PIPELINE LICENCE 83 OPERATIONAL ENVIRONMENTAL PLAN

GAS DIVISION

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Contents

1. DEFINITIONS

Term / Acronym	Definition
ASS	Acid Sulfate Soils
AASS	Actual Acid Sulfate Soils
AGIG	Australian Gas Infrastructure Group
ALARP	As Low As Reasonably Practicable.
ATCO	ATCO Gas Australia Pty Ltd.
BCT	Business Continuity Team
Contractor	A supplier in a contractual situation.
CMT	Crisis Management Team
DBNGP	Dampier to Bunbury Natural Gas Pipeline.
DBP	Dampier Bunbury Pipeline.
DPLH	Department of Planning Lands and Heritage.
DRF	Declared Rare Flora
DWER	Department of Water and Environmental Regulation.
DEE	Department of the Environment and Energy.
DFES	Department of Fire and Emergency Services
DRDL	Department of Regional Development and Lands.
DMIRS	Department of Mines, Industry Regulation and Safety.
DMP	Department of Mines and Petroleum (now DMIRS)
DBCA	Department of Biodiversity, Conservation and Attractions.
Emergency	means an incident which: • Has the potential to cause major loss of people, equipment, materials process or the environment; • Has caused or threatens to cause failure of gas supply to shippers; • Is of sufficient magnitude to attract wide publicity and the responsibility and the response of the police, fire brigade or other emergency services; and • Results in an uncontrolled release of gas
EMT	Emergency Management Team
EPA	Environmental Protection Authority.
EPBC Act	Environment Protection and Biodiversity Conservation Act (1999).
EPBC Regulations	Environment Protection and Biodiversity Conservation Regulations (2000).
GDA94	Geocentric Datum Of Australia 1994
GDS	Gas Distribution System.
GHG	Greenhouse Gases.

Term / Acronym	Definition
Hazard	Any unsafe act or condition that has the potential to injure people, result in harm to the environment, damage property, equipment or materials or lead to loss of process.
Hazardous Substance	A substance: • Entered in the List of Designated Hazardous Substances; or • If the substance is not entered in the List of Hazardous Substances determined in accordance with the Approved Criteria for Classifying Hazardous Substances whether the substance is a hazardous substance
HDD	Horizontal directional drilling
HSE	Health, Safety and the Environment
HP120	High Pressure Pipeline number 120 (internal ATCO numbering of the Pipeline)
Incident	An undesired event or set of circumstances that did result in an undesired outcome through injury to people, harm to the environment, damage to property, equipment or materials or loss of process.
KP	Kilometre Point when making reference to the location of a particular point of reference in relation to the MGL.
JRA	Job Risk Analysis means a method of identifying hazards with workplace tasks and the development of control measures to manage the identified hazards.
MAOP	Maximum allowable operating pressure.
Management Plan	A project or job specific management plan, which describes how QHS&E and quality activities and Potential Impacts on a project or job will be managed.
Management System	A framework that integrates quality, health, safety and environmental management activities and ensures compliance to specified requirements; contains objectives, performance standards and responsibilities, as well as specifying the methods of implementation in the context of the operations of the company.
MGL	Mandurah Gas Lateral
Near Miss	An undesired event or set of circumstances that did not result in any loss but had the potential to do so.
NGER Act	National Greenhouse and Energy Reporting Act (2007).
NGER Regulation	National Greenhouse and Energy Reporting Regulations (2008).
OEP	Operational Environmental Plan.
OSC	On Scene Commander
O&M	Operation and Maintenance
PASS	Potential Acid Sulfate Soils
Permit to Work	A completed and authorised permit to carry out work within the compound fences at any site.
PL83	Pipeline Licence 83.
PIMP	Pipeline Integrity Management Plan.
PRS015	Pressure Reduction Station 015.

Term / Acronym	Definition
QHS&E	Quality, Health, Safety and Environment.
Relevant Authorities	Either one or all of DMIRS, DWER, DBCA, or EPA as the case may be.
ROW	(Right of Way/ROW/corridor) means the area located surrounding an infrastructure installation, e.g. road, or pipeline, legally recognised for access by the relevant authority.
Risk	The exposure to the chance of harm or loss.
Risk Assessment	The process used to determine risk priorities by evaluating and comparing the level of risk against program standards, pre-determined risk levels or other criteria.
Safeguard Mechanism Rule	National Greenhouse and Energy Reporting (Safeguard Mechanism) Rule (2015).
SDS	Safety Data Sheet.
SOP	Standard Operating Procedure
SSV	Slam shut valve
Sub-contractor	An organisation that conducts work for a Contractor, under contract to that Contractor.
SWI	Safe Work Instructions
System Improvement	The corrective action required rectifying a situation. Corrective action encompasses three stages: • Implementation of control; • Facility for sign-off; and • Follow-up to check effectiveness of control.
Take 5	Primary method of identifying hazards with workplace tasks and the implementation of control measures to manage the identified hazards.
TEC	Threatened Ecological Community
UAFG	Unaccounted for Gas.

2. INTRODUCTION

ATCO Gas Australia (ATCO) owns and operates the Mid-West and South-West Gas Distribution System (MWSWGDS), which includes the Rockingham sub-network used to transport gas to the Rockingham and Mandurah areas. The Pipeline Licence 83 (PL83) also known internally in ATCO as High Pressure Pipeline number 120 (HP120), pipeline route passes through the Shire of Murray, located approximately 65km south of Perth in Western Australia's Peel Region.

The Mandurah Gas Lateral (MGL) consists of a 7.05km 200mm nominal diameter (DN200) Class 600 Steel pipeline from the Dampier to Bunbury Natural Gas Pipeline (DBNGP) to Pressure Reduction Station (PRS015) and approximately 9.65km of DN250 Class 150 Steel pipeline from PRS015 connecting to the Rockingham sub-network (pipeline). The Class 600 section of the MGL, including PRS015, is regulated under the *Petroleum Pipelines Act (1969)* (PPA) and the Class 150 section is regulated under the *Gas Standards Act (1972)*. ATCO is granted a Pipeline Licence under the PPA for this portion and is known as Pipeline Licence 83 (PL83). The primary location class as defined by the Australian Standard/New Zealand Standard 2885.6 *Pipelines – Gas and Liquid Petroleum Part 6: Pipeline safety management* (AS/NZS 2885.6) is Rural Residential (R2).

Construction and commissioning of PL83 was completed in 2010 with the facility having an operating design life of at least 40 years. PL83 is valid from September 23rd 2009 to the 23rd September 2030 inclusive.

2.1 Purpose and Scope

This Operational Environmental Plan (OEP) has been developed to ensure effective operation and maintenance of PL83 to manage the potential environmental impacts of those activities.

The OEP applies to all the activities associated with PL83 and includes, but is not limited to, the following:

- Description of the legislative framework.
- Description of the operational and maintenance activities.
- Description of the existing environment.
- Identification and assessment of potential environmental aspects and impacts associated with the activities.
- Control measures by which potential aspects and impacts will be avoided or minimised.
- Performance objectives and measurable standards by which environmental performances can be quantitatively assessed.
- Emergency and contingency planning; and
- The environmental management and implementation strategy.

2.1.1 Review

The OEP will be reviewed and updated as required, to incorporate any new requirements from the conditions associated with PL83 activities.

2.2 Location

PL83 is located in the Mandurah region, south of Perth, Western Australia. The western extent of the pipeline is located generally within rural land with potential for future light industrial uses. The general locality of the Pipeline Licence area is shown in Figure 1. An overview of the pipeline route of PL83 from the DBNGP is provided in Figure 2.

Table 1 contains the Geocentric Datum of Australia 1994 (GDA94) coordinates of the PL83 pipeline extent.

Table 1: PL83 MGL Extent GDA94 Coordinates

Point	Easting	Northing
Start	397,773.753	6,403,763.323
Finish	390,026.601	6,403,685.419

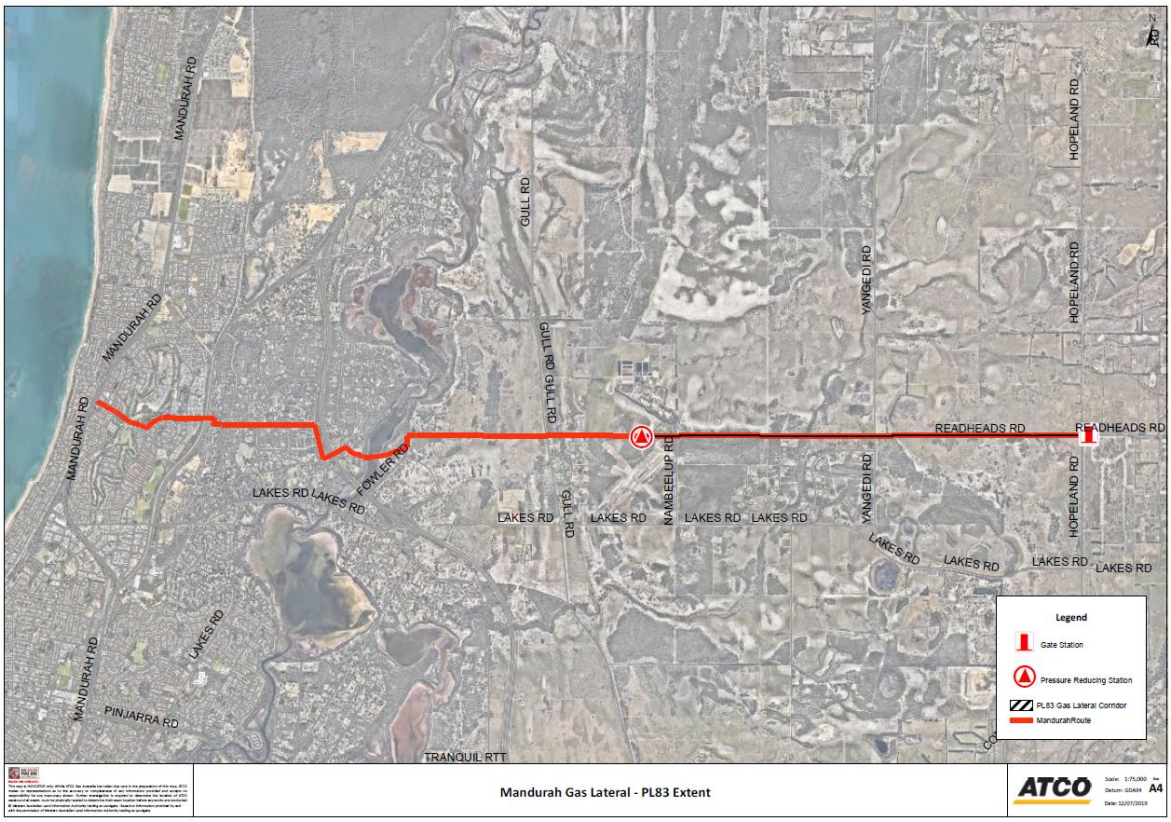

Figure 1: Mandurah Gas Lateral Pipeline Route.

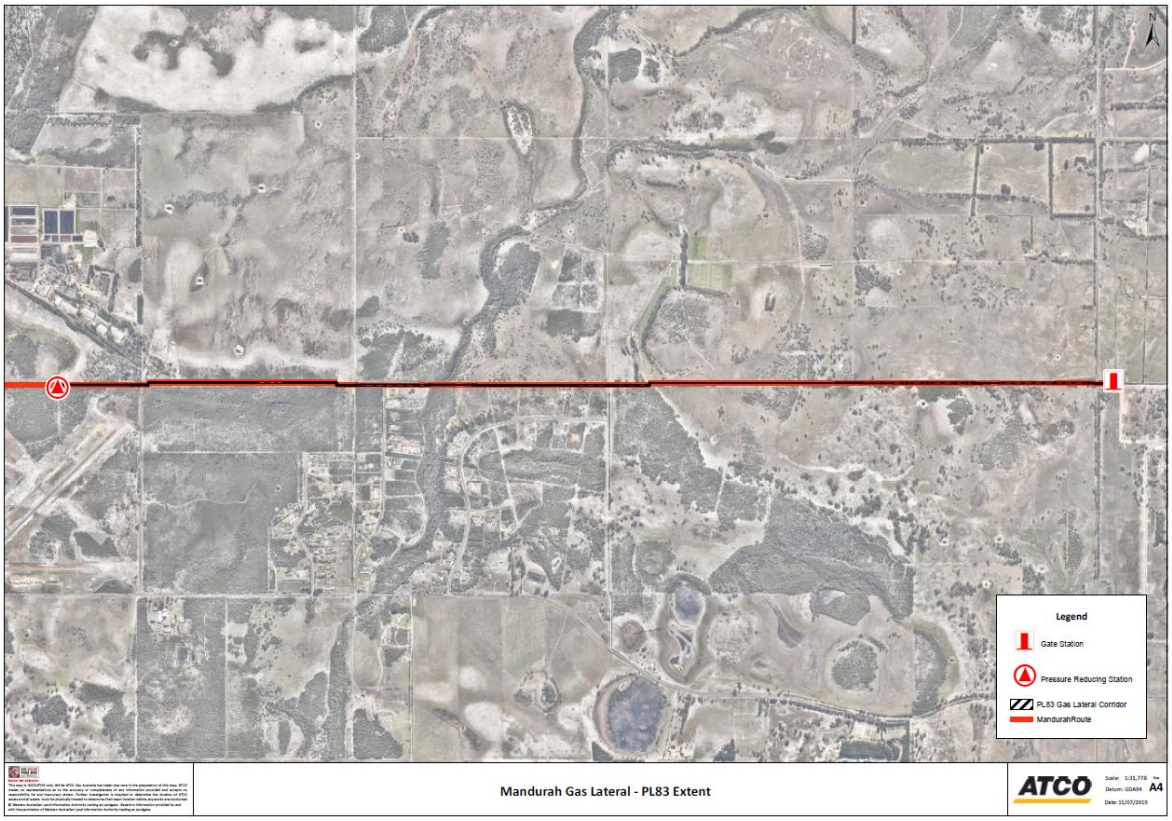

Figure 2: Mandurah Gas Lateral Pipeline License PL83 area.

2.3 Land Tenure

The PL83 inlet and launcher facility is located adjacent to the DBNGP and within the widened DBNGP corridor managed by the DBNGP Land Access Minister. A section 34 access right was granted under the *Dampier to Bunbury Pipeline Act (1997)* for the ongoing access and use of this area (AR43, granted 2nd November 2011) and remains in place.

The PRS015 is located within an area that was originally part of the Royal Aero Club of Western Australia (RACWA) Aerodrome. The PRS and the associated buffer is located on subdivided land and the freehold was purchased by ATCO on 27th April 2010. This area is now known as Lot 3 on Deposited Plan 67436 being the subject of Certificate of Title Volume 2752 Folio 968. The PRS and launcher sites are marked in both Figure 1 and Figure 2. Appendix A and Appendix B contain engineering diagrams of PRS015 and the 120V1 Launcher site (Launcher).

The pipeline corridor can be accessed from Hopelands Road, Readheads Road, Gull Road, Yangedi Road, Fowler Road, Nambeelup Road and Lakes Road.

The land adjacent to PL83 is predominantly used for agriculture. Peel Region Scheme maps identify all surrounding land as rural, however the Shire of Murray Local Planning Scheme indicates some special uses along the pipeline route. These are identified as:

- Royal Aero Club of Western Australia airbase at Murray Field;
- Bush Retreat is zoned for use as kennels; and

- Dirk Hartog Road (east of Yangedi South Road) is zoned for home business use. The pipeline is over 190m from the Dirk Hartog Road reserve and there are currently no dwellings within 500m of the pipeline.

Although the land north of the RACWA air field is zoned rural, it comprises a piggery, an organic waste recycling facility and a mushroom composting business. These facilities are over 270m from the pipeline. Three dwellings for piggery staff are within 130m from the gas pipeline (one of which is approximately 60m from the pipeline).

Other dwellings within 300m of the pipeline are situated at Bush Retreat in the land zoned for kennel use. The closest home is approximately 50m from the pipeline and the site is used for greyhound training and kennels.

The only other dwelling in the vicinity is a farm residence over 200m from the pipeline just east of Yangedi South Road. The closest dwelling to the launcher is 330m away and the closest dwelling to the PRS is 440m away.

3. HEALTH, SAFETY AND ENVIRONMENT POLICY

ATCO aspires to excellence in Health, Safety and Environmental Performance. The ATCO Health, Safety and Environment Practice (AA-HSE-PC04) provides a framework for ATCO activities. This policy is accessible to personnel including employees, contractors and sub-contractors. It is also displayed in all depots and is available on the Intranet. Appendix C contains a copy of the ATCO Health, Safety and Environment Practice (AA-HSE-PC04).

ATCO is committed to protecting the environment in which it operates, by undertaking activities with sensitivity for the environmental impacts, such that legislation and regulatory compliance is maintained, minimising environmental impacts and seeking to reduce environmental impact intensity over time.

3.1 Environmental Approvals

A summary of the approval requirements for PL83 is provided in Table 2.

Table 2: PL83 Approvals

Approval	Agency	Act or Regulation	WA/Cth	Comments
Pipeline Licence	DMIRS	*Petroleum Pipelines Act (1969)*	WA	PL83 granted 23/09/2009
S18 Approval to disturb	DPLH	*Aboriginal Heritage Act (1972)*	WA	Granted – Ref: 29-09036 (DIA 3582 (Serpentine River) 31/12/2009
Approval to proceed	DEE	*Environmental Protection and Biodiversity Conservation Act (1991)*	Cth	No EPBC approvals required.
Native Vegetation Clearing Permit	DWER	*Environmental Protection (Clearing of Native Vegetation) Regulations (2004)*	WA	Granted - CPS/3491 29/01/2010

Approval	Agency	Act or Regulation	WA/Cth	Comments
Bed and Banks Permit	DWER	*Rights in Water and Irrigation Act (1914)*	WA	Granted – PMB167877(1) 28/01/2010 Note: for construction period only 25 January 2010 – 30 June 2010
Approval to disturb wetland	EPA	*Environmental Protection Act (1986) and Environmental Protection (Swan Coastal Plain Lakes) Policy (1992)*	WA	Assessed as "Not Assessed – Public Advise Given – Managed under Part V of the EP Act (Clearing)" 4/05/2009
Section 34 access right	DRDL	*Dampier to Bunbury Pipeline Act (1997)*	WA	Granted – Access Right 43 (AR 43) 2/11/2011

3.2 International Agreements and Conventions

The MGL Pipeline Project Construction Environmental Management Plan (CEMP) was developed to meet the requirements of the PL83 licensing construction requirements. Review of publicly available datasets as well as site specific surveys undertaken by third party consultants were used to assess the following environmental aspects which are detailed in both the CEMP and section 6 of this OEMP include:

- Vegetation, flora and fauna survey; including disease and weed identification and mapping;
- Soils (including Acid Sulfate Soils [ASS]);
- Hydrology;
- Environmentally sensitive areas; and
- Heritage sites.

A summary of the international agreements and conventions which were considered during the development of the CEMP in relation to the PL83 area is provided in Table 3. All of the obligations relating to the agreements listed in Table 3, with the exception of the UN Framework Convention on Climate Change, are encapsulated by compliance with the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and *Environment Protection and Biodiversity Conservation Regulations 2000* (EPBC Regulations).

No further reviews or site-specific surveys have been conducted on the PL83 area relating to international agreements and conventions.

Table 3: International Agreements and Conventions

International Agreement or Convention	Applicability
China-Australia Migratory Bird Agreement (CAMBA)	Agreement between the Government of Australia and the Government of the People's Republic of China for the Protection of Migratory Birds and their Environment. ATCO adheres to the requirements of the EPBC Act and EPBC Regulations.
Japan-Australia Migratory Bird Agreement (JAMBA)	Agreement between the Government of Australia and the Government of Japan for the Protection of Migratory Birds in Danger of Extinction and their Environment. ATCO adheres to the requirements of the EPBC Act and EPBC Regulations.
Republic of Korea – Australia Migratory Bird Agreement (ROKAMBA)	Agreement between the Government of Australia and the Government of the Republic of Korea for the Protection of Migratory Birds and their Environment. ATCO adheres to the requirements of the EPBC Act and EPBC Regulations.
Ramsar Convention	The Ramsar Convention's broad aims are to halt the worldwide loss of wetlands and to conserve, through wise use and management, those that remain. Australia's commitments and responsibilities under the Ramsar Convention are managed in part by the EPBC Act and EPBC Regulations. There are no Ramsar listed wetlands in the PL83 area. ATCO adheres to the requirements of the EPBC Act and EPBC Regulations.
Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention)	The Bonn Convention lays the legal foundation for internationally coordinated conservation measures for migratory animals and their habitats. ATCO adheres to the requirements of the EPBC Act and EPBC Regulations.
World Heritage Convention	The Convention sets out the duties of States Parties in identifying potential sites and their role in protecting and preserving them. There is no identified world heritage listed properties in the PL83 area. ATCO adheres to the requirements of the EPBC Act and EPBC Regulations.
UN Framework Convention on Climate Change	ATCO reports GHG emissions in line with the requirements of the NGER Act and National NGER Regulations. ATCO is subject to emissions limits as per the Safeguard Mechanism Rule.

3.3 Codes of Practice and Standards

ATCO adheres to the codes of practice and standards listed in Table 4 during the maintenance and ongoing operation of the PL83 pipeline and associated facilities.

Table 4: Codes of Practice applicable to the construction and operation of the PL83 facilities

Code of Practice or Standard
APGA Code of Environmental Practice – Onshore Pipelines Revision 5
AS 2885.0-2018 Pipelines – Gas and Liquid Petroleum General Requirements
AS/NZS 2885.1-2018 Pipelines - Gas and Liquid Petroleum - Design and Construction
AS/NZS 2885.2-2020 Pipelines - Gas and Liquid Petroleum – Welding
AS 2885.3-2022 Pipelines - Gas and Liquid Petroleum - Operation and Maintenance
AS/NZS 2885.5-2012 Pipelines - Gas and Liquid Petroleum - Field Pressure Testing
AS ISO 31000: 2018 Risk Management

4. IMPLEMENTATION STRATEGY

4.1 Environmental Management

Environmental management is an integral part of the operations and maintenance of PL83. Sound management of PL83 will minimise potential impact of the operations and maintenance activities associated with the asset. In particular, ATCO operations aim to manage four key issues:

- The pipeline structure and integrity
- Pipeline operating conditions and practices
- The Pipeline Licence area; and
- Activities that could affect the above elements.

Effective environmental management in these areas and the application of the following components, help to ensure that the environmental impacts and risks are reduced and environmental management is efficiently practised. These systems, practices and procedures are shown in Figure 3.

- *Petroleum Pipelines Act (1969) & Environmental Protection Act (1986)*.
- Pipeline License 83.
- Health, Safety and Environment Practice (see Appendix C).
- Relevant internal referenced documents (see Appendix D).
- Network Incident Escalation Response.
- Incident reporting (see section 10.4.2).

Figure 3: Systems, Practices and Procedures Relational Hierarchy

Appendix D contains a full list of the specific internal documents used to ensure the environmental performance objectives and standards are met. Section 8.3 Performance Objectives, Standards and Measurement Criteria outlines the use of the referenced documents with relation to each identified aspect.

This OEP has been developed in accordance with the *Petroleum Pipelines (Environment) Regulations (2012)* and the *Schedule of Onshore Petroleum Exploration and Production Requirements 1991*, as administered by DMIRS. This EP is also consistent with *Australian Pipelines and Gas Association (APGA) Code of Environmental Practice – Onshore Pipelines Revision 5 (2022)* and *AS2885.3 Pipelines – Gas and Liquid Petroleum – Operation and Maintenance*.

4.2 Roles and Responsibilities

Environmental management will be undertaken by ATCO employees, consultants, its contractors and sub-contractors.

Table 5 outlines the operational management structure for PL83 and the associated responsibilities.

Table 5: Operational Management Structure and Associated Responsibilities

Position Title	Reporting to	Principal Duties
Managing Director	Board	• Overall responsibility for the health, environmental performance and safety and welfare of all relevant ATCO employees.
President, Gas	Managing Director	• Ensure that ATCO has comprehensive policies and procedures for the management of HSE matters. • Provide overall direction to, and support for, the implementation and regular review of HSE management, policies and procedures. • Development and implementation of objectives and targets (which are clear, realistically quantifiable and time bound).
General Manager HSE	President, Gas	• Approve the OEP and overseeing the implementation of the OEP. • Monitoring the implementation of the OEP, compliance with relevant health, safety and environmental legislation and policy, and procedures to ensure its continuing competency in the safe operation and maintenance Annual performance review against the OEP. • Ensure that policy, systems and procedures are reviewed regularly and that management and employees are committed to and implement relevant HSE policies. • Review records and reports on safety statistics, incidents/hazards and action taken to determine performance against the OEP • Ensure audits, compliance assessments and inductions are completed. • Ensure comprehensive policies and procedures are in place for the safe and efficient implementation of the OEP. • Provide leadership and coaching to personnel to improve the capability, performance and motivation of personnel enabling them to meet their individual and team goals and to enable them to maintain safe and environmentally acceptable working conditions and systems. • Assess and ascertain the adequacy and effectiveness of the Emergency Response Management Plan AGA-R&R-PL01 to respond and effectively contain any unplanned incidents or accident. • Ensure through direct participation that one desktop emergency exercise is carried at least annually covering possible environmental scenarios across the gas distribution network and perform drills and exercises as required. • Assist in reviewing any proposed change to the accepted OEP. • Assist in reviewing the OEP's performance and provide advice where necessary to continually improve the OEP

Position Title	Reporting to	Principal Duties
Environmental Advisor	General Manager HSE	• Keep the OEP (as well as supporting information) relevant and up to date, and conduct periodic reviews, monitor impacts of change on the OEP and prepare document for submission when required. • Review records and reports on safety statistics, incidents/hazards and action taken to determine performance in HS&E management. • Provide performance and status reports to internal and external groups. • Ensure audits and verification assessments are completed and support where required.
Manager Operations South	Senior Manager Operations	• Conduct regular site inspections to verify all facilities and equipment are operated and maintained in accordance with HSE objectives. • Implement the operations and maintenance activities program, which maintains and enhances the integrity. • Plan and organise all relevant resources (physical, human and information) for both current and future PL83 requirements. • Provide leadership and coaching to personnel to improve the capability, performance and motivation of personnel enabling them to meet their individual and team goals and to enable them to maintain safe and environmentally acceptable working conditions and systems. • Implement, comply with and identify improvements to the OEP. • Develop and review OEP documentation associated with the operation and maintenance. • Implement an Emergency Response Management Plan and organise necessary resources to execute the plan. • Participate in periodic emergency response training exercises. • Comply with and enforce all legislation, standards and codes of practice that apply to PL83. • Ensure training and awareness programs are implemented. • Ensure training needs for management and employees are identified and implemented consistent with the OEP.
Maintenance Team South	Manager Operations South	• Conduct monthly right of way (ROW) Inspection and quarterly Monitoring Program to verify all facilities and equipment are operated and maintained • Implement the operations and maintenance activities program, which maintains and enhances the integrity. • Plan and organise all relevant resources (physical, human and information) for both current and future PL83 requirements • Provide performance and status reports to internal groups on PL83. • Implement and comply with the OEP and implement operation and maintenance activities.

Position Title	Reporting to	Principal Duties
		• Conduct periodic emergency response training exercises. • Comply with and enforce all legislation, standards and codes of practice that apply to PL83
Manager Technical Compliance	General Manager Assets & Engineering	• Conduct periodic reviews of the Emergency Response Management Plan. • Conduct periodic emergency response training exercises
Manager Organisational Development	General Manager Human Resources	• Ensure training needs for management and employees are identified and implemented consistent with the OEP.
All workers		• Must observe all company HSE instructions, act in a safe manner and avoid risk to themselves and others. • Be responsible for HSE in operations over which they have control over working conditions and methods.

4.3 Training and Implementation

The training program implemented for this OEP is provided to all ATCO personnel involved in the operations and maintenance of PL83. All personnel involved will be made aware of the relevant environmental aspects, impacts and their applicable control measures. The training program will include but not be limited to spill management containment and clean up, environmental noise, flora and fauna and weed and pathogen training.

Personnel will be informed of their obligations and the specific environmental aspects, impacts and their control measures involved with PL83 through the ATCO Site Safety and Environment (ATCO SSE) programmes. Personnel will be inducted and records of personnel attendance and assessments of induction training conducted will be maintained. Personnel may also attend additional training where identified, as required by ATCO.

The ATCO inductions and SSE programme cover the following:

- HSE Policy;
- HSE Event Notification & Investigation;
- Spill Management Containment and Clean Up;
- Groundwater and Stormwater Management Control and Sediment Containment;
- Soil and Dust Control (including ASS);
- Flora and fauna;
- Vegetation clearing;
- Fire Response;
- Incident Reporting;
- Emergency Response; and
- Permit to Work System.

Additional training is provided to all ATCO personnel who are involved in operational, and maintenance activates. The additional training includes, but is not limited to:

- Management of ASS;
- Excavation and backfilling;
- Take 5 Hazard Assessment Process and Job Risk Analysis (JRA) Process;
- Weed and Pathogen Management and Vehicle Hygiene;
- Weed Removal; and
- HSE Issue Resolution.

Visitors shall be provided with induction in Gas Distribution Field Observation Visits by Office Staff Visitor Safety Induction (PLN WI 006 RF01) and shall be supervised and not permitted to perform any works on the Gas Distribution network. Records of visitor inductions shall be maintained.

This OEP provides an overview of the PL83 receiving environment and the identified hazards with a potential to impact the environment. Prior to conducting work on the PL83 area a planning review is completed which includes, but is not limited to the following:

- Identify the job steps associated with the task and/or review the task procedure/work instruction;
- Identify any potential environmental hazards;
- Check the OEP and supporting documents for general control measures for the task; and
- Complete a Take 5 or Job Risk Assessment.

In addition to the control measures identified in this OEP and its supporting documents, a Take 5 or JRA must be completed prior to the commencement of any task that has the potential to have an adverse impact on the environment. The Take 5 or JRA is used to identify any additional control measures necessary to minimise the environmental impact of a task.

4.4 Communication

HSE notice boards have been established to inform personnel of relevant health, safety and environmental information. This includes HSE Committee minutes and environmental incident alerts, including those relating to environmental aspects and potential impacts contained in this OEMP. The notice boards are refreshed periodically with up-to-date information, as it becomes available. Internal communication of environmental issues to ATCO personnel requiring action is made through:

- HSE Committee meetings;
- Audit report findings/actions;
- Environmental site inspections;
- HSE event reports;
- Monthly report process;
- Audits; and
- Toolbox meetings.

5. DESCRIPTION OF ACTIVITY

The MGL was constructed in 2010, with the construction and commissioning of the MGL conducted under the Construction Environmental Management Plan (CEMP - document number ML-5.6-PA-001). This OEP relates to the ongoing operation and management of the MGL commencing in 2010. Table 6 outlines the activity timeframes and related environmental considerations.

