

# Jemena Northern Gas Pipeline Pty Ltd

## Northern Gas Pipeline

### Draft Environmental Impact Statement

#### APPENDIX W – AIR QUALITY MANAGEMENT PLAN

Public

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# Air Quality Management Plan - Northern Gas Pipeline - FINAL

Jemena Limited

**399-PA-EV-010**

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The validity and comprehensiveness of supplied information has not been independently verified and, for the purposes of this report, it is assumed that the information provided to Air Noise Environment Pty Ltd for the purposes of this project is both complete and accurate.





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# 1 Introduction

## 1.1 Purpose of the Management Plan

This Air Quality Management Plan (AQMP) has been prepared by Air Noise Environment Pty Ltd on behalf of Jemena Ltd for construction and operation of the Northern Gas Pipeline (NGP).

This AQMP contains details of the potential air quality impacts associated with the proposed pipeline construction and operational activity, legislative requirements and management tools to investigate and act on non-compliances.

## 1.2 Responsibility for the Management Plan

The Site Manager has day to day responsibility for implementation and compliance with this AQMP. The Site Manager is also responsible for disseminating information about the AQMP to all staff, contractors and visitors to the site.

It is essential that all personnel at the site are aware of the AQMP. Under the *Queensland Environmental Protection Act 1994* and *Northern Territory Waste Management and Pollution Control Act 2015*, all persons and businesses have a duty to protect the environment and/or to report occurrences of environmental harm. This responsibility is implicit in the General Environmental Duty of the QLD and NT Act:

### **QLD General Environmental Duty (Part 1, Division 1 of the Act)**

*'A person must not carry out any activity that causes, or is likely to cause, environmental harm unless the person takes all reasonable and practicable measures to prevent or minimise the harm.'*

### **NT General Environmental Duty (Part 3 of the Act)**

*'A person who:*

- *conducts an activity that causes or is likely to cause pollution resulting in environmental harm or that generates or is likely to generate waste; or*
- *performs an action that causes or is likely to cause pollution resulting in environmental harm or that generates or is likely to generate waste,*
- *must take all measures that are reasonable and practicable to:*
  - *prevent or minimise the pollution or environmental harm; and*
  - *reduce the amount of the waste.'*

All employees, sub-contractors and visitors to the site must comply with the General Environmental Duty.





## 1.3 Structure of the Document

The AQMP is structured as follows:

- Sections 2 to 7 outlines the relevant legislation and standards, construction/operational activities, potential impacts and implementation procedures for the AQMP and management procedures in the event of a complaint.
- Appendix A - defines the plans and procedures for addressing and managing these risks.
- Appendix B - presents the forms that are to be used to document and assess compliance with the AQMP.





## 2 Proposed Pipeline

### 2.1 Pipeline Route

The Northern Gas Pipeline (NGP) is proposed pipeline 622 km in length, beginning at Warrego (Northern Territory) and extending east towards Mt Isa (Queensland). The majority of the pipeline is located in the Northern Territory and the final 165 km will be located in Queensland. The proposed pipeline will connect gas supplies from offshore and land-based sources in the Northern Territory to the eastern gas markets.

Several pipeline facilities are proposed at specific points along the pipeline route. These facilities include the following:

- Start of Line (SOL) facility at Warrego;
- End of Line (EOL) facility at Mt Isa; and
- Main Line Valve (MLV) sites for maintenance and operational requirements (total of 3).

A total of five Cathodic Protection (CP) sites are also proposed however, there are no air emissions associated with these facilities.

Figure 2.1 presents the pipeline route and key features of the pipeline. Figure 2.2 presents a close-up of the pipeline route and EOL facility in Mt Isa.







