

# **Annual Environmental Performance Report 2020**

## **Water Bore Monitoring Program EP 161**

<b>Date</b>	<b>Rev</b>	<b>Reason for Issue</b>	<b>Author</b>	<b>Checked</b>	<b>Approved</b>
29/10/2020	1	Submitting	MB	PW	AM

<b>Document title</b>	Annual Environmental Performance Report 2020 NT Exploration Permit 161 Water Bore Monitoring Program
<b>EMPs Covered</b>	NT Exploration Permit 161 Water Bore Monitoring Program EP 161 EMP, November 2018
<b>Permit</b>	EP 161
<b>Interest holder details</b>	Santos QNT Pty 60 Flinders Street, Adelaide South Australia 5000 GPO Box 2455, Adelaide South Australia 5001 ABN 33 083 077 96  Tamboran Resources Ltd 110-112 The Corso, Manly NSW 2095 ABN 28 135 299 062
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<b>Date approved</b>	29 October 2020

## Signature and Certification

I/We hereby declare that the information provided in this annual environment performance report and accompanying documents is to the best of my/our knowledge, true and correct.

Asset/Project Approval

Signature	
Name (print)	Angus McIntyre
Position	Manager – Onshore New Ventures
Date	29 October 2020

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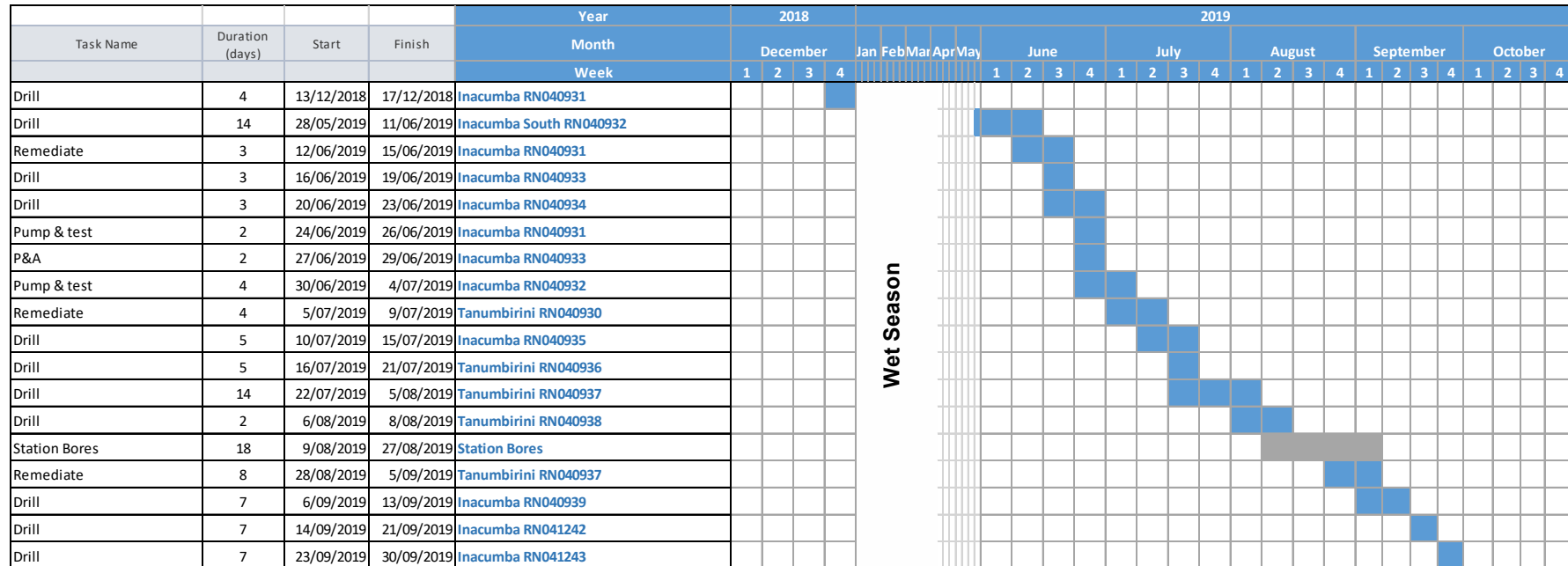
## Abbreviations and Units

Acronym / Abbreviation	Description
AEPR	Annual Environmental Performance Report
ALARP	As low as reasonably practicable
AAPA	Aboriginal Areas Protection Authority
Code	Code of Practice
DENR	Department of Environment and Natural Resources
DPIR	Department of Primary Industry and Resources
EMP	Environmental Management Plan
EP	Exploration Permit
ESCP	Erosion and Sediment Control Plan
IVMS	In vehicle monitoring systems
NT	Northern Territory
NT EPA	Northern Territory Environmental Protection Authority
SMS	Santos Management System
SSCC	Sacred Site Clearance Certificate

## 1.0 Introduction

The Petroleum (Environment) Regulations 2016 (NT) include a requirement for the interest holder to provide a report to the Minister on an annual basis that outlines the environmental performance of the interest holder (the Annual Environment Performance Report). The report must include sufficient information to allow the Minister to assess whether the interest holder has met the environmental outcomes and environmental performance standards included in the approved Environment Management Plan (EMP). The report is to consider information required to be recorded, monitored or reported under the Petroleum (Environment) Regulations 2016 (NT) and any other law in force in the Northern Territory related to conduct of the regulated activity.

This Annual Environmental Performance Report (AEPR) applies to the Water Bore Monitoring Program that was approved on 12 December 2018. The period covered by this AEPR is from 12 December 2018 until 11 December 2019.



**Figure 1 Timing of Regulated Activities Conducted During the Reporting Period**

## 1.1 Background

Santos QNT Pty Ltd (Santos) is the operator of EP 161. Santos submitted the *Water Bore Monitoring Program EP 161 EMP, Revision 5, Nov 2018* (EMP 2018-2) under the *Petroleum (Environment) Regulations (PER)* that came into force 6 July 2016. EMP 2018-2 was submitted to cover the following scope:

- Construction of a 50m x 50m drill pad at each of the Tanumbirini South, Inacumba North and Inacumba South locations
- Installation of up to two groundwater monitoring bores at each drill pad (six bores in total)
- Upgrade of up to 6.3 kilometres of seismic lines and fence lines for access
- Construction of 550m of new track.

