SSD-6038

Annual Review

2019

Santos

Dewhurst Gas Exploration Pilot Expansion

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1. Introduction

This report is an amendment of the original SSD-6038 Annual Review submitted to NSW DPIE 30 March 2020. A Request For Information (RFI) was sent to Santos by DPIE enquiring why section 4.2 reported that there were no reportable incidents or exceedences during 2019 when Table 8 incorrectly stated otherwise. Table 8 has been amended to correctly state that all conditions of the Water Management Act 2000 were complied with during the reporting period.

This report addresses the requirements of Condition 4 of Schedule 5 of SSD-6038 – the Dewhurst Gas Exploration Pilot Expansion (the approval).

The Bibblewindi Gas Exploration Pilot Expansion (SSD-5934) was granted on the same day as SSD-6038. No works have been undertaken to commence the Bibblewindi development. As such, the requirement to provide an Annual Review for the Bibblewindi Gas Exploration Pilot Expansion has not been triggered.

The report's format mirrors the sections of the approval, but also includes relevant information from the Annual Review Guideline *Post Approval Requirements for State Significant Mining Developments October 2015.*

Name of Operation	Dewhurst Gas Exploration Pilot Expansion
Name of Operator	Santos NSW (Eastern) Pty Ltd
Development consent / project approval#	SSD-6038
Name of holder of development consent	Santos NSW (Eastern) Pty Ltd
Petroleum Exploration Licence #	PEL238
Name of holder of Petroleum Exploration Licence	Santos NSW Pty Ltd (ACN 094 269 780) and Energy Australia Narrabri Gas Pty Ltd (ACN 147 609 729)
Water licence #	90AL832238
Name of holder of water licence	Santos NSW (Eastern) Pty Ltd
Annual Review start date	1 January 2019
Annual Review end date	31 December 2019
I, Brendon Child, certify that this annual report is a true and accurate record of the compliance status of the Dewhurst Gas Exploration Pilot Expansion for the period 1 January 2019 to 31 December 2019 and that I am authorised to make this statement on behalf of Santos NSW (Eastern) Pty Ltd.	
Name and Title of authorised reporting officer	[redacted]
Signature and date	[redacted]

2. Description of Development

This section addresses the following requirements:

SSD approval: Schedule 5 Condition 4 (a): *describe the development (including any rehabilitation) that was carried out in the past calendar year and the development that is proposed to be carried over the coming year.*

Guidelines: Provides information sought under Sections 2 & 4 of the Guidelines

Contact details for key personnel responsible for environmental management of the operation: [redacted]

A Development Consent (DC) was issued by the Planning Assessment Commission on 18 July 2014 for the Dewhurst 13-18H Extension and the Dewhurst 30 and 31 Extension.

The development includes the operation of the Dewhurst 13-18H Pilot and the Dewhurst 26-29 Pilot, including the Dewhurst 13-18H Extension and Dewhurst 30 and 31 Extension. This approval was amended in July 2017 to extend the period of operation of the Dewhurst 26-29 wells.

The Dewhurst 13-18H Extension involves the drilling and operation of an additional two horizontal wells at each of Dewhurst 16H, Dewhurst 17H and Dewhurst 18H pilot wells.

The Dewhurst 30 and 31 Extension involves the drilling and operation of two additional wells at the development, namely Dewhurst 30 and Dewhurst 31.

2.1 Dewhurst 13-18H Pilot

The Dewhurst 13-18 Pilot did not operate during the reporting period. The status of all wells is 'suspended'. The drilling of the additional two horizontal wells at each of the Dewhurst 16H, 17H and Dewhurst 18H has not occurred.

There was no land disturbance at any of the sites in the Pilot during 2019. No water was extracted from any of the wells.

The only activities at the Pilot was surveillance by Santos operator/maintainers undertaking their routine surveillance on the wells and Santos environmental staff taking water samples from the shallow aquifer monitoring bores at Dewhurst 14, and their routine inspections.

2.2 Dewhurst 26-31 Pilot

The Dewhurst 26-29 Pilot wells were drilled in 2014, prior to the granting of SSD-6038.

The drilling of the additional two wells in the Pilot (Dewhurst 30 &31) has not yet been undertaken. The leases were cleared and prepared in 2014 as reported in the 2014 and subsequent Annual Reviews.

Partial rehabilitation of each of the sites was undertaken by spreading stockpiled topsoil and mulch over the bare earth prior to the well sites being commissioned.

The Dewhurst 26-29 Pilot (the Pilot) consists of two vertical wells at Dewhurst 26 and Dewhurst 28. Three horizontal wells originating each at Dewhurst 27 and Dewhurst 29, and drilled into three separate coal seams to intersect with the Dewhurst 26 and Dewhurst 28 wells respectively. In the reporting year, all

gas produced in the Pilot was piped to Dewhurst Southern flowline. This gas was primarily used to generate electricity at the Wilga Park Power Station. The remainder was flared. All water produced in the Pilot is piped to a fully bunded balance tank at Dewhurst 28 before being pumped via the approved Southern flowline to a 5ML tank at Bibblewindi where it is mixed with water from other Pilots. From there the water is transferred via an underground flowline to the Leewood Water Management facility for storage prior to treatment. There is no release to waters from this facility, or from any section of the pipeline between the Dewhurst South Pilot and Leewood.