Table 6: Activity Timeframes and Environmental Considerations

	Date	Environmental Considerations
Timeframe	23rd September 2009 – 23rd September 2030	• Impacts on fauna habitat • Impact to native vegetation • Contribution to atmospheric greenhouse gases through use of vehicles and machinery • Loss of topsoil due to erosion • Contamination of water bodies due to sedimentation • Contaminations to soil and water resulting from Spills
Duration	21 years	• As above
Hours of Operation	24 hours (night and day continuous operations)	• Death to fauna due to interactions and unauthorised activity • Noise due to venting / gas release • Fire due to ignition of flammable substances • General waste site contamination from personnel due to lack of housekeeping • Spills due to lack of appropriate storage and handling of fuel and hazardous materials • Death of fauna due to interaction and disturbance through vibration • Damage to vegetation due to unauthorised clearing • Erosion due to inappropriate stockpile heights or incorrect implementation of design • Fire due to lack of appropriate fuel, machinery and emergency response management • Spread of weed / disease due to lack of adherence to vehicle / machinery hygiene requirements

The PL83 pipeline route shown in Figure 1 commences at the DBNGP near the intersection of Hopelands Road and Readheads Road, North Dandalup and terminates at the PRS located adjacent to Readheads Road. The pipeline is approximately 7.05km in length and includes the North Dandalup to Nambeelup Section and the PRS to Mandurah Section.

5.1 North Dandalup to Nambeelup Section

The North Dandalup to Nambeelup section is approximately 7.05km of 200mm diameter, Class 600 Maximum Allowable Operating Pressure (MAOP) 6,900kPa pressure steel pipeline. The alignment follows Readheads Road from the DBNGP near Hopelands Road to a Pressure Reduction Station (PRS) located adjacent to Readheads Road.

The pipeline installation depth varies but maintains a minimum depth of 1.5m cover. Trenchless installations, or horizontal directional drilling (HDD) installations were utilised under nominated road and rail crossings in accordance with API RP 1102 Steel Pipelines Crossing Railroads and the Highways and the Railways of Australia Code and the Public Transport Authorities approval. HDD was used where the pipeline traversed waterways (Serpentine River, Nambeelup Brook and EPP

Lake) at a depth of approximately 10m below riverbeds to avoid flow interruptions related to the pipeline infrastructure. HDD was also utilised in areas of environmental significance to avoid/minimise the potential impacts.

Sacrificial magnesium anode cathodic protection is used on the MGL at 3 sites along the PL83 extent. The sites contain 2 x 10kg magnesium anodes installed at a depth of approximately 5m. The anodes were replaced during 2016 as part of a maintenance and replacement program. The performance of all ATCO cathodic protection systems on steel pipelines is monitored as per the Asset Lifecycle Strategy - Corrosion Protection Systems (AGA-S&P-ST06) and Asset Lifecycle Strategy - Pipelines Mains and Services (AGA-S&P-ST08).

PRS015 is located at Kilometre Point (KP) KP7.05 South of Readheads Road approximately 450m east of the North-West corner of Murray Field aerodrome. This structure is located within a 22m x 27m fenced compound to protect the asset from unauthorised entry, interference and vandalism. Fencing is also designed to provide adequate separation distance from fence to assets to prevent impact from fire. The PRS is protected from vehicle impact by bollards which have been installed in accordance with Damage Prevention Management Guideline for ATCO Facilities (ENS GL0006).

The purpose of PRS015 is to limit the pressure of the gas in the Class 150 section of the Mandurah gas pipeline to within the design pressure. The pressure reduction station utilises Gorter Controls pressure regulators in a working and standby stream configuration which allows for 100% redundancy. The Class 600 section of the skid has full bore, trunnion mounted ball valves which are manually operated. The Class 150 section of the skid includes full bore, trunnion mounted ball valves and operation is manual operated in the form of a geared wheel arrangement. Overpressure protection is provided by the utilisation of active monitor regulation, with the second run set up to take over supply automatically. As a safety back up to the active monitor arrangement a slam shut valve (SSV) is provided on each pressure control run to close on over pressure. Filtration has been installed to remove solids from the gas stream prior to entering the pressure control sections of PRS015. A top entry basket type filter is installed at both runs of PRS015, upstream of the pressure reduction regulators to remove solids down to 150µm particulate size. PRS015 has pressure indicators located upstream of each SSV and downstream of the pressure reduction regulators. The PRS schematic diagram is contained in Appendix A.

5.2 PRS to Mandurah Section

PRS to Mandurah section is 250mm diameter Class 150 MAOP 1,900 kPa pressure steel pipeline and continues from the PRS terminating at Mandurah Road, Mandurah. This section is not covered under PL83 or the *Petroleum Pipelines Act (1969)*.

The entire extent of the MGL ROW was constructed utilising a 16m width, with a reduced ROW of between 8m to 10m used in environmentally sensitive areas. Environmental considerations are listed in section 6 of the OEP.

The operation of PL83 involves a range of activities generally undertaken by operations staff and specialist service contractors. Common activities include:

- Surveillance of the Pipeline Licence area;
- Maintenance of the pipeline;
- Pipeline Licence area; and

- Associated facilities (such as valves, pressure reduction stations and cathodic protection equipment);
- Filter inspection and replacements;
- Periodic pigging (pipeline integrity gauge maintenance) of the pipeline for cleaning or inspection; and
- Use and handling of chemicals and hazardous materials.

As part of these operation and maintenance activities of PL83, there may be a requirement to conduct maintenance related excavations for pipeline inspection and/or repair or similar activities involving ground disturbance. Line of site clearing is considered exempt under *Schedule 6 item 1* of the EP Act. Pursuant to section 54 (1) of the *Energy Operators (Powers) Act 1979* (EOP Act), ATCO is required to ensure that vegetation which may interfere with, or obstruct the maintenance, construction or safe use of a supply system is removed. Line of sight clearing operates on the principle of minimisation, only clearing what is deemed necessary to maintain line of sight in accordance with the EOP Act.

Table 7 provides descriptions of the relevant activities and the potential environmental impacts which are managed within this OEP and supporting documents referenced in this OEP.

No machinery or mobile equipment stored is PL83. Any machinery or mobile equipment that may be utilised during the operations and maintenance of PL83 will be transported from an ATCO Depot or brought to site by specialist contractors.

There are no hazardous chemical storage areas on PL83. Two fire extinguishers located at the PRS and the launcher site. Should chemicals or hazardous substances be required for the maintenance and operation of PL83 they will be transported from an ATCO Depot to site by specialist contractors. During normal maintenance and operations activities, only minimal quantities of chemicals or hazardous substances are likely to be taken to or used on site. The largest quantities expected are during major maintenance activities such as intelligent pigging where there may be a maximum of 10L to 20L approved of various required lubricating oils. Any materials removed from headers during pigging will be retained with drip trays and disposed of to an appropriate waste disposal centre.

There are no ablution facilities generating black or grey water wastes on the Pipeline Licence area or at pipeline facilities which generate black or grey water wastes.

Table 7: Summary of PL83 Operations and Potential Environmental Impacts

Activity	Description	Potential Environmental Impacts	Mitigation Measures Referenced within EP
Weed Control	Localised spraying and hand removal of weeds is undertaken along the Licence area regularly should the identification of weeds occur.	• Death to fauna due to interaction • Impact on fauna habitat due to uncontrolled spraying • Impact to native vegetation due to uncontrolled spraying • Spills due to lack of appropriate storage and handling of chemicals • General waste from containers and equipment • Spread of weeds due to lack of control	• 8.2.1 Stakeholder & Land Access Management • 8.2.3 Vegetation Management • 8.2.4 Weed & Disease/Hygiene Management • 8.2.12 Waste Management • 9 Oil Spill Contingency Plan
Line of Sight Clearance	Clearance of the Licence area to maintain line-of-sight is generally not required as the pipeline is located in predominantly low open grassland or shrub-land and the majority of the Licence area is within a fire break, so vegetation height is regularly managed. Any large trees or shrubs directly above the buried pipe were removed during construction. Any vegetation identified as a risk to the operational integrity of the pipeline will be removed in accordance with AS2885.3-2012 on an as needs basis.	• Death to fauna due to interaction • Impact on fauna habitat due to uncontrolled clearing • Impact to native vegetation due to uncontrolled clearing • Spread of weeds due to lack of control	• 8.2.1 Stakeholder & Land Access Management • 8.2.3 Vegetation Management • 8.2.4 Weed & Disease/Hygiene Management
Patrolling and inspections	PL83 is patrolled and inspected monthly, to identify for unauthorised activity, weeds, erosion, sign damage, etc. This is conducted via a vehicle along the access track.	• Death to fauna due to interaction • Spread of weeds due to lack of control • Spread of phytophthora dieback • Oil and diesel spills from vehicle • Unauthorised activity	• 8.2.1 Stakeholder & Land Access Management • 8.2.4 Weed & Hygiene Management
Above Ground Facility Inspections	The PL83 above ground facilities are inspected monthly for unauthorised activity, weeds, erosion, sign damage, etc. This is conducted by driving to each site and conducting a physical	• Death to fauna due to interaction • Spread of weeds due to lack of control	• 8.2.1 Stakeholder & Land Access Management

Activity	Description	Potential Environmental Impacts	Mitigation Measures Referenced within EP
	inspection by walking around and within the site and then conducting the technical inspections and general maintenance as required by the Work Instructions.	• Spread of phytophthora dieback • Oil and diesel spills from vehicle • Unauthorised activity • General waste from containers and equipment	• 8.2.4 Weed & Disease/Hygiene Management • 8.2.12 Waste Management •
Emissions	Methane gas (as the major component of natural gas within the pipeline) is released to the atmosphere as a result of pipeline and facility maintenance operations (i.e. unit blow downs/venting, valve opening/testing). Small volumes are released. This occurs for the duration of the pipeline's operational life.	• Noise due to venting / gas release • Contamination of environment due to emissions	• 8.2.1 Stakeholder & Land Access Management • 8.2.8 Dust and Air Emissions Management • 8.2.9 Noise Management •
Pipeline Incident	The main threats to public safety from pipeline operation and maintenance are fire, explosion or radiation exposure as a result of pipeline rupture. Pipeline risk assessments have identified that these threats are associated with factors such as third party or external interference to the pipeline and pipeline corrosion. Pipeline design minimises this threat in that the pipeline has been designed to comply with Clause 4.7.2 of AS2885.1 (the 'no rupture' clause) and identified third party external interference risk locations have concrete slabs installed over the pipeline to provide additional protection. It is assessed that a full bore rupture is not likely and the risk of penetration of the pipe wall is reduced to as low as reasonably practicable.	• Noise due to venting / gas release • Contamination of environment due to emissions • Fire due to ignition of flammable substances	• 8.2.1 Stakeholder & Land Access Management • 8.2.9 Noise Management • 8.2.14 Emergency Response Management • 9 Oil Spill Contingency Plan
Erosion Events	Following major rainfall events run-off areas on the Licence area can experience soil erosion. Repairs are conducted following detection of an erosion event and include the replacement of similar materials, re-profiling and ongoing monitoring.	• Loss of top soil due to erosion • Contamination of water bodies due to sedimentation • Spread of weeds due to water flow • Spread of phytophthora dieback due to water flow	• 8.2.1 Stakeholder & Land Access Management • 8.2.2 Soil and Ground Stability Management • 8.2.3 Vegetation Management

Activity	Description	Potential Environmental Impacts	Mitigation Measures Referenced within EP
			• 8.2.4 Weed & Disease/Hygiene Management • 8.2.11 Water Management
Maintenance Excavations (including coating refurbishment, defect dig ups and inspections, installation of anode beds and new tie-ins) Replacement of Pipeline Section Maintenance on Pipeline (including pressure testing and pigging)	Excavations of the Licence area usually involve the following steps: • A grader, excavator or bulldozer is used to clear and stockpile any surface vegetation from the site. • Topsoil is removed to a depth, typically 100 to 150 mm and stockpiled separately to vegetation. • Vegetation and soil stockpiles are to be a maximum height of 2 metres. • Spoil is excavated and stockpiled separately to vegetation and topsoil on a pad cleared of topsoil. • The pipeline maintenance is then undertaken (this may include welding, painting, sand blasting). Following the completion of the work, trench spoil is returned to the trench, with a low crown left above the trench to minimise the likelihood of subsidence of material. Topsoil is then evenly re-spread and cleared vegetation placed/re-spread over the site to assist in soil retention and provision of seed stock for re-vegetation. The Licence area was re-contoured to match the surrounding landform and erosion controls constructed as required. In some areas (e.g. areas at risk of erosion), manual spreading of seed may be carried out to enhance natural regeneration. These activities may occur to rectify defects but are expected to be very rare throughout the life of the pipeline.	• General waste from personnel due to lack of housekeeping • Fire risk due to general waste and lack of housekeeping • Spills due to lack of appropriate storage and handling of fuel and hazardous materials • Death of fauna due to interaction and disturbance through vibration • Impact on fauna habitat due to unauthorised clearing • Damage to vegetation due to unauthorised clearing • Inability to reinstate due to lack of top soil stripped and inappropriate storage • Soil compaction due to lack of appropriate reinstatement • Erosion due to inappropriate stockpile heights or incorrect implementation of design • Fire due to lack of appropriate fuel, machinery and emergency response management • Spread of weed / disease due to lack of adherence to vehicle / machinery hygiene requirements	• 8.2.1 Stakeholder & Land Access Management • 8.2.2 Soil and Ground Stability Management • 8.2.3 Vegetation Management • 8.2.4 Weed & Disease/Hygiene Management • 8.2.5 Maintenance of pipeline (involving ground disturbance) • 8.2.7 Bushfire Prevention and Management • 8.2.8 Dust and Air Emissions Management • 8.2.9 Noise Management • 8.2.10 Heritage Management • 8.2.11 Water Management • 8.2.12 Waste Management • 8.2.13 Hazardous Materials Management • 8.2.14 Emergency Response Management •

Activity	Description	Potential Environmental Impacts	Mitigation Measures Referenced within EP
		• Contribution to atmospheric greenhouse gases through use of vehicles and machinery	

5.3 Rehabilitation

5.3.1 Current Status

The majority of the pipeline ROW was reinstated at the conclusion of construction by backfilling the trench, respreading topsoil, contouring to reflect the pre-construction contours and fencing rectification or replacement where required. Where a road or access track was intersected, the ROW was reinstated to the original access track condition. The section of the pipeline extending to the east of Nambeelup Road for approximately 1,250m was revegetated at the conclusion of the installation works. Remediation and revegetation works consisted of levelling the site, spreading topsoil, mulching cleared vegetation, direct seeding and erection of new fencing.

A flora and vegetation rehabilitation program was undertaken following the construction of PL83 to assess the progress of the rehabilitation along the ROW and to determine compliance with the Native Vegetation Clearing Permit CPS/3491 valid from 21st February 2010 to 21st February 2015 inclusive.

An audit of the CPS/3491 was conducted in June 2011 for compliance with the conditions of Clearing Permit CPS 3491/2 during the period from 1 January 2010 to 31 December 2010. The audit included a desktop review of documentation, interviews with selected staff and field inspections of the project area following completion of works. Overall, the review found that clearing was carried out in compliance with CPS 3491/2. At project completion, only 80% of the total approved Native Vegetation Clearing Permit Area (including amendment) was cleared, being a total of 5.9ha cleared from an approved 7.93ha. The audit included observations that project documentation showed a strong focus on environmental performance and compliance and the success of management attention to environmental requirements was evident in the limited clearing extent and tidy site conditions observed during field inspections. A recommendation was made to ensure that both weed removal and monitoring of revegetation outcomes are planned, scheduled and implemented prior to the end of October 2011 in order to satisfy the ongoing requirements of CPS3491/2.

A weed species assessment was undertaken on 21 July 2011 to determine the diversity of weed species, locations of weed species and areas to be prioritised for control within areas cleared during the construction of PL83 under CPS/3491. The areas cleared along PL83 were located from an off-take point on the DBNGP on Readheads Road to the east of Hopelands Road, traversing approximately 16 km west to Meadow Springs. It was found that the diversity of weeds recorded was lower than the records made during the surveys conducted over the alignment during 2009.

For the term of the clearing permit, annual weed control was undertaken along the pipeline alignment in cleared areas where those weeds are likely to spread, and which may result in environmental harm to adjacent areas of native vegetation. Spot removal of noxious weeds is undertaken where necessary.

5.3.2 Closure

Following cessation of operations, the Activity area will be returned to a condition suitable for the relevant surrounding land use (i.e. rural/ agricultural). The Management of Decommissioned Assets Guideline (AGA-ENG-GL12) establishes procedures for the management of facilities and infrastructure during decommissioning and specifies the requirements for their permanent retirement.

In decommissioning the assets, ATCO will conduct all decommissioning works to ensure full compliance with the requirements set out in the *Petroleum Pipelines Act 1969* relating to pipeline decommissioning actives.

Decommissioning works will commence within one year of the pipeline no longer being required and specific provisions relating to the decommissioning of all infrastructure will be evaluated in accordance with the Management of Decommissioned Assets Guideline (AGA-ENG-GL12) and will be communicated with all relevant stakeholder prior to commencement of works.

5.3.2.1 Decommissioning

Prior to decommissioning of the pipeline and associated infrastructure, a revision of the current Environment Plan or a decommissioning-specific Environment Plan will be provided to DMIRS for approval.

The revision will provide further information on the decommissioning process and contain specific details of the removal of infrastructure and remediation of any operational or decommissioning related impacts caused by ATCO.

5.3.2.2 Rehabilitation Monitoring and Reporting

Following completion of the decommissioning operations, rehabilitation monitoring will commence within one year. Rehabilitation monitoring will be undertaken by an independent consultant (botanist) and record:

- Species present (native and introduced) and their coverage
- Signs of contamination
- Signs of erosion/sedimentation
- Presence of any infrastructure or waste
- Evidence of any impacts from external factors (e.g. vehicle tracks).

Rehabilitation monitoring will be undertaken at 17 representative impact and reference locations along the pipeline route, nominally at each KP of the pipeline (i.e. 0,1…16). The exact location of the rehabilitation monitoring locations will be refined by the rehabilitation consultant prior to the first survey to ensure representative coverage of surrounding environments. Rehabilitation monitoring continue annually until the below rehabilitation objectives and completion criteria have been met (Table 8).

Results of annual rehabilitation monitoring will be provided to DMIRS on an annual basis, submitted with the annual compliance monitoring (Section 8).

Table 8: Rehabilitation objectives, completion criteria and intervention strategy

Factor	Rehabilitation Objective	Completion Criteria	Trigger for Intervention	Intervention Strategy
Flora and Vegetation	No spread of introduced flora species.	• No additional weed species identified during rehabilitation monitoring.	• Additional weed species identified during rehabilitation monitoring.	• Targeted removal of weed species.
	No spread of disease or pathogens	• No encroachment of dieback into non-infected areas from known infected areas	• Potential dieback related vegetation impacts identified during monitoring	• Area remapped and boundaries established • Additional monitoring
	Flora species richness comparable to neighbouring areas.	• Species richness at impact areas over 70% of that at reference areas.	• Species richness at impact areas not improving over three consecutive years of rehabilitation monitoring.	• Additional seeding of native species.
	Vegetation cover comparable to neighbouring areas.	• Vegetation cover at impact areas over 70% of that at reference areas.	• Vegetation cover at impact areas (relative to reference areas) not improving over three consecutive years of rehabilitation monitoring.	• Additional seeding of native species.
Fauna	Fauna habitat comparable to neighbouring areas.	• Flora species richness and vegetation cover restored as per above will restore fauna habitat.		
Soil and Groundwater	Soil and groundwater are free of contamination.	• No Activity-attributable contamination identified during soil and groundwater (if required) sampling.	• Activity-attributable contamination detected in sampling.	• Treatment/removal of contamination (as relevant). • Additional sampling.
Landforms	Landforms are stable in the surrounding landscape.	• No erosion identified at impact areas.	• Erosion identified at impact areas during rehabilitation monitoring.	• Remediation of eroded areas with clean fill and/or topsoil. • Use of natural materials (e.g. mulch, gravel) to stabilise areas as required.
Amenity	All infrastructure and waste removed from the Activity area.	• No Activity-attributable infrastructure or waste identified during rehabilitation monitoring.	• Remnant infrastructure or waste identified during rehabilitation monitoring.	• Removal of infrastructure or waste.

6. DESCRIPTION OF THE ENVIRONMENT

Prior to the construction of PL83, a number of environmental studies were conducted. These studies are detailed in the Construction Environmental Management Plan (CEMP - document number ML 5.6 PA 001), and the supporting documentation to the environmental approvals.

The CEMP was submitted as part of the pipeline approval process and should be referenced when considering the environmental impact of any new or existing pipeline activities. There have been no further environmental studies other than those mentioned in this EP since the completion of the CEMP environmental studies.

Post construction, there have been no recorded impacts to fauna, however, periodic line of sight maintenance clearing will occur along the pipeline route for the life of the asset. Line of site clearing is exempt under Schedule 6 item 1 of the *Environmental Protection Act (1986) (WA)*. Pursuant to section 54 (1) of the *Energy Operators (Powers) Act (1979) (WA)* ATCO is required to ensure that vegetation which may interfere with, or obstruct the maintenance, construction or safe use of a supply system is removed.

No evidence of dieback incursion has been observed in vegetation adjacent to the pipeline. Weed and pathogen management is ongoing and conducted in accordance with the Weed and Pathogen Management Procedure (AGA-HSE-PR20). Periodic surveys and eradication programs will be conducted to ensure no new weed infestations occur.

No new heritage areas have been discovered and are not expected to be discovered in the pipeline area.

The environmental aspects detailed in the CEMP include:

- Vegetation, flora and fauna survey; including disease and weed identification and mapping;
- Soils;
- Hydrology;
- Environmentally sensitive areas; and
- Heritage sites.

6.1 Vegetation, Flora and Fauna

Prior to construction, the pipeline alignment was subject to flora and vegetation surveys completed between September 2009 and December 2009. The flora and vegetation surveys consisted of a combination of Level 1 and Level 2 surveys as defined and required by the EPA and targeted searches for Threatened Flora, Declared Rare Flora (extant) and Priority Flora. The survey was conducted over the entire length of the MGL alignment, being approximately 16km, located between the corner of Readheads Road and Hopelands Road, North Dandalup west to the intersection of Meadow Springs Road and Mandurah Road, Meadow Springs.

A search of the Commonwealth (EPBC Act) Protected Matters database was undertaken for the area within which the lateral line is located. There were several items listed in the database search that were considered relevant to the area.

6.1.1 EPBC Listed Fauna

During a fauna survey of the pipeline route between Hopelands Road and the Serpentine River (Ecoscape 2008a), a total of 20 native fauna species were recorded in the area, including two Threatened species, the Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*) and either Carnaby's (*Calyptorhynchus latirostris*) or Baudin's Cockatoo (*Calyptorhynchus baudinii*). The Priority conservation species Rainbow Bee-eater (*Merops ornatus*), a transient species, was also identified by call while surveying in Marri woodlands in the eastern parts of the survey route. This species is also listed as a migratory species and a marine species under the EPBC Act. These species are all listed as Matters of National Environmental; Significance under the EPBC Act.

Habitat for the EPBC listed Endangered Carnaby's Black Cockatoo, the Vulnerable Forest Red-tailed Black Cockatoo and the Vulnerable Baudin's Black Cockatoo. The vegetation was representative of both foraging and breeding habitat. These species are known to feed on the canopy plants within the alignment and surrounds. Surveys to assess the habitat value were undertaken, consisting of measures of Diameter Breast Height (DBH) of canopy species. Based on this work, there were a total of 20 habitat trees along the alignment. The alignment was modified to avoid habitat trees with none removed through the construction phase or the operations phase. The loss of feeding habitat for this species has been avoided.

6.1.2 EPBC and DBCA Listed Flora

During the survey, one (1) Declared Rare Flora and two (2) Priority Flora were recorded.

- *Diuris drummondii* (**DRF**) – this orchid was collected from one location along the pipeline alignment, with a total of three plants recorded at that location. To assist with determining the potential for the proposed clearing and construction works to impact on the population of this species, or its habitat, a detailed search was conducted within the area surrounding this record. During the search, an additional 500-1,000 plants were observed.
- *Acacia benthamii* (**P2**) – this species was recorded at a single location. To assist with determining impacts to this species, a detailed search was conducted within the proposed pipeline alignment and immediate surrounds. No additional collections were made of this species during the search.
- *Boronia capitata* subsp*. gracilis* (**P3**) – this species was recorded at two locations along the proposed pipeline alignment. The collection of this species within the area represents a range extension for this species, with next nearest record being at South Dandalup. To assist with determining the potential impacts to this species, a detailed search was conducted within the proposed pipeline alignment and immediate surrounds. Based on the findings of this search, two (2) populations were recorded, the original population, which consisted of three plants and a second population of two (2) plants. These populations were avoided during the clearing of vegetation and construction of the pipeline.

In addition to these collections, targeted searches were conducted in habitat identified as being suitable other DRF and Priority Flora, with a high priority placed on searching habitat for *Drakaea elastica.* No plants were recorded during these searches. The lack of collections of this species should not be taken to indicate that the species would not be found within these areas. Orchids can be highly variable in relation to emergence and flowering patterns. As a precaution, impacts to potential habitat for any DRF or Priority orchids were minimised or avoided where practicable.

The area is potentially habitat for the Critically Endangered *Darwinia* sp. Muchea (B.J. Keighery 2458), the Endangered *Caladenia huegelii, Drakaea elastica* and *Lepidosperma rostratum* and the Vulnerable *Drakaea micrantha* Hopper & A.P. Brown. It was noted that of these species, only *Caladenia huegelii* and *Drakaea elastica* have been collected from within 10km of the area of disturbance. Targeted searches for *Drakaea elastica* and *Caladenia huegelii* were completed as a component of the surveys. No specimens of either were found. The *Kunzea* spp. vegetation within the alignment was considered to potentially host *Drakaea elastica* and impacts to these units were minimised.

According to DBCA database results there were a total of six DRF, as defined under the *Western Australian Wildlife Conservation Act 1950*, recorded within a 10km radius of the pipeline alignment. These were:

- *Caladenia huegelii* (Orchidaceae)
- *Diuris drummondii* (Orchidaceae)
- *Drakaea elastica* (Orchidaceae)
- *Synaphea* sp. Fairbridge Farm (Proteaceae)
- *Synaphea* sp. Pinjarra (Proteaceae)
- *Synaphea* stenoloba (Proteaceae)

In addition to the DRF, there were a total of 18 Priority Flora listed that have been collected from within a 10km radius of the area of disturbance. Of the DRF and Priority Flora, the following species were noted as occurring within or in close proximity to the areas of disturbance:

- *Acacia benthamii* (Mimosaceae; P2)
- *Parsonsia diaphanophleba* (Apocynaceae; P4)
- *Drakaea elastica* (Orchidaceae; DRF)
- *Johnsonia pubescens ssp cygnorum* (Hemerocallidaceae; P2)

6.1.3 Peel-Harvey Catchment Area

The area cleared is located within the Peel-Harvey Catchment – the clearing was not considered to significantly impact on the catchment.

6.1.4 Conservation Reserve

The pipeline alignment runs through Serpentine River Nature Reserve (ID 44986) (KP11.34-KP11.8). The activities within the reserve are limited to existing firebreaks and cleared areas. There are no provisions to clear within this reserve.

6.1.5 Threatened and Priority Ecological Communities

There were no Threatened Ecological Communities (TECs) identified as occurring within the DBCA database search for the project area and surrounds; however, two TECs were identified as having been recorded within 7km of the database search area. These were:

- The ‘Vulnerable’ threatened ecological community – ‘*Corymbia calophylla - Eucalyptus marginata* woodlands on sandy clay soils of the southern Swan Coastal Plain (SCP3b)'; and

- The 'Vulnerable' threatened ecological community – 'Forests and woodlands of deep seasonal wetlands of the Swan Coastal Plain (SCP15)'.

During the first site visit, the inferred TEC claypan vegetation unit, described in previous surveys as being located between KP 1.7 – 1.9, was visited. Based on guidance from the DBCA, HDD was used at this site to avoid potential impacts to the TEC. The DBCA also provided guidance in relation to an area of vegetation that was considered to contain the TEC SCP 3b. Based on the guidance from the DBCA, this section of vegetation was considered as requiring a quadrat-based assessment, as this allowed for the use of statistical analysis to determine whether it could be inferred as a TEC.

During the surveys of the pipeline alignment, a total of 11 broad associations were described, within which a total of 33 vegetation units were defined. The 11 broad associations are:

- Melaleuca species Woodlands in seasonally wet areas.
- *Corymbia calophylla* Woodlands in low-lying areas.
- *Eucalyptus marginata* subsp. *marginata* Woodlands on grey sands.
- *Kunzea glabrescens* Low Forests in seasonally wet areas.
- *Jacksonia - Adenanthos* Open Shrubland on grey sands.
- Acacia Scrub on grey sands
- *Juncus pallidus* Sedegland on seasonally inundated grey sands
- *Hakea varia* Shrubland
- Banksia Low Open Forests on grey sands
- *Eucalyptus rudis* Low Woodland on low-lying areas.
- *Dasypogon bromeliifolius* Heath on grey sands

The vegetation between KP7.4 and KP7.5 within which the DRF orchid *Diuris drummondii* was recorded was considered to have conservation significance. The vegetation in this area is habitat for this orchid and contains vegetation that would potentially be habitat for the EPBC Act listed critically endangered DRF orchid *Drakaea elastica*. The vegetation in this area and the implications of impacts were discussed with the Species and Communities Branch of the DBCA; the need to avoid impacts to habitat as well as individual plants was raised. Based on this, this section of the pipeline was constructed through HDD in this section of the pipeline alignment, thereby eliminating any impacts and maintaining the habitat.

Based on analysis of the quadrat-based data, a number of the vegetation units described in the report were found to have a high level of affinity with 'Low Lying *Banksia attenuata* woodlands or shrublands (SCP 21c)', which is a P3 Priority Ecological Community. The remaining vegetation bore no clear relationship to the SCP units included in the statistical analysis, which may mean that the dataset needs to be expanded to include more units. The vegetation previously identified by the DBCA was potentially being a TEC SCP 3b was included in the analysis. Based on the findings of this analysis, this section of vegetation was not inferred as a TEC. During the assessment of the clearing permit application by the DBCA, a determination from the Species and Communities Branch was noted, in which this vegetation was considered to be the TEC SCP 3b. This relates to vegetation located at KP 2.64 – 2.81.

6.1.6 Native Vegetation

The extent of native vegetation of the PL83 and surrounding areas are shown in in Figure 4. During vegetation surveys, a total of 480 specimens were collected, representing 298 taxa (including subspecies and variants). The native flora collected during the survey numbered 222 different species, subspecies and variants from 125 genera within 55 families. The most speciose families were: Papilionaceae, with 19 taxa from 11 genera; Cyperaceae, with 19 taxa from 8 genera; Myrtaceae, with 18 taxa from 11 genera; and Proteaceae, with 18 taxa from 9 genera. The family Orchidaceae was well represented in the census, with a total of 15 taxa from 7 genera.

The census of the native flora within the alignment and immediate surrounds was conducted over a number of site visits, timed to coincide as far as was practicable with flowering times or the presence of annual or ephemeral taxa. The census Figure of 222 was considered to represent a comprehensive census. Taxonomy could not be resolved beyond genus level for four collections. These were compared against known or potential flora of conservation within the area. There were four collections where taxonomy could not be resolved due to changes or revisions within complexes. These were considered to be common species.

