

# NARRABRI GAS PROJECT

## Noise Management Plan

### PHASE 1

**0041-150-PLA-0008**

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## Acronyms and abbreviations

| Acronym         | Description  |
|-----------------|--|
| °C              | degrees Celsius  |
| AS/NZS          | Australian Standard/New Zealand Standard                                   |
| CCC             | Community Consultative Committee   |
| CoC             | Conditions of consent for the NGP SSD 6456                                 |
| CSG             | coal seam gas  |
| dB              | decibel  |
| D&C             | drilling and completions   |
| DECC            | The former NSW Department of Environment and Climate Change                |
| DECCW           | The former NSW Department of Environment, Climate Change and Water         |
| DPE             | NSW Department of Planning and Environment                                 |
| DPIE            | The former NSW Department of Planning, Industry and Environment            |
| EIS             | environmental impact statement   |
| EMP             | environmental management plan  |
| EMS             | Environmental Management Strategy  |
| EPA             | NSW Environment Protection Authority                                       |
| EP&A Act        | <i>Environmental Planning and Assessment Act 1979 (NSW)</i>                |
| EP&A Regulation | Environmental Planning and Assessment Regulation 2021                      |
| EPBC Act        | <i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i> |
| EPL             | environment protection licence under the POEO Act                          |
| EQulS           | Environmental Quality Information System                                   |
| ha              | hectare  |
| IEA             | Independent Environmental Audit  |
| km              | kilometre  |
| km/hr           | kilometre per hour   |
| m               | metre  |
| m/s             | metres per second  |
| ML              | megalitre  |
| mm              | millimetre   |
| NP&W Act        | <i>National Parks and Wildlife Act 1974 (NSW)</i>                          |
| NPfI            | <i>Noise Policy for Industry 2017</i>                                      |
| PAL             | petroleum assessment lease under the PO Act                                |
| PEL             | petroleum exploration licence under the PO Act                             |
| PO Act          | <i>Petroleum (Onshore) Act 1991 (NSW)</i>                                  |
| POEO Act        | <i>Protection of the Environment Operations Act 1997 (NSW)</i>             |
| POEO Regulation | Protection of the Environment Operations (General) Regulation 2009         |
| POP             | Petroleum Operations Plan  |



| Acronym | Description   |
|---------|---|
| PPL     | petroleum production lease under the PO Act             |
| PPLA    | petroleum production lease application under the PO Act |
| RBL     | rating background level                                 |
| SEPP    | State Environmental Planning Policy                     |
| SMS     | Santos Management System                                |
| SSD     | State significant development                           |

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## 1. Introduction

### 1.1 Narrabri Gas Project

#### 1.1.1 Background

Resource exploration has been occurring in the north-western area of NSW since the 1960s; initially for oil, but more recently for coal and gas. Santos NSW Pty Ltd began exploring for natural gas from coal seams in north-western NSW in 2008 and is currently conducting coal seam gas (**CSG**) exploration and appraisal activities within Petroleum Exploration Licence (**PEL**) 238, Petroleum Assessment Lease (**PAL**) 2 and Petroleum Production Lease (**PPL**) 3, located in the Gunnedah Basin about 20 kilometres (**km**) south-west of the town of Narrabri. Activities in PAL 2 have focussed on the Bibblewindi and Bohena CSG pilots, whilst recent activities in PEL 238 have focussed on the Dewhurst and Tintfield CSG pilots.

The Narrabri Coal Seam Gas Utilisation Project (Wilga Park Power Station and associated infrastructure) operates under an existing Part 3A approval under the *Environmental Planning and Assessment Act 1979* (NSW) (**EP&A Act**). It was originally approved in 2008, with various modifications approved between 2011 and 2019. It encompasses a gas gathering system, a compressor and associated flare, a gas flow line from Bibblewindi to Wilga Park within a 10 metre (**m**) corridor with a riser at Leewood and an expansion of the existing Wilga Park Power Station from 12 to 40 megawatts.

#### 1.1.2 Current Project

On 30 September 2020, Santos NSW (Eastern) Pty Ltd (**Santos**) obtained development consent for State significant development (**SSD**) 6456 to develop the Narrabri Gas Project (**NGP**) (**the Project**). Approval EPBC 2014/7376 under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (**EPBC Act**) was granted on 24 November 2020.

The Project includes the progressive installation of up to 850 new gas wells on up to 425 new well pads over approximately 20 years and the construction and operation of gas processing and water treatment facilities. The Project area covers about 950 square kilometres (95,000 hectares) in size and the Project footprint will directly impact about 1 % of that area.

Four phases of development are defined under the consent, including:

- Phase 1 - exploration and appraisal;
- Phase 2 - construction activities for production wells and related infrastructure;
- Phase 3 - gas production operations; and
- Phase 4 - gas well and infrastructure decommissioning, rehabilitation and closure.

Phase 1 of the Project is defined in the consent as the phase of the development comprising ongoing exploration and appraisal activities in the Project area, including:

- seismic surveys;
- core and chip holes;
- construction and operation of pilot wells (up to 25 wells on up to 25 well pads across the project area); and
- pilot well ancillary infrastructure, including access tracks, gas and water gathering lines, water balance tanks, safety flaring infrastructure, utilities and services, and environmental monitoring equipment including groundwater monitoring bores.

Santos plans to continue exploration and appraisal of the resource in the near term until a final investment decision can be made. The exploration and appraisal activities will include continued operation of Santos' existing wells, infrastructure and facilities in PEL 238 and PAL 2, and construction and operation of new core holes, pilot wells and supporting infrastructure permitted under Phase 1.

Santos' existing exploration and appraisal activities in PEL 238 and PAL 2 include:

- Tintsfield Pilot;
- Bibblewindi East Pilot;
- Bibblewindi West Pilot;
- Dewhurst North Pilot;
- Dewhurst South Pilot;
- Dewhurst northern and southern flow lines;
- Leewood Water Management Facility including ponds, water treatment plant and irrigation area;
- Bibblewindi Facility including gathering system, water balance tank, compressor and flare; and
- Bibblewindi to Leewood buried gas pipeline.

These exploration and appraisal activities will continue as part of the NGP. The initial, new-appraisal Phase 1 scope is a relatively minor extension to these existing exploration and appraisal activities.

The Phase 1 scope is planned to include the construction and operation of:

- 4 coreholes;
- 6 pilot wells;
- 2 deep reservoir monitoring bores (converted coreholes);
- new shallow water monitoring bores;
- associated linear infrastructure;
- seismic surveys (length and location to be determined); and
- continued operation of Santos' existing exploration and appraisal activities including workover activities.

The full definitions of the approved activities for Phases 2, 3 and 4 of the Project are provided in the consent. Further details regarding the staging of the works and the exact scope for each are as approved in the Field Development Plan.

## 1.2 Purpose and scope of Plan

This Noise Management Plan (**NMP** or **Plan**) has been prepared by suitably qualified and experienced persons as listed in the document control tables. The Plan has been prepared for Phase 1 of the development in accordance with condition A23 of Schedule 2 of SSD6456. Staging of the NMP was approved by the Planning Secretary in letter dated 14 April 2021. The Plan will be revised, updated and approved prior to subsequent phases of the development to reflect the additional gas production infrastructure; newly constructed infrastructure and facilities; updated operational procedures and any revised lease or licence conditions.

The Plan has been developed in accordance with the requirements of approval conditions of PEL 238; PAL 2; PPL 3; compliance conditions of Environment Protection Licence (**EPL**) 20350; the SSD 6456 conditions of consent (**CoC**); and the relevant noise management guidelines. It provides details on the management and mitigation of noise generated during construction and operation of Phase 1 to minimise any negative effect on sensitive receivers and amenity. The Plan also details the monitoring and reporting requirements associated with the management of noise impacts of the Project and provides full details of the relevant activity approval and development consent conditions. The consent conditions directly relevant to noise management are provided in section 3 and Appendix B.

## 1.3 Objectives

The objectives of this Plan are to:

- provide the relevant statutory requirements (including any relevant approval, licence or lease conditions);
- provide the relevant commitments or recommendations identified in the Environmental Impact Statement (**EIS**) for the Project;
- identify sensitive receivers and noise sensitive areas for the Project;
- outline relevant noise criteria for the range of expected Project activities;
- describe measures to prevent any material harm to the environment where reasonable and feasible;
- describe management measures to minimise noise generation where prevention is not feasible, including accounting for noise-enhancing meteorological conditions;
- outline on-site noise monitoring and recording requirements; and
- describe reporting protocols to notify the regulator, relevant stakeholders and affected residents.

## 1.4 Performance measures

In order to comply with the applicable noise criteria for the various Phase 1 activities as set out in conditions B7 to B9, Santos will implement all reasonable and feasible measures to ensure that the Project complies with the following performance measures related to the management of Project-generated noise:

- prioritise the prevention of any material harm to the environment from noise generating activities of the development;
- where prevention is not reasonable and feasible, minimise the construction, operational, low frequency and road noise of the development;
- monitor and record major equipment noise levels and make this data readily available at the request of DPE or the NSW Environment Protection Authority (**EPA**);

- minimise the noise impacts of the development during noise-enhancing meteorological conditions when the noise criteria in the CoC do not apply;
- operate a suitable system to enable the public to get up to date information on any construction or non-routine safety flaring operations that have the potential to exceed the noise criteria in the CoC; and
- regularly assess meteorological and noise monitoring data and modify operations in the Project area in response to this data to ensure compliance with the relevant consent conditions.

## 1.5 Consultation

Consultation with the EPA and the Community Consultative Committee (**CCC**) has been undertaken during the preparation and finalisation of this NMP. The primary objective of consultation was to inform and involve all stakeholders during each stage of Plan development.

The comments received from the EPA centred around the NMP fully addressing the requirements of the consent and the EPL 20350. There were also comments regarding the applicability of meteorological conditions applicable to noise limits.

Comments provided by the CCC related generally to the request for further information and further detail on the Phase 1 activities. Clarifications were also requested around working hours and the negotiated agreements with owner/s of the relevant residence or land to exceed the noise criteria.

Consultation records, a summary of issues raised during consultation and how these issues were addressed, are provided in Appendix A.

## 1.6 Structure of this Plan

The Noise Management Plan sets out the details required by the CoC B13 and provides additional noise management requirements to address the objectives in section 1.3. The structure of this Plan is as follows:

|           |   |
|-----------|---|
| Section 1 | Provides an introduction to the Project and the context, scope, purpose and objectives of this Plan. It further provides the performance measures related to managing, monitoring and measuring noise |
| Section 2 | Defines the roles and responsibilities of personnel involved with the NGP, including consultants, contractors and subcontractors  |
| Section 3 | Outlines the statutory provisions relevant to the management of noise generated by development of the NGP   |
| Section 4 | Describes the characteristics of the Project site, including details about the sensitive receivers and noise sensitive areas  |
| Section 5 | Outlines the noise criteria required for the Project, including under different meteorological conditions, and provides the locational criteria from the consent                                      |
| Section 0 | Provides the details of the potential noise impacts from the construction and operational activities scheduled to be as part of Phase 1   |



|  |  |
|--|--|
| Section Error! Reference source not found. | Details the noise management measures to be implemented during construction and managing very noise-enhancing meteorological conditions  |
| Section 6.2                                | Sets out the Phase 1 noise monitoring program requirements, and provides the details for both attended and unattended noise monitoring   |
| Section 13                                 | Details the record keeping and the noise monitoring data management  |
| Section 10                                 | Describes the actions required for noise-related incidents, exceedances and non-compliances. This section also details the stakeholder engagement process and complaint management                     |
| Section 11                                 | Identifies the noise reporting and management plan evaluation and review processes. This section also details the environmental improvement measures associated with the noise impact from the Project |
| Section 12                                 | References   |
| Section 13                                 | Glossary   |
| Appendix A                                 | Consultation records   |
| Appendix B                                 | Compliance conditions relevant to this Plan  |

## 1.7 Distribution

The approved plan will be implemented in accordance with condition B14. A copy of the latest approved NMP is available to all Santos personnel via the Santos intranet. In accordance with consent condition D13, the latest copy can also be found on the Project website, including associated monitoring results, complaint register, a record of all incidents and non-compliances, Annual Reviews, Independent Environmental Audits and the Applicant's response to the recommendation in any audit report.

In accordance with specific licence, approval or code of practice conditions, a latest approved copy of this NMP is also available at the Santos' Operations Centre located at 300 Yarrie Lake Road in Narrabri. This is where operational and field staff commence and finish each workday.

Note that any printed copies of the NMP are uncontrolled.

## 2. Roles and responsibilities

All Santos employees and contractors involved in the Narrabri Gas Project are responsible for the environmental performance of their activities and for complying with all legal requirements and obligations. Project personnel will be required to comply with approval requirements of the activities they undertake and potential environmental impacts from all activities will be managed in accordance with the Project's relevant management plan(s).

In accordance with consent condition D1, the Environmental Management Strategy (**EMS**) sets out the role, responsibility, authority and accountability of all key personnel involved in the environmental management of the Project, including the requirements and obligations in this NMP. All roles, responsibilities and accountabilities have been assigned in accordance with Santos Management System *SMS-MS14\_People Management Standard*.

### 3. Regulatory requirements and criteria

The Project is permissible with development consent under the *State Environmental Planning Policy (Resources and Mining) 2021*, and is identified as a 'State significant development' under Section 4.38 of the EP&A Act and the *State Environmental Planning Policy (Planning Systems) 2021*.

The Project was subject to the State significant development assessment and approval provisions of Division 4.1 of Part 4 of the EP&A Act and was granted approval as a State significant development under the EP&A Act and the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (**EPBC Act**).

The Project will be carried out in accordance with the:

- relevant existing development consents and activity approvals;
- the conditions of relevant tenements including PEL 238, PAL 2, PPL 3;
- the provisions of the *Petroleum (Onshore) Act 1991* (NSW) (**PO Act**) and relevant guidelines;
- EPL 20350 issued by the EPA and the provisions of the *Protection of the Environment Operations Act 1997* (**POEO Act**); and the
- conditions of consent for the NGP SSD 6456.

#### 3.1 Compliance conditions

Compliance conditions associated with the following licence(s), lease(s) and consent(s) are relevant to this NMP:

- PEL 238, granted on 1 September 1980 and most recently renewed on 12 April 2022;
- PAL 2, granted on 30 October 2007;
- PPL 3, granted on 15 December 2003;
- PPLs 13, 14, 15 and 16, once issued;
- EPL 20350; and
- SSD 6456.

##### 3.1.1 PEL 238

There are no specific conditions or obligations in PEL 238 related to noise management.

##### 3.1.2 PAL 2 and PPL 3

Lease condition 2 of PAL 2 state that activities must only be carried out in accordance with a Petroleum Operations Plan (**POP**) which has been approved by the Director-General of the Department of Primary Industries. Further, the POP must (i) identify how operations will be carried out on site in order to prevent and or minimise harm to the environment; and (ii) reflect conditions of approval under the EP&A Act, the POEO Act, and any other approvals relevant to PAL 2 and PPL 3. The latest version of the POP was approved on 18 September 2020. This NMP supports the POP and satisfies condition 2 of PAL 2 and PPL 3 by providing information about how Santos will undertake activities without exceeding operational and construction noise limits.

### 3.1.3 EPL 20350

Petroleum exploration, assessment and production' is a scheduled activity listed in Schedule 1 of the POEO Act. Under Section 48 of this Act, all scheduled activities are required to hold an environment protection licence. EPL 20350 is held for CSG activities in PEL 238, PAL 2 and PPL 3 and contains the following requirements and obligations in relation to the management of noise.

- condition L4 and sub-conditions identify the noise limits for operational activities; and
- condition L5 and sub-conditions define the hours of operation, including standard construction hours.

The specific requirements of conditions L4 and L5 and sub-conditions are presented in Table B1 in Appendix B.

### 3.1.4 Development Consent SSD 6456

There are a number of SSD 6456 consent conditions that are directly relevant to noise management, with the key conditions CoC B7 to B14. Table B2 in Appendix B specifies where each of the requirements of all the relevant SSD 6456 consent conditions are addressed in this Plan.

**Consent condition B7** states that Santos must ensure that noise generated by the development during the Operational Phase and Construction Phase outside of standard hours - including cumulative noise generated by the Wilga Park Power Station and ancillary activities, but excluding Phase 1 and 2 construction activities during standard construction hours, and non-routine safety flaring operations - does not exceed the criteria in Table 2 of the CoC. These criteria are summarised in Table 5.1 in section 5.

**Consent condition B8** states that Santos must implement all reasonable and feasible measures to ensure that the noise generated by Phase 1 and 2 construction activities during standard construction hours - including cumulative noise generated by the Project and noise from the Wilga Park Power station and ancillary activities in the Project area - does not exceed the criteria in Table 3 of the CoC. These criteria are summarised in Table 5.1 in section 5.

**Consent condition B9** states that Santos must implement all reasonable and feasible measures to ensure that the noise generated by non-routine flaring operations - including cumulative noise generated by the development and noise from the Wilga Park Power Station and ancillary activities in the Project area - does not exceed the criteria in Table 2 of the CoC at any residence on privately-owned land. These criteria are summarised in Table 5.1 in section 5.

**Consent condition B10** states that noise generated by the development must be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the *NSW Noise Policy for Industry* (EPA, 2017) (**Noise Policy for Industry**). Appendix 4 of the CoC specifies the meteorological conditions under which these criteria apply and requirements for evaluating compliance with these criteria (note that the consent conditions from Appendix 4 have been addressed in section 5).

**Consent condition B11** states that the criteria in Table 2 and Table 3 of the CoC do not apply if Santos has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and Santos has advised the Planning Secretary in writing of the terms of the agreement.

All noise criteria are summarised in Table 5.1 in section 5.

**Consent condition B12** states that Santos must comply with the following noise operating conditions:

- (a) implement all reasonable and feasible measures to:
  - (i) minimise the construction, operational, low frequency and road noise of the development;
  - (ii) attenuate all new plant and equipment that will operate in noise sensitive areas;
  - (iii) schedule non routine safety flaring and other non-routine maintenance activities at Leewood Facility and Bibblewindi facility that have the potential to exceed the noise criteria in Table 2, during the day period, where practicable;
  - (iv) monitor and record major equipment noise levels and make this data readily available at the request of the Department or the EPA;
  - (v) minimise the noise impacts of the development during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see Appendix 4 of CoC) (note that the consent conditions from Appendix 4 have been addressed in section 5);
- (b) operate a suitable system to enable the public to get up to date information on any construction or non-routine safety flaring operations that have the potential to exceed the noise criteria in this consent; and
- (c) regularly assess meteorological and noise monitoring data and modify operations in the project area in response to this data to ensure compliance with the relevant conditions of this consent.

