

Annual Environmental Performance Report 2020

Dukas-1 – Conventional Gas Well

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EMP(s) Covered	Dukas-1 – Conventional Gas Well
Permit	EPs 112 and 125
Interest holder details	<p>Santos QNT Pty Ltd 60 Flinders Street, Adelaide South Australia 5000 GPO Box 2455, Adelaide South Australia 5001 ABN 33 083 077 96</p> <p>Frontier Oil and Gas Pty Ltd ABN 91 103 194 136 GPO Box 292, Brisbane, Qld, 4001</p> <p>Ordiv Petroleum Pty Ltd ABN 29 111 102 697 GPO Box 292, Brisbane, Qld, 4001</p>
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Approved by	Santos QNT Pty
Date approved	2 September 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)	David Close
Position	General Manager – Onshore New Ventures
Date	2 September 2020

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Abbreviations and Units

Acronym / Abbreviation	Description
AEPR	Annual Environmental Performance Report
ALARP	As low as reasonably practicable
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
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 an annual report to the Minister outlining 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 applies to the Dukas-1 – Conventional Gas Well EMP, EP 112 and 125 that was approved on 15 February 2019. The period covered by this AEPR is from 15 February 2019 to 14 February 2020.

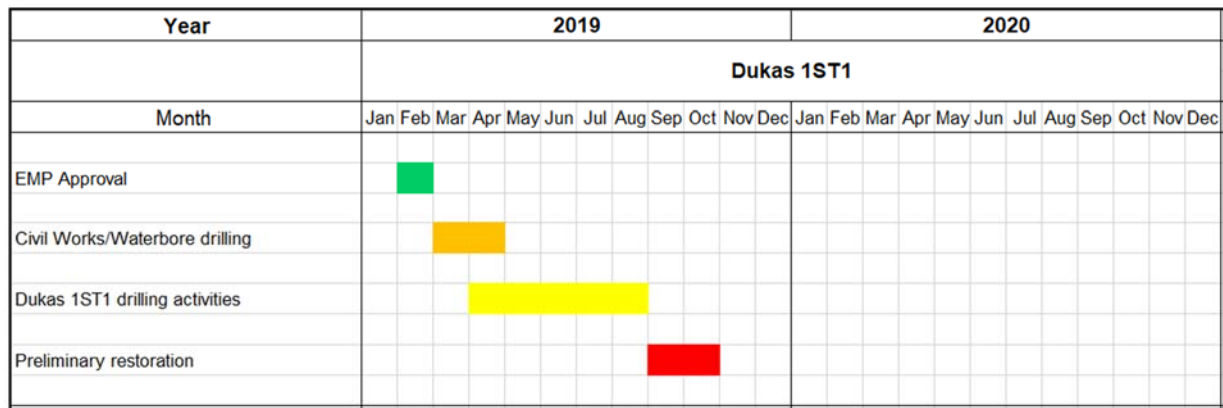


Figure 1: Timing of Regulated Activities Conducted During the Reporting Period

1.1 Background

NT Exploration Permits 112 and 125 are located in the Amadeus Basin in the south of the Northern Territory (refer to Figure 2). Santos is the operator of EP 112 and drilled the Dukas-1 exploration well in EP 112. The access track and supporting infrastructure such as borrow pits required for this activity occurred within both EP 112 and 125 as shown in Figure 3.