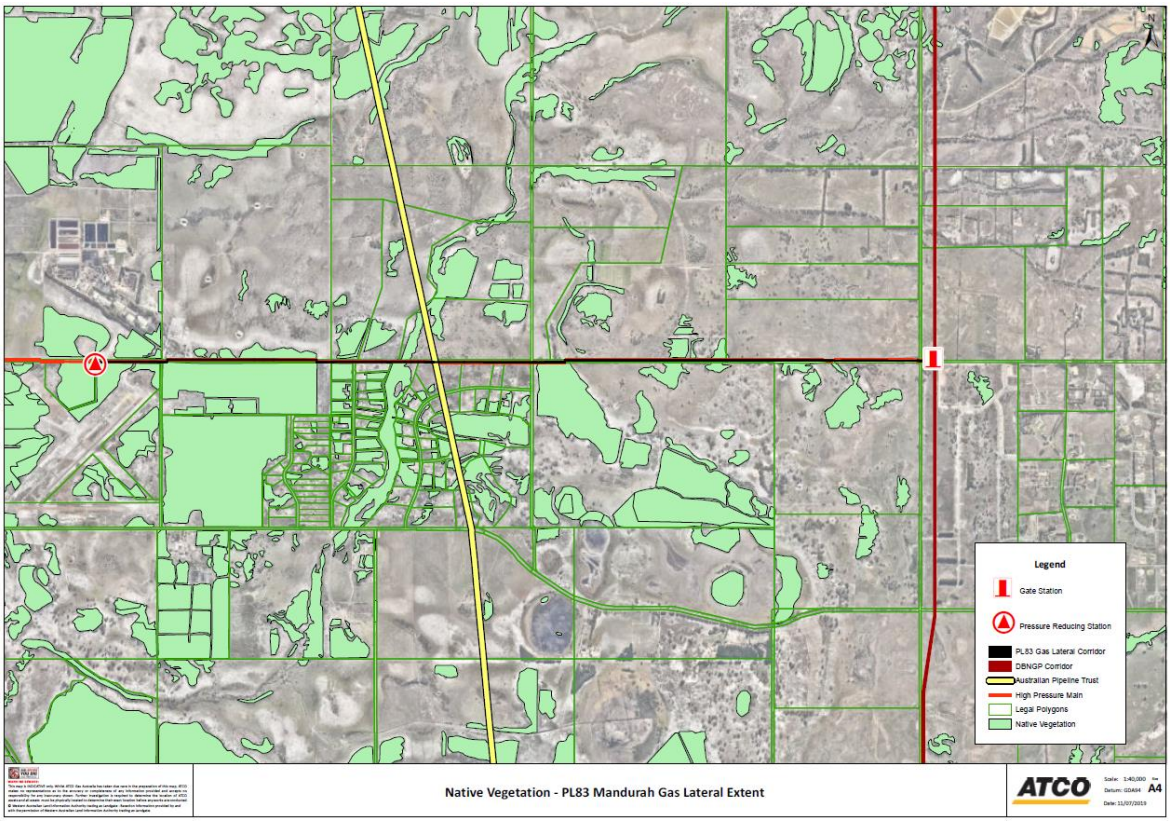

Figure 4: Native Vegetation – Mandurah Gas Lateral PL83 Extent

6.1.7 Vegetation Complexes

The survey areas are within the following Heddle vegetation complexes:

- Bassendean Complex Central and South;
- Guildford Complex;
- Herdsman Complex;

- Southern River Complex; and
- Yoongarillup Complex.

As some areas of native vegetation within the Project area were to be cleared during the construction phase that may have triggered environmental offset requirements, a suitable offset area (nominally a minimum of 13.85ha as approved under CPS/3491) was secured for DBCA ownership and ongoing management.

The offset area contains vegetation that is habitat to the DRF orchid *Diuris drummondii* with a population of between 500 and 1,000 plants recorded. In addition to this, areas were identified as being potential habitat for the EPBC Act listed DRF species *Drakaea elastica*. Whilst none of this species were recorded in this area, the potential for this vegetation to host this species was considered to be of conservation significance.

Vegetation within the offset area was assessed as having habitat potential for the EPBC Act listed species Carnaby's Black Cockatoo, Forest Red-tailed Black Cockatoo and Baudin's Black Cockatoo. In particular, some areas were considered to be in excellent condition, with a number of *Corymbia calophylla* in the area of a size suitable for nesting. The vegetation was also considered to have value as a corridor, being part of a corridor that traverses generally east from the western edge of the Murrayfield Aerodrome towards Nambeelup.

Surveys of the relevant areas were conducted with a level of intensity consistent with collecting sufficient information to facilitate an assessment of the flora and vegetation values of the area. The work resulted in the discovery of a new population of the DRF orchid *Diuris drummondii* and an area of habitat for this species in excellent condition. In addition to this, there were the discoveries of two new populations of two Priority taxa. The census of the flora was extensive, especially in light of the level of disturbance and fragmentation in the region. The census captured a high number of annual and ephemeral taxa.

Vegetation within the survey area ranged from completely degraded, parkland cleared through to vegetation that was considered as being close to pristine. ATCO actively engaged in minimising impacts to vegetation, with particular effort to on avoiding clearing in habitat that was considered to be under threat or to have high conservation values. Whilst targeted searches were conducted across the area of disturbance, there was a probability the *EPBC Act (1999)* listed critically endangered DRF orchid *Drakaea elastica* could be within the alignment and surrounds. To this end, clearing was kept to as low an amount as was practicable.

Any future maintenance works or clearing for additional facilities along the pipeline will consider the potential impact on the identified flora, fauna and communities and ensure compliance with CPS/3491 and this OEMP.

6.1.8 Weeds

The alien flora collected during the CEMP survey numbered 76 different species, subspecies and variants from 62 genera within 27 families. The most speciose families were: Poaceae, with 19 taxa from 14 genera; Papilionaceae, with 13 taxa from 7 genera; and *Asteraceae*, 9 taxa from 9 genera. There were three declared plants were recorded during the survey, being:

- *Zantedeschia aethiopica* (arum lily) – P1, P4 for whole of state;

- *Moraea flaccida* (one leaf cape tulip) – P1 for whole of state, P4 for LGA Mandurah, Waroona, Murray, Harvey; and
- *Echium plantagineum* (Paterson's Curse) – P1 for whole of state, P3 for LGA Mandurah, Murray.

It should be noted that a number of the other weed species recorded within this survey are considered to be significant environmental weeds. These include *Euphorbia terracina*, *Ehrharta calycina, Watsonia meriana* var*. bulbillifera* and *Pelargonium capitatum*. Areas within which these species are found shall be subject to appropriate hygiene practices to limit the dispersal of propagules.

360 Environmental were engaged to conduct a weed mapping exercise of the PL83 area in January 2019. The survey identified a total of 28 introduced species, with one species, *Gomphocarpus fruticosus*, being listed as a declared pest under the *Biosecurity and Agriculture Management Act 2007.* There were no identified species listed as weeds of national significance during the survey.

6.1.9 Dieback

A dieback assessment of the route was undertaken in November 2008 (Glevan 2008). The assessment resulted in the determination of three categories of vegetation, being Un-infested (no apparent dieback disease), Infested (disease symptoms present) and Un-mappable (unable to determine dieback disease presence) (Figure 5). Most of the route was un-mappable with dieback only found in a small location between KP4.74 to KP4.82 (at the end of a recently constructed road into a rural subdivision) near Nambeelup Brook and in the section between Bush Road and Nambeelup Road (between KP 5.2 and KP 6.5). No further dieback survey work has been undertaken since the initial 2008 work.

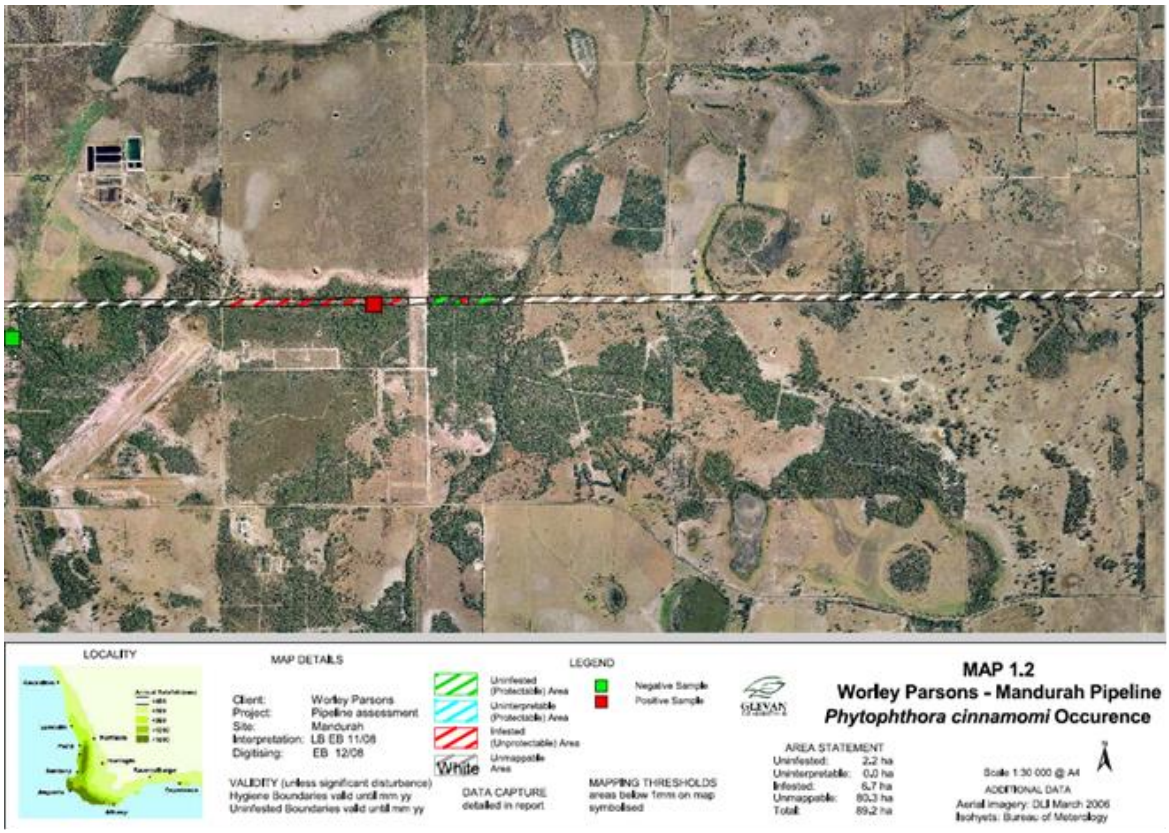

Figure 5: Glevan 2008 PL83 Dieback assessment mapping

6.2 Soils

The soil along the pipeline route was found to be typically fine to medium grained quartz sand, with various colours and amounts of organic matter. Some areas had sandy clay horizons and iron-rich mottling. The pipeline route is known to have at least moderate potential to encounter actual and potential ASS (AASS and PASS, respectively) (Figure 6). As the groundwater level is relatively high and there are organic-rich and/or potentially sulphurous soils present along the pipeline route, all areas apart from the Tamala Limestone are considered to present a high to moderate risk of encountering ASS, especially areas underlain by swamp, estuaries and the soils of the Guildford Formation.

An investigation for ASS was undertaken along the pipeline route between Hopelands Road and the Serpentine River in May, November and December 2008 in accordance with the Draft Identification and investigation of ASS (Department of Environment 2006) by digging 53 test pits and 13 boreholes. Soil pH did not indicate the presence of AASS in this section of the pipeline. No further ASS assessment work has been undertaken since the initial investigations in late 2008.

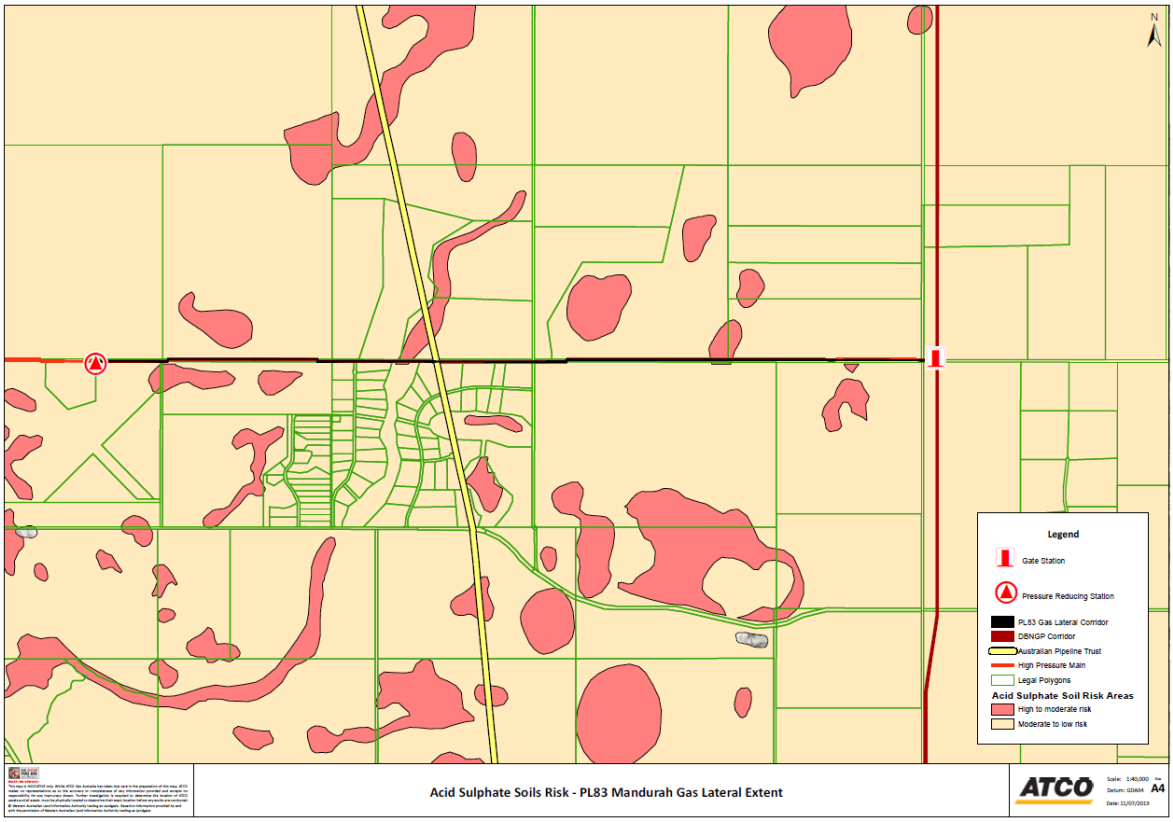

Figure 6: ASS Risks – Mandurah Gas Lateral PL83 Extent

6.3 Hydrology

The water table along the eastern portion of the pipeline route, between Hopelands Road and the Serpentine River, is relatively shallow, lying between 0m and 5m below the ground's surface. Much of the area inundated in winter and is classified as Multiple Use category wetlands (Figure 7). Existing man-made drains are common in the area. They were predominantly designed and installed during a time of high rainfall (particularly in the 1940s) and are now resulting in lowering of the groundwater table.

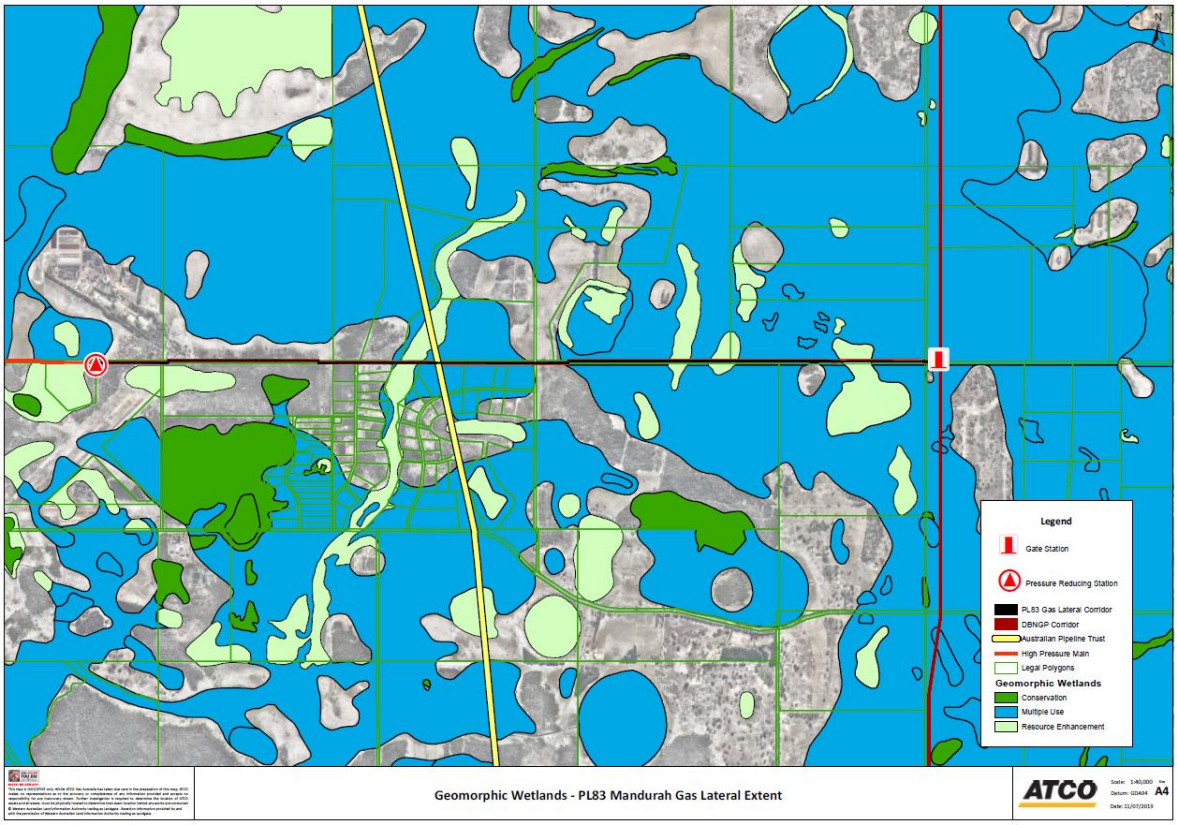

Figure 7: Geomorphic Wetlands – Mandurah Gas Lateral PL83 Extent

6.4 Environmentally Sensitive Areas

Several Environmentally Sensitive Areas (ESAs) occur in the vicinity of the pipeline corridor (see Figures 8 & 9). These ESAs are as follows:

- Conservation Category wetland to the south of the proposed route along Readheads Road at KP5.2 to KP5.7. The ROW avoids the wetland as well as the 50m buffer.
- Environmental Protection (Swan Coastal Plain Lakes) Policy 1992 Lake (EPP Lake) to the south of the proposed route along Readheads Road at KP6.35 to KP6.5. The northern boundary of the EPP Lake, a Resource Enhancement Category wetland, is south of the Readheads Road reserve. The ROW is wholly contained within the Readheads Road reserve.
- EPP Lake to the south of the proposed route along Readheads Road at KP6.57 to KP6.75. The northern boundary of the EPP Lake, a Resource Enhancement Category wetland, is 40m south of the ROW.

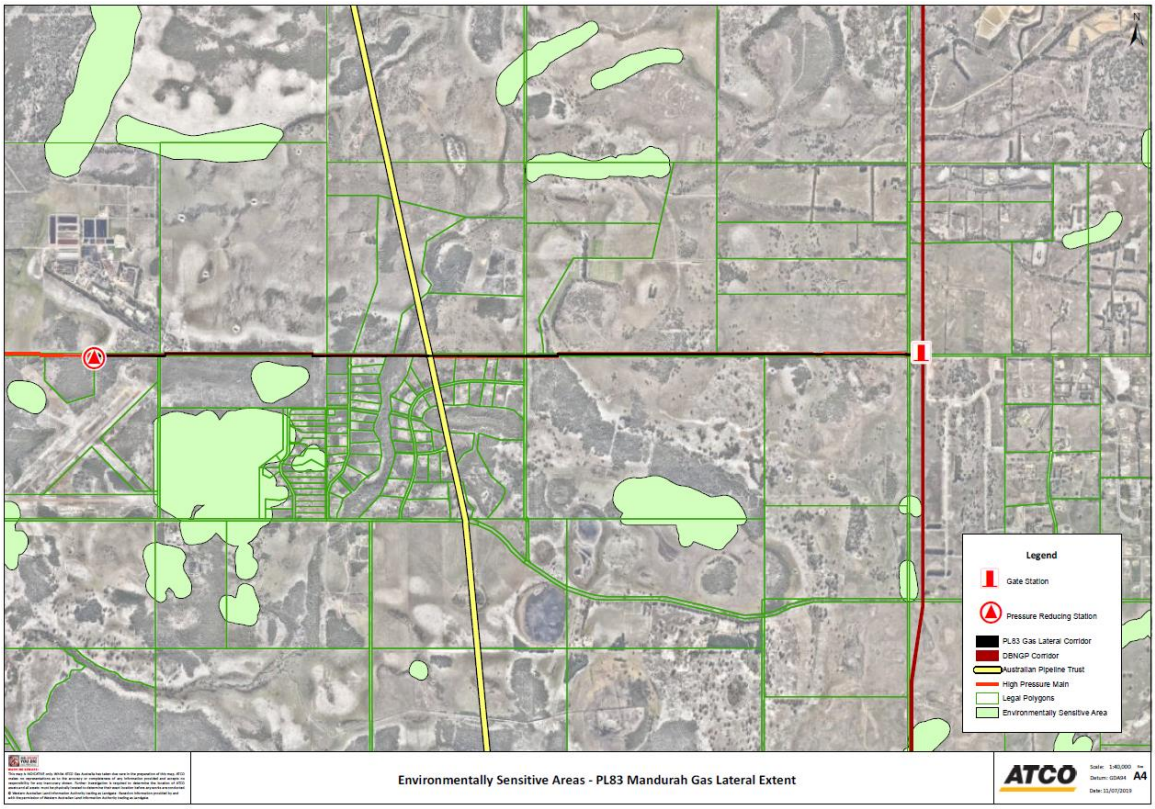

Figure 8: Environmentally Sensitive Areas – Mandurah Gas Lateral PL83 Extent

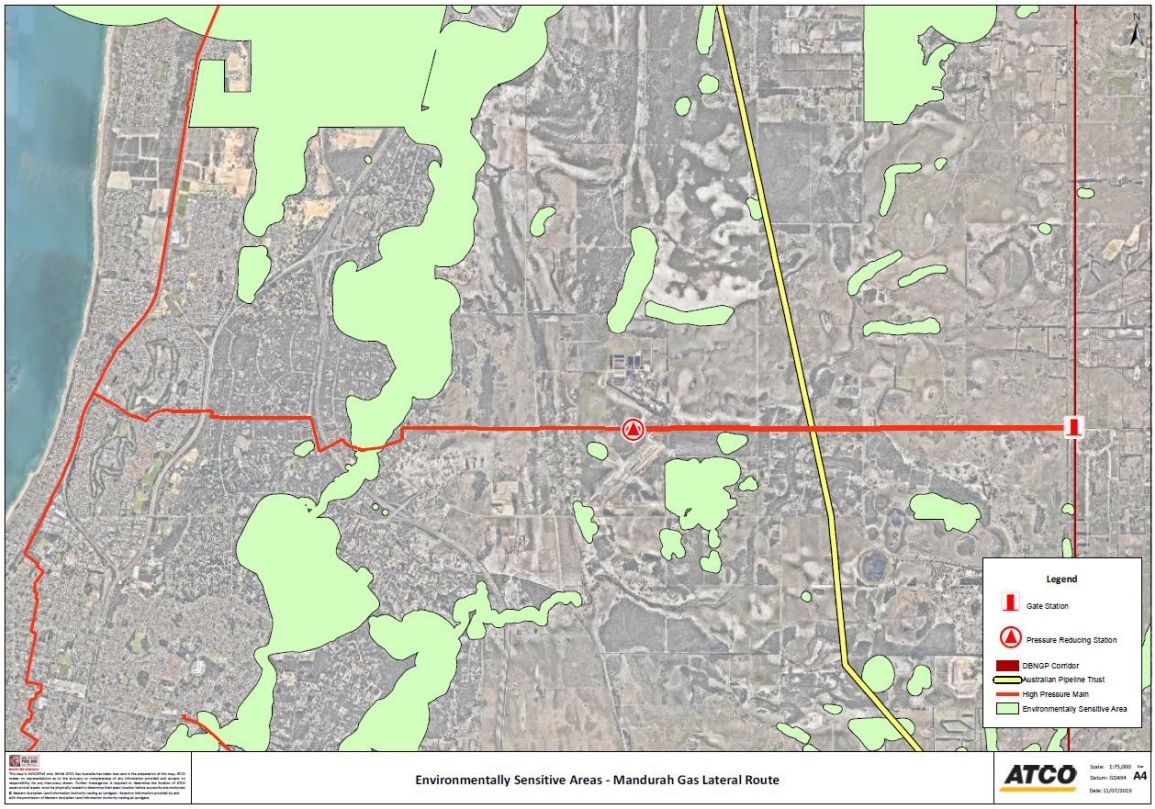

Figure 9: Environmentally Sensitive Areas – Mandurah Gas Lateral Route

The route also crosses Nambeelup Brook between KP4.32 to KP4.55, which while not classified as an ESA, is classified as a Resource Enhancement wetland. Nambeelup Brook produces intermittent, and sometimes very high, flows. As a consequence, the banks are notably eroded where the brook crosses Readheads Road and Lakes Road, and the floodplain is quite wide. Near Readheads Road, the median flow in the period February - April is 0.01 ML/month (MBS Environmental, 2006). Ponding of water in Nambeelup Brook is common although there was no visible water in the main channel at the Readheads Road crossing in February 2008.

The general direction of groundwater flow across the Pipeline Licence area is from east to west and locally the direction of groundwater movement is towards drainage paths and major water bodies such as the Serpentine River and Nambeelup Brook.

6.5 Aboriginal Heritage

The Aboriginal people of the Bibbulmun Nation are the first people known to have inhabited south-west Western Australia, including the Mandurah region. The people of the Bibbulmun Nation lived off the land, with estuaries in the area being the main source of food. The locality was then known as Mandjar, which translates to 'meeting place'. Following European settlement, the name was adapted to Mandurah.

Several Aboriginal heritage sites occur within the pipeline alignment (Figure 10). The primary sites are associated with the Nambeelup Brook and the Serpentine River. Aboriginal heritage surveys of the pipeline route confirmed a total of seven existing Aboriginal heritage sites in the project development area, although no new sites were identified during the survey.

The Aboriginal heritage site associated with the Serpentine River marks a significant water source in the area and is likely to have been of particular focus by Aboriginal people in the past. This section was horizontally directionally drilled (HDD) to minimise impacts to groundwater flows and Aboriginal heritage sites. Should ground disturbance be required near Aboriginal heritage sites, a desktop review will be completed which may require consultation with the Department of Planning, Lands and Heritage (DPLH) and the Traditional Owners.

The Nambeelup Brook is within the PL83 licence area; however, the Serpentine River is not.

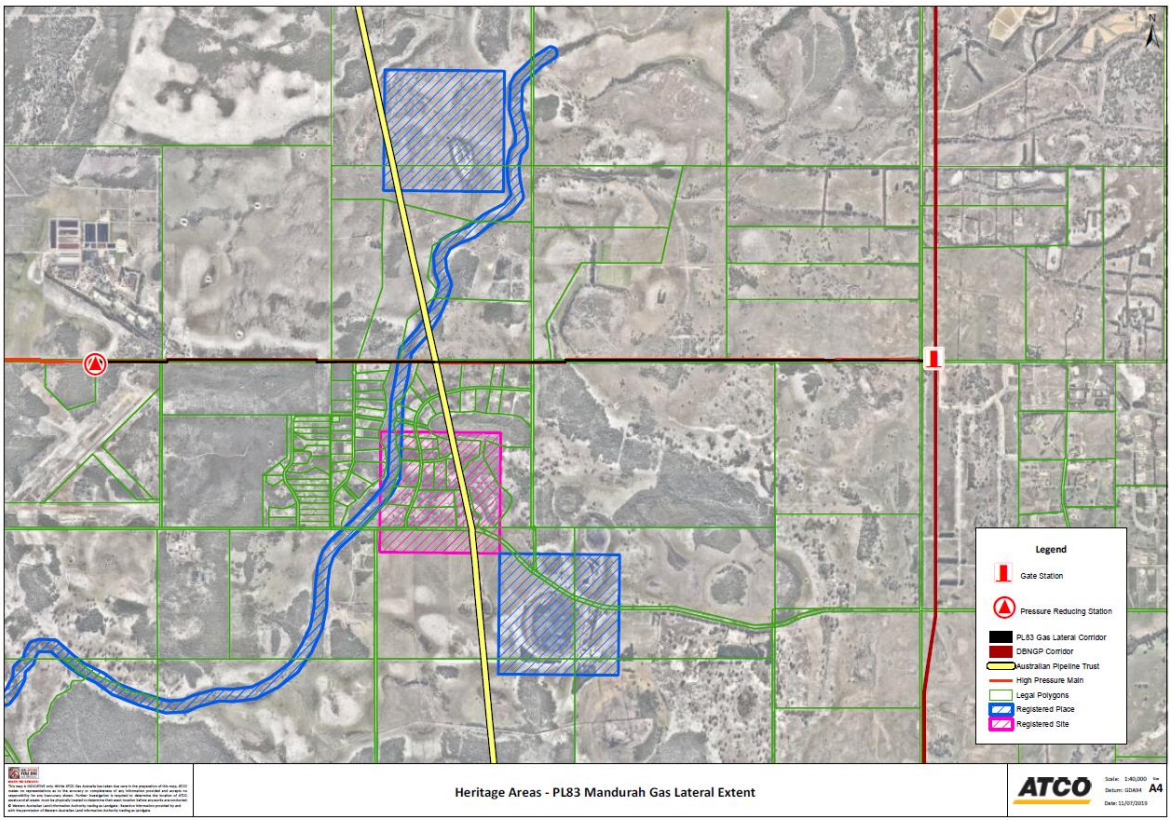

Figure 10: Aboriginal heritage sites and places – Mandurah Gas Lateral PL83 Extent

7. STAKEHOLDER CONSULTATION

ATCO is committed to respecting the rights and desires of all individuals who may be directly affected by PL83 and committed to abide by relevant legislation. Land access agreements and the relevant land tenure have been obtained or are agreed in principle to ensure long term operational access to the pipeline and the PRS.

Ongoing stakeholder consultation is implemented throughout the operation of PL83. Landowners/occupiers adjacent to the MGL are contacted on an annual basis either by email or phone to ensure that they are aware of the location of the MGL adjacent to their property and to assess any existing or future threats to the pipeline integrity or risks to people, property and the environment. In the event that landowners/occupiers cannot be contacted on the current details held by ATCO, the Designated Landowner Liaison Contact will attempt to contact land occupiers in person at the property address.

The Shire of Murray is to be contacted on a quarterly basis by the Land Management and Project Co-ordinator either in person, via email or telephone conversation. The intent of this regular communication is to:

- Ensure the Shire of Murray is aware of the relevant ATCO contact for any matters relating to the MGL; and
- To keep updated on any planned works on or around the MGL Licence Area (such as sealing the gazetted road or planned residential developments).

In the event that the Shire of Murray communicate any planned works on or around the MGL to AGA, relevant reviews to Formal Safety Assessments (including review of location class) will be undertaken to assess the change / proposed change to ensure MGL risk is controlled to acceptable level, or is As Low As Reasonably Practicable (ALARP). Liaison with other government or third party stakeholders will be conducted on an as-required basis (i.e. Department of Water and Environmental Regulation, Department of Planning, Lands and Heritage).

