

Development Consent

Section 89E of the *Environmental Planning and Assessment Act 1979*

As delegate of the Minister for Planning, the Planning Assessment Commission of New South Wales (the Commission) approves the development application referred to in Schedule 1, subject to the conditions in Schedules 2 to 5.

These conditions are required to:

- prevent, minimise, and/or offset adverse environmental impacts;
- set standards and performance measures for acceptable environmental performance;
- require regular monitoring and reporting; and
- provide for the ongoing environmental management of the development.

Blue type represents July 2017 modifications.

Member of the Commission	Member of the Commission
Sydney	2014
SCHEDULE 1	
Application Number:	SSD-6038
Applicant:	Santos NSW (Eastern) Pty Ltd
Consent Authority:	Minister for Planning
Land:	See Appendices 1 and 2
Development:	Dewhurst Gas Exploration Pilot Expansion

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DEFINITIONS

Adaptive management	Adaptive management includes monitoring impacts and effects and, based on the results, modifying operations as activities proceed to ensure that the effects, impacts and/or associated environmental consequences remain within predicted and designated ranges and in compliance with the conditions of this consent
Annual Review	The review required by condition 4 of Schedule 5
Applicant	Santos NSW (Eastern) Pty Ltd, or any other person or persons who rely on this consent to carry out the development that is subject to this consent
Conditions of this consent	Conditions contained in Schedules 2 to 5 inclusive
Department	Department of Planning & Environment
Development	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, as depicted in Appendices 1 and 2.
Dewhurst 13-18H Extension	The drilling and operation of an additional two horizontal wells at each of the Dewhurst 16H, Dewhurst 17H and Dewhurst 18H pilot wells
Dewhurst 30 and 31 Extension	The drilling and operation of two additional wells at the development, namely Dewhurst 30 and Dewhurst 31.
DPI Water	Department of Primary Industries - Water
EIS	Environmental Impact Statement titled <i>Dewhurst Gas Exploration Pilot Expansion Environmental Impact Statement</i> , dated October 2013, and associated response to issues raised in submissions, titled <i>Dewhurst Gas Exploration Pilot Expansion Response to Submissions</i> , dated January 2014; and Modification 1 application and assessment titled Dewhurst Gas Exploration Pilot Expansion (SSD-6038) (dated May 2017) .
Environmental consequences	The environmental consequences of exploration activities, including; contamination of groundwater; adverse water quality impacts; impacts on aquatic ecology; and gas leakages.
EPA	Environment Protection Authority
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EP&A Regulation	<i>Environmental Planning and Assessment Regulation 2000</i>
EPL	Environment Protection Licence issued under the POEO Act
Feasible	Feasible relates to engineering considerations and what is practical to build or to implement
Incident	A set of circumstances that: <ul style="list-style-type: none"> causes or threatens to cause material harm to the environment; and/or breaches or exceeds the limits or performance measures/criteria in this consent
Land	As defined in the EP&A Act, except for where the term is used in the noise and air quality conditions in Schedule 3 of this consent where it is defined to mean the whole of a lot, or contiguous lots owned by the same landowner, in a current plan registered at the Land Titles Office at the date of this consent
Material harm to the environment	Actual or potential harm to the health or safety of human beings or to ecosystems that is not trivial
Minister	Minister for Planning, or delegate
Minor	Not very large, important or serious
Negligible	Small and unimportant, such as to be not worth considering
NOW	NSW Office of Water
OCSG	Office of Coal Seam Gas
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
Privately-owned land	Land that is not Crown Land or owned by a public agency, a mining company or a petroleum company (or a subsidiary of such a company)
Reasonable	Reasonable relates to the application of judgement in arriving at a decision, taking into account: mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements
Rehabilitation	The treatment or management of land disturbed by the development for the purpose of establishing a safe, stable and non-polluting environment
RMS	Roads and Maritime Services
Safe, serviceable & repairable	Safe means no danger to users who are present, serviceable means available for its intended use and repairable means damaged components can be repaired economically
Secretary	Secretary of the Department, or nominee
Site	All land directly affected by the development (see Appendices 1 and 2)
Statement of Commitments	The Management and Monitoring Summary set out in the EIS and Appendix 4
NSW Government	
Department of Planning & Environment	

SCHEDULE 2 ADMINISTRATIVE CONDITIONS

OBLIGATION TO MINIMISE HARM TO THE ENVIRONMENT

1. In addition to meeting the specific performance criteria established under this consent, the Applicant shall implement all reasonable and feasible measures to prevent and/or minimise any harm to the environment that may result from the construction, operation, or rehabilitation of the development.

TERMS OF CONSENT

2. The Applicant shall carry out the development generally in accordance with the:
 - (a) EIS;
 - (b) Statement of Commitments; and
 - (c) conditions of this consent.

Note: The general layout of the development is shown in Appendix 2.

3. If there is any inconsistency between the above documents, the more recent document shall prevail to the extent of the inconsistency. However, the conditions of this consent shall prevail to the extent of any inconsistency.
4. The Applicant shall comply with any reasonable requirement/s of the Secretary arising from the Department's assessment of:
 - (a) any strategies, plans, programs, reviews, audits, reports or correspondence that are submitted in accordance with this consent; and
 - (b) the implementation of any actions or measures contained in these documents.

LIMITS ON CONSENT

Resource Appraisal

5. Wells in the development may be operated:
 - (a) [until 18 July 2020](#), in the case of existing wells within the development; and
 - (b) a period of 3 years from the date of well completion, in the case of the Dewhurst13-18H Extension and Dewhurst 30 and 31 Extension wells.

Notes:

- Under this consent, the Applicant is required to rehabilitate the site and perform additional undertakings to the satisfaction of [the Secretary](#). Consequently this consent will continue to apply in all other respects other than the right to operate the development until the rehabilitation of the site and these additional undertakings have been carried out satisfactorily.
- The drilling and operation of petroleum exploration wells requires a Petroleum Exploration Licence or Petroleum Assessment Lease to be held under the Petroleum (Onshore) Act 1991.

6. The Applicant shall not undertake hydraulic fracturing.

Hours of Operation

7. The Applicant may undertake the development 24 hours a day, 7 days a week.

PROTECTION OF PUBLIC INFRASTRUCTURE

8. The Applicant shall:
 - (a) repair, or pay all reasonable costs associated with repairing, public infrastructure that is damaged by the development; and
 - (b) relocate, or pay all reasonable costs associated with relocating, public infrastructure that needs to be relocated as a result of the development.