**Consent condition B13** states that prior to the commencement of Phase 1, Santos must prepare a Noise Management Plan for the Project to the satisfaction of the Planning Secretary. This plan must:

- (a) be prepared by a suitably and experienced person/s;
- (b) be prepared in consultation with the EPA and CCC;
- (c) describe the measures to be implemented to ensure:
  - (i) compliance with the noise criteria and operating conditions in this consent;
  - (ii) reasonable and feasible noise mitigation measures are being employed;
  - (iii) noise impacts of the development are minimised during noise enhancing meteorological conditions under which the noise criteria in this consent do not apply (see Appendix 4 of CoC) (note that the consent conditions from Appendix 4 have been addressed in section 5);
  - (iv) any blasting impacts associated with the construction of the development are minimised;
- (d) describe the noise management system in detail; and
- (e) include a monitoring program that:
  - (i) evaluates and reports on:
    - the effectiveness of the noise management system;
    - compliance against the noise criteria in this consent; and
    - compliance against the noise operating conditions;
  - (ii) includes a program to calibrate and validate the unattended monitoring results with the attended monitoring results over time (so the unattended noise monitoring program can be used as a trigger for further attended monitoring where there is a risk of non-compliance with the noise criteria in this consent); and
  - (iii) defines what constitutes a noise exceedance, incident or non-compliance, and includes a protocol for identifying and notifying the NSW Department of Planning and Environment (DPE) and relevant stakeholders of these events.

**Consent condition B14** states that Santos must implement the Noise Management Plan once approved by the Planning Secretary.

**Consent condition B25** requires Santos to have a suitable meteorological station operating in the Project area that can measure, amongst other aspects, meteorological conditions in accordance with the Noise Policy for Industry, unless a suitable alternative is approved by the Planning Secretary following consultation with the EPA.

### 3.2 Relevant codes, standards, policies and guidelines

#### 3.2.1 NSW Industrial Noise Policy and Noise Policy for Industry

The EIS was submitted in January 2017 and assessed against the Secretary's Environmental Assessment Requirements (SEARs) which referenced the Industrial Noise Policy (INP) (EPA, 2000). The INP has since been superseded by the Noise Policy for Industry (**NPfI**) (EPA, October 2017). Under the NPfI transitional arrangements published by the EPA, the SEARs requirements referencing the INP were carried through the planning approval process. The CoC for SSD 6456 refer to the NPfI in Condition B10 stating the development must be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the NPfI. Appendix 4 of the CoC contradicts condition B10 requiring attended compliance monitoring be undertaken in accordance with the relevant requirements of the INP. Since the NPfI is referenced in the main body of the CoC and provides the most relevant up to date guideline on compliance monitoring, this NMP will adopt the NPfI where relevant.

#### 3.2.2 Interim Construction Noise Guideline

The *Interim Construction Noise Guideline* (DECC, 2009) (**Interim Construction Noise Guideline**) was developed to focus on applying a range of work practices most suited to minimise construction noise impacts, rather than focusing only on achieving numeric noise levels. While some noise from construction sites is inevitable, the aim of the Interim Construction Noise Guideline is to protect the majority of residences and other sensitive land users from noise pollution most of the time.

The Interim Construction Noise Guideline is specifically aimed at managing noise from construction works regulated by the EPA and is used to assist the EPA in setting statutory conditions in licences or other regulatory instruments.

#### 3.2.3 Road Noise Policy

The *Road Noise Policy* (DECCW, 2011) (**Road Noise Policy**) outlines the range of measures needed to minimise road traffic noise and its impacts. It is intended for use by:

- road project proponents;
- determining authorities and regulators involved in the approval and construction of road;
- projects and land use developments that generate additional traffic on existing roads;
- city and transport planners and policymakers dealing with issues such as route corridors, heavy vehicle transport and building codes; and
- acoustic specialists.

The Road Noise Policy will help the above individuals and agencies to assess and mitigate the impacts of traffic noise from new and redeveloped road projects, and traffic-generating developments on residential and other sensitive lands. It links with other NSW Government policies and plans to ensure that where road traffic exists, its noise impacts are appropriately identified and addressed.

### 3.3 EIS commitments

In the EIS Chapter 31, Santos has committed to implement a number of measures pending Project approval and a final investment decision. The EIS commitments relevant to noise management have been reproduced in Table 3.1 in accordance with consent condition D3(c) which states that Santos must ensure that (where relevant) the management plans include any relevant commitments or recommendations identified in the EIS. Note that in some instances a commitment may be no longer relevant or correct due to the management plan structure required by the SSD 6456 consent conditions, rather than the environmental management plan structure proposed in the EIS.

The noise and vibration assessment completed as part of the EIS found that vibration impacts will not be likely at residences given their distribution through the Project area, the nature of field development and mitigation and management measures set out in the noise assessment. Vibration buffer distances to achieve the daytime ‘human comfort’ criteria are predominantly less than the 200 m buffer distance set out under the Field Development Protocol.

If vibration-generating activities are to be undertaken in the vicinity of residences or buildings, a Vibration Management Plan will be developed and implemented.

**Table 3.1 - EIS commitments relevant to noise management**

| Number | EIS Commitments relevant to Noise Management   |
|--------|--|
| 1.2    | A Project wide environmental management strategy, comprising of a number of sub-plans to be used throughout the planning and design, construction, operation and decommissioning and rehabilitation stages of the Project are described in Chapter 30 [of the CoC]. The sub-plans are <sup>1</sup> : <ul style="list-style-type: none"> <li>• ...</li> <li>• Noise and Vibration Management Plan</li> <li>• ...</li> </ul> |
| 10.1   | Noise from the activity will meet the relevant noise criteria at residences unless a written agreement is in place with the landholder.  |
| 10.2   | A Noise Management Plan will be implemented.   |
| 10.3   | If vibration-generating activities are to be undertaken in the vicinity of residences or buildings, a Vibration Management Plan will be developed and implemented.   |
| 10.4   | If blasting is required, the Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration (ANZECC 1990) will be implemented.   |

As described in section 11 of this Plan and section 8 of the EMS, this Plan will be subject to regular evaluation and review. This will include the EIS commitments to ensure they remain current, applicable, and generally improve the environmental performance of the Project.

<sup>1</sup> Only the plans relevant to noise management have been listed. The full list of sub-plans is provided in the EMS section 3.5.



## 4. Existing environment

### 4.1 Regional climate

Winds in the Narrabri region are mainly from the south-east and the north, as presented in Figure 4.1. The breakdown of seasonal and daily wind rose diagrams indicate that the distributions of wind from season to season do not change significantly. Overall, the patterns remain relatively consistent. South-easterly winds are a dominant flow throughout each day, however the westerly component tends to develop during the afternoon, while the northerly component tends to ease during the evening.

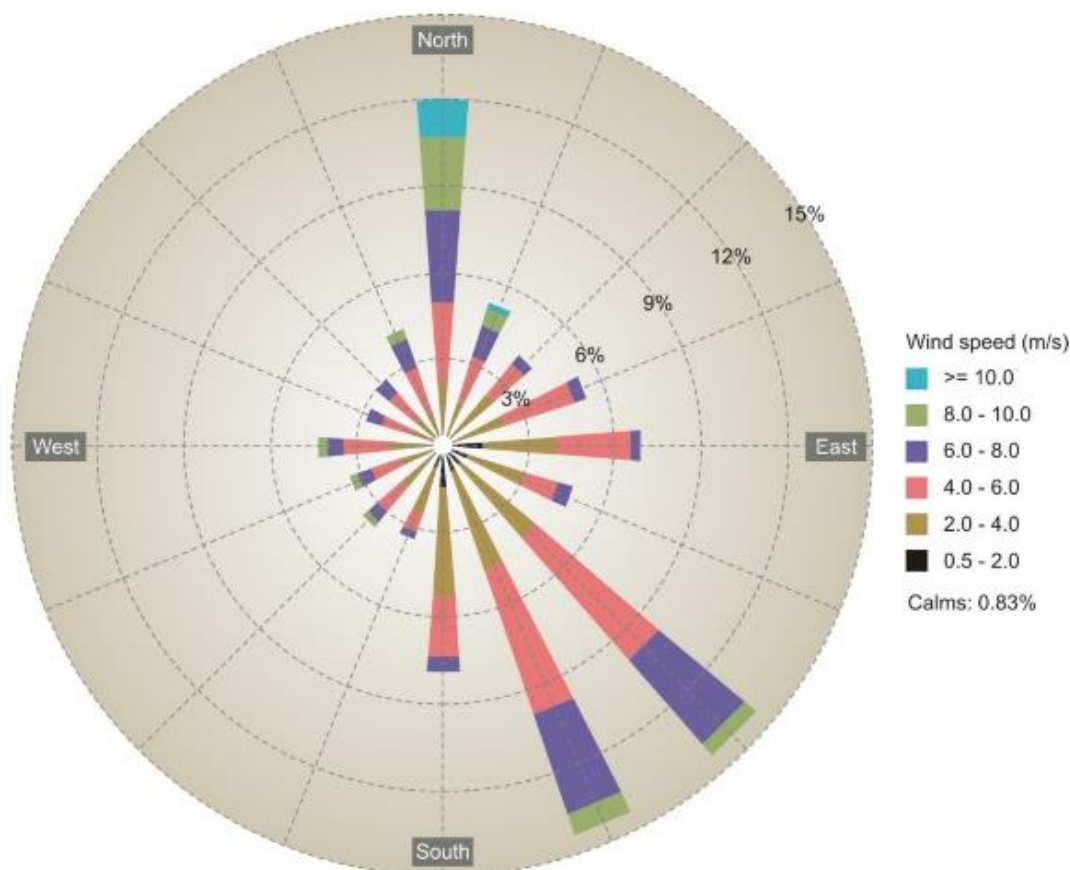


Figure 4.1 - Annual wind frequency and speed by origin in the Narrabri region

### 4.2 Land use

The majority of the Project is located in an area designated under the Narrabri Local Environmental Plan 2012 as either RU1 (Primary Production) or RU3 (Forestry). Brigalow Park Nature Reserve, which is surrounded by the Project area though excluded from the Project footprint, is designated E1 (National Parks and Nature Reserves).

The Project area has a mix of State, local and forestry roads. The major road is the Newell Highway, which is a major transport route between New South Wales and Queensland. The road network near the Project area also includes the Kamilaroi Highway, McFarlane's Road, Rockdale Road, Westport Road, X-Line Road, Beehive Road and Old Mill Road.



## 4.3 Background noise levels

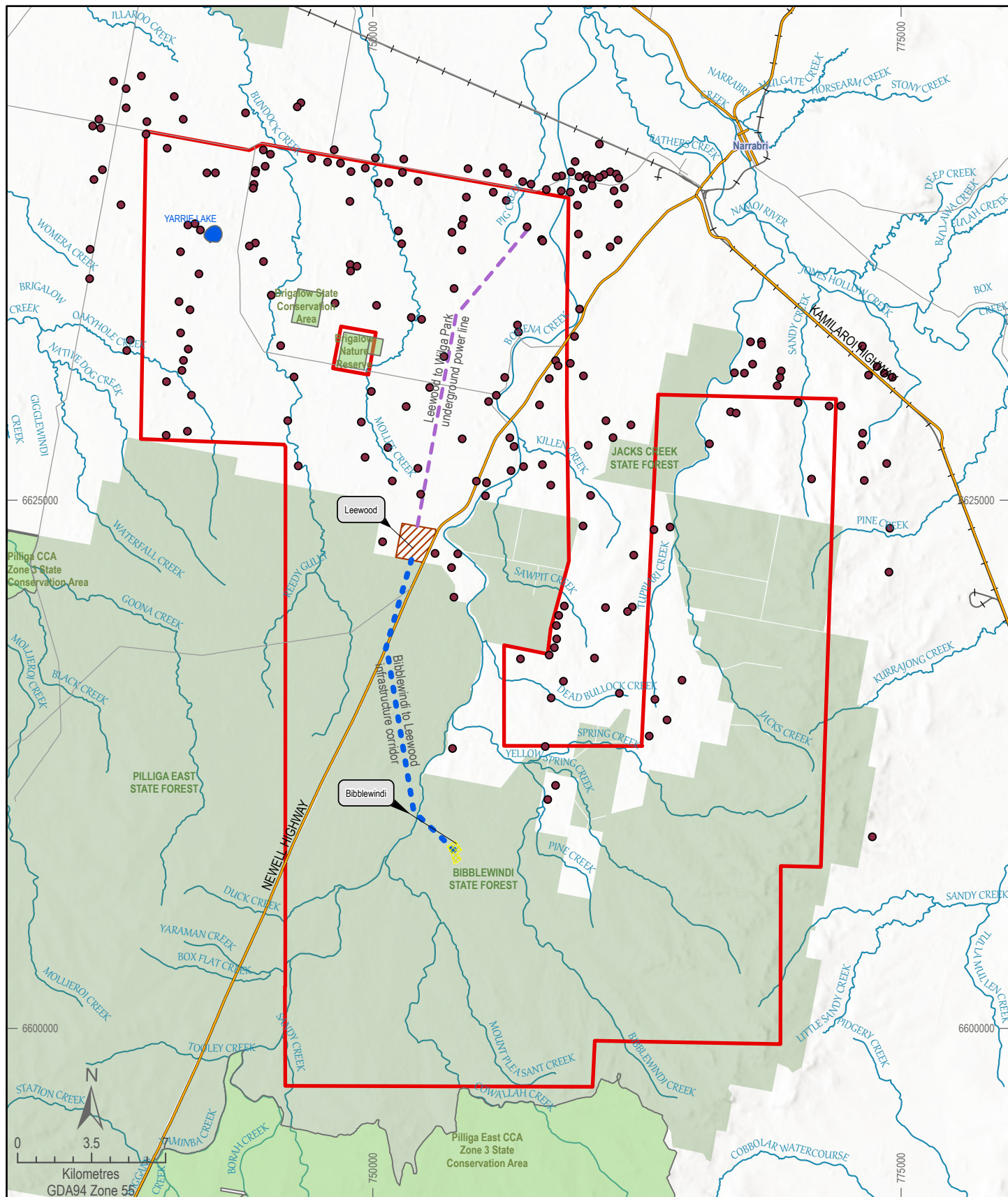
For the background noise assessment for the EIS, monitoring locations were distributed through the Project area to collect data representative of the range of background noise environments. Monitoring locations were positioned within the northern (predominantly agricultural) part of the Project area, nearby Leewood and adjacent to the Newell Highway, and in the southern (predominantly forested) part of the Project area.

The Industrial Noise Policy requires that, 'where the rating background level is found to be less than 30 dB(A), then it is set to 30 dB(A)'. The results of long-term noise monitoring show that the existing noise levels in the study area are consistently below 30 dB(A) except in proximity to the Newell Highway. These findings were consistent with previous noise surveys undertaken in the study area. Existing noise sources are typical of the environment including those generated by commercial logging operations, agricultural activities, gas exploration activities and traffic along the Newell Highway and local roads.

Short-term (15 minute) attended measurements were taken at the long-term monitoring locations to supplement the logger data and identify noise sources. Attended measurement noise levels were also consistent with previous results that found background noise levels to be below 30 dB(A).

## 4.4 Sensitive receptors

The EIS assessment identified 114 sensitive receivers within the Project area at relatively low density. A further 103 sensitive receivers were identified within three kilometres of the boundary of the Project area. Non-residential receivers also include Yarrie Lake, Brigalow State Conservation Area and Brigalow Nature Reserve. The sensitive receivers identified in and around the Project area are shown in Figure 4.2, which is a direct reproduction of Appendix 3 Figure 5 of the CoC.



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- |  |   |
|--|---|
| <span style="border: 2px solid red; display: inline-block; width: 15px; height: 10px;"></span> NGP boundary  | <span style="border-bottom: 2px solid orange; display: inline-block; width: 20px;"></span> Highway                    |
| <span style="background: repeating-linear-gradient(45deg, transparent, transparent 2px, orange 2px, orange 4px); display: inline-block; width: 15px; height: 10px;"></span> Leewood      | <span style="border-bottom: 1px solid grey; display: inline-block; width: 20px;"></span> Major roads                  |
| <span style="background: repeating-linear-gradient(-45deg, transparent, transparent 2px, yellow 2px, yellow 4px); display: inline-block; width: 15px; height: 10px;"></span> Bibblewindi | <span style="border-bottom: 1px dashed grey; display: inline-block; width: 20px;"></span> Railway                     |
| <span style="border-bottom: 2px dashed purple; display: inline-block; width: 20px;"></span> Leewood to Wilga Park infrastructure corridor  | <span style="border-bottom: 2px solid blue; display: inline-block; width: 20px;"></span> Watercourse                  |
| <span style="border-bottom: 2px dashed blue; display: inline-block; width: 20px;"></span> Bibblewindi to Leewood infrastructure corridor   | <span style="background-color: #d9ead3; display: inline-block; width: 15px; height: 10px;"></span> State Forest       |
| <span style="display: inline-block; width: 5px; height: 5px; background-color: black; border-radius: 50%;"></span> Sensitive receivers   | <span style="background-color: #c7e9c0; display: inline-block; width: 15px; height: 10px;"></span> Parks and reserves |
|  | <span style="background-color: #3182bd; display: inline-block; width: 15px; height: 10px;"></span> Lakes and dams     |

**NARRABRI GAS PROJECT**

Figure 4.2  
Sensitive Receivers Within Three  
Kilometres of the Project Area

## 5. Noise criteria

### 5.1 Phase 1 construction and operational activities

Consent condition B7, B8 and B9 provides noise criteria, as summarised in Table 5.1, with the following considerations:

- for standard hours construction phase works, where these criteria are not achieved, all reasonable and feasible mitigation measures are to be implemented during these construction activities. Reasonable is defined in the consent as “*applying judgement in arriving at a decision, considering mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements*”. Feasible is defined in the consent as, “*what is possible and practical in the circumstances*”;
- for operational phase and non-standard hours construction phase works, which cannot be exceeded; and
- for non-routine safety flaring, where these criteria are not achieved, all reasonable and feasible mitigation measures are to be implemented during these construction activities. The mitigation requirements for non-routine safety flaring at Leewood as described in consent conditions C1 to C3 do not apply to Phase 1 since there is no flare located at Leewood.

Standard construction hours are defined in the consent as 7 am to 6 pm Monday to Friday, and 8 am to 1 pm Saturday.

Subject to private negotiated agreements with the owner/s of the relevant residence or land to exceed the noise criteria, as required by EPL 20350 condition L5.2 and CoC B11, construction activities will generally occur between 7 am and 6 pm Monday to Sunday. Under the same agreements, the drilling and completions (D&C) activities are the only scheduled activity to occur for 24 hours a day.