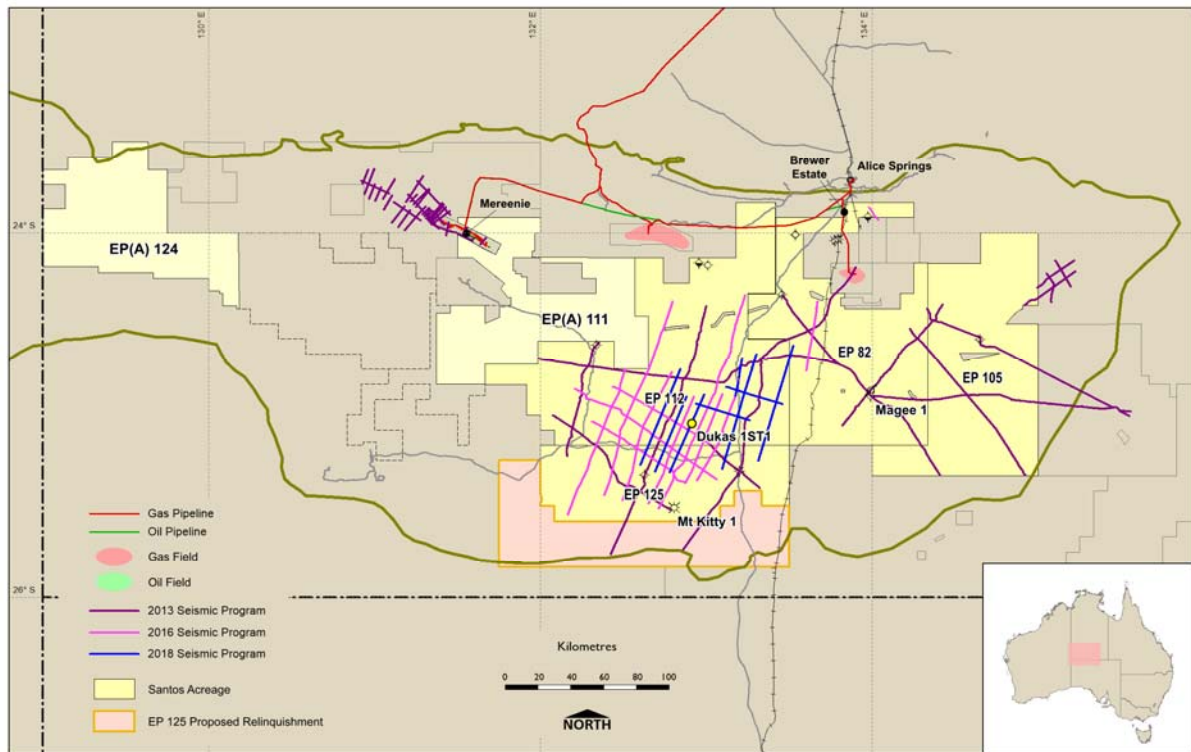


Figure 2: Santos acreage, Amadeus Basin, NT

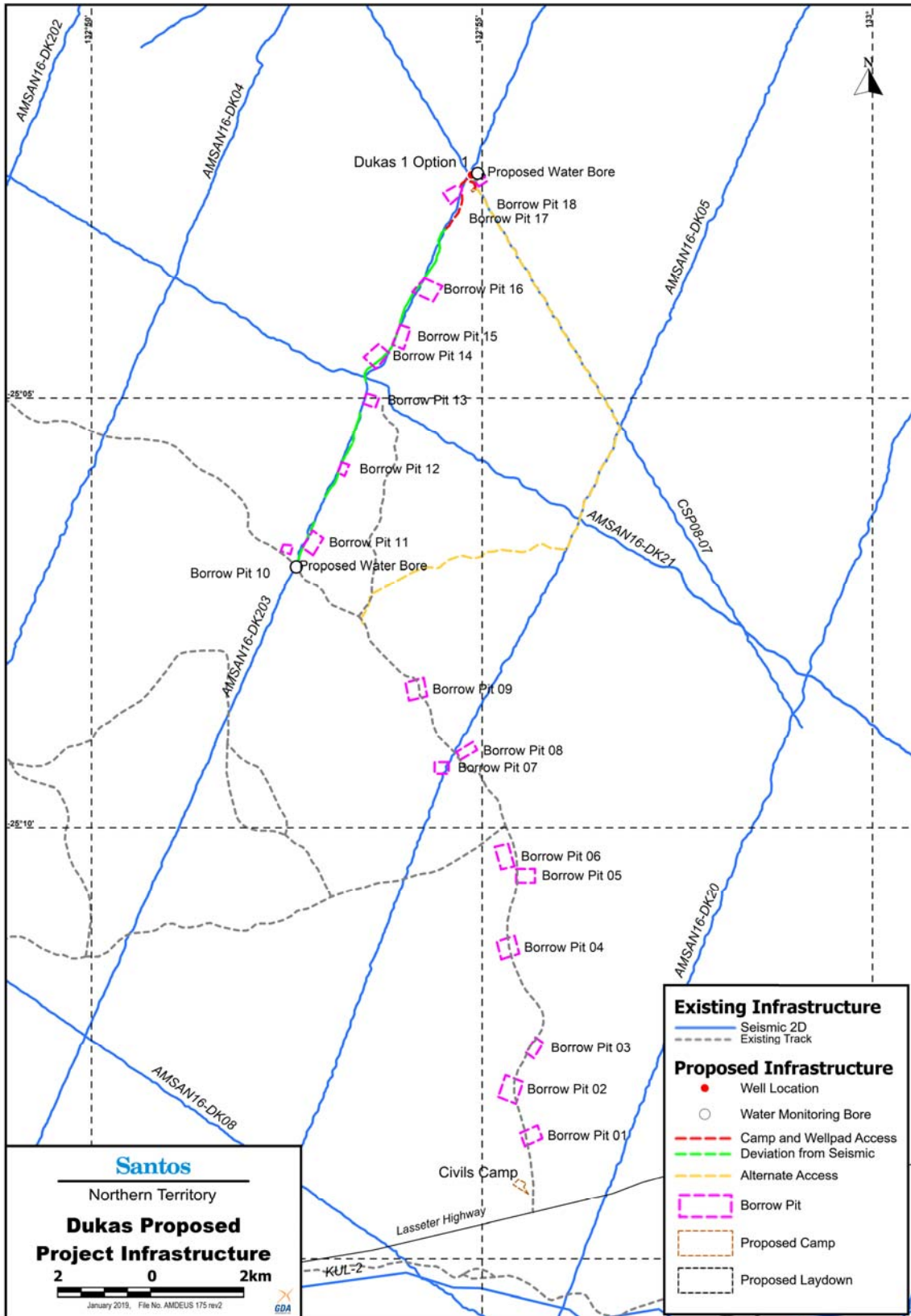


Figure 3: Location of Regulated Activities

Key activities for the drilling of the Dukas-1 well included:

- Civil works for:
 - Access Track
 - Borrow Pits
 - Laydowns
 - Well Lease Pad
 - Camp
 - Water Bore Pads
- Water extraction and storage
- Drilling activities, including formation evaluation (open and cased hole wireline)
- Well integrity monitoring
- Wellbore seismic evaluation (e.g. vertical and offset seismic profiling).

The project was run in two stages. Stage 1 comprised preliminary civil works and water bore drilling required to facilitate the installation of water supply bores, one being at the Dukas-1 location. Stage 2 comprised all activities associated with drilling the Dukas-1 exploration well, as well as plugging and suspension, maintenance and preliminary restoration works.

Please note that drilling program did not reach the target depth and therefore no production testing occurred during the reporting period. Dukas 1ST1 was plugged and suspended at 3704m measured depth rotary table (MDRT) for potential future re-entry and deepening.

