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Environment Division
Department of Environment and Natural Resources
Northern Territory Government
Level 1, Arnhemica House, 16 Parap Road, Parap NT 0820
GPO Box 3675, Darwin NT 0801

27 September 2019

Dear Mr. Purdon,

Santos QNT Pty Ltd (Santos) is the operator of exploration permit (EP) 161, located approximately 350 km south-east of Katherine in the Northern Territory (NT). On 23 October 2019, Santos received formal advice that the Environmental Management Plan: *McArthur Basin Hydraulic Fracturing 2019-20 Program* (DENR EMP assessment document reference: NTEPA2019/0102-007~0011) was approved.

In accordance with Regulation 22 of Petroleum (Environment) Regulations, Santos proposes to modify the regulated activity for the above EMPs and is writing to the Minister to give notice and specify details of the proposed modification. The modification of the regulated activity relates to the installation of additional contingency tanks to further reduce the likelihood of loss of containment of flowback fluids.

Details of the Proposed Modification

Santos is proposing to modify the EMP to include the installation of additional, contingent water storage tanks within the bunded tank pad area. The initial plan for 2019 activities and the hydraulic fracturing of the existing Tanumbirini 1 well was to utilise two 6.3ML tanks; one for clean bore water to be used in the hydraulic fracturing process and one covered tank for flowback.

Pre-job testing with bore water has identified the integrity of the inner-liner of Tank 2 has been compromised. At this stage, the second liner as well as the leak detection liner have good integrity. However, given the lack of integrity of the inner liner, the following conservative measures will be employed to manage containment of flowback:

- Tank 2 to have all fluid transferred to the existing Tank 1
- Tank 2 will be emptied, all existing liners will be removed
- Tank 2 will be re-lined with three new liners (leak detection liner plus two additional liners) and tested for integrity.
- An additional 6.3ML tank will be installed (Tank 3) with three liners and tested for integrity.
- An additional HDPE lined, bunded secondary containment area will be constructed within the existing clay lined earthen 1m bund wall.
- Within the additional HDPE lined, bunded secondary containment area, a total of 21 separate 500bbl (80m³ or 0.08ML) tanks will be installed (See Figure 1). These tanks will be connected with hoses and will be in hydraulic communication.

Once Tank 2 and Tank 3 are complete, Tank 2 will be hydrotested by filling it with 5.4 ML and water will then be transferred to the Tank 3 to hydrotest. This will leave Tank 2 available for flowback treatment by evaporation (once approved by DENR) (note that Tank 2 and Tank 3 are effectively interchangeable in this process).

The primary plan is to utilise Tank 1 for flowback. If at any stage there is a breach on Tank 1, flowback will be transferred to the 21 x 500 bbl tanks. Any flowback fluid prior to Tank 2 and Tank 3 being constructed and tested will be limited to the safe volume that can be stored in the 21 enclosed 500 bbl tanks.



Figure 1 Enclosed 500 bbl tanks

Modification has not caused a new or an increase in environmental impact or risk

The modification has not caused a new environmental impact or environmental risk and has not resulted in an increase in an existing environmental impact or environmental risk. Please note that the new tanks have secondary containment in the form of an additional HDPE lined bunded area.

The risk mitigation controls outlined in the existing EMP will not require any amendment to accommodate the modification. Santos has reviewed the EMP and the proposed modification will not result in an increase in likelihood, consequence or overall risk ranking.

Cultural Heritage

The additional activities are located on land that has undergone cultural heritage clearance, sacred site avoidance clearance and AAPA certification. The scope of works and the location of all proposed activities are covered by AAPA Certificate C2019/043.

Stakeholder Engagement

Santos QNT Pty Ltd has continued to engage with key stakeholders on an ongoing basis. Contact has been maintained as per the existing Land Access Agreement (LAA) and in accordance with the LAA, the landholder will be notified of these works.

If you require any further information or have any queries please don't hesitate to contact myself or Mitch Bird, Senior Environmental Adviser, at mitch.bird@santos.com or (07) 3838 3799.

Yours Sincerely,



David Close
General Manager – Onshore New Ventures