**Table 5.1 - Noise criteria summary**

| Time period                             |                       | All privately owned residences                                      | Yarrie Lake, Brigalow Conservation Area, Brigalow Nature Reserve |
|---|-----------------------|---|--|
| Day                                     | Duration of day       | Noise criteria dB(A)  |  |
| Monday to Friday                        | 7am to 6pm            | 40 L <sub>Aeq</sub> (15mins)  | 50 L <sub>Aeq</sub> (period)                                     |
| Monday to Friday                        | 6pm to 7am            | 35 L <sub>Aeq</sub> (15mins)  |  |
| Saturday                                | 8am to 1pm            | 40 L <sub>Aeq</sub> (15mins)  |  |
| Saturday                                | 1pm to 8am            | 35 L <sub>Aeq</sub> (15mins)  |  |
| Sunday and public holidays              | All hours             | 35 L <sub>Aeq</sub> (15mins)  |  |
| Monday to Saturday                      | Night (10pm.- 7am)    | 45 L <sub>A1</sub> (1min)   |  |
| Sunday and Public Holidays              | Night (10pm- 8am)     |   |  |
| Non-routine safety flaring <sup>1</sup> | All hours of everyday | 35 L <sub>Aeq</sub> (15mins)<br>Refer to section 5.2 for exemptions |  |

**Note 1:** No routine safety flaring is approved at pilot wells or production wells.

Note that in accordance with EPL 20350 condition L5.2(a), the following activities may be carried out outside of standard hours:

- construction work that causes  $L_{Aeq(15\text{minute})}$  noise levels that are no more than 5 dB above rating background level at any residence not subject to a private negotiated agreement, in accordance with the Interim Construction Noise Guideline;
- the delivery of plant, equipment and materials which is required to be delivered outside of the standard construction hours by Police and/or other authorised authorities; and
- emergency work to avoid loss of life, damage to property and/or environmental harm. Santos will on becoming aware of the need to undertake emergency work – notify the NSW Environment Protection Authority Environment Line on 131 555

Note also that, in accordance with CoC B11, the noise criteria in Table 5.1 do not apply if Santos has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and Santos has advised the DPE in writing of the terms of this agreement.

## 5.2 Meteorological conditions

The Noise Compliance Assessment in Appendix 4 of the CoC states that the noise limits do not apply under certain meteorological conditions, which are provided both for temperature lapse rates and Pasquill stability classes. The Sigma-Theta method has been adopted for establishing Pasquill stability classes. As required, a weather station has been installed at the Leewood facility to record the data used for determining meteorological conditions (excluding wind speed at microphone height). The weather station measures windspeed as specified in *AS3580.14-2011: Methods for sampling and analysis of ambient air, Meteorological monitoring for ambient air quality monitoring applications*.

The noise criteria apply during all meteorological conditions except for the following:

- wind speeds greater than 3 metres per second (**m/s**) at 10 m above ground level;
- stability category F temperature inversion conditions and wind speeds greater than 2 m/s at 10 m above ground level; or
- stability category G temperature inversion conditions.

The Npfl defines these conditions as 'very noise-enhancing meteorological conditions', and under these conditions recommends the noise criteria should not be exceeded by more than 5 dB.

Santos will assess the noise generated from the development in accordance with the requirements and exemptions of the Npfl. Condition B13(c)(iii) requires that noise impacts of the Project are minimised during 'very noise enhancing meteorological conditions' under which the noise criteria in the CoC do not apply. During these periods, Santos will meet the noise criteria, and will not exceed by 5 dB. This is managed through the monitoring of meteorological conditions and adjusting work activities as discussed in section 7.2.

## 5.3 Locational criteria

Field development planning will be carried out in accordance with the Field Development Protocol and will comply with the following locational criteria relating to noise specified under CoC B1 Table 1:

- no Project-related infrastructure within 200 metres of any residence (occupied or otherwise) unless agreed with the landowner, and a copy of this agreement has been forwarded to the Planning Secretary;
- no well pads within 100 metres of any privately-owned land or other land not owned by the Applicant, unless otherwise agreed with the landowner, and a copy of this agreement has been forwarded to the Planning Secretary; and
- pilot well pads to be spaced at least 250 metres apart.

Section 10 of the Field Development Protocol identifies these and other locational criteria.

## 6. Noise impact

### 6.1 Phase 1 construction activities

The Phase 1 activities have the potential to generate noise and as such, depending on their location, have the potential to adversely affect a sensitive receptor. The Phase 1 activities include construction and operation of:

- 4 coreholes;
- 6 pilot wells;
- 2 deep reservoir monitoring bores (converted coreholes);
- new shallow water monitoring bores;
- associated linear infrastructure; and
- seismic surveys.

#### 6.1.1 Construction and well operation

The construction of access tracks, well pads and the installation of gas and water gathering system of the pilot wells for Phase 1 will involve clearing, earthworks, construction of ancillary infrastructure including fencing, and D&C activities. Typical construction equipment will include some or all of the following, possibly at times operating concurrently:

- chainsaws;
- ultra-loggers;
- dozers, graders and scrapers;
- excavators;
- bobcat skid steer loaders and front end loaders;
- body trucks and trailers; and
- generators.

Equipment for D&C activities will include some or all of the following, possibly at times operating concurrently:

- mobile crane truck;
- drill rig;
- winch;
- mud pump engine;
- mud shaker;
- generators and hydraulic power unit;
- air compressors and boosters;
- high- pressure cement unit; and
- welding rig.

D&C activities generally have an operational requirement to occur continuously 24 hours per day. A maximum distance of approximately 1,875 m is predicted to be required to meet noise management levels during the night-time period (under very noise-enhancing meteorological conditions) during

cementing. The operation of the high-pressure cement units is the highest noise source activity during D&C (at 122 dB(A) unmitigated), with mitigation measures implemented. Other high noise level activities associated with D&C are the movement of drill rod casings and air releases. There is the potential for sleep disturbance criteria to be exceeded where sensitive receivers are located within 1,300 m of a drilling rig. The Field Development Protocol applies the noise constraints to guide the siting of wells and this dictates where management and mitigation measures will be required to be implemented, including in situations where multiple drill rigs are operating in vicinity of one another, or other Project noise sources.

The maximum buffer distance to achieve the noise management levels during standard construction hours are estimated to be approximately 1,440 m during vegetation clearing for access tracks and gathering line corridors; and approximately 2,021 m during trenching activities for gathering line installation. By their nature, noise level exceedances of the construction noise management levels at sensitive receivers associated with the installation of access tracks or gathering lines are very short term as the installation work front proceeds along the corridor.

As per CoC A11, other than for non-routine safety flaring, consent has not been granted for flaring infrastructure at pilot wells.

A buffer screening test has been completed for the proposed Phase 1 activities to identify potentially affected privately-owned residences for which further detailed assessment is required. The buffer distances for construction and well operational phase activities have been obtained from the EIS and are summarised in Table 6.1 and Table 6.2 respectively. Note that the buffer screening tests are based on the preliminary locations of Phase 1 activities and will be reviewed during the preparation of the Field Development Plan once the micro-siting and pre-clearance cultural heritage surveys are complete and the final locations have been confirmed.

**Table 6.1 - Screening criteria buffer distance (construction activities)**

| Phase                             | Activity / equipment                        |                                       | Screening criteria buffer distance (m) |                        |
|-----------------------------------|---|---------------------------------------|--|------------------------|
|                                   |   |                                       | Standard hours                         | Outside standard hours |
| Construction activities – Phase 1 | Well drilling activities                    |                                       | 844                                    | 1875                   |
|                                   | Gas and water gathering system installation | Gathering line installation trenching | 2021                                   | -                      |
|                                   |   | Vegetation clearing                   | 1440                                   | -                      |

**Table 6.2 - Screening criteria buffer distances (operational activities)**

| Phase                            | Activity / equipment | Screening criteria buffer distance (m) |
|----------------------------------|----------------------|--|
| Operational activities – Phase 1 | Well operation       | 218                                    |



Figure 6.1 identifies preliminary locations of Phase 1 activities and sensitive receptors, with the buffer screening tests for gathering line installation trenching (during standard hours) and well drilling activities (outside standard working hours) presented in Figure 6.2. As per Table 6.1 above, these buffer distances are 2021 m and 1875 m respectively.

Based on the buffer screening test presented in Figure 6.2, up to potentially three residences may experience noise impacts from the Phase 1 construction activities associated with well drilling. A detailed assessment will be prepared as part of the Field Development Plan for the Phase 1 activities to quantify construction noise levels at these residences, and confirm whether an exceedance of noise criteria is predicted. In accordance with CoC B11, the noise criteria in Table 5.1 and thus the buffer distances in Table 6.1 and Table 6.2 do not apply where Santos has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria.

No blasting is proposed for Phase 1 of the Project.

If further exploration and appraisal activities are planned in the future beyond those described above, the noise buffer screening test will be conducted for any new identified locations.

Note also that the buffer distances, as provided in Table 6.1 and Table 6.2, will be refined based on newly available source noise data from future attended monitoring. Updated buffer distances will then be incorporated into revisions of this Plan and used for subsequent buffer distance screening tests.

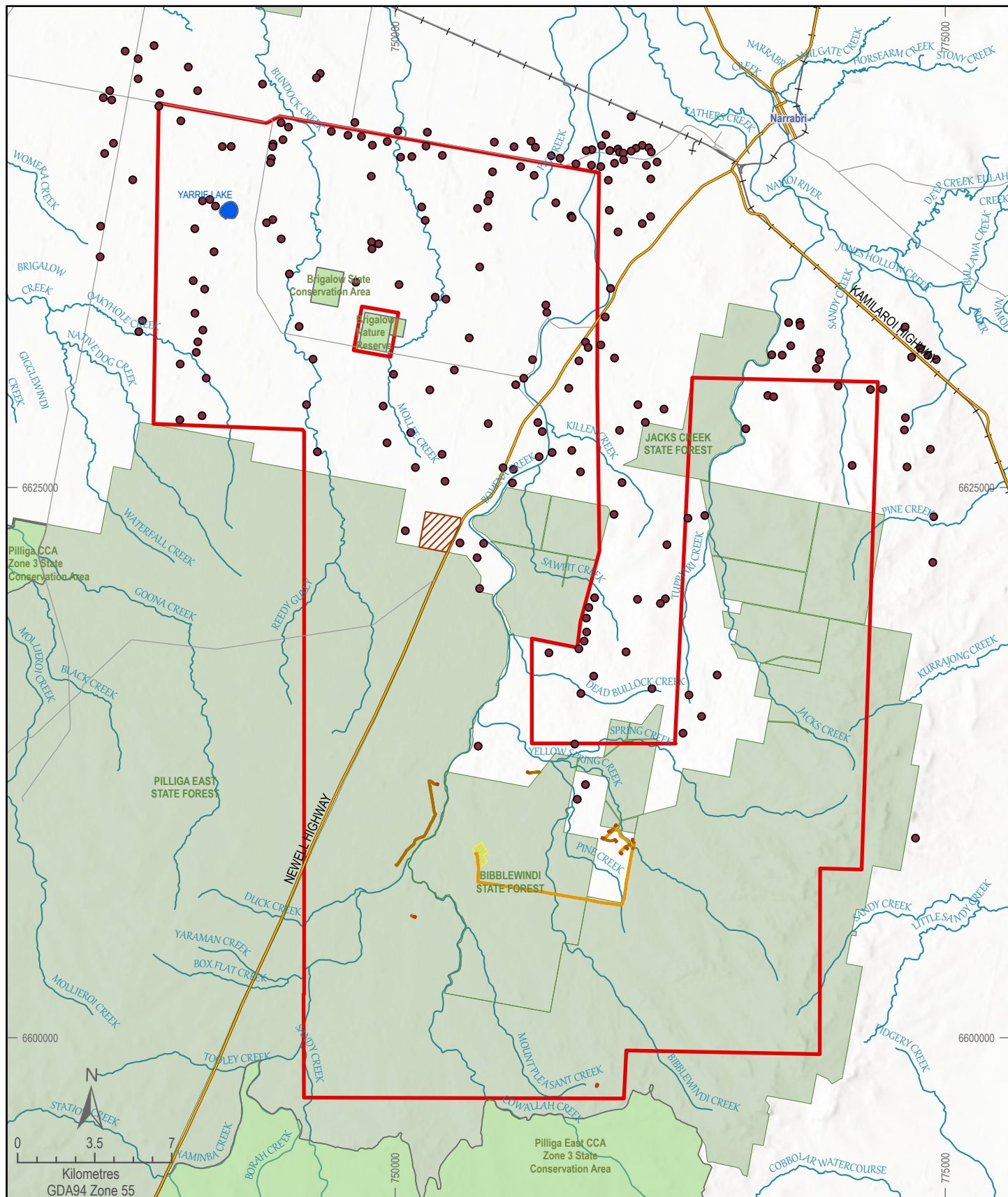
## 6.1.2 Construction traffic noise

A road traffic noise assessment was undertaken for the EIS including the following roads where increases in traffic are expected due to Project activities: the Newell Highway, the Kamilaroi Highway, Tibbereena Street, Old Gunnedah Road, X-Line Road, Yarrie Lake Road, Mooloolbar Street and internal forest roads.

Construction road traffic noise during the absolute peak traffic generation period will not increase existing road traffic noise levels by more than 2 dB(A) at sensitive receivers on highways and local roads. Based on the noise assessment it is expected that noise levels will not significantly increase as a result of Phase 1 activities. Where road traffic noise levels are predicted to exceed the noise criteria, it was determined to be from existing traffic noise.

Noise levels on internal forest roads are predicted to increase by more than 2 dB(A), however will comply with the local road noise criteria in the Road Noise Policy within 10 m of the road. Sensitive receivers near internal forest roads are located greater than 10 m from the road corridor and therefore will not receive noise levels that exceed the criteria during Phase 1 of the Project.





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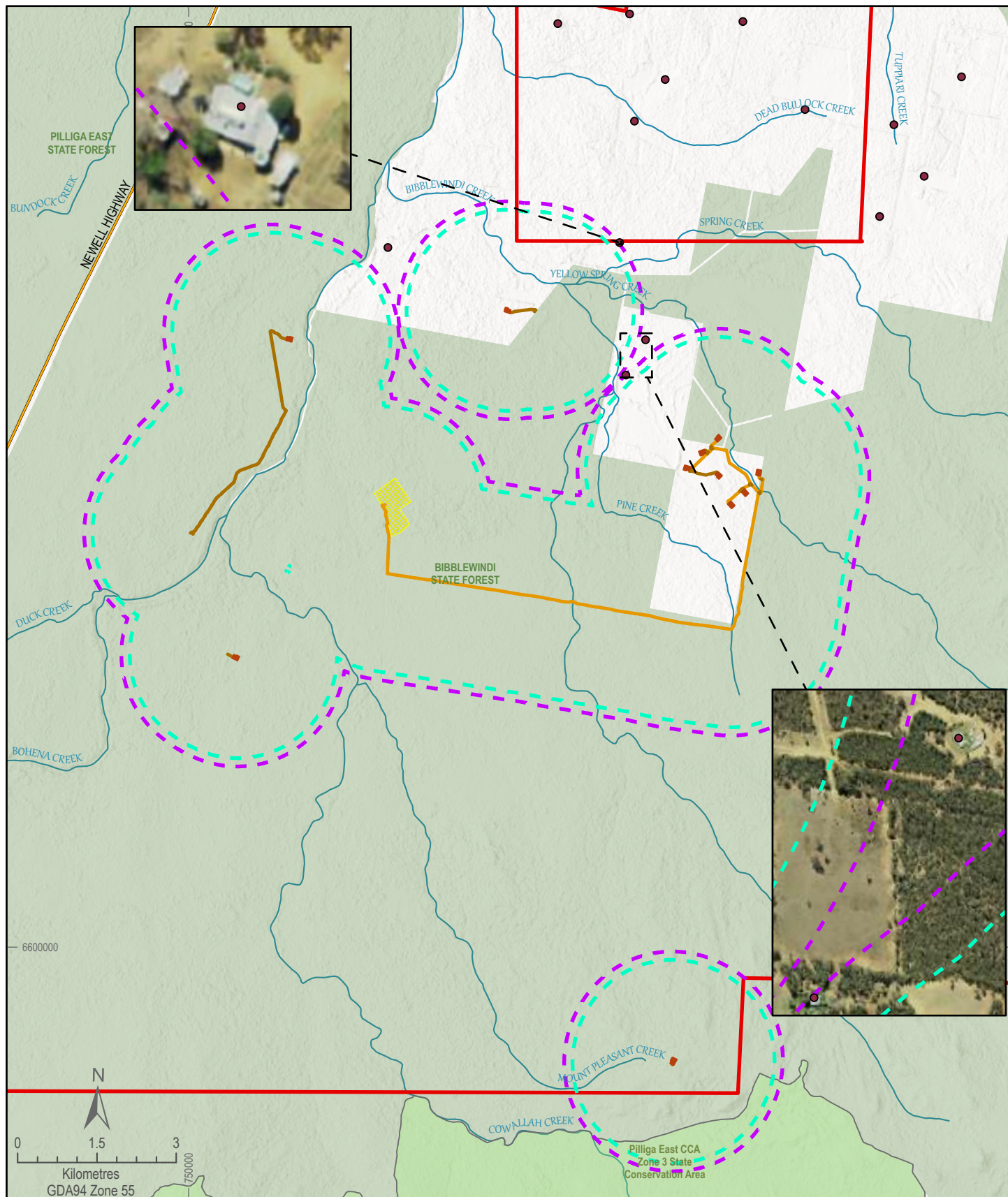
**LEGEND**

- NGP boundary
- Leewood
- Bibblewindi
- Sensitive receivers
- Phase 1 well pads
- Phase 1 access roads
- Phase 1 flowlines
- Highway
- Major roads
- Railway
- Watercourse
- State Forest
- Parks and reserves
- Lakes and dams

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Figure 6.1

Residence Compliance Points and  
Phase 1 Planned Activity Locations



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**LEGEND**

NGP boundary

Biblewindi

Sensitive receivers

Phase 1 flowlines

Phase 1 access roads

Phase 1 well pads

Indicative inside standard hours buffer

Indicative outside standard hours buffer (well drilling only)

Highway

Watercourse

State Forest

Parks and reserves

Figure 6.2

Phase 1 Development Infrastructure  
Buffer Screening Test



## 6.2 Cumulative impacts

The following existing infrastructure has the potential to operate at the same time as the construction and operation of Phase 1 activities, and therefore may contribute to cumulative construction noise impacts within the study area. Existing infrastructure includes:

- Bibblewindi East Pilot;
- Bibblewindi West Pilot;
- Dewhurst South Pilot;
- Dewhurst northern and southern flow lines;
- Leewood Water Management Facility including ponds, water treatment plant and irrigation area;
- Bibblewindi Facility including gathering system, water balance tank, compressor and flare;
- Bibblewindi to Leewood buried gas pipeline; and
- Wilga Park Power Station.

Table 6.3 lists the operational status of this infrastructure and identifies potential cumulative noise impacts with Phase 1 activities. Where there is potential for cumulative noise impacts, these will be temporary in nature, as the greatest Phase 1 impacts occur during construction of linear infrastructure which will move along the corridor.