Ongoing consultation with DMIRS, DPLH, WAPC and Shire of Murray has continued through the operation period and will continue for the duration of the PL83. The Land Owner / Occupier Liaison Procedure provides mechanisms and processes for stakeholder consultation and resolution of any concerns or complaints for the minimisation of impact to the public from the site.

The following consultation has been undertaken with the parties contained in the Table 9.

Table 9: Stakeholder Consultation

Stakeholder	Date	Discussion Points and Outcomes	Method of Consultation	Proponent Response / Outcome
RACWA	May-2010	Correspondence regarding Construction Access Agreement (for commissioning and operation). Initial concerns regarding easement.	E-mail Meetings	
	Jul-2013	Correspondence regarding settlement of PRS site and environmental offset area being purchased from RACWA.	E-mail Meetings	
	Jul -2014	Correspondence requesting updates to landowner details.	E-mail	No changes, ATCO to continue liaison.
	Jul-2016	ATCO requested updates to landowner details, communicated personnel changes and updates to ATCO contact details.	E-mail	No change, ATCO to continue liaison.
	Jun-2018	ATCO requested updates to landowner details.	E-mail	No change, ATCO to continue liaison.
	04/12/2020	Letter and property information contact questionnaire (PICQ) sent	E-mail	Responded same day with completed PICQ
Regional Lands Development	Nov-2011	Final Sec 34 Access Right issued (AR 43).	Written	
	Feb-2011	Correspondence with RDL regarding valuation of off take land.	E-mail	
	Jul-2016	ATCO communicated personnel changes and updates to ATCO contact details.	E-mail	No further comment, ATCO to continue liaison.
	Nov-annually	Payment of annual fee for the Sec 34.		
DMIRS	Nov-2012	Liaison with DMP regarding location of PL83 licence.	E-mail Written notification Meetings	Clarified that PL is only for Class 600 section between DMNGP and PLS at RACWA.
	Aug-2011	Correspondence with DMP regarding digital as built data for pipeline location.	E-mail	
	Aug-2013	Liaison with DMP regarding update to OEMP to meet Regulations.	E-mail	OEMP updated to reflect changes to regulation/DMIRS requests.

Stakeholder	Date	Discussion Points and Outcomes	Method of Consultation	Proponent Response / Outcome
	Apr-2014	Liaison with DMP regarding update to OEMP to meet Regulations.	E-mail	OEMP updated to reflect changes to regulation/DMIRS requests.
	Jun-2014	Liaison with DMP regarding update to OEMP to meet Regulations.	E-mail	OEMP updated to reflect changes to regulation/DMIRS requests.
	Aug-2014	Liaison with DMP regarding update to OEMP to meet Regulations.	E-mail	OEMP updated to reflect changes to regulation/DMIRS requests.
	Oct-2014	Liaison with DMP regarding update to OEMP to meet Regulations.	E-mail	OEMP updated to reflect changes to regulation/DMIRS requests.
	Nov-2014	Liaison with DMP regarding update to OEMP to meet Regulations.	E-mail	OEMP updated to reflect changes to regulation/DMIRS requests.
	2018	Notification of non-compliance (Annual Report)	E-mail	Annual report submitted as agreed upon.
	2019	Notification of non-compliance (OSCP)	E-mail	Revision of OSCP and OEMP resubmitted as agreed upon.
	2019	Meeting to discuss OSCP and OEMP requirements	Meeting	
	2019	Liaison with DMP regarding update to OEMP to meet Regulations.	E-mail	OEMP updated to reflect changes to regulation/DMIRS requests.
	10/06/2020	ATCO\DMIRS Liaison Meeting	Remote – Teams Meeting	Regular liaison meeting with ATCO and DMIRS Case Officer
	08/12/2020	ATCO\DMIRS Liaison Meeting	Remote – Teams Meeting	Regular liaison meeting with ATCO and DMIRS Case Officer
	23/07/2020	MGL PRS015 HAZOP Review – Meeting Invite extended to DMIRS	Remote – Teams Meeting	No Attendance/Response
	03/08/2020 & 05/08/2020	MGL Operations and Maintenance HAZID Review – Meeting Invite extended to DMIRS	E-mail / Remote – Teams Meeting	3rd Aug 2020 - Attended by DMIRS Case Officer

Stakeholder	Date	Discussion Points and Outcomes	Method of Consultation	Proponent Response / Outcome
	08/09/2020 & 13/10/2020	MGL Safety Management Study Review – Meeting Invite extended to DMIRS	E-mail / Remote – Teams Meeting	No Attendance/Response
	14/12/2020	OEMP addition of closure EPO, EPS and MC	E-mail	Feedback provided and incorporated into revision 10 of OEMP
Shire of Murray	July-2013	Payment of the Shire of Murray rate notice processed. Annual correspondence regarding the PRS.	E-mail	No further comment.
	Dec-2014	Liaison regarding pigging activities	E-mail	No further comment
	May-2019	Correspondence relating to proposed land use changes.	Meeting E-mail	No issues and no proposed change in land use or proposed development in the area of or improvement to the unmade Readheads Road reserve.
	Oct-2019	Correspondence relating to proposed land use changes.	Meeting E-mail	No issues, only possible development Keralup by the Department of Housing and this is at the end of Lakes Road and not a concern.
	Dec-2020	Letter and PICQ sent	E-mail	No response in 2020
Landholders (including Shire of Murray and adjacent landholders)	Mar-2010	WNES liaison with landowners regarding access issues.	Meeting	
	Jan-2014	Liaison regarding pigging activities.	E-mail Phone calls	No further comment.
	Jul-2016	ATCO communicated personnel changes and updates to ATCO contact details.	E-mail	ATCO to continue liaison.
	Ongoing/Annual	Consultation in accordance with AS2885.3 regarding pipeline safety awareness and planned works/activities or subdivision consideration	E-mail Phone calls	ATCO to continue liaison.

Stakeholder	Date	Discussion Points and Outcomes	Method of Consultation	Proponent Response / Outcome
	Dec-2020	Letter and PICQ sent to all adjacent landholders	E-mail where e-mail address available, otherwise sent via standard mail	Total of 16 sent with 3 responses and 13 non-responses during 2020
DMIRS	Ongoing/Annual	Consultation and liaison regarding compliance with PPA, PP(E)R, PL83 and this EP	E-mails Phone calls Meetings	ATCO to continue liaison.
DRDL	Ongoing/Annual	Consultation and liaison regarding section 34 access right and the DBNGP corridor	E-mails Phone calls Meetings	ATCO to continue liaison.
DBNGP	2020	Land Management at AGIG contacted as head office address changed during 2020 and confirmation required.	E-mail	No response in 2020
Water Corporation	07/12/2020	Letter and property information contact details (PICD) sent	E-mail	No response in 2020

8. ENVIRONMENTAL ASPECTS, IMPACTS AND CONTROL MEASURES

8.1 Hazard Identification and Assessment

Environmental hazards associated with commissioning, operations and maintenance activities were considered and assessed in a formal HAZID in accordance with AS/NZS ISO31000:2009 and was conducted in 2010. The HAZID included representatives from ATCO, Engineering, Commissioning, Operations and Maintenance and HSE personnel.

A review of the Environmental Risk Assessment was conducted in 2014 in accordance with the AS/NZS ISO31000:2009 and in compliance with *Petroleum Pipelines (Environment) Regulations (2012)*. A copy of the Environmental Risk Assessment in provided in Appendix F and the ATCO Risk Matrix (AGA-GRC-RG08) used in Appendix G.

Effective hazard assessment requires a systematic approach to the identification of hazards and risks. The risk assessment process focused on the environmental hazards associated with the operations and maintenance of PL83. The purpose of the review was to brainstorm, identify and risk assess hazards that may occur during operations and maintenance activities that have the potential to impact the environment. These hazards were assessed against existing policies and procedures and in some cases where it was considered appropriate, additional mitigation measures and actions were assigned for resolution, close out and monitoring.

The objectives of the workshops were to:

- Identify and systematically assess all new or additional major hazards and potential incident events associated with the operations and maintenance activities;
- Evaluate the identified risks;
- Where necessary, make recommendations to eliminate or reduce risks;
- Record the workshop findings; and
- Provide a basis for the ongoing monitoring and closure of associated actions.

A structured brainstorming process was used for the study, consisting of:

- Definition of the study objectives and area to be studied;
- Brainstorming of activities involved in the operations and maintenance;
- Brainstorming and documentation of the hazards and their causes;
- Determination of worst-case credible consequences;
- Determination of the likelihood of the consequence occurring as a pre-treatment risk ranking;
- Documenting the existing safeguards (management control and mitigation systems and procedures);
- Determination of the likelihood of the consequence occurring (taking into consideration the existing safeguards in place);
- Assessing the risk associated with the identified hazard; and

- Identifying actions where deemed appropriate or to address the risks deemed unacceptable or not ALARP.

The outcome of the review of the Risk Assessment, there were 20 hazards identified, of which 4 hazards were identified to have an “Intermediate” residual risk ranking. These hazards related to the potential for impact on the environment through fire or the spread of weeds and disease. All events would have the potential to result in environmental damage to vegetation, flora and fauna, including protected species and environmentally sensitive areas.

Given the existing mitigation measures in place for these hazards and the experience personnel involved in Operation & Maintenance, no additional mitigation measures were identified that would reduce the risk, therefore they were considered ALARP. Appendix G details the criteria used in the risk assessment and subsequent rating of risks.

8.2 Environmental Performance Objectives, Standards and Measurement Criteria.

The following have been identified as key environmental objectives for PL83:

- To operate and maintain the pipeline in a safe manner.
- To operate and maintain the Pipeline Licence area in a manner that minimises potential impacts on the environment, land use and third parties.
- To conduct maintenance and repair activities in a manner consistent with this EP and the APIA Code of Environmental Practice.

Significant potential environmental impacts identified for PL83 and associated with general pipeline operations and maintenance are managed via the strategies outlined in the following sections.

The following tables summarise the key environmental objectives, management and measurement criteria that are provided in this OEP.

8.2.1 Stakeholder and Land Access Management

Stakeholder Management and Land Access			
Activities	During operation, access to the Pipeline Licence area is required on a regular basis for: • Pipeline surveillance and inspections to identify areas of erosion and subsidence, areas requiring vegetation management, check cathodic protection, identify possible leaks, monitoring third party activity and identifying any unacceptable risks to the pipeline • Monitoring and auditing of environmental conditions • Performance of maintenance activities; and • Construction of facilities or additional infrastructure.		
Hazards	• Vehicle/mobile equipment movement • Excavations and construction activities		
Inherent Risk Analysis and Rating			
Potential Impact	**Consequence**	**Likelihood**	**Inherent Risk**
Disturbance and damage to land uses.	Major	Unlikely	High
Disruption to landholders and third parties	Minor	Occasional	Low
Potential Impacts	**Mitigation Measures**		
• Disturbance and damage to land uses. • Disruption to landholders and third parties.	• The ROW shall only be used as an access for activities essential to ensuring continued safe pipeline operation and protection of the local environment and is not to be used as a general thoroughfare. • Access to the ROW shall be via existing roads and tracks only. • Any use of internal property tracks or private roads for ground patrols must be with the agreement of the landholder. • The landholder will be notified at least 24 hours before access is required. Where this is commonly not possible, or unreasonable, alternative agreements will be reached regarding ongoing access. • The access track along the ROW shall be maintained to a minimum practicable width for the safe execution of pipeline inspection and maintenance activities in accordance with AS2885.3. • Public access along the ROW shall not be permitted (to the extent that it can be reasonably controlled) unless that right already exists. Public access to the ROW shall be controlled by measures, which disguise the ROW (e.g. dog leg service track entrances or revegetation plans), or by physical barriers (e.g. gates, fences, log and rock barriers, trenches) and signs.		

Stakeholder Management and Land Access	
	• The ROW will not be fenced unless it is required for rehabilitation of an area, protection of heritage sites or safety hazard control. • Access to the ROW shall be conducted in a manner that adequately considers potential noise or vibration impacts. • Vehicle speed when driving on the ROW will be limited based on environmental conditions to ensure minimal generation of dust and ROW degradation and will be monitored using vehicle telematics to ensure compliance. • Potential impacts associated with access to the pipeline corridor will be monitored as part of a structured inspection and monitoring program. • Access to the Licence area shall be managed to minimise potential weed impacts. • Access to and along the Licence area should be minimized following periods of prolonged or heavy rainfall. • If maintenance or construction activity is required, access to infrastructure shall be maintained to standards acceptable to the appropriate managing authority. • Where practicable, disruptive activities are scheduled to reduce potential adverse effects. • Where practicable, all relevant landholders and third parties are to be notified in advance of any disruptive activities. • A database will be maintained of all landholders and third parties to facilitate landholder contact. • Regular contact with landholders will be conducted. • New landholders and third parties will be briefed regarding approved and prohibited land uses as well as the safety, emergency response and operational considerations of PL83.

Residual Risk Analysis and Rating			
Potential Impact	**Consequence**	**Likelihood**	**Residual Risk**
Disturbance and damage to land uses.	Major	Remote	Intermediate
Disruption to landholders and third parties	Trivial	Remote	Negligible

Demonstration of ALARP and Acceptability

Application of the hierarchy of effectiveness of controls to assess ALARP and acceptability:

Elimination:

No elimination options are available for certain maintenance and operational activities therefore elimination controls are not applicable in this instance. In the event access is temporarily restricted for a period of time, the use of drones for pipeline inspections will be employed to avoid unnecessary stakeholder and land access related impacts.

Physical Controls:

Physical barriers (gates, fences, trenches and log/rock barriers) in place to ensure that access to the ROW is restricted to ATCO personnel, unless in instances where public access already exists.

Stakeholder Management and Land Access

Procedural Controls:

Specific entry/exit points have been designed to ensure that access to the ROW is restricted to ATCO personnel, unless in instances where public access already exists. Pipeline site inspections as per ATCO PR0001 RF21 Site Inspection are conducted in accordance with SWI ST 001 Pipeline Patrol which requires that access to ROW occurring in private property requires liaison with the property owner. Pipeline patrols monitor the condition of the ROW to ensure that the minimum practicable width for the safe execution of operation and maintenance activities is maintained in accordance with AS2885.3. The minimum practicable width ensures that the operations and maintenance of the pipeline has minimal encroachment onto privately owned land. All stakeholder management is conducted in accordance with AGA-R&R-PR08 Landowner Occupier Liaison Procedure. ATCO maintains a 24 hour complaints line via its control centre to ensure stakeholder complaints can be addressed as they arise. All complaints are logged in the incident management system and investigated as per HSE PR0018 HSE Event Investigation, Corrective and Preventative Action and Close out.

Reduction:

Limiting exposure to ROW could reduce the risk however the current interval between scheduled maintenance tasks is specified in the Asset Class Plan and is designed to ensure the safe operation of the asset.

ATCO believes that with the implementation of the above measures, potential environmental impacts have been controlled in a manner which meets the definition of ALARP.

Measurement of Environmental Performance

Potential Impact	Objective	Standards	Measurement Criteria	Responsibilities
• Disturbance and damage to land uses.	• No damage to land uses as a result of land access for pipeline maintenance or operational activities.	• Monthly pipeline patrol and site inspections to be conducted as per AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol and AGA-SWI-ST01-FM02 Metro Pipeline Patrol. • Report all instances of erosion/depth of cover issues. • Note positions of streams/water crossing (where applicable) and report any signs of erosion or sedimentation. • Report any signs of vegetation regrowth or ROW vegetation encroachment. • Report any ROW weed infestations. • ROW maintained in accordance with AS2885.3 at a 'minimum practicable width' to ensure safe operation and maintenance.	• Monthly pipeline patrols and site inspections confirm ROW maintained ≤10m unless otherwise required to ensure safe operations. • Evidence of use of drone surveys in known pathogen/disease area or where land access issues identified. • Monthly review of incident Management System verifies no third-party complaints relating disruption of landholders.	• As per Table 5.

Stakeholder Management and Land Access				
		• ROW maintained at ≤10m width unless otherwise required to ensure safe operation. • Drone inspections to be carried out in known pathogen/disease areas or where access is restricted due to water, soil or vegetation conditions.		
• Disruption to landholders and third parties.	• No landholder and third-party complaints relating to land management or stakeholder engagement.	• Stakeholder engagements managed in accordance with AGA-R&R-PR08 Landowner Occupier Liaison Procedure. • Landowners to be notified 24 hours prior to access requirements (private land). • Confirm operation of gates, locks and access to ROW is maintained and report where non-operational or not accessible. • Monthly pipeline patrol and site inspections to be conducted as per AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol and AGA-SWI-ST01-FM02 Metro Pipeline Patrol.	• Evidence of compliance with AGA-R&R-PR08 Landowner Occupier Liaison Procedure and AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol relating to landholder/stakeholder notifications of works (landowner notified ≥24 hours prior to land access requirement). • Monthly review of incident Management System verifies no third-party complaints relating disruption of landholders.	• As per Table 5.
Systems and Procedures				
• AGA-O&M-PR31 Complaints Handling Procedure • AA-HSE-PR20 Incident Reporting & Investigation Procedure • AGA-R&R-PR08 Landowner Occupier Liaison Procedure • AGA-SWI-ST01-FM02 Metro Pipeline Patrol • AGA-R&R-PR03 Notifiable Incident Reporting • AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol				
Monitoring				
• Incident management system				

Stakeholder Management and Land Access
• Pipeline inspections • Stakeholder engagement register
Records
• Incident management system monthly reports • Audits and Inspection records • Annual compliance audits • PL83 Annual Environmental Report • Stakeholder engagement records

8.2.2 Soil and Ground Stability Management

Soil and Ground Stability			
Activities	During the operation, the Pipeline Licence area may be vulnerable to soil and ground instability issues such as erosion and subsidence due to: • Exposure of the ground surface to water and wind • Lack of vegetation cover • Vehicle and equipment movement. • Maintaining an adequate level of vegetation cover on the Pipeline Licence area is vital to protect the soil resource. • In the case of surface water flow, access tracks may be more vulnerable to erosion, particularly in steep areas, and require drainage controls to divert overland and channelled flows.		
Hazards	• Vehicle/mobile equipment movement • Excavations on ROW • High rainfall events/flooding • Lack of vegetation cover		
Inherent Risk Analysis and Rating			
Potential Impact	**Consequence**	**Likelihood**	**Residual Risk**
Soil Erosion	Minor	Unlikely	Low
Sediment release to land and water	Minor	Unlikely	Low
Damage to native vegetation and fauna habitats	Severe	Occasional	Intermediate
Damage to land uses	Major	Unlikely	High
Potential Impacts	**Mitigation Measures**		
• Soil erosion. • Sediment release to land and water.	• Monthly inspections are carried out along the pipeline route to monitor the condition of the access tracks. • Where erosion is occurring due to inadequate vegetation cover on the pipeline ROW consideration shall be given to promoting additional growth. Such work shall be conducted in consultation with the landholder.		

Soil and Ground Stability	
• Damage to native vegetation and fauna habitats. • Damage to land uses.	• Vehicle access is restricted to stable ground and with the use of designated access tracks. Additional care is taken near waterways and drainage lines. • Any imported material required for rehabilitation works will be obtained with landholder approval. Imported fill will be sourced locally and be free of weeds, disease/pathogens and other contaminants. • Potential impacts associated with soil and ground stability will be monitored as part of a structured inspection and monitoring program. • Erosion and sediment control structures, if implemented, shall be routinely inspected to ensure they remain effective.

Residual Risk Analysis and Rating

Potential Impact	Consequence	Likelihood	Residual Risk
Soil Erosion	Minor	Remote	Negligible
Sediment release to land and water	Minor	Remote	Negligible
Damage to native vegetation and fauna habitats	Severe	Remote	Low
Damage to land uses	Major	Remote	Intermediate

Demonstration of ALARP and Acceptability

Application of the hierarchy of effectiveness of controls to assess ALARP and acceptability:

Elimination:

Drones are used for conducting pipeline surveys in areas of ROW which have been impacted during times of high rainfall/flooding events to eliminate the impacts of vehicle/mobile equipment movements on soil and ground stability. Due to the nature of the infrastructure some excavations are unavoidable and therefore no elimination options are available in this instance.

Physical Controls:

Physical structures in the form of sediment control barriers are required where there is a possibility of sediment run-off from an ATCO worksite. The identification and construction of sediment control barriers are managed in accordance with HSE WI009 Sediment Containment Work Instruction.

Procedural Controls:

The following procedural controls are in place to mitigate the impacts relating to soil and ground stability:

- AGA-HSE-WI04 Erosion and Sediment Control
- AGA-SWI-EX01 Excavation and Backfilling Requirements

Soil and Ground Stability				
Pipeline site inspections as per AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol are conducted in accordance with AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol to ensure erosion events and issues relating to soil and ground stability are reported and rectified. **Reduction:** Access to the ROW is limited to pipeline patrols and necessary pipeline maintenance and incident response and not as a general access route to above ATCO ground facilities in order to minimise the impacts on soil and ground stability relating to vehicle/mobile equipment movement. Excavations are only conducted where deemed necessary to reduce the potential impacts. ATCO believes that with the implementation of the above measures, potential environmental impacts have been controlled in a manner which meets the definition of ALARP.				
Measurement of Environmental Performance				
Potential Impact	**Objective**	**Standards**	**Measurement Criteria**	**Responsibilities**
• Damage to native vegetation, fauna habitats or land use as a result of soil erosion.	• To avoid or minimise the potential for soil erosion as a result of pipeline maintenance or operation. • No damage to land uses as a result of soil erosion from pipeline maintenance or operational activities. • No damage to native vegetation or fauna habitats as a result of soil erosion from pipeline maintenance or operation.	• Erosion controlled in accordance with AGA-HSE-WI04 Erosion and Sediment Control. • Schedule wok with the potential for increasing erosion to align with low risk period. • Use of barriers and structures to minimise water velocities are required for maintenance works with identified increased erosion potential. • Stockpiles to be constructed with a slope no greater than 2:1 (horizontal to vertical). • Topsoil and under-burden to be kept separate when stockpiling soil. • Soil stockpiles to be >10m distance from known waterway (unless no alternative exists). • Monthly pipeline patrol and site inspections to be conducted as per AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol and in accordance	• Monthly pipeline patrols and site inspections where stockpiling and excavations are active demonstrate compliance with AGA-HSE-WI04 Erosion and Sediment Control. • Monthly pipeline inspections verify no soil erosion impacts to ROW. • Evidence of use of drone surveys where potential soil erosion issues identified during monthly inspections. • Monthly review of incident Management System verifies no soil erosion related incidents.	• As per Table 5.

Soil and Ground Stability				
		with AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol. • Report all instances of erosion/depth of cover issues. • Note positions of streams/water crossing (where applicable) and report any signs of erosion or sedimentation. • Drone inspections to be carried out in areas or where access may result in increased soil erosion.		
• Damage to native vegetation, fauna habitats or land use as a result of sediment release to land and water.	• No sediment release to land and water as a result of pipeline maintenance or operation. • No damage to land uses as a result of sediment release from pipeline maintenance or operational activities. • No damage to native vegetation or fauna habitats as a result of sediment release from pipeline maintenance or operation.	• Sediment managed in accordance with AGA-HSE-WI04 Erosion and Sediment Control work instruction. • Sites to be inspected pre-work to identify potential sediment issues. • Where potential for sediment related issues are identified the following controls should be assessed and utilised where appropriate; o Installation of sediment traps at the source. o Installation of sediment traps at the perimeter of the worksite to re-direct/reduce the water flow. o Construction of diversion channels; or o Construction of settling basins. • All sediment collected in sediment traps will be collected and disposed of as waste.	• Monthly pipeline patrols and site inspections where potential sediment related issues have been identified demonstrate compliance with AGA-HSE-WI04 Erosion and Sediment Control controls. • Monthly pipeline inspections verify no soil erosion or sediment impacts to ROW our surrounding environment. • Monthly review of Incident Management System verifies no sediment related incidents to land or water.	• As per Table 5.

Soil and Ground Stability				
		• To prevent sediment issues related to backfilling in areas identified as potential risk areas, backfill will be layered in 150mm sections and each section is to be compacted prior to completion of the backfill layer. • Monthly pipeline patrol and site inspections to be conducted as per AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol and in accordance with AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol. • Report all instances of erosion/depth of cover issues. • Note positions of streams/water crossing (where applicable) and report any signs of erosion or sedimentation.		

Systems and Procedures

- AGA-HSE-WI04 Erosion and Sediment Control
- AA-HSE-PR20 Incident Reporting & Investigation Procedure
- AGA-SWI-EX01 Excavation and Backfilling Requirements
- AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol
- AGA-R&R-PR03 Notifiable Incident Reporting
- AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol

Monitoring

- Incident management system
- Pipeline inspections
- Open excavation inspections (when required)

Records

Soil and Ground Stability
• Incident management system monthly reports • Audits and Inspection records • Annual compliance audits • PL83 Annual Environmental Report

8.2.3 Vegetation Management

Vegetation Management			
Activities	• Vehicle movement or ground disturbing activities along the Pipeline Licence area may impact flora and vegetation. Activities within the permanently disturbed areas of operation are unlikely to impact flora and vegetation, however any activities outside any authorized areas has the potential to impact. • Clearing of vegetation over the pipeline ROW is required in order to maintain line of sight with relation to the high pressure signage (in accordance with AS2885.3 and the obligations under the Energy Operators (Power) Act 1979).		
Hazards	• Vehicle/mobile equipment movement • Unauthorised clearing • Maintenance of ROW and line of sight		
Inherent Risk Analysis and Rating			
Potential Impact	**Consequence**	**Likelihood**	**Residual Risk**
Unauthorised clearing of native vegetation	Severe	Unlikely	Intermediate
Disturbance to existing vegetation and fauna habitats	Severe	Occasional	Intermediate
Establishment of weed species	Major	Unlikely	High
Erosion and sedimentation.	Minor	Unlikely	Low
Potential Impact	**Mitigation Measures**		
• Unauthorised clearing of native vegetation. • Disturbance to existing vegetation and fauna habitats. • Establishment of weed species. • Erosion and sedimentation.	• The removal or disturbance of vegetation outside the approved Native Vegetation Clearing Permit area is not permitted (unless the relevant regulatory approvals are obtained). CPS3545/3 applies to ATCO operations statewide as do schedule 6 clearing exemptions relating to the Energy Operators (Power) Act 1979. • The access track shall be kept navigable by adequately controlling the vegetation growth in accordance with AS2885.3. • Revegetation success is monitored in accordance with a ROW inspection program. • Further restoration works may be required in areas where vegetation establishment has been less than acceptable. Such works shall be conducted in consultation with the relevant landholder.		

Vegetation Management			
Residual Risk Analysis and Rating			
Potential Impact	**Consequence**	**Likelihood**	**Residual Risk**
Unauthorised clearing of native vegetation	Severe	Remote	Low
Disturbance to existing vegetation and fauna habitats	Severe	Remote	Low
Establishment of weed species	Major	Remote	Low
Erosion and sedimentation.	Minor	Remote	Negligible

Demonstration of ALARP and Acceptability

Application of the hierarchy of effectiveness of controls to assess ALARP and acceptability;

Elimination:

Due to the nature of the infrastructure maintenance clearing is unavoidable in order to maintain ROW access and line of sight requirements. No elimination options are available for certain maintenance and operational activities therefore elimination controls with regards to vegetation management are not applicable in this instance.

Physical Controls:

The physical removal of weeds is undertaken once the area of concern has been identified and reported via the incident management system.

Procedural Controls:

ATCO have been issued a statewide native vegetation clearing permit (CPS3454/3) under section 51E of the Environmental Protection Act 1986 (Act). The permit authorises WAGN to undertake clearing for the construction of extensions to the gas distribution network, including extensions of the gas distribution network in Environmentally Sensitive Areas. All construction activities are required to complete the AGA-ENG-PL02-FM01 Project Advice Checklist which requires the identification of vegetation clearing requirements. AGA-ENG-PL02-FM01 Project Advice Checklist requires that the clearing be conducted in accordance with the conditions of the statewide clearing permit (CPS3454/3). The Clearing of Native Vegetation Purpose Permit Work Instruction HSE WI001 outlines the steps required prior to clearing native vegetation for the construction of extensions of the gas distribution networks.

ATCO are required to conduct line of sight clearing under section 54 (1) the EO Act. Line of sight clearing operates on the principle of minimisation, only clearing what is deemed necessary to maintain line of sight over the pipeline infrastructure. ATCO have an exemption under Schedule 6, Item 1 of the Environmental Protection Act 1986 (WA) to conduct line of sight clearing due to the requirements set out in the Energy Operators (Powers) Act 1979.

Pipeline patrols monitor the condition of the ROW to ensure that the line-of-sight requirement and weed occurrences are appropriately managed. The identification and removal of weeds is managed in accordance with AGA-HSE-PR20-WI01 Weed Removal Work Instruction and Vehicle Hygiene and AGA-HSE-PR20 Weed and Pathogen Management.

Vegetation Management				
Reduction: Where required, clearing is based on the principle of minimisation to ensure safe operation of the infrastructure and adequate ROW access for maintenance purposes. ATCO believes that with the implementation of the above measures, potential environmental impacts have been controlled in a manner which meets the definition of ALARP.				
Measurement of Environmental Performance				
Potential Impact	**Objective**	**Standards**	**Measurement Criteria**	**Responsibilities**

• Unauthorised clearing of native vegetation causing disturbance to existing vegetation and fauna habitats.	• No unauthorised clearing of native vegetation.
	• No disturbance of existing vegetation or fauna habitats resulting from poor vegetation management.
		• The removal or disturbance of native vegetation outside the approved ROW is not covered by ATCOs exemption under the EO Act.
		• Major construction or project related work to ensure AGA-ENG-PL02-FM01 Project Advice Checklist (PAC) completed prior to work commencing.
		  ○ Native vegetation extent to be recorded in GIS mapping system and referenced prior to any clearing work.
		  ○ HSE advisor to confirm clearing requirements prior to work commencing.
		• Clearing outside of the ROW requires compliance with CPS3545/3ATCO operations statewide clearing permit.
		• Clearing exemptions relating to the Energy Operators (Power) Act 1979 cover the clearing of native vegetation on existing network and infrastructure (including above ground facilities).
		• ROW maintained in accordance with AS2885.3 at ≤10m width unless otherwise required to ensure safe operation.
		• Monthly pipeline patrol and site inspections to be conducted as per AGA-R&R-PR01-
			• Annual compliance audit to confirm compliance with CPS3545/3.
			• Monthly pipeline patrols and site inspections confirm ROW maintained ≤10m unless otherwise required to ensure safe operations.
			• Review of completed AGA-ENG-PL02-FM01 Project Advice Checklist for relevant major construction or project related work.
			• Monthly review of Incident Management System verifies no incidents relating to unauthorised clearing of native vegetation.
			• Monthly review of Incident Management System verifies no incidents relating to disturbance of existing vegetation or fauna habitats resulting
				• As per Table 5.

