H horizontal well, evaluation of Inacumba-1H and Tanumbirini-2H wells (including Formation Integrity test (FIT), mudlogging, wireline, Cement Bond Logging (CBL), Diagnostic Fracture Injection Testing (DFIT) and coring), suspension and/or plugging and decommissioning of Inacumba-1H and Tanumbirini-2H wells, and care and maintenance.
 - ii. All activities are proposed for the 2019 dry season or if not completed, the site will be demobilised when weather forecasts the onset of significant wet season rainfall consistent with a monsoonal trough, tropical low or cyclone.
 - iii. The regulated activity does not include hydraulic fracturing of a petroleum exploration well and no produced water or flow back fluid will be produced.
 - iv. The regulated activity does not include rehabilitation of the Tanumbirini and Inacumba wells sites it is included in the Santos Civils and Seismic EMP.
 - b. The scale of the regulated activity is as follows:
 - i. The drilling program involves drilling and testing of two wells and the testing of a third existing well. The Inacumbawell site program includes; drilling a vertical pilot well (Inacumba-1 well site) to the basement Bessie Creek Formation, with a total vertical depth (TVD) of 3,250 +/- 50 m and a deviated (horizontal section) bore hole towards the north-east from the vertical pilot hole kick off point for a total length of the wellbore measured along the actual well path, or Measured Depth (MD) of 5,100m. The program at Tanumbirini includes the DFIT of Tanumbirini 1, and drilling the Tanumbirini-2 well site includes a horizontal well which is currently planned to reach a MD of 5,800m and approximately 3,450m TVD.

- ii. This regulated activity will use an estimated total of 12 megalitres (ML) of groundwater sourced from existing bores.
 - iii. The interest holder has estimated approximately 2,758 tonnes of carbon dioxide equivalent (CO₂) emissions from the regulated activity.
 - c. The EMP contains an appropriate level of detail for the nature and scale of the activities proposed. The description of the regulated activity is clearly described. The description of the existing sub-surface environment and aquifers is informed by adequate hydrological, seismic and stratigraphic studies and is adequately understood. The identification of environmental impacts and risks is comprehensive and contains a sufficient level of detail to inform assessment. The EMP provides detail on environmental outcomes and performance standards, implementation strategy, personnel, emergency contingency plan, stakeholder engagement, legislative requirements, recording, monitoring, reporting and notifications to an appropriate level of quality and applicability.
 - d. Having regard to the above, the information in the EMP is appropriate for the nature and scale of the regulated activity to which it relates.
3. The EMP meets the approval criterion in reg 9(1)(c) for the following reasons: reg 9((1)(c)
- a. I have considered reg 4(d) (which requires that I give fundamental consideration to the conservation of biological diversity and ecological integrity) as follows:
 - i. I believe the information I have regarding the existing biodiversity and ecosystems that are to be affected by the regulated activity; the effects that are likely; and the mitigation measures reasonably available, is sufficient.
 - ii. The regulated activity poses a low risk to the ecosystem within the Sturt Plateau and Gulf Fall and Uplands bioregions. Given the relatively small area of impact, 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 threatened species. This EMP does not address land clearing or other civil works which have already been approved via a separate EMP (Santos McArthur Basin Civil and Seismic Program EP161 EMP, approved 6 June 2019). Four threatened species have been identified as having a 'medium' likelihood of occurrence within the regulated activity area. 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 threatened species. Impacts and risks to flora, fauna, and ecosystems have been mitigated to an acceptable level.
 - iii. The conservation of biological diversity and ecological integrity is vital to the achievement of ecologically sustainable development. Given the fundamental nature of this consideration, I have given central importance to the conservation of biodiversity and ecological integrity in weighing whether I am satisfied the approval criterion in reg 9(1)(c) has been met.
 - iv. If carried out in accordance with the EMP, the regulated activity is not considered to have an impact on the conservation of biological diversity. The EMP outlines measures to minimise impacts on affected environmental values, including maintaining groundwater quality, and where possible preventing interactions of fauna with open water storages and cuttings pit. The potential impacts and risks of the drilling activities identified in the EMP relate to animal welfare and do not pose a significant risk to threatened species at a population level due to the low likelihood of threatened species inhabiting the area and implementation of control measures to avoid impacts to fauna. The EMP outlines measures to minimise impacts on fauna, including control measures to prevent interactions of fauna and stock with open

cuttings pit or open water storage. I have made an additional approval condition to ensure impacts to animal welfare are addressed (Condition 7).