OPERATION OF PLANT AND EQUIPMENT

9. The Applicant shall ensure that all plant and equipment used at the site is:
 - (a) maintained in a proper and efficient condition; and
 - (b) operated in a proper and efficient manner.

STAGED SUBMISSION OF STRATEGIES, PLANS OR PROGRAMS

10. With the approval of the Secretary, the Applicant may submit any strategies, plans or programs required by this consent on a progressive basis.

Notes:

- *If the submission of any strategy, plan or program is to be staged, then the relevant strategy, plan or program must clearly describe the specific stage to which the strategy, plan or program applies, the relationship of this stage to any future stages, and the trigger for updating the strategy, plan or program.*
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SCHEDULE 3 SPECIFIC ENVIRONMENTAL CONDITIONS

SOIL & WATER

Note: Under the Water Act 1912 and/or the Water Management Act 2000, the Applicant is required to obtain the necessary water licences for the development.

Water Supply

1. The Applicant shall ensure that it has sufficient water for all stages of the development, and if necessary, adjust the scale of operations under the consent to match its available water supply and licenced water entitlements, to the satisfaction of the Secretary.

Compensatory Water Supply

2. The Applicant shall provide a compensatory water supply to any landowner of privately-owned land whose water entitlements are adversely impacted (other than an impact that is negligible) as a result of the development, in consultation with [DPI Water](#), and to the satisfaction of the Secretary.

The compensatory water supply measures must provide an alternative long-term supply of water that is equivalent to the loss attributed to the development. Equivalent water supply must be provided (at least on an interim basis) within 24 hours of the loss being identified.

If the Applicant and the landowner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the Secretary for resolution.

If the Applicant is unable to provide an alternative long-term supply of water, then the Applicant shall provide alternative compensation to the satisfaction of the Secretary.

Pollution of Waters

3. Unless an EPL authorises otherwise, the Applicant shall comply with Section 120 of the *Protection of the Environment Operations Act 1997* during the carrying out of the development.
4. The Applicant shall implement all reasonable and feasible measures to ensure that gas wells are constructed, operated and decommissioned to avoid risks of gas leakages to and adverse impacts on beneficial aquifers, including resulting impacts on groundwater users and groundwater dependent ecosystems.
5. The Applicant shall ensure that no drilling fluids additives containing Benzene, Toluene, Ethylbenzene and Xylene (BTEX) chemicals are used in the development.

Construction and Operation of Petroleum Wells

6. The Applicant must ensure that all petroleum wells:
 - a) must be designed, constructed, maintained and abandoned in accordance with the *Code of Practice for Coal Seam Gas – Well Integrity* (DTIRIS 2012);
 - b) ensure hydraulic isolation between the Upper Namoi and Lower Namoi alluvium and the Great Artesian Basin Southern Recharge during drilling activities
 - c) have all casing fully cemented from casing shoe to surface, leaving no open annuluses;
 - d) have a blow-out prevention device on the wellhead secured to the steel casing; and
 - e) are sealed with cement from the total depth to 1.5 metres below the surface when exploration is completed and the well is no longer required;in order to protect the integrity of any underground aquifers, prevent gas escape and maintain groundwater quality.

Water Management and Monitoring

7. Prior to the commencement of drilling activities, in consultation with [DPI Water](#), the Applicant shall revise its Groundwater Monitoring and Modelling Plan to include a description of the monitoring specific to the development, and provide consideration of the future development of the groundwater model to a Cass 2 or 3 model in accordance with the Australia Groundwater Modelling Guidelines and to a standard required by the NSW aquifer Interference Policy to the satisfaction of the Secretary.
8. Water extracted from all wells in the development (ie produced water) must be stored in ponds constructed with an impervious lining, to prevent contamination of groundwater.

Erosion and Sedimentation

9. Soil and water management measures consistent with *Managing Urban Stormwater – Soils and Construction Vol. 1* (Landcom, 2004) shall be employed during the construction of the development to minimise soil erosion and the discharge of sediment and other pollutants to land and/or waters.

Gas Gathering System

10. The Applicant shall, to the satisfaction of the Secretary, ensure that:
- pipelines are designed, constructed and operated in accordance with the Australian Standard for the Installation and Maintenance of Plastic Pipe Systems for Gas AS 3723-1989 (or its latest version);
 - the route of gas gathering and water transport systems and access roads follow previously or currently disturbed areas wherever possible;
 - trenches are not left open overnight, unless adequately covered or suitable fauna egress structures are put in place;
 - any open trenches are inspected for fauna each day at the commencement of construction activities;
 - open trenching works within 20 metres of watercourses are only undertaken during dry weather conditions;
 - construction activities do not impede lateral water flows;
 - no crown or camber remains along any gas gathering system line, following rehabilitation;
 - signs are erected at intervals along all gas gathering system lines indicating the presence of a buried gas pipeline; and
 - impacts to riparian vegetation and endangered ecological communities are minimised.

NOISE

Construction Noise

11. The Applicant shall ensure that the noise generated by construction complies with the requirements of the *Interim Construction Noise Guideline* (DECC, 2009).

Noise Impact Assessment Criteria

12. The Applicant shall ensure that the noise generated by the development does not exceed the criteria in Table 1 and Table 2 at any residence on privately-owned land.

Table 1: Construction Noise Impact Assessment Criteria dB(A)

Location	Standard Construction Hours L _{Aeq} (15 min)	Outside Standard Construction Hours L _{Aeq} (15 min)
Any residence on privately-owned land	40db(A)	35(dbA)

Note: Standard construction hours are 7 am to 6 pm Monday to Friday and 8 am to 1 pm Saturday.

Table 2: Operational Noise Impact Assessment Criteria dB(A)

Location	Operational Noise Criteria L _{Aeq} (15 min)
Any residence on privately-owned land	35(dbA)

Noise generated by the development is to be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy. Appendix 2 sets out the meteorological conditions under which these criteria apply, and the requirements for evaluating compliance with these criteria.