Vegetation Management				
		FM21 Site Inspection – Pipeline Patrol and in accordance with AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol. • Report any signs of vegetation regrowth or ROW vegetation encroachment. • Report any signs of unauthorised clearing outside of ROW.	from poor vegetation management.	
• Establishment of weed species.	• See section 8.2.4 Weed and Disease/Hygiene Management	• See section 8.2.4 Weed and Disease/Hygiene Management	• See section 8.2.4 Weed and Disease/Hygiene Management	• As per Table 5.
• Erosion and sedimentation	• See section 8.2.2 Soil and Ground Stability.	• See section 8.2.2 Soil and Ground Stability.	• See section 8.2.2 Soil and Ground Stability.	• As per Table 5.
Systems and Procedures				
• AGA-ENG-PL02-FM01 Project Advice Checklist • AGA-HSE-GL02 Project Advice Checklist Environmental Considerations Guideline • AA-HSE-PR20 Incident Reporting & Investigation Procedure • AGA-HSE-PR20 Weed and Pathogen Management • AGA-HSE-PR20-WI01 Weed Removal Work Instruction • AGA-R&R-PR03 Notifiable Incident Reporting • AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol • AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol				
Monitoring				
• Incident management system • Pipeline inspections • Clearing permit requirements				
Records				
• Incident management system monthly reports				

Vegetation Management
• Vegetation clearing register • Audits and Inspection records • Annual compliance audits • PL83 Annual Environmental Report • Project advice checklists

8.2.4 Weed and Disease/Hygiene Management

Weed and Disease/Hygiene Management			
Activities	• Vehicle movement or ground disturbing activities along the Pipeline Licence area may impact the spread of weeds and diseases/pathogens. Activities within the permanently disturbed areas of operation are unlikely to have an impact, however any activities outside any authorized areas has the potential to result in negative impact.		
Hazards	• Vehicle and machinery movements. • Site and amenities establishment. • Ground disturbing activities for maintenance including ground disturbing activities, trenching, clear and grade, excavation.		
Inherent Risk Analysis and Rating			
Potential Impact	**Consequence**	**Likelihood**	**Residual Risk**
Competition from weed species and associated negative impacts to native flora.	Major	Unlikely	High
Spread of disease/pathogens.	Major	Unlikely	High
Potential Impacts	**Mitigation Measures**		

• Competition from weed species and associated negative impacts to native flora.
• Spread of disease/pathogens.
	• Monthly inspection and monitoring of the ROW will include an assessment of weed impacts. If weeds are found, aspects noted will include:
	  ○ Weed species that are present;
	  ○ Estimated coverage of total area;
	  ○ GPS coordinates of infestation;
	  ○ Possible reasons for outbreak, and
	  ○ Suggested technique for eradication.
	• Maintenance personnel conducting patrols are to be trained in the identification of weed species and techniques for their eradication.
	• The transport of soil along the ROW will be avoided where practicable.
	• Induction to provide awareness to personnel of requirements prior to entry to site.
	• Utilisation of existing disturbed areas and designated access and parking areas to prevent the spread of weeds.
	• Disease infected areas on the ROW requiring special hygiene management will be identified and recorded. Alternatively, in potentially affected areas the entire ROW will be considered at risk and managed accordingly.		

Weed and Disease/Hygiene Management	
	• Areas of high conservation value requiring special protection will be identified and recorded and operational personnel made aware through training and / or inductions. • Vehicles will be visually inspected before accessing the ROW and where necessary, soil and organic matter will be brushed off into a container for disposal. • Vehicles and machinery will be prevented from carrying soil or vegetable matter that is likely to spread disease into or out of the area. These requirements are defined in SWI ST 001 Safe Work Instruction: Pipeline Patrol.

Residual Risk Analysis and Rating

Potential Impact	Consequence	Likelihood	Residual Risk
Competition from weed species and associated negative impacts to native flora.	Major	Remote	Intermediate
Spread of disease/pathogens.	Major	Remote	Intermediate

Demonstration of ALARP and Acceptability

Application of the hierarchy of effectiveness of controls to assess ALARP and acceptability:

Elimination:

No elimination options are available for certain maintenance and operational activities therefore elimination controls with regards to weed and disease/pathogen management are not applicable in some instances instance. Drones are used for conducting pipeline surveys in areas of ROW which have been identified as containing disease/pathogens during high-risk times (during and after rainfall).

Physical Controls:

The physical removal of weeds is undertaken either by contractor or ATCO staff once the area of concern has been identified and reported via the incident management system. The use of contractors will be determined based on the size, type and location of the weed species identified. The use of signage to designate areas containing disease/pathogens has been employed to ensure the areas are either avoided (see elimination control) or correct procedures (see procedural controls) are followed in those areas. Areas were identified during survey work in 2008 and mapped (see Figure 5).

Procedural Controls:

Weed and disease/pathogen management is managed in accordance with the following procedures which outline the requirements for the identification and eradication of weeds and the correct hygiene practices to be followed in identified disease/pathogen areas.

- AGA-HSE-PR20 Weed and Pathogen Management
- AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol
- AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol

Weed and Disease/Hygiene Management				
• AGA-HSE-PR20-WI01 Safe Work Instruction: Weed Removal Weed mapping of the MGL PL83 area have been conducted and shapefiles created to identify areas of infestation. Weed mapping will be conducted as required to ensure management/mitigation controls are effective. Weed mapping exercises will be determined by the frequency of weed related incidents recorded in the incident management system as well as the outcomes of site inspections/pipeline patrols. Disease/pathogen mapping was conducted during 2008 and the areas containing disease/pathogens mapped (see Figure 5). ATCO believes that with the implementation of the above measures, potential environmental impacts have been controlled in a manner which meets the definition of ALARP.				
Measurement of Environmental Performance				
Potential Impact	**Objective**	**Standards**	**Measurement Criteria**	**Responsibilities**
• Competition from weed species and associated negative impacts to native vegetation and flora.	• To avoid or minimise the spread of weeds and/or disease. • To promptly identify areas requiring weed control. • To eliminate infestations of noxious species and effectively control weed species. • No new weed species and/or disease introduced as a result of the operation or maintenance of the pipeline and associated facilities	• Weed management is managed in accordance with AGA-HSE-PR20 Weed and Pathogen Management. • No work to be conducted in known weed infestations unless weed removal has occurred. • No unnecessary ground disturbing work to be carried out on MGL. • All soil/fill material used on MGL must be free of weed and weed seed/bulbs. • Monthly pipeline patrol and site inspections to be conducted as per AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol and in accordance with AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol. • New or suspected weed infestations reported immediately via the Incident Management System. • Weed removal to be undertaken in accordance with AGA-HSE-PR20-WI01 Safe Work Instruction: Weed Removal.	• Monthly pipeline patrols and site inspections verify absence of new and/or spread of weeds. • Monthly review of Incident Management System verifies weed infestations, where discovered, were reported in accordance with AGA-HSE-PR20 Weed and Pathogen Management. • Records of soil material transported to site confirmed as weed and weed seed/bulb free. • Evidence of identification and eradication of weed species where incidents relating to weed infestations have been reported. • Evidence of weed survey being conducted within the 5-year period. • Annual review of GIS mapping systems confirms weed layer is consistent with current weed survey data. • Personnel training management records confirm 100% of personnel received appropriate training and inductions.	• As per Table 5.

Weed and Disease/Hygiene Management				
		• Removal method to be determined based on weed type and period. • All known/reported weed infestations to be removed prior to work being undertaken in affected area. • Weed survey to be conducted on a 5 yearly basis to determine extent of weed infestations on MGL. • All identified priority weed infestations must be removed as soon as practical. • GIS data must be updated post weed survey work to ensure weed infestation data is current to allow adequate management. • Weed and disease/pathogen management training included in personnel inductions.		
• Spread of disease/pathogens.	• No negative impacts to native vegetation relating to the spread of pathogen/disease resulting from the operation or maintenance of the pipeline and associated facilities.	• Disease/pathogen management is managed in accordance with HSE AGA-HSE-PR20 Weed and Pathogen Management. • Clean on entry and clean on exit requirements for all vehicles when moving between known disease/pathogen areas and disease/pathogen free areas (signed on MGL). • Boots to be cleaned on entry and exit when moving between known disease/pathogen areas and disease/pathogen free areas (signed on MGL).	• Monthly pipeline patrols and site inspections verify absence of new and/or spread of disease/pathogens. • Monthly review of Incident Management System verifies disease/pathogen areas, where discovered, were reported in accordance with AGA-HSE-PR20 Weed and Pathogen Management Procedure. • Records of soil material transported to site confirmed as disease/pathogen free. • Evidence of disease/pathogen survey being conducted within the 5-year period. • Annual review of GIS mapping systems confirms disease/pathogen layer is consistent with current weed survey data.	• As per Table 5.

Weed and Disease/Hygiene Management				
		• All soil/fill material used on MGL must be free of disease/pathogens. • No removal or transport of soil from known disease/pathogen areas to known disease/pathogen free areas. • Routine maintenance work is required to be scheduled during drier periods when the risk for spreading disease/pathogens is lower. • No ground disturbing works to be conducted during or within 72 hours of rainfall event unless work is related to emergency repair/in a response to an emergency. • Only essential maintenance work to be conducted in known disease/pathogen areas • Monthly pipeline patrol and site inspections to be conducted as per AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol and in accordance with AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol. • All new or suspected disease/pathogen incidences reported immediately via the Incident Management System. • Drone surveys to be utilised in areas of known disease/pathogen occurrences. • Disease/pathogen survey to be conducted on 5 yearly basis to determine extent of disease/pathogens on MGL.	• Personnel training management records confirm 100% of personnel received appropriate training and inductions • Evidence of use of drone surveys where disease/pathogen issues identified.	

Weed and Disease/Hygiene Management				
		• All identified disease/pathogen areas must be signed. • GIS data must be updated post weed survey work to ensure disease/pathogen data is current to allow adequate management. • Weed and disease/pathogen management training included in personnel inductions.		

Systems and Procedures

- AA-HSE-PR20 Incident Reporting & Investigation Procedure
- AGA-R&R-PR03 Notifiable Incident Reporting
- AGA-HSE-PR20 Weed and Pathogen Management
- AGA-HSE-PR20-WI01 Safe Work Instruction: Weed Removal
- AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol
- AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol
- SSE Training and Induction

Monitoring

- Incident management system
- Pipeline inspections

Records

- Incident management system monthly reports
- Audits and Inspection records
- Annual compliance audits
- PL83 Annual Environmental Report
- Training management records

8.2.5 Maintenance of Pipeline (involving ground disturbance).

Maintenance of Pipeline (involving ground disturbance)	
Activities	• Ground disturbing activities may be required for maintenance or construction of additional facilities within the ROW. • Ground disturbing activities include earthworks, clear and grade, excavation.
Hazards	• Vehicle/mobile equipment movements • Excavations • Soil stockpiling

Inherent Risk Analysis and Rating			
Potential Impact	**Consequence**	**Likelihood**	**Residual Risk**
Soil erosion and sediment release.	Minor	Unlikely	Low
Interruption to natural surface and groundwater flows.	Major	Unlikely	High
Disturbance to native vegetation, flora and fauna.	Severe	Occasional	Intermediate
Damage to adjacent land uses.	Major	Unlikely	High
Temporary disruption to landholder and third parties.	Minor	Occasional	Low
Introduction of weed species or spread of disease.	Major	Unlikely	High

Potential Impacts	**Mitigation Measures**
• Soil erosion and sediment release. • Interruption to natural surface and groundwater flows.	• All vehicles and machinery will be inspected and documented as clean prior to mobilisation for maintenance ground disturbing activities on the ROW. • Ground disturbing activities shall be undertaken in accordance with a job specific management plan. • Prior to commencing ground-disturbing activities which may impact adjacent landholders, adequate notification shall be given. • Only clean fill shall be used if additional material is required (see AS2885.3). • Fill material will be sourced locally, be similar to the natural soil of the area and be weed and disease/pathogen free.

Maintenance of Pipeline (involving ground disturbance)	
• Disturbance to native vegetation, flora and fauna. • Damage to adjacent land uses. • Temporary disruption to landholder and third parties. • Introduction of weed species or spread of disease.	• Topsoil will be returned to facilitate revegetation. • Daily inspections of maintenance excavations, where present, to ensure no fauna are trapped. • Excavation design to ensure ability for fauna to escape or inability for fauna to enter.

Residual Risk Analysis and Rating

Potential Impact	Consequence	Likelihood	Residual Risk
Soil erosion and sediment release	Minor	Remote	Negligible
Interruption to natural surface and groundwater flows.	Major	Remote	Intermediate
Disturbance to native vegetation, flora and fauna	Severe	Remote	Low
Damage to adjacent land uses	Major	Remote	Intermediate
Temporary disruption to landholder and third parties	Trivial	Remote	Negligible
Introduction of weed species or spread of disease	Major	Remote	Intermediate

Demonstration of ALARP and Acceptability

Application of the hierarchy of effectiveness of controls to assess ALARP and acceptability for impacts relating to 8.2.5 Maintenance of Pipeline (involving ground disturbance), with the exception of impacts to fauna, are covered in the following sections:

- 8.2.2 Soil and Ground Stability

Maintenance of Pipeline (involving ground disturbance)

- 8.2.3 Vegetation Management
- 8.2.11 Water Management
- 8.2.1 Stakeholder and Land Access
- 8.2.4 Weed and Disease/Hygiene Management

Application of the hierarchy of effectiveness of controls to assess ALARP and acceptability for fauna impacts relating to 8.2.5 Maintenance of Pipeline (involving ground disturbance).

Elimination:

No elimination options are available for maintenance and operational activities involving ground disturbance, therefore elimination controls with regards to fauna management are not applicable.

Physical Controls:

Excavation and ground disturbing work AGA-SWI-EX01 Excavation and Backfilling Requirements. Open unattended excavations require the erection of barricades and signage until the site is reinstated or while operational and maintenance works are being undertaken. Excavation designs to include provisions for excavations design to ensure ability for fauna to escape or inability for fauna to enter (depending on the specific work requirements of the excavation).

Procedural Controls:

Excavation and ground disturbing work to be carried out in accordance with AGA-SWI-EX01 Excavation and Backfilling Requirements with open maintenance excavations requiring daily inspections to ensure no fauna entrapment. Barriers are required to be erected for unattended open excavations in accordance with AGA-SWI-SSU04 Safe Work Instruction: Site Setup Barricading.

Reduction:

Excavation activities are conducted only when absolutely necessary and all efforts are made to reduce the size and duration of the excavation.

ATCO believes that with the implementation of the above measures, potential environmental impacts have been controlled in a manner which meets the definition of ALARP.

Measurement of Environmental Performance

Potential Impact	Objective	Standards	Measurement Criteria	Responsibilities
• Soil erosion and sediment release.	• See sections 8.2.2 Soil and Ground Stability and 8.2.11 Water Management.	• See sections 8.2.2 Soil and Ground Stability and 8.2.11 Water Management.	• See sections 8.2.2 Soil and Ground Stability and 8.2.11 Water Management.	• As per Table 5.
• Interruption to natural surface and groundwater flows.	• See section 8.2.11 Water Management.	• See section 8.2.11 Water Management.	• See section 8.2.11 Water Management.	• As per Table 5.

Maintenance of Pipeline (involving ground disturbance)				
• Disturbance to native vegetation, flora and fauna.	• See sections 8.2.3 Vegetation Management and 8.2.4 Weed and Disease/Hygiene Management. • No negative impacts to fauna resulting from the operation or maintenance of the pipeline and associated facilities.	• Excavation and ground disturbing work to be carried out in accordance with AGA-SWI-EX01 Excavation and Backfilling Requirements. • Daily inspections of maintenance excavations, where present, to ensure no fauna present. • All excavations to be inspected for fauna immediately prior to backfilling. • Excavation design to ensure ability for fauna to escape or inability for fauna to enter. • Monthly pipeline patrol and site inspections to be conducted as per AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol and in accordance with AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol. • Any fauna interactions to be reported immediately via the Incident Management System. • All fauna deaths to be reported immediately via the Incident Management System. • Development and implementation of a Fauna Management Procedure (where required).	• Evidence of daily inspections conducted when open excavations are present. • Inspections of all open excavations to confirm correct excavation design to ensure ability for fauna to escape or inability for fauna to enter. • Monthly review of the Incident Management System verifies no negative impacts to fauna as a result of operation or maintenance of the pipeline and associated facilities. • Fauna management procedure developed and implemented (where required).	• As per Table 5.
• Damage to adjacent land uses.	• See section 8.2.1 Stakeholder and Land Access.	• See section .8.2.1 Stakeholder and Land Access.	• See section 8.2.1 Stakeholder and Land Access.	• As per Table 5.
• Temporary disruption to	• See section .8.2.1 Stakeholder and Land Access.	• See section .8.2.1 Stakeholder and Land Access.	• See section .8.2.1 Stakeholder and Land Access.	• As per Table 5.

Maintenance of Pipeline (involving ground disturbance)				
landholder and third parties.				
• Introduction of weed species or spread of disease.	• See section 8.2.4 Weed and Disease/Hygiene Management	• See section 8.2.4 Weed and Disease/Hygiene Management	• See section 8.2.4 Weed and Disease/Hygiene Management	• As per Table 5.

Systems and Procedures

- AA-HSE-PR20 Incident Reporting & Investigation Procedure
- AGA-R&R-PR03 Notifiable Incident Reporting
- AGA-SWI-EX01 Excavation and Backfilling Requirements
- AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol
- AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol
- AGA-SWI-SSU04 Safe Work Instruction: Site Setup Barricading
- Employee HSE Manual and Induction
- Vehicle Inspection Form (online)
- SSE Training and Induction

Monitoring

- Incident management system
- Pipeline inspections
- Open excavation inspections (when required)

Records

- Incident management system monthly reports
- Audits and Inspection records
- Annual compliance audits
- PL83 Annual Environmental Report
- Training management records

8.2.6 ASS Management

<table>
<tr><th colspan="5">ASS</th></tr>
<tr><td>Activities</td><td colspan="4">• Operation and maintenance activities or construction of additional facilities may cause exposure and/or dewatering of ASS.</td></tr>
<tr><td>Hazards</td><td colspan="4">• Excavations
• Dewatering</td></tr>
<tr><th colspan="5">Inherent Risk Analysis and Rating</th></tr>
<tr><td colspan="2">Potential Impact</td><td>Consequence</td><td>Likelihood</td><td>Residual Risk</td></tr>
<tr><td colspan="2">Acidification of the soil.</td><td>Severe</td><td>Occasional</td><td>Intermediate</td></tr>
<tr><td colspan="2">Impact on native vegetation and flora.</td><td>Severe</td><td>Occasional</td><td>Intermediate</td></tr>
<tr><td colspan="2">Damage to adjacent land uses.</td><td>Severe</td><td>Occasional</td><td>Intermediate</td></tr>
<tr><td>Potential Environmental Impacts</td><td colspan="4">Mitigation Measures</td></tr>
<tr><td>• Acidification of the soil.
• Impact on native vegetation and flora.
• Damage to adjacent land uses.</td><td colspan="4">• Identification of ASS must be undertaken prior to ground/groundwater disturbing work.
• Site specific investigations/assessments are required where any of the following criteria for assessment are triggered;
<table>
<tr><th>Classification</th><th>Nature of disturbance that triggers ASS investigation</th></tr>
<tr><td>Class 1 – high to moderate risk of ASS occurring within 3m of natural soil surface</td><td>• Earthworks (excavations) that will disturb >100m3 of soil.
• Any dewatering or soil draining activity.</td></tr>
<tr><td>Class 2 – moderate to low risk of ASS occurring within 3m of natural soil surface, but high to moderate risk of ASS beyond 3m of natural soil surface</td><td>• All works involving the lowering of the water table (temporary or permanent).
• Earthworks (excavations) extending beyond 3m below the natural ground surface.
• Works within 500m of wetlands.</td></tr>
</table>
• Where site investigations determine the presence of ASS, the management of ASS is to be conducted in accordance with the treatment and management of soils and water in acid sulfate soil landscapes (2015).
• Wherever possible, the best, most time effective and cheapest strategy to manage ASS is avoidance of its disturbance as ASS remains inert while in anaerobic and/or anoxic conditions. In instances where ASS is deemed to be unavoidable a demonstration of efforts to avoid disturbance is required.</td></tr>
</table>

ASS	
	• Where disturbance of ASS is unavoidable, works should be undertaken in a manner that mitigates potential adverse impacts on the built and natural environment using the most appropriate management techniques. • Where the ASS investigation determines the presence of ASS and the disturbance cannot be avoided or minimised to a level which would not trigger an investigation to be conducted (see Table 2), an ASS management plan (ASSMP) is required to be developed in accordance with the *treatment and management of soils and water in acid sulfate soil landscapes* (2015).

Residual Risk Analysis and Rating

Potential Impact	Consequence	Likelihood	Residual Risk
Acidification of the soil.	Severe	Remote	Low
Impact on native vegetation and flora.	Severe	Remote	Low
Damage to adjacent land uses.	Severe	Remote	Low

Demonstration of ALARP and Acceptability

Application of the hierarchy of effectiveness of controls to assess ALARP and acceptability;

Elimination:

Avoidance of high to medium risk ASS is the preferred option for mitigating the impacts of ASS, however no elimination options are available for certain maintenance and operational activities therefore elimination controls with regards to ASS management are not applicable in some instances instance.

Physical Controls:

Physical testing of ASS is required where excavations are deemed to pose a risk (in high to medium ASS areas where excavations >100m3 or dewatering will be required). In instances where physical testing indicates the presence of actual ASS, physical treatment will be undertaken by a third-party contractor for all excavation/re-instatement and dewatering activities.

Procedural Controls:

ASS impacts are managed in accordance with the following procedures which outline the requirements for the identification and treatment of ASS.

- AGA-ENG-PL02-FM01 Project Advice Checklist
- AGA-HSE-GL02 Project Advice Checklist Environmental Considerations Guideline
- AGA-HSE-PR03 Management of Acid Sulphate Soils
- AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol

Reduction:

Excavation size and the duration which the excavation will be left open will be minimised in areas of high to medium risk ASS.

ASS				
ATCO believes that with the implementation of the above measures, potential environmental impacts have been controlled in a manner which meets the definition of ALARP.				
Measurement of Environmental Performance				
Potential Impact	**Objective**	**Standards**	**Measurement Criteria**	**Responsibilities**
• Acidification of the soil impacting on adjacent land use, native vegetation/flora.	• To avoid or minimise the activation of ASS. • No negative impacts relating to ASS on adjacent land use, native vegetation or flora as a result of operation or maintenance of the pipeline and associated facilities.	• ASS managed in accordance AGA-HSE-PR03 Management of Acid Sulphate Soils. • Major construction or project related work to ensure ASS is identified via completion of AGA-ENG-PL02-FM01 Project Advice Checklist prior to work commencing. • PAC to be completed with reference to ASS layers in AGA-ENG-PL02-FM01 Project Advice Checklist and AGA-HSE-GL02 Project Advice Checklist Environmental Considerations Guideline. • HSE advisor to review completed PACs where ASS has been identified. • Site specific investigation is required where class 1 or class 2 conditions are triggered (see mitigation measures above). • ASSMP is required to be developed where the ASS investigation determines the presence of ASS and the disturbance cannot be avoided or minimised to a level which would not trigger an investigation.	• Review of completed PACs (AGA-ENG-PL02-FM01 Project Advice Checklist) for relevant major construction or other project related work confirms where class 1 or class 2 conditions have been triggered that a site-specific investigation has been conducted. • Evidence of ASSMP for works where ASS investigation determines the presence of ASS and the disturbance cannot be avoided or minimised to a level which would not trigger an investigation. • Evidence of compliance with conditions of ASSMP where required. • Monthly pipeline patrols and site inspections verify no negative impacts on to environment in ASS areas where recent maintenance work has taken place. • Monthly review of the Incident Management System verifies no negative impacts relating to ASS on adjacent land use, native vegetation or flora as a result of operation or maintenance of the pipeline and associated facilities. • Personnel training management records confirm 100% of personnel received appropriate training and inductions.	• As per Table 5.

ASS				
		• ASSMP to be develop for each specific major construction or other project work which triggers above conditions. • Monthly pipeline patrol and site inspections to be conducted as per AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol and in accordance with AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol. • Report any impacts to adjacent land use. • Report any signs of ASS impacts to soil or water • ASS management training included in personnel inductions.		
Systems and Procedures				
• AGA-ENG-PL02-FM01 Project Advice Checklist • AGA-HSE-GL02 Project Advice Checklist Environmental Considerations Guideline • AA-HSE-PR20 Incident Reporting & Investigation Procedure • AGA-R&R-PR03 Notifiable Incident Reporting • AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol • AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol • AGA-HSE-PR03 Management of Acid Sulphate Soils • AGA-SWI-EX01 Excavation and Backfilling Requirements • Employee HSE Manual and Induction • SSE Training and Induction				
Monitoring				
• Incident management system • Pipeline inspections				

ASS
• Monitoring of soil/water quality if deemed necessary in accordance with HSE PR0009 Management of ASS.
Records
• Incident management system monthly reports • Audits and Inspection records • Annual compliance audits • PL83 Annual Environmental Report • Soil and water analysis records/reports if conducted • ASS management plan (if required) • Project advice checklists

8.2.7 Bushfire Prevention and Management

Bushfire Prevention	
Activities	• Operation and maintenance activities or construction of additional facilities may cause increased bushfire risks. The threat of bushfire related to normal operation of the pipeline is considered low.
Hazards	• Vehicle/mobile equipment movements • Pipeline puncture • Spark emitting maintenance work such as welding and grinding

Inherent Risk Analysis and Rating			
Potential Impact	**Consequence**	**Likelihood**	**Residual Risk**
Damage to, or loss of, flora, fauna and habitat.	Major	Unlikely	High
Damage to pastoral land uses.	Major	Unlikely	High
Damage to, or loss of, third party infrastructure.	Major	Unlikely	High

Potential Impacts	**Mitigation Measures**
• Damage to, or loss of, flora, fauna and habitat. • Damage to pastoral land uses. • Damage to, or loss of, third party infrastructure.	• Procedures to prevent and respond to bushfire incidents are developed and implemented in accordance with AS2885.3, and the Emergency Response Management Plan. • Operations and maintenance are conducted in accordance with the requirements of the regulatory and local fire authorities. In particular, operations comply with relevant fire restrictions, notification requirements and permitting procedures. • All equipment complies with the relevant fire safety standards. • Machinery and vehicles not in use are parked in designated parking areas. • Vehicles are regularly checked to ensure combustible materials do not build up in critical areas where ignition could occur. • Where flammable or combustible chemicals are required to be stored on site, appropriate firefighting equipment will be available. Incompatible chemicals will not be stored together. Where practicable, flammable liquids will be stored in flammable liquid cabinets and in accordance with the Safety Data Sheet (SDS). • Firebreaks are maintained at facility sites as appropriate.

Bushfire Prevention			
Residual Risk Analysis and Rating			
Potential Impact	**Consequence**	**Likelihood**	**Residual Risk**
Damage to, or loss of, flora, fauna and habitat.	Major	Remote	Intermediate
Damage to pastoral land uses.	Major	Remote	Intermediate
Damage to, or loss of, third party infrastructure.	Major	Remote	Intermediate

Demonstration of ALARP and Acceptability

Application of the hierarchy of effectiveness of controls to assess ALARP and acceptability:

Elimination:

No elimination options are available for certain maintenance and operational activities therefore elimination controls with regards to bushfire management are not applicable in some instances instance.

Physical Controls:

Cathodic protection is installed on the MGL to prevent the increased rate of pipeline corrosion and mitigate its impacts reducing the risk of pipeline leaks. The pipeline is also electrically isolated from above ground MGL structures to safeguard against arc ignition. Overpressure protection is provided by the installation of pressure monitoring devices (PMDs) and the installations of slam shut values (SSV's).

Detailed information regarding the safe operation of the MGL is contained in AGA-R&R-PL13 ATCO Mandurah Gas Lateral (PL83) Safety Case, submitted to DMIRS as required by PL83.

Procedural Controls:

Bushfire related impacts are managed in accordance with the following procedures:

- AGA-R&R-PR06 Permit to Work System
- TOC PR0007 WI003 Control of Hot Work
- AA-HSE-PR39 Managing Hazardous Chemicals and Dangerous Goods
- AGA-R&R-PL01 Emergency Response Management Plan
- AGA-SWI-FERU01 Safe Work Instruction: Field Emergency Response Unit (FERU): Use of FERU
- AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol

Bushfire Prevention

High- and low-pressure alarms are set and monitored by the ATCO control room in accordance with AGA-O&M-PR05 Control Room Alarm Response Procedure to ensure both over-pressurisation and leak occurrences are responded to.

Operational practices are detailed in the following procedures/plan and outlined in TCO PL00006 Mandurah Gas Lateral Safety Case;

- AGA-S&P-ST06 Asset Lifecycle Strategy - Corrosion Protection Systems
- AGA-S&P-ST08 Asset Lifecycle Strategy - Pipelines Mains and Services
- AGA-S&P-ST09 Asset Lifecycle Strategy - Pressure Regulating Facilities

ATCO believes that with the implementation of the above measures, potential environmental impacts have been controlled in a manner which meets the definition of ALARP.

Measurement of Environmental Performance

Potential Impact	Objective	Standards	Measurement Criteria	Responsibilities

• Damage to, or loss of, flora, fauna and habitat.
• Damage to pastoral land uses.
• Damage to, or loss of, third party infrastructure.
	• No bushfires ignited by operation or maintenance of the pipeline and associated facilities.	• Pressure monitoring device (PMD) alarms configured to allow for automated notification of changes to predefined normal operating conditions (3,000kPa high and 2,500kPa low pressure alarms) providing indication of potential pipeline leaks/losses.
		• PRS facility designed in accordance with ENS GL0006 Damage Prevention Management Guideline for ATCO Facilities.
		• No vegetation of any kind within an asset boundary fence.
		• Site to be covered with 100mm of blue metal or gravel to prevent vegetation growth.
		• 3-metre-wide firebreak to be maintained around the outside of the asset boundary fence.
		• Hot work to be managed by AGA-R&R-PR06 Permit to Work System.
		• All hot work to be conducted under TOC PR0007 WI003 Control of Hot Work.
			• Annual review of PDM alarm configuration to ensure correct settings.
			• Annual verification of compliance with AGA-R&R-PL01 Emergency Response Management Plan.
			• Monthly review of hot work permit system confirms all hot work undertaken on PL83 complied with TOC PR0007 WI003 Control of Hot Work.
			• Monthly review of Incident Management System verifies no bushfire incidents ignited by operation or maintenance of the pipeline or associated facilities.
			• Monthly pipeline patrols and site inspections verify adequate maintenance of pipeline facilities including but not limited to
			  ○ Fire breaks.
			  ○ Fire prevention measures.
			  ○ Fire suppression equipment.
				• As per Table 5.

Bushfire Prevention				

		• Fire watch to be present during hot work covered under hot work permit.
		• No planned maintenance work involving hot works to be conducted during total fire ban.
		• Mandatory hot work permit requirements must be satisfied prior to hot work permit approval;
		  ○ Persons completing the hot work trained and deemed competent.
		  ○ Fire equipment checked and present.
		  ○ Bushfire hazards within 15m of hot work site identified and controlled.
		• No hazardous material will be stored on the MGL which may contribute to the initiation or escalation of a bushfire event.
		• Pipeline depth of cover maintained at 1.2m to minimise risk of pipeline penetration or exposure to bushfire risk.
		• Emergency response tested in accordance with AGA-R&R-PL01 Emergency Response Management Plan;
		• Annual desktop DBNGP Emergency Control Request to isolate or reduce gate station pressure exercise conducted.
		• 5 yearly mobilisation DBNGP Emergency Control Request to isolate or reduce gate station pressure exercise conducted.
		• 5 yearly coverage of specific hazard including;
		  ○ Natural disaster (bushfire included).
		  ○ Loss of containment leading to fire or explosion.
			• Review of monthly vehicle inspections completed and confirm presence of in date fit for purpose fire suppression equipment.
			• Personnel training management records confirm 100% of personnel received appropriate training and inductions.	