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 this EMP
2. compliance with each environmental outcome and environmental performance standard within the approved EMP
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

Indicator	Description
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:
 - Daily and weekly inspections, as committed to in the EMP, as follows:
 - i. Table 68
 - ii. Section 5.2
 - Internal audits of compliance, as follows:
 - i. Start-up verification for all contractors
 - ii. Daily EMP checklists completed during the period 26 February 2019 to 5 September 2019
2. outcomes from regulatory inspection 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. Activities under this approval must commence within 12 months of the date of this approval.	Compliant	Activities commenced within 12 months of the date of this approval as per previous reports accepted by DPIR and DENR.

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 Dukas-1 – Conventional Gas Well EMP

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
1	Minimise emissions to air Minimise disturbance to native fauna Minimise disturbance to native vegetation Minimise the impact on human health	Blade work is banned on naturally smooth surfaces or flat easy terrain. Minimal blade work is permitted elsewhere for access	Compliant	Daily checklist confirms all clearing was in accordance with Environmental Performance Standards.
2		Where possible, existing tracks, roads or seismic lines will be used for access.	Compliant	Figure 3 shows use of existing seismic lines and landholder tracks for access. These were the only tracks used during the reporting period.
3		No driving off designated access roads	Compliant	Details regarding designated access tracks included in on-site inductions and daily toolbox meetings. Land Access Field Supervisors and EHS coaches on site to ensure compliance. Daily checklist shows no exceptions for driving off designated access tracks. The Incident Management System (IMS) shows no reports for driving off designated access tracks.
4		Speeds on unsealed roads will be limited – maximum 60 km/hr for light vehicles, 40 km/hr for trucks and heavy vehicles.	Compliant	Clear signage was in place. Daily checklist confirms speeds on unsealed roads limited. The Incident Management System (IMS) shows no reports relating to speed.
5		Water trucks will be used for dust suppression as required.	Compliant	Daily checklist confirms road watering used for dust suppression as required. Daily record of rig support and civils support package demonstrates the presence and use of water trucks throughout activities.
6		Minimise emissions to air	All vehicles, plant and the drill rig will be in good working order. Engines and machinery are maintained in accordance with the maintenance schedule	Compliant

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
				Acceptance sign-off confirms Rig in acceptable condition prior to start of contract. Transport vehicles hired from reputable vehicle hire company.
7		All boundary lighting will be positioned to face inwards to provide adequate lighting for safe operations, without excessive overspill.	Compliant	Daily checklist shows inspection of lighting to ensure adequate lighting for safe operations, without excessive overspill.
8	Minimise disturbance to native fauna Minimise disturbance to livestock, pastoral infrastructure and landholders	Ensure site environmental inductions for all site personnel and contractors include the issue of noise, vibration and light and protective measures to prevent disturbance.	Not Applicable	Well lease located sufficient distance from settlements that light, vibration and noise from activity not an issue (28km NE of Mt Ebenezer Homestead, 36km NE of Imanpa Community and 34km NW of Erldunda Roadhouse). Noise, vibration and light disturbance contained to well pad. Rig noise map shows highest noise focused around generators, mud pumps and mud tanks near centre of well pad. Potential disturbance along access track managed with sign-posted speed limits (10km speed limit within 1km radius of stock yard) and livestock advisory signs.
9		Lighting used on drill site to minimise offsite disturbance, while maintaining safety standards.	Compliant	Daily checklist shows inspection of lighting to ensure adequate lighting for safe operations, without excessive overspill.
10	Minimise disturbance to native fauna	Existing noise attenuation devices fitted to drill rig and other machinery used on site will be maintained in good working order.	Compliant	Daily checklist shows noise attenuation devices fitted to drill rig and other machinery and maintained in good working order.
11	Minimise disturbance to landholders Minimise disturbance to livestock	Engines and machinery are maintained in accordance with the maintenance schedule.	Compliant	Daily checklist confirms all vehicles, plant and drill rig in good working order. Audits and verifications for contractor equipment show equipment well maintained and within specifications for operation. Start-up verification for all equipment includes certification and maintenance check signed off by Santos EHS Advisor. Prespud Checklist and Rig Acceptance sign-off confirms Rig in acceptable condition

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
				prior to start of contract. Transport vehicles hired from reputable vehicle hire company.
12	Minimise disturbance to landholders	Maintain communications during operations with relevant landholders.	Compliant	Daily checklist confirms communications maintained with landholders, with Land Access Field Supervisor on site during activities. Land access records show that communication with the landholders was maintained.
13	Minimise loss of vegetation	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 all site personnel were given inductions. The induction package included material covering relevant cultural heritage, pastoral, conservation, legislation and infrastructure issues.
14	Minimise disturbance to native fauna and loss of habitat Minimise damage to soil through compaction and exposure	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 3 shows the use of existing seismic and landholder tracks for access. These were the only access tracks used during the reporting period.
15	Minimise disturbance or damage to culturally sensitive site	Staying within designated work areas and on approved roads.	Compliant	Daily checklist confirms that only approved access roads were used. Figure 3 shows the use of existing seismic and landholder tracks for access. These were the only access tracks used during the reporting period.
16		Preference to use previously disturbed areas. Where possible, existing tracks, roads or seismic lines will be used for access.	Compliant	Figure 3 shows the use of existing seismic and landholder tracks for access. These were the only access tracks used during the reporting period.
17	Minimise loss of vegetation	Mature trees selected for preservation are to be flagged to ensure their protection	Compliant	Scouting report identified mature trees and preferentially located infrastructure to avoid mature trees. Mature tree in the centre of the lease pad retained. Daily EMP Checklist confirms all clearing was in accordance with Environmental Performance Standards.