However, these criteria do not apply if the Applicant has an agreement with the relevant landowner to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Operating Conditions

13. The Applicant shall:
- implement best management practice to minimise the construction, operational, road noise of the development;
 - operate an on-site noise management system to ensure compliance with the relevant conditions of this consent;

- (c) minimise the noise impacts of the development during meteorological conditions under which the noise limits in this consent do not apply (see Appendix 3);
 - (d) regularly assess the noise management system to ensure compliance with the relevant conditions of this consent,
- to the satisfaction of the Secretary.

AIR QUALITY & GREENHOUSE GAS

Odour

14. The Applicant shall ensure that no offensive odours are emitted from the site, as defined under the POEO Act.

Greenhouse Gas Emissions

15. The Applicant shall implement all reasonable and feasible measures to minimise the release of greenhouse gas emissions from the site to the satisfaction of the Secretary.

Air Quality Criteria

16. The Applicant shall ensure that all reasonable and feasible avoidance and mitigation measures are employed so that the particulate emissions generated by the development do not exceed the criteria listed in Tables 3, 4 and 5 at any residence on privately-owned land.

Table 3: Long term criteria for particulate matter

Pollutant	Averaging period	^d Criterion
Total suspended particulate (TSP) matter	Annual	^a 90 µg/m ³
Particulate matter < 10 µm (PM ₁₀)	Annual	^a 30 µg/m ³

Table 4: Short term criterion for particulate matter

Pollutant	Averaging period	^d Criterion
Particulate matter < 10 µm (PM ₁₀)	24 hour	^a 50 µg/m ³

Table 5: Long term criteria for deposited dust

Pollutant	Averaging period	Maximum increase in deposited dust level	Maximum total deposited dust level
^c Deposited dust	Annual	^b 2 g/m ² /month	^a 4 g/m ² /month

Notes for Tables 3-5:

- ^a Total impact (ie incremental increase in concentrations due to the development plus background concentrations due to other sources);
- ^b Incremental impact (ie incremental increase in concentrations due to the development on its own);
- ^c Deposited dust is to be assessed as insoluble solids as defined by Standards Australia, AS/NZS 3580.10.1:2003: **Methods for Sampling and Analysis of Ambient Air - Determination of Particulate Matter - Deposited Matter - Gravimetric Method**; and
- ^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 EPA.

Operating Conditions

17. The Applicant shall:
 - (a) implement a Leak Detection and Repair Program that is conducted in accordance with *US EPA Method 21 – Determination of Volatile Organic Compound Leaks (40 CFR Part 60, Appendix A, Method 21)*, unless otherwise agree by the EPA;
 - (b) implement best practice air quality management at the site, including all reasonable and feasible measures to minimise off-site odour and dust emissions generated by the development, including from any spontaneous combustion on site;
 - (c) operate an air quality management system on site to ensure compliance with the relevant conditions of this consent;
 - (d) minimise the air quality impacts of the development during adverse meteorological conditions and extraordinary events (see note d to Tables 3-5 above); and
 to the satisfaction of the Secretary.

TRAFFIC AND TRANSPORT

18. The unsealed road network used by the development shall be maintained and managed consistent with *Managing Urban Stormwater – Soils and Construction Volume 2C Unsealed Roads and Erosion and sediment control on unsealed roads – A field guide for erosion and sediment control maintenance practices* and in accordance with the Permit to Occupy issued by Forestry NSW.
19. The Applicant shall seal the first 30 metres of X-Line Road at the intersection of X-Line Road and Newell Highway, to the satisfaction of RMS.
20. The Applicant shall ensure that, prior to commencing construction of the Dewhurst 13-18H Extension and Dewhurst 30 and 31 Extension wells, Size B “Turning Traffic” Signs (W5-25) and 300 metre distance plates are installed at a distance of 300 metres on either side of the X-Line Road intersection with the Newell Highway, to the satisfaction of the RMS.
21. The Applicant is to prepare a Code of Conduct, in consultation with RMS, for all drivers required to access the site. The Code of Conduct is to include:
 - (a) details of the transportation/access routes to be followed to access and exit the site;
 - (b) management actions that ensure drivers operate their vehicles in a safe, professional and courteous manner; and
 - (c) measures to minimise or avoid access to the site outside of daylight hours, wherever practicable.

WASTE MANAGEMENT

22. The Applicant shall:
 - (a) minimise and monitor the waste generated by the development;
 - (b) ensure all above ground tanks containing material that is likely to cause environmental harm must be bunded or have an alternative spill containment system in place;
 - (c) ensure it has in place appropriate containment, mitigation, contingency, remediation and rehabilitation methods and actions in order to prevent an accidental spill of waste material or in the event of an accidental spill;
 - (d) ensure that the waste generated by the development is appropriately stored, handled and disposed of;
 - (e) manage on-site sewage treatment and disposal in accordance with the requirements of Council; and
 - (f) report on waste management and minimisation in the Annual Review, to the satisfaction of the Secretary.

HAZARDOUS MATERIALS

23. The Applicant shall ensure that the storage, handling, and transport of dangerous goods is done in accordance with the relevant *Australian Standards*, particularly AS1940 and AS1596, and the *Dangerous Goods Code*.

VISUAL

Visual Amenity and Lighting

24. The Applicant shall:
 - (a) implement all reasonable and feasible measures to minimise the visual and lighting impacts of the development;
 - (b) ensure no outdoor lights shine above the horizontal; and
 - (c) ensure that all external lighting associated with the development complies with *Australian Standard AS4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting*.

BUSHFIRE

25. The Applicant shall:
 - (a) ensure that the development is suitably equipped to respond to fires on site;
 - (b) take all reasonable measures to prevent the ignition and/or spread of bushfires, in accordance with the *Schedule of Onshore Petroleum Operations and Production Safety Requirements (1992)*; and
 - (c) assist the Rural Fire Service and emergency services as much as possible if there is a fire in the vicinity of the site.

BIODIVERSITY AND REHABILITATION

Performance Measures – Natural Features

26. The Applicant shall ensure that the development does not cause any exceedances of the performance measures in Table 6, to the satisfaction of the Secretary.

Table 6: Performance Measures

Biodiversity	
Groundwater Dependent Ecosystems	Negligible environmental consequences
Threatened species, threatened populations, or endangered ecological communities	Minor environmental consequences.