Bushfire Prevention				
		○ Loss of containment (general). • Monthly pipeline patrol and site inspections to be conducted as per AGA-SWI-ST01-FM02 Metro Pipeline Patrol and in accordance with AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol. ○ Report any vegetation within the boundary fence. ○ Report any instances of inadequate fire breaks outside of the boundary fence. • Monthly vehicle inspections to be conducted as per the Vehicle Inspection Form (online). • Personnel are trained in accordance with the AGA-R&R-PL01 Emergency Response Management Plan and AGA-SWI-FERU01 Safe Work Instruction: Field Emergency Response Unit (FERU): Use of FERU, where required.		

Systems and Procedures

- AGA-S&P-ST06 Asset Lifecycle Strategy - Corrosion Protection Systems
- AGA-S&P-ST08 Asset Lifecycle Strategy - Pipelines Mains and Services
- AGA-S&P-ST09 Asset Lifecycle Strategy - Pressure Regulating Facilities
- AGA-R&R-PL01 Emergency Response Management Plan
- AGA-R&R-PR06 Permit to Work System
- TOC PR0007 WI003 Control of Hot Work
- AA-HSE-PR39 Managing Hazardous Chemicals and Dangerous Goods
- AA-HSE-PR20 Incident Reporting & Investigation Procedure
- AA-HSE-PR20 Incident Reporting & Investigation Procedure
- AGA-SWI-ST01-FM02 Metro Pipeline Patrol
- AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol

Bushfire Prevention
• Vehicle Inspection Form (online) • AGA-SWI-FERU01 Safe Work Instruction: Field Emergency Response Unit (FERU): Use of FERU
Monitoring
• Incident management system • Pipeline inspections • Hot work permits requirements
Records
• Incident management system monthly reports • Hot works permit register • Audits and Inspection records • Annual compliance audits • PL83 Annual Environmental Report • Training management records

8.2.8 Dust and Air Emissions Management

Dust and Air Emissions	
Activities	The release of natural gas during purging to allow certain maintenance activities. • The release of odorised gas. • Vehicle and machinery exhausts. • Dust emissions from vehicles and equipment. • The release of methane gas as a result of pipeline and facility maintenance operations • Inline inspections (Pigging) operations
Hazards	• Generation of dust • Increased air emissions • GHG emissions

Inherent Risk Analysis and Rating			
Potential Impact	**Consequence**	**Likelihood**	**Residual Risk**
Greenhouse gas emissions (GHG).	Trivial	Frequent	Low
Temporary reduction of amenity associated with dust and odour.	Trivial	Frequent	Low
Localised impacts to sensitive flora and fauna.	Trivial	Unlikely	Negligible

Potential Impacts	**Mitigation Measures**
• Greenhouse gas emissions (GHG). • Temporary reduction of amenity associated with dust and odour. • Localised impacts to sensitive flora and fauna.	• The planned release of gas from pipelines will be minimised for economic and environmental reasons, and where practicable, only takes place under favourable meteorological conditions, which will facilitate rapid atmospheric dispersion of the gas. • For pigging operations that occur in accordance with the PIMP (estimated to be every 10 years) the volume of gas released will be that to purge and vent the launcher and receiving headers and associated piping. It is expected that the launcher and receiver headers will require approximately 500 litres (L) each per pig launch (expect 4 pigs for each pigging operation), the filters will require complete venting on completion of the pigging which is estimated to release a further 200L each for the 4 units. The total volume of gas released for each pigging operation is estimated at 5kL based on the physical dimensions of the vessels. • For pigging operations dust material will be extracted via the filters. Any material removed from the headers will be captured with drip trays and disposed of at appropriate disposal centre. The dust material is expected to be rust particles and scale.

Dust and Air Emissions	

	• In an abnormal situation such as over-pressurisation, pressure relief valves will operate and discharge gas to atmosphere. The rate of discharge is nominated on the manufacturers details. The time of the release would be recorded via pressure monitoring devices and associated alarms which are monitored via telemetry at ATCO Australia's control centre Jandakot. Calculations based on these factors would be utilised to determine gas loss.
	• Methane gas is released annually for the filter strainer at 3500kpa per filter (2 filters used) which produces a total volume discharged of 1.4m³ including venting (0.7m3 per filter and piping around)
	• Methane gas is released for depressurising pipework for maintenance at 1800kpa x 2 streams + small amount of venting which produces a total discharge of 7m3 (3.5m3 per stream) every 4 months.
	• Adjacent landholders are advised of pipeline venting operations prior to the planned activity commencing.
	• Periodic leakage surveys shall be conducted to detect fugitive gas releases from the pipeline as per AS2885.3 requirements.
	• Gas vents are located at appropriate distances from residential areas and infrastructure in accordance with relevant regulatory and Australian Standard requirements;
	• Adjacent landholders, local authorities and regulatory authorities (such as CASA) are advised of pending major planned venting operations prior to undertaking the activity.
	• Monitoring, recording and reporting of emissions in accordance with the National Greenhouse and Energy Reporting (NGER) requirements in accordance with the *National Greenhouse and Energy Reporting Act (2007)*.
	• If dust problems occur at particular sections of the ROW, the following measures are adopted;
	  ○ Revegetation using existing species and prevent access until the vegetation is established;
	  ○ Ensure speed limits are appropriate and being observed;
	  ○ Vehicle movements will be minimised; and
	  ○ If available, water will be sprayed on problem areas.

Residual Risk Analysis and Rating			
Potential Impact	**Consequence**	**Likelihood**	**Residual Risk**
Greenhouse gas emissions (GHG).	Trivial	Frequent	Low
Temporary reduction of amenity associated with dust and odour.	Trivial	Frequent	Low
Localised impacts to sensitive flora and fauna.	Trivial	Unlikely	Negligible

Dust and Air Emissions
Demonstration of ALARP and Acceptability

Application of the hierarchy of effectiveness of controls to assess ALARP and acceptability:

Elimination:

No elimination options are available for certain maintenance and operational activities therefore elimination controls with regards to dust and air emissions management are not applicable in some instances instance.

Physical Controls:

During pigging activities dust material is contained using filters to avoid excessive dust generation/discharge. Regulators configured in an active-monitor arrangement in a working/standby stream configuration are installed to provide protection from overpressure downstream of the DBNGP Gate Station (i.e. on the MGL). There is also overpressure protection at PRS015 for the Class 150 HP Pipeline linking the MGL to the Sub-network, provided through active-monitor regulation and an SSV.

The PRS015 outlet is controlled to Class 150 operating pressure to supply the Class 150 HP Pipeline. PMD alarms have been set to detect low pressure instances to identify potential pipeline leaks in order to minimise the impacts of unplanned emissions. Gas vents are located at appropriate distances from residential areas and infrastructure in accordance with relevant regulatory and Australian Standard requirements to minimise potential venting related impacts on third parties/adjacent landholders.

Procedural Controls:

All key stakeholders as defined in section 7 are notified prior to any major dust or emissions related work. Dust and air emissions related impacts are managed in accordance with the following procedures which govern the ongoing operational and preventative maintenance of the pipeline and related facilities:

- AGA-S&P-ST08 Asset Lifecycle Strategy - Pipelines Mains and Services
- AGA-S&P-ST09 Asset Lifecycle Strategy - Pressure Regulating Facilities
- AGA-SWI-MA08 Work Instruction Natural Gas Network Leak Survey and Leak Detection
- AGA-ENG-PL02-FM01 Project Advice Checklist

Dust impacts relating to soil stockpiling and ground disturbing works are managed in accordance with HSE WI013 Stockpiled Soil and Dust Control. Vehicle speeds are modified during ROM movements and minimised to as low as practicable to avoid excess dust generation relating to vehicle movements.

Reduction:

- Venting emissions are limited to the minimum volume required for operational system and facility maintenance requirements due to both economic and environmental impacts related with gas losses. Vehicle movements on the ROM are strictly limited to operational activities and not to be used as a thoroughfare.

ATCO believes that with the implementation of the above measures, potential environmental impacts have been controlled in a manner which meets the definition of ALARP.

Dust and Air Emissions				
Measurement of Environmental Performance				
Potential Impact	**Objective**	**Standards**	**Measurement Criteria**	**Responsibilities**

• Greenhouse gas emissions (GHG).	• To avoid or minimise GHG emissions.	• Pressure monitoring device (PMD) alarms configured to allow for automated notification of changes to predefined normal operating conditions (3,000kPa high and 2,500kPa low pressure alarms) providing indication of potential pipeline leaks/losses.
		• Maintenance of above ground facilities is managed in accordance with; AGA-S&P-ST09 Asset Lifecycle Strategy - Pressure Regulating Facilities.
		• High pressure regulators are required to be inspected at 4 monthly intervals.
		• High pressure regulator values are required to be inspected annually.
		• PRS015 is required to be inspected at 4 monthly intervals.
		• Maintenance of the pipeline mains and services is managed in accordance with AST PL00009 Asset Class Plan – Pipelines, Mains and Services and AS2885.3 requirements.
		• 5 yearly leak detection survey work to be carried out on full length of pipeline in accordance with AGA-SWI-MA08 Safe Work Instruction: Maintenance: Natural Gas Networks Leak Survey and Leak Detection.
		• Isolation valves are required to be inspected annually.
		• Service valves on ≥500KPa pipelines are required to be serviced annually.
			• Annual review of PDM alarm configuration to ensure correct settings.
			• Estimations of GHG emissions calculated in accordance with manufacturers details and reported quarterly (see section 10.4.1).
			• Annual review of GHG data and GHG data reported annually in compliance with NGER Act and NGER Regulations.
			• Annual review of compliance to;
			  ○ AGA-S&P-ST08 Asset Lifecycle Strategy - Pipelines Mains and Services
			  ○ AGA-S&P-ST09 Asset Lifecycle Strategy - Pressure Regulating Facilities
			  ○ AGA-SWI-MA08 Safe Work Instruction: Maintenance: Natural Gas Networks Leak Survey and Leak Detection
			• Monthly review of Incident Management System verifies no unplanned discharge events or natural gas leaks.
				• As per Table 5.

Dust and Air Emissions				
		• Inline inspections are required to be conducted every 10 years. • Monitoring, recording and reporting of GHG emissions in accordance with the National Greenhouse and Energy Reporting (NGER) Act (2007) and National Greenhouse and Energy Reporting (NGER) Regulations (2008).		
• Temporary reduction of amenity associated with dust and odour.	• To avoid or minimise the reduction of amenity associated with dust.	• Dust managed in accordance with AGA-HSE-GL09 Stockpile Management Guideline. • Where practical water trucks to be used for dust suppression. • Vehicle speeds to be reduced during dry conditions to reduce impact of vehicle movements on ROW. • Vegetation management of ROW to ensure adequate vegetative cover outside of ROW boundary (where possible). • Major construction or project related work to ensure AGA-ENG-PL02-FM01 Project Advice Checklist completed prior to work commencing. • HSE Advisor to review PACs where risk associated with dust has been identified. • Adjacent landholders, local authorities and regulatory authorities are advised of pending major planned venting operations 48 hours prior to undertaking the activity. • Monthly pipeline patrol and site inspections to be conducted as per AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol in accordance with AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol.	• Annual review of notification sent to landholders and regulatory authorities relating to planned major venting operations. • Monthly review of Incident Management System verifies no dust or odour related amenity impacts from pipeline or associated facilities activities. • Review of completed PACs AGA-ENG-PL02-FM01 Project Advice Checklist) for relevant major construction or other project related work confirms where dust risk has been identified that HSE advisor has reviewed proposed controls. • Vehicle telematics confirm vehicles speeds reduced when on ROW during dry conditions.	• As per Table 5.
• Localised impacts to sensitive flora and fauna.	• No negative impacts to sensitive flora and fauna as a result of operation or maintenance of the pipeline and associated facilities.			• As per Table 5.

Dust and Air Emissions				
		• Report any signs of poor vegetation cover outside of ROW boundary.		

Systems and Procedures

- AGA-S&P-ST08 Asset Lifecycle Strategy - Pipelines Mains and Services
- AGA-S&P-ST09 Asset Lifecycle Strategy - Pressure Regulating Facilities
- AGA-SWI-MA08 Safe Work Instruction: Maintenance: Natural Gas Networks Leak Survey and Leak Detection
- AGA-ENG-PL02-FM01 Project Advice Checklist
- AGA-HSE-GL02 Project Advice Checklist Environmental Considerations Guideline
- AGA-R&R-PL01 Emergency Response Management Plan
- AGA-HSE-GL09 Stockpile Management Guideline
- AA-HSE-PR20 Incident Reporting & Investigation Procedure
- AGA-R&R-PR03 Notifiable Incident Reporting
- AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol
- AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol
- Employee HSE Manual and Induction

Monitoring

- Incident management system
- Pipeline inspections
- Systems monitoring
- Facilities maintenance records (SAP)

Records

- Incident management system monthly reports
- Facilities maintenance records
- Systems monitoring records (SAP)
- Audits and Inspection records
- Annual compliance audits
- PL83 Annual Environmental Report

Dust and Air Emissions
• Annual NGER report submission • Quarterly emissions and discharge reports • Project advice checklists

8.2.9 Noise Management

Noise			
Activities	• The primary source of operational noise along the pipeline length is the venting facility at the Pressure Reduction Station 015 (PRS015).		
Hazards	• Operational and maintenance activities • Construction of new facilities • PRS • Over-pressurisation		
Inherent Risk Analysis and Rating			
Potential Impact	**Consequence**	**Likelihood**	**Residual Risk**
Disturbance to local residents and other landholders.	Minor	Occasional	Low
Disturbance to stock and wildlife.	Minor	Occasional	Low
Potential Impacts	**Mitigation Measures**		
• Disturbance to local residents and other landholders. • Disturbance to stock and wildlife.	• As the inlet and outlet facilities are located away from town sites and residences, noise from pipeline facilities will not have a significant impact. • Operations shall comply with all relevant regulatory requirements and AS2885.3 regarding noise control. • Equipment shall be selected in consideration of its noise emissions. Where practicable, equipment will be selected that is likely to result in the lowest noise impact while still completing the required task. • Where practicable, excessively noisy activities shall be scheduled for periods that are less likely to result in noise nuisance. This decision will be made in consultation with the residents. • Where appropriate, noise monitoring shall be conducted. • Noise complaints will be dealt with in accordance with the normal incident reporting procedures.		
Residual Risk Analysis and Rating			
Potential Impact	**Consequence**	**Likelihood**	**Residual Risk**
Disturbance to local residents and other landholders.	Minor	Occasional	Low
Disturbance to stock and wildlife.	Minor	Occasional	Low

Noise
Demonstration of ALARP and Acceptability

Application of the hierarchy of effectiveness of controls to assess ALARP and acceptability:

Elimination:

No elimination options are available for certain operational activities such as the operation of the launcher, PRS and associated system maintenance activities as well as the requirement to conduct other noise producing works. Elimination controls with regards to noise management are not applicable in those instances.

Physical Controls:

Identified potential noise generating equipment purchased is required to meet all applicable standards and relevant legislations including those related to noise. As such the PRS employs low noise Gorter Pressure Control Valves (PCVs) to ensure noise levels are as low as practicable.

The PRS utilises manually operated full bore Trunnion Mounted Ball Valves for flow configuration. The configuration of the two parallel streams is such that a common header with ball valve allows for both streams to operate in parallel and for each stream to operate individually. The design uses full bore valves to reduce unwanted pressure drop and reduce noise levels.

Procedural Controls:

All key stakeholders as defined in section 7 are notified prior to any major noise generating works. Major construction or project related work is required to complete ENS PL00002 RF01 Project Advice Checklist (PAC) prior to work commencing in order to identify potential noise issues. If the work is considered to be at risk of producing high levels of noise consideration is given to appropriate timing of work activities so as to reduce the impacts relating to noise. Where required, a noise management plan will be developed to appropriately map and manage the specific impacts relating to the noise generating works.

Dust and air emissions related impacts are managed in accordance with the following procedures which govern the ongoing operational and preventative maintenance of the pipeline and related facilities:

- AGA-ENG-PL02-FM01 Project Advice Checklist
- AGA-HSE-GL02 Project Advice Checklist Environmental Considerations Guideline
- AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol
- AA-HSE-PL02 Noise Management Plan

Reduction:

Where vehicles and mobile equipment are not required for conducting works, they will be shut down to reduce the associated noise impacts.

ATCO believes that with the implementation of the above measures, potential environmental impacts have been controlled in a manner which meets the definition of ALARP.

Noise				
Measurement of Environmental Performance				
Potential Impact	**Objective**	**Standards**	**Measurement Criteria**	**Responsibilities**
• Disturbance to local residents, other landholders stock and native fauna.	• To avoid or minimise operation noise impacts on adjacent residents, other landholders, stock or native fauna.	• Operations shall comply with the Environmental Protection (Noise) Regulations 1997 and AS2885.3 regarding noise control. • Noise will be managed in accordance with AA-HSE-PL02 Noise Management Plan. • Construction and maintenance work to be conducted only during specified times as per Environmental Protection (Noise) Regulations 1997. • 48 hours' notice to be provided to residents and other land holders where work is to occur outside of specified times as per Environmental Protection (Noise) Regulations 1997. • Equipment selection and design to be made with noise considerations in mind (quietest reasonably available). • Construction equipment to be shut down when not in use to avoid unnecessary noise. • Major construction or project related work to ensure AGA-ENG-PL02-FM01 Project Advice Checklist) completed prior to work commencing. • Where PAC identifies noise as a potential impact, HSE Advisor to review and determine the need for a Noise Management Plan (NMP). • Monthly pipeline patrol and site inspections to be conducted as per AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol and in accordance with AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol.	• Annual review of construction and maintenance works to ensure consistency with operational time requirements as per Environmental Protection (Noise) Regulations 1997. • Annual review of new equipment installations to ensure compliance with equipment selection requirements in AA-HSE-PL02 Noise Management Plan. • Vehicle telematics confirm vehicles not left idling for > 2 hours. • Review of completed AGA-ENG-PL02-FM01 Project Advice Checklist for relevant major construction or project related work to ensure where noise has been identified as a risk that HSE advisor has reviewed proposed controls. • Monthly pipeline patrol and site inspections verify no excessive noise generated relating to operation or maintenance of the pipeline and associated facilities. • Monthly review of Incident Management System verifies no confirmed operation noise impacts on adjacent residents, other landholders, stock or native fauna.	• As per Table 5.

Noise				
		• Report any instances of excessive noise generation from pipeline and associated facilities. • Noise complaints will be dealt with in accordance with the normal incident reporting procedures. • Environmental noise training to be included in personnel inductions.	• Personnel training management records confirm 100% of relevant personnel received appropriate training and inductions.	

Systems and Procedures

- AGA-ENG-PL02-FM01 Project Advice Checklist
- AGA-HSE-GL02 Project Advice Checklist Environmental Considerations Guideline
- AA-HSE-PR20 Incident Reporting & Investigation Procedure
- AGA-R&R-PR03 Notifiable Incident Reporting
- AA-HSE-PL02 Noise Management Plan
- AGA-R&R-PR03 Notifiable Incident Reporting
- AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol
- AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol
- AGA-R&R-PR08 Landowner Occupier Liaison Procedure
- AGA-O&M-PR31 Complaints Handling Procedure
- Employee HSE Manual and Induction
- SSE Training and Induction

Monitoring

- Incident management system
- Pipeline inspections
- Vehicle telematics
- Noise monitoring where required in response to complaints

Noise
Records
• Incident management system monthly reports • Audits and Inspection records • Annual compliance audits • PL83 Annual Environmental Report • Training management records • Environmental noise management plans/reports (where required in response to complaints) • Project advice checklists

8.2.10 Heritage Management

Heritage Management			
Activities	• Activities with the potential to impact heritage sites include; • Operational and maintenance activities, particularly ground disturbing activities. • Construction of additional facilities.		
Hazards	• Disturbance of heritage sites • Loss or destruction of heritage sites/values		
Inherent Risk Analysis and Rating			
Potential Impact	**Consequence**	**Likelihood**	**Residual Risk**
Disturbance or destruction of heritage sites.	Minor	Unlikely	Low
Potential Impacts	**Mitigation Measures**		
• Disturbance or destruction of heritage sites.	• Operations will be in accordance with the Heritage Management Protocol and relevant Heritage Agreement. • Maintenance personnel shall be adequately made aware of Heritage and Cultural Potential impacts and management.		
Residual Risk Analysis and Rating			
Potential Impact	**Consequence**	**Likelihood**	**Residual Risk**
Disturbance or destruction of heritage sites.	Minor	Remote	Negligible
Demonstration of ALARP and Acceptability			
Application of the hierarchy of effectiveness of controls to assess ALARP and acceptability: **Elimination:** Avoidance of ground disturbing activities in aboriginal heritage sites/places is the preferred option for mitigating the impacts relating to operational and maintenance activities, however no elimination options are available for certain maintenance and operational activities therefore elimination controls with regards to aboriginal heritage management are not applicable in some instances instance. **Procedural Controls:**			

Heritage Management

Aboriginal heritage impacts are managed in accordance with the following procedures which outline the requirements for the identification and approvals for conducting work within registered aboriginal heritage sites/places.

- AGA-ENG-PL02-FM01 Project Advice Checklist
- AGA-HSE-GL02 Project Advice Checklist Environmental Considerations Guideline

Where the PAC identifies that work is required to be conducted within a registered aboriginal heritage site/place ATCO will conduct a desktop review in accordance with the Aboriginal Heritage Due Diligence Guidelines prior to referring the work to the DPLH for further guidance. No ground disturbing work is conducted in registered aboriginal heritage sites/place without DPLH consultation and (if required) approval and consent form the traditional owners. All ATCO employees are required to complete Heritage and Cultural Awareness training as part of their initial induction.

ATCO believes that with the implementation of the above measures, potential impacts have been controlled in a manner which meets the definition of ALARP.

Measurement of Environmental Performance

Potential Impact	Objective	Standards	Measurement Criteria	Responsibilities
• Disturbance or destruction of heritage sites	• No impacts to known heritage sites on or near the pipeline or associated facilities. • No negative feedback from heritage and community groups, regulatory authorities and other relevant stakeholders.	• Operations managed accordance with the Aboriginal Heritage Act 1972, relevant Heritage Agreement and Aboriginal Heritage Due Diligence Guidelines. • All ground disturbing works to be assessed for potential to impact registered heritage sites and places in accordance with the Aboriginal Heritage Due Diligence Guidelines. • Approval required where works confirmed to occurring within the registered heritage site. • Major construction or project related work to ensure AGA-ENG-PL02-FM01 Project Advice	• All new Indigenous heritage sites identified during maintenance and operational works reported as per Aboriginal Heritage Act 1972. • Review of completed ENS AGA-ENG-PL02-FM01 Project Advice Checklist to ensure compliance with Aboriginal Heritage Act 1972, relevant Heritage Agreement and Aboriginal Heritage Due Diligence Guidelines where heritage sites have been identified in the proposed work area. • Annual review of all ground disturbing works to ensure no unauthorised disturbance of heritage sites. • Monthly review of incident Management System verifies no	• As per Table 5.

Heritage Management				
		Checklist completed prior to work commencing. • AHIS to be utilised to identify registered sites and places prior to work commencing. • HSE advisor to review PACs where registered sites or places have been identified. • Heritage and Cultural impacts awareness training included in personnel inductions.	unauthorized disturbance to heritage sites. • Personnel training management records confirm 100% of relevant personnel received appropriate training and inductions.	

Systems and Procedures

- AGA-ENG-PL02-FM01 Project Advice Checklist
- AGA-HSE-GL02 Project Advice Checklist Environmental Considerations Guideline
- AA-HSE-PR20 Incident Reporting & Investigation Procedure
- AGA-R&R-PR03 Notifiable Incident Reporting
- AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol
- AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol
- AGA-SWI-EX01 Excavation and Backfilling Requirements
- Employee HSE Manual and Induction
- Incident management system
- Aboriginal Cultural Heritage Inquiry System (ACHIS)

Monitoring

- Incident management system
- Pipeline inspections

Records

- Incident management system monthly reports
- Audits and Inspection records

Heritage Management
• Annual compliance audits • PL83 Annual Environmental Report • Training management records • Project advice checklists

8.2.11 Water Management

Water Management			
Activities	• Hydrostatic testing activities. • Times of natural rainfall during activities. • Dewatering of maintenance work areas, if required, after natural rainfall events. • Normal operating processes involving water disposal and management.		
Hazards	• Vehicle and machinery movements. • Release of hydrostatic test water to ground. • Spills. • Abrasive blasting/pipeline coating. • Improper management of soil stockpiles.		
Inherent Risk Analysis and Rating			
Potential Impact	**Consequence**	**Likelihood**	**Residual Risk**
Reduction in water quality as a result of increase sediment load.	Minor	Remote	Negligible
Contamination of surface or ground water.	Minor	Unlikely	Low
Altered drainage patterns and water flow regimes.	Minor	Remote	Negligible
Potential Impacts	**Mitigation Measures**		
• Reduction in water quality as a result of increase sediment load. • Contamination of surface or ground water. • Altered drainage patterns and water flow regimes.	• Should erosion and sedimentation occur, appropriate corrective action should be undertaken (consideration to be given to permanent rather than temporary repair). This may include restoring bank profiles, reseeding slopes, replacing sandbags or gabions or installing additional silt fences or geotextile fabric. • Maintenance of mobile equipment and vehicles will not be conducted within 150m of any surface water body, to reduce the risk of contamination in the event of accidental fuel or oil release. • All chemicals used during operations will be transported, stored, handled and disposed of in accordance with the requirements of the relevant dangerous goods and environmental legislation and industry standards.		

Water Management	
	• Hazardous wastes will not be stored or handled within the vicinity of any surface water. • Any spills or chemical release shall be managed in accordance with the Oil Spill Contingency Plan and Emergency Response Management Plan. • Removal of water from the trench during maintenance activities would be undertaken in a manner that minimises sediment uptake from the trench, minimises the extent and duration of water table drawdown, and avoids groundwater contamination. • Water removed from trenches would be disposed to adjacent land and would avoid soil erosion by discharging to stable vegetated areas or through energy dissipaters and would not result in flooding beyond the intended receiving area. • Water removed from trenches would not be discharged directly into wetlands. • If removal of water from trenches is required in regions of ASS acidic water would be treated by direct addition of neutralising agents in a tank. • Any necessary hydro-testing will be carried out off site where possible. Where hydro-testing is done on site, water disposal options will be investigated and finalised rather than discharge to the environment. • DMIRS will be notified before any discharge of hydro-test water to the environment is to take place.

Residual Risk Analysis and Rating

Potential Impact	Consequence	Likelihood	Residual Risk
Reduction in water quality as a result of increase sediment load.	Minor	Remote	Negligible
Contamination of surface or ground water.	Minor	Remote	Negligible
Altered drainage patterns and water flow regimes.	Minor	Remote	Negligible

Demonstration of ALARP and Acceptability

Application of the hierarchy of effectiveness of controls to assess ALARP and acceptability:

Elimination:

Where possible, hydrostatic testing is conducted off-site to eliminate the related potential impacts. There are no chemicals or hazardous materials stored within PL83 area or associated facilities. No elimination options are available for certain operational activities, such as excavations and on-site pipeline maintenance, testing and repair. Elimination controls with regards to noise management are not applicable in those instances.

Physical Controls:

Physical structures in the form of sediment control barriers are required where there is a possibility of sediment run-off from an ATCO worksite. The identification and construction of sediment control barriers are managed in accordance with AGA-HSE-WI04 Erosion and Sediment Control.

Water Management

Procedural Controls:

Where works are identified as having the potential to obstruct, destroy or interfere with a watercourse during the completion of AGA-ENG-PL02-FM01 Project Advice Checklist, no work will take place unless authorised by a permit or exemption as defined by DWER. Where works requiring dewatering/the abstraction of water are identified during completion of during the completion of AGA-ENG-PL02-FM01 Project Advice Checklist, works will not take place without a relevant licence issued by DWER. Water related impacts are managed in accordance with the following procedures which govern the ongoing operational and preventative maintenance of the pipeline and related facilities:

- AGA-A&C-GL06 Hydrostatic Testing
- AGA-HSE-WI04 Erosion and Sediment Control
- AGA-ENG-PL02-FM01 Project Advice Checklist
- AGA-HSE-GL02 Project Advice Checklist Environmental Considerations Guideline
- AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol
- AA-HSE-PR39 Managing Hazardous Chemicals and Dangerous Goods
- AGA-HSE-PR03 Management of Acid Sulphate Soils
- AGA-SWI-EX01 Excavation and Backfilling Requirements

Reduction:

Maintenance of mobile equipment and vehicles will not be conducted within 150m of any surface water body, to reduce the risk of contamination in the event of accidental fuel or oil release

ATCO believes that with the implementation of the above measures, potential environmental impacts have been controlled in a manner which meets the definition of ALARP.

Measurement of Environmental Performance

Potential Impact	Objective	Standards	Measurement Criteria	Responsibilities
• Reduction in water quality as a result of increase sediment load.	• To avoid or minimise sediment entering waterways resulting from the operation or maintenance of the pipeline and associated facilities.	• See section 8.2.2 Soil and Ground Stability.	• See section 8.2.2 Soil and Ground Stability.	• As per Table 5.
• Contamination of surface or ground water.	• Avoid or minimise contamination of surface water, watercourses and groundwater resulting from the	• Hazardous wastes managed in accordance with AA-HSE-PR39 Managing Hazardous Chemicals and Dangerous Goods and all relevant	• Hazardous wastes managed in accordance with AA-HSE-PR39 Managing Hazardous Chemicals and Dangerous Goods.	• As per Table 5.

Water Management				

	operation or maintenance of the pipeline and associated facilities.	regulatory and Safety Data Sheet (SDS) requirements (see section 8.2.13).
		• Major construction or project related work to ensure AGA-ENG-PL02-FM01 Project Advice Checklist completed prior to work commencing.
		• ASS layer to be used to confirm ASS risk at work location.
		  ○ If work is being conducted in ASS risk area, ASS risk to be controlled in accordance with section 8.2.6 ASS.
		• Wetland layer to be used to confirm presence of wetlands at work location.
		  ○ Where works are to be conducted within buffer zone HSE Advisor is to review PAC.
		• All hydro-testing of pipelines will be carried out off site unless unfeasible and in accordance with AGA-A&C-GL06 Hydrostatic Testing.
		• Where testing is unable to be conducted off-site, all on-site test water will be collected and disposed of off-site.
		• No test water will be discharged to the environment.
		• Any spills of test water will be managed in accordance with AA-HSE-PR20 Incident Reporting & Investigation Procedure.
		• Spills managed in accordance with AA-HSE-PR20 Incident Reporting & Investigation Procedure.
			• All spills reported as per requirements in section 9.5 of the OSCP.
			• Monthly review of Incident Management System verifies no contamination of surface or groundwater.
			• Annual review of all hydro-testing confirm testing was carried out in accordance with AGA-A&C-GL06 Hydrostatic Testing.
			• All ASS impacts managed in accordance with section 8.2.6 ASS.
			• Review of all completed AGA-ENG-PL02-FM01 Project Advice Checklist to ensure compliance with standards.	