EMP 2018-2 was approved on 12 December 2018, conditional on the installation of the groundwater bores being completed within one year and being drilled by a licenced driller. This AEPR has been prepared to report on activities that have occurred under EMP between 12 December 2018 and 11 December 2019.



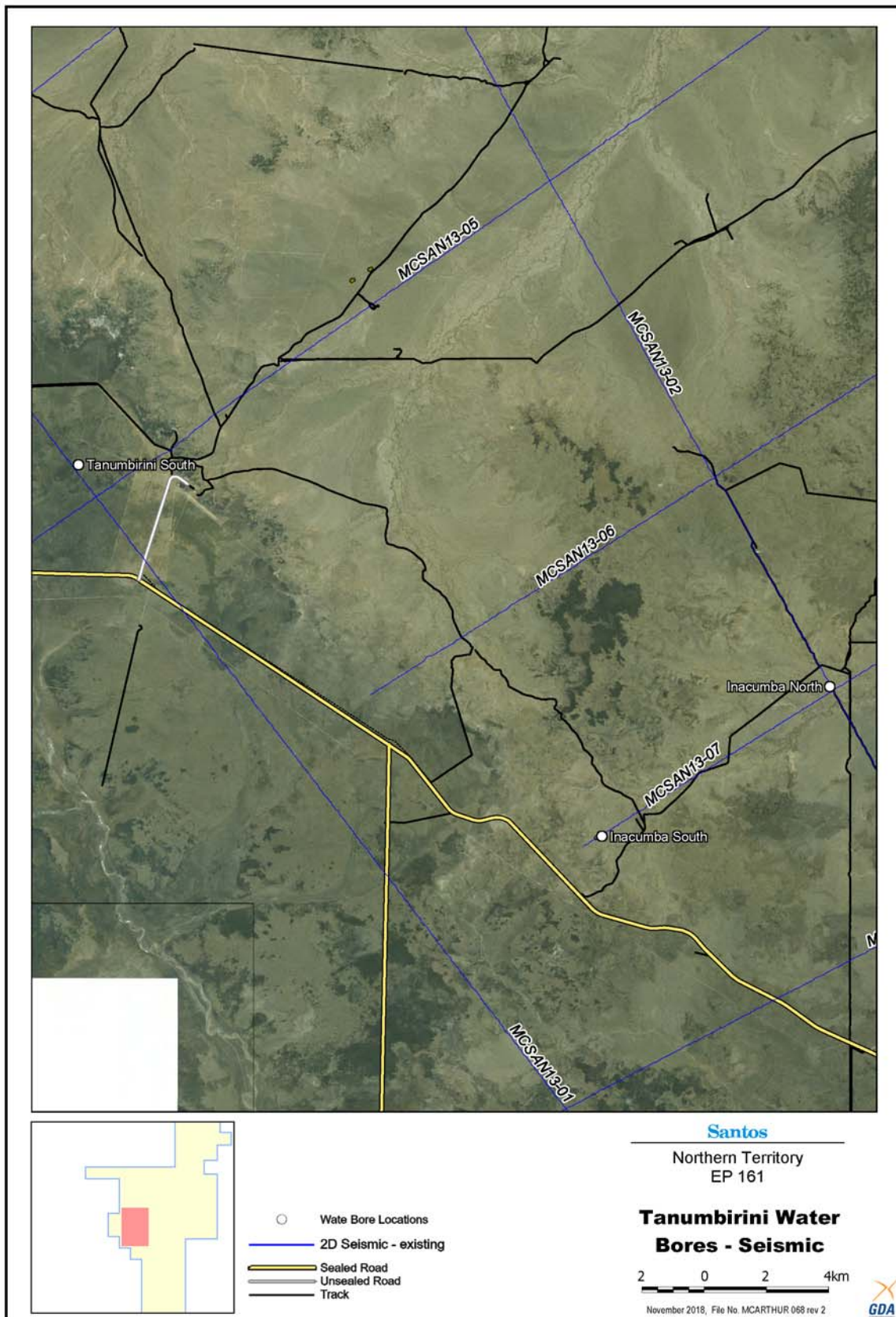


Figure 2 Location of Regulated Activities

## 1.2 Contents of Performance Report

This AEPR describes the environmental performance of Santos by evaluation of the following:

1. Compliance with Ministerial approval conditions for each EMP.
2. Compliance with each environmental outcome and environmental performance standard within the EMP 2018-2.
3. Compliance with reporting requirements in accordance with the Code and Regulations.
4. All recordable and reportable incidents, including root cause analysis and related corrective actions to prevent re-occurrence.
5. Findings of all regulatory inspections and audits and related actions to address any findings.

## 1.3 Assessment of Compliance

Table 1 shows the compliance status indicators used in this AEPR.

**Table 1 Compliance Descriptors**

Indicator	Description
Compliant	Compliant with requirement for entire 12 month reporting period
Partially Compliant	Compliant with requirement for most of year, short periods of non-compliance
Not Compliant	Interest holder did not comply with the requirement during the reporting period
Not Applicable	Requirement not applicable during the reporting period

## 1.4 Evidence of Compliance

The following sources of evidence are used to demonstrate compliance:

1. Internal tracking of compliance by Santos through:
  - Internal annual audits of compliance, as follows:
    - i. Daily checklists
    - ii. Induction registers
    - iii. Stakeholder engagement register
2. Outcomes from regulatory inspections conducted by the Department of Environment and Natural Resources (DENR), Petroleum Operations.
3. Recordable and reportable incident reports submitted to DENR Petroleum Operations
4. Reports provided to DENR, the Department of Primary Industry and Resources (DPIR) and other government agencies.

## 2.0 Demonstration of Compliance

Table 2 demonstrates Santos' compliance with Ministerial EMP approval conditions.