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
18		Cleared vegetation will be respread during rehabilitation	Compliant	Dukas 1ST1 did not reach the primary reservoir target and was plugged and suspended for future re-entry and deepening. As a result, the well lease, camp, laydown areas and access track have not yet been restored. Borrow pits have been restored and cleared vegetation respread as demonstrated by relevant Photopoints.
19		Branches will be pruned in preference to total tree removal	Compliant	Well site infrastructure have been placed in an area that minimises disturbance to mature Desert Oaks (2018, EcOz). Mature tree in the centre of the lease pad retained. Access tracks utilised existing disturbances where incidental trimming of mature trees occurred.
20	Minimise disturbance to native fauna and loss of habitat	Hollow timber/trees that may be nesting/roosting sites for fauna will not be cleared.	Not Applicable	There were no hollow timber/trees that may be nesting/roosting sites for fauna detected during pre-activity ecology survey (2018, EcOz)
21		Grading will be minimised where possible. If light grading is necessary, flora rootstock will be left intact to promote regeneration.	Compliant	Fit for purpose access track built to Santos Class C specification as detailed in the approved EMP. Road constructed to sufficient width to enable safe ingress/egress of rig and equipment. Wellsite pad sited to minimise vegetation clearing and cut and fill required.
22	Minimise damage to soil through compaction and exposure	The Erosion and Sediment Control Plan developed by a Certified Professional in Erosion and Sediment Control (CPESC) plan will be implemented.	Compliant	An Erosion and Sediment Control Plan was developed by Tim Elder a Certified Professional in Erosion and Sediment Control (CPESC). That plan was implemented.
23		Inversion of the soil profile will be minimised where possible	Compliant	Excavation was required for borrow pits, water bore ponds, the cuttings pit, flare pit, and the VSP pit, as described in the approved EMP. Removed topsoil, vegetation and seed stock was stockpiled separately at excavation sites. The stockpiled material has been respread at the restored borrow pit sites. The stockpiled material at other sites will be appropriately respread during future restoration works (post well re-entry).

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
24	No disturbance or damage to culturally sensitive site	Disturbance is restricted to areas which have CLC clearance	Compliant	Activities were only conducted within the project area in Figure 3. GIS database shows that the project area in Figure 3 is wholly within areas that have CLC clearances.
25		Ensure a sacred site clearance certification will be obtained prior to any activity.	Compliant	Sacred site clearance certificate 2018-144 was received from the CLC 12 December 2018, prior to any activity.
26		Known sites of sacred or cultural significance are identified and avoided.	Compliant	GIS databases show sacred and culturally significant sites identified by the CLC. The project footprint was planned to avoid these sites (Figure 3). Project personnel inductions included a requirement to stay within the designated project area.
27		Any new sites identified during the activity will be reported to the Santos Cultural Heritage Team and avoided.	Not Applicable	No new sites were identified during the activity.
28		Maintain GIS database of project footprint and cultural heritage sites including details of any Restricted Work Areas.	Compliant	GIS database that includes project area and cultural heritage sites was maintained during the reporting period. Current data for areas cleared under CLC Sacred Site Clearance Certificate No. 2018-144 was updated 5 February 2019.
29	No groundwater extraction impacting existing groundwater users/environment	Groundwater impact risk assessment for the proposed extraction rates and durations will be undertaken and will determine if monitoring is required	Compliant	Four new waterbores were drilled to support the project, and one landholder water bore was used at the beginning of the project. Water take from the landholder bore and new bore within 500m was limited to 17% of total water used. Water bore flow rates, water take and SWL were monitored. 80% of water take was from two new bores between 3 and 10.4km from the landholder water bore that geological studies indicated were drawing on different water zones. No additional monitoring is required.
30		Ensure groundwater take is limited to the small volumes required by the project.	Compliant	The groundwater extraction volumes were documented and recorded during the reporting period and were limited to the

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
				volumes in the EMP. Total volume has been provided to DPIR via email on Friday 20 December 2019.
31		Ensure appropriate licences are obtained prior to drilling program and that planned extraction is sustainable.	Compliant	On 20 February 2019, a phone call with DENR Water Resources hydrogeologist confirmed that as the project is not located within a Water Control District, and will not extract more than 15 L/s, no licence is required for groundwater extraction. Volumes sustainable.
32		If local water resources are used, bore numbers and estimated extraction volumes will be provided to DPIR.	Compliant	The groundwater extraction volumes were documented and recorded during the reporting period and were limited to the volumes in the EMP. Total volume has been provided to DPIR via email on Friday 20 December 2019.
33		Drivers will be appropriately qualified and will be trained in emergency response	Compliant	4WD and emergency response training recorded in contractor training matrices. Training and personnel emergency response plan sign off checked and signed off by Santos EHS Advisor as part of start-up verification for all contractors.
34	Minimise disturbance to surface water Minimise disturbance to groundwater Minimise reduction in soil quality	Vehicles will have appropriate spill kits and staff trained in emergency response	Compliant	Daily checklist shows that vehicles and mobile plant had appropriate spill kits and staff trained in emergency response. Emergency response training recorded in contractor training matrices. Training and personnel emergency response plan sign off checked and signed off by Santos EHS Advisor as part of start-up verification for all contractors.
35		Travel Management Procedures are in place	Compliant	Daily checklist shows that Travel Management Procedures were in place as per section 18.9 of NT Safety Management Plan (SMP).
36		Well bore integrity assessed prior to commencing drilling test.	Compliant	Casing, well control, and formation pressure testing was completed to verify well operating envelope. Pressure tests results were reported to DPIR in Daily Drilling Reports (DDRs).

