

Section 7**Gas Transmission Pipeline Environmental Values and Management of Impacts****7.8 Air Quality****7.8.1 Introduction**

An air quality impact assessment for the proposed gas transmission pipeline was conducted to address the Term of Reference (ToR) requirements for the EIS relating to air quality. The assessment considered the potential air quality impacts associated with the construction and operational phases of the gas transmission pipeline. A full description of the gas transmission pipeline used as the basis for the assessment is provided in Section 3.7.

Key findings of the air quality assessment for the proposed gas transmission pipeline are described below, with a full copy of the assessment report provided in Appendix S.

7.8.2 Methodology

The air quality assessment included:

- Description of the existing air quality along the gas transmission pipeline corridor;
- An overview of applicable air quality criteria based on relevant legislation and Environmental Protection Agency (EPA) guidelines;
- Air quality impacts associated with the construction and normal operation of the gas transmission pipeline; and
- A summary of possible mitigation measures which could be incorporated into the pipeline development program to minimise the potential for impacts.

7.8.3 Regulatory Framework

Air quality guidelines and emission standards for the project are outlined in Section 6.8.3.

7.8.4 Existing Environmental Values**7.8.4.1 Climate**

See Section 7.2 for the climate summary of temperature, rainfall, evaporation, relative humidity, wind speed and wind direction, atmospheric stability, mixing height and temperature inversions.

7.8.4.2 Existing Ambient Air Quality

The existing ambient air quality near the eastern end of the gas transmission pipeline corridor is represented by measurements taken at Gladstone. The existing air quality of Gladstone is presented in detail for the LNG facility in Section 8.8. The existing air quality near the western end of the gas transmission pipeline corridor is represented by measurements from Toowoomba (the closest EPA monitoring station), as presented in Section 6.8. There are no other EPA air quality monitoring stations located in the vicinity of the gas transmission pipeline corridor, and no publicly available field air quality data collected by industry.

7.8.5 Potential Impacts and Mitigation Measures**7.8.5.1 Description of Activities**

The gas transmission pipeline will be a buried, high pressure steel pipeline. It will be designed in accordance with the requirements of the Australian Standard for pipelines (AS 2885). The gas transmission pipeline is to be built entirely of welded pipes, with approximately nine buried mainline

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valves with an above-ground bypass valve and blowdown piping. Mainline valves are used for isolating sections of the pipeline and venting gas to enable maintenance activities or in the event of an incident.

The pipeline construction activities that could potentially impact on air quality include:

- The clearing of the proposed pipeline easement with topsoil removed and stockpiled;
- Excavating a pipeline trench, with the subsoil stockpiled adjacent to the trench;
- Pipe stringing and bending: The pipe will be laid out in preparation for welding and pipes bent as required by route and terrain;
- Pipe placement in the trench (lowering in and laying), with trench spoil backfilled and compacted; and
- Once construction is complete, rehabilitation will involve removal of construction material, surface re-contouring, fence repair/replacement, respreading of topsoil and vegetation seeding/revegetation.

See Section 3.7 for a full description of the proposed gas transmission pipeline, used as the basis for this assessment.

This project will comply with the Santos document *EHS Management System Hazard Standard, EHS05 Air Emissions*. Santos strives to meet air quality guidelines through new facility EIS assessment, qualifying emissions through direct monitoring or estimation techniques, recording external and internal complaints related to offensive air emissions or odour, and establishing and maintaining an air quality monitoring program if required by the relevant environmental agency.

7.8.5.2 Emission Rates

Emissions During Construction

Impacts

Air emissions during construction of the gas transmission pipeline will be primarily dust, with some minor sources of combustion pollutants such as nitrogen oxides due to diesel and petrol vehicles and machinery.

Emissions will be generated from a number of sources including:

- Clearing of vegetation and topsoil;
- Excavation and transport of earth material;
- Vehicle (including heavy vehicles delivering pipeline) travelling on unpaved roads; and
- Vehicles and construction equipment (such as excavators) exhausts.

No air dispersion modelling has been conducted to assess air quality impacts during pipeline construction because of the difficulty of modelling ever-changing construction location and the mobile nature of most sources during the construction.

The impacts of construction activities will be managed through the Environmental Management Plan (EMP). This will include strategies to prevent or minimise dust emissions during construction activities, an outline of methods to monitor the effects of construction activities, and documentation of procedures that will be implemented to mitigate any adverse off-site impacts.