The Dewhurst 26-29 Pilot began operating for the first time on 19 January 2015, following completion of interference testing.

In 2018, gas gathering infrastructure was extended to connect to an existing flowline, transporting gas to the Wilga Park Power Station. Construction works involved identifying existing infrastructure and trenching in a new section of gas pipeline. This work was outside of the scope of the approval to SSD 6038, and was approved by a modification to the Review of Environmental Factors for the Dewhurst Southern Flowline. Those works took place in November/ December 2018. These activities have reduced the need to flare gas from the Pilot.

For the reporting year, the Pilot operated continuously without workovers, except for when the pilot was shut in for a Total Power Outage (TPO) from 2 December 2019 to 8 December 2019, to coincide with works being conducted at the Wilga Park Power Station (WPPS) and Bibblewindi Compressor facilities. The Pilot was shut in throughout other minor periods of the year for general maintenance.

Figure 1 Aerial photograph of Dewhurst 26-31 Pilot

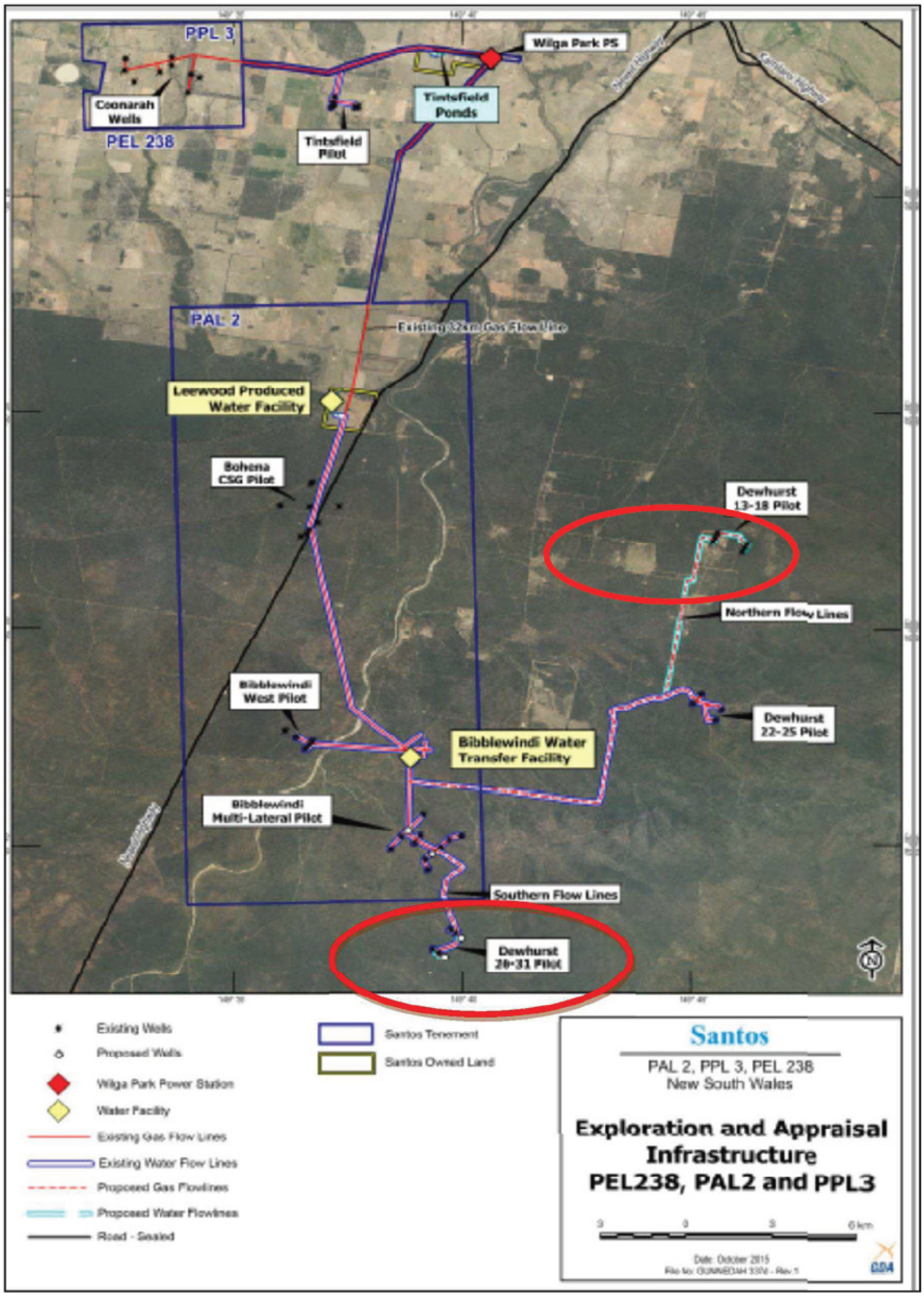

Figure 2 Santos Infrastructure Narrabri Gas Field

3. Review of Monitoring Results and Complaints

This section addresses the following requirements:

SSD approval: Schedule 5 Condition 4 (b)

I. *Include a comprehensive review of monitoring results and complaints records of the development over the past calendar year, which includes a comparison of these results against the: relevant statutory requirements, limits, or performance measures/ criteria*

II. *requirements of any plan or program required under this consent*

III. *monitoring results of previous years and*

IV. *relevant predictions in the EIS*

Guideline: Section 6 Environmental performance, Section 7 Water Management, and Section 8 Rehabilitation

3.1 Noise

The conditions of the SSD approval, PEL 238 and of EPL 20350 set noise limits at any residence or sensitive receiver of 35dB (A) for operational noise. The nearest sensitive receiver is over 10 km away from the site.

The approved Project Environmental Management Plan (PEMP) lists attended monitoring to be undertaken at sensitive receivers in instances of noise complaints. Since no noise complaints have been received, no monitoring at any sensitive receiver has been required.

Santos operator/maintainers carry out regular routine inspections of sites as part of their normal duties. Environmental advisers undertake inspections of the sites to determine if any additional noise mitigation measures are required. These formal inspections are scheduled in the compliance database ComTrack for 6 monthly compliance checks. Additionally, environmental advisers are on site regularly, and deal with any environmental issues at the time of identification. No noise related matters have required attention.

The EIS predicted no impact at any sensitive receiver from the Dewhurst 26 - 29 pilot. As discussed in the introduction, the Dewhurst 13-18 Pilot did not operate during 2019.

3.2 Blasting

Not applicable

3.3 Air Quality

The EPL 20350 does not impose any air quality limits. It has three conditions relating to measures to be taken to prevent or minimise dust generation.

The PEL 238 approval does not include any air quality conditions, but has a general requirement to implement all reasonably practicable measures to prevent and/or minimise harm to the environment.

To avoid the generation of dust, all trafficable areas at the well sites have been covered with blue metal, and the sections of partial rehabilitation have had mulch applied across the surface.

The Dewhurst 30 and 31 sites have had a polymer spray applied across the bare surfaces of the site primarily for erosion and sediment control, but this product also binds the surface to prevent dust generation.

SSD-6038 sets long and short term criteria limits for particulate matter, as well as long term criteria for deposited dust. This approval sets the limits at any residence on privately owned land, the nearest of which is 10 km away. Monitoring is conducted at the Dewhurst 26 site, and as shown in the tables below, that even within an operational site, the monitoring results are significantly below the limits in the approval.

Table 1 Long term criteria for particulate matter

Pollutant	Averaging period	Criterion	Average Result (full year)
Total Suspended particulate (TSP) matter	Annual	90 µg/m^3	21.66 µg/m^3
Particulate matter <10µm(PM_{10})	Annual	30 µg/m^3	8.76 µg/m^3

Table 2 Short term criteria for particulate matter

Pollutant	Averaging period	Criterion	Maximum Result (full year)
Particulate matter <10µm(PM_{10})	24 hour	50 µg/m^3	24.5 µg/m^3

Table 3 Long term criteria for deposited dust

Pollutant	Averaging period	Maximum increase in Total Deposited Dust level		Maximum Total Deposited Dust level	
Deposited dust	Annual	Criteria:	2 g/m^2/month	Criteria:	4 g/m^2/month
		2019 Result:	1.0 g/m2/month	2019 Result:	2.1 g/ m^2/month

The PEMP lists the monitoring frequency for the short and long term particulate matter standards to be conducted every six days. The 2019 full monitoring record is shown in Appendix 1.

The data shows the operation being managed in such a way as to be below the maximum particulate levels. It should be noted that a number of environmental events caused high results, not consistent with the normal operating values that have been obtained from laboratory analysis of PM10, TSP and total deposited dust. In accordance with Condition 16(d) of SSD-6038, the values obtained from these events were excluded from the long and short term monitoring criteria calculations. Data from occasions when the units did not run for the specified 24 hours was also excluded from calculations.

Condition 16(d) Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed to by the Secretary in consultation with the EPA.

The occasions where results were impacted by extraordinary events and when the units did not run for the specified 24hours are listed in Table 4 and Table 5 below.

Table 4 Results removed from dust monitoring (PM10 and TSP) due to the occurrence of extraordinary events.