**Table 6.3 - Existing infrastructure and operational status**

| Infrastructure                         | Operational Status  | Cumulative noise impacts   |
|--|---|--|
| Dewhurst South Pilot                   | Currently operating   | The noise study as part of the NGP EIS found that receivers located more than 568 metres away would experience a noise level of less than 25 dB, and would experience no cumulative noise impacts.   |
| Bibblewindi East Pilot                 | Currently operating   | The noise study as part of the NGP EIS found that receivers located more than 568 metres away would experience a noise level of less than 25 dB, and would experience no cumulative noise impacts.   |
| Bibblewindi West Pilot                 | Currently operating   | The noise study as part of the NGP EIS found that receivers located more than 568 metres away would experience a noise level of less than 25 dB, and would experience no cumulative noise impacts.   |
| Existing approved Bibblewindi Facility | Flare operating. Compressor currently not operating, may be operating during Phase 1 based on volume of gas | The Environmental Assessment (EA) of the Wilga Park Power Station <sup>2</sup> includes assessment of the Bibblewindi facility. The noise study predicted noise levels up to 28 dBA under a 5.0 km/hr wind at a distance of 1500 m. These anticipated noise levels are unlikely to lead to cumulative noise impacts, however attended monitoring of compressors if they begin operations would occur to confirm noise predictions. |
| Leewood water treatment plant          | Water treatment plant and irrigation currently not operating but will                                       | Noise predictions provided in the Review of  |

<sup>2</sup> Eastern Star Gas (2008) *Narrabri Coal Seam Gas Utilisation Project, PEL 238 Gunnedah Basin New South Wales, Part 3A Environmental Assessment (Project Application 07\_0023)*, viewed 14 March 2022, available at: <https://www.planningportal.nsw.gov.au/major-projects/projects/wilga-park-power-station>

| Infrastructure           | Operational Status  | Cumulative noise impacts  |
|--------------------------|---|---|
|                          | commence during Phase 1   | <p>Environmental Factors (REF)<sup>3</sup> for this facility anticipated noise levels of up to 34 dBA at the nearest residential receiver, however these predictions are likely to be conservative as noise mitigation from buildings was not included in the noise modelling. Phase 1 activities are not expected to occur in this area at this stage, however if Phase 1 development in this area is proposed in the future cumulative impacts at receivers directly surrounding the Leewood site would be considered in the assessment protocol.</p> <p>Harvesting of the irrigation area could also occur once per year and would be scheduled to not coincide with any phase 1 construction activities in the vicinity of Leewood where practicable.</p> |
| Wilga Park Power Station | Currently operating at reduced capacity 12 MW out of 22 MW. May operate up to 22 MW during Phase 1 depending on gas produced. | <p>The Wilga Park Power Station is situated in the northern area of the project. Phase 1 activities are not expected to occur in this area at this stage, however if Phase 1 development in this area is proposed in the future cumulative impacts at receivers directly surrounding the Wilga Park Power Station would be considered in the assessment protocol.</p>   |

<sup>3</sup> RPS (2015) *Leewood Produced Water Treatment and Beneficial Reuse Project, Review of Environmental Factors*, viewed 14 March 2022, available via DIGS Geological Survey of NSW database: <https://search.geoscience.nsw.gov.au/report/R00070789>

## 7. Noise impact management

The following section details the management measures that will be implemented where reasonable and feasible throughout the construction and operational phases of the Project to ensure compliance with the relevant conditions.

### 7.1 Noise management measures

The following noise management measures provided in Table 7.1 are to be implemented during construction activities, where reasonable and feasible.

**Table 7.1 - Worksite noise mitigation measures**

| Management measure             | Description   |
|--------------------------------|---|
| <b>Construction activities</b> |   |
| Worksite best practices        | All personnel on site will be made aware of the potential for noise impacts and will aim to minimise impact or elevated noise levels, where possible  |
|                                | Regular identification of noisy activities, plant and equipment and adoption of improvement techniques  |
|                                | Minimise the need for vehicle reversing (for example, by arranging for one-way site traffic routes)   |
|                                | Scheduling of respite periods for high noise activities including rock breaking, ripping and sawing   |
|                                | No swearing or unnecessary shouting or loud stereos/radios on site  |
|                                | All employees, contractors and sub-contractors will receive an environmental induction  |
|                                | Ensure contractors have attenuated new plant and equipment as agreed with Santos when operating in noise sensitive areas.   |
|                                | All new plant and equipment introduced to site and operating in noise sensitive area will be attenuated. Note that the full range of plant and equipment required for the Phase 1 construction activities has been assessed in the EIS. |
| Equipment substitution         | Where reasonably practicable, noisy plant will be replaced by less noisy alternatives   |
| Modification of equipment      | All engine covers will be kept closed while equipment is operating  |
|                                | Plant and vehicles will be kept properly serviced and fitted with appropriate mufflers and silencers, where applicable  |
|                                | The use of exhaust brakes will be eliminated, where practical   |
|                                | Where practical, plant operating on site will be fitted with broadband reversing alarms/buzzers.  |
|                                | Acoustic enclosures will be provided for suitable equipment   |
| Use and siting of plant        | The offset distance between noisy plant and adjacent sensitive receivers will be maximised where practical  |
|                                | Plant used intermittently will be throttled down or shut off  |
|                                | Noise-emitting plant will be directed away from sensitive receivers, where  |

| Management measure                | Description  |
|-----------------------------------|--|
|                                   | possible   |
|                                   | Car pooling and use of shuttle buses to transport construction workers will be implemented where able to reduce the number of project vehicles on roads.   |
|                                   | Speed limits will be enforced, particularly near sensitive receptors, to reduce noise from vehicles along roads.   |
| Regular and effective maintenance | Regular inspection and maintenance of equipment to ensure it is in good working order and checking the condition of mufflers   |
|                                   | Machines found to produce excessive noise compared to industry best practice will be removed from the site or stood down until repairs or modifications can be made  |
|                                   | Ensure air lines on pneumatic equipment do not leak  |
|                                   | Return of any hired equipment that is causing noise that is not typical for the equipment – the increased noise may indicate the need for repair   |
| Alternative methods               | Examine and implement, where feasible and reasonable, alternatives to rock-breaking work methods, such as hydraulic splitters for rock and concrete, hydraulic jaw crushers, chemical rock and concrete splitting. The suitability of alternative methods should be considered on a case-by-case basis |
| Scheduling                        | Non-routine maintenance activities at the Leewood and Bibblewindi facilities with the potential to exceed noise criteria, including non-routine safety flaring, will be scheduled during the day where practicable.  |
|                                   | High noise activities will be scheduled during standard construction hours, where reasonable and feasible.   |

## 7.2 Meteorological station

Santos has installed and operates a meteorological station at the Leewood facility in accordance with the requirements of consent condition B25 to:

- measure the meteorological conditions in accordance with the *AS 3580.14-2011: Methods for sampling and analysis of ambient air, Meteorological monitoring for ambient air quality monitoring applications*;
- measure the meteorological conditions in accordance with the Npfl; and
- take continuous real-time measurements of wind speed, wind direction sigma-theta and temperature.

The objectives of the meteorological station for noise are primarily to:

- identify when very noise enhancing meteorological conditions identified in the consent conditions have been triggered (refer to section 5.2);
- notify field operators regarding 'very noise-enhancing meteorological conditions' so that construction and operational activities can be managed. The aim is to minimise noise and not exceed the noise criteria by 5 dB (as recommended by the Npfl in Factsheet D) during very noise enhancing meteorological conditions; and
- record data to communicate potential meteorological conditions that may increase noise impacts from activities on sensitive receivers.

The requirement for management of these activities during very noise enhancing meteorological conditions (as defined in Appendix 4 of the CoC) for Phase 1 will be determined through a risk assessment undertaken during the preparation of the Field Development Plan for each planned development. During this risk assessment sensitive receivers will be identified in proximity to the works to determine wind and inversion conditions where 'very noise enhancing meteorological conditions' could increase noise impacts. When these conditions are met, the weather station will be used to alert and notify field operators. The field operators will minimise noise emissions by the following general measures where reasonable and feasible:

- orientating the equipment noise source in a direction away from the receiver. Attended compliance monitoring of equipment will identify the directionality of the noise sources;
- minimising the amount of equipment being used;
- prioritising work areas further away from sensitive receivers;
- operating equipment at a lower power setting; and
- avoiding non-routine safety flaring.

Triggers for 'very noise-enhancing meteorological conditions' detected at the meteorological station include the following:

- day (7 am and 6 pm), SigmaTheta < 2.1 degrees;
- night (6 pm and 7 am), SigmaTheta < 2.1 degrees and wind speed < 2 m/s; and
- night (6 pm and 7am), SigmaTheta < 3.8 degrees and wind speed > 2 m/s and < 3 m/s.

When trigger levels for 'very noise-enhancing meteorological conditions' are detected, the following procedure will take place. At the end of each 1 hour averaging period, these will be triggered, and an alert notification will be sent via email. The alert will state the following:

*"Very noise enhancing weather conditions are current. Please ensure noise mitigation measures are implemented for activities. Refer to the NGP Noise Management Plan 0041-150-PLA-0008, Section 6 and Table 7.1."*

This notification will be sent to the Santos central onshore compliance email account and to a site-specific email account to notify field operators.

Note there is the ability to edit the notification and email recipients throughout the Project.

## 8. Monitoring

### 8.1 Phase 1 noise monitoring requirements

The scope of work for Phase 1 involves the exploration D&C program and construction of ancillary infrastructure associated with those activities. The location of the infrastructure will be identified as the field development planning progresses. The Field Development Plan will identify where and when noise monitoring will be required. The monitoring program for Phase 1 activities is outlined in Table 8.1.

### 8.2 Compliance monitoring requirements

Noise monitoring is to be undertaken at the commencement of construction or operational activities to confirm source noise data of major construction and operational plant / equipment. The requirement to monitor will also be determined on a case-by-case basis, following the results of a detailed noise assessment. These will be triggered when noise sensitive receivers are identified within buffer distances for construction and operational phases and there is no negotiated agreement in place with the owner/s of the relevant residence or land to exceed the noise criteria. Following the results of a detailed noise assessment, the monitoring program may include both attended and unattended monitoring.

#### 8.2.1 Attended noise monitoring

- Operator attended source noise measurements of activities will be undertaken to confirm source noise levels.
- Results are to be compared to noise modelling input data to confirm that detailed noise assessment predictions are representative.
- Where source noise levels are in exceedance of detailed noise assessment input data, an adjustment to assessment predictions will be implemented where appropriate.
- Source noise measurements are to consider all modifying factors as provided in Factsheet C of the NPfI.
- Measure noise at or near the receiver and calibrate the unattended noise monitoring stations.
- Noise measurements made at the receiver are to consider all modifying factors as provided in Factsheet C of the NPfI.
- All confirmed non-compliances or noise exceedances will be documented, and be provided to the affected land holder and tenant no longer than 7 days after the monitoring results are received by Santos. The following will be included:
  - location of exceedance;
  - date, time and duration of exceedance;
  - prevailing meteorological conditions at time of exceedance;
  - measured noise level in comparison to the criteria;
  - applied modifying factors where appropriate, in accordance with Factsheet C of the NPfI; and
  - appropriate corrective action taken to minimise exceedance.
- All confirmed non-compliances will be documented, and provided to the DPE within 7 days including the reason for the non-compliance and action taken (or to be taken) to address the non-compliance.



## 8.2.2 Unattended noise monitoring

- Unattended noise monitoring stations are appropriate for non-transient noise sources and may not be appropriate for short term transient construction activities such as access track and flow line construction.
- Where a detailed noise assessment has predicted an exceedance of the noise criteria for construction activities during standard hours, and after implementing all feasible and reasonable mitigation, an unattended noise monitoring station will be deployed to monitor activity noise levels.
- During the set-up and/or review of the unattended monitoring, the data from the unattended noise monitoring station will be validated through attended measurements.
- It may be appropriate in certain circumstances for a monitoring station to be deployed at an intermediate location between the subject activity and sensitive receiver, to ensure a sufficient signal to noise ratio is maintained. The alert trigger noise level of the station will be adjusted for this intermediate location to account for the distance to the received location, and details of this will be provided in the relevant detailed noise assessment.
- A notification from the monitoring station will be triggered when there is a non-compliance. A notification will also be triggered when there is a noise exceedance, where the relevant detailed noise assessment concluded that there will be a residual exceedance of the criteria for construction activities within standard hours, after all feasible and reasonable mitigation measures are implemented.
- The notification will be sent to the field operator of the relevant activity, and corrective action will then be undertaken to reduce noise emission and attended noise monitoring may be required to investigate the non-compliance or noise exceedance.
- All confirmed non-compliances or noise exceedances will be documented, and be provided to the affected land holder and tenant no longer than 7 days after the monitoring results are received by Santos. The following will be included:
  - location of exceedance;
  - date, time and duration of exceedance;
  - prevailing meteorological conditions at time of exceedance;
  - measured noise level in comparison to the criteria;
  - applied modifying factors where appropriate, in accordance with Factsheet C of the NPfI; and
  - appropriate corrective action taken to minimise exceedance.
- All confirmed non-compliances will be documented, and provided to the DPE within 7 days including the reason for the non-compliance and action taken (or to be taken) to address the non-compliance.

**Table 8.1 - Summary of monitoring program requirements**

| Monitoring program requirement  | How the requirement will be addressed in Phase 1  |
|---|---|
| <b>Aspects of the Noise Management Plan</b>   |   |
| Ensure compliance with noise operating conditions.  | Implement an inspection and audit program of Phase 1 D&C and construction noise mitigation and management actions.  |
| Evaluate the noise management measures.   | Monitoring of the noise impact management (section 7) will be undertaken by: <ul style="list-style-type: none"> <li>• land access agreements obtained for infrastructure on the property;</li> <li>• monthly reviewing the complaints register and reviewing complaints made for construction, road noise, or D&amp;C activities relating to noise;</li> <li>• records and data management for operating the meteorological station, and identifying very noise enhancing meteorological conditions;</li> <li>• identifying noise sensitive area through the Field Development Plan and the Field Development Protocol; and</li> <li>• reviewing incident management system for noise exceedances.</li> </ul> |
| Minimise the noise impacts of the development during noise-enhancing meteorological conditions when the noise criteria in the CoC do not apply (see Appendix 4 of CoC).   | Records from the meteorological station.  |
| Monitor and record major equipment noise levels and make this data readily available at the request of the Department or the EPA.   | At the commencement of the D&C program, noise levels for the drill rig and associated equipment will be measured and recorded on site, consistent with the Noise Policy for Industry. Noise levels from major equipment associated with constructing well pads and ancillary infrastructure for Phase 1 will be measured and recorded. The data will be made available, if requested by the Department.   |
| Operate a suitable system to enable the public to get up to date information on any construction or non-routine safety flaring operations that have the potential to exceed the noise criteria in this consent. | Where Project activities may exceed the noise criteria or non-routine safety flaring operations could occur in the future, information will be communicated to relevant stakeholders Consistent with the Community Plan. Engagement plan records will be reviewed after non routine safety flaring events and construction programs.  |

| Monitoring program requirement  | How the requirement will be addressed in Phase 1   |
|---|--|
| Regularly assess meteorological and noise monitoring data and modify operations in the project area in response to this data to ensure compliance with the relevant conditions of this consent.   | Records from the meteorological station will be used to identify very noise enhancing weather conditions for noise generating activities. For Phase 1, this will predominantly focus on construction and D&C activities in noise sensitive areas.  |
| Include a program to calibrate and validate the unattended monitoring results with the attended monitoring results over time (so the unattended noise monitoring program can be used as a trigger for further attended monitoring where there is a risk of non-compliance with the noise criteria in this consent).   | For Phase 1, modelling has indicated when noise criteria have the potential to be exceeded. If activities will be conducted in noise sensitive area, a program to calibrate and validate the unattended monitoring results will be undertaken to enable unattended noise monitoring to trigger a response when there is a risk of non-compliance with the noise criteria.  |
| <b>Complying with noise criteria for Project activities</b>   |  |
| Noise generated by the development must be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the Noise Policy for Industry and Appendix 4 of the CoC that specifies the meteorological conditions under which the criteria apply and methods to evaluate compliance with the criteria (section 5.2 of the NMP). | For noise affected residences, the noise trigger level and maximum noise levels will be assessed consistent with section 2.6 of the Policy.<br><br>They will be assessed at the point on or within the residential property boundary or if that is more than 30 m from the residence, at the reasonably most affected point within 30 m of the residence, but not closer than 3 m to a reflective surface and at a height of between 1.2-1.5 m above ground level.<br><br>Meteorological station will be designed to measure the criteria to trigger exemptions to noise criteria (section 7.2). |
| Ensure Project activities comply with noise criteria in the consent.  | Modelling for D&C and construction has been conducted for the Project area to identify potential distance to sensitive receptors that may exceed noise criteria. Ensure potential distances for noise impacts identified in the EIS are considered in field development planning.<br><br>Ensure the Field Development Protocol has been implemented.<br><br>For activities within Noise Sensitive Areas, implement site specific modelling and a site-specific noise monitoring program.   |
| Implement site specific noise monitoring to ensure noise can be measured and monitored to address noise criteria at sensitive receivers. This will include determining very noise enhancing meteorological conditions and attended noise monitoring at identified sensitive locations.  | For activities within Noise Sensitive Areas, implement site-specific modelling and a site-specific noise monitoring program at identified sensitive receivers.   |

| Monitoring program requirement  | How the requirement will be addressed in Phase 1                                |
|---|---|
| <p>The attended compliance monitoring will be carried out in accordance with the relevant requirements for reviewing performance set out in the Industrial Noise Policy, in particular the requirements relating to:</p> <ul style="list-style-type: none"> <li>• monitoring locations to collect representative noise data;</li> <li>• meteorological conditions during which collection of noise data is not appropriate;</li> <li>• equipment used to collect noise data;</li> <li>• conforming with Australian Standard relevant to each piece of equipment; and</li> <li>• modifying collected noise data, including when extraneous noise and/or penalties for modifying factors, apart from adjustments for duration.</li> </ul> <p>The exception to this, is when applying appropriate modifying factors for low frequency noise during compliance testing. This will be undertaken in accordance with Fact Sheet C of the Noise Policy for Industry.</p> | <p>Reports and records for attended compliance monitoring will be assessed.</p> |

## 9. Record keeping

Santos has a data management plan for the NGP that outlines the policies and procedures that will be implemented to ensure that data is managed in a consistent, efficient and effective manner in order to provide accurate records of activity operations and enhance the value of the data collected.

Santos uses a number of systems and platforms to manage the documentation and data associated with the activities under this Plan. These include Sharepoint for management plans, procedures and laboratory reports; Santos' EHS Toolbox for capturing inspections and field assessments; and EQulS<sup>4</sup>, an advanced environmental data management and decision support system, for capturing all data and any laboratory results (where relevant).

Key records associated with this NMP that are stored and managed include:

- field data records including weather station data and records of very noise enhancing meteorological conditions;
- records of any site-specific noise modelling during project design;
- records of monitoring events and attended monitoring;
- site inspection records; and
- calibration records for field instruments and continuous noise monitoring systems;

Monitoring data is subject to quality assurance (QA) and quality control (QC) protocols and procedures that ensure that data is accurate and usable. Data is subjected to consistent validation and verification procedures. Any data that fails QA and QC procedures is rejected for future use. QA and QC procedures includes program monitoring guidelines (minimum and maximum values) that will likely be configured in the environmental database for each monitoring compliance requirement or to detect anomalous results. The guidelines act as quality control measures to verify that data falls within an acceptable range.