**Table 2 Compliance with Ministerial EMP Approval Conditions**

No	Ministerial Condition	Compliance Status	Evidence
1	The approval is subject to the following conditions: a. Water monitoring bores will be drilled and constructed by a water bore driller licensed under the <i>Water Act</i> and in accordance with the current version of the <i>Minimum Construction Requirements for water bores in Australia</i> .	Partially Compliant	<p>Drilling licence number DL1007 was provided by Silver City Drilling (water bore drilling contractor). The water bore designs show that the bore was generally constructed in accordance with the current version of the Minimum Construction Requirements for water bores in Australia. The daily checklist also confirms this.</p> <p>The failure to isolate the Gum Ridge Formation and the Inacumba unit<sup>1</sup> during the drilling of the groundwater bore RN040931 was discussed with DENR during the reporting period. This connectivity is potentially inconsistent with the Minimum Construction Requirements for Water Bores in Australia (3rd edition).</p> <p>This was reported to DENR in the Recordable Incidents Summary Report for the period between 26 November 2018 and 24 February 2019.</p>
	b. The groundwater bore installation must be completed within 12 months from the date of this approval.	Compliant	<p>Water bores were completed within 12 months from the date of this approval. The EMP was approved on 12 December 2018. The final groundwater bore installation was completed on the 30 September 2019.</p>

<sup>1</sup> Following publication of the Water Resources Division Technical Report 20/2020 entitled "Identification of the new Inacumba aquifer at Tanumbirini Station" the stratigraphic unit intersected by the Inacumba North water bores and previously called the Bukulara Sandstone is now termed the Inacumba unit.

Table 3 provides a systematic overview of Santos' compliance with the environmental outcomes and environmental performance standards within the approved EMP.

**Table 3 Compliance with Environmental Outcomes and Environmental Performance Standards Water Bore Monitoring Program**

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
1	Minimise disturbance to native flora	All personnel are given environmental and cultural heritage inductions prior to commencing work. Inductions for all employees and contractors cover pastoral, conservation, legislation and infrastructure issues.	Compliant	Induction records show that environmental and cultural heritage inductions were conducted prior to commencement of operations. Daily EHS checklist also completed.
2		Activities to be planned to minimise new land disturbance by utilising previous disturbed areas or existing tracks (where possible), and through operational practices including weaving.	Compliant	Figure 2 demonstrates that the site access is predominately via existing pastoral tracks and seismic lines. The access tracks shown in Figure 2 were the only access tracks used by the project.
3		Preference to use previously disturbed areas. Where possible, existing tracks, roads or seismic lines will be used for access.	Compliant	Figure 2 demonstrates that the site access is predominately via existing pastoral tracks and seismic lines. The access tracks shown in Figure 2 were the only access tracks used by the project.
4		Mature trees selected for preservation are to be flagged to ensure their protection	Compliant	Daily checklist confirms compliance with requirement to flag trees selected for preservation to ensure their protection.
5		Cleared vegetation will be respread during rehabilitation	Not Applicable	Cleared vegetation has been stockpiled. However, rehabilitation using this vegetation is yet to commence.
6		Hollow timber/trees that may be nesting/roosting sites for fauna will not be cleared.	Compliant	Daily Clearing checklist confirms no hollow trees were cleared.

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
7		Branches will be pruned in preference to total tree removal	Compliant	Daily Clearing checklist confirms that branches were pruned in preference to total tree removal.
8	Minimise disturbance to native fauna	Clearing of vegetation for track upgrades will be restricted to the minimum clearing required for the all-terrain water bore drill rig.	Compliant	Two of the three water bores are located on or next to existing seismic lines. The Tanumbirini South water bore has been located approximately 80m off the existing seismic line. Daily Clearing checklist confirms clearing of for the 80m access track was minimised.
9		Flora rootstock will be left intact to promote regeneration.	Compliant	Daily Clearing checklist confirms all clearing was in accordance with Environmental Performance Standards. Clearing of larger shrubs and trees was minimised due to the location of the water bores and open woodland vegetation communities. Ground layer vegetation was left in place and flora rootstock was left intact to promote regeneration.
10		Steep terrain will be avoided (where possible).	Compliant	Figure 2 shows the location of the access tracks and the water bores. These locations avoid steep terrain.
11		Hollow timber/trees selected for preservation are to be flagged to ensure their protection	Compliant	Daily Clearing checklist confirms trees selected for preservation were flagged to ensure their protection.
12	Minimise disturbance to natural drainage patterns	Alteration of natural drainage contours or lines will be avoided	Compliant	Figure 2 shows the only access tracks and seismic lines used by the project. No alteration of natural drainage contours or lines was required.
13	Minimise disturbance of soil resources	An all-terrain water bore drill rig will be used.	Compliant	Utilised a truck mounted mobile drilling rig (Hydco 1000H Diamond / RC) which minimised soil disturbance.

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
14		Alteration of natural drainage contours or lines will be avoided and/or bypass structures installed to minimise obstruction to flow	Compliant	Figure 2 demonstrates that the site access is predominately via existing pastoral tracks and seismic lines. These were the access tracks used by the project. Alteration of natural drainage contours or lines was not required.
15		Erosion and sediment control structures (e.g. berms, sediment fences) to be installed and maintained where necessary	Compliant	Daily Clearing checklist confirms ESCP controls implemented.
16		Inversion of the soil profile will be minimised where possible	Not Applicable	Figure 2 shows the location of the water bores. Inversion of the soil profile was not required for the drilling of the water bores.
17	Avoid disturbance to sites of cultural, sacred and heritage significance	Disturbance is restricted to areas for which NLC clearance has been provided. Disturbance is restricted to subject land as detailed in the AAPA Authority Certificate.	Compliant	NLC clearance obtained for Tanumbirini and Inacumba project work area. GIS database maintained for project areas and cultural heritage sites. GIS shows that the project is restricted to subject land as detailed in the AAPA Authority Certificate (C2018-105 Variation to C2018 – 102).
18		Known sites of sacred or cultural significance are identified and avoided.	Compliant	NLC clearance obtained for Tanumbirini South, Inacumba North and Inacumba South project work areas. GIS database maintained for project areas and cultural heritage sites. GIS shows that the project is restricted to subject land as detailed in the AAPA Authority Certificate (C2018-105 Variation to C2018 – 102).
19		Any new sites identified during the activity will be reported to the Santos Cultural Heritage Team and avoided.	Not Applicable	No new heritage sites identified during the reporting period.