2019 DWH26AQ2PM10 & DWH26AQ2TSP Summary					
Sample Date	PM10 (µg/m^3)	TSP (µg/m3)	Days between samples	Certificate of Analysis (COA)	Comments
27/04/2019	26.5	53.9	12	EN1902910	Unit ran twice with the same filter papers
19/08/2019	89.6	204	6	EN1906210	High wind speeds, up to 56km/hr SW wind gusts (BoM Weather Station 054038) & 54.2km/hr (Santos Leewood Weather Station) causing dust storms over the monitoring site.
31/08/2019	0.6	7.2	6	EN1906210	Generator issue, no power. Units only operated for 1214 minutes.
6/09/2019	228	475	6	EN1906308	High wind speeds, up to 85km/hr NW wind gusts (BoM Weather Station 054038) & 69.5km/hr (Santos Leewood Weather Station) causing dust storms over the monitoring site.
29/11/2019	32.9	97.5	6	EN1908558	High wind speeds, up to 57km/hr NW wind gusts (BoM Weather Station 054038) & 43.2 km/hr (Santos Leewood Weather Station) causing dust storms over the monitoring site.
17/12/2019	76	133	6	EN1909067	High winds speeds up to 54km/hr SSE wind gusts (BoM Weather Station 054038) & 33.12 km/hr (Santos Leewood Weather Station) causing dust storms over the monitoring site.
23/12/2019	45.9	86	6	EN2000073	High wind speeds, up to 50km/hr SE wind gusts (BoM Weather Station 054038) & 33.48 km/hr (Santos Leewood Weather Station) causing dust storms over the monitoring site.

Table 5 Results removed from dust monitoring (Depositional Dust) due to the occurrence of extraordinary events.

2019 DWH26AQ2 Summary						
Sample Period	Sample Start Date	Sample Finish Date	Result (Total Insoluble Matter)	Change from previous month (cannot exceed 2)	COA	Comments
March	5/03/2019	2/04/2019	2.8	2.2	EN1902232	There were no additional activities (normal operation) being carried out at the monitoring site over the sampling period. Hi result due to high winds of up to 72 km/hr (BoM Weather Station 054038)

						and 69.48 km/hr (Santos Leewood Weather Station) were recorded within March as well as dust storms which were reported within the month.
April	2/04/2019	1/05/2019	0.2	-2.6	EN1902924	Change due to extraordinary event occurring in the previous month.

The PEMP also describes measures to be followed by Santos in order to mitigate against air quality deterioration. These include dust minimisation measures as well as greenhouse gas mitigation measures.

Santos undertakes a Leak Detection and Repair program (LDAR) in accordance with its Leak Detection and Repair Plan. This plan is part of the overall well integrity program for all wells operated by Santos' NSW operations. No reportable leaks were identified by the Santos program during 2019. Santos is required to report on the LDAR program in its annual return for EPL 20350, which is due for submission in June 2020. Santos reported on its LDAR program in the 2019 EPL Annual Return for the period 1 May 2018 to 30 April 2019.

3.4 Biodiversity

The EPL 20350 contains no biodiversity conditions.

The PEL 238 approval does not contain any specific biodiversity conditions.

SSD-6038 sets performance standards for groundwater dependent ecosystems (negligible environmental consequences) and threatened species, threatened populations, or endangered ecological communities (Minor environmental consequences). Santos engaged ecologists (EcoLogical Australia) to conduct autumn and spring surveys in 2019, who provided the following conclusion and recommendation in their report *Dewhurst 26 – 31 BMP Annual Monitoring Report 2019*.

This report presents the results from five years' monitoring data collected for the project, and because the DH13-18H Pilot and Bibblewindi Multi-lateral Pilot have not yet been constructed, only four of the proposed 10 monitoring sites have been established.

Data analysis in 2019 continues to suggest little difference between impact and control sites in terms of fauna diversity or composition, flora structure or condition and vertebrate pest populations. There are no clear patterns or differences between control and impact sites, however there is variation within sites between years, with generally a large decline in species richness and native species cover across all sites over the past few years. Persistent hot and dry drought conditions are likely the cause of these declines. Although there have been some observable changes apparent between monitoring years (e.g. exotic species cover, native plant species diversity, microbat species richness), these changes are consistent across site types, and as such can be considered unrelated to the construction and operation of the pilot wells.

The decreases in structure and composition attributes across the sites may also have contributed to the decrease in woodland bird species richness between years. Furthermore, the increased 'openness' of the sites may have facilitated higher bat activity than in previous years. Interpretation of these results is highly speculative, given the low replication and the nature of the data collected, i.e. indirect measures of fauna activity using passive recording devices.

The low replication of the program inhibits true statistical analysis of the monitoring sites at this stage. For proper statistical analysis additional replicates in each treatment group (i.e. 'impact' and 'control') are needed. Despite this there is value in continuing the monitoring at these sites as long-term data sets are valuable in guiding future management and providing indicative patterns of behaviour for future sites.

3.5 Heritage

Not applicable. There were no new ground disturbances in 2019.

Table 6 Summary table for environmental aspects

Aspect	Approval criteria	Performance	Trend/ key management implications	Implemented/ proposed management actions
Noise	35dB (A) at noise sensitive location	Nearest residence 10km away – no impact	nil	Continued implementation of PEMP
Blasting	N/A	N/A	N/A	N/A
Air Quality	Refer to the tables in section 3.3	Well below maximum limits	Reduced dust levels indicated by monitoring results	Continued implementation of PEMP
Biodiversity	Negligible impact of GDE, and minor on threatened populations	No impact detected to date	Insufficient data for ecologist to advise	Continuation of autumn and spring surveys
Heritage	N/A no new disturbances	N/A no new disturbances	N/A no new disturbances	N/A no new disturbances

3.6 Complaints

No complaints regarding the development were directly made to Santos in the reporting period.