In accordance with the monitoring and recording conditions of EPL 20350 all relevant records are required to be kept for at least 4 years after the relevant event. Records are to be kept in a legible form for provision to any inspector of authorised officer (including from the EPA or DPE) for a period of four years following the expiry or termination of a prospecting title (sections 97D and 97E of the PO Act).

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<sup>4</sup> EQulS (Environmental Quality Information System) is a proprietary software application.

## 10. Incidents, non-compliances and complaints

### 10.1 Incidents and non-compliances

In accordance with CoC B13(e)(iii), a noise exceedance, incidence or non-compliance are defined as follows:

- a noise exceedance is an event during standard construction hours where the noise level exceeds the noise level after all feasible and reasonable mitigation is implemented;
- an incident is defined in the consent as a circumstance that causes or threatens to cause material harm. It is unlikely that an incident could occur in relation to noise from Phase 1 activities, however any incidents which causes or threatens to cause material harm will be notified to the DPE and EPA immediately.
- a non-compliance is an event during operation or construction outside of standard hours, where compliance noise monitoring confirms that the noise criteria are exceeded.

Procedures for notifying, responding and reporting and incident, exceedance or non-compliance will be in accordance with CoC D6 and D7 respectively, as described in section 6 of the Project EMS. In the event of an environmental incident or non-compliance with the Project Approval, Santos will initiate an investigation. An incident will be reported immediately after Santos becomes aware of an incident causing or threatening to cause material environmental harm<sup>5</sup>. Santos will notify DPE and the EPA via the Major Projects Portal immediately and this notice will describe the location and nature of the incident.

Within 7 days of becoming aware of a non-compliance with the CoC, Santos will notify the Department of the non-compliance via the Major Projects Portal. This notice will set out the non-compliance, the reasons for the non-compliance (if known) and what actions have been taken, or will be taken, to address the non-compliance. A non-compliance which has been notified as an incident will not be notified as a non-compliance.

Where incidents or non-compliances associated with this NMP are identified, Santos will:

- take all reasonable and feasible steps to ensure that the incident or non-compliance ceases and does not reoccur;
- consider all reasonable and feasible options for remediation (where relevant) and submit a report to the relevant department(s) describing options and any preferred remediation measures or other courses of action; and
- implement remediation measures as directed by the relevant department(s).

For further information on the protocol response to a noise exceedance, incident or non-compliance, refer to sections 8.2.1 and 8.2.2.

### 10.2 Unpredicted impact protocol

It is considered unlikely that the activities during Phase 1 will result in any unpredicted or unforeseen impacts in relation to the noise impact on sensitive receptors. However, in accordance with CoC D3(f), the following strategy outlined in Table 10.1 will be adopted in the event an unpredicted noise impact or event occurs.

<sup>5</sup> Refer to the Glossary in section 12 for the full definition of 'incident', as per the Development Consent for SSD 6456.

**Table 10.1 - Unpredicted impact protocol**

| Step | Strategy  |
|------|---|
| 1    | Stop the construction activity causing the noise impact and implement immediate corrective actions to minimise the unpredicted impact.  |
| 2    | Review the unpredicted effect or impact and consider the following: <ul style="list-style-type: none"> <li>activities that may have triggered this event; and</li> <li>relevant monitoring data.</li> </ul>   |
| 3    | Notify the relevant agencies and departments  |
| 4    | If appropriate, commission an investigation by an appropriate specialist  |
| 5    | Based on the results of the investigation, develop the appropriate amendment and amelioration methods to recommence the relevant construction activity, which may include a change in working hours, a change in plant or equipment, or other measure/s;  |
| 6    | Implement the information from the investigation to review, and if necessary, update this NMP which will include any or all of the following: <ul style="list-style-type: none"> <li>a review and where required, revision of the noise impact buffer zones;</li> <li>a review and where required, revision of the noise management measures and and monitoring regime;</li> <li>a review the actions and activities that may have been undertaken prior to the unforeseen impact or event; and</li> <li>implement any relevant training based on the findings of the investigation to avoid any recurrence of the unpredicted impact.</li> </ul> |

## 10.3 Stakeholder engagement

### 10.3.1 Public notification

There is a comprehensive Community Consultation Plan in place for the Narrabri Gas Project and risk-based assessments are undertaken on the level of impact that activities may have on stakeholders and the community. Established engagement and consultation activities provide various opportunities for stakeholders and community members to learn about, provide input to, and raise concerns about activities that Santos is conducting or planning to conduct.

This includes updates on the Narrabri Gas Project website on key activities; an Activity Update emailed to key stakeholders and available on the Narrabri Gas Project website and published in the Narrabri Courier and Wee Waa Times monthly; and a generic email address and contact telephone number included on all printed material for community members to ask questions. Santos also participates in several local groups and committees to ensure that information is available to the community about current and future activities and potential issues are identified and resolved. These groups include the Narrabri Gas Project CCC, Narrabri Chamber of Commerce, and the Local Emergency Management Committee.

### 10.3.2 Landowner engagement for infrastructure development

Landholder engagement and consultation is an important component of all stages of development. Gas wells will only be drilled on a landholder's property where there is a land access agreement in place negotiated in accordance with the *Agreed Principles of Land Access*.

The *Agreed Principles of Land Access* is an agreement on access to private agricultural landholder's property for coal seam gas drilling operations for exploration and production purposes. It has been signed by Santos, AGL and landholder representatives from the NSW Farmers Association, Cotton Australia Ltd, the NSW Irrigators Council, the Country Women's Association and Dairy Connect.

A Land Access Agreement will be required with each landowner before infrastructure can be located on the landholder's property.

### 10.3.3 Potentially affected landowners

Potentially affected landowners will be provided with advanced notice of the nature of the activities, their duration and means of contacting Santos. Where there is a risk of noise criteria being exceeded at a sensitive receiver, Santos will implement noise mitigation strategies for the duration of those activities to ensure the noise criteria are not exceeded, and during standard hours as far as reasonable and feasible.

Alternatively, Santos will seek to reach an agreement with the landowner that involves alternative arrangements for the duration of the activities, where the noise criteria may be exceeded. The alternative arrangement will be a written agreement between Santos and the landholder – the terms of which will be provided to the Planning Secretary in accordance with condition B11 of the CoC. Where noise may exceed the noise criteria at a sensitive receiver indicated by modelling, site-specific noise monitoring will be implemented in the noise sensitive area, either at the residence or between the residence and the activity.

## 10.4 Complaint management

Santos has a documented *Complaint Management Procedure* that is communicated to all relevant staff members. Complaints can be directed to Santos via phone or email 24 hours a day, 7 days a week. Contact details are publicly available on the Project website and are presented in Appendix D of the EMS.

All complaints are logged on a complaint form which includes the following details:

- date and time of the complaint;
- complainant details;
- details of the issue or complaint;
- actions taken to remediate the issue, if any;
- follow up actions required, if any;
- details of further liaison with complainant, if any; and
- closure date and time of the issue.



As per CoC D13, Santos maintains a complaint register which is updated as required and available on the Project website.

Where no private negotiated agreements with the owner/s of the relevant residence or land to exceed the noise criteria is in place, in the event of a noise complaint, the source of the noise will be investigated. Santos will conduct noise monitoring of the activity at the affected receiver. If it is determined that noise levels are unacceptable, further reasonable and feasible work practices or mitigation measures will be implemented.

Where any exceedance of noise monitoring criteria and/or performance measures has occurred, Santos will take all reasonable and feasible steps to ensure that the exceedance ceases and does not reoccur; and implement remediation measures as soon as practicable. This will include an assessment of the effectiveness of the relevant noise management measures related to the cause of the exceedance and/or complaint.

Where required, any complaint monitoring will be reported.

## **10.5 Independent review at landowner request**

If a landowner considers the development to be exceeding relevant noise criterion listed in the consent or this Plan on their residence or land, they may ask the Planning Secretary in writing for an independent review of the impacts of the development on their residence or land. If the Planning Secretary is not satisfied that an independent review is warranted, the Planning Secretary will notify the landowner in writing of that decision, and the reasons for that decision, within 21 days of the request for a review.

If the Planning Secretary is satisfied that the review is warranted, Santos will commission that review within 3 months (or other timeframe as agreed with the Planning Secretary) in accordance with condition C7. Once complete, Santos will provide a copy of the review to the Planning Secretary and the landowner and implement any recommendations of the review at the direction of the Planning Secretary.

## 11. Reporting, evaluation and review

### 11.1 Annual Review

In accordance with CoC D8, Santos will review the performance of its noise management system from the previous calendar year and report on the environmental performance of the Project to the satisfaction of the Planning Secretary. The Annual Review will be submitted by the end of March each year to the Department via the Major Projects Portal.

This Annual Review will evaluate and report on compliance with the performance measures, criteria and operating conditions of SSD 6456 to ensure that all implementation is consistent with all relevant management plans and procedures, including this noise management plan. Santos will identify potential non-compliances, analyse the causes of these potential non-compliances and describe the measures that will be implemented to ensure compliance in the future.

Further, the Annual Review under CoC D8 requires a number of items to be reviewed or assessed. In summary these are:

- monitoring results and complaints;
- trends in monitoring data;
- non-compliance and incidents;
- compliance with performance measures;
- discrepancies between predicted and actual impacts; and
- measures to be implemented to improve environmental performance.

A review of causal factors for any noise exceedances or noise-related complaints will be undertaken to determine any trends associated with the effectiveness of the noise management measures listed in section 7.1. Management measures associated with common causes of noise exceedances or complaints will be modified and/or added to, to increase their ability to mitigate the discrete noise source and minimise the potential for reoccurrence of the same type of noise event.

The annual report will identify noise monitoring events undertaken and any exceedances and may also make recommendations for any additions, changes or improvements of the noise management system. Further details on the reporting, evaluation and review of this Plan are provided in section 8 of the EMS.

### 11.2 Independent environmental audit

In accordance with CoC D9 and D10, within one year of commencement of Phase 1 and every three years thereafter, Santos will facilitate an independent environmental audit (IEA) to ensure compliance with the following:

- implementation consistent with the Protocol and Field Development Plan;
- conditions of all relevant approvals, permits, licences and plans;
- relevant State and Commonwealth legislation;
- management plans; and
- any annual compliance review obligations for the period.

The IEA will be led and conducted by a suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Planning Secretary, and be carried out in consultation with the relevant agencies, the CCC and the various advisory groups required by the CoC.

Within 3 months of commencing an IEA, unless the Planning Secretary agrees otherwise, Santos will submit a copy of the IEA report to DPE (and any other NSW agency that requests it) together with its response to any recommendations contained in the IEA report, and a timetable for the implementation of the recommendations.

### 11.3 Management Plan review and evaluation

As required by CoC D4, Santos will review the suitability of existing strategies, plans and programs required under this consent, within two months of:

- (a) the submission of an incident report;
- (b) the submission of an Annual Review;
- (c) the submission of an Independent Environmental Audit;
- (d) the submission of a Field Development Plan;
- (e) the submission of a Groundwater Model Update; or
- (f) the approval of any modification of the conditions of this consent.

This is to ensure this Plan is updated on a regular basis and to incorporate any recommended measures to improve the environmental performance of the Project.

In view of the various conditions requiring annual reviews, suitability assessments and performance evaluations, it is recommended that this Plan be reviewed and, if necessary, updated in at least the following circumstances:

- in accordance with any direction from the NSW EPA or the Minister administering the PO Act;
- due to any significant change to the design of infrastructure or operation of the field development plan;
- if there is ambiguity in relation to whether there is a significant change, Santos will consult with the Planning Secretary to determine whether the NMP must be reviewed; and
- otherwise at intervals of no longer than one year.

The review history table in the front of this Plan provides the details of each review, conducted in accordance with condition D4.

As required by CoC D5, if the review under condition D4 determines that the strategies, plans and programs required under this consent require revision - to either improve the environmental performance of the development, cater for a modification or comply with a direction - then Santos will submit the revised document to the Planning Secretary for approval within 6 weeks of the review.

Note that in accordance with consent condition B14, Santos will implement the NMP once it has been approved by the Planning Secretary.

## 11.4 Improvement measures

Santos will conduct a program to investigate and implement ways to improve the environmental performance associated with noise management over time, and implement a protocol for the periodic review of the NMP, in accordance with CoC D3(g) and (i) respectively.

This program to improve the environmental performance of the Project that will be implemented following review and evaluation include the following:

- regular review of construction plant and equipment used for the various construction activities;
- regular internal audits of the noise impact management process;
- modifications to the NMP to reflect changing site, construction or weather conditions; and
- a review of the monitoring regime and monthly site inspections.

The protocol for review is set out by consent conditions D8, D4 and D5, which have been addressed in sections 11.1 and 11.3 above.

In accordance with CoC D13 and as described in section 6 of the EMS, all relevant monitoring data and associated reports will be made available on the Project website, for the duration of the Project. This information will be kept up to date.

## 12. References

DECC (2009). *Interim Construction Noise Guideline*. NSW Department of Environment and Climate Change

DECCW (2011). *NSW Road Noise Policy*. NSW Department of Environment, Climate Change and Water.

EPA (2017). *Noise Policy for Industry*. NSW Environmental Protection Authority

Standards Australia (2019). Australian Standard/New Zealand Standard International Standards Organisation IEC 61672.1:2019. *Electroacoustics - Sound level meters Specifications*.

## 13. Glossary

| Term                      | Definition <sup>6</sup>  |
|---------------------------|--|
| Acoustic enclosure        | A structure built around a noise source to reduce noise  |
| Approved disturbance area | The disturbance areas shown in the EIS as modified by any approved Field Development Plan  |
| Attended                  | Monitoring may be attended where suitably qualified personnel attend the monitoring event  |
| Calm                      | Where very noise enhancing meteorological conditions do not occur at a site for a significant period of time   |
| Council                   | Narrabri Shire Council   |
| Day                       | The period from 7am to 6pm Monday to Saturday and 8am to 6pm Sundays and Public Holidays   |
| Department                | NSW Department of Planning and Environment (DPE)   |
| EIS                       | The Environmental Impact Statement titled Narrabri Gas Project Environmental Impact Statement, dated 31 January 2017, submitted with the development application, including the Applicant's response to submissions and supplementary response to submissions, and the additional information provided by the Applicant to (the then) DPIE in support of the application |
| EPA                       | NSW Environment Protection Authority   |
| Evening                   | The period from 6 pm to 10 pm  |
| dB                        | Decibel is the unit used for expressing the sound pressure level (SPL) or sound power level (SWL) in acoustics   |
| dB(A)                     | Decibel expressed with the frequency weighting filter used to measure 'A-weighted' sound pressure levels that conforms approximately to the human ear response, as our hearing is less sensitive at low and high frequencies   |
| Exploration well          | A petroleum well that is drilled to: a) Explore for the presence of petroleum or natural underground reservoirs suitable for storing petroleum, or b) obtain stratigraphic information for the purpose of exploring for petroleum. For clarity, an exploration well is not a production well   |
| Feasible                  | Means what is possible and practical in the circumstances  |
| Gas compression facility  | A facility that houses multiple compressor units, either nodal or hub compressors or a mixture of both used to increase the pressure of gas for the purpose of transmission; may be collocated with a gas treatment facility and/or water management facility  |
| Gas field infrastructure  | All Project-related infrastructure, excluding the Leewood facility, Bibblewindi facility and the road upgrades required under SSD 6456   |
| Gas well                  | Pilot wells and production wells   |
| Gathering lines           | Pipelines used to transfer gas and produced water from wells   |
| $L_{Aeq(period)}$         | Equivalent sound pressure level: the steady sound level that, over a specified period of time, would produce the same energy equivalence as the fluctuating sound level actually occurring   |
| $L_{A90(period)}$         | The sound pressure level that is exceeded for 90 % of the measurement period   |
| $L_{A1(1min)}$            | The sound pressure level which is exceeded for 1 per cent of the specified   |

<sup>6</sup> The majority of the definitions are as provided in the Development Consent for SSD 6456 and EPL 20350.

| Term  | Definition <sup>6</sup>   |
|---|---|
|   | time period of 1 minute   |
| Incident                                    | An occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance   |
| Linear infrastructure                       | Project related infrastructure of a linear nature including gas and water gathering lines, gas and water pipelines, access tracks, power lines, communication lines and other service lines   |
| Major facilities                            | Leewood facility and Bibblewindi facility   |
| Material harm                               | <p>Is harm that:</p> <ul style="list-style-type: none"> <li>involves actual or potential harm to the health or safety of human beings or to the environment that is not negligible, or</li> <li>results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding \$10,000 (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment)</li> </ul> <p>This definition excludes “harm” that is authorised under either SSD 6456 or any other statutory approval</p> |
| Minimise                                    | Implement all reasonable and feasible mitigation measures to reduce the impacts of the Project  |
| Mitigation                                  | Activities associated with reducing the impacts of the development  |
| Night                                       | The period from 10 pm to 7 am Monday to Saturday and 10pm to 8am Sundays and Public Holidays  |
| Noise sensitive receiver                    | <p>A noise modelling term used to describe a map reference point where noise is predicted. They consist of areas or places potentially affected by noise or vibration including:</p> <ul style="list-style-type: none"> <li>a residential dwelling;</li> <li>an educational institution, library, childcare centre or kindergarten;</li> <li>a hospital, surgery or other medical institution;</li> <li>an active (for example sports field, golf course) or passive (for example national park) recreational area;</li> <li>commercial or industrial premises; and</li> <li>a place of worship</li> </ul>                            |
| Petroleum Assessment Lease 2 (PAL 2)        | <p>A PAL is required to hold the exclusive right to prospect for petroleum and to assess any petroleum deposit over a specified area of land in NSW. A lease allows the holder to maintain a title over a potential area, without having to commit to further exploration. The holder can, however, continue prospecting operations and to recover petroleum in the course of assessing the viability of commercial mining.</p> <p>PAL 2 is held by Santos NSW Pty Ltd</p>  |
| Petroleum Exploration Licence 238 (PEL 238) | <p>Before exploring for minerals or petroleum in NSW, an explorer must first obtain a Petroleum Exploration Licence (PEL) under the <i>Petroleum (Onshore) Act 1991</i>. An exploration licence gives the licence holder exclusive rights to explore for petroleum or specific minerals within a designated area but it does not permit mining, nor does it guarantee a mining or production lease will be granted.</p> <p>PEL 238 is held by Santos NSW Pty Ltd.</p>   |

| Term  | Definition <sup>6</sup>   |
|---|---|
| Petroleum Production Lease 3 (PPL 3)          | <p>A petroleum production lease gives the holder the exclusive right to extract petroleum within the production lease area during the term of the lease.</p> <p>PPL 3 is held by the following titleholders:</p> <ul style="list-style-type: none"> <li>• Santos QNT Pty Ltd;</li> <li>• Santos NSW (Hillgrove) Pty Ltd;</li> <li>• Santos NSW (Eastern) Pty Ltd.</li> </ul>  |
| Petroleum production lease application (PPLA) | <p>A petroleum production lease gives the holder the exclusive right to extract petroleum within the production lease area during the term of the lease.</p> <p>Development consent under the <i>Environmental Planning and Assessment Act 1979</i> must be in place before a petroleum production lease can be granted.</p> <p>Santos, on behalf of its joint venture partner lodged four petroleum production lease applications under the PO Act in May 2014 for the Project area, being PPLAs 13, 14, 15 and 16. Santos NSW Pty Ltd is the applicant.</p> |
| Pilot well                                    | A well for gas and water extraction, for the purpose of exploration, appraisal and assessment of the gas field potential  |
| Planning Secretary                            | Planning Secretary under the EP&A Act, or nominee   |
| Pollution incident                            | Has the same meaning as in the POEO Act   |
| Production well                               | A well for gas and water extraction, for the purpose of commercial gas production and/or use  |
| Project area                                  | The area of approximately 95,000 hectares that encompasses the Project  |
| Project footprint                             | The area of surface expression being about 1,000 hectares occupied by the infrastructure components of the Narrabri Gas Project   |
| Project-related infrastructure                | All infrastructure and other structures associated with the development. This includes linear infrastructure and non-linear infrastructure, surface infrastructure and subsurface infrastructure, major facilities, wells and well pads and other gas field infrastructure  |
| Peak particle velocity                        | Peak particle velocity is the maximum vector sum of three orthogonal time-synchronized velocity components regardless of whether these component maxima occurred simultaneously   |
| Rating background level                       | The overall single-figure background level representing each assessment period (day/evening/night) over the whole monitoring period   |
| Public infrastructure                         | Linear and related infrastructure that provides services to the general public, such as roads, railways, water supply, drainage, sewerage, gas supply, electricity, telephone, telecommunications, etc.   |
| Reasonable                                    | Means applying judgement in arriving at a decision, considering mitigation benefits, cost of mitigation versus benefits provided, community views and the nature and extent of potential improvements   |
| Rehabilitation                                | The restoration of land disturbed by the development to ensure it is safe, stable and non-polluting over the short, medium and long term  |
| Standard construction hours                   | 7 am to 6 pm Monday to Friday, and 8 am to 1 pm on Saturdays  |
| Tonality                                      | Noise containing a prominent frequency or frequencies characterised by definite pitch   |
| Unacceptable risk                             | The level of risk at which mitigation actions are deemed to be warranted.   |
| Vibration                                     | The variation of the magnitude of a quantity which is descriptive of the motion or position of a mechanical system, when the magnitude is alternatively greater and smaller than some average value or reference.   |



| Term     | Definition <sup>6</sup>  |
|----------|--|
|          | Vibration can be measured in terms of its displacement, velocity or acceleration. The common units for velocity are millimetres per second (mm/s)  |
| Well     | Pilot wells and production wells   |
| Well pad | An area of up to 1 hectare in size upon which the gas wells are to be located, with the area decreasing to no more than 0.25 hectares following rehabilitation <sup>7</sup> , or other area as may be approved in the Field Development Plan |

<sup>7</sup> Workover activities will be contained within the operational area of the well pad area of around 0.2 ha, with an additional laydown area that could be approximately 0.2 ha in size.