No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
20		Maintain GIS database of project footprint and cultural heritage sites including details of any works conditions.	Compliant	GIS database maintained for project areas and cultural heritage sites. GIS shows that the project is restricted to subject land as detailed in the AAPA Authority Certificate (C2018-105 Variation to C2018 – 102).
21	Minimise disturbance to livestock, pastoral infrastructure and landholders.	Relevant landowners and occupiers and relevant third-party tenement holders are notified prior to activity.	Compliant	Land Access and Compensation Agreement in place. Notice of Entry given on 19 November 2018, prior to commencing works. Ongoing consultation occurred with the landholder. Land Access Field Supervisor onsite during water bore activities.
22		All gates are left in the condition in which they were found (i.e. open / closed).	Compliant	Daily checklist confirms gates left in condition they were found. Landholder consultation logs show that there were no incidents or concerns regarding gates.
23		Damage to station tracks is avoided and reported if does occur.	Compliant	Site access was speed limited to 80 km/hr on unsealed roads, 40 km/hr on water bore access tracks and seismic lines. Only designated access tracks identified in the EMP were used for access and no heavy vehicles were used during the wet season  The Incident Management System and the daily checklist confirms damage to station tracks avoided / reported.
24		Unauthorised offline driving is prohibited for all project personnel.	Compliant	Figure 2 shows the only access tracks and seismic lines used by the project. Complaints register shows no off road driving was recorded.
25		When necessary, all fences are restored to satisfaction of landowner / managers.	Not Applicable	Landholder consultation logs show that there were no fences that required restoration.

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
26		System is in place for logging landholder complaints to ensure that issues are addressed as appropriate.	Compliant	Landholder consultation logs include a system for logging landholder complaints.
27		Personnel are given environmental and cultural heritage inductions prior to commencing work	Compliant	Induction records show that environmental and cultural heritage inductions were conducted prior to commencement of operations. Daily EHS checklist also completed.
28	Minimise reduction in air quality	Where possible, existing tracks, roads or seismic lines will be used for access.	Compliant	Site access via existing pastoral tracks and seismic lines (Figure 2). The access tracks in Figure 2 were the only access tracks use by the project.
29	Minimise smothering of undisturbed vegetation Minimise disturbance to fauna	Off track driving is prohibited – no bush bashing or short cuts are permitted.	Compliant	Figure 2 shows the only access tracks use by the project
30	Minimise loss of amenity	Speeds on unsealed roads will be limited – max 80 km/hr on unsealed roads, 40 km/hr on water bore access tracks and seismic lines.	Compliant	Incident management system and daily checklist confirms speed limits were complied with.
31		Any remediation work should be undertaken upon completion of all activities.	Not Applicable	Cleared areas under this EMP are still operational and access is required to conduct groundwater monitoring and complete other civil works activities approved under other EMP/s. Remediation work will be undertaken upon completion of these activities.
32	Minimise disturbance to native fauna, landholders and livestock	Relevant landholders and occupiers are consulted with respect to water bore locations.	Compliant	Land Access and Compensation Agreement in place. This agreement included the location of the three water bores. A Notice of Entry discussing the location and the scope of activities was completed (19 November 2018) before works were undertaken and ongoing consultation occurred with the landholder. Land Access Field Supervisor onsite during water bore activities.



No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
33		Landholders are provided updates on progress throughout the project (both water monitoring bore drilling and groundwater monitoring events).	Compliant	Communications procedure with landholders was in place. Ongoing consultation was undertaken daily or as required.
34		Maintain communications during operations with relevant landholders.	Compliant	Stakeholder communication logs confirm communications with relevant landholders.
35		Water bore drilling will only occur during daylight hours.	Compliant	Project implemented as a daylight only operation (single crew). Daily reports confirm activity and timing.
36		Driving will only occur during daylight hours.	Compliant	Project implemented as a daylight only operation (single crew). Daily reports confirm activity and timing.
37		Off line driving is banned – no bush bashing or short cuts are permitted.	Compliant	Figure 2 shows the only access tracks and seismic used by the project. Daily checklist confirms there was no unauthorised off-road driving.
38		Relevant landowners and occupiers are notified prior undertaking activities.	Compliant	Land Access and Compensation Agreement in place. Notice of Entry completed in 19 November 2018 before works undertaken.
39		All gates are left in the condition in which they were found (i.e. open / closed).	Compliant	Daily checklist confirms gates left in condition they were found. Landholder consultation logs show that there were no incidents or concerns regarding gates.
40		When necessary, all fences are restored to satisfaction of landowner / managers.	Not Applicable	No fences required restoration.
41		Speed will be limited along lines to 40km/hr and 80km/hr on other unsealed roads.	Compliant	Daily checklist confirms speed limits set and complied with.

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
42		All vehicle routes have speed limits set which must be adhered to.	Compliant	Project Initiation EMP General Rules state the speed limits set which must be adhered to. No incidents lodged in the IMS.
43	Minimise disturbance of soil resources Minimise disturbance to drainage patterns of surface waters and shallow groundwater resources, Minimise disturbance to native vegetation and native fauna, Minimise disturbance to culturally sensitive sites, Minimise disturbance to livestock, pastoral infrastructure and landholders	Disturbance is restricted to areas for which consent has been provided.	Compliant	All activities will comply with the land access agreements. Figure 2 illustrates the disturbance area.
44		Where possible, existing tracks, roads or seismic lines will be used for access.	Compliant	All activities will comply with the land access agreements. The existing tracks shown in Figure 2 were used for access.
45		Due to the instability and erosion potential when disturbed, the steeper slopes and escarpments of tableland land systems are avoided.	Compliant	Figure 2 shows that steep slopes and escarpments were avoided. The existing tracks shown in Figure 2 were used for access.
46		Creek bank vegetation is left intact and detours sought if too dense to pass through.	Compliant	No removal of creek bank vegetation was required. The existing tracks shown in Figure 2 were used for access.
47		Unavoidable compaction in areas other than those susceptible to erosion, will be ripped on completion of work.	Not Applicable	Any restoration work required is scheduled to follow exploration activities. The three sites are still active and expected to be operational to conduct groundwater monitoring and complete other civil works activities approved under other EMP/s for the foreseeable future.
48		Any remediation work should be undertaken upon completion of all activities.	Not Applicable	Any restoration work required is scheduled to follow exploration activities. The three sites are still active and expected to be operational to conduct groundwater monitoring and complete other civil works activities approved under other EMP/s for the foreseeable future.