As part of Santos' operations, complaints are entered to a database and the response provided or action taken is recorded. The website is updated monthly in relation to complaints received.

There have been no complaint trends over the previous five years of operation.

3.7 Engagement

Key community consultation activities for the Narrabri Gas Project are managed by Santos on a 'whole-of-project' basis, and relate to activities undertaken across PEL 238, PAL 2 and PPL 3 generally and are not specific to this project (SSD-6038).

There is a comprehensive Community Consultation Plan in place for PEL 238, stakeholders have been identified, and a risk-based assessment undertaken on the level of impact or benefit that activities may potentially have on stakeholders and the community.

Santos does not retain separate consultation records for the Dewhurst Gas Exploration Pilot Expansion; however community activities undertaken in the similar reporting period for the PEL 238 licence area demonstrate the comprehensive community engagement activity for this licence area, including this project:

- There were around 220 visitors to Santos shopfronts;
- Around 200 visitors attended the Santos information stand at AgQuip in 2019;
- More than 20 community and field site tours were hosted in the licence area; and
- Monthly Activity Updates for PEL 238 activities were distributed to over 350 individuals each month.

There are well established consultation tools in place and this is complementary to the mature relationship that Santos has with stakeholders in the PEL 238 licence area. These tools provide ongoing opportunities for stakeholders and members of the community to learn about, provide input to, and raise concerns about activities that Santos is conducting, or planning to conduct including those relating to this project. This includes:

Consultation Activity	Frequency
Narrabri Gas Project CCC	• Meetings are held at least every two months or more often as determined by the Independent Chair.
Face to face meetings	• Regular face to face meetings are held with key stakeholders relevant to their level of interest in activities
Community Site Tours	• Community Site Tours to visit operational sites are advertised monthly in the local newspaper and on the Santos website • Site tours are also provided upon request from interested community groups and other stakeholders
Communication tools	• An email and a contact telephone number for the Narrabri Shopfront is referenced on Santos website and external printed documentation

Consultation Activity	Frequency
	• Enquiries are answered promptly and issues raised are recorded in a consultation database
Website	• The Narrabri Gas Project website is maintained and updated with current information www.narrabrigasproject.com.au
Brochures and fact sheets	• Brochures and fact sheets are regularly reviewed and updated • New publications will be produced as required
Activity Update Reports	• Monthly activity updates are prepared and emailed to key stakeholders and uploaded to the website and included monthly in the local newspaper • Updates are distributed to the Narrabri Gas Project CCC members to disseminate to members of their respective organisations
Media Updates	• Advertisements and media releases for key announcements
Social Media	• Santos' Facebook and Twitter pages provide information through social media channels
Santos shopfront	• The Shopfront in Narrabri is open during business hours and has printed information and displays
Attendance at community events and agricultural shows	• Santos attends relevant local agricultural shows, NSW Farmers Annual Conference, AgQuip and other community events
Community Participation	• Santos participates in relevant local groups and committees

3.8 Water and Waste Management

Santos extracts saline water from the coal seams in order to collect the gas entrained in the coal cleats. All water produced in the Pilot is piped to a bunded balance tank at Dewhurst 28 before being transferred via the approved Southern flowline to Bibblewindi and onto the Leewood Water Management facility. The bunded balance tank at Dewhurst 28 is on a compacted base, with a HDPE liner. The tank levels are monitored by Santos' telemetry systems and the valves are equipped with high level and low level alarms to warn of abnormal tank levels. The trip system on the tank allows the wells to be shut down automatically on high level and valves to operate automatically at pre-set levels to minimise risk of spills or overflow. These valves can also be operated manually by on site personnel.

Table 7 Water Use For the year 1 January 2019 to 31 December 2019

Water Licence #	Water Sharing Plan	Entitlement	Passive Take/inflows	Active pumping	TOTAL
90AL832238	NSW Murray Darling Basin Porous Rock Groundwater Sources	600ML	Nil	101.6 ML	101.6 ML

Condition 22 of Schedule 3 requires reporting on waste management and minimisation in the Annual Review. The primary waste stream generated at the development is produced water. Given the gas extraction requires the de-watering of the wells, it is not possible to minimise the extraction of this water. However, Santos has constructed a reverse osmosis water treatment plant at Leewood so that the produced water can be treated to a standard capable of being beneficially re-used by irrigating on site at Leewood. As previously reported, irrigation ceased on 8 February 2018, and the water treatment plant was temporarily mothballed on 30 April 2018. No water treatment took place in the reporting period; however all of the water produced by the development has been stored in the Leewood ponds. When the water treatment plant re-commences operation, the water will be used for one or more of the crop irrigation, construction purposes, dust suppression or fire fighting.

A comparison between anticipated waste generation as predicted in the EIS, and actual is shown in Table 8.