Figure 2.1 - NGP Route and Facilities



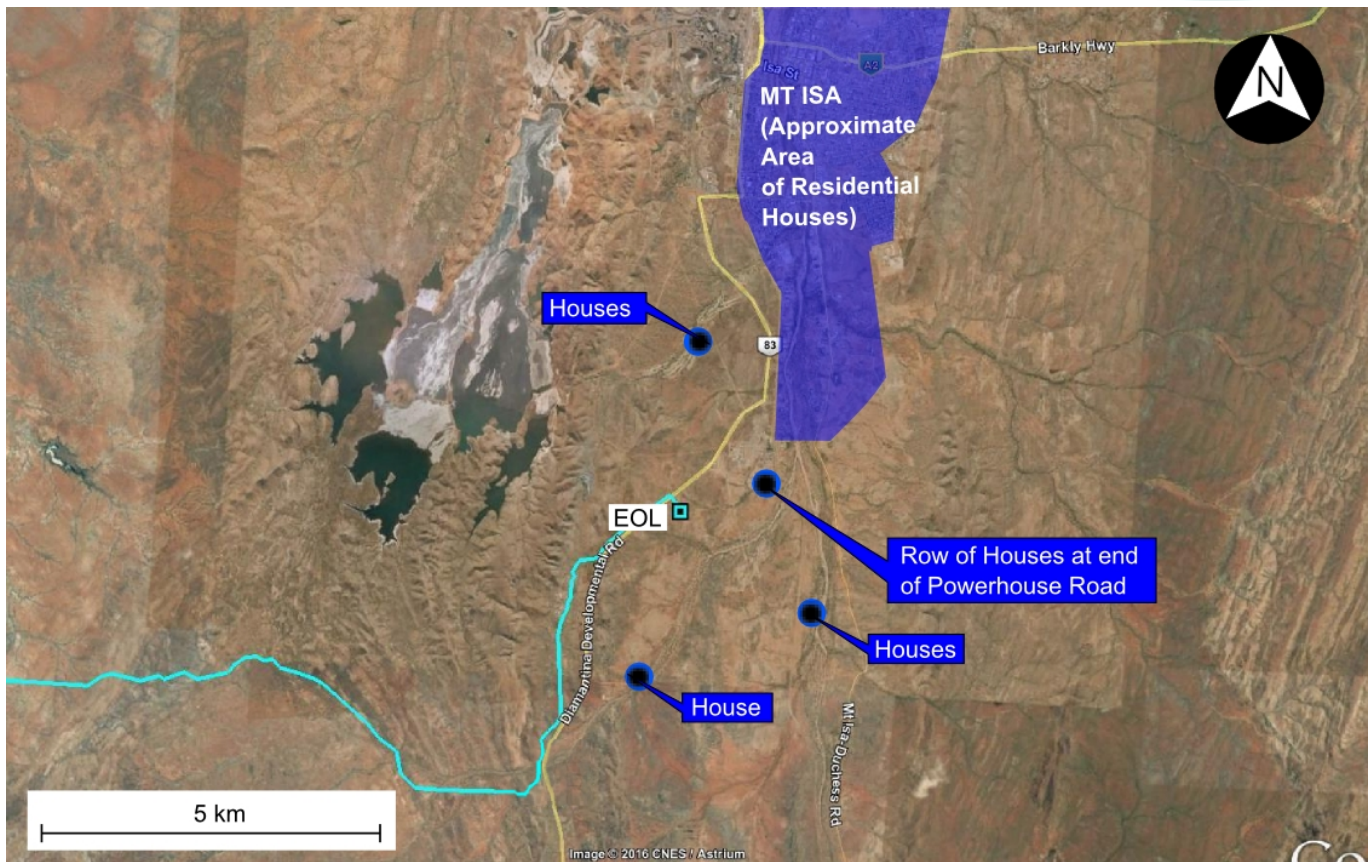


Figure 2.2 - Mt Isa Pipeline Route and EOL Facility

## 2.2 Nearest Sensitive Receptors

The pipeline route traverses primarily through isolated rural areas, thus limiting the number of potentially affected sensitive receptors. Potential air quality impacts from projects of this type are generally limited to within a 5 km radius.

The nearest sensitive residential receptors to construction and operations are located at the end of the proposed pipeline in the Mt Isa area. These sensitive receptors include homesteads on large rural lots immediately outside Mt Isa and residential areas within Mt Isa. The nearest homestead is approximately 2.5 km from the EOL facility, and 1 km from the pipeline route. The nearest houses in the Mt Isa city area are approximately 1.2 km north-east of the EOL facility.

Along the rest of the pipeline route, the number of potentially affected sensitive receptors are limited and include a small number of family outstations and a pastoral homestead (18 km east of MLV3). The nearest family outstation (No. 975) is 3.4 km south of the pipeline route. The pastoral homestead is 3.5 km north of the route. It is noted that the SOL facility is at a significant distance from sensitive receptors (at least 28 km) hence, no air quality impacts on the population are expected from operation of SOL facility equipment.

Figures 2.1 and 2.2, and Table 2.1 identify sensitive receptors within 20 km of the pipeline route. Figure 2.1 also identifies the nearest sensitive receptors (family outstations 239, 248, 255 and 974)







to the SOL facility. These receptors are noted to be between 28 to 46 km from this facility.

Table 2.1 - Summary of Sensitive Residential Receptors within 20 km of Pipeline Route

Receptor	Distance from Pipeline Route	Distance from Nearest Pipeline Facility	Population / No. of Dwellings
Tennant Creek	16.5 km South	41.5 km south-east of SOL Facility 121 km west of MLV1	3,061
Family Outstation 952	6.8 km South	41.8 km south-east of SOL Facility 121 km west of MLV1	3 houses
Family Outstation 975	3.4 km South	60 km east of SOL facility 101 km north-west of MLV1	2 houses
Family Outstation 721	14.8 km north	73 km east of SOL facility 95 km north-west of MLV1	8 houses
Family Outstation 732	12.4 km south	44 km south-east of MLV1	4 houses
Pastoral Homestead	3.5 km north	18 km east of MLV3	3 houses and a school
Homestead South of Mt Isa	1 km east	2.5 km south of EOL facility	Single house
Mt Isa	1.2 km north-east	1.2 km north-east of EOL facility	Row of houses near power station

Table 2.2 presents a summary of minimum separation distances to sensitive receptors for the SOL and EOL facilities, and MLV sites.