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
49		A Primary Erosion and Sediment Control (ESC) Plan will be developed in consultation with DENR. Once finalised the ESC Plan will be implemented.	Partially Compliant	<p>Santos has engaged EcOz Environmental Consultants (EcOz) to develop a number of Erosion and Sediment Control Plans (ESCP) associated with the proposed exploration activities at Tanumbirini. These ESCPs have been prepared by a Certified Professional in Erosion and Sediment Control (CPESC) and implemented by the project. At the time of commencement an ESCP had been developed for the Tanumbirini South location only. However the erosion and sediment control measures within the ESCP were adopted for all three locations.</p> <p>The key erosion and sediment control measures from the ESCP that were utilised are:</p> <ul style="list-style-type: none"> <li>• Site access to be via existing access wherever possible.</li> <li>• Minimise the areas of soil/vegetation disturbed.</li> <li>• Construct drill pads by slashing or blading the surface vegetation</li> </ul> <p>Vegetation clearing was minimised and due to the use of existing access tracks and seismic lines and the open woodland vegetation communities that occur at site.</p> <p>Only a small section (550m) of new access track was required. These new access tracks and water bores were not located within drainage features and a groundcover root stock was left in place.</p>
50		Unauthorised offline driving is prohibited for all project personnel.	Compliant	Daily checklist confirms no unauthorised offline driving. The existing tracks and seismic lines shown in Figure 2 were used for access.

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
51		Operations are shut down during wet weather or flooding and only restarted once potential for extensive damage has passed.	Compliant	Operations suspended for one afternoon (13 December 2018). Operations resumed 14 December 2018 following confirmation that access road and lease were in good condition and there was no potential for extensive damage.
52		Following shut down due to flooding or inundation the risk assessment will be re-visited to ensure controls are still appropriate to manage risk to ALARP.	Compliant	Operations suspended for one afternoon (13 December 2018). Operations resumed 14 December 2018 following confirmation that access road and lease were in good condition and there was no potential for extensive damage.
53		Weed wash-down certification for vehicle and machinery from interstate.	Compliant	Weed hygiene certificates demonstrate compliance. Daily checklist confirms valid weed hygiene certification.
54	Minimise disturbance to native fauna	Ensure site environmental inductions for all site personnel and contractors include vehicle weed hygiene requirements and information on exotic invasive ants.	Compliant	Induction records show that environmental and cultural heritage inductions were conducted prior to commencement of operations. Daily checklist confirms compliance with weed hygiene requirements.
55	Minimise disturbance to native flora	All vehicle and equipment movements to stay on formed access tracks and seismic lines.	Compliant	Daily checklist confirms no unauthorised driving. The existing tracks shown in Figure 2 were used for access.
56	Minimise negative impacts to soil quality	Ensure vehicles, machinery and equipment entering the permit areas have been cleaned and are free of soil and vegetative matter, or have a valid weed hygiene certificate.	Compliant	Daily checklist confirms compliance with weed hygiene requirements.
57	Minimise disturbance to livestock	A baseline weed assessment will be completed prior the commencement of works covered in this EMP.  Baseline data will be collected in consultation with the Department of Environment and	Compliant	Draft documents and data sent to DENR Weed Management in November 2018 and final version of the weed management plan was sent to via email on 19 November 2018.

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
		Natural Resources (DENR) and data will be provided to DENR in a format to be specified by them.  Areas of priority weeds identified will be marked		Baseline Weed Assessment documentation was approved by DENR.
58		If infestations of priority weed species are identified during water monitoring bore drilling program, they will be avoided, where possible, via a detour around the infestation.	Compliant	Baseline Weed Assessment documentation was approved by DENR.
59		If infestations are unavoidable, infestations will be crossed at the narrowest point and wash downs will be conducted once exiting the infestation.	Not Applicable	Figure 2 shows the use of existing tracks for access. No weed infestations were encountered on the access track.
60		Any onsite wash down sites will be marked for further monitoring.	Not applicable	Figure 2 shows the use of existing tracks for access. No weed infestations were encountered on the access track.
61		Undertake post-activity weed assessment and monitoring.	Compliant	Reports from the post wet season monitoring survey show the weed monitoring program in place.
62	Minimise disturbance to native fauna	Include fire season education as part of the induction.	Compliant	Daily checklist shows that toolbox meeting conducted and included a discussion on fire risk level for the day and fire risk management.
63	Minimise disturbance to native flora	Use of qualified water bore driller contractors with Northern Territory dry season experience	Compliant	Drilling licence number DL1007 was provided by Silver City Drilling (water bore drilling contractor).
64	Minimise negative impacts to landholders	All vehicles will be equipped with portable fire extinguishers	Compliant	Daily checklist confirms vehicles were equipped with portable fire extinguishers.
65	Minimise disturbance to livestock	Machinery and vehicles should be parked in areas of low fire risk and be free of any	Compliant	Figure 2 shows the areas covered by the project. The daily checklist confirms that vehicles were parked in

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
		combustible material, for example in the case of dry grass build up.		areas of low fire risk and be free of any combustible materials.
66		All vehicles will be equipped with fully operational VHF and / or UHF radio transceivers.	Compliant	Daily checklist confirms vehicles were equipped with fully operational VHF and / or UHF radio transceivers.
67		Smoking will only be permitted in areas clear of vegetation, and there will be no disposal of butts.	Compliant	Incident management systems shows there were no incidents of smoking in unpermitted areas.
68		<p>All personnel will receive information prior to the commencement of the activity relating to:</p> <ul style="list-style-type: none"> <li>Provisions of the Emergency Response Plan including procedures during a fire emergency</li> <li>The operation of firefighting equipment and communications</li> </ul> <p>Restricted smoking requirements</p>	Compliant	Silver City Drilling Emergency Response Plan provided to Santos included procedures for Fire and Explosion response and Bush Fire procedure. Rig induction documents location of firefighting equipment and restricted smoking area. Daily checklist shows that toolbox meeting conducted and included a discussion on fire risk level for the day and fire risk management.
69		<p>Toolbox meetings will be conducted to:</p> <ul style="list-style-type: none"> <li>Alert the workforce of the fire risk level for the day</li> </ul> <p>Discuss any fire risk management breaches and remedial actions</p>	Compliant	Daily checklist shows that toolbox meeting conducted and included a discussion on fire risk level for the day and fire risk management.
70	No unplanned interactions or disturbance to landholders	Damage and degradation of station tracks is avoided	Compliant	Site access was speed limited to 80 km/hr on unsealed roads, 40 km/hr on water bore access tracks and seismic lines. Only designated access tracks identified in the EMP were used for access and no heavy vehicles were used during the period between January and May.