Table 8. Comparison between predicted waste generation and actual in the reporting period

Source	Classification	Estimated Quantity	Actual quantity 2019
Construction Activities			*No construction activities undertaken in 2019
Drill fluid	Liquid waste	825m^3	0*
Drilling fluid-contaminated cement slurry		160m^3	0*
Produced water		450m^3	0*
Fuels, engine coolant and		< 200L	0*
Human waste including pump out		< 60m^3	0*
General waste including food waste from personnel and non-recyclables	General solid waste (putrescible)	<40m^3	0*
Drill cuttings	General solid waste (non-putrescible)	350m^3	0*
Drained oil filters, empty oil containers and oil absorbent materials that do not contain free liquids, plastics (e.g. packaging pipe caps), concrete wastes, cured resins, paints, glues, etc.		< 80m^3	0*
Contaminated soil ^	Dependent on waste	Undetermined	0*
Recyclables including glass, PET bottles, aluminum, scrap metal (e.g. pipe cuttings), rope spacers, paper and cardboard.	Recyclable	<40m^3	0*
Operational Activities			
Produced water	Liquid waste	Max. 845 m^3 per day	378.1 m^3 per day (average)
Waste generated from maintenance works	Various	Undetermined	<1 cubic metre

No hazardous wastes were generated at the development for the reporting period.

Figure 3 Dewhurst 28 – Balance tank

3.9 Rehabilitation

No additional rehabilitation was undertaken during 2019 – a year of extremely low rainfall. The partial rehabilitation works described in the Annual Review submitted in 2019 were maintained in accordance with Santos' weed management program and the site specific erosion and sediment control plans.

Each of the six sites are located within a fenced enclosure of 1 Ha in size, and the standard practice is that once the rig has left the site and surface infrastructure has been installed, partial rehabilitation occurs. A fenced area of approximately 30m x 30m is retained for the well site equipment. A blue metal access track around the perimeter of this enclosure separates the rehabilitation from the well facilities. The revegetation occurs naturally from the seed bank in the removed topsoil.

The sites are monitored for weeds, and when necessary treated as per the weed management program. The only relevant performance criterion in table 4-13 of the EIS for the Development relates to weed management i.e. weeds to not dominate after disturbance or rainfall. The active weed management program in place restricts weed populations; however as seen by the photos, the dominant vegetation at all sites is as a result of natural regeneration with native species. All other performance criteria in Table 4-13 of the EIS are not triggered until after the sites are abandoned, or rehabilitation is completed. No wells have been abandoned, and although Santos has undertaken partial rehabilitation of the sites, the rehabilitation work has not been completed. It is sometimes necessary to re-clear partially rehabilitated areas for operational needs such as setting up for workover rigs.

Figure 4 Dewhurst 26

Figure 5 Dewhurst 27

Figure 6 Dewhurst 28

Figure 7 Dewhurst 29

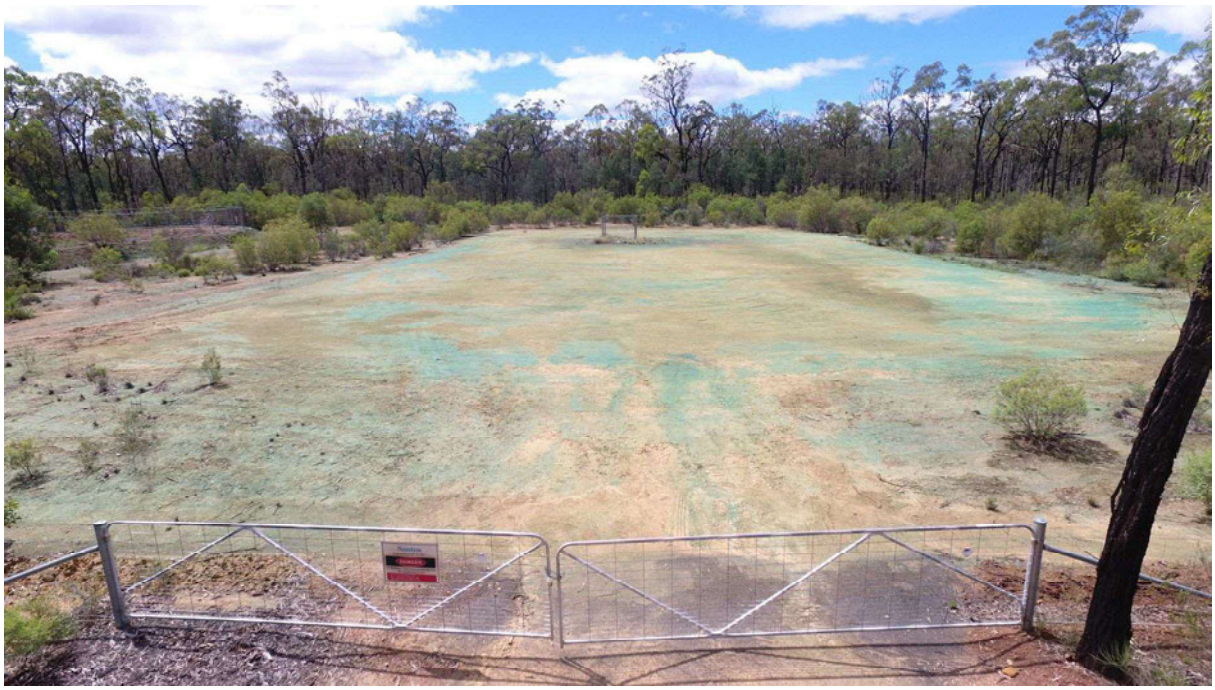

Figure 8 Dewhurst 30

Figure 9 Dewhurst 31

4. Compliance Statement

This section addresses the following requirements:

SSD approval: Schedule 5 Condition 4 (c) ***Identify any non-compliance over the past calendar year, and*** *describe what actions were (or are being) taken to address non compliances*

Guidelines: Section 10 Independent Audit and Section 11 Incidents and non-compliances.

The relevant approvals for the development are:

- SSD 6038 approval;
- PEL 238;
- EPL 20350;
- Approval Dewhurst 26-29 Pilot (DRE) 16 August 2013.

Table 9 Statement of Compliance

Were all conditions of the relevant approval complied with as they relate to the development in 2019	
SSD 6038	Yes
PEL 238	Yes
EPL 20350	Yes
Approval Dewhurst 26-29 Pilot	Yes
Water Management Act 2000	Yes

4.1 Independent Audit

Under the approval of SSD 6038 Schedule 5, condition 8, Santos was required to engage an approved Independent Environmental Auditor to conduct a full audit of the development. Damien Taylor of SMEC (Australia) Pty Ltd was approved by the Department of Planning and Environment (DPE) to undertake the audit.

The audit was completed on 9 January 2019, and the final report was submitted to DPE on 18 February 2019.

The audit concluded that *'the overall compliance for the Dewhurst Gas Exploration Pilot Expansion project is of a high standard. The administrative items identified in the previous independent audit have been addressed and closed out, and no additional non-compliant items were identified during this audit.'*

The only recommendation made by the auditor was as the following; *'the level of monitoring required by the consent conditions were found to be disproportionate to the level of risk of the activity to the location environment, particularly with respect to air quality monitoring needed to carry out real time high volume*

sampling when the nearest resident is some ten kilometres away. The auditor suggested that the air quality monitoring aspect of the Dewhurst Gas Exploration Project could be reduced and still provide the regulator with a sufficient level of knowledge of what the project impacts are.'

The next Independent Environmental Audit is scheduled in ComTrack to be completed by 4 November 2021.

4.2 Incidents and non-compliances

There were no reportable environmental incidents for the development in 2019 nor were there any exceedances of any limits in any approval.

5. Identification Trends

All monitoring complies with the relevant approval limits. This is also discussed in the relevant sections of this report.

The EcoLogical biodiversity assessment did not identify any detrimental impacts from the development.

The Leak Detection and Repair Program conducted by Santos shows all equipment is operating in good condition.

6. Forecast of operations and activities for the next reporting period.

For the 2020 calendar year, Santos proposes to continue to operate the Dewhurst 26-29 pilot. Now that the gas flowline has been constructed, it is proposed to continue to use the gas produced from the development in generating electricity at the Wilga Park Power Station.

Water from the development will continue to be piped to Leewood and managed in accordance with approval and licence conditions.

It is not proposed to drill Dewhurst 30 and 31 wells in 2020.

The Dewhurst 13-18 pilot will remain suspended.

The activities undertaken in 2020 at the pilots will be similar to 2019; however, should it become necessary to do so, Santos would bring in a workover rig to undertake downhole maintenance.

7. Discrepancies between predicted and actual impacts

No discrepancies have been detected. The project area is very small, and is isolated from any sensitive receiver or ecological community.

8. Continuing or proposed measures to improve the environmental performance of the development

Santos will continue with its implementation of the Project Environmental Management Plan in managing environmental aspects associated with the project. There will be a continuation of the leak detection and repair program to minimise gas loss from infrastructure. Through the use of the latest technology, and the detailed knowledge of operational infrastructure, Santos will ensure that gas leaks are minimised.