Biodiversity Management Plan

27. The Applicant shall prepare and implement a Biodiversity Management Plan for the development, to the satisfaction of the Secretary. This plan must:
- (a) be prepared in consultation with OEH, and be approved by the Secretary prior to commencing construction of the Dewhurst 13-18H Extension and Dewhurst 30 and 31 Extension wells;
 - (b) describe the short, medium, and long term measures that would be implemented to minimise indirect impacts of the development;
 - (c) include a seasonally-based program to monitor and report on the effectiveness of these measures, and progress against the performance measures in Table 6; and
 - (d) include details of who would be responsible for monitoring, reviewing, and implementing the plan.

Progressive Rehabilitation

28. Unless otherwise agreed by the Secretary, the Applicant shall rehabilitate progressively, that is, as soon as reasonably practicable following disturbance, all surface borehole locations and any other parts of the site impacted by the development, to the satisfaction of [the Secretary](#).
29. Prior to commencing construction of the Dewhurst 13-18H Extension and Dewhurst 30 and 31 Extension wells, the Applicant shall revise its Rehabilitation Management Plan to the satisfaction of [the Secretary](#).
30. The Applicant shall fully seal and rehabilitate all boreholes, to the satisfaction of [the Secretary](#), no longer than 10 years after drilling of the Dewhurst 13-18H Extension and Dewhurst 30 and 31 Extension is completed, unless a development application related to gas production is submitted to the Department by that date.
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SCHEDULE 4 ADDITIONAL PROCEDURES

NOTIFICATION OF LANDOWNERS

1. As soon as practicable after obtaining monitoring results showing:
 - (a) an exceedance of any relevant criteria in Schedule 3, the Applicant shall notify affected landowners in writing of the exceedance, and provide regular monitoring results to each affected landowner until the development is again complying with the relevant criteria; and
 - (b) an exceedance of any relevant air quality criteria in Schedule 3, the Applicant shall send a copy of the NSW Health fact sheet entitled "Mine Dust and You" (as may be updated from time to time) to the affected landowners and/or existing tenants of the land (including the tenants of any mine-owned land).

INDEPENDENT REVIEW

2. If an owner of privately-owned land considers the development to be exceeding the relevant criteria in Schedule 3, then he/she may ask the Secretary in writing for an independent review of the impacts of the development on his/her land.

If the Secretary is satisfied that an independent review is warranted, then within 2 months of the Secretary's decision the Applicant shall:

- (a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Secretary, to:
 - (i) consult with the landowner to determine his/her concerns;
 - (ii) conduct monitoring to determine whether the development is complying with the relevant criteria in Schedule 3; and
 - (iii) if the development is not complying with these criteria then identify the measures that could be implemented to ensure compliance with the relevant criteria; and
 - (b) give the Secretary and landowner a copy of the independent review.
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SCHEDULE 5 ENVIRONMENTAL MANAGEMENT, REPORTING AND AUDITING

ENVIRONMENTAL MANAGEMENT

Environmental Management Strategy

1. The Applicant shall prepare and implement an Environmental Management Strategy for the development to the satisfaction of the Secretary. This strategy must:
 - (a) be submitted to the Secretary for approval prior to the commencement of the construction of the Dewhurst 13-18H Extension or the Dewhurst 30 and 31 Extension;
 - (b) provide the strategic framework for environmental management of the development;
 - (c) identify the statutory approvals that apply to the development;
 - (d) describe the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the development;
 - (e) describe the procedures that would be implemented to:
 - (i) keep the local community and relevant agencies informed about the operation and environmental performance of the development;
 - (ii) receive, handle, respond to, and record complaints;
 - (iii) resolve any disputes that may arise during the course of the development;
 - (iv) respond to any non-compliance;
 - (v) respond to emergencies; and
 - (f) include:
 - (i) copies of any strategies, plans and programs approved under the conditions of this consent; and
 - (ii) a clear plan depicting all the monitoring required to be carried out under the conditions of this consent.

Management Plan Requirements

2. The Applicant shall ensure that the management plans required under this consent are prepared in accordance with any relevant guidelines, and include:
 - (a) detailed baseline data;
 - (b) a description of:
 - (i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);
 - (ii) any relevant limits or performance measures/criteria;
 - (iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;
 - (c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;
 - (d) a program to monitor and report on the:
 - (i) impacts and environmental performance of the development;
 - (ii) effectiveness of any management measures (see c above);
 - (e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;
 - (f) a program to investigate and implement ways to improve the environmental performance of the development over time;
 - (g) a protocol for managing and reporting any:
 - (i) incidents;
 - (ii) complaints;
 - (iii) non-compliances with statutory requirements; and
 - (iv) exceedances of the impact assessment criteria and/or performance criteria; and
 - (h) a protocol for periodic review of the plan.

Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.

Adaptive Management

3. The Applicant must assess and manage development-related risks to ensure that there are no exceedances of the criteria in Schedule 3. Any exceedance of these criteria and/or performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation.

Where any exceedance of these criteria and/or performance measures has occurred, the Applicant must, at the earliest opportunity:

- (a) take all reasonable and feasible steps to ensure that the exceedance ceases and does not reoccur;
- (b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and
- (c) implement remediation measures as directed by the Secretary, to the satisfaction of the Secretary.

Annual Review

- 4. By the end of March each year, or other timing as may be agreed by the Secretary, the Applicant shall review the environmental performance of the development to the satisfaction of the Secretary. This review must:
 - (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 out over the next year;
 - (b) include a comprehensive review of the monitoring results and complaints records of the development over the past calendar year, which includes a comparison of these results against the:
 - (i) 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;
 - (c) identify any non-compliance over the past calendar year, and describe what actions were (or are being) taken to ensure compliance;
 - (d) identify any trends in the monitoring data over the life of the development;
 - (e) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and
 - (f) describe what measures will be implemented over the current calendar year to improve the environmental performance of the development.

Revision of Strategies, Plans and Programs

- 5. Within 3 months of:
 - (a) the submission of an annual review under condition 4 above;
 - (b) the submission of an incident report under condition 7 below;
 - (c) the submission of an audit report under condition 9 below; or
 - (d) any modification to the conditions of this consent, (unless the conditions require otherwise),the Applicant shall review, and if necessary revise, the strategies, plans, and programs required under this consent to the satisfaction of the Secretary.