Table 2.2 - Separation Distances of Pipeline Facilities

Pipeline Facility	Distance to Nearest Residential Receptor
Start of Line Facility	28 km east of Family Outstation 248
End of Line Facility	1.8 km south-west of nearest house in Mt Isa
MLV1	33 km south of Family Outstation 907
MLV2	88 km east of Family Outstation 732
MLV3	18 km west of Pastoral Homestead





## 2.3 Pipeline Operational Facilities

### 2.3.1 SOL Facility

The Start of Line (SOL) facility consists of gas compression infrastructure to pressurise gas for transportation to the Mt Isa End of Line (EOL) facility. The facility will also comprise various filtration and separation equipment to remove liquids and impurities which may have formed in the gas pipeline through condensation. For emergency purposes, a flare and pipeline vent system is proposed to be constructed. Other supporting infrastructure includes an office, workshop, accommodation room and car park. The main equipment with a potential for air emissions are as follows:

- 2 x Export Compressor turbines;
- 2 x Residue Compressor turbines;
- 3 x Gas Engine Alternators (GEAs);
- Process heater;
- High Pressure/Low Pressure (HP/LP) Flare; and
- gas vent.

Pipeline gas will be used to power the compressor turbines and GEAs. Carbon monoxide and nitrogen oxides are the main pollutants expected from combustion of gas in the SOL facility equipment. Use of the gas vent and flare will occur during commissioning, periodic testing, variations in incoming gas quality and in emergency situations. Minor flaring (0.8 kg/hr per flare) and venting (from a Nitrogen Reduction Unit) is also proposed.

The nearest sensitive receptors to the SOL facility are 28 km to the west. At such a large separation distance, these receptors are not expected to be affected by air emissions from the SOL facility operations. Figure 2.3 presents the proposed layout of the SOL facility.



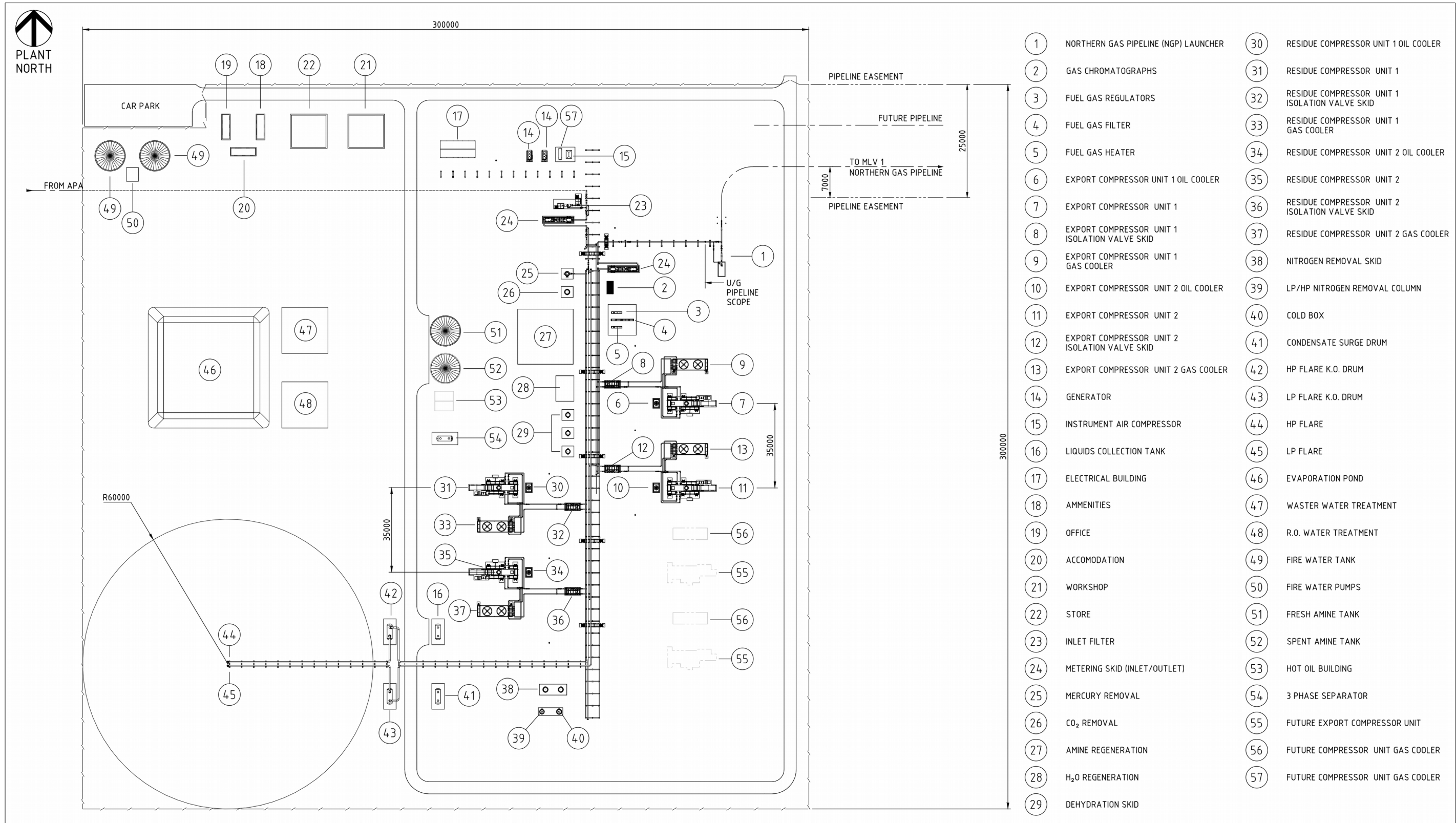


Figure 2.3 - Proposed SOL Facility Layout



### 2.3.2 EOL Facility

The End of Line (EOL) Facility provides additional gas compression infrastructure. The main equipment expected to contribute to air emissions from the facility are summarised as follows:

- 2 x compressor turbines;
- 1 x Gas Engine Alternator (GEA);
- boiler heat exchanger; and
- gas vent.