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
				Incident management systems and daily checklist confirms that damage and degradation of station tracks was avoided.
71		Inductions for all employees and contractors cover pastoral, conservation, legislation and infrastructure issues.	Compliant	Induction records show that the work program, environmental and cultural heritage inductions were conducted prior to commencement of operations. Daily EHS checklist also completed.
72		All litter is to be managed and disposed of correctly.	Compliant	Incident management systems. Daily checklist confirms compliance with requirement.
73		Speeds on private unsealed roads will be limited to a maximum of 80 km/hr	Compliant	Incident management system and daily checklist confirms speed limits were complied with.
74	Minimise disturbance to surface water, groundwater, soil quality and native fauna	Licensed waste contractor will be used where appropriate.	Compliant	Initially general waste disposed of via landholder homestead where drilling crew were lodged during operations. Once the civils camp was established a licensed waste contractor was used. Environment Protection Licence (Pursuant to section 34 of the Waste Management and Pollution Control Act) demonstrates that waste contractors are licensed: <ul style="list-style-type: none"> <li>• Licensee RUSCA ENVIRONMENTAL SOLUTIONS PTY. LTD.</li> <li>• Licence Number EPL250-01</li> </ul>
75		Water bore drilling will be conducted by a licensed contractor	Compliant	Drilling licence number DL1007 was provided by Silver City Drilling (water bore drilling contractor).
76		Spill kits available to treat spills in situ	Compliant	Daily checklist confirms the presence of spill kits.
77		Water bore drilling will be conducted in accordance with the Minimum Construction	Partially Compliant	Drilling licence number DL1007 was provided by Silver City Drilling (water bore drilling contractor). The water bore designs show that the bore was generally constructed in accordance with the current version of

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
		Requirements for Water Bores in Australia (3rd edition)		<p>the Minimum Construction Requirements for water bores in Australia. The daily checklist also confirms this.</p> <p>The failure to isolate the Gum Ridge Formation and the Inacumba unit<sup>2</sup> during the drilling of the groundwater bore RN040931 was discussed with DENR during the reporting period. This connectivity is potentially inconsistent with the Minimum Construction Requirements for Water Bores in Australia (3rd edition).</p> <p>This was reported to DENR in the Recordable Incidents Summary Report for the period between 26 November 2018 and 24 February 2019.</p>
78		All fuel stored and used should be under the control of qualified or trained personnel.	Compliant	<p>Daily checklist confirms all hazardous materials were stored and managed in accordance with Environmental Performance Standards.</p> <p>Bunded tanks and spill mats were in place for fuel storage.</p> <p>Fuels stored were under the control of personnel that were trained in the requirements of Silver City Drilling's HSPRC015 Chemical Management Procedure. This procedure contains requirements for:</p> <ul style="list-style-type: none"> <li>• Storage and Transportation of Chemical Substances.</li> <li>• Storage of Hazardous Substances.</li> </ul>

<sup>2</sup> Following publication of the Water Resources Division Technical Report 20/2020 entitled "Identification of the new Inacumba aquifer at Tanumbirini Station" the stratigraphic unit intersected by the Inacumba North water bores and previously called the Bukulara Sandstone is now termed the Inacumba unit.



No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
				<ul style="list-style-type: none"> <li>Storage of Flammable and Combustible Liquids.</li> </ul>
79		Waste will be segregated on site and all putrescible waste material will be held in fauna proof containers.	Compliant	Daily checklist confirms all waste was held in fauna proof containers.
80		Any spills contained and retrieved.	Not Applicable	Incident Management System and daily checklist confirms that there were no spills.
81		Any spills will be remediated to the satisfaction of the landholder, fenced, soil removed to appropriate facility and signed off by land holder in accordance with the access.	Not Applicable	Incident Management System and daily checklist confirms that there were no spills.
82		Fuel and other lubricants will be appropriately stored and managed, in accordance with AS1940 The Storage and Handling of Flammable and Combustible Liquids.	Compliant	Daily checklist confirms all hazardous materials were stored and managed in accordance with Environmental Performance Standards.

Table 4 demonstrates Santos' compliance with reporting requirements in the Code of Practice: Onshore Petroleum Activities in the Northern Territory (Code of Practice) and the Petroleum (Environment) Regulations 2016 (NT).

**Table 4 Compliance with Mandatory Reporting Requirement**

No	Reference	Requirement	Compliance Status	Evidence
1	Code cl A.3.5	Geospatial information depicting areas cleared is to be provided to the Minister.	Not Applicable	Not applicable, approved prior to Code being incorporated into Regulations
2	Code cl A.3.6 (b)	Weed management plan developed as part of the EMP must provide for ongoing weed monitoring.	Not Applicable	Not applicable, approved prior to Code being incorporated into Regulations
3	Code cl A.3.7(a)vi	The fire management plan developed as part of the EMP must provide for annual fire mapping to monitor changes to fire frequency in the relevant areas.	Not Applicable	Not applicable, approved prior to Code being incorporated into Regulations
4	Code cl A.3.9(c) Code cl A.3.9(e)	The rehabilitation plan developed as part of the EMP requires progressive rehabilitation of significantly disturbed land which is required to commence no longer than 12 months following the cessation of activities on the land. It also requires regular maintenance and annual monitoring of rehabilitated areas.	Not Applicable	Not applicable, approved prior to Code being incorporated into Regulations
5	Code cl B.4.13.2(c)	As a minimum, the following must be recorded and reported for each stage (where a stage in this context means all fluids pumped at a particular depth interval): a) total volume of hydraulic fracturing fluid pumped, b) quality of water used (tested for analytes in section C.8 of this Code. Analyses do not need to be repeated if the same water source is used for multiple stages) and c) typical and maximum concentrations of chemicals or other substances used.	Not Applicable	Not applicable, approved prior to Code being incorporated into Regulations