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
37		Blow-out preventer in well	Compliant	As-built specifications of well provides details of the Blow-out preventer.
38		Cement bond logging completed	Not Applicable	No cement bond logs were required. Cement returns to surface confirmed casing strings cemented to surface. Cement volumes confirmed in DDRs and cementing reports. Well Barrier Integrity Validation (WBIV) documents describing well barriers in place accepted by DPIR 22/08/19 and rig release approved.
39		Well control procedures are in place including The Santos Drilling And Completions Technical Standards 7 - Well Control Onshore	Compliant	Relevant personnel trained and certified - Well Control Ticket (IADC/IWCF Level 3/4). Well Control certification checked and signed off by Santos EHS Advisor as part of start-up verification for drilling contractor. Well control drills carried out as reported in DDRs. Regular Blow Out Preventer (BOP) tests conducted as per procedures described in drilling program and reported in DDRs. Critical acceptance criteria were documented and signed off in Well View.
40		Well design and weighted mud system in place and are known.	Compliant	Daily mud reports / mud logging and Well Barrier Integrity Validation documents show well design and mud system in place and known.
41		Real time monitoring of conditions during drilling including drilling monitoring & gas detection monitoring	Compliant	Daily drilling reports, daily geological reports, Halliburton real time system, mud log data and Pason real time system show monitoring.
42		Riser & diverter will be used to prevent mud spills	Compliant	Drilling program documents show the presence of riser and diverter. Daily drilling reports confirm installation.
43		Pre-spud checks / Pre-job checks when transferring mud	Compliant	Pre-spud checklist confirms checks have occurred. Pre-Job Safety Meeting conducted for any rig operation. These are detailed in the daily drilling reports.

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
44		Appropriate bunding in use for storage of chemicals and where required adherence to standards (e.g. Storage and Handling of Workplace Dangerous Goods National Standard [NOHSC:1015(2001)])	Compliant	Daily checklist shows appropriate bunding was in place.
45		Real time monitoring of conditions during drilling.	Compliant	Daily drilling reports, daily geological reports, Halliburton real time system, mud log data and Pason real time system show monitoring.
46		Drilling Muds will be mixed in tanks.	Compliant	Activities captured in daily drilling fluid reports. Mud tanks on site.
47		Spill kits available to treat spills in-situ	Compliant	Daily checklist shows spill kits available to treat spills in-situ.
48		Minimise fuel transfer where possible.	Compliant	Daily checklist shows fuel transfers were minimised where possible. Weekly audit of fuel transfers were conducted.
49		Use of drip trays for transfers.	Compliant	Daily checklist shows use of drip trays for transfers.
50		Any spills contained and remediated.	Compliant	Daily checklist shows all spills contained and remediated. All spills recorded in IMS and remediated appropriately
51		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.	Compliant	Email and telephone conversations on the 10/04/2019 show that the landholder was notified and satisfied with remediation efforts.
52		Fuel and other lubricants will be appropriately stored and managed, in accordance with AS1940.	Compliant	Daily checklist confirms fuel and other lubricants stored and managed in accordance with Environmental Performance Standards
53	Unplanned interaction with or disturbance to other land users	Relevant landowners and occupiers are notified prior to civil and drilling activities.	Compliant	Landholder engagement records indicate the Notice of Entry requirements were fulfilled before works commenced: <ul style="list-style-type: none"> Occupier of land – NOE 25 February 2019, via email; 7 day NOE period waived.

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
				<ul style="list-style-type: none"> Owner of land – NOE 25 February 2019, via email; 7 day NOE period waived.
54		Inductions for all employees and contractors cover pastoral, conservation, legislation and infrastructure issues.	Compliant	Induction records show all staff were inducted. Induction material provided covered relevant pastoral, conservation, legislation and infrastructure issues.
55		All litter is to be managed and disposed of correctly.	Compliant	Daily checklist shows all litter managed and disposed of correctly. No records of non-compliance in IMS. Waste management contractor receipts show compliance.
56		System is in place for logging landholder complaints to ensure that issues are addressed as appropriate.	Compliant	Daily checklist shows system in place. Land Access Field Supervisor on site during activities. Landholder engagement records demonstrate that complaints were logged and addressed.
57		Damage to station tracks is avoided and reported if does occur.	Compliant	Daily checklist shows damage to station tracks avoided. No records regarding station tracks were logged in IMS.
58		All gates are left in the condition in which they were found	Compliant	Daily checklist shows all gates left in condition in which they were found. No records regarding gates were logged in IMS.
59		Speeds on unsealed roads will be limited – maximum 60 km/hr for light vehicles, 40 km/hr for trucks and heavy vehicles and 20 km/hr around stock yards	Compliant	Clear signage was in place. Daily checklist confirms speeds on unsealed roads limited. The IMS shows no reports relating to speed.
60		When necessary, all fences are restored to satisfaction of landowner / managers.	Compliant	New fences and cattle grids were constructed to the satisfaction of the landholder. Landholder confirmed satisfaction with access road and permanent fences during on ground inspection with Land Access Field Supervisor on 15 December 2019. Temporary fencing around sump reinforced with steel droppers following site visit.
61	Minimise disturbance to native fauna	No driving off designated access roads	Compliant	Details regarding designated access tracks included in on-site inductions and daily toolbox meetings. Land Access Field Supervisors and EHS coaches on site to ensure