The EOL facility is expected to operate continuously. As with the SOL facility, pipeline gas will be used at the EOL facility and key air pollutants are expected to be CO and NO<sub>x</sub>. Use of the gas vent will occur during commissioning, periodic testing and in emergency situations. Figure 2.4 presents the proposed layout of the SOL facility.





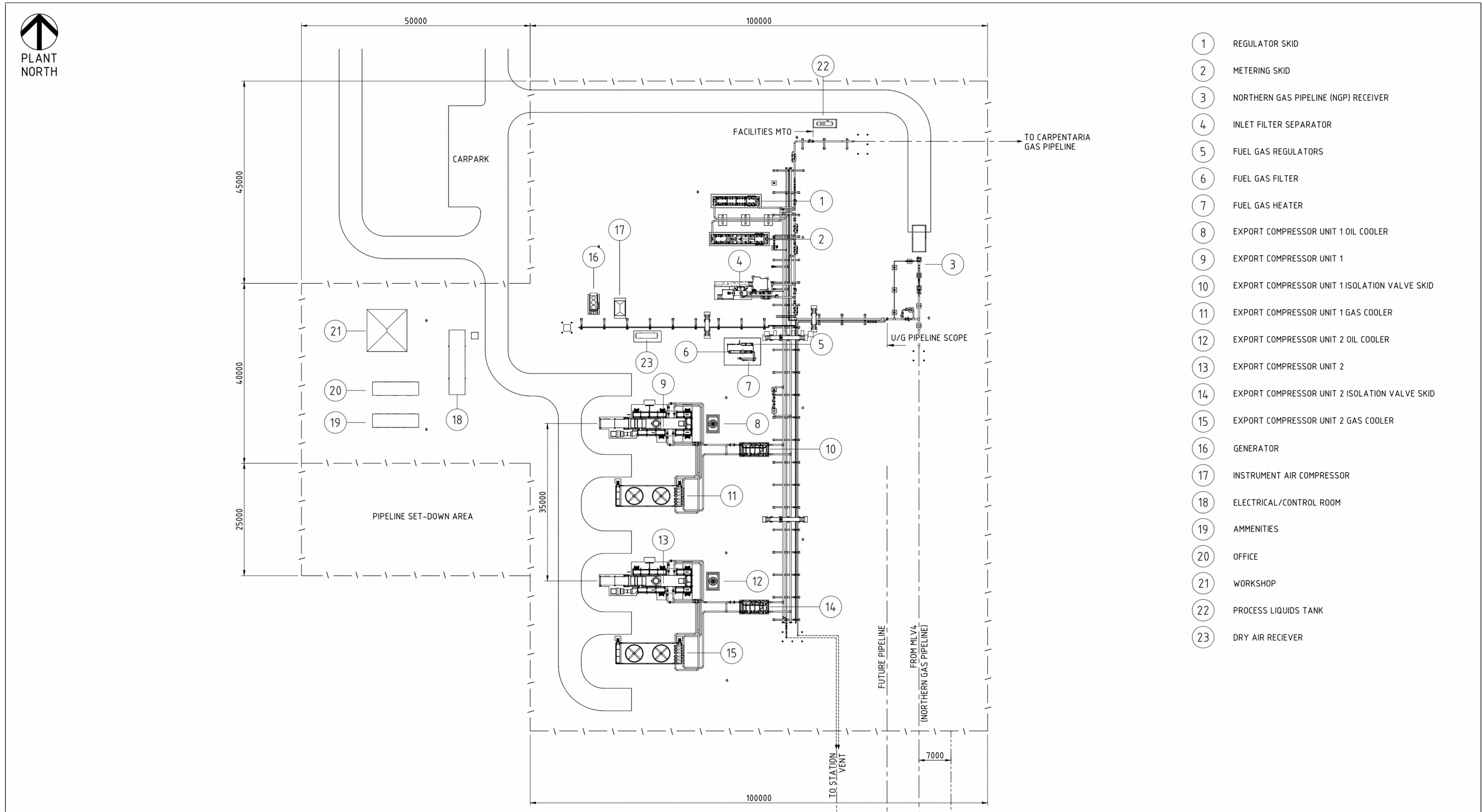


Figure 2.4 - Proposed EOL Facility Layout



### 2.3.3 Main Line Valves

In addition to the gas vents at the SOL and EOL facilities, three main line valves (MLVs) are proposed along the pipeline route. The MLV sites provide a means of controlling gas flow along the pipeline and, during an emergency, the valves are closed to isolate a section of the pipeline. Once isolated, the gas from the relevant section is vented prior to incident investigation and/or maintenance taking place.

## 2.4 Pipeline Constructions

Pipeline construction will be undertaken by individual crews (e.g. trenching, pipe laying) with each crew working sequentially along the pipeline route during construction. A 30 m wide Right of Way (ROW) will be utilised for the majority of the pipeline. In general terms, the pipeline construction process involves the following stages:

- clearing the Right of Way (ROW);
- preparing the pipeline (e.g. stringing, bending);
- excavating a trench for the pipeline;
- lowering the pipeline;
- backfilling and restoration.