No	Reference	Requirement	Compliance Status	Evidence
6	Code cl B.4.13.2(k)iv	Where venting is the only technically feasible option for managing produced gas, the technical considerations preventing the use of the recovered gas must be recorded and included in the operator's annual report.	Not Applicable	Not applicable, approved prior to Code being incorporated into Regulations
7	Code cl B.4.14.2(c)	All new barriers or new well operating envelopes must be verified and clearly documented and reported by submission of an updated well barrier integrity validation (WBIV) report to DPIR.	Not Applicable	Not applicable, approved prior to Code being incorporated into Regulations
8	Code cl B.4.15.2(j)	Complete and accurate records of the entire decommissioning procedure must be kept, with these records submitted as part of the legislative reporting requirements for the decommissioning of petroleum wells.	Not Applicable	Not applicable, approved prior to Code being incorporated into Regulations
9	Code cl B.4.17.2(d)	Any guidelines published by the Northern Territory Government from time to time relating to reporting and data submission, and groundwater monitoring data standards must be followed.	Not Applicable	Not applicable, approved prior to Code being incorporated into Regulations
10	Code cl C.3(e)	The components of the wastewater management framework, include: Monitor, manage and report in accordance with the Wastewater Management Plan and Spill Management Plan.	Not Applicable	Not applicable, approved prior to Code being incorporated into Regulations
11	Code cl C.6.1(d)	Wastewater tracking documentation must be reported to the Minister at least annually in accordance with the framework (Spill Management Plan and Wastewater Management Plan) outlined in the EMP	Not Applicable	Not applicable, approved prior to Code being incorporated into Regulations
12	Code cl C.7.1(d)ii	Wastewater Management Plan must include a program for monitoring and reporting against the effectiveness of the measures for the mitigation of	Not Applicable	Not applicable, approved prior to Code being incorporated into Regulations

No	Reference	Requirement	Compliance Status	Evidence
		interaction with wildlife, stock and human receptors with wastewater.		
13	Code cl D.4.3.2(f)	A written report detailing the levels of methane measured, the duration of the unusual readings and the results of the investigation (including remedial actions) must be submitted within one month of the significantly higher-level methane event being detected.	Not Applicable	Not applicable, approved prior to Code being incorporated into Regulations
14	Code cl D.5.9.2(c)	Emissions from exploration, well construction (including during flow back) and workovers must be measured and reports submitted.	Not Applicable	Not applicable, approved prior to Code being incorporated into Regulations
15	Code cl D.5.9.3(a)	Where natural gas is vented or flared at a gas processing or other downstream facility, emissions must be estimated and reported.	Not Applicable	Not applicable, approved prior to Code being incorporated into Regulations
16	Code cl D.6.1	All mandated government reporting is complied with; and all detectable leaks and emissions are reported on an annual basis.	Not Applicable	Not applicable, approved prior to Code being incorporated into Regulations
17	Code cl D.6.2(a)	Reports of baseline assessments must be submitted at the conclusion of each field campaign.	Not Applicable	Not applicable, approved prior to Code being incorporated into Regulations
18	Code cl D.6.2(b)	Emissions reporting must be in accordance with Section D.5.6. Emissions associated with venting and flaring as described in Section D.5.9 must be provided separately to the Northern Territory Government in accordance with this Code.	Not Applicable	Not applicable, approved prior to Code being incorporated into Regulations
19	Reg 14	A current EMP remains in force until the interest holder notifies the Minister the activity is no longer being carried out and all of the environmental outcomes and obligations under the plan have been	Compliant	The current EMP remains in force.

No	Reference	Requirement	Compliance Status	Evidence
		met, and the Minister advises the interest holder the notice is accepted and the plan ceases to be in force.		
20	EMP s 9.1 Ongoing Consultation Schedule 1, item 9(2)	Interest holders are required to conduct future engagement with stakeholders, in accordance with the description in the EMP.	Compliant	Stakeholder engagement logs indicate that engagement with stakeholders has been undertaken.
21	EMP Section 8.6 Incident Reporting Reg 33	DENR is notified of reportable incidents within 2 hours of the interest holder becoming aware of the incident, or within 2 hours of the incident occurring.  A written report must be provided within 24 hours if the initial report was made orally.	Not Applicable	There were no reportable incidents during this period.
22	EMP Section 8.6 Incident Reporting Reg 34	Reports on reportable incidents are to be provided to DENR as soon as practicable and within 72 hours of the event occurring.  A final report must be provided to DENR within 30 days after remediation/clean-up of the affected area.	Not Applicable	There were no reportable incidents during this period.
23	EMP Section 8.6 Incident Reporting Reg 35	A written report of all recordable incidents must be provided to DENR not later than 15 days after the 90 day reporting period (unless otherwise agreed).	Partially Compliant	Reports on all recordable incidents were provided: <ul style="list-style-type: none"> <li>• 1<sup>st</sup> report provided 28/06/2019 (93 days late)</li> <li>• 2<sup>nd</sup> report provided 17/07/2019 (21 days late)</li> <li>• 3<sup>rd</sup> report provided 27/11/2019 (63 days late)</li> <li>• 4<sup>th</sup> report provided 19/12/2019 (Met timeframes)</li> </ul>
24	Reg 37A	A report about flow back fluid from hydraulic fracturing must be provided to the Minister within 6 months of the flow back occurring.	Not Applicable	The regulated activity did not include hydraulic fracturing.