- v. Where relevant, management measures are consistent with the requirements of the Code, NT Land Clearing Guidelines and the Preliminary Guideline: Groundwater Monitoring Bores for Exploration Petroleum Wells in the Beetaloo Sub-basin.
 - vi. If carried out in accordance with the EMP, the regulated activity is not considered to have an impact on the conservation of ecological integrity.
- b. I have considered reg 4(a) (which concerns the integration of long-term and short-term economic, environmental, social and equitable considerations) as follows:
- i. The expression *environment* as defined in the *Petroleum Act 1984* relevantly includes the well-being of humans, structures made or modified by humans, amenity values of an area and economic, social and cultural conditions. The requirements under the Regulations include stakeholder engagement and a broad consideration of the environmental impacts and environmental risks of the regulated activity in question. In making that broad consideration, the long-term and short-term environmental impacts and environmental risks were identified and assessed in the EMP.
 - ii. The regulated activity is low impact and of short duration (17 weeks). It forms one component of a broader gas exploration program in the region. The EMP adequately assesses the environmental impacts and risks associated with the regulated activity and outlines appropriate avoidance and mitigation measures. This includes the assessment and management of social impacts and risks, including the appropriate management of cultural heritage. An Authority Certificate under the NTASSA has been issued for the regulated activity. The interest holder has undertaken stakeholder engagement with landholders and land managers, traditional owners, the Northern Land Council (NLC) and NT Government agencies.
 - iii. The regulated activity has considered environmental controls in well design, operations and decommissioning that ensures well integrity and long term protection of aquifers. These controls and site specific well integrity monitoring are appropriately identified in Table 3-5 of the EMP and will be implemented in the Well Operations Management Plan for approval and oversight by the Department of Primary Industry and Resources.
 - iv. The EMP has assessed the cumulative quantities of groundwater extraction from this regulated activity (12ML) and the approved civils and seismic EMP (45.5ML). The total volume of groundwater to be extracted is within the volume of groundwater the interest holder is permitted to extract under its water extraction licence granted under the *Water Act 1992* on 8 May 2019 (Licence No. GRF10280). This extraction licence has a Maximum Water Entitlement of 193.5ML/year for five years. The water entitlement takes into account the requirements for related exploration activities on EP161 including civil works, camp requirements, petroleum well construction and potential hydraulic fracturing (subject to a future EMP approval). The granted water extraction licence is less than 0.01% of cumulative current groundwater extraction from the Gum Ridge Formation aquifer.
 - v. The EMP in this case is considered to have adequately assessed and integrated economic, social and environmental considerations.

- vi. I observe that in carrying out the regulated activity there is no particular contest between economic, social and environmental considerations that requires further mention.
- vii. Accordingly, I am satisfied that the concept of integration has been taken into account.
- c. I have considered reg 4(b) (which concerns the 'precautionary principle') as follows:
 - i. The regulated activity does not pose a threat of serious or irreversible environmental damage which warrants the application of the precautionary principle.
- d. I have considered reg 4(c) (which concerns the principle of intergenerational equity) as follows:
 - i. The environmental burdens of the regulated activity will not disproportionately affect particular stakeholders. The cumulative greenhouse gas emissions estimate from the regulated activity are minimal in context of Northern Territory and Australian emissions and represent 0.09% of NT annual emissions and 0.0027% of annual national emissions
 - ii. Cumulative impacts of groundwater extraction have been assessed and will be regulated by a water extraction licence under the *Water Act 1992*.
 - iii. Cultural values will be protected through the application of Authority Certificates issued to the interest holder under the NTASSA and measures for reporting on discovery of archaeological sites. Accordingly I do not believe that the carrying out of the regulated activity in accordance with the EMP would have an effect contrary to the principle of intergenerational equity.
- e. I have considered reg 4(e) (which concerns the promotion of improved valuation, pricing and incentive mechanisms) as follows:
 - i. In accordance with the 'polluter pays principle':
 - (1) The interest holder will cover the cost of remediation of the impacts of the regulated activity, as is set out in Section 7.3 of the EMP.
 - (2) If the interest holder fails to remediate the impacts, an environmental rehabilitation bond has been provided by the interest holder which is considered to be adequate to cover the resulting costs.
- f. No environmental report or statement has been required to be prepared in relation to the regulated activity. The NT EPA was not of the opinion that the regulated activity is capable of having a significant effect on the environment. reg 9(2)(b)
- g. The NT EPA has provided the following in relation to the regulated activity and the EMP:
 - i. In accordance with my request under s29B of the NT EPA Act, the NT EPA reviewed the EMP for the regulated activity against the approval criteria in regulations 9(1)(b), 9(1)(c) and 9(2)(a) of the Regulations and other matters the NT EPA considered relevant, and has provided advice about the EMP. Relevantly:
 - (1) The NT EPA recommended that should the EMP be approved, it be subject to seven conditions. The NT EPA's recommendations have informed the conditions of this approval.
 - (2) The NT EPA concluded that the EMP for the regulated activity, subject to the recommended approval conditions, 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 environmental impacts and environmental risks of the activity will be reduced to a level that is as low as reasonably practical and acceptable.