Note: This is to ensure the strategies, plans and programs are updated on a regular basis, and incorporate any recommended measures to improve the environmental performance of the development.

REPORTING

Incident Reporting

- 6. The Applicant shall immediately notify the Secretary and any other relevant agencies of any incident that has caused, or threatens to cause, material harm to the environment. For any other incident associated with the development, the Applicant shall notify the Secretary and any other relevant agencies as soon as practicable after the Applicant becomes aware of the incident. Within 7 days of the date of the incident, the Applicant shall provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.

Regular Reporting

- 7. The Applicant shall provide regular reporting on the environmental performance of the development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent.

INDEPENDENT ENVIRONMENTAL AUDIT

- 8. Within 12 months of the commencement of the construction of Dewhurst 13-18H Extension or the Dewhurst 30 and 31 Extension, and every 3 years thereafter, unless the Secretary directs otherwise, the Applicant shall commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:
 - (a) be conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary;
 - (b) include consultation with the relevant agencies;

- (c) assess the environmental performance of the development and assess whether it is complying with the requirements in this consent and any relevant EPL or petroleum title (including any assessment, plan or program required under these approvals);
- (d) review the adequacy of strategies, plans or programs required under the abovementioned approvals; and
- (e) recommend appropriate measures or actions to improve the environmental performance of the development, and/or any assessment, plan or program required under the abovementioned approvals.

Note: This audit team must be led by a suitably qualified auditor and include experts in any field specified by the Secretary.

- 9. Within 6 weeks of the completion of this audit, or as otherwise agreed by the Secretary, the Applicant shall submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report.

ACCESS TO INFORMATION

- 10. Within 6 months of the date of this consent, the Applicant shall:
 - (a) make copies of the following publicly available on its website:
 - (i) the documents referred to in condition 2 of Schedule 2;
 - (ii) all current statutory approvals for the development;
 - (iii) all approved strategies, plans and programs required under the conditions of this consent;
 - (iv) a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs;
 - (v) a complaints register, updated monthly;
 - (vi) the annual reviews of the development;
 - (vii) any independent environmental audit of the development, and the Applicant's response to the recommendations in any audit;
 - (viii) any other matter required by the Secretary; and
 - (b) keep this information up-to-date, to the satisfaction of the Secretary.
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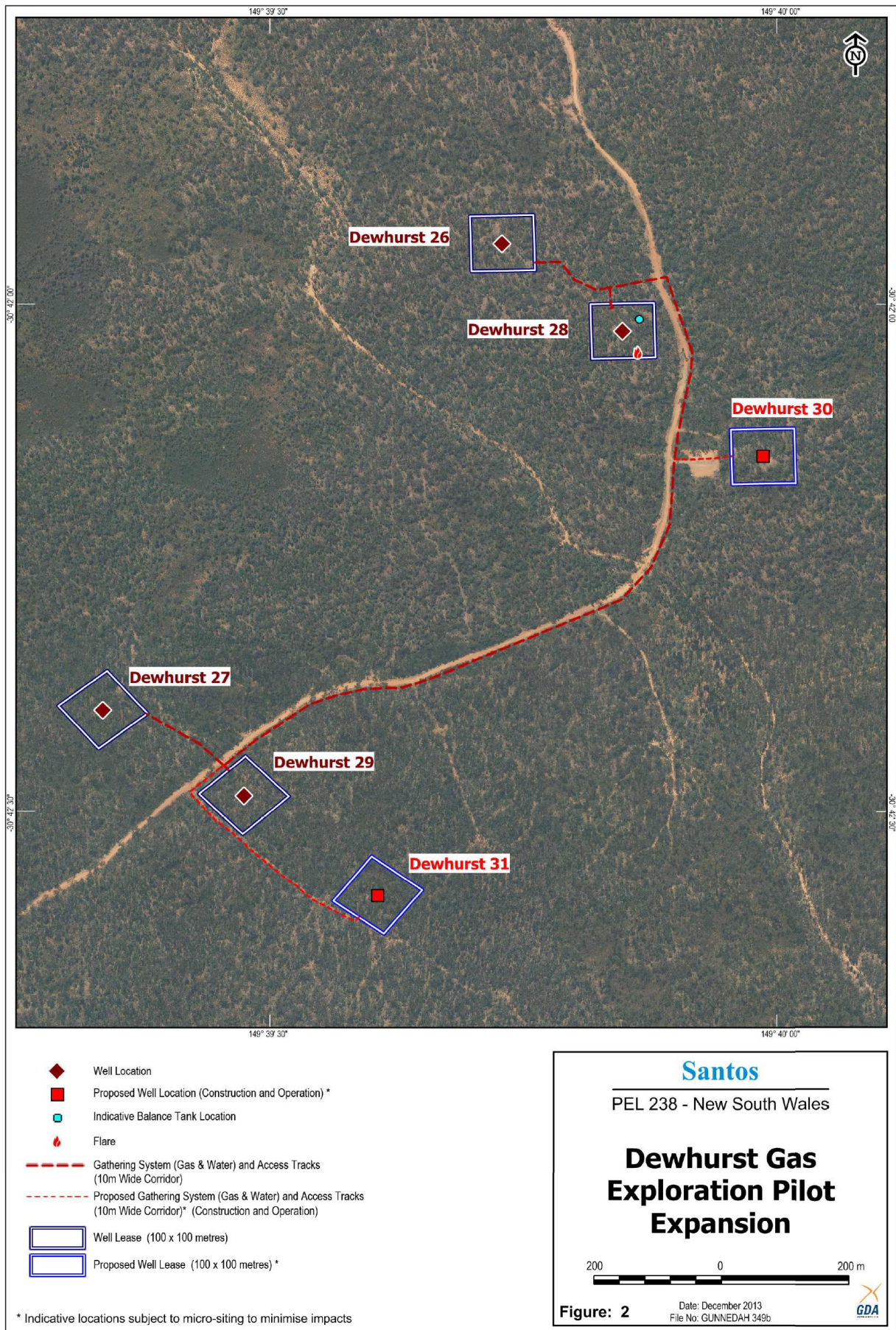
APPENDIX 1: SCHEDULE OF LAND

<i>Well</i>	<i>Lot Description</i>
Dewhurst 13	Lot 32 DP 757104
Dewhurst 14	Lot 32 DP 757104
Dewhurst 15	Lot 32 DP 757104
Dewhurst 16H	Lot 32 DP 757104
Dewhurst 17H	Lot 32 DP 757104
Dewhurst 18H	Lot 32 DP 757104
Dewhurst 26	Crown Land State Forest
Dewhurst 27	Crown Land State Forest
Dewhurst 28	Crown Land State Forest
Dewhurst 29	Crown Land State Forest
Dewhurst 30	Crown Land State Forest
Dewhurst 31	Crown Land State Forest

APPENDIX 2: DEVELOPMENT AREAS (SITE)

Land directly affected by the development components shown in the figures below.