No	Reference	Requirement	Compliance Status	Evidence
25	Reg 37B	A report about produced water from hydraulic fracturing must be provided to the Minister within 6 months of the produced water being extracted.	Not Applicable	The regulated activity did not include hydraulic fracturing.
26	Schedule 1, item 12	Interest holder must notify the Minister, occupier of the land and owner of the land on which the activity is to be carried out <b>before</b> commencement of activity.	Compliant	<ul style="list-style-type: none"> <li>• EMP approved 12 December 2018</li> <li>• Works commenced 13 December 2018; the rig was on standby until the EMP was approved.</li> <li>• Final amendments to the EMP and the provision of the security bond were completed in consultation with DPIR. The water bore drill rig was on standby for 5 days prior to commencement and the department understood that the rig was on standby and that works would commence upon approval.</li> <li>• LAA in place with landholder to allow water bore construction and drilling.</li> <li>• Occupier of land – NOE for water bore drilling activities was sent to the landholder on 19 November 2018, via email.</li> </ul>

## 3.0 Summary of Compliance

### 3.1 Overview of Compliance

Table 5 provides a summary of the results of the compliance assessment against the 110 total compliance items.

**Table 5: Compliance Summary**

Compliance Indicator	Number	Percentage
Compliant	72	65.5%
Partially Compliant	4	3.6%
Not Compliant	0	0
Not Applicable	34	30.9%

### 3.2 Overview of Items Found Not Compliant or Partially Compliant

The following sections describe:

- the specific compliance requirements not met for the reporting period
- an analysis of the possible potential environmental harm or impact to environmental values resulting from non-compliance or partial compliance, using multiple lines of evidence
- a summary of the corrective actions already implemented, and further actions still required, as applicable, to ensure compliance is fully achieved in the future.

#### 3.2.1 Ministerial Approval Conditions

##### 3.2.1.1 Description

The drilling of the groundwater bore RN040931, specifically the failure to isolate the Gum Ridge Formation and the Inacumba unit<sup>3</sup> in that bore. This connectivity is potentially inconsistent with the Minimum Construction Requirements for Water Bores in Australia (3rd edition).

##### 3.2.1.2 Analysis of Potential Environmental Harm or Impact

There was no discernible flow or permeability in the lower unit. No cross-flow or contamination of either aquifer is evident. Analysis of groundwater sampled from the bore demonstrates water quality that is consistent with groundwater sampled from other bores that target only the Gum Ridge Formation.

<sup>3</sup> Following publication of the Water Resources Division Technical Report 20/2020 entitled "Identification of the new Inacumba aquifer at Tanumbirini Station" the stratigraphic unit intersected by the Inacumba North water bores and previously called the Bukulara Sandstone is now termed the Inacumba unit.

### 3.2.1.3 Corrective Actions

The water bore was remediated. Specifically, the following were done to ensure isolation:

- Cut weld rings between 12" and 8" production casing, and pull up the first 18m of casing.
- Cut and suspend 8" casing from 12" casing.
- Plug up the base of the hole using cement-bentonite grout (to <104m depth).
- Airlift bore until clean and take water sample for analysis.
- Future bores to be drilled to isolate the Gum Ridge Formation and the Inacumba unit<sup>4</sup>.

## **3.2.2 Environmental Performance Standards**

### 3.2.2.1 Description

The drilling of the groundwater bore RN040931, specifically the failure to isolate the Gum Ridge Formation and the Inacumba unit<sup>4</sup> in that bore. This connectivity is potentially inconsistent with the Minimum Construction Requirements for Water Bores in Australia (3rd edition).

### 3.2.2.2 Analysis of Potential Environmental Harm or Impact

There was no discernible flow or permeability in the lower unit. No cross-flow or contamination of either aquifer is evident. Analysis of groundwater sampled from the bore demonstrates water quality that is consistent with groundwater sampled from other bores that target only the Gum Ridge Formation.

### 3.2.2.3 Corrective Actions

The water bore was remediated. Specifically, the following were done to ensure isolation:

- Cut weld rings between 12" and 8" production casing, and pull up the first 18m of casing.
- Cut and suspend 8" casing from 12" casing.
- Plug up the base of the hole using cement-bentonite grout (to <104m depth).
- Airlift bore until clean and take water sample for analysis.
- Future bores to be drilled to isolate the Gum Ridge Formation and the Inacumba unit<sup>4</sup>.

### 3.2.2.4 Description

The Erosion and Sediment Control Plans (ESCP) did not include all locations.

### 3.2.2.5 Analysis of Potential Environmental Harm or Impact

There was low potential for environmental harm or impact. Santos has engaged EcOz Environmental Consultants (EcOz) to develop a number of Erosion and Sediment Control Plans (ESCP) associated with the proposed exploration activities at Tanumbirini. These ESCPs have been prepared by a Certified Professional in Erosion and Sediment Control (CPESC) and implemented by the project. The erosion and sediment control measures included in these ESCPs were adopted for the project as a whole.

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<sup>4</sup> Following publication of the Water Resources Division Technical Report 20/2020 entitled "Identification of the new Inacumba aquifer at Tanumbirini Station" the stratigraphic unit intersected by the Inacumba North water bores and previously called the Bukulara Sandstone is now termed the Inacumba unit.



#### 3.2.2.6 Corrective Actions

Prior to any additional works at these three sites an Erosion and Sediment Control Plan (ESCP) will be developed in consultation with DENR.

### **3.2.3 Regulatory Reporting**

#### 3.2.3.1 Description

Recordable Incidents Summary Reports were not lodged within 15 days of the reporting period.

#### 3.2.3.2 Analysis of Potential Environmental Harm or Impact

There was no potential for environmental harm or impact.

#### 3.2.3.3 Corrective Actions

Santos will submit recordable incident reports for this EMP at 90 day intervals as required. The requirements to submit these recordable incident reports for this EMP has been added to Santos' compliance tracking system.

### **3.3 Application of Lessons Learned Across Santos' Onshore Interests**

Daily EMP checklist was very useful to check compliance with the EMP during activities on site and to provide evidence of compliance for this AEPR. Santos will continue with this approach.

The project's central document storage could be better set up at the beginning of the project to allow us to easily locate documents that provide evidence of compliance. This has improved as the project as a whole has become more mature.

Santos will submit recordable incident reports for this EMP at 90 day intervals as required. The requirements to submit these recordable incident reports for this EMP has been added to Santos' compliance tracking system.