Construction works specific to certain sections of the pipeline will also be required. This includes construction of the EOL and SOL facilities at each end of the pipeline, blasting only at hard rock locations and boring for trenchless crossings. Five main construction camps are proposed along the pipeline route.





### 3 Legislation and Criteria

Relevant Northern Territory and Queensland environmental legislation relating to air quality impacts for the project are summarised in Table 3.1.

Table 3.1 - Relevant Legislation

Legislation	Description	Relevance
<u>Queensland</u>		
<i>Environmental Protection Act 1994 (Revised 2016)</i>	<p>The Act imposes a general environmental duty on all persons to refrain from carrying out any activity that causes or has the potential to cause environmental harm (Part 1, Division 1).</p> <p>A duty to notify is established under the Act (Division 2). Any person who becomes aware that serious environmental harm is caused or threatened has a duty under the Act to give notice in writing to the administering authority.</p>	The general duty to protect the environment and to notify the authorities in the event of environmental harm applies to all staff and contractors.
<i>Environmental Protection (Air) Policy 2008</i>	The <i>EPP Air</i> provides a framework for managing and minimising air quality impacts on sensitive receptors. Ambient air quality objectives for a variety of pollutants are presented.	The ambient air quality objectives presented in Schedule 1 are applicable to the construction phase of the project.
<u>Northern Territory</u>		
<i>Waste Management and Pollution Control Act</i>	Similar to the <i>QLD EP Act</i> , the Act imposes a general environmental duty on all persons to refrain from carrying out any activity that causes or has the potential to cause environmental harm (Part 3). A duty to notify is also required by the Act (Part 3, Section 14).	The general duty to protect the environment and to notify the authorities in the event of environmental harm applies to all staff and contractors.

The Northern Territory government provides guidance on the assessment of air quality through the use of Environmental Protection Objectives established in accordance with the *NT Waste Management and Pollution Control Act (14 October 2015)*. The Act does not provide specific air quality criteria however, reference is made to the *National Environmental Protection Policy (NEPM) for Ambient Air* as a possible source of criteria.



The *NEPM Air (1998)* provides ambient air quality standards for the protection of human health and well-being. In Queensland, ambient air quality criteria is defined in the *Queensland Environmental Protection (Air) Policy 2008*. A comparison of the *NEPM Air* and *QLD EPP Air* indicates that air quality goals for pollutants relevant to the project are similar in both legislation.

The key air quality indicators relevant to the project are related to combustion of diesel and gas (carbon monoxide, nitrogen dioxide and particulate matter). Table 3.2 summarises the air quality criteria. All criteria are associated with the protection of human health and well-being, unless stated otherwise.

Table 3.2 - Air Quality Criteria

Compound	Air Quality Criteria ( $\mu\text{g}/\text{m}^3$ )	Averaging Period	Source
Carbon Monoxide	11,000	8-hours	<i>NEPM &amp; QLD EPP Air</i>
Nitrogen Dioxide	250	1-hour	<i>NEPM &amp; QLD EPP Air</i>
	62 33 (health and biodiversity of ecosystems)	Annual	<i>NEPM &amp; QLD EPP Air</i> <i>QLD EPP Air</i>
TSP	90	Annual	<i>QLD EPP Air</i>
PM <sub>10</sub>	50	24-hour	<i>NEPM &amp; QLD EPP Air</i>
PM <sub>2.5</sub>	25	24-hour	<i>NEPM<sup>a</sup> &amp; QLD EPP Air</i>
	8	Annual	<i>NEPM<sup>a</sup> &amp; QLD EPP Air</i>
<sup>a</sup> Advisory Reporting Standard under the current NEPM Air. A review has recently been undertaken by the National Environment Protection Council and the proposal is to adopt the advisory PM <sub>2.5</sub> goals as national standards.			







## 4 Air Quality Risk Assessment

### 4.1 Summary of Air Emission Sources

Based on a review of the pipeline project, Table 4.1 presents a summary of the potential air emissions during the construction and operational phase.

Table 4.1 - Summary of Potential Air Emissions

Air Emission Source	Key Air Quality Indicators / Pollutants
<i>Construction Phase</i>	
Earthwork activities (i.e. clearing, trenching, backfilling, drill/blasting)	Particulate matter (as defined by TSP and PM <sub>10</sub> )
Operation of diesel powered machinery and Equipment	Diesel exhaust (CO, NO <sub>2</sub> , PM <sub>10</sub> and PM <sub>2.5</sub> )
<i>Operational Phase</i>	
SOL Compressor Turbines (4)	CO and NO <sub>2</sub>
SOL Gas Engine Alternators (3)	CO and NO <sub>2</sub>
EOL Compressor Turbines (2)	CO and NO <sub>2</sub>
EOL Gas Engine Alternator (1)	CO and NO <sub>2</sub>
EOL Boiler Heat Exchanger	CO and NO <sub>2</sub>
SOL Flare	Combustion pollutants (CO, NO <sub>2</sub> and particulate matter depending on efficiency and type of flare)
Gas Vents (SOL, EOL and MLV sites)	Methane

### 4.2 Risk Assessment

The assessment of potential risks associated with the project air emission sources has been undertaken through a qualitative and quantitative analysis. The quantitative analysis has been completed using computational air dispersion modelling. The methodology and results of the modelling are outlined in the Air Quality Assessment for the project (Document 399-RP-EV-010). Table 4.2 presents a risk assessment matrix based on the analysis undertaken. The matrix summarises the potential risks according to the likelihood of an event occurring and the subsequent consequence (see Table 4.3 for the risk matrix definitions).