## Appendix A - Consultation records

# Santos

## Management Plan Consultation Feedback Form

**DOCUMENT TITLE:** Noise Management Plan

**STAKEHOLDER:** NSW Environment Protection Authority

**CONSULTATION  
RELEASE DATE:** 30 August 2021

**COMMENTS DUE DATE:** 29 October 2021

### General Feedback

|                                    |   |
|------------------------------------|---|
| <b>Key Issues</b>                  | As an overall comment, the NMP is quite higher order. The NMP should be thoroughly reviewed and reassessed to ensure that it fully and unambiguously addresses all the requirements for the plan outlined in SSD 6456, Condition B13 and associated conditions.   |
|                                    |   |
|                                    |   |
|                                    |   |
| <b>Suggestions for improvement</b> | The proponent / licensee should carefully review the plan against all planning and Environment Protection License requirements and examine and justify how the NMP satisfies these requirements. The NMP should be a "how to" document to inform how noise is to be effectively managed and hence clearly outline the expected on the ground actions to manage noise in accordance with the statutory requirements. |
|                                    |   |
|                                    |   |
|                                    |   |
|                                    |   |

| Section | Type           | Specific Feedback   |
|---------|----------------|---|
|         |                | <i>Detail specific issues with certain sections in the document</i>   |
| s.3.2.4 | Policy context | The circumstances in which the 'Noise Policy for Industry' may apply are outlined in the EPA's publication 'Implementation and transitional arrangements for the Noise Policy for Industry' (EPA, 2017). The NMP should be consistent with this document.   |
| s.1.2   |                | Typo, SSD 6456 versus "4656"  |
| s.5.2   | Consistency    | Table 5.2 presents the meteorological (met) conditions applicable to the noise limits. SSD6456, Appendix 4 describes the applicable met conditions using two methods to determine inversion strength, those being direct temperature lapse rate (delta T over 100m) or Pasquill Gifford Stability Category (PGSC). <b>The NMP has adopted the met conditions based on the delta T approach.</b> EPL 20350 uses PGSC to describe the met conditions applied to noise limits and not the delta T approach. Unless the met station (not fully described in the NMP) includes a temperature mast capable of directly measuring delta T over 100m (in accordance with the Noise Policy for Industry), the met conditions adopted in the NMP should reflect PGSC. |

# Santos

## Management Plan Consultation Feedback Form

| Section              | Type        | Specific Feedback<br><i>Detail specific issues with certain sections in the document</i>   |
|----------------------|-------------|--|
| s.6.1                | Consistency | Section 6.1 states that: "exceedance of the construction noise management levels are expected to be minor". <b>The planning approval does not appear to allow exceedance of construction noise levels.</b>   |
| s.8.2                | Consistency | All 'modifying factors' are to be determined in accordance with the Noise Policy for Industry Fact Sheet C, not only low frequency noise.  |
| Figure 7.1           | Adequacy    | Include a requirement for corrective and preventative action (including notification) should an exceedance of applicable noise criteria be identified. The Figure or supporting text should clearly outline the triggers and methodology to be applied to compliance noise monitoring. |
| Appendix B, Table B1 | Adequacy    | These sections do not address the requirements of SSD 6456, B13(c)(3).   |
| Appendix B, Table B1 | Adequacy    | It is unclear how Section 8 of the NMP addresses the requirements of SSD 6456, B13(f)  |
| Appendix B, Table B1 | Adequacy    | Further to the above, Appendix B, Table B1 should include a third column to fully justify how the quoted NMP Section/s in column 2 fully satisfy the requirements of the SSD requirements outlined in column 1.  |



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## Noise Management Plan CCC Feedback

22/11/2021

Thank you for the opportunity for CCC members to provide input into the Draft Noise Management Plan for the Narrabri Gas Project. As a member of the CCC, People for the Plains has sought feedback from our members and from community members and provide a summary below for inclusion. Please find six requests below.

### 1. Consultation Needs To Occur

The Noise Management Plan outlines that there are 114 sensitive receivers within the project boundary and another 103 within 3km of the project, making the total of 217 sensitive receivers.

From our initial consultation with these sensitive receivers within the limited timeframe offered by this feedback process, it would seem that at least some and probably all of the sensitive receivers are not aware of the existence of the NMP and have not had any input into its development. Some stated clearly that they had not had ANY contact at all with Santos.

Appendix A "Consultation Records" remains blank in this draft. There is not enough information provided about who was consulted about noise impacts to allow this draft to be finalised.

It is important that the sensitive receivers understand the expected impacts to them, and also that they understand what actions/processes are available to them to put in formal complaints if noise breaches occur.

***We request that the draft NMP not be finalised until the sensitive receivers have each had the opportunity to review it.***

### 2. Field Development Plan First

The Noise Management Plan is to cover the construction and operation activities of Phase One only. While Phase One can include up to 25 pilot wells on 25 well pads the Draft NMP says that Phase One will include:

- 4 coreholes
- 6 pilot wells
- 1 deep reservoir monitoring bores
- some new shallow monitoring bores
- linear infrastructure
- seismic surveys
- the current operations

From the NMP, it is unclear if it is managing the impacts of what is approved under Phase One (up to 25 wells as outlined in Section 6) or what is planned for Phase One at this stage (as listed above from Section 1.1.2). Clarity around this would be useful for community members seeking to understand their rights.

Consideration should also be given to the potential for Phase One activities to remain in place for a number of years, waiting for a final investment decision, where the project does not move on to Phase Two when a new NMP will be developed. This NMP could remain in place for a long time,





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given it is for both construction and operation of this infrastructure and should take into account ongoing operation of this infrastructure.

The constraints-based approach used, simply identifies buffer distances from sensitive receivers to infrastructure or work being undertaken. Depending on the situation, these buffer zones are between 218 meters (from an operating well) to 1,875m (to drilling work), 2,021m (to construction work), 1,440m (from vegetation clearing) and 3,412m from flaring. This is not a simple approach that is easily understood by sensitive receivers.

The NMP says that site specific predictions for noise impacts have been undertaken where the location of the infrastructure is known. Stating “the operation of pilot wells is not expected to impact receivers if located appropriately”. And in Appendix M noted a number of times “The operation of production wells is not expected to impact receivers if located appropriately” and “Site specific noise predictions and impact assessment have been undertaken where the location of the infrastructure is known. Where the location of the infrastructure is unknown, a constraints based approach has been adopted and the buffer distances required to achieve the noise criteria have been estimated.”

The EIS says the Field Development Protocol will apply the findings of Appendix M to ensure noise outcomes are considered in the siting of infrastructure.



NMP Fig 7.1 shows the very first step is to identify where all the infrastructure should go and what noise will be created.

Unfortunately, as the Field Development Plan is not yet available, the locations of the core holes, pilot wells, monitoring bores and seismic survey locations are not known.

The draft NMP itself doesn't provide any mapping to show where the coreholes, pilot wells or monitoring bores are to be drilled.

We believe that it is too premature to finalise the NMP when the location of the infrastructure is not known and therefore the sensitive receivers are not known.

We disagree with the constraints-based approach on which the NMP appears to be relying, given the location of the infrastructure is not publicly known.

***We request a review of the draft Field Development Plan and finalisation of this Plan prior to the finalisation of the Noise Management Plan allowing for site specific predictions of noise impacts on sensitive receivers to be used, rather than constraints-based assumptions.***



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### 3. Existing Infrastructure Noise Impacts

This NMP also manages the noise impacts from Santos' existing exploration and appraisal activities in PEL 238 and PAL 2 including:

- Tintsville Pilot;
- Bibblewindi East Pilot;
- Bibblewindi West Pilot;
- Dewhurst North Pilot;
- Dewhurst South Pilot;
- Dewhurst northern and southern flow lines;
- Leewood Water Management Facility including ponds, water treatment plant and irrigation area;
- Bibblewindi Facility including gathering system, water balance tank, compressor and flare; and
- Bibblewindi to Leewood buried gas pipeline.

Not much detail is provided in the NMP as to how the noise impacts from these current operations differ from the new developments.

***We request clarity around the noise impacts and management and mitigation of existing operations.***

### 4. Transparency of Exceedance Agreement

Development Consent SSD 6456 Condition B11 states that noise exceedances can occur if Santos has an agreement with the residence. We would like to request that this agreement is made available to the community. Community division created by this industry is due to confidential arrangements that vary between neighbours. This is highly divisive and has negative social outcomes for our community. Should this agreement be made public, a level of honesty and transparency is bought to the table which will help reduce negative social impacts.

***We request that the agreement allowing noise exceedances for some sensitive receivers, be publicly available.***

### 5. Inclusion of all Sensitive Receivers

The NMP makes it clear that Santos has not yet identified if each of the sensitive receivers are occupied dwellings or not. And yet Section 7.3 outlines that "the project is committed to meeting noise management levels at occupied sensitive receivers". We are concerned that Santos is not in a position to determine if a dwelling is occupied or not given various living arrangements people may have. To disregard from the outset, those that Santos deems to be unoccupied is not reasonable.

***We request that Santos commits to meeting the noise management levels at ALL sensitive receivers, not just occupied sensitive receivers in its understanding.***

### 6. Operation during Normal Operating Hours Only

Much of the NMP refers to during "normal operating hours", yet these hours do not appear to be listed in the NMP or the EIS documents. It states that noise impacts will occur from cementing activities, construction activities at Leewood and from the Bibblewindi transmission line. We



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request that these activities only occur during normal operating hours and during non-adverse meteorological conditions to ensure sensitive receivers are not impacted.

***We request that “normal operating hours” be stated and that high noise creation activities are not undertaken outside normal operating hours and during adverse meteorological activities.***

Thank you for the opportunity to provide feedback on the draft Noise Management Plan and we look forward to this feedback being incorporated into the plan. This will be a clear and obvious indication of the importance of the role of the Community Consultative Committee.

Regards

People for the Plains



## Noise Management Plan - EPA comments received on Revision C (draft)

| Item | Section of reviewed version | Section of revised/final Plan            | Comment  | How addressed  |
|------|-----------------------------|--|--|--|
| 1    | General                     | General                                  | The NMP should be thoroughly reviewed and reassessed to ensure that it fully and unambiguously addresses all the requirements for the plan outlined in SSD 6456, Condition B13 and associated conditions.  | The NMP has been revised to address stakeholder comments and reviewed against the conditions of consent and other relevant licences including the EPL and tenure instruments.  |
| 2    | General                     | General                                  | The proponent / licensee should carefully review the plan against all planning and Environment Protection License requirements and examine and justify how the NMP satisfies these requirements. The NMP should be a "how to" document to inform how noise is to be effectively managed and hence clearly outline the expected on the ground actions to manage noise in accordance with the statutory requirements.  | The NMP has been revised to address stakeholder comments and reviewed against the conditions of consent and other relevant licences including the EPL and tenure instruments.  |
| 3    | Section 3.2.4               | Section 3.2.1                            | The circumstances in which the 'Noise Policy for Industry' may apply are outlined in the EPA's publication 'Implementation and transitional arrangements for the Noise Policy for Industry' (EPA, 2017). The NMP should be consistent with this document.  | <p>The EIS was submitted in January 2017 and assessed against the Secretary's Environmental Assessment Requirements (SEARs) which referenced the Industrial Noise Policy (INP) (EPA, 2000). The INP has since been superseded by the Noise Policy for Industry (NPfI) (EPA, October 2017). Under the NPfI transitional arrangements published by the EPA, the SEARs requirements referencing the INP were carried through the planning approval process. The CoC for SSD 6456 refer to the NPfI in Condition B10, stating the development must be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the NSW Noise Policy for Industry (EPA, 2017).</p> <p>Appendix 4 of the CoC requires attended compliance monitoring be undertaken in accordance with the relevant requirements of the INP. Since the NPfI is referenced in the main body of the CoC and provides the most relevant up to date guideline on compliance monitoring, this NMP has adopted the NPfI where relevant.</p> <p>The noise criteria in the CoC are based on the INP and will be applied.</p> |
| 4    | Section 1.2                 | Section 1.3                              | Typo, SSD 6456 versus "4656"   | Typos have been corrected throughout the document.   |
| 5    | Section 6.1                 | N/A – now covered under sections 6 and 7 | Section 6.1 states that: "exceedance of the construction noise management levels are expected to be minor". The planning approval does not appear to allow exceedance of construction noise levels.  | Construction and operational activities will comply with the relevant noise criteria, or be undertaken subject to a negotiated agreement with the owner/s of the relevant residence or land to exceed the noise criteria, as required by EPL 20350 condition L5.2 and CoC B11.   |
| 6    | Section 5.2                 | Section 5.2                              | Table 5.2 presents the meteorological (met) conditions applicable to the noise limits. SSD6456, Appendix 4 describes the applicable met conditions using two methods to determine inversion strength, those being direct temperature lapse rate (delta T over 100m) or Pasquill Gifford Stability Category (PGSC). The NMP has adopted the met conditions based on the delta T approach. EPL 20350 uses PGSC to describe the met conditions applied to noise limits and not the delta T approach. Unless the met station (not fully described in the NMP) includes a temperature mast capable of directly measuring delta T over 100m (in accordance with the Noise Policy for Industry), the met conditions adopted in the NMP should reflect PGSC. | Reference to the delta T approach was incorrect. The sigma theta method will be adopted. Section 5.2 has been revised accordingly.   |
| 7    | Section 8.2                 | Section 8.2                              | All 'modifying factors' are to be determined in accordance with the Noise Policy for Industry Fact Sheet C, not only low frequency noise.  | Section 8.2 of the Plan has been updated to state that all 'modifying factors' are to be considered as provided in Factsheet C of the NPfI and not just low frequency adjustments.   |
| 8    | Section 7.3, Figure 7.1     | Section 10.1                             | Include a requirement for corrective and preventative action (including notification) should an exceedance of applicable noise criteria be identified. The Figure or supporting text should clearly outline the triggers and methodology to be applied to compliance noise monitoring.   | Procedure for identifying an exceedance and notification protocol has been included in Section 8.4.2 of the updated version of the NMP   |
| 9    | Appendix B, Table B1        | Appendix B, Table B1                     | These sections do not address the requirements of SSD 6456, B13(c)(3).   | Appendix B, Table B1 has been revised to incorporate all relevant conditions of consent and updated references based on the revised Plan. Controls for noise management under adverse met conditions has been addressed in section 7.2 of the updated version of the NMP.  |

| Item | Section of reviewed version | Section of revised/final Plan | Comment   | How addressed  |
|------|-----------------------------|-------------------------------|---|--|
| 10   | Appendix B, Table B1        | Appendix B, Table B1          | It is unclear how Section 8 of the NMP addresses the requirements of SSD 6456, B13(f)   | Appendix B, Table B1 has been revised to incorporate all relevant conditions of consent and update the references based on the revised Plan.<br><br>Note that Table B1 in Appendix B (in the NMP Rev C) erroneously referred to condition B13(f). This should have been 13B(e).<br><br>Section 8.2 of the revised Plan identifies compliance noise monitoring requirements. Section 11 addresses reporting requirements. |
| 11   | Appendix B, Table B1        | Appendix B, Table B1          | Further to the above, Appendix B, Table B1 should include a third column to fully justify how the quoted NMP Section/s in column 2 fully satisfy the requirements of the SSD requirements outlined in column 1. | Appendix B, Table B1 has been revised to incorporate all relevant conditions of consent and updated references based on the revised Plan.  |

**Note:**

The numbering of the sections and appendices between the draft and final version of the document may have changed.