Water Management				
• Altered drainage patterns and water flow regimes.	• To manage surface water flows and to minimise potential adverse impacts associated with altered flow regimes resulting from the operation or maintenance of the pipeline and associated facilities.	• Work involving ground disturbance to be conducted and managed in accordance with section 8.2.2 8.2.2 Soil and Ground Stability. • All work conducted in compliance with Rights in Water and Irrigation Act 1914; • Works will not obstruct, destroy or interfere with a watercourse unless authorised by a permit or exemption as defined by DWER. • Will not take water from an underground source without a current relevant licence.	• All work involving ground disturbance to be conducted and managed in accordance with section 8.2.2 8.2.2 Soil and Ground Stability • All required permits and licenses in place and review confirms conditions have been adhered to (where applicable).	• As per Table 5.
Systems and Procedures				
• AGA-ENG-PL02-FM01 Project Advice Checklist • AGA-HSE-GL02 Project Advice Checklist Environmental Considerations Guideline • AA-HSE-PR20 Incident Reporting & Investigation Procedure • AGA-HSE-PR03 Management of Acid Sulphate Soils • AGA-A&C-GL06 Hydrostatic Testing • AGA-R&R-PR03 Notifiable Incident Reporting • AA-HSE-PR39 Managing Hazardous Chemicals and Dangerous Goods • AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol • AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol • AGA-R&R-PL01 Emergency Response Management Plan • AGA-HSE-WI04 Erosion and Sediment Control • AGA-SWI-EX01 Excavation and Backfilling Requirements				
Monitoring				
• Incident management system				

Water Management
• Pipeline inspections • Water monitoring where required
Records
• Incident management system monthly reports • Audits and Inspection records • Annual compliance audits • PL83 Annual Environmental Report • Water quality reports • Project advice checklists

8.2.12 Waste Management

Waste Management			
Activities	• Activities involving use of consumables. • Unwrapping of materials and equipment. • Putrescible waste from personnel meals (morning tea, lunch, afternoon tea) brought to site. • Waste from pigging operations (oils, grease, consumables, etc.)		
Hazards	• Inefficient or inappropriate waste management • Incorrect storage and disposal of waste		
Inherent Risk Analysis and Rating			
Potential Impact	**Consequence**	**Likelihood**	**Residual Risk**
Contamination of soil and water, including ground water.	Minor	Unlikely	Low
Adverse effects to native vegetation and fauna.	Minor	Unlikely	Low
Reduction of visual amenity.	Minor	Unlikely	Low
Potential Impacts	**Mitigation Measures**		
• Contamination of soil and water, including ground water. • Adverse effects to native vegetation and fauna. • Reduction of visual amenity.	• All waste chemicals and other toxic materials shall be stored and collected for safe transport off-site for reuse, recycling, treatment or disposal at locations approved by relevant regulatory authorities. • Waste receptacles transported onto and off site will be lidded and clearly labelled. • Any chemicals or hazardous materials brought to site will be stored in containers designed to prevent the release of spilt substances to the environment. • Material removed from the headers during pigging operations will be captured with drip trays and disposed of at an appropriate waste disposal centre. • If pyrophoric dust is encountered when filters are cleaned, the debris will be collected into a sealed container and disposed of at an appropriate facility. • The pipeline ROW will be maintained to an orderly and hygienic standard. • Appropriate measures shall be taken to ensure litter accumulation is avoided and personnel are to take litter and rubbish offsite when they leave.		

Waste Management	

	• Spills will be cleaned up immediately to avoid contamination and reported immediately using spill kits provided in vehicles.
	• All wastes are disposed of in an environmentally acceptable manner. Waste management procedures are based on the following:
	  ○ **Reduce** wastes at the source;
	  ○ **Reuse** materials where possible; and
	  ○ **Recycle** wastes where practicable.

Residual Risk Analysis and Rating			
Potential Impact	**Consequence**	**Likelihood**	**Residual Risk**
Contamination of soil and water, including ground water.	Minor	Remote	Negligible
Adverse effects to native vegetation and fauna.	Minor	Remote	Negligible
Reduction of visual amenity.	Minor	Remote	Negligible

Demonstration of ALARP and Acceptability

Application of the hierarchy of effectiveness of controls to assess ALARP and acceptability:

Elimination:

There are no chemicals or hazardous materials stored within PL83 area or associated facilities.

Physical Controls:

The used of drip trays and seal containers for storing maintenance related consumables and dust is employed to reduce the likelihood of incorrect waste disposal practices.

Procedural Controls:

All consumables/waste taken or found to be on-site is to be transport off-site for reuse, recycling, treatment or disposal at locations approved by relevant regulatory authorities.

Waste related impacts are managed in accordance with the following procedures which govern the ongoing operational and maintenance of the pipeline and related facilities;

- AA-ENV-PLA-001 Waste Management Plan
- AA-HSE-PR39 Managing Hazardous Chemicals and Dangerous Goods
- AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol

Reduction:

- ATCO encourages the reduction of waste at the source in accordance with AA-ENV-PLA-001 Waste Management Plan.

ATCO believes that with the implementation of the above measures, potential environmental impacts have been controlled in a manner which meets the definition of ALARP.

Waste Management				
Measurement of Environmental Performance				
Potential Impacts	**Objectives**	**Standards**	**Measurement Criteria**	**Responsibilities**
• Contamination of soil and water, including ground water.	• No soil or water contamination incidents resulting from the waste generated by the operation or maintenance of the pipeline and associated facilities.	• Waste managed in accordance with AA-ENV-PLA-001 Waste Management Plan. • Reduce wastes at the source. • Reuse materials where possible. • Recycle wastes where practicable. • Material removed from the headers during pigging operations will be captured with drip trays and disposed of at an appropriate waste disposal centre. • When PRS filters are cleaned, the debris must be collected into a sealed container and disposed of at an appropriate facility. • All waste taken on-site is to be removed and disposed of off-site, in an environmentally acceptable manner in accordance with DWER Landfill Waste Classification and Waste Definitions 1996 (as amended 2019). • Waste receptacles will be transported to and from site for use during maintenance and operational activities, be clearly labelled and sealed when transported. • Monthly pipeline patrol and site inspections to be conducted as per AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol and in accordance with AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol. • Report any waste present or visual amenity reduction. • Waste management awareness training included in personnel inductions.	• Monthly review of Incident Management System verifies no waste related soil or water contamination incidents. • Monthly review of Incident Management System verifies no negative impacts to native flora or fauna. • Monthly review of Incident Management System verifies no incidents or complaints relating to visual amenity. • Monthly vehicle inspections completed and confirm presence of spill kits. • Monthly pipeline patrols and site inspections confirm no waste related impacts. • Personnel training management records confirm 100% of relevant personnel received appropriate training.	• As per Table 5.
• Adverse effects to native flora and fauna.	• No negative impacts to native flora or fauna resulting from the waste generated by the operation or maintenance of the pipeline and associated facilities.			
• Reduction of visual amenity.	• Avoid or minimise visual impacts resulting from the waste generated by the operation or maintenance of the pipeline and associated facilities. • No incidents or complaints relating to visual amenity resulting from the waste generated by the operation or maintenance of the pipeline and associated facilities.			
Systems and Procedures				
• AA-ENV-PLA-001 Waste Management Plan				

Waste Management
• AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol • AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol • AA-HSE-PR39 Managing Hazardous Chemicals and Dangerous Goods • AA-HSE-PR04 Spill Management Procedure • AGA-R&R-PR03 Notifiable Incident Reporting • AA-HSE-PR20 Incident Reporting & Investigation Procedure • AA-ENV-PLA-001 Waste Management Plan • SSE Training and Induction • Incident management system • Employee HSE Manual and Induction
Monitoring
• Incident management system • Pipeline inspections
Records
• Incident management system monthly reports • Audits and Inspection records • Annual compliance audits • PL83 Annual Environmental Report

8.2.13 Hazardous Materials

Hazardous Materials	
Activities	• Activities associated with operating and maintenance of PL83. • Activities associated with the use of vehicles and machinery. • Use of specific hazardous materials such as paints, thinners, greases, etc. which can be involved in vehicle and plant inspections and daily maintenance and other general works.
Hazards	• Use of hazardous materials for the processing of hydrocarbons. • Spills resulting from the incorrect storage and handling of hazardous materials.

Inherent Risk Analysis and Rating			
Potential Impact	**Consequence**	**Likelihood**	**Residual Risk**
Contamination of land and water, including ground water.	Minor	Unlikely	Low
Air and odour emissions.	Minor	Unlikely	Low

Potential Impacts	**Mitigation Measures**
• Contamination of land and water, including ground water. • Air and odour emissions.	• Hazardous wastes will be managed in accordance with all relevant regulatory and Safety Data Sheet (SDS) requirements. • The storage and handling of fuels and chemicals will comply with all relevant legislation and Australian Standards AS1940:2004 – The storage and handling of flammable and combustible materials. • SDS is provided for chemicals and is available for all chemicals handled. • There are no chemicals or hazardous materials stored within PL83. • Chemicals used in the PRS are stored in containers designed to prevent the release of spilt substances to the environment. • Chemicals are not stored or handled in the vicinity of natural or built waterways or water storage areas. Appropriate spill response equipment, including containment and recovery equipment, is available in personnel vehicles. • Maintenance personnel training is conducted in fuel and chemical handling and spill response. • Spills will be cleaned up immediately to avoid contamination and report all spills, regardless of volume, in accordance with Hazard and Incident and Reporting Procedure, including monthly DMIRS reporting and other statutory reporting as required. • Ensure environmental surveys, including soil and water sampling and analysis, are conducted post response to ensure appropriate measures are taken. • All storage and handling equipment will be maintained in good condition.

Hazardous Materials			
Residual Risk Analysis and Rating			
Potential Impact	**Consequence**	**Likelihood**	**Residual Risk**
Contamination of land and water, including ground water.	Minor	Remote	Negligible
Air and odour emissions.	Minor	Remote	Negligible

Demonstration of ALARP and Acceptability

Application of the hierarchy of effectiveness of controls to assess ALARP and acceptability:

Elimination:

There are no chemicals or hazardous materials stored within PL83, however the use of hazardous material and chemicals is required for some operational and maintenance activities. Elimination controls with regards to hazardous materials management are not applicable in some instances.

Physical Controls:

Where chemicals are required to be used in the PRS are stored in containers designed to prevent the release of spilt substances to the environment. Appropriate spill response equipment, including containment and recovery equipment, is available in all personnel vehicles.

Procedural Controls:

ATCO through the implementation of the OSCP (section 9) will mitigate the impacts of hazardous material related incidents. Hazardous material related impacts are managed in accordance with the following procedures which govern the ongoing operational and preventative maintenance of the pipeline and related facilities;

- AA-HSE-PR39 Managing Hazardous Chemicals and Dangerous Goods
- AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol
- Vehicle Inspection Form (online)
- AGA-HSE-PL03 Section 9 PL83 Oil Spill Contingency Plan
- AA-HSE-PR04 Spill Management Procedure

ATCO believes that with the implementation of the above measures, potential environmental impacts have been controlled in a manner which meets the definition of ALARP.

Measurement of Environmental Performance

Potential Impact	Objective	Standards	Measurement Criteria	Responsibilities
• Contamination of land and water,	• Avoid or minimise adverse impacts on land and water resulting from the	• Hazardous materials are managed in accordance with AA-ENV-PRO-018 Managing Hazardous Materials and all	• Monthly pipeline patrols and site inspections confirm any/all hazardous materials on site comply with the	• As per Table 5.

Hazardous Materials				
including ground water.	operation or maintenance of the pipeline and associated facilities. • No reportable spills.	relevant regulatory and Safety Data Sheet (SDS) requirements. • All Hazardous Materials shall be stored and labelled in accordance with ADG Code, Australian Standards and Guidance Notes where applicable, or equivalent legislation. • All contractors who intend to bring Hazardous Materials on site shall provide an SDS and risk assessment to HSE Advisor, prior to entry on site. • All Hazardous Materials are to be transported in accordance with the requirements of the Australian Dangerous Goods Code (ADG Code) relevant legislation and Australian Standards. • No hazardous materials are to be stored within PL83. • Hazardous materials are not stored or handled in the vicinity of natural or built waterways or water storage areas. • Monthly vehicle inspections to be conducted as per Vehicle Inspection Form (online). • Appropriate spill response equipment, including containment and recovery equipment, is available in personnel vehicles where required. • All chemicals or hazardous materials used in the PRS are required to be stored in containers designed to prevent the release of spilt substances to the environment.	requirements of AA-HSE-PR39 Managing Hazardous Chemicals and Dangerous Goods. • Annual review of hazardous substances used on MGL to confirm all substances were approved by HSE advisor. • Monthly review of Incident Management System verifies no adverse impacts on land and water resulting from the operation or maintenance of the pipeline and associated facilities. • Review of monthly vehicle inspections completed and confirm presence of spill response equipment where required. • Monthly review of Incident Management System verifies no spills. • Personnel training management records confirm 100% of relevant personnel received appropriate training. • Annual review of spill incidents (where applicable) confirm spills managed in accordance with the incident management system (section 9 and section 10.4.2).	

Hazardous Materials				
		• Maintenance personnel trained in hazardous substance management and spill response. • Spills managed in accordance the incident management system (section 9 and section 10.4.2).		
• Air and odour emissions.	• See section 8.2.8 Dust and Air Emissions	• See section 8.2.8 Dust and Air Emissions	• See section 8.2.8 Dust and Air Emissions	• As per Table 5.

Systems and Procedures

- AA-HSE-PR39 Managing Hazardous Chemicals and Dangerous Goods
- AGA-R&R-PR01-FM21 Site Inspection – Pipeline Patrol
- AGA-SWI-ST01 Safe Work Instruction: Pipeline Patrol
- AA-HSE-PR20 Incident Reporting & Investigation Procedure
- AGA-HSE-PL03 Section 9 PL83 Oil Spill Contingency Plan
- AA-HSE-PR04 Spill Management Procedure
- AGA-R&R-PL01 Emergency Response Management Plan
- AGA-R&R-PR03 Notifiable Incident Reporting
- ChemAlert (Chemical Management Software)
- Vehicle Inspection Form (online)
- Incident management system
- SSE Training and Induction
- Employee HSE Manual and Induction

Monitoring

- Incident management system
- Pipeline inspections

Records

Hazardous Materials
• Incident management system monthly reports • Audits and Inspection records • Annual compliance audits • PL83 Annual Environmental Report • Training management records

8.2.14 Emergency Response Management

Emergency Response Management			
Activities	• General maintenance and operational activities have the potential to result in an emergency event with the potential to impact the environment.		
Hazards	• Escalation of emergency due to poor emergency response management. • Spills • Bushfire		
Inherent Risk Analysis and Rating			
Potential Impact	**Consequence**	**Likelihood**	**Residual Risk**
Damage to the environment.	Major	Unlikely	High
Potential Impacts	**Mitigation Measures**		
• Damage to the environment.	• Ensure Emergency Response Management Plans are in place and tested regularly, including an environmental scenario. • Ensure personnel are trained in accordance with the Emergency Response Management Plan. • Ensure suitable Emergency Response equipment is available. • Ensure environmental surveys, including sampling and analysis, are conducted post response to ensure appropriate measures are taken.		
Residual Risk Analysis and Rating			
Potential Impact	**Consequence**	**Likelihood**	**Residual Risk**
Damage to the environment.	Major	Remote	Intermediate
Demonstration of ALARP and Acceptability			
Application of the hierarchy of effectiveness of controls to assess ALARP and acceptability: **Physical Controls:** Pressure monitoring alarms have been fitted to the PRS to ensure abnormal operating conditions are identified as soon as they occur. The installed alarms are received by the ATCO control room which is staffed 24/7 7 days a week. **Procedural Controls:** Emergency response management is conducted in accordance with the following procedures which outline how to respond to an emergency response situation, including the process for the escalation of events: • AGA-R&R-PL01 Emergency Response Management Plan			

Emergency Response Management				
• AGA-R&R-PL01 Emergency Response Management Plan • AGA-R&R-PL01-WI02 ATCO – Gas Division Emergency Exercises • AGA-R&R-PL01-WI01 Emergency Control Request Transmission Operator Gate Station ATCO believes that with the implementation of the above measures, potential environmental impacts have been controlled in a manner which meets the definition of ALARP.				
Measurement of Environmental Performance				
Potential Impact	**Objective**	**Standards**	**Measurement Criteria**	**Responsibilities**
• Damage to the environment.	• No Damaged to the environment as a result of emergency. • No escalation of environmental emergency due to delayed or inadequate emergency response.	• Emergency response tested in accordance with AGA-R&R-PL01 Emergency Response Management Plan. • Annual desktop DBNGP Emergency Control Request to isolate or reduce gate station pressure exercise conducted. • 5 yearly mobilisation DBNGP Emergency Control Request to isolate or reduce gate station pressure exercise conducted. • 5 yearly coverage of specific hazard including; o Natural disaster (bushfire included). o Loss of containment leading to fire or explosion. o Loss of containment (general). • Field Emergency Response Unit (FERU) created to assist in the control of emergencies/incident response. • FERU members must:	• Annual verification of compliance with AGA-R&R-PL01 Emergency Response Management Plan. • Monthly review of Incident Management System verifies no damage to the environment as a result of an emergency. • Monthly review of Incident Management System verifies no escalation of environmental emergency due to delayed or inadequate emergency response. • Review of monthly vehicle inspections completed and confirm presence of in date fit for purpose fire suppression equipment. • Monthly review and verification of AGA-SWI-FERU01 Safe Work Instruction: Field Emergency Response Unit (FERU): Use of FERU, specifically, the Trailer Contents and Equipment Storage Area Contents inspections. • Annual review of FERU member training and medical records to confirm 100% FERU members have appropriate medical clearance and training. • Personnel training management records confirm 100% of personnel received appropriate training and inductions.	• As per Table 5.

Emergency Response Management				
		○ Successfully pass initial medical examination. ○ Complete annual medical examinations as required. ○ Be trained and assessed as competent in: ○ Confined space entry. ○ Senior first aid. ○ Emergency isolation tools, equipment and fittings. ○ Use of SCBA. ○ Fire extinguisher training. • Inspections to confirm suitable Emergency Response equipment is available to be conducted as per; • Vehicle inspection form (online): ○ Monthly vehicle inspections required for all ATCO vehicles. • AGA-SWI-FERU01 Safe Work Instruction: Field Emergency Response Unit (FERU): Use of FERU: ○ Monthly checks on all equipment as per trailer content checklist. ○ Monthly checks on all equipment as per storage area content checklist. • Personnel are trained in accordance with the AGA-R&R-PL01 Emergency Response Management Plan.		

Emergency Response Management
Systems and Procedures
• Vehicle Inspection Form (online) • AGA-SWI-FERU01 Safe Work Instruction: Field Emergency Response Unit (FERU): Use of FERU • AA-HSE-PR20 Incident Reporting & Investigation Procedure • AGA-HSE-PL03 section 9 - Oil Spill Contingency Plan • AGA-R&R-PL01 Emergency Response Management Plan • AGA-R&R-PL01-WI01 Emergency Control Request Transmission Operator Gate Station • AGA-R&R-PL01-WI02 ATCO – Gas Division Emergency Exercises • AGA-R&R-PR03 Notifiable Incident Reporting • Incident management system • SSE Training and Induction • Employee HSE Manual and Induction
Monitoring
• Incident management system • Pipeline inspections
Records
• Incident management system monthly reports • Audits and Inspection records • Annual compliance audits • PL83 Annual Environmental Report • Training management records

8.2.15 Closure Management

Closure Management			
Activities	• Decommissioning and rehabilitation operations will be undertaken once the pipeline is no longer required. These operations will primarily involve earthmoving and infrastructure removal, followed by routine inspections for rehabilitation monitoring. These operations have the potential to impact the environment both during the active operations (decommissioning) and during rehabilitation, if the decommissioning operations are not undertaken appropriately.		
Hazards	• Vehicle/mobile equipment movement • Excavations on ROW • Lack of vegetation cover • Spread of disease/pathogens • Introduction and/or spread of weeds • Inadequate decommissioning practices.		
Inherent Risk Analysis and Rating			
Potential Impact	**Consequence**	**Likelihood**	**Residual Risk**
Contamination of land and water, including ground water.	Severe	Occasional	Intermediate
Impacts on native vegetation and flora.	Severe	Unlikely	Intermediate
Spread of disease/pathogens	Major	Unlikely	High
Establishment of weed species.	Severe	Occasional	Intermediate
Erosion and sedimentation due to landform changes.	Minor	Occasional	Low
Reduction in visual amenity.	Minor	Occasional	Low
Potential Impact	**Mitigation Measures**		
• Contamination of land and water, including ground water. • Impacts on native vegetation and flora.	• Spills will be cleaned up immediately to avoid contamination and report all spills, regardless of volume, in accordance with Hazard and Incident and Reporting Procedure, including monthly DMIRS reporting and other statutory reporting as required. • Soil and water sampling will be conducted where contamination is suspected/identified.		

Closure Management	
• Spread of disease/pathogens • Establishment of weed species. • Erosion and sedimentation due to landform changes. • Reduction in visual amenity.	• Remediation activities will be conducted to soil and/or water where required (in response to activity-attributable contamination). • Revegetation success is monitored in accordance with rehabilitation monitoring program (to be developed pre-closure). • Weed and pathogen introduction and/or spread to be managed in accordance with AGA-HSE-PR20 Weed and Pathogen Management. • Further restoration works may be required in areas where vegetation establishment has been less than acceptable. Such works shall be conducted in consultation with the relevant landholder. • Only certified weed and disease/pathogen free clean fill utilised for filling of excavations. • Erosion and sediment control structures, if implemented, shall be routinely inspected to ensure they remain effective. • Consultation with landholders and other stakeholders as per Section 7.

Residual Risk Analysis and Rating

Potential Impact	Consequence	Likelihood	Residual Risk
Contamination of land and water, including ground water.	Severe	Remote	Low
Impacts on native vegetation and flora.	Severe	Remote	Low
Spread of disease/pathogens	Major	Remote	Intermediate
Establishment of weed species.	Severe	Remote	Low
Erosion and sedimentation due to landform changes	Minor	Remote	Negligible
Reduction in visual amenity.	Minor	Remote	Negligible

Demonstration of ALARP and Acceptability

Application of the hierarchy of effectiveness of controls to assess ALARP and acceptability:

Elimination:

Closure (decommissioning and rehabilitation) of the pipeline will be required in the future to ensure there are no ongoing environmental risks. No elimination options are available therefore elimination controls with regards to closure are not applicable in this instance.

Physical Controls:

Physical structures in the form of sediment control barriers are required where there is a possibility of sediment run-off from an ATCO worksite. The physical removal of weeds is undertaken either by contractor or ATCO staff once the area of concern has been identified and reported via the incident management system. The use of contractors will be

Closure Management

determined based on the size, type and location of the weed species identified. The use of signage to designate areas containing disease/pathogens has been employed to ensure correct procedures are followed in those areas.

Further physical controls will be identified pre-closure works and incorporated into a revised OEMP to be submitted and approved by DMIRS prior to any closure activities.

Procedural Controls:

- AGA-HSE-PL03 Section 9 PL83 Oil Spill Contingency Plan
- AA-HSE-PR04 Spill Management Procedure
- AGA-ENG-GL12 Management of Decommissioned Assets
- AGA-HSE-PR20 Weed and Pathogen Management
- Annual rehabilitation monitoring to ensure rehabilitation is progressing adequately
- Ongoing consultation with stakeholders as per Section 7

ATCO believes that with the implementation of the above measures, potential environmental impacts have been controlled in a manner which meets the definition of ALARP.

Measurement of Environmental Performance

Potential Impact	Objective	Standards	Measurement Criteria	Responsibilities
• Contamination of land and water, including ground water.	• No activity-attributable soil contamination • No activity-attributable surface water contamination • No activity-attributable groundwater contamination	• All closure activities will be conducted in compliance with Rights in Water and Irrigation Act 1914 (where applicable); • Closure works be designed so as to not obstruct, destroy or interfere with a watercourse unless authorised by a permit or exemption as defined by DWER. • Hazardous wastes managed in accordance with AA-HSE-PR39 Managing Hazardous Chemicals and Dangerous Goods • and all relevant regulatory and Safety Data Sheet (SDS) requirements (see section 8.2.13). • Major closure and/or project related work to ensure AGA-ENG-PL02-FM01 Project Advice Checklist	• Hazardous wastes managed in accordance with AA-HSE-PR39 Managing Hazardous Chemicals and Dangerous Goods. • All spills reported as per requirements in Section 9.6 of the OSCP. • Monthly review of Incident Management System verifies no contamination of surface or groundwater. • All ASS impacts managed in accordance with section 8.2.6 ASS Management.	• As per Table 5.

Closure Management				

		• completed prior to work commencing.
		• ASS layer to be used to confirm ASS risk at work location.
		  ○ If work is being conducted in ASS risk area, ASS risk to be controlled in accordance with section 8.2.6 ASS.
		• Wetland layer to be used to confirm presence of wetlands at work location.
		  ○ Where works are to be conducted within buffer zone HSE Advisor is to review PAC.
		• Spills managed in accordance with the incident management system (section 9 and section 10.4.2).
		• Soil sampling conducted on excavated material where potential contamination is observed.
		• Where soil sampling indicates contamination, groundwater sampling will be conducted.
		• Surface water monitoring will be conducted where surface water bodies have the potential to be impacted by ATCO activities.
			• Review of all completed AGA-ENG-PL02-FM01 Project Advice Checklist to ensure compliance with standards.
			• All required permits and licenses in place and review confirms conditions have been adhered to (where applicable).
			• Soil sampling analysis reviewed and contaminated soil remediation plan developed and implemented (if required).
			• Groundwater and surface water monitoring programs established and ongoing monitoring conducted (as required)
			• Review of monitoring programs analysis indicate no activity-attributable contamination.	

• Impact on native vegetation and flora.	• No post-closure activity-attributable residual impacts on vegetation cover • No post-closure activity-attributable residual impacts on species richness	• Vegetation cover criteria and monitoring program to be established as part of pre-closure activities. ○ Vegetation cover at impact areas >70% of reference area.	• Annual rehabilitation monitoring indicates successful vegetation cover and species richness outcomes in line with criteria. • Completion criteria in monitoring program met.	• As per Table 5.

Closure Management				
		• Species richness criteria and monitoring program to be established as part of pre-closure activities. ○ Species richness at impact areas >70% of reference area.		
• Establishment of weed species.	• No introduction or spread of weeds as a result of closure activities	• Weed management is managed in accordance with AGA-HSE-PR20 Weed and Pathogen Management. • Weed removal to be undertaken in accordance with AGA-HSE-PR20-WI01 Weed Removal Work Instruction. • No work to be conducted in known weed infestations unless weed removal has occurred. • All soil/fill material used on MGL must be free of weed and weed seed/bulbs. • Removal method to be determined based on weed type and period. • All known/reported weed infestations to be removed prior to work being undertaken in affected area. • Weed and disease/pathogen management training included in personnel inductions.	• Records of soil material transported to site confirmed as weed and weed seed/bulb free. • Evidence of identification and eradication of weed species where incidents relating to weed infestations have been reported. • Personnel training management records confirm 100% of personnel received appropriate training and inductions.	• As per Table 5.
• Spread of disease/pathogens	• No spread of disease/pathogen as a result of closure activities	• Disease/pathogen management is managed in accordance with AGA-HSE-PR20 Weed and Pathogen Management. • Clean on entry and clean on exit requirements for all vehicles when moving between known disease/pathogen areas and disease/pathogen free areas (signed on MGL).	• Annual rehabilitation monitoring indicates no new and/or spread of disease/pathogens. • Records of soil material transported to site confirmed as disease/pathogen free.	• As per Table 5.

Closure Management				
		• Boots to be cleaned on entry and exit when moving between known disease/pathogen areas and disease/pathogen free areas (signed on MGL). • All soil/fill material used on MGL must be free of disease/pathogens. • No removal or transport of soil from known disease/pathogen areas to known disease/pathogen free areas. • Closure work is required to be scheduled during drier periods when the risk for spreading disease/pathogens is lower. • No ground disturbing works to be conducted during or within 72 hours of rainfall event unless work is related to emergency repair/in a response to an emergency. • Only essential closure work to be conducted in known disease/pathogen areas • Disease/pathogen management training included in personnel inductions.	• Personnel training management records confirm 100% of personnel received appropriate training and inductions	
• Erosion and sedimentation due to landform changes.	• To avoid or minimise the potential for soil erosion as a result of closure activities • No damage to land uses as a result of soil erosion from closure activities • No damage to native vegetation or fauna habitats as a result of soil erosion from closure activities	• Closure wok with the potential for increasing erosion to align with low-risk period. • During closure/decommissioning activities; o Stockpiles to be constructed with a slope no greater than 2:1 (horizontal to vertical). o Topsoil and under-burden to be kept separate when stockpiling soil.	• Annual rehabilitation monitoring indicates no damage as a result of sedimentation or erosion. • Monthly review of Incident Management System verifies no incidents relating to erosion or sedimentation.	• As per Table 5.

Closure Management				
		○ Soil stockpiles to be >10m distance from known waterway (unless no alternative exists). ○ Use of barriers and structures to minimise water velocities are required for closure/decommissioning works with identified increased erosion potential. ○ Erosion controlled in accordance with AGA-HSE-GL09 Stockpile Management Guideline. ○ Sediment managed in accordance with AGA-HSE-WI04 Erosion and Sediment Control. ○ To prevent sediment issues related to backfilling in areas identified as potential risk areas, backfill will be layered in 150mm sections and each section is to be compacted prior to completion of the backfill layer. • Annual monitoring to identify areas of erosion or sedimentation impact. • Report all instances of erosion/depth of cover issues.		
• Reduction in visual amenity.	• No significant impact on visual amenity resulting from closure activities	• All waste taken on-site or generated during closure works is to be removed and disposed of off-site, in an environmentally acceptable manner in accordance with DWER Landfill Waste Classification and Waste Definitions 1996 (as amended 2019). • Waste receptacles will be transported to and from site for use during closure	• Monthly review of Incident Management System verifies no incidents or third-party complaints relating to visual amenity	• As per Table 5.

Closure Management				
		activities, be clearly labelled and sealed when transported.		

Systems and Procedures

- AA-HSE-PR39 Managing Hazardous Chemicals and Dangerous Goods
- AGA-ENG-PL02-FM01 Project Advice Checklist
- AGA-HSE-GL02 Project Advice Checklist Environmental Considerations Guideline
- AA-HSE-PR20 Incident Reporting & Investigation Procedure
- AGA-HSE-PR20 Weed and Pathogen Management
- AGA-HSE-PR20-WI01 Weed Removal Work Instruction
- AGA-R&R-PR03 Notifiable Incident Reporting
- AGA-HSE-WI04 Erosion and Sediment Control
- AGA-HSE-GL09 Stockpile Management Guideline
- AGA-ENG-GL12 Management of Decommissioned Assets
- AGA-HSE-PL03 Section 9 PL83 Oil Spill Contingency Plan
- AA-HSE-PR04 Spill Management Procedure
- Incident management system
- Employee HSE Manual and Induction
- SSE Training and Induction

Monitoring

- Incident management system
- Rehabilitation monitoring program

Records

- Incident management system monthly reports
- Audits and Inspection records
- Annual compliance audits
- PL83 Annual Environmental Report
- Rehabilitation monitoring records

9. OIL SPILL CONTINGENCY PLAN

The aim of the Mandurah Gas Lateral Oil Spill Contingency Plan (OSCP) is to have in place appropriate measures to minimise the impact of oil spills should they occur during PL83 operation and maintenance activities. This plan is directed at guiding the actions of personnel in response to an oil spill from diesel and chemicals used along PL83 and this plan defines the:

- Priority actions to be taken in the event of a spill;
- Equipment and facilities available for containment, recovery and disposal of spilled oil;
- The personnel responsible for responding to an oil spill and contact with the relevant authorities; and
- Guidelines for monitoring the impacts of oil spills on the environment and for subsequent clean-up.