During construction, the risks associated with project air emissions sources are expected to be Low, with the majority of activities being Unlikely and having a Minor consequence. This risk rating is partly due to the large separation distances of the proposed pipeline from sensitive receptors. Air dispersion modelling completed for worst-case construction scenarios (excavation, drilling/blasting, diesel emissions), indicates compliance with the air quality criteria. The use of standard dust management measures is expected to further reduce the potential air quality impacts (likelihood corresponding to Rare).

During operations, assuming low emission stacks for the EOL facility equipment, the likelihood of impacts has been classed as Likely (due to poor pollutant dispersion from low stacks). A Serious consequence rating is considered applicable given that emissions are expected to be continuous. Frequent exceedences of pollutant criteria can result in ongoing health risks for the community, which are at a minimum separation distance of 1.2 km. Again, this assumes that a low stack is installed for equipment. Emissions from the EOL facility are proposed to be released via elevated stacks. Air dispersion modelling for the EOL facility with the proposed stacks demonstrate compliance with the relevant air quality goals therefore, a Low risk rating applies with the proposed mitigation.

The SOL facility (flare, compressor turbines and GEAs) is at least 28 km from the nearest receptors. At distances of this order, air quality emissions from the operations would not be identifiable either through modelling or monitoring. As the potential for risks is Low, there is limited opportunity for further reduction to risks.

In relation to venting along the pipeline, the main potential health risk associated with methane is its asphyxiant (displacement of oxygen) and explosive properties<sup>1</sup>. In the event, that an explosion did occur, consequences may be considered Serious though nevertheless localised. The risk of asphyxiation and explosions are typically limited to confined spaces. As gas will be vented into the open atmosphere, the likelihood for such events to occur are expected to be Rare.

It is also noted that flaring and venting would occur during commissioning, periodic testing and in emergency situations hence air emissions from these activities will occur on an infrequent basis. Only minor flaring (0.8 kg/hr per flare) and venting (from a Nitrogen Reduction Unit) would occur at the SOL facility.

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1 Canadian Centre for Occupational Health and Safety. 2015. *Methane OSH Answers Fact Sheets*. [ONLINE] Available at: [https://www.ccohs.ca/oshanswers/chemicals/chem\\_profiles/methane.html](https://www.ccohs.ca/oshanswers/chemicals/chem_profiles/methane.html). [Accessed 10 May 2016].





Table 4.2 - Air Quality - Risk Assessment Matrix

Project activity	Impacts	Likelihood	Consequence	Risk (No Mitigation)	Proposed Mitigation/Management Measures	Likelihood	Consequence	Residual risk (After mitigation)
<b>Construction</b>								
Earthworks (clearing, excavation, backfilling)	Particulate emissions (nuisance and/or health impacts)	2	1	Low	Standard management measures (e.g. water sprays)	1	1	Low
Drilling and Blasting	Particulate emissions (nuisance and/or health impacts)	2	1	Low	Standard management measures (e.g. water sprays)	1	1	Low
Operation of diesel equipment	Diesel exhaust emissions (health impacts)	2	1	Low	Regular maintenance and use of latest emissions technology (if available)	1	1	Low
All other construction activities (other than earth work-related stages)	Particulate emissions (nuisance and/or health impacts)	1	1	Low	Standard management measures (e.g. water sprays)	1	1	Low
<b>Operations</b>								
SOL Facility	Combustion emissions from GEAs and compressor turbines (health impacts)	1	2	Low	Elevated emission stacks and regular maintenance (e.g. monitoring and recording of equipment operating parameters, regular stack emissions monitoring)	1	2	Low
EOL Facility	Combustion emissions from water bath heater, GEA and compressor turbines (health impacts)	3	2	Moderate	Elevated emission stacks and regular maintenance (e.g. monitoring and recording of equipment operating parameters, regular stack emissions monitoring)	1	2	Low
Gas Flaring (SOL Facility)	Combustion emissions (health impacts)	2	2	Low	Elevated emission stacks and regular maintenance (e.g. monitoring and recording of equipment operating parameters)	1	2	Low
Gas Venting	Methane emissions (asphyxiation and flammability risks)	1	3	Moderate	Regular maintenance	1	3	Moderate