### Noise Management Plan - CCC comments received on Revision C (draft)

| Item | Section of reviewed version | Section of revised/final Plan | Comment   | How addressed  |
|------|-----------------------------|-------------------------------|---|--|
| 1    | Section 1                   | Section 1.6                   | There are 217 sensitive receivers within 3km of the Narrabri Gas Project area. We request that the draft NMP not be finalised until the sensitive receivers have each had the opportunity to review it.   | Consent condition B13 requires the NMP to be prepared in consultation with the EPA and the CCC. The NMP has been prepared for Phase 1 only which has the potential to affect a limited number of sensitive receivers. These receivers will be consulted during development of the Field Development Plan which will confirm the scope and footprint of Phase 1, and include a detailed noise assessment.   |
| 2    | Section 1                   | Section 1                     | From the NMP, it is unclear if it is managing the impacts of what is approved under Phase 1 (up to 25 wells as outlined in Section 6) or what is planned for Phase 1 at this stage (4 coreholes, 6 pilot wells and ancillary infrastructure). Clarity around this would be useful for community members seeking to understand their rights.   | The NMP is for the following Phase 1 infrastructure: <ul style="list-style-type: none"> <li>• 4 coreholes;</li> <li>• 6 pilot wells;</li> <li>• 2 deep reservoir monitoring bores (converted core holes);</li> <li>• associated linear infrastructure</li> <li>• seismic surveys (length and location to be determined); and</li> <li>• continued operation of Santos' existing exploration and appraisal activities including workover activities.</li> </ul> as described in sections 1.1.2 and 6.1 of the revised Plan.   |
| 3    | Section 1                   | Section 1                     | Consideration should also be given to the potential for Phase 1 activities to remain in place for a number of years, waiting for a final investment decision. This NMP could remain in place for a long time and should take into account ongoing operation of this infrastructure.   | This NMP takes into consideration managing noise impacts from the entire lifecycle of Phase 1, including construction and operation.   |
| 4    | Section 6                   | Section 6                     | The constraints-based approach used, simply identifies buffer distances from sensitive receivers to infrastructure or work being undertaken. Depending on the situation, these buffer zones are between 218 meters (from an operating well) to 1,875m (to drilling work), 2,021m (to construction work), 1,440m (from vegetation clearing) and 3,412m from flaring. This is not a simple approach that is easily understood by sensitive receivers. | The 'constraints-based' approach does not directly quantify received construction and operational noise levels at receivers. It is proposed that these buffer distances would be used as a screening assessment during the field development planning process (at 'desktop review' stage) to identify areas where a detailed noise assessment is required. A preliminary buffer screening assessment has been conducted for proposed Phase 1 infrastructure and is included in section 6 of the revised NMP.<br><br>A detailed noise assessment involving noise predictions and site-specific management measures, where required, will be conducted and documented within the Field Development Plan. |
| 5    | Generally                   | Generally                     | The draft NMP does not identify the locations of coreholes, pilot wells or monitoring bores and we do not agree with the constraints-based approach.<br><br>We request a review of the draft Field Development Plan and finalisation of this Plan prior to the finalisation of the Noise Management Plan allowing for site specific   | The Project was assessed and approved using a constraints-based approach for gas field infrastructure (i.e. wells and associated linear infrastructure). The development consent provides location criteria (condition B1) as well as noise criteria (conditions B7 to B14) which allow the constraints-based approach to site this infrastructure.  |

| Item | Section of reviewed version | Section of revised/final Plan | Comment   | How addressed   |
|------|-----------------------------|-------------------------------|---|---|
|      |                             |                               | predictions of noise impacts on sensitive receivers to be used, rather than constraints-based assumptions.  | The NMP identifies the proposed locations of Phase 1 infrastructure and provides a preliminary screening buffer assessment against this infrastructure.<br>The final locations of Phase 1 infrastructure will be confirmed in the Field Development Plan following the processes identified in the Field Development Protocol.<br>The Field Development Plan will be developed in consultation with a range of stakeholders, including the CCC and the owners of any land which gas field infrastructure is proposed to be sited. Once approved, all plans including the NMP and Field Development Plan, will be publicly available on Santos' website. |
| 6    | Generally                   | Section 6.2                   | Not much detail is provided in the NMP as to how the noise impacts from Santos' existing operations differ from new Phase 1 infrastructure.<br>We request clarity around the noise impacts and management and mitigation of existing operations.  | A section considering cumulative impacts with Santos' existing activities has been provided in section 6.2 of the revised NMP.  |
| 7    | Section 7.1.2               | Section 10.3.3                | Development Consent SSD 6456 Condition B11 states that noise exceedances can occur if Santos has an agreement with the residence. We request that the agreement allowing noise exceedances for some sensitive receivers, be publicly available.   | Condition B11 states that the noise criteria (specified in conditions B7 and B8 of the consent) do not apply if the Applicant has an agreement with the relevant owner/s of the relevant residence or land to exceed the noise criteria, and the Applicant has advised the Planning Secretary in writing of the terms of the agreement. Any agreements made in accordance with this condition will not be made public by Santos.  |
| 8    | Section 7.3                 | Section 6                     | We request that Santos commits to meeting the noise management levels at ALL sensitive receivers, not just occupied sensitive receivers in its understanding.   | The locational criteria and noise criteria specified in the conditions of consent apply to all residences whether occupied or not. Santos is committed to complying with these conditions. The NMP has been updated to clarify this commitment.   |
| 9    | Generally                   | Section 5.1                   | Much of the NMP refers to during "normal operating hours", yet these hours do not appear to be listed in the NMP or the EIS documents. It states that noise impacts will occur from cementing activities, construction activities at Leewood and from the Bibblewindi transmission line. We request that "normal operating hours" be stated and that high noise creation activities are not undertaken outside normal operating hours and during adverse meteorological activities. | The term ' <i>normal operating hours</i> ' is not used in the NMP. ' <i>Standard construction hours</i> ' or sometimes, ' <i>standard hours</i> ' are defined under the consent as '7 am to 6 pm Monday to Friday, and 8 am to 1 pm on Saturdays'. This definition has been included in Section 5.1 of the revised NMP.<br>As the Plan is for Phase 1 only, it does not include construction activities at Leewood or for the Bibblewindi transmission line.  |

**Note:**

The numbering of the sections and appendices between the draft and final version of the document may have changed.

## Appendix B - Conditions relevant to the NMP

**Table B1 - EPL 20350 conditions directly relevant to this Noise Management Plan**

| EPL 20350 conditions directly relevant to this NMP   |                                 |                                     | Section reference                 |                                 |                                     |                                   |  |         |         |         |  |
|--|---------------------------------|-------------------------------------|-----------------------------------|---------------------------------|-------------------------------------|-----------------------------------|--|---------|---------|---------|--|
| <b>L4 Noise limits - operational activities limits</b>   |                                 |                                     |                                   |                                 |                                     |                                   |  |         |         |         |  |
| L4.1 Noise generated at the premises must not exceed the noise limits in the table below:  |                                 |                                     | Section 5.1                       |                                 |                                     |                                   |  |         |         |         |  |
| <table> <tr> <th>Location</th><th>Day Noise Limit LAeq(15 minute)</th><th>Evening Noise Limit LAeq(15 minute)</th><th>Night Noise Limit LAeq(15 minute)</th></tr> <tr> <td>any residential sensitive receptor not subject to a private negotiated agreement</td><td>35dB(A)</td><td>35dB(A)</td><td>35dB(A)</td></tr> </table> |                                 |                                     | Location                          | Day Noise Limit LAeq(15 minute) | Evening Noise Limit LAeq(15 minute) | Night Noise Limit LAeq(15 minute) | any residential sensitive receptor not subject to a private negotiated agreement | 35dB(A) | 35dB(A) | 35dB(A) |  |
| Location   | Day Noise Limit LAeq(15 minute) | Evening Noise Limit LAeq(15 minute) | Night Noise Limit LAeq(15 minute) |                                 |                                     |                                   |  |         |         |         |  |
| any residential sensitive receptor not subject to a private negotiated agreement   | 35dB(A)                         | 35dB(A)                             | 35dB(A)                           |                                 |                                     |                                   |  |         |         |         |  |
| L4.2 For the purpose of Condition L4.1:  |                                 |                                     |                                   |                                 |                                     |                                   |  |         |         |         |  |
| a) Day is defined as the period from 7 am to 6 pm Monday to Saturday and 8am to 6pm Sundays and Public Holidays;   |                                 |                                     | Section 5.1                       |                                 |                                     |                                   |  |         |         |         |  |
| b) Evening is defined as the period from 6 pm to 10 pm; and  |                                 |                                     | Section 5.1                       |                                 |                                     |                                   |  |         |         |         |  |
| c) Night is defined as the period from 10 pm to 7 am Monday to Saturday and 10pm to 8am Sundays and Public Holidays  |                                 |                                     | Section 5.1                       |                                 |                                     |                                   |  |         |         |         |  |
| L4.3 To determine compliance:  |                                 |                                     |                                   |                                 |                                     |                                   |  |         |         |         |  |
| a) with the $L_{eq}(15 \text{ minute})$ noise limits in condition L4.1, the noise measurement equipment must be located:   |                                 |                                     |                                   |                                 |                                     |                                   |  |         |         |         |  |
| <ul style="list-style-type: none"> <li>approximately on the property boundary, where any dwelling is situated 30m or less from the property boundary closest to the premises; or</li> </ul>  |                                 |                                     | Table 8.1                         |                                 |                                     |                                   |  |         |         |         |  |
| <ul style="list-style-type: none"> <li>within 30 meters of a dwelling facade, but not closer than 3m, where any dwelling on the property is situated more than 30 meters from the property boundary closest to the premises; or, where applicable</li> </ul>   |                                 |                                     | Table 8.1                         |                                 |                                     |                                   |  |         |         |         |  |
| <ul style="list-style-type: none"> <li>within approximately 50 meters of the boundary of a National Park or a Nature Reserve.</li> </ul>   |                                 |                                     | Not applicable to Phase 1         |                                 |                                     |                                   |  |         |         |         |  |
| b) with the noise limits in condition L4.1, the noise measurements equipment must be located:  |                                 |                                     |                                   |                                 |                                     |                                   |  |         |         |         |  |
| <ul style="list-style-type: none"> <li>at the most affected point at a location where there is no dwelling at the location; or</li> </ul>  |                                 |                                     | Table 8.1                         |                                 |                                     |                                   |  |         |         |         |  |
| <ul style="list-style-type: none"> <li>at the most affected point within an area at a location prescribed by condition L4.1.</li> </ul>  |                                 |                                     | Table 8.1                         |                                 |                                     |                                   |  |         |         |         |  |
| L4.4 A non-compliance of condition L4.1 will still occur where noise generated from the premises in excess of the appropriate limit is measured:   |                                 |                                     |                                   |                                 |                                     |                                   |  |         |         |         |  |
| <ul style="list-style-type: none"> <li>at a location other than an area prescribed by condition L4.1; and/or</li> </ul>  |                                 |                                     | Table 8.1                         |                                 |                                     |                                   |  |         |         |         |  |
| <ul style="list-style-type: none"> <li>at a point other than the most affected point at a location.</li> </ul>   |                                 |                                     | Table 8.1                         |                                 |                                     |                                   |  |         |         |         |  |
| L4.5 The noise limits set out in condition L4.1 apply under all meteorological conditions except for the following:  |                                 |                                     |                                   |                                 |                                     |                                   |  |         |         |         |  |
| a) Wind speeds greater than 3 metres/second at 10 metres above ground level; or  |                                 |                                     | Section 5.2                       |                                 |                                     |                                   |  |         |         |         |  |

| EPL 20350 conditions directly relevant to this NMP   | Section reference |
|--|-------------------|
| b) Stability category F temperature inversion conditions and wind speeds greater than 2 metres/second at 10 metres above the ground level; or  | Section 5.2       |
| c) Stability category G temperature inversion conditions.  | Section 5.2       |
| L4.6 For the purposes of condition L4.5:   |                   |
| a) Data recorded by a meteorological station (at a location to be negotiated with the EPA) must be used to determine meteorological conditions; and  | Section 7.2       |
| b) Temperature inversion conditions (stability category) are to be determined by the sigma-theta method referred to in Part E4 of Appendix E to the NSW Industrial Noise Policy.   | Section 7.2       |
| L4.7 For the purposes of determining the noise generated at the premises the modification factors in Section 4 of the NSW Industrial Noise Policy must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.                   | Section 7.2       |
| <b>L5 Hours of operation - construction activities limits</b>  |                   |
| L5.1 Standard construction hours   |                   |
| Unless otherwise specified by any other condition of this licence, all construction activities are:  |                   |
| a) restricted to between the hours of 7:00am and 6:00pm Monday to Friday;  | Section 5.1       |
| b) restricted to between the hours of 8:00am and 1:00pm Saturday; and  | Section 5.1       |
| c) not to be undertaken on Sundays or Public Holidays.   | Section 5.1       |
| L5.2 Exceptions to standard construction hours   |                   |
| The following activities may be carried out outside of the hours permitted by Condition L5.1:  |                   |
| a) Construction work that causes $L_{Aeq(15minute)}$ noise levels that are no more than 5 dB above rating background level at any residence not subject to a private negotiated agreement, in accordance with the Interim Construction Noise Guideline (DECC, 2009); | Section 5.1       |
| b) The delivery of plant, equipment and materials which is required to be delivered outside of the standard construction hours by Police and/or other authorised authorities; and  | Section 5.1       |
| c) Emergency work to avoid loss of life, damage to property and/or environmental harm. The licensee must on becoming aware of the need to undertake emergency work – notify the NSW Environment Protection Authority Environment Line on 131 555.                    | Section 5.1       |

**Table B2 - SSD 6456 consent conditions directly relevant to this NMP**

| SSD 6456 consent conditions directly relevant to this NMP  | Section reference                              |
|--|--|
| <b>Consent condition A1</b><br>In meeting the conditions of this consent, the Applicant must implement all reasonable and feasible measures to prevent and, if prevention is not reasonable and feasible, minimise any material harm to the environment that may result from the construction, operation or rehabilitation of the development.         | Section 1.4 and 1.5                            |
| <b>Consent condition A5</b><br>The Applicant may only undertake the development in the following stages:   | Section 1.2                                    |
| a) Phase 1, comprising ongoing exploration and appraisal activities;   |  |
| b) Phase 2, comprising construction activities for production wells and related infrastructure;  |  |
| c) Phase 3, comprising gas production operations; and  |  |
| d) Phase 4, comprising gas well and infrastructure decommissioning, rehabilitation and mine closure.   |  |
| <b>Consent condition A23</b><br>With the approval of the Planning Secretary, the Applicant may:  |  |
| a) prepare and submit any strategy, plan or program required by this consent on a staged basis (if a clear description is provided as to the specific stage and scope of the development to which the strategy, plan or program applies, the relationship of the stage to any future stages and the trigger for updating the strategy, plan or program | Section 1.1.2<br>Section 1.2                   |
| b) combine any strategy, plan or program required by this consent (if a clear relationship is demonstrated between the strategies, plans or programs that are proposed to be combined);  | N/A – this plan is not combined with any other |
| c) update any strategy, plan or program required by this consent (to ensure the strategies, plans and programs required under this consent are updated on a regular basis and incorporate additional measures or amendments to improve the environmental performance of the development); and  | Section 1.1.2<br>Section 1.2                   |
| d) combine any strategy, plan or program required by this consent with any similar strategy, plan or program required by a consent   | N/A – this plan is not combined with any other |
| <b>Consent condition B1</b><br>The Applicant must ensure that petroleum mining operations in the Project area comply with the locational criteria in Table 1.  |  |
| <ul style="list-style-type: none"> <li>No project related infrastructure within 200 metres of any residence (occupied or otherwise), unless otherwise agreed with the landowner, and a copy of this agreement has been forwarded to the Planning Secretary.</li> </ul>   | Section 5.3                                    |
| <ul style="list-style-type: none"> <li>No well pads within 100 metres of any privately-owned land or other land not owned by the Applicant, unless otherwise agreed with the landowner, and a copy of this agreement has been forwarded to the Planning Secretary.</li> </ul>  | Section 5.3                                    |
| <ul style="list-style-type: none"> <li>Production well pads to be spaced at least 750 metres apart.</li> </ul>   | Not relevant to Phase 1                        |
| <ul style="list-style-type: none"> <li>Pilot well pads to be spaced at least 250 metres apart.</li> </ul>  | Section 5.3                                    |



| SSD 6456 consent conditions directly relevant to this NMP  |                                    | Section reference                   |                           |                                    |                                |                              |  |                              |                           |                           |                         |                                |    |    |    |    |  |                              |  |  |
|--|------------------------------------|-------------------------------------|---------------------------|------------------------------------|--------------------------------|------------------------------|--|------------------------------|---------------------------|---------------------------|-------------------------|--------------------------------|----|----|----|----|--|------------------------------|--|--|
| <ul style="list-style-type: none"><li>No telecommunications towers within 500 metres of any residence (occupied or otherwise), unless otherwise agreed with the landowner, and a copy of this agreement has been forwarded to the Planning Secretary.</li></ul>  |                                    | Not relevant to Phase 1             |                           |                                    |                                |                              |  |                              |                           |                           |                         |                                |    |    |    |    |  |                              |  |  |
| <b>Consent condition B2</b><br>Prior to the commencement of Phase 1, the Applicant must prepare a Field Development Protocol for the development to the satisfaction of the Planning Secretary. This plan must:  |                                    | Refer to the Field Development Plan |                           |                                    |                                |                              |  |                              |                           |                           |                         |                                |    |    |    |    |  |                              |  |  |
| <div>(a) provide a framework for siting gas field infrastructure in the project area to ensure:<br/>...<br/>(ii) compliance with the noise and noise quality criteria;</div>   |                                    |                                     |                           |                                    |                                |                              |  |                              |                           |                           |                         |                                |    |    |    |    |  |                              |  |  |
| <b>Consent condition B7</b><br><br>The Applicant must ensure that the noise generated by the development – including cumulative noise generated by the Wilga Park Power Station and ancillary activities in the project area, but excluding Phase 1 and 2 construction activities during standard construction hours, and non-routine safety flaring operations – does not exceed the criteria in Table 2.<br><br><b>Table 2:</b> Operational noise criteria dB(A)   |                                    | Section 5.1                         |                           |                                    |                                |                              |  |                              |                           |                           |                         |                                |    |    |    |    |  |                              |  |  |
| <table><tr><th rowspan="2">Noise Assessment Location</th><th>Day</th><th>Evening</th><th>Night</th><th>Night</th></tr><tr><th>L<sub>Aeq</sub> (15 min)</th><th>L<sub>Aeq</sub> (15 min)</th><th>L<sub>Aeq</sub> (15 min)</th><th>L<sub>A1</sub> (1 min)</th></tr><tr><td>All privately owned residences</td><td>35</td><td>35</td><td>35</td><td>45</td></tr><tr><td>Yarrie Lake, Brigalow State Conservation Area, Brigalow Nature Reserve</td><td colspan="3">50 L<sub>Aeq</sub> (period)</td><td>-</td></tr></table><br><b>Notes:</b> <ul style="list-style-type: none"><li>Receiver locations are shown on the applicable figure in Appendix 3 [of the CoC]</li><li>Condition B11 provides exemptions to complying with these criteria.</li><li>Noise criteria for Phase 1 and 2 construction activities during standard construction hours are outlined in condition B8.</li><li>For the avoidance of doubt, the criteria in Table 2 apply to Phase 1 and 2 construction activities outside standard construction hours.</li><li>Noise criteria for non-routine safety flaring operations are outlined in condition B9.</li></ul> |                                    |                                     | Noise Assessment Location | Day                                | Evening                        | Night                        | Night  | L <sub>Aeq</sub> (15 min)    | L <sub>Aeq</sub> (15 min) | L <sub>Aeq</sub> (15 min) | L <sub>A1</sub> (1 min) | All privately owned residences | 35 | 35 | 35 | 45 | Yarrie Lake, Brigalow State Conservation Area, Brigalow Nature Reserve | 50 L <sub>Aeq</sub> (period) |  |  |
| Noise Assessment Location  | Day                                | Evening                             |                           | Night                              | Night                          |                              |  |                              |                           |                           |                         |                                |    |    |    |    |  |                              |  |  |
|  | L <sub>Aeq</sub> (15 min)          | L <sub>Aeq</sub> (15 min)           | L <sub>Aeq</sub> (15 min) | L <sub>A1</sub> (1 min)            |                                |                              |  |                              |                           |                           |                         |                                |    |    |    |    |  |                              |  |  |
| All privately owned residences   | 35                                 | 35                                  | 35                        | 45                                 |                                |                              |  |                              |                           |                           |                         |                                |    |    |    |    |  |                              |  |  |
| Yarrie Lake, Brigalow State Conservation Area, Brigalow Nature Reserve   | 50 L <sub>Aeq</sub> (period)       |                                     |                           | -                                  |                                |                              |  |                              |                           |                           |                         |                                |    |    |    |    |  |                              |  |  |
| <b>Consent condition B8</b><br><br>The Applicant must implement all reasonable and feasible measures to ensure that the noise generated by Phase 1 and 2 construction activities during standard construction hours – including cumulative noise generated by the development and noise from the Wilga Park Power Station and ancillary activities in the project area – does not exceed the criteria in Table 3.<br><br><b>Table 3:</b> Construction noise criteria dB(A) – standard construction hours   |                                    | Section 5.1                         |                           |                                    |                                |                              |  |                              |                           |                           |                         |                                |    |    |    |    |  |                              |  |  |
| <table><tr><th>Noise Assessment Location</th><th>During Standard Construction Hours</th></tr><tr><td>All privately owned residences</td><td>40 L<sub>Aeq</sub> (15 min)</td></tr><tr><td>Yarrie Lake, Brigalow State Conservation Area, Brigalow Nature Reserve</td><td>50 L<sub>Aeq</sub> (period)</td></tr></table><br><b>Notes:</b> <ul style="list-style-type: none"><li>Receiver locations are shown on the applicable figure in Appendix 3 [of the CoC].</li><li>Operational noise criteria, including Phase 1 and 2 activities outside standard construction hours are outlined in condition B7. For the avoidance of doubt, the criteria in Table 3 do not apply to Phase 1 and 2 activities outside standard construction hours.</li></ul>  |                                    |                                     | Noise Assessment Location | During Standard Construction Hours | All privately owned residences | 40 L <sub>Aeq</sub> (15 min) | Yarrie Lake, Brigalow State Conservation Area, Brigalow Nature Reserve | 50 L <sub>Aeq</sub> (period) |                           |                           |                         |                                |    |    |    |    |  |                              |  |  |
| Noise Assessment Location  | During Standard Construction Hours |                                     |                           |                                    |                                |                              |  |                              |                           |                           |                         |                                |    |    |    |    |  |                              |  |  |
| All privately owned residences   | 40 L <sub>Aeq</sub> (15 min)       |                                     |                           |                                    |                                |                              |  |                              |                           |                           |                         |                                |    |    |    |    |  |                              |  |  |
| Yarrie Lake, Brigalow State Conservation Area, Brigalow Nature Reserve   | 50 L <sub>Aeq</sub> (period)       |                                     |                           |                                    |                                |                              |  |                              |                           |                           |                         |                                |    |    |    |    |  |                              |  |  |