- ii. The content of the NT EPA's advice and recommendations have been incorporated into the comments in this statement of reasons and the conditions in the Approval Notice.
- h. The existing environment along with its particular values and sensitivities is appropriately identified in Section 4 of the EMP.
- i. The anticipated environmental risks are appropriately identified in Section 5 of the EMP.
- j. I agree with the risk assessment set out in Section 6 of the EMP, and to the extent I do not agree I have imposed a condition or conditions to address the relevant risk or risks.
- k. The anticipated environmental impacts are appropriately identified in Section 6 of the EMP. The regulated activity is part of the second component of an exploration program and cumulative effects have been identified and assessed. In EMPs for subsequent stages (if they proceed) the interest holder will need to continue to address cumulative effects.
- l. The EMP demonstrates how the interest holder will comply with relevant requirements of the Code in undertaking the regulated activity. This includes a list of applicable ISO/API standards that have been adopted for the selection of materials for use in well construction; drilling program environmental controls and related engineering controls contained in the Well Operations Management Plan (WOMP); a brief summary of which was provided in the EMP. The risk assessment provided in the EMP cross references relevant sections of the Code that apply to the mitigation and management measures to enable the reviewer to identify and confirm that the proposed drilling program activities comply with the Code. The EMP provides a Wastewater Management Plan and Spill Management Plan, specific petroleum well integrity criteria and monitoring programs that meet the requirements of the Code.
- m. Key issues raised in the 22 public submissions, NTG agencies and NT EPA Onshore Gas Committee were addressed by the interest holder via an updated EMP, including an updated Waste Water Management Plan and Spill Management Plan and additional fauna welfare mitigation measures.
- n. I have taken into account all public submissions in making my decision. I recognise the importance the community places on the protection of water, fauna, management of chemicals and waste, human health and stakeholder engagement. The final EMP appropriately identifies the risks and potential impacts raised in submissions and commits to mitigation and management measures to address these risks and potential impacts. The EMP provides details of stakeholder engagement that meets clauses 7 and 9 of the Regulations (Section 9 and Appendix I).
- o. I note that many of the submissions expressed opposition to the unconventional shale gas industry. I refer to the findings of the Final Report of the Scientific Inquiry into Hydraulic Fracturing in the Northern Territory that concluded the risks of onshore gas development could be managed and minimised to an acceptable level with the implementation of its 135 recommendations. All of the recommendations applicable to exploration approvals have been implemented.

reg 9(1)(c)

- p. A number of public submissions raised concern about appropriate regulation and compliance of the EMP against the Code. I note that the EMP was revised to ensure it meets the requirements of the final Code. Concern was raised about the separation of different regulated activities in EMPs that makes it difficult to assess the cumulative effects and risks of the entire activity. I consider the cumulative effects have been appropriately addressed at this early stage of exploration activities.
- q. I am satisfied that the concerns and issues raised have been adequately mitigated and/or addressed in this EMP.
- r. There are no environmental impacts or environmental risks relating to the proposed regulated activity which I consider to be unacceptable.
- s. Overall, having regard to the above, I am satisfied that the EMP demonstrates that the regulated activity is to be carried out in manner by which the environmental impacts and environmental risks are reduced to a level that is:
 - i. as low as reasonably practicable; and
 - ii. acceptable.