END OF REPORT

2019 DWH26AQ2PM10 & DWH26AQ2TSP Summary					
Sample Date	PM10 (µg/m³)	TSP (µg/m3)	Days between samples	Certificate of Analysis (COA)	Comments
3/01/2019	8.2	25.2	6	EN1900312	
9/01/2019	11	19.3	6	EN1900312	
15/01/2019	11.9	34.2	6	EN1900445	
21/01/2019	10.8	22.9	6	EN1900520	
27/01/2019	12.8	29.9	6	EN1900763	
2/02/2019	7.2	18.9	6	EN1900762	
8/02/2019	5.5	13.9	6	EN1900992	
14/02/2019	5.4	30.2	6	EN1901207	
20/02/2019	**	**	6	**	Equipment Issue
26/02/2019	2.9	9.8	6	EN1901377	
4/03/2019	9.3	20.2	6	EN1901619	
10/03/2019	14.3	40.5	6	EN1901750	
16/03/2019	12.5	23.2	6	EN1901878	
22/03/2019	16.1	44.4	6	EN1902232	
28/03/2019	11	19.7	6	EN1902232	
3/04/2019	3.2	7.3	6	EN1902418	
9/04/2019	19.2	52.4	6	EN1902692	
15/04/2019	9.6	19.4	6	EN1902692	
27/04/2019	26.5	53.9	12	EN1902910	Unit ran twice with the same filter papers
3/05/2019	6.5	17	6	EN1903145	
9/05/2019	9.6	15	6	EN1903303	
15/05/2019	5.6	10.3	6	EN1903554	
21/05/2019	2	6.4	6	EN1903589	
27/05/2019	9.9	31.1	6	EN1903920	
2/06/2019	7.7	11.4	6	EN1903967	
8/06/2019	5.8	9.4	6	EN1904152	
14/06/2019	2.5	2.9	6	EN1904246	
20/06/2019	3	6.1	6	EN1904356	
26/06/2019	0.1	4.9	6	EN1904779	
2/07/2019	7.4	11.5	6	EN1904777	
8/07/2019	0.8	2.7	6	EN1904812	
14/07/2019	0.8	3.2	6	EN1905042	
20/07/2019	2.5	6.1	6	EN1905076	
26/07/2019	3.5	8	6	EN1905419	
1/08/2019	< 0.1	1.7	6	EN1905583	
7/08/2019	2.4	12.3	6	EN1905720	
13/08/2019	< 0.1	< 0.1	6	EN1905720	
19/08/2019	89.6	204	6	EN1906210	High wind speeds: up to 56km/hr SW wind gusts (BoM Weather Station 054038) & 54.2km/hr (Santos Leewood Weather Station) causing dust storms over the monitoring site
25/08/2019	18.7	36.9	6	EN1906025	
31/08/2019	0.6	7.2	6	EN1906210	Generator issue, no power. Units only operated for 1214 minutes
6/09/2019	228	475	6	EN1906308	High wind speeds: up to 65km/hr NW wind gusts (BoM Weather Station 054038) & 69.5km/hr (Santos Leewood Weather Station) causing dust storms over the monitoring site
12/09/2019	7.9	25.9	6	EN1906504	
18/09/2019	3.6	13.3	6	EN1906756	
24/09/2019	6.8	16.1	6	EN1906724	
30/09/2019	13.2	26.1	6	EN1906880	
6/10/2019	14.9	44	6	EN1907417	
12/10/2019	2.2	7.4	6	EN1907417	
18/10/2019	18.2	46.1	6	EN1907417	
24/10/2019	**	**	6	**	Equipment Issue
30/10/2019	24.5	58.7	6	EN1907865	
5/11/2019	**	**	6	**	Equipment Issue
11/11/2019	7.1	40.4	6	EN1908045	
17/11/2019	17.2	39.5	6	EN1908437	
23/11/2019	**	**	6	**	No power
29/11/2019	32.9	97.5	6	EN1908558	High wind speeds: up to 57km/hr NW wind gusts (BoM Weather Station 054038) & 43.2 km/hr (Santos Leewood Weather Station) causing dust storms over the monitoring site
5/12/2019	**	**	6	**	No power
11/12/2019	**	**	6	**	No power

17/12/2019	76	133	6	EN1909067	High winds speeds up to 54km/hr SSE wind gusts (BoM Weather Station 054038) & 33.12 km/hr (Santos Leewood Weather Station) causing dust storms over the monitoring site
23/12/2019	45.9	86	6	EN2000073	High wind speeds, up to 50km/hr SE wind gusts (BoM Weather Station 054038) & 33.48 km/hr (Santos Leewood Weather Station) causing dust storms over the monitoring site
29/12/2019	15.9	50.6	6	EN2000073	

2019 DWH26AQ2 Summary						
Sample Period	Sample Start Date	Sample Finish Date	Result (Total Insoluble Matter)	Change from previous month (cannot exceed 2)	COA	Comments
January	31/12/2018	4/02/2019	1.6		EN1900763	
February	4/02/2019	5/03/2019	0.6	-1	EN1901619	
March	5/03/2019	2/04/2019	2.8	2.2	EN1902232	There were no additional activities (normal operation) being carried out at the monitoring site over the sampling period. It is suspected that the cause of the increase may be due to an accumulation of dust from regional dust storms along with high winds over the sampling period.
April	2/04/2019	1/05/2019	0.2	-2.6	EN1902924	
May	1/05/2019	3/06/2019	0.8	0.6	EN1903920	COA comment: Sample outside typical exposure period of 30 +/- 2 days as per AS2580.10.1 (33days)
June	3/06/2019	4/07/2019	0.1	-0.7	EN1904778	
July	4/07/2019	2/08/2019	0.3	0.2	EN1905601	
August	2/08/2019	4/09/2019	0.6	0.3	EN1906157	
September	4/09/2019	1/10/2019	1.1	0.5	EN1906880	
October	1/10/2019	1/11/2019	2.1	1	EN1907865	
November	1/11/2019	2/12/2019	2.1	0	EN1908558	
December	2/12/2019	6/01/2020	1.5	-0.6	EN2000073	