Mitigation Measures

The impacts of construction activities on air quality will be managed through implementing best practice procedures to reduce air emissions as part of the EMP.

Mitigation measures to reduce potential dust emissions during construction activities are listed below:

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- The land cleared for construction purposes will be kept to the minimum necessary, especially during the drier months of the year;
- The cleared areas not required for ongoing maintenance will be rehabilitated through revegetation;
- Minimising vehicle speeds; and
- Dust suppression will be undertaken during construction and clearing activities, particularly during high wind conditions. Haul roads and other unsealed areas may be watered to suppress dust.

Emissions During Normal Operations

Impacts

The gas transmission pipeline is to be built entirely of welded pipes, without any release points under normal operation. Mainline valves are only used for maintenance activities or in the event of an incident. Potential air quality impacts are unlikely during routine operations, except for minor dust and exhaust emissions from pipeline maintenance vehicles.

Potential gas release (i.e. gas venting) during upset conditions or planned maintenance may occur via mainline valves. In case of such events, the air releases will be predominantly methane, with minor releases of carbon dioxide and nitrogen, and with trace releases of ethane (See Section 3.7 for chemical composition of the coal seam gas (CSG)). Those gases are not considered as air pollutants and not listed in the key pollutants table in the ToR, and hence they have not been assessed for air quality impacts.

Mitigation Measures

During the operational phase, mitigation measures will include:

- Minimising vehicle speeds for pipeline patrol vehicles; and
- Monitoring and maintenance programs to ensure good vegetation cover on the proposed pipeline easement.

Human Health Risk Assessment

Impacts

As there are no known hazardous or toxic air pollutants from the gas transmission pipeline during normal operation, human health risk assessment has not been conducted.

Mitigation Measures

Potential human health impacts from dust and other pollutants during the construction will be minimised through implementing best practice procedures to reduce air emissions.

Odour Assessment

Due to the chemical composition of the CSG (see Section 3.3 for CSG chemical composition), odour is not considered relevant to the proposed gas transmission pipeline.

Cumulative Impacts

Section 1 identifies other proposed gas transmission pipelines associated with other potential CSG projects. There is limited information available as to the planned development or timing of these projects; however a qualitative assessment can be made of the possible cumulative impacts.

Some sections of the proposed gas transmission pipeline corridor may be located within an area where these other pipelines are proposed to be located in the future.

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Cumulative impacts are expected to be negligible because air emissions related to the construction and operation of gas pipelines are very low.

Table 7.8.1 provides a summary of potential air quality impacts and mitigation measures for the gas transmission pipeline.

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Table 7.8.1 Potential Air Quality Impacts and Mitigation Measures

Aspect	Potential Impact	Mitigation Measures	Objective
Construction			
Dust emissions.	Dust can potentially impact on human and vegetation health.	• Implement appropriate engineering design to minimise dust emissions. • Minimise areas cleared. • Use dust suppression controls. • Implement quantified monitoring and measuring program. • Educate community on GLNG emissions and their impacts.	Reduce impact of dust.
Operation			
Dust emissions.	Dust can potentially impact on human and vegetation health.	• Minimise vehicle speeds for pipeline patrol vehicles, and • Monitor and maintain adequate vegetation cover on the ROW areas along the pipeline to avoid dust generation.	Reduce impact of dust.
Decommissioning			
Dust emissions.	Dust can potentially impact on human and vegetation health.	• Implement appropriate engineering design to minimise dust emissions. • Minimise areas cleared. • Use dust suppression controls. • Implement quantified monitoring and measuring program.	Reduce impact of dust.

Section 7**Gas Transmission Pipeline Environmental
Values and Management of Impacts****7.8.6 Summary of Findings**

The air quality assessment identified minimal impacts associated with the construction and operation of the gas transmission pipeline. Dust emissions during the construction phase will be managed through implementing best practice dust control procedures such as minimising clearance areas, revegetation, and watering haul roads. Fuel exhaust emissions during the construction phase will be minimised through a monitoring and maintenance program to ensure all vehicles and machinery are fitted with appropriate emission control equipment and these emission controls are working properly. During the operational phase of the pipeline, gas venting for scheduled maintenance and emergencies will release only those gases that are not considered air pollutants.