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Onshore Gas
Department of Environment and Natural Resources
Northern Territory Government
Floor 1, Goyder Centre, Chung Wah Terrace, Palmerston, NT
PO Box 496, Palmerston, 0831

08 August 2019

Dear Mr. Shaw,

Santos QNT Pty Ltd (Santos) is the operator of exploration permit (EP) 112, located south-west of Alice Springs. On 15 February 2019, Santos received formal advice that the Environmental Management Plan: Dukas-1 – Conventional Gas Well (DPIR ref: E2018/0022-0027), referred to herein as the "EMP", had been approved.

In accordance with Regulation 22 of the Petroleum (Environment) Regulations, Santos proposes to modify the regulated activity for the above EMP and is writing to the Minister to give notice and specify details of the proposed modification.

Details of the Proposed Revision

Section 3.4.3 of the approved EMP proposes to include a zero-offset vertical seismic profile (VSP). Specifically the EMP states "*wireline logging program may include a zero-offset vertical seismic profile (VSP) or checkshot surveying. These geophysical techniques are similar to surface seismic exploration, but where the detectors (geophones) are located in the well bore, rather than at the surface, and the surface source is stationary*". Santos proposes to modify this scope. The modification relates to completing a "walkway" VSP in addition to a "zero-offset" VSP. A walkaway VSP involves the use of a mobile seismic source (a vibroseis truck) at the surface, which is moved to pre-determined offsets away from the Dukas-1 conventional gas well while the downhole receivers are held at a fixed location.

Scope of Works

A walkaway VSP differs from a standard VSP, where the seismic source is held at a fixed offset while the downhole tools are moved at set intervals up through the well. A wireline logging unit and a separate unit able to lower/raise the tool string (ie. the rig or a crane if operations are conducted post rig release) are required. A vibrator truck is the most suitable source to use for a walkaway VSP, which will require access tracks along the extent of source offsets required, in this case along an existing seismic line.

The proposed walkaway VSP will extend up to five kilometres on a north-easterly trajectory along the existing AMSAN16 seismic line AMSAN16-DK203 (See Figure 1). The AMSAN16 seismic line was completed as part of the Southern Amadeus 2D Seismic Program, approved on 30 November 2017 under the Southern Amadeus 2D Seismic Program EMP (DPIR ref: E2018/0022-0027).