Table 4.3 - Risk Assessment Matrix Definitions

Jemena Risk Matrix			Ref : Group Risk Management Manual JAA MA 0050 Rev 5				
CONSEQUENCES			Minor - 1	Serious - 2	Severe - 3	Major - 4	Catastrophic - 5
	Health & Safety		Minimal impact on health & safety (SGSPAA personnel or member(s) of the public).	Medical treatment injury or lost time injury (SGSPAA personnel) On-site first aid to a small number of member(s) of the public, lost time.	Single permanent partial disability (SGSPAA personnel) Medical aid required for member(s) of the public.	Single total permanent disability affecting SGSPAA personnel (i.e. unable to return to preinjury role or any other role as a result of injuries) Multiple hospitalisations, permanent disability, member(s) of the public with life threatening injuries.	1 or more fatalities or total permanent disabilities (SGSPAA personnel). 1 or more fatalities of member(s) of the public.
	Environment		No effect or minor on-site effects rectified with negligible residual effect.	On-site release of pollutants with minimal impact	Some loss of or damage to third party property. Temporary harm to the environment, containment to a small area, with no environmental off site release.	Destruction of third party property. Major consequence for the environment and rectification difficult, including environmental off site release.	Significant destruction of third party property. Substantial or long term damage to flora/fauna, soil/water, including environmental off site release.
FREQUENCY	Almost Certain - 5	Event is expected to occur in most circumstances	MODERATE	HIGH	EXTREME	EXTREME	EXTREME
	Likey - 4	Event will probably occur in most circumstances	MODERATE	SIGNIFICANT	HIGH	EXTREME	EXTREME
	Possible - 3	Event should occur at some time	MODERATE	MODERATE	SIGNIFICANT	HIGH	EXTREME
	Unlikely - 2	Event could occur at some time	LOW	LOW	MODERATE	SIGNIFICANT	HIGH*
	Rare - 1	Event may occur only in exceptional circumstances	LOW	LOW	MODERATE	MODERATE	SIGNIFICANT
RISK LEVEL		RISK MANAGEMENT ACTIONS					
EXTREME		Requires immediate action - Highest priority to treat risk - Senior level monitoring.					
HIGH		Requires immediate attention – must manage with senior level monitoring. Includes RHSEC and ERMIC / LT oversight of Unlikely Likelihood, Catastrophic Consequence					
SIGNIFICANT		Requires Management attention with a degree of priority. Includes RHSEC / ERMIC / LT oversight of Rare Likelihood, Catastrophic Consequence Events. High level					
MODERATE		Requires routine to periodic monitoring.					
LOW		"Business as usual" - should not require much attention but should be reviewed at least annually. Managed by routine policies and procedures.					





## 5 Air Quality Management and Control

Air quality management procedures should be implemented for the pipeline construction and operations. A summary of procedures that will assist in managing air quality impacts are presented below:

- Construction:
  - regular use of water sprays on exposed areas of ground and unpaved vehicle routes;
  - covering spoil in haul trucks when leaving the site;
  - properly maintain all equipment operated by diesel engines to minimise gaseous and particulate exhaust emissions.
- Operations:
  - implement a regular maintenance program for the heater, GEAs and compressor turbines to ensure equipment is operating at optimum efficiency;
  - implement monitoring and recording of equipment operating parameters (i.e. fuel consumption and composition); and
  - undertake regular stack emissions testing (as typically required by the administering authority).

A site-based management procedure (presented in Appendix A) has been developed for managing air quality impacts at the construction site. The above mentioned procedures are also summarised in this management procedure. The structure adopted for the procedure is as follows:

Table 5.1: Site-Based Air Quality Management Procedure

Item	Description
Objectives/Targets:	The goals that the management plan seeks to attain.
Performance Indicators:	Performance indicators that provide a measure for achieving the objectives and targets outlined in the management plan
Control Measures:	The control measures that will be implemented to minimise the risk of environmental impact and, if undesirable impact or an unforeseen level of impact occurs, that specify the appropriate corrective action.
Monitoring:	The monitoring requirements that will allow measurement of actual performance against objectives and targets.
Responsibilities:	The persons responsible for implementing the management plan.



Item	Description
Reporting and Review:	The reporting information required to meet the objectives of the management plan and the expectations of both the administering authority and the community.





## 6 Monitoring and Reporting

### 6.1 Monitoring

The responsibility for monitoring of overall compliance with this AQMP lies with the overall Site Manager.

Specific monitoring and investigation of particular issues must also take place as appropriate. An air quality investigation should be undertaken in the event of a valid complaint or if requested by the NT EPA or QLD Department of Environment and Heritage Protection (EHP). Air quality monitoring must be undertaken where necessary to further investigate a valid complaint, where standard mitigation strategies have not resolved the issues that resulted in the complaint.

Where monitoring is completed, it is to be undertaken in accordance with the QLD EHP Air Quality Sampling Manual. The Manual provides sampling methodologies for both ambient air monitoring and stack emissions testing. As the NT EPA does not specify preferred air monitoring procedures, the QLD guideline should be referred to.

### 6.2 Complaints Handling

All complaints received in relation to air quality must be recorded on a complaint report form (Form B) presented in Appendix B of this report.

The form will need to be completed in full for each complaint, detailing at least the following:

1. Time, date and nature of complaint;
2. Type of communication;
3. Name and contact details of complainant;
4. Response and investigation undertaken as a result of the complaint;
5. Name of the person responsible for investigating the complaint;
6. Action taken as a result of the complaint investigation;
7. Signature of the responsible person.

The complaint records must be kept on file for a period of not less than five (5) years.

### 6.3 Reporting to the Regulatory Authorities

Any incident where environmental harm is caused or threatened must be reported to the relevant regulatory authority (NT EPA or QLD EHP) immediately. An incident reporting sheet is provided in Appendix B.





# 7 Implementation and Document Control

## 7.1 Implementation

As the guidance presented in the AQMP is generally fairly simple, common-sense approaches to management of the relevant issues, formal training is not considered necessary. However, all personnel, contractors and visitors must comply with the requirements of the AQMP and it is the responsibility of the Site Manager to make all relevant persons or organisations aware of their environmental responsibilities.