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
	Minimise disturbance to livestock, pastoral infrastructure and landholders			compliance. Daily checklist shows no exceptions for driving off designated access tracks. IMS shows no reports for driving off designated access tracks.
62		Speeds on unsealed roads will be limited – maximum 60 km/hr for light vehicles, 40 km/hr for trucks and heavy vehicles and 20 km/hr around stockyards.	Compliant	Clear signage was in place. Daily checklist confirms limited speeds on unsealed roads. The IMS shows no reports relating to speed.
63	Minimise disturbance to native fauna	Pits and water bore ponds will be fenced	Compliant	Daily checklist and site photos demonstrate that the pit and water bore ponds were fenced.
64		Routine checks of pits during construction and throughout the drilling program	Compliant	Daily checklist ensured pits were checked.
65	Minimise disturbance to livestock, pastoral infrastructure and landholders	Relevant landowners and occupiers are notified prior to civil and drilling activities.	Compliant	Landholder engagement records indicate the Notice of Entry requirements were fulfilled before works commenced.
66		All gates are left in the condition in which they were found	Compliant	Daily checklist shows all gates left in condition in which they were found. No records regarding gates were logged in IMS.
67		When necessary, all fences are restored to satisfaction of landowner / managers.	Compliant	New fences and cattle grids were constructed to the satisfaction of the landholder. Landholder confirmed satisfaction with access road and permanent fences during on ground inspection with Land Access Field Supervisor on 15 December 2019. Temporary fencing around sump reinforced with steel droppers following site visit.
68	Minimise disturbance to native fauna Minimise disturbance to native flora Minimise disturbance to livestock	Well site fire management protocol will be in place with monitoring	Compliant	Bushfire Procedure Activity Checklist and Evacuation Procedure Activity Checklist included in Emergency and Well Control Response Plan. Fire awareness and emergency response training recorded in contractor training matrices. Training and personnel emergency response plan sign off checked and signed off by Santos EHS Advisor as part of start-up verification for all contractors.

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
69	Minimise disturbance to landowners	Fire-fighting equipment and competent fire-fighting personnel will be used	Compliant	Fire awareness and emergency response training recorded in contractor training matrices. Training and personnel emergency response plan sign off checked and signed off by Santos EHS Advisor as part of start-up verification for all contractors. Fire extinguisher register, including inspections and due dates, checked and signed off by Santos EHS Advisor as part of start-up verification for all contractors. Daily checklist shows fire-fighting equipment in place and competent fire-fighting personnel present.
70		Include fire season education as part of the induction.	Compliant	Fire awareness and emergency response training recorded in contractor training matrices. Training and personnel emergency response plan sign off checked and signed off by Santos EHS Advisor as part of start-up verification for all contractors.
71		Appropriate fire prevention procedures in place.	Compliant	Fire awareness training recorded in contractor training matrices, checked and signed off by Santos EHS Advisor as part of start-up verification for all contractors. Fire extinguisher register, including inspections and due dates, checked and signed off by Santos EHS Advisor as part of start-up verification for all contractors. Daily checklist confirms all firefighting equipment and procedures were in place.
72		Appropriate firefighting gear available to the crew.	Compliant	Emergency equipment, including fire extinguishers, smoke alarms and self-contained breathing apparatus (SCBA) located around rig site as per contractor safety equipment layout. Emergency equipment checked and signed off by Santos EHS Advisor as part of start-up verification for all contractors. Daily checklist confirms appropriate firefighting equipment available for the crew.
73		All vehicles will be equipped with portable fire extinguishers.	Compliant	Fire extinguisher register for vehicles and mobile plant, checked and signed off by Santos EHS Advisor as part of

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
				start-up verification for all contractors. Daily checklist confirms all vehicles equipped with portable fire extinguishers.
74		Machinery and vehicles should be parked in areas of low fire risk and be low fire risk and be free of any combustible material	Compliant	Designated parking areas were located within low fire risk areas and were free of any combustible material. No records for machinery or vehicles parked outside low fire risk areas were logged in IMS.
75		Any petrol motor vehicles or petrol-powered pumps will be fitted with spark arresters.	Compliant	Daily checklist confirms no petrol motors on site.
76		All vehicles will be equipped with operational VHF and / or UHF radio transceivers.	Compliant	Daily checklist shows that all vehicles were equipped with operational VHF and / or UHF.
77		Smoking will only be permitted in areas clear of vegetation, and there will be no disposal of butts.	Compliant	At site inductions included information on designated smoking areas. No records regarding smoking outside permitted areas were logged in IMS.
78		<p>All personnel will receive information prior to the commencement of the activity relating to:</p> <ul style="list-style-type: none"> • Provisions of the Emergency Response Plan including procedures during a fire emergency • The operation of firefighting equipment and communications • Restricted smoking requirements 	Compliant	Fire awareness and emergency response training recorded in contractor training matrices. Training and personnel emergency response plan sign off checked and signed off by Santos EHS Advisor as part of start-up verification for all contractors. At site EHS inductions provided and recorded by Rig Manager/HSE Supervisor and reported in Daily HSE reports.
79		<p>Toolbox meetings will be conducted to:</p> <ul style="list-style-type: none"> • Alert the workforce of the fire risk level for the day • Discuss any fire risk management breaches and remedial actions 	Compliant	Daily drilling report, daily civils report, daily prestart meeting records, daily HSE reports and daily checklist (item 41) confirm toolbox meetings conducted as required. No fire risk management breaches were logged in IMS so no fire risk management breaches discussed in toolbox meetings.