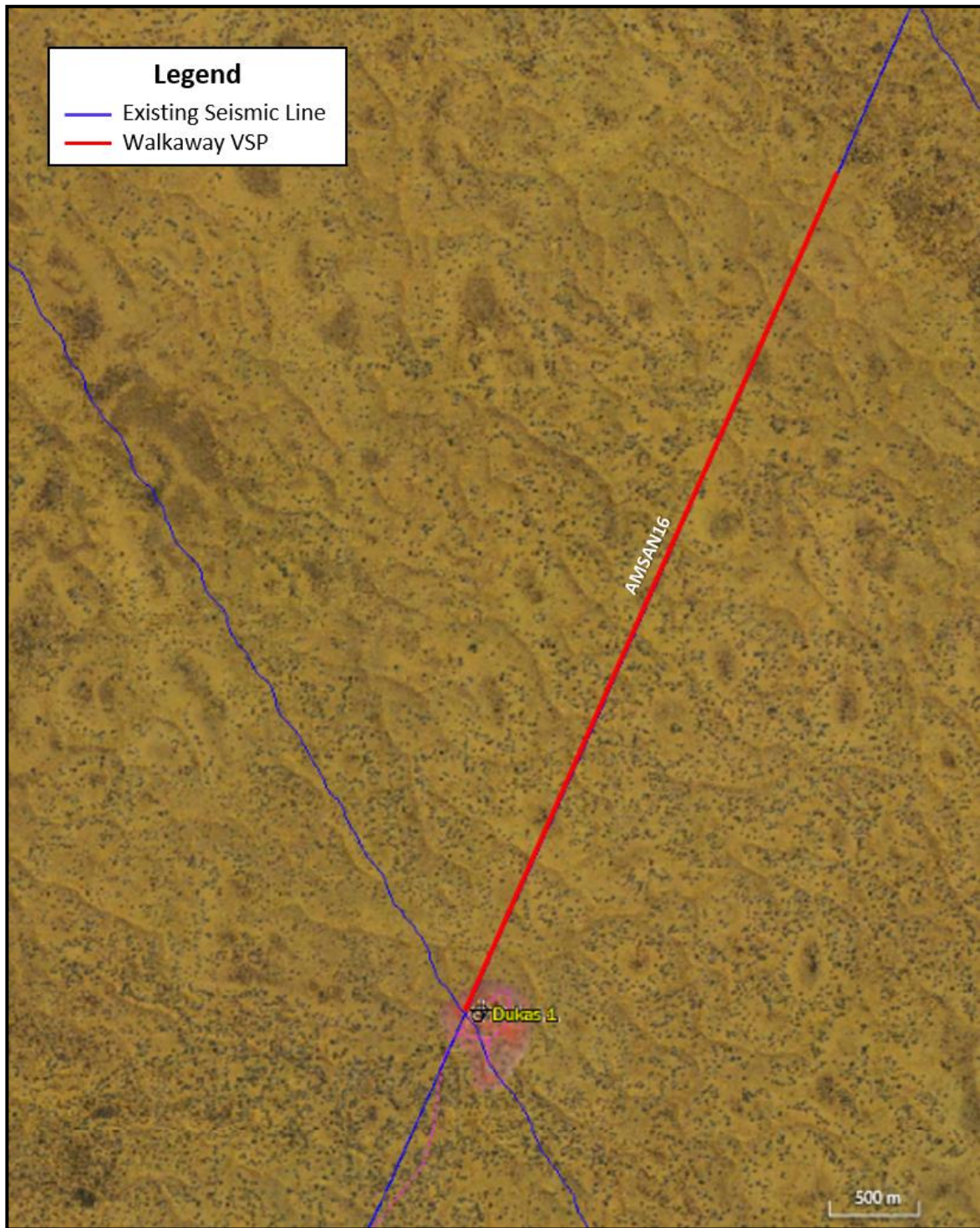


Figure 1 Location of the proposed Walkaway VSP, existing seismic and Dukas-1

The track has recently been scouted and it is determined to be suitable. Importantly no additional clearing is necessary, and the use of a dozer for track modifications is not required. Photos taken Monday 5 August 2019 along the proposed walkaway VSP line are shown in Figure 2.

The proposed walkaway VSP may also extend up to five kilometres on a south-westerly trajectory along the existing Dukas well site access track.