## 7.2 Updating the Management Plan

It is recommended that the Site Manager completes a review of the scope and application of the AQMP prior to the start of construction. Interim reviews should also be undertaken in response to incidents that occur or significant changes that take place at the site.

Matters that may result in the necessity for an interim review of the AQMP include the following:

- Receipt of a valid complaint that results in the need for procedural changes;
- Changes to on-site activities with a potential to change air emissions (e.g. changes to the proposed construction methodologies, installation of new equipment); and
- At the request of the administering authority.







# Appendix A – Environmental Management Procedures





## SITE BASED MANAGEMENT PLAN - AIR QUALITY

<b>Objective/Target</b>	<p>To prevent air quality impacts (nuisance or health-related) as a result of construction and operational activity.</p> <p>To comply with the requirements of the QLD and NT legislation, including the <i>QLD Environmental Protection Act 1994</i>, <i>QLD Environmental Protection (Air) Policy 2008</i> and <i>NT Waste and Pollution Control Act</i>.</p>
<b>Performance Indicators</b>	The objectives of this management plan are not being achieved if valid air quality complaints are received by Jemena, the QLD EHP or NT EPA.
<b>Control Measures</b>	<ul style="list-style-type: none"> <li>● Construction: <ul style="list-style-type: none"> <li>● regular use of water sprays on exposed areas of ground and unpaved vehicle routes;</li> <li>● covering spoil in haul trucks when leaving the site;</li> <li>● properly maintain all equipment operated by diesel engines to minimise gaseous and particulate exhaust emissions.</li> </ul> </li> <li>● Operations: <ul style="list-style-type: none"> <li>● implement a regular maintenance program for the water bath heater, GEAs and compressor turbines to ensure equipment is operating at optimum efficiency;</li> <li>● implement monitoring and recording of equipment operating parameters (i.e. fuel consumption and composition); and</li> <li>● undertake regular stack emissions testing.</li> </ul> </li> </ul>
<b>Monitoring</b>	<p>Air quality monitoring will be undertaken where necessary to further investigate a valid complaint and where standard mitigation strategies have not resolved the issues that resulted in the complaint.</p> <p>Monitoring should be completed in accordance with the QLD EHP Air Sampling Manual.</p>
<b>Responsible Person</b>	The Site Manager is responsible for ensuring the control measures are implemented, recording of observations, complaint investigation and implementation of monitoring and corrective actions where appropriate.
<b>Reporting</b>	If an air quality complaint is received, it is necessary to complete an 'Environmental Air Quality Complaint Report'. QLD EHP or NT EPA should be notified if the investigation confirms that air pollutant levels in excess of the relevant criteria have occurred.





# Appendix B – Air Quality Management Forms





## FORM 1 - COMPLAINTS HANDLING AND REPORTING

### **Part A - Initial Communication (To Be Completed by Complaint Recipient)**

Date and Time of Complaint	
Name and Address of Complainant	
Phone Number	
Type of Communication (letter, phone call, visit, etc)	
Site Representative to whom complaint was made	Name: Signature:
Description of Complaint	
Reported frequency of occurrence	

### **Part B - Action Report (To Be Completed by Site Manager)**

Action taken to deal with complaint	
Visit to the complainant	Yes or No
Findings of the visit	
Detailed inspection of site to determine possible source of complaint?	Yes or No
Result of Investigation	
Action taken to eliminate cause	





### **Part C - Finalisation (To Be Completed by Site Manager)**

Was a formal response issued to the complainant?	Yes or No
Was the cause of complaint eliminated?	Yes or No
Other Comments	

Parts B and C Completed by:

.....  
(Name) (Signature) (Date)

This form must be kept in the complaints register maintained by the Site Manager.





## FORM 2 - AIR QUALITY INCIDENT RESPONSE

### Part A - Description of the Air Quality Related Incident or Event

Date and Time of Complaint	
Employee who observed or reported the incident or event	Name: Signature:
Describe in detail the nature of incident or event noting: <ul style="list-style-type: none"><li>• The performance indicators that have been breached</li><li>• The extent of environmental harm that has occurred</li><li>• If no environmental harm has occurred, identify the risk or potential for environmental harm</li></ul>	
Did a complaint occur as a result of the incident or event?  Note the date that the complaint form was completed:	Yes or No  Date:
Site Representative to whom complaint was made	Name: Signature:
Assess likely frequency of occurrence if an on-going issue, or risk of recurrence if a one-off incident	

### Part B - Action Report

Detail the investigations that have taken place to determine the cause of the incident or event:  Note: if monitoring has taken place, attach results of monitoring to this form when completed.	
Detail the actions or steps taken to deal with the incident or event to prevent recurrence or minimise environmental impact:	
Has the administering authority been notified of	Yes or No





the incident?  If so, note date, time and the name of the Officer spoken to:	Date(s)
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### **Part C - Finalisation**

Have the actions and steps to prevent recurrence of the incident or event been documented?	Yes or No  Date(s)
Was an incident or monitoring report issued to the administering authority?	Yes or No
Was cause of the incident or event eliminated?  If no, detail how the risk of future environmental harm has been minimised:	Yes or No
Other Comments	

Parts B and C Completed by:

.....  
(Name) (Signature) (Date)

This form must be kept in the complaints register maintained by the Site Manager. The document must be made available for inspection by the relevant authorities or interested third parties (where appropriate) upon request.