APPENDIX 3: NOISE ASSESSMENT

Applicable Meteorological Conditions

1. The noise criteria in Table 3 are to apply under all meteorological conditions except the following:
 - (a) average wind speed at microphone height exceeds 5 m/s;
 - (b) wind speeds greater than 3 m/s measured at 10 m above ground level; or
 - (c) temperature inversion conditions greater than 3°C/100 m or stability category F.

Determination of Meteorological Conditions

2. Except for wind speed at microphone height, the data to be used for determining meteorological conditions shall be that recorded by the meteorological station located on the site.

Compliance Monitoring

3. Attended monitoring is to be used to evaluate compliance with the relevant conditions of this consent.
4. Unless otherwise agreed with the Secretary, this monitoring is to be carried out in accordance with the relevant requirements for reviewing performance set out in the *NSW Industrial Noise Policy* (as amended from time to time), in particular the requirements relating to:
 - (a) monitoring locations for the collection of representative noise data;
 - (b) meteorological conditions during which collection of noise data is not appropriate;
 - (c) equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment; and
 - (d) modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration.

APPENDIX 4: STATEMENT OF COMMITMENTS

Item	Commitment
Activity type	The Dewhurst Gas Exploration Pilot Expansion (proposed activity) includes the expansion of operations at the Dewhurst 13-18H and Dewhurst 26-31 pilots, and operation of both pilots for up to three years. Works at Dewhurst 13-18H involve re-entering three existing wells to convert single horizontal wells to triple-stacked horizontal wells. Works at Dewhurst 26-31 involve the construction of two additional wells on new lease areas to expand the pilot from four to six wells.
Location	The proposed activity is within Petroleum Exploration Licence (PEL) 238, on private and Crown land (Dewhurst 13-18H) and within the Pilliga East State Forest (Dewhurst 26-31).
Hours of operation	Hours of operation will be up to 24 hours a day, seven days a week.
Activity duration	Approximately 5-6 months construction/drilling and up to 3 years for operation of the wells.
Proposed commencement date	Works are scheduled to commence in the second quarter of 2014.
Maximum area of disturbance	8.89 ha (Dewhurst 13-18H – 5.37 ha; Dewhurst 30/31 – 3.52 ha)
Rehabilitation commitments and timeframes	Pilot well decommissioning and rehabilitation of the well lease areas and access tracks will occur within 6 months of abandonment where practical. Pilot wells and ancillary infrastructure will be decommissioned and lease areas rehabilitated as outlined in Section 4.5 of the Environmental Impact Statement (EIS).
Stakeholder consultation	<ul style="list-style-type: none"> Community consultation will be undertaken in accordance with Chapter 5 of the EIS. Advice will be provided to relevant landowners that may be impacted by the activity 14 days prior to the proposed activity commencing. Narrabri Shire Council will be consulted on a monthly basis where appropriate. Updates on the proposed activity will be provided to the Narrabri Community Consultation Committee. Advertisements will be placed in the local media of the up-coming exploration and drilling activities. The local police will be notified of the proposed drilling activities and provided with a road traffic plan specifying the route, time and location of the drilling rig 14 days prior to the drilling rig mobilising to site.
Land resources	<p>Construction</p> <ul style="list-style-type: none"> Excess topsoil and subsoil generated during site preparation activities will be stockpiled onsite and used as backfill following completion of drilling. Stockpiles will be managed according to best management practices such as the measures outlined in <i>Managing Urban Stormwater: Soils and Construction</i> (Landcom, 2004) ('the Blue Book'). Erosion and sediment controls will be implemented where necessary during construction activities, in accordance with the guidelines, principles and recommended minimum design standards contained in Managing Urban Stormwater: Soils and Construction – Volume 1 (the Blue Book). These controls will be maintained until disturbed areas of the site are stabilised.

Item	Commitment
	<ul style="list-style-type: none"> ▪ The quantity of chemicals, fuels and oils stored onsite will be minimised, where practicable. ▪ All additives, chemicals, fuels and oils stored onsite will be kept in an appropriately secured, bunded storage shed in accordance with the relevant Safety Data Sheet (SDS). ▪ Where there is a risk of contamination pits will be lined or material will be stored in surface tanks or metal bins. ▪ An SDS register of all chemicals used or stored onsite will be maintained. ▪ Maintenance of vehicles, plant and equipment will occur offsite at an appropriately licensed facility unless deemed necessary and appropriate to conduct such maintenance onsite. ▪ Any spills or leaks will be contained and cleaned up immediately using the spill kit. Contaminated material (such as contaminated soil or absorbent materials) will be placed in a bag and removed from site for disposal at a licensed waste facility. ▪ Plant and equipment will be inspected daily to ensure these are properly maintained. <p>Operation</p> <ul style="list-style-type: none"> ▪ Ongoing management and maintenance of remaining infrastructure onsite will occur, including water transfer area and well heads. ▪ The gathering system water pressure will be monitored. Should line failure occur between the wells to the transfer tanks at Dewhurst 14 and Dewhurst 28, operation of the well will be suspended until the problem is rectified. ▪ The two pilot sites will be rehabilitated in accordance with Section 4.5 of the EIS. ▪ <i>Any spills or leaks during operation will be contained and cleaned up immediately using a spill kit. Contaminated material (such as contaminated soil or absorbent materials) will be placed in a bag and removed from the site of the spill for disposal at a licensed waste facility.</i>
Groundwater	<p>Construction</p> <ul style="list-style-type: none"> ▪ The wells will be designed and constructed in accordance with the <i>NSW Coal Seam Gas Code of Practice Well Integrity</i> (DTIRIS, 2012). ▪ Drilling and installation operations, well control, waste management and abandonment procedures for the pilot wells will be in accordance with accepted industry practices and in accordance with the processes outlined in the EIS. ▪ A driller that holds the relevant qualifications as defined by the NSW Office of Water will be onsite during drilling of the top hole until the surface casing is set, cemented, and pressure tested. During this time, there will be 24 hour coverage by one person working the day shift and on call at site during the night. This will ensure that the appropriate knowledge of water legislation and regulation in NSW and technical skills are employed to avoid impacts to surface and groundwater sources. ▪ Excessive drilling fluid losses will be cured by loss circulation material (cellulose material such as sawdust or other benign naturally occurring substances, as required) to ensure most fluids return to the surface. ▪ Santos will make reasonable endeavours to seek permission (from landowners) to access registered groundwater bores within 2 km of the two pilot sites to undertake groundwater monitoring prior to drilling, to establish baseline conditions, and on completion of drilling, to determine if there are any impacts. Where access to bores is granted (and the bore is functioning), monitoring will include water level measurements and water quality observations in the field, and sampling for analysis by an accredited laboratory. <p>Operation</p> <ul style="list-style-type: none"> ▪ The volume of water extracted from the pilot wells will be monitored.