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
80		The flare pit will be monitored during flaring	Not applicable	No flaring was undertaken.
81	Minimise disturbance to native fauna Minimise disturbance to native flora Minimise negative impacts to soil quality Minimise disturbance to livestock	Weed wash-down certification for vehicle and machinery from interstate.	Compliant	Weed Management Plan included washdown certification. Weed washdown certification was completed for vehicles / equipment / machinery.
82		Ensure site environmental inductions for all site personnel and contractors include vehicle weed hygiene requirements and information on exotic invasive ants.	Compliant	Vehicle weed hygiene requirements communicated to all Santos personnel and contractors. Weed hygiene declarations were completed for vehicles / equipment / machinery prior to entering the project area.
83		All vehicle and equipment movements to stay on formed access tracks, well leases and camp areas.	Compliant	Details regarding designated access tracks included in on-site inductions and daily toolbox meetings. Land Access Field Supervisors and EHS coaches on site to ensure compliance. Daily checklist shows no exceptions for driving off designated access tracks. IMS shows no reports for driving off designated access tracks.
84		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	Weed Management Plan included washdown certification. Weed hygiene declarations were completed for vehicles / equipment / machinery prior to entering the project area.
85		A baseline weed assessment has been completed prior the commencement of works covered in this EMP. This baseline assessment will be used to provide benchmarks for post-project monitoring.	Compliant	Baseline Weed Assessment was included in the Weed Management Plan. This documentation was delivered to DENR on the 18 December 2018. The Weed Management Plan was approved 20 December 2018.
86		To minimise spread of buffel grass from the south to the north of the project area, road works will be completed in the northern areas first and transporting soil material from the south to the north will be minimised.	Compliant	Recommendations in the Weed Management Plan were implemented. Where possible, road works were conducted with preference given to doing works in the northern project area as a priority.

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
87		Baseline data will be collected in consultation with the Department of Environment and Natural Resources (DENR) and data will be provided to DENR in a format to be specified by them.	Compliant	Baseline Weed Assessment was included in the Weed Management Plan. This documentation was delivered to DENR on the 18 December 2018. The Weed Management Plan was approved 20 December 2018.
88		Areas of priority weeds identified will be marked.	Not Applicable	No priority weeds were identified in the baseline weed assessment.
89		If infestations of priority weed species are identified during baseline assessment they will be avoided via a detour around the infestation if within line tolerance.	Not Applicable	No priority weeds were identified in the baseline weed assessment.
90		If infestations are unavoidable, infestations will be crossed at the narrowest point and wash downs will be conducted once exiting the infestation.	Not Applicable	The DENR approved Baseline Weed Assessment report identifies no priority weeds.
91		To minimise pest fauna interactions, municipal wastes and putrescible food wastes will be stored in sealed containers that limit access from Rock Doves and Sparrows	Compliant	Daily checklist indicates that all putrescible food wastes were stored sealed containers
92		All water storages will be fenced to exclude large herbivorous fauna (Camels and Donkeys)	Compliant	Daily checklist shows that all water storages were fenced.
93	<p>Minimise disturbance to surface water</p> <p>Minimise reduction in soil quality</p>	Pits will have sufficient storage capacity to ensure there is an adequate freeboard, ensuring the highest recorded monthly rainfall can be accommodated.	Partially Compliant	<p>Sump (pit) fluid height was temporarily above the minimum freeboard threshold specified within the EMP. Due to the extensive cleaning out of barites from the mud tanks and the inflow of drilling fluids the fluid height temporarily passed the minimum freeboard requirement of 357mm.</p> <p>There was no spill or overtopping of the sump and at no stage was the freeboard less than 300mm. This was reported in the recordable Incidents Summary Report covering the period 15 August 2019 to 13 November 2019.</p>

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
94	Minimise disturbance to groundwater	Sump and flare pit levels will be monitored for overflow during and after high rainfall at all times while drilling	Not Applicable	There were no high rainfall events during activity.
95		Soil sampling will include a baseline sample to drilling, sampling sump fluid post drill and sampling cuttings when dried out	Compliant	Chain of custody documentation for the lab shows that the soil samples were collected on the 14 March 2019. Samples acquired, analysed and documented
96		Cuttings burial or removal subject to sampling results	Not applicable	Dukas 1ST1 did not reach the primary reservoir target and was plugged and suspended for future re-entry and deepening. As a result the lined cuttings pit remains in place for future activity. The cuttings pit has been fenced off with temporary fencing with a second fence barrier around the well lease to prevent animal ingress. Liquid in the cuttings pit is expected to entirely evaporate and the cuttings to dry out. Laboratory certificates of analysis show that cuttings sampling occurred on 3 October 2019. Additional analysis is required prior to cuttings disposal. Cuttings disposal will be completed either prior to or following future activity at the project site.
97		Cuttings pit will be constructed with a liner	Compliant	Daily checklist confirms pit was constructed with liner. Site photos and lease diagram show HDPE liner in cutting pits.
98		Cuttings pit will be inspected to check the integrity of the liner	Compliant	Daily checklist item 53 shows the cuttings pit was inspected, including the integrity of the liner.
99		Cuttings pit liner will be removed at the completion of project activities during demobilisation and rehabilitation activities prior to being backfilled.	Not Applicable	Dukas 1ST1 did not reach the primary reservoir target and was plugged and suspended for future re-entry and deepening. As a result the lined cuttings pit remains in place for future activity. The cuttings pit has been fenced off with temporary fencing with a second fence barrier around the well lease to prevent animal ingress. Liquid in the cuttings pit is expected to entirely evaporate.