| SSD 6456 consent conditions directly relevant to this NMP   | Section reference             |
|---|-------------------------------|
| <b>Condition B9</b><br>The Applicant must implement all reasonable and feasible measures to ensure that the noise generated by non-routine safety flaring operations – including cumulative noise generated by the development and noise from the Wilga Park Power Station and ancillary activities in the project area – does not exceed the criteria in Table 2 at any residence on privately-owned land. | Section 5.1                   |
| <b>Condition B10</b><br>Noise generated by the development must be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the NSW Noise Policy for Industry (EPA, 2017). Appendix 4 sets out the meteorological conditions under which these criteria apply and the requirements for evaluating compliance with these criteria.              | Section 5.2                   |
| <b>Condition B11</b><br>The noise criteria in Tables 2 and 3 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and the Applicant has advised the Planning Secretary in writing of the terms of this agreement.  | Section 5.1<br>Section 10.3.3 |
| <b>Condition B12</b><br>The Applicant must:   |                               |
| (a) implement all reasonable and feasible measures to:  |                               |
| (i) minimise the construction, operational, low frequency and road noise of the development;  | Section 7.1                   |
| (ii) attenuate all new plant and equipment that will operate in noise sensitive areas;  | Section 7.1                   |
| (iii) schedule non-routine safety flaring and other non-routine maintenance activities at the Leewood facility and Bibblewindi facility that have the potential to exceed the noise criteria in Table 2, during the day period, where practicable;  | Section 7.1<br>Section 5.1    |
| (iv) monitor and record major equipment noise levels and make this data readily available at the request of the Department or the EPA;  | Sections 8.2 and 9            |
| (v) minimise the noise impacts of the development during noise-enhancing meteorological conditions when the noise criteria in this consent do not apply (see Appendix 4);   | Sections 5.2 and 7.2          |
| (b) operate a suitable system to enable the public to get up-to-date information on any construction or non-routine safety flaring operations that have the potential to exceed the noise criteria in this consent; and   | Section 10.3.1                |
| (c) regularly assess meteorological and noise monitoring data and modify operations in the project area in response to this data to ensure compliance with the relevant conditions of this consent.   | Sections 5.2 and 7.2          |
| <b>Note:</b> Noise sensitive areas are areas with the potential to generate increased noise at privately-owned residences, such as areas near the boundary of the major facilities or well pads near residences.  |                               |
| <b>Consent condition B13</b><br>Prior to the commencement of Phase 1, the Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:   |                               |
| a) prepared by a suitably qualified and experienced person/s;   | Section 1.2                   |
| b) be prepared in consultation with the EPA and the CCC;  | Section 1.5                   |
| c) describe the measures to be implemented to ensure:   |                               |
| (i) compliance with the noise criteria and operating conditions in this consent;  | Section 7.1                   |

| SSD 6456 consent conditions directly relevant to this NMP   | Section reference  |
|---|--|
| (ii) reasonable and feasible noise mitigation measures are being employed;  | Section 7.1  |
| (iii) noise impacts of the development are minimised during noise enhancing meteorological conditions under which the noise criteria in this consent do not apply (see Appendix 4 of CoC)   | Section 5.2 and 7.2  |
| (iv) any blasting impacts associated with the construction of the development are minimised;  | N/A – no blasting is proposed during Phase 1 (refer to section 7.1 for preliminary noise assessment) |
| d) describe the noise management system in detail; and  | Sections 7 and 8 and sub-sections  |
| e) include a monitoring program that:   | Section 8 and Table 8.1  |
| (i) evaluates and reports on:   |  |
| ▪ the effectiveness of the noise management system;   |  |
| ▪ compliance against the noise criteria in this consent; and  |  |
| ▪ compliance against the noise operating conditions;  | Table 8.1  |
| (ii) includes a program to calibrate and validate the unattended monitoring results with the attended monitoring results over time (so the unattended noise monitoring program can be used as a trigger for further attended monitoring where there is a risk of non-compliance with the noise criteria in this consent); and   |  |
| (iii) defines what constitutes a noise exceedance, incident or non-compliance, and includes a protocol for identifying and notifying DPE and relevant stakeholders of these events.   | Section 10.1   |
| <b>Condition B14</b><br>The Applicant must implement the Noise Management Plan once approved by the Planning Secretary.   | Section 1.7  |
| <b>Condition B25</b><br>Prior to the commencement of Phase 1 and for the life of the development, the Applicant must ensure that there is a suitable meteorological station operating in the project area that:<br>a) complies with the requirements in the <i>Approved Methods for Sampling and Analysis of Air Pollutants in New South Wales</i> (DEC, 2007);<br>b) is capable of continuous real-time measurement of wind speed, wind direction sigma theta and temperature; and<br>c) can measure meteorological conditions in accordance with the <i>NSW Noise Policy for Industry</i> (EPA, 2017),<br>d) unless a suitable alternative is approved by the Planning Secretary following consultation with the EPA. | Section 7.2  |

| SSD 6456 consent conditions directly relevant to this NMP   |                              | Section reference   |
|---|------------------------------|---|
| <b>Condition C1</b><br>Upon receiving a written request from the owner of any residence on the privately-owned land listed in Table 12, the Applicant must implement additional noise mitigation measures in consultation with the landowner, to mitigate noise impacts on the residence associated with non-routine safety flaring operations at the Leewood Facility. These measures may include provision of alternative accommodation during non-routine safety flaring operations, or provision of acoustic treatments to the residence, and must be consistent with the measures outlined in the Voluntary Land Acquisition and Mitigation Policy for State Significant Mining, Petroleum and Extractive Industry Developments (NSW Government, 2018). They must also be reasonable and feasible, proportionate to the level of predicted impact and directed towards reducing the relevant noise impacts of the development during non-routine safety flaring operations.<br><br><i>Table 12: Land subject to additional mitigation upon request</i> |                              | Not applicable.<br><br>There is no flare at the Leewood facility, and none will be constructed as part of Phase 1 |
| <b>Mitigation Basis</b>   | <b>Land</b>                  |   |
| Noise (during non-routine safety flaring operations)  | 179, 182, 189, 191, 216, 217 |   |
| <b>Note:</b> The location of the land referred to in Table 12 is shown on the applicable figure in <b>Error! Reference source not found..</b>   |                              |   |
| <b>Consent condition C2</b><br>If within 3 months of receiving this request from the owner, the Applicant and the owner 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 Planning Secretary for resolution.  |                              | Not applicable.<br><br>There is no flare at the Leewood facility, and none will be constructed as part of Phase 1 |
| <b>Consent condition C3</b><br>At least 3 months prior to the commencement of Phase 3, the Applicant must notify in writing the owners of the residences on the land listed in Table 12 that they are entitled to ask the Applicant to undertake additional mitigation measures upon request.   |                              | Not applicable.<br><br>There is no flare at the Leewood facility, and none will be constructed as part of Phase 1 |
| <b>Consent condition C4</b><br>As soon as practicable and no longer than 7 days after obtaining monitoring results showing an exceedance of any noise, air quality, water or blasting criterion or performance measure in this consent, or in any management plan required under this consent, the Applicant must provide the details of the exceedance to any affected landowners and tenants.   |                              | Section 8.2 and sub-sections  |
| <b>Consent condition C5</b><br>If a landowner considers the development to be exceeding any relevant noise, air quality, water or blasting criterion or performance measure in this consent, or in any management plan required under this consent, on their residence or land, they may ask the Planning Secretary in writing for an independent review of the impacts of the development on their residence or land.  |                              | Section 10.5  |
| <b>Consent condition C6</b><br>If the Planning Secretary is not satisfied that an independent review is warranted, the Planning Secretary will notify the landowner in writing of that decision, and the reasons for that decision, within 21 days of the request for a review.   |                              | Section 10.5  |

| SSD 6456 consent conditions directly relevant to this NMP   | Section reference                                  |
|---|--|
| <p><b>Consent condition C7</b></p> <p>If the Planning Secretary is satisfied that an independent review is warranted, within 3 months, or other timeframe agreed by the Planning Secretary and the landowner, of the Planning Secretary's decision, the Applicant must:</p> <ul style="list-style-type: none"> <li>(a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Planning Secretary, to: <ul style="list-style-type: none"> <li>(i) consult with the landowner to determine their concerns;</li> <li>(ii) conduct monitoring to determine whether the development is complying with the relevant criterion or performance measure on their residence or land; and</li> <li>(iii) if the development is not complying with the relevant criterion or performance measure, identify measures that could be implemented to ensure compliance with the relevant criterion or performance measure;</li> </ul> </li> <li>(b) give the Planning Secretary and landowner a copy of the independent review; and</li> <li>(c) comply with any written requests made by the Planning Secretary to implement any findings of the review.</li> </ul> | Section 10.5                                       |
| <p><b>Consent condition D3</b></p> <p>The Applicant must ensure that (where relevant) the management plans required under this consent include:</p>   |  |
| a) summary of relevant background or baseline data;   | Section 4 and sub-sections                         |
| b) details of:  |  |
| (i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);   | Sections 3 and 5                                   |
| (ii) any relevant limits or performance measures and criteria; and  | Sections 1.4 and 5                                 |
| (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;   | Section 1.4 and 5                                  |
| c) any relevant commitments or recommendations identified in the documents that together comprise the NGP EIS;  | Section 3.3  |
| d) a description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria   | Sections 7 and sub-sections and 8 and sub-sections |
| e) a program to monitor and report on the:  | Section 8  |
| (i) impacts and environmental performance of the Project; and   | Section 11   |
| (ii) effectiveness of the management measures set out pursuant to paragraph (d);  |  |
| f) 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;  | Section 10.2                                       |
| g) a program to investigate and implement ways to improve the environmental performance of the development over time  | Sections 11.4                                      |
| h) a protocol for managing and reporting any:   |  |
| (iii) incident, non-compliance or exceedance of any impact assessment criterion and performance criterion   | Section 10.1                                       |

| SSD 6456 consent conditions directly relevant to this NMP   | Section reference |
|---|-------------------|
| (iv) complaint; or  | Section 10.4      |
| (v) failure to comply with other statutory requirements; and  | Section 10.1      |
| i) a protocol for periodic review of the plan.  | Section 11.3      |
| <b>Consent condition D4</b><br>Within 2 months of:  | Section 11.3      |
| a) the submission of an incident report;  |                   |
| b) the submission of an Annual Review;  |                   |
| c) the submission of an Independent Environmental Audit;  |                   |
| d) the submission of a Field Development Plan;  |                   |
| e) the submission of a Groundwater Model Update; or   |                   |
| f) the approval of any modification of the conditions of this consent,  |                   |
| the Applicant must review the suitability of existing strategies, plans and programs required <b>under</b> this consent.:   |                   |
| <b>Consent condition D5</b><br>If the review determines that the strategies, plans and programs required under this consent require revision – to either improve the environmental performance of the development, cater for a modification or comply with a direction - then the Applicant must submit the revised document to the [Planning] Secretary for approval within 6 weeks of the review.<br><b>Note:</b> <i>This is to ensure strategies, plans and programs are updated on a regular basis and to incorporate any recommended measures to improve the environmental performance of the development.</i> | Section 11.3      |
| <b>Consent condition D6</b><br>The Applicant must notify the Department and any other relevant agencies via the Major Projects Portal immediately after it becomes aware of the incident. This notice must describe the location and nature of the incident.  | Section 10.1      |
| <b>Consent condition D7</b><br>Within 7 days of becoming aware of a non-compliance with the conditions of this consent, the Applicant must notify the Department of the non-compliance via the Major Projects Portal. This notice must set out the non-compliance, the reasons for the non-compliance (if known) and what actions have been taken, or will be taken, to address the non-compliance.<br><b>Note:</b> <i>A non-compliance which has been notified as an incident does not need to also be notified as a non-compliance</i>  | Section 10.1      |
| <b>Consent condition D8</b><br>By the end of March each year, unless the Planning Secretary agrees otherwise, the Applicant must submit an Annual Review of the environmental performance of the development to the Department via the Major Projects Portal.   | Section 11.1      |
| <b>Consent condition D9</b><br>Within one year of commencement of Phase 1 and every 3 years thereafter, unless the Planning Secretary directs otherwise, the Applicant must commission and pay the full cost of an Independent Environmental Audit of the development.  | Section 11.2      |
| <b>Consent condition D13</b><br>From the commencement of Phase 1, until the completion of all rehabilitation required under this consent, the Applicant must:   |                   |

| SSD 6456 consent conditions directly relevant to this NMP  | Section reference                   |
|--|-------------------------------------|
| <p>a) make copies of the following information publicly available on its website:</p> <ul style="list-style-type: none"> <li>(i) the document/s listed in condition A2(c);</li> <li>(ii) current statutory approvals for the development;</li> <li>(iii) approved strategies, plans and programs;</li> <li>(iv) detailed plans for the Phases of the development;</li> <li>(v) minutes of CCC and Advisory Group meetings;</li> <li>(vi) regular reporting on the environmental performance of the development in accordance with the reporting requirements in any plans or programs approved under the conditions of this consent;</li> <li>(vii) 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;</li> <li>(viii) a summary of the current phase/s and progress of the development;</li> <li>(ix) contact details to enquire about the development or to make a complaint;</li> <li>(x) a complaint register, updated monthly;</li> <li>(xi) a record of all incidents and non-compliances;</li> <li>(xii) the Annual Reviews of the development;</li> <li>(xiii) audit reports prepared as part of any Independent Environmental Audit of the development and the Applicant's response to the recommendations in any audit report; and</li> <li>(xiv) any other matter required by the Planning Secretary; and</li> </ul> | <p>Section 1.7<br/>Section 10.4</p> |
| <p>b) keep such information up to date.</p>  | <p>Section 11.4</p>                 |
| <b>Appendix 4 Noise Compliance Assessment</b>  |                                     |
| <p><b>Applicable Meteorological Conditions</b></p> <p>1. The noise criteria in Part B are to apply under all meteorological conditions except the following:</p> <ul style="list-style-type: none"> <li>(a) where 3°C/100 metres (m) lapse rates have been assessed, then: <ul style="list-style-type: none"> <li>(i) wind speeds greater than 3 metres/second (m/s) measured at 10m above ground level;</li> <li>(ii) temperature inversion conditions between 1.5°C and 3°C/100m and wind speeds greater than 2m/s measured at 10m above ground level; or</li> <li>(iii) temperature inversion conditions greater than 3°C/100m.</li> </ul> </li> <li>(b) where Pasquill Stability Classes have been assessed, then: <ul style="list-style-type: none"> <li>(i) wind speeds greater than 3m/s at 10m above ground level;</li> <li>(ii) stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level;</li> <li>(iii) stability category G temperature inversion conditions.</li> </ul> </li> </ul>   | <p>Section 5.2</p>                  |
| <p><b>Determination of Meteorological Conditions</b></p> <p>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.</p>   | <p>Section 5.2</p>                  |



| SSD 6456 consent conditions directly relevant to this NMP  | Section reference |
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| <p><b>Compliance Monitoring</b></p> <p>3. Unless otherwise agreed by the Planning Secretary, the attended compliance monitoring must be carried out in accordance with the relevant requirements for reviewing performance set out in the <i>NSW Industrial Noise Policy</i> (EPA, 2000), in particular the requirements relating to:</p> <ul style="list-style-type: none"> <li>(a) monitoring locations for the collection of representative noise data;</li> <li>(b) meteorological conditions during which collection of noise data is not appropriate;</li> <li>(c) equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment; and</li> <li>(d) modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration,</li> </ul> <p>with the exception of applying appropriate modifying factors for low frequency noise during compliance testing. This should be undertaken in accordance with Fact Sheet C of the <i>NSW Noise Policy for Industry</i> (EPA, 2017).</p> | Table 8.1         |