Item	Commitment
	<ul style="list-style-type: none"> Pressure gauges will be fitted to the pilot wells, and monitored remotely through a supervisory control and data acquisition (SCADA) system. Should pressure change due to a leak, the pilot wells will be shut down immediately and the affected area investigated. The groundwater monitoring program will be implemented. In line with monitoring during drilling, Santos will make reasonable endeavours to seek permission (from landowners) to continue monitoring of registered groundwater bores within 2 km of the two pilot sites to determine if there are any impacts to aquifers. The wells will be decommissioned as soon as they are no longer required.
Surface water	<p>Construction</p> <ul style="list-style-type: none"> Water will not be extracted from nearby watercourses, including Mount Pleasant Creek, Tuppiari Creek, Cowallah Creek or Jacks Creek. The existing diversion bund at Dewhurst 13-18H will be maintained on the up-slope side of the lease areas to divert clean water around the work area. Diversion bunds will be installed and maintained for the Dewhurst 30 and 31 lease areas. Drilling fluids will be contained in surface tanks which will be regularly inspected and maintained. Water that drains to the cellar pit will be circulated with the drilling fluid throughout the drilling process. Should any formation fluid rise through the well, it will be captured in the waste fluid tank and will be removed to a licensed waste facility that is able to accept liquid waste for disposal or treatment. Drilling fluids will be transported to and from site by an appropriately licensed contractor. Fuel and lubricants will be stored onsite only when necessary and maintained offsite whenever possible. Wastewater generated through general site activities will be removed by an appropriately licensed contractor for disposal at a licensed facility or treated to an appropriate quality prior to discharging. All areas storing or handling fuel, fuel using equipment, and chemicals will be bunded in accordance with <i>Australian Standard 1940–2004; The Storage and Handling of Flammable and Combustible Liquids</i> or other relevant guidelines. Weather forecast will be monitored and in the event that prolonged, severe wet weather or flooding is predicted, works will cease and plant, machinery and any chemicals will be secured and bunded. A minimum freeboard of 300 mm will be maintained for any tanks containing liquid waste. <p>Operation</p> <ul style="list-style-type: none"> The surface infrastructure at the lease areas will be regularly inspected. The surface water monitoring program will be implemented.
Biodiversity	<ul style="list-style-type: none"> Micro-siting of lease areas and service corridors locations will be undertaken at Dewhurst 30 and 31 during detailed design and pre-clearance survey stage to minimise impacts on the ecological communities and species. Clearing of hollow-bearing trees will be avoided where possible. While clearing or disturbance to vegetation occurs, a fauna spotter/catcher will be onsite to supervise works. Hollow logs removed from the disturbance areas are to be relocated to habitats adjacent to the lease areas under supervision from the fauna/spotter catcher. Fauna sensitive clearing techniques will be implemented, including vibrating the bucket on large trees (particularly hollow-bearing trees) prior to clearing, and dismantling large trees.

Item	Commitment
	<ul style="list-style-type: none"> ▪ The site boundary will be clearly demarcated to ensure that plant and vehicles keep within the approved area of disturbance. ▪ The two pilot sites will be rehabilitated in accordance with Section 4.5 of the EIS. ▪ Construction and operational vehicles/plant will only travel on the designated access tracks. Site speed limits will be imposed to reduce the potential of fauna strike and to reduce dust generation. ▪ Prior to earthworks, noxious weeds present onsite will be removed or treated with herbicide to help prevent or reduce their spread. ▪ Weed management measures will be undertaken; including wash down of all plant and machinery (including vehicles) in accordance with legislative requirements to prevent the spread of weeds and pathogens. ▪ Weed monitoring will occur throughout all phases of the proposed activity. Weed removal will be carried out as necessary. ▪ A suitable offset will be provided prior to the decommissioning of the proposed activity. This will include the appropriate quantification of the offset quantum required to adequately offset the biodiversity impacts associated with the proposed activity.
Air quality	<ul style="list-style-type: none"> ▪ Dust will be suppressed as required by spraying water along the access tracks and lease areas. ▪ Site speed limits will be imposed to minimise dust generated by vehicle movements. ▪ Loose, dust generating materials will be covered when transported to and from site. ▪ Vehicles, plant and equipment will be regularly maintained to ensure they are in good operating condition. ▪ Vehicles, plant and machinery will be turned off when not in use rather than left idling. ▪ Rehabilitation works, including landform establishment, will occur within six months of abandonment.
Greenhouse Gases	<p>Construction</p> <ul style="list-style-type: none"> ▪ Retain timber and woody debris cleared during site preparation (excluding merchantable timber identified by Forestry NSW) for use in rehabilitation to assist in re-establishing carbon sink. ▪ Energy efficient equipment and processes will be used where possible. ▪ Water based drilling fluids will be used. ▪ Appropriate monitoring of emissions and consumables will be undertaken for legislative reporting requirements (such as to inform National Greenhouse and Energy Reporting Scheme (NGERS) calculations). <p>Operation</p> <ul style="list-style-type: none"> ▪ Regular monitoring and maintenance of equipment and pipes will occur to identify any leaks to minimise fugitive emissions. ▪ A fugitive emissions monitoring program will be implemented in the Energy NSW CSG Exploration and Appraisal Program (E&A Program) area, incorporating a leak detection and repair program using the Picarro Cavity Ring Down Spectrometer. ▪ Appropriate monitoring of emissions and consumables will be undertaken for legislative reporting requirements (such as to inform NGERS calculations).
Noise	<ul style="list-style-type: none"> ▪ Forestry NSW, the private landowner at Dewhurst 13-18H and the next two nearest sensitive receivers will be notified prior to the proposed activity commencing. ▪ During construction, feasible and reasonable work practices will be implemented with the aim to achieve LA_{eq} 40 dB(A) noise levels during recommended standard construction hours and LA_{eq} 35 dB(A) outside of these times.