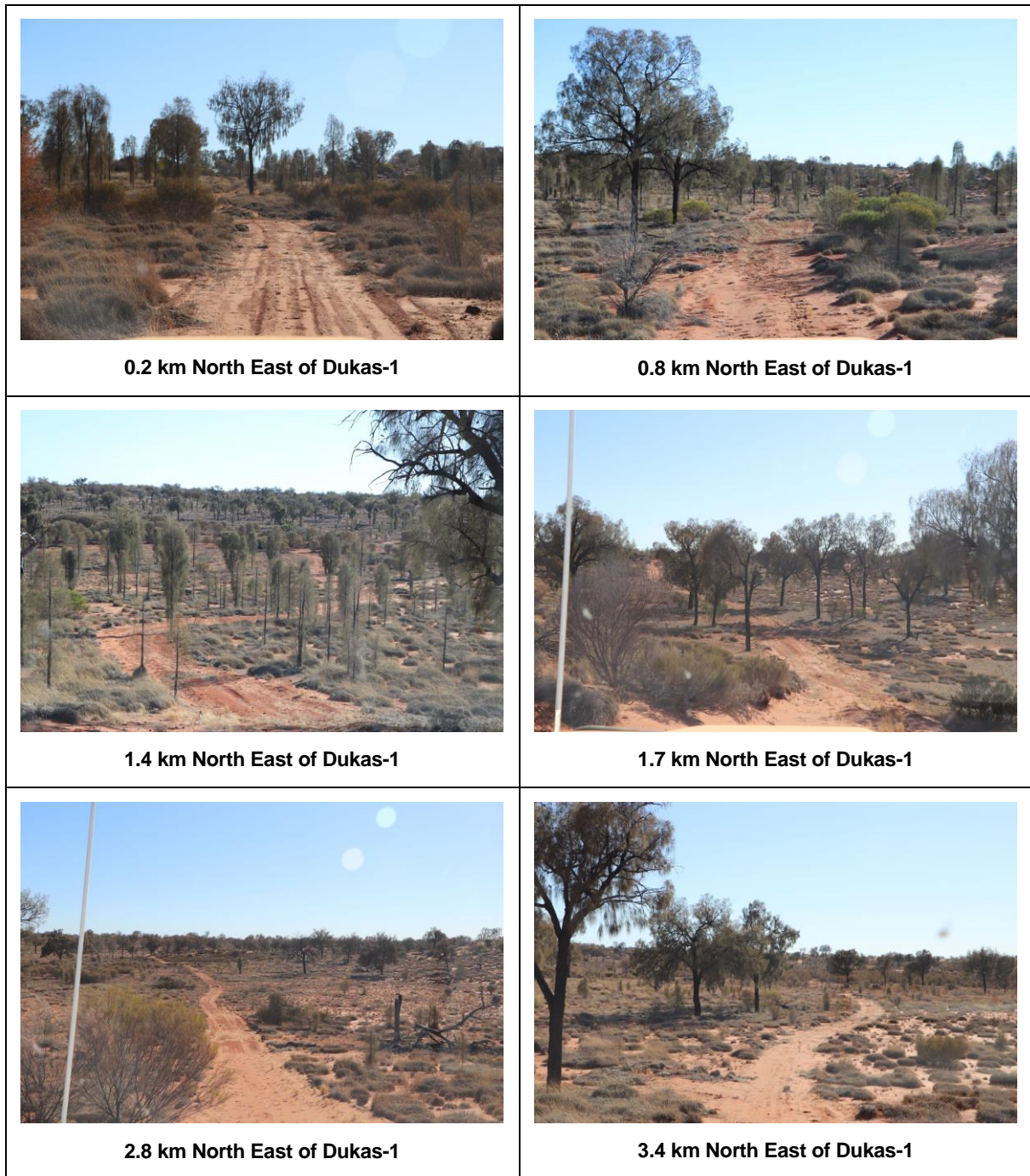


Figure 1 Photo points along the proposed Walkaway VSP on existing seismic line AMSAN16

Environmental Impact

The additional activities and associated risk profile are identical to those covered by the current and approved EMP. The scope modification will not result in an increase in environmental risk. There are no additional environmental impacts. There is no additional clearing required and a dozer, generally used to upgrade access to lines and re-profile, will not be used.

The risk mitigation controls outlined in the existing EMP are identical and will not require any amendment to accommodate the additional scope. The additional minor scope is covered under the existing security agreement (and that held under the Southern Amadeus 2D Seismic Program).

Cultural Heritage

The additional activities are located on land entirely within the areas covered by Central Land Council's Sacred Site Clearance Certificate number C2017-125 (copy attached). There are no sacred sites within the vicinity and the actual activity (utilising vibroseis to collect data) is included in the scope of the work program submission to the Central Land Council (WP-17-0041). The Central Land Council has been notified of the proposed activity and no concerns have been raised.

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 Mitch Bird via mitch.bird@santos.com or on (07) 3838 3799.

Yours Sincerely,



David Close
General Manager – Onshore New Ventures