No	Environmental Outcome	Environmental Performance Standard	Compliance Status	Evidence
100		Groundwater monitoring will be undertaken to ensure leaching is not occurring.	Compliant	The Groundwater monitoring program commenced May 2018 with additional samples collected in March 2019 and October 2019. Groundwater monitoring program is ongoing. The next sample is scheduled to be taken one month prior to activities recommencing.
101	Minimise disturbance to native fauna	Waste will be segregated on site and all putrescible waste material will be held in fauna proof containers.	Compliant	Daily checklist indicates that all putrescible food wastes were stored in sealed containers

Table 4 demonstrates Santos compliance with reporting requirements in the Code of Practice: Onshore Petroleum Activities in the Northern Territory (Code of Practice) and interest holder's compliance with reporting requirements under the Petroleum (Environment) Regulations 2016 (NT) schedule 1, item 11(2), which requires all information required to be recorded, monitored or reported has been provided. Where relevant, Santos has also confirmed that all records, monitoring or required reporting under the Petroleum (Environment) Regulations 2016 (NT)¹ has been provided to DENR or the relevant NTG agency.

Table 4 Compliance with Mandatory Reporting Requirements

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	Not Applicable	Not applicable, approved prior to Code being incorporated into Regulations

¹ Petroleum (Environment) Regulations 2016 (NT) sch 1, item 11(2).

No	Reference	Requirement	Compliance Status	Evidence
		fire mapping to monitor changes to fire frequency in the relevant areas.		
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
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	Not Applicable	Not applicable, approved prior to Code being incorporated into Regulations

No	Reference	Requirement	Compliance Status	Evidence
		an updated well barrier integrity validation (WBIV) report to DPIR.		
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 interaction with wildlife, stock and human receptors with wastewater.	Not Applicable	Not applicable, approved prior to Code being incorporated into Regulations
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	Not Applicable	Not applicable, approved prior to Code being incorporated into Regulations

No	Reference	Requirement	Compliance Status	Evidence
		investigation (including remedial actions) must be submitted within one month of the significantly higher-level methane event being detected.		
14	Code cl D.5.9.2(c)	Emissions from exploration, well construction (including during flowback) 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 met, and the Minister advises the interest holder	Compliant	The EMP remains in force.

No	Reference	Requirement	Compliance Status	Evidence
		the notice is accepted and the plan ceases to be in force.		
20	EMP s 9.4 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 and this engagement continues: <ul style="list-style-type: none"> Land Access Field Supervisor on site during activities. Land access records show that communication with the landholders was maintained and is ongoing. Regular progress updates provided to the Central Land Council via phone and email during activities. Site visit by the CLC and traditional owners 2 May 2019. Included one hour Welcome to Country meeting attended by all on site personnel.
21	EMP s 7.6 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 s 7.6 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/cleanup of the affected area.	Not Applicable	There were no reportable incidents during this period.
23	EMP s 7.6 Reporting Reg 35	A written report of all recordable incidents must be provided to DENR not later than	Compliant	Reports on all recordable incidents was provided: <ul style="list-style-type: none"> 1st report provided 31/05/2019, met timeframes 2nd report provided 28/08/2019, met timeframe

No	Reference	Requirement	Compliance Status	Evidence
		15 days after the 90 day reporting period (unless otherwise agreed).		<ul style="list-style-type: none"> • 3rd report provided 21/11/2019, met timeframes. • 4th report provided 26/02/2020, met timeframes
24	Reg 37A	A report about flowback fluid from hydraulic fracturing must be provided to the Minister within 6 months of the flowback occurring.	Not Applicable	The regulated activity did not include hydraulic fracturing.
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 before commencement of activity.	Compliant	<p>Civil Works: The regulated activity commenced on 26 February 2019.</p> <p>The following persons were notified on:</p> <ul style="list-style-type: none"> • Minister: <ul style="list-style-type: none"> ○ EMP approved 15 February 2019 ○ DPIR notification that civil works can commence, subject to execution of Land Access Agreement – received by email 15 February 2019 ○ Fully executed LAA dated 25 February 2019 • Occupier of land – NOE 25 February 2019, via email; 7 day NOE period waived. • Owner of land – NOE 25 February 2019, via email; 7 day NOE period waived. <p>Drilling: The regulated activity commenced on 16 April 2019</p> <ul style="list-style-type: none"> • Minister - Drilling program approved 14 March 2019 • Occupier of land – NOE 26 March 2019, via email

No	Reference	Requirement	Compliance Status	Evidence
				<ul style="list-style-type: none"> Owner of land – NOE 26 March 2019, via email
29	EMP Section 7.2	EMP Performance Report to be provided to DPIR within three months of completion of the activity and full de-mobilisation of Plant and Equipment.	Not Applicable	Activities on site are yet to be completed. The well is currently plugged and suspended for possible future re-entry and deepening.

3.0 Summary of Compliance

3.1 Overview of Compliance

Table 5 provides a summary of the results of the compliance assessment against the 130 total compliance items.

Table 5: Compliance Summary

Compliance Indicator	Number	Percentage
Compliant	94	72.9
Partially Compliant	1	0.8
Not Compliant	0	0
Not Applicable	34	26.3

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.

3.3 Environmental Performance Standards

3.3.1.1 Description

Sump (pit) fluid height temporarily above the minimum freeboard threshold specified within the EMP. Due to the extensive cleaning out of barites from the mud tanks and the inflow of drilling fluids the fluid height passed the minimum freeboard requirement of 357mm.

3.3.1.2 Analysis of Potential Environmental Harm or Impact

There was no spill or overtopping of the sump and at no stage was the freeboard less than 300mm. The temporary level above the threshold occurred in the dry season and corrective actions were immediately implemented. The potential for harm was minimal.

3.3.1.3 Corrective Actions

A pump was immediately used to lower the height of the fluid in the pit. Future works within the basin will consider the additional storage capacity required at this site.

3.4 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 to allow us to easily locate documents that provide evidence of compliance.