Item	Commitment
	<ul style="list-style-type: none"> During operation, in the event that the residence located 500 m south of the Dewhurst 13-18H Pilot (RR4) is to be re-occupied, monitoring will be undertaken to confirm operational noise levels at this location. If noise monitoring determines that levels are above noise criteria, an agreement will be negotiated with the landowner, or further feasible and reasonable mitigation measures will be implemented to reduce noise levels.
Traffic and Transport	<ul style="list-style-type: none"> Vehicles will not travel at speeds greater than 80 km per hour along unsealed roads (including within the forest) unless otherwise signed. Heavy vehicle activity passing through residential areas will be confined to standard construction hours (7.00 am to 6.00 pm Monday to Friday, 8.00 am to 1.00 pm Saturday). All site staff and delivery drivers will receive the appropriate induction (consistent with Santos policies), which will include driver protocols and identification of any local hazards. An in-vehicle monitoring system (IVMS) will be fitted to all Santos vehicles. Construction vehicle movements will be restricted to designated routes to/ from site via the Newell Highway. Construction vehicle activity will be managed and controlled in the vicinity of the two pilot sites. Any damage to roads caused by construction activities will be repaired at Santos cost in accordance with the Permit to Occupy, land access agreement or the PEL 238 conditions. Access to the Dewhurst 13-18H and Dewhurst 26-31 pilots shall primarily be via the intersection of X-Line Road and the Newell Highway.
Waste	<ul style="list-style-type: none"> Management of drilling fluids and drill cuttings in accordance with principles outlined in Sections 4.3.7.5 and 4.3.7.6. Management of waste, including its transport, will comply with the <i>Protection of the Environment Operations Act 1997</i> (POEO Act) and <i>Protection of the Environment Operations (Waste) Regulation 2005</i> (POEO (Waste) Regulation). The Waste Management Plan will be implemented, that will be based on the waste reduction hierarchy of avoid, reduce, reuse, recycle, recover, treat and dispose. General site waste will be segregated according to their classifications under the <i>Waste Classification Guidelines</i> (DECCW, 2009) and stored in bins or skips within a designated waste transfer point within the lease area prior to transportation for disposal. Regulated waste will be collected by licensed contractors for off-site disposal. General and recyclable waste will be transported to local council landfill and recycling facilities. Following completion of cementing, excess fluids and cement slurries will be segregated in steel waste tanks and removed and disposed of by a licensed waste disposal company. Sewage waste will be removed from site by a licensed contractor for treatment and disposal, as required. The type and volume of all waste removed from site will be recorded. All staff and contractors will be made aware of waste management procedures during the site induction and through toolbox talks. Chemical, fuel and oil containers will be managed according to the SDS or manufacturers' directions to avoid potential impacts to the environment or human health.
Hazards	Construction

Item	Commitment
	<ul style="list-style-type: none"> Site safety protocols, incident management and emergency procedures will be implemented during the construction and drilling works. The two pilot sites will be kept in a clean and tidy manner during site preparation, drilling activities and operation of the pilot wells. Chemicals and potentially hazardous substances will be used and stored according to regulatory requirements including the <i>Work Health and Safety Act 2011</i>. Any dangerous goods will be transported according to regulatory requirements under the <i>Dangerous Goods (Road and Rail Transport) Act 2008</i>. Chemical, fuel and oil containers will be managed according to the SDS or manufacturers' directions to avoid potential impacts to the environment or human health. <p>Operation</p> <ul style="list-style-type: none"> The flare at Dewhurst 14 will be designed to limit the risk of ignition. Acceptable radiation limits for various locations at the flare site will be determined based on the <i>American Petroleum Institute (API) 521 Standard</i> (API, 2007) and <i>AS 60079.10.1 – Classification of Areas – Explosive Gas Atmospheres</i>. Within the sterile zone, a high-density polyethylene (HDPE) liner will be laid, covered with approximately 300 mm of compacted soil and blue metal aggregate. Where feasible best practice bushfire risk management will be implemented. All statutory obligations for bushfire management will be met. An education program for staff and contractors regarding the risks from bushfires in consultation and collaboration with relevant stakeholders will be implemented.
Social and Economic	<ul style="list-style-type: none"> Consultation activities will occur in accordance with Chapter 5 of the EIS. Continued contribution to the local sponsorship program. Implementation of a buy local program.
Other	<ul style="list-style-type: none"> Project staff and contractors will be made aware of their statutory obligations to protect Aboriginal cultural heritage objects under the <i>National Parks & Wildlife Act 1974</i>, through the site induction and toolbox talks. All works will be undertaken to comply with Part 6 of the NPW Act. If any previously unidentified Aboriginal cultural heritage objects are identified during works, then such in the immediate area will cease, the area will be cordoned off and the NSW Office of Environment and Heritage (NSW OEH) Enviroline 131 555 will be contacted. A suitably qualified archaeologist will be contacted so that the site can be assessed and managed in accordance with relevant legislative and policy requirements. In the event that skeletal remains are uncovered, then works in the immediate area will cease, the area will be cordoned off and the NSW Police will be contacted. Should the NSW Police determine that the material is not recent, the NSW OEH Enviroline 131 555 and relevant Aboriginal stakeholders will be contacted to determine an action plan for the management of the skeletal remains prior to works re-commencing. If any previously unidentified potential non-Aboriginal cultural heritage material is identified during construction or drilling, then works in the immediate area will cease, the area will be cordoned off and the NSW OEH Heritage Branch will be contacted. A suitably qualified archaeologist will be contacted so that the site can be assessed and managed.