As required by the Department of Mines and Petroleum's (DMP) *Guideline for the Development of an Onshore Oil Spill Contingency Plan* (July 2016), an immediate response strategy (i.e. ATCO's Spill Response Flow Diagram [AA-HSE-PR04-FM01]) is presented in Figure 11 below.

ATCO

SPILL RESPONSE FLOW DIAGRAM

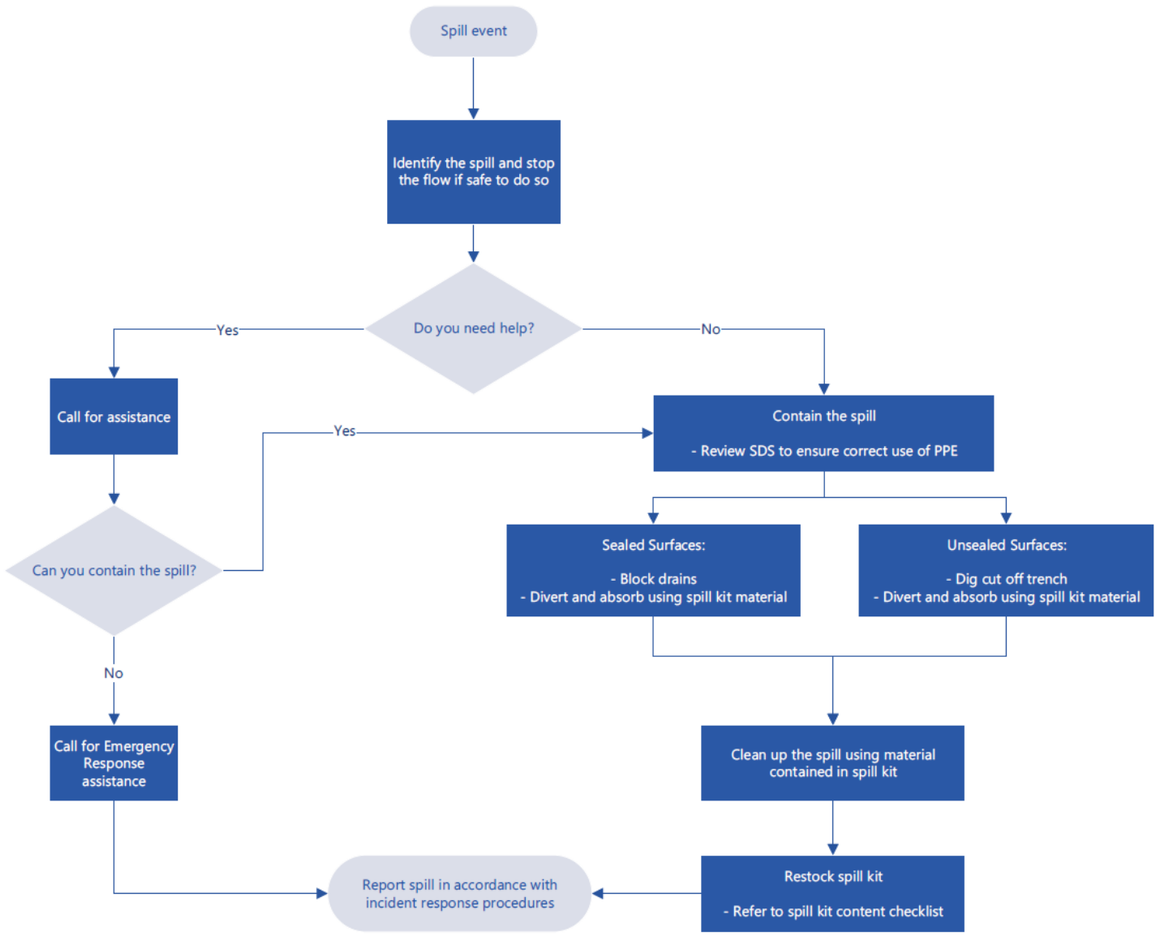

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Figure 11: ATCO Gas Spill Response Flow Diagram

9.1 OSCP Scope

This OSCP covers the length of the MGL located in the Mandurah region, south of Perth in Western Australia. Table 1 contains the coordinates of the pipeline while Figures 1 and 2 shows its general location.

This OSCP is prepared in accordance with Regulation 15(8) of the *Petroleum Pipelines (Environment) Regulations (2012)* and interfaces with the following documents:

- AGA-HSE-PL03 Pipeline 83 Operational Environmental Plan;
- AGA-R&R-PL01 Emergency Response Management Plan;
- AA-HSE-PR20 Incident Reporting & Investigation Procedure; and
- AA-HSE-PR04 Spill Management Procedure.

The OSCP will be reviewed annually and when a new facility or structure is added under the OEP and OSCP. A revision of the OSCP will be lodged with DMIRS every 2.5 years.

9.2 Objectives

The objectives of the OSCP are to:

- Facilitate the protection of human life and safety.
- Ensure that environmental impacts are minimised.
- Ensure a state of preparedness.
- Identify potential oil pollution sources.
- Define procedures for reporting spills to the relevant authorities.
- Define procedures for the efficient control of the spill source.
- Direct the restoration of the environment, as near as is practicable, to pre-spill conditions.

9.3 Immediate Response Strategy

ATCO will consider the immediate response priorities as defined by the NOPSEMA Oil Spill Contingency Planning, which are:

- Human health and safety;
- Habitat and cultural resources;
- Rare and/ or endangered flora and fauna;
- Commercial resources; and
- Amenities.

The immediate response to a spill event is detailed in Appendix A of the Spill Management Procedure (AA-HSE-PR04 contained in Appendix H). The Spill Response Flow Diagram (AA-HSE-PR04-FM01) contained in Appendix I (and Figure 11) should be followed in the result of a spill event.

9.4 Preparedness

Incident response, including responding to oil spills, is managed in accordance with Emergency Response Management Plan (AGA-R&R-PL01), as included in Appendix J.

9.4.1 Roles and Responsibilities

The roles and responsibilities when responding to an emergency, including oil spills are defined in the Emergency Response Management Plan (AGA-R&R-PL01) (refer to Appendix J). An extract of the roles and responsibilities as defined in the Emergency Response Management Plan (AGA-R&R-PL01) are contained in Table 10 below, however, note that these must be read in conjunction with Section 2 of the Emergency Response Management Plan.

Table 10: Incident Response Roles and Responsibilities

Roles	Key Responsibilities
Officer	• Implement repair if no additional resources required. • If additional resources are required, manage the AGA response by assuming the OSC role at the incident site until relieved or otherwise directed by the Supervisor. • Ensure the response is managed to protect human life; reduce trauma; maintain system safety; and ensure system supply.
On Scene Commander	• Command of the emergency operations pertaining to AGA assets. • Control and co-ordination of the response to events escalating. • Manage the AGA response at the incident site(s). • Manage the incident as effectively and efficiently as the circumstances allow. • Coordinate and communicate all activities and actions with the Control Room and/or Area or Duty Manager / AGA Manager, or if an emergency has been declared and the Emergency Management Team (EMT) has been activated the Emergency Commander. • Establish a Command Post or Centre. • Ensure the response is managed to protect human life; reduce trauma; maintain system safety; and ensure system supply. • Assess the situation, identify the risk and determine priorities. • Establish systems and procedures for the safety and the welfare of all AGA personnel and third party contractors working at the incident.

Area/Duty Manager	• Manage the initial overall operational response to an emergency, coordinating the necessary people and resources to cover all aspects of operational response and recovery.
	• Ensure all appropriate operational response personnel are notified of a Gas or Security Alert, including:
	  ○ AGA Executive Management / Crisis Executive.
	  ○ Appropriate members from CMT.
	  ○ Control Room.
	  ○ General Manager Operations; and
	  ○ Incident management support from within AGA.
	• Ensure the response is managed to protect human life; reduce trauma; maintain system safety; and ensure system supply.

Roles	Key Responsibilities
Emergency Commander	• Manage the overall operational response to an emergency, bringing together and co-ordinating the necessary people and their resources to cover all aspects of operational response and recovery. • Ensure the response is managed to protect human life; reduce trauma; maintain system safety; and ensure system supply. • Develop and manage the emergency action plan using AGA-R&R-PL01 Emergency Response Management Plan. • Notify and request the activation of required members of AGA Executive Management/Incident Management Support. • Notify and authorise the activation of specialist and AGA Executive Management/Incident Management Support and/or individuals. • Establish effective liaison and cooperation with relevant persons, Regulators, government agencies, including the affected community.

9.4.2 Response Levels

The initial response to an incident by the Officer on site is to make the site as safe as soon as possible and classify the incident. The classification determines on going response to the incident and aligns with classification for network incidents reporting requirements. Figure 12 outlines the incident and response steps as detailed in the Emergency Response Management Plan (AGA-R&R-PL01).

There are four incident classifications as used in the escalation process which are defined in the Emergency Response Management Plan (AGA-R&R-PL01), as included in Appendix J. An extract of the Emergency Response Management Plan (AGA-R&R-PL01) incident classification has been provided in Table 11.

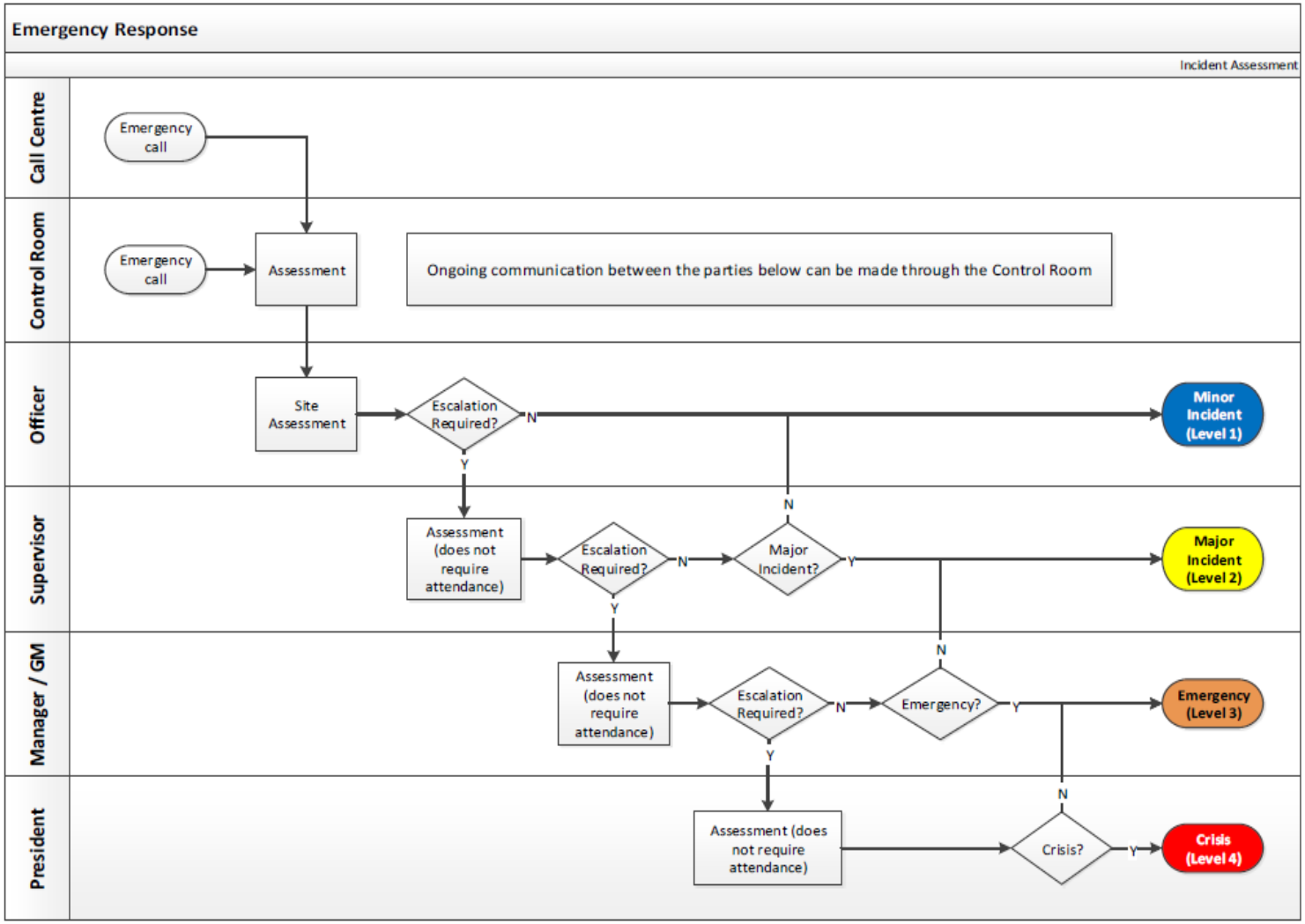


Figure 12: ATCO Incident Assessment and Response Flow Diagram

9.4.3 Incident Classification

Incidents are classified in accordance with ATCO's Notifiable Incident Reporting (AGA-R&R-PR03) and the Incident Reporting & Investigation Procedure (AA-HSE-PR20) documentation (as included in Appendix J).

The four incident classification levels are outlined in the following sub-sections. A summary of the incident levels and response guidance is presented in Table 11 below.

Additional information relating to response actions (i.e. initial, ongoing and stand-down) relevant to each role (refer to Section 9.4.1) and/or EMT is outlined ATCO's Emergency Response Action Checklists (AGA-R&R-PL01-FM14) (included in Appendix K).

Table 11: ATCO Emergency Response Management Plan Incident Classifications

Incident Levels	Consequence				Response Guidance
	People	Environmental	Supply	Reputation	
Minor	Minimal impact on health and safety.	No effect or minor onsite effects that are rectified rapidly with a negligible, residual effect.	Supply interruption of; (i) impacting < 100 consumers; (ii) no impact to critical customers.	Minor concerns from isolated members of the public.	Normal Line Management processes. However where there is con-current incident management underway; or a requirement to manage resources, the EMT may still be activated.
Major	Injuries or illnesses requiring first aid or medical treatment.	Effect localised (<0.1ha) and short term (<1 year). Minimal rectification.	Supply interruption of; (i) impacting ≥100 consumers; or (ii) short-term interruption to critical customers.	Minor adverse attention/concerns from: – Regulators; Government; Local/State media attention; or Public.	First Responders are activated, and the Duty Manager notified. The EMT may be activated to manage the Major Incident, particularly in the case of Supply interruptions.
Emergency	Injuries or illness requiring hospital treatment.	Localised (<1 ha) with short term effects (<10yrs); rectification moderate.	Supply interruption of; (i) impacting >500 consumers; or (ii) prolonged interruption to critical customers.	Adverse attention/concerns from: – Regulators; Government; State /National /International media; or Public.	EMT is activated, and ATCO/ATCO Australia executive management is notified. The Business Continuity Team (BCT) and, or Crisis Management Team (CMT) may convene for the strategic management of emergencies.
Crisis	Fatalities. Several people with life threatening or permanently disabling injuries.	Major offsite impact; Long term (2yrs or more), severe effects or rectification difficult.	Supply interruption of; (i) impacting >10,000 consumers; or (ii) >10,000 consumer weeks.	High profile adverse attention/concerns from: – Regulators; Government; State /National /International media; or Public.	The EMT / BCT and CMT are activated. ATCO Australia is notified.

9.4.3.1 Minor Incident – Level 1

A Level 1 Minor Incident is characterised by the following:

- An incident that can be resolved by an initial response; or
- An incident whereby the initial response deems the incident can be resolved at a later date in accordance with the applicable Standard Operating Procedures (SOP) (e.g. Safe Work Instructions [SWI]), guidelines, forms, etc.).

  However, on the occasions that concurrent incident management occurs and/or resourcing constraints, the EMT may be activated.

Potential examples of a Level 1 Minor Incident are as follows:

- Minor gas leaks at a meter;
- Broken domestic services with MAOP 100 kPa or less (consideration for the location of the break);
- Smell of gas in the area as a result of Class 2 and/or 3 leaks[1]; or
- Minor injury requiring first aid.

9.4.3.2 Major Incident – Level 2

A Level 2 Major Incident is characterised by the following:

- An incident that can be responded to and managed by a Network Operations group using ATCO's SOPs.

A Level 2 Major Incident is generally limited to the immediate area and managed by the On Scene Commander (OSC); however, the EMT may be activated to manage the incident.

Examples of a Level 2 Major Incident can be a result of the following:

- A broken service with MAOP 100kPa or less in a high density community use area, sensitive area, or area where the incident has the potential to constitute a risk to people or property and evacuations may be required;
- A broken gas main with MAOP 100kPa or less;
- Water in the main that can be isolated and contained to a small area and minimal customers affected;
- Smell of Gas in the area as a result of a Class 1 Leak;
- Gas main/service fire with no injuries and/or major damage, this may be contained to the immediate location and gas isolated using Safe Work Instructions, Work Instructions and Guidelines. Note that Emergency Service Agencies may attend these incidents;
- Injury requiring medical treatment at a Medical Centre, or Hospital outpatients; and/or
- Small fire that can be contained and extinguished quickly. The localised evacuation of ATCO depot/office may be required.

[1] ATCO's internal leak classification (natural gas).

9.4.3.3 Emergency – Level 3

Level 3 Emergencies are more complex in size, where the consequences (or potential consequences), are more severe and require additional incident management resources. For a Level 3 Emergency, the EMT is activated and incident management support may be sought from within ATCO.

Examples of a Level 3 Emergency can be a result of the following:

- Gas main/service rupture with MAOP of 350kPa to 700kPa and/or a high pressure jet fire;
- A water in the main affecting a large area and/or customers;
- A gas leak in a highly populated area which may require evacuations e.g. Perth CBD, Building and Fremantle CBD;
- A serious injury to either a member of the public or ATCO personnel;
- Severe gas supply interruption which has or has the potential to impact a large area or significant number of customers (e.g. 500 to 10,000 consumers, however depending on the location and area impacted, the time of the day and resource requirements; potential for prolonged interruption to critical customers, a Level 3 Emergency may be declared for lesser number of consumers impacted by the interruption);
- Fire and evacuation at ATCO depot/office site. Department of Fire and Emergency Services (DFES) called to manage the fire;
- Bomb threat and evacuation at ATCO depot/office site. WA Police called in to manage the threat; and/or
- Aircraft crash into open ground/unoccupied buildings at Jandakot Operations Centre.

9.4.3.4 Crisis – Level 4

A Level 4 Crisis is characterised by a degree of complexity, or the severity (or potential severity) of the consequences of the incident is major or catastrophic (as derived from the ATCO Gas Australia Risk Matrix [AGA-GRC-RG08]) and requires the initiation of the CMT. Please also refer to AA-GRC-PL06 Crisis Management Plan for further guidance.

Examples of a Level 4 Crisis can be a result of the following:

- Main or pipeline rupture with MAOP greater than 700kPa (also referred to as HP Class 150, 300 or 600 pipelines), which has the potential for a major gas explosion and or jet fire, or a major explosion and/or jet fire has occurred;
- Major gas discharge in highly populated or sensitive areas requiring evacuations (e.g. Perth CBD, multi storey building, Fremantle CBD, hospital, or ATCO personnel);
- Major gas supply interruption that has or has the potential to impact a large number of consumers (e.g. greater than 10,000 customers);
- Major fire and evacuation at an ATCO depot/office site. DFES called to manage the fire with major building damage and loss of work area for the performance of critical business functions;

- Bomb (improvised explosive device) has been found or an explosion has occurred at ATCO depot/office site and evacuations have been initiated. WA Police called to manage the threat; and/or
- Aircraft crash into occupied buildings at the Jandakot Operations Centre.

As incidents grow in size and/or complexity, management of the incident becomes more demanding and the OSC needs to consider the delegation of responsibility. In smaller incidents, the OSC may have the capacity to undertake more than one role and delegate others. As an incident develops, the OSC may elect to delegate additional functions in order to devote more attention to the control function.

9.4.4 Communications

The ATCO emergency number 13 13 52 is the principle means for the initial communication of gas faults, incidents and emergencies. Gas emergency calls through the 13 13 52 emergency number typically come from members of the public, or personnel working for the third party responsible for the impact upon ATCO gas distribution infrastructure. This process is to ensure ATCO maintains a single point of contact for all emergencies and incidents, such is the nature of the work (i.e. 24/7 operations).

Emergency services agencies such as DFES and Police have a dedicated phone line directly to the ATCO Control Room. ATCO's Emergency and Operational Contact List is presented in Appendix L.

When an emergency starts by ATCO personnel working on the ATCO gas distribution infrastructure assets, the ATCO personnel's initial communication will be by contacting the Control Room or the Call Centre on the 13 13 52 emergency number, as per ATCO's Emergency Response Management Plan (AGA-R&R-PR01) (Appendix J).

ATCO personnel have access to various forms of communications; these include the principle form of communication mobile phones. All ATCO field vehicles are also fitted with two-way hand-held, or trunk radios for direct communications back to the ATCO Control Room.

9.4.5 Emergency Response Testing

Emergency response testing is conducted in accordance with the Emergency Response Management Plan (AGA-R&R-PL01). Table 12 is an extract from the Emergency Response Management Plan (AGA-R&R-PL01) and details ATCOs emergency exercise commitments as they apply to the MGL.

Table 12: Emergency Exercise Commitments

Exercise	Exercise Description	Frequency
State Emergency Management Exercise involving ATCO's GDN	External State Emergency Exercises – The State of Western Australia runs various State emergency exercise, which includes state-wide and local area emergencies and includes the following: • Public Utilities Office facilitated inter government agency and gas industry emergency response and recovery desktop exercise for State-wide gas supply disruption scenario.	As requested

Exercise	Exercise Description	Frequency
	• State level, or State Risk Project exercises run by the State Emergency Management Committee through the Office of Emergency Management, DFES and Local Government Authorities,	
Perth CBD / City Block Emergency Isolation	CBD Emergency Isolation of one of the four Perth CBD Isolation Zones on a rolling annual cycle: CBD: 1; CBD: 2; CBD: 3; and CBD: 4; in accordance with AGA-R&R-PL01-WI04 CBD Emergency Isolation Exercise may include request for involvement of the safety regulator Building and Energy	Annual
Perth Metropolitan Area, including Mandurah	Emergency exercise may include request for involvement of Emergency Service Agencies	2 years
Albany LPG Storage Facility	Emergency exercise may include request for involvement of Emergency Service Agencies	3 years
Regional Networks – Albany, Bunbury, Busselton and surrounds, Geraldton and Kalgoorlie	Emergency exercises which are also conducted a refresher training incident /emergency to be determined and organised by the relevant Manager/Supervisor in consultation with the Training Department and Technical Compliance.	Annual in each region
DBNGP Mandurah Gate Station – Mandurah Gas Lateral	Desktop DBNGP Emergency Control Request to isolate or reduce Gate Station outlet operating pressure in accordance with: • AGA-R&R-PL01-WI01 Emergency Control Request Transmission Operator Gate Station; • AGA-R&R-PL01-FM09 Emergency Isolation Request Form DBNGP Mandurah Gate Station; and • AGA-R&R-PL01-FM15 Emergency Pressure Reduction of DBNGP North Dandalup Mandurah Gate Station.	Annual[2], except when the 5 yearly mobilisation exercise is conducted
DBNGP Mandurah Gate Station – Mandurah Gas Lateral	Five Yearly mobilisation DBNGP Emergency Control Request to isolate or reduce Gate Station outlet operating pressure in accordance with: • AGA-R&R-PL01-WI01 Emergency Control Request Transmission Operator Gate Station; • AGA-R&R-PL01-FM09 Emergency Isolation Request Form DBNGP Mandurah Gate Station; and • AGA-R&R-PL01-FM15 Emergency Pressure Reduction of DBNGP North Dandalup Mandurah Gate Station Emergency exercise may include request for involvement of Emergency Service Agencies and the Shire of Murray.	5 years
Control and Call Centre DR Loss of Jandakot Telephony	Gas Distribution Jandakot Communications Contingency for testing access to and functionality of backup DR telephony system, exercise in accordance with CCT PR0001 Gas	Monthly

[2] Note that additional emergency exercises (desktop and/or field) may be undertaken following key milestones, such as: (i) significant amendments to the OSCP, (ii) addition of a new location for the activity, and/or (iii) operation of a new facility or structure under the scope of the OSCP.

Exercise	Exercise Description	Frequency
	Distribution Jandakot Communications Contingency and its related work instructions.	
Control Room/Call Centre DR Relocation	Gas Distribution Jandakot Communications Contingency for testing access to, relocation of operational staff and full functionality (full switch-over) of backup DR telephony system, exercise is to be conducted in accordance with CCT PR0001 Gas Distribution Jandakot Communications Contingency and its related work instructions.	6 monthly
Curtailment	One of either the Perth Metropolitan Area, including Mandurah; or Regional Network exercise to include testing ATCOs curtailment response.	5 years
Coverage of specific emergency hazards	Serious injury, or fatality and this exercise should at different times consider various hazards, such as major loss of containment discharge, fire and, or explosion, vehicle, traffic related hazards and other OSH related hazards • Natural disaster, such as fire, flood, storm, earthquake • Pipeline loss of containment and major discharge • Pipeline loss of containment, major discharge leading to fire and, or explosion NOTE: Any of the above may be covered by response to an emergency event that is also written up to as an exercise, or involvement in one of the State Emergency Management Exercises	5 yearly – covered a minimum of once for each emergency hazard

9.4.6 Trajectory Modelling

Trajectory modelling has not been conducted for the PL83 OSCP, due to both the nature of the pipeline and the potential spill volumes relating to worst case incidents listed in Section 9.5.

Any chemical or hydrocarbon spills to ground would likely be extremely localised and would not have material impacts on the surrounding soil or water. In the event of a pipeline rupture, due to the properties of natural gas, the release volume would quickly and readily disperse and spread long distances. The dispersal of the natural gas would be dependent on atmospheric conditions and actual release volumes.

9.5 Identification of Spill Sources

An assessment of the potential releases of oil spills including chemicals and diesel were conducted in the Environmental Risk Assessment and the outcomes are listed in the Environmental Risk Assessment Register provided with the AGA-HSE-PL03 PL83 Operational Environmental Plan (OEP). The assessment found that in all potential spill scenarios, the residual risk to the environment was assessed to be as low as reasonably practicable (ALARP).

The following describes the potential releases of spills that may occur during operation and maintenance of PL83.

9.5.1 Vehicle/mobile equipment Collision or incident

The largest possible volume of spill would be if the fuel tank was punctured and lost all fuel. This would be approximately 60L (0.06m³) diesel fuel spill. This could potentially happen anywhere along the pipeline ROW; however, the seasonal waterway at Nambeelup Brook is avoided when patrolling the pipeline. The estimated area of impact relating to this type of event is approximately 1m².

9.5.2 Transfer, transport or handling incident

The largest quantities expected to be transported and handled are during major maintenance activities such as intelligent pigging where there may be a maximum of 10L to 20L approved of various required lubricating oils. This could potentially happen at the launcher site or the PRS. This type of incident could also happen in other areas requiring maintenance although the amount used would be much lower than 20L. The estimated area of impact relating to this type of event is approximately 1m².

9.5.3 Pigging waste/spills

The largest quantities expected are during major maintenance activities such as intelligent pigging where there may be a maximum of 10L to 20L approved of various required lubricating oils. Any materials removed from headers during pigging could potentially be spilt at the launcher site or the PRS. The estimated area of impact relating to this type of event is approximately 1m².

9.5.4 Pipeline rupture

Pipeline rupture is a potential source of release however this would be a gas release and does not constitute an oil spill.

9.6 Reporting Requirements

In the event of an oil spill occurring, reporting is to be in conjunction with Section 10.4.2 of the OEP. Personnel will report all oil spills involved with PL83 in compliance with internal Incident Reporting procedure.

The initial information required is as follows:

- Time and place of spill;
- Type of oil spill and quantity;
- Cause of spill;
- Action taken to control the spill; and
- Damage assessment.

Under the *Petroleum Pipelines (Environment) Regulations (2012)* significant incidents must be reported to DMIRS. This is for incidents within the Pipeline Licence area. Incidents outside the Pipeline Licence area(s) are covered under the *Environmental Protection Act (1986)* and must be reported to the Department of Environment Regulation. For spills, we have adopted the reporting thresholds outlined in *Schedule of Onshore Petroleum Exploration and Production Requirements (1991)* as seen in Table 13.

Table 13: Summary of External Reporting Requirements for Oil Spills

Regulations & Schedules	Incident reporting	Contact Details
Petroleum Pipelines (Environment) Regulations (2012)	**Regulation 28 and 29** Reportable incident reporting: Reportable incidents are required to be reported to DMIRS within 2 hours and a written report within 3 days. **Regulation 30** Recordable incident reporting: A record of all recordable incidents that occurred during the calendar month to be submitted to DMIRS not later than 15 days after the end of that calendar month.	**Incident Shared Number: (08) 9222 3727** (reportable incidents only) **Email:** petroleum.environment@dmirs.wa.gov.au
Schedule of Onshore Petroleum and Production Requirements – (1991) (amended 2010) (For spills, ATCO has adopted the reporting thresholds outlined in *Schedule of Onshore Petroleum Exploration and Production Requirements 1991*)	**Clause 290 (1)(a) and (1)(b)** Report shall be made forthwith (2 hours) upon the occurrence of: o Spill of hydrocarbon in inland waters > 80L; o Spill in hydrocarbon in other areas > 500L; o Significant quantity of petroleum in gaseous form > 500m^3; and Uncontrolled escape or ignition of petroleum or other flammable or combustible material causing a potentially hazardous situation.	**Incident Shared Number: (08) 9222 3727** (reportable incidents only) **Email:** petroleum.environment@dmirs.wa.gov.au
DMIRS Direction issued 22 April 2003	**DMIRS Direction:** Spillage of hydrocarbons or other material[3] that affects a ground surface area > 100m^2.	**Incident Shared Number: (08) 9222 3727** (reportable incidents only) **Email:** petroleum.environment@dmirs.wa.gov.au
Environmental Protection Act (1986)	***Environmental Protection Act (1986)* s.3A**	**DWER 24-hour Pollution Hotline:** 1300 784 782

[3] Other materials include drilling fluids, chemicals, produced formation water or substances that have the potential to adversely affect surface vegetation, soil or subsurface ground water.

Regulations & Schedules	Incident reporting	Contact Details
	Where an incident causes or threatens to cause serious or material environmental harm. **Serious Environmental Harm:** environmental harm that: • Is irreversible, of a high impact or on a wide scale; or • Is significant or in an area of high conservation value or special significance; • Results in actual or potential loss, property damage; or • Damage costs of an amount, or amounts in aggregate, exceeding 5 times the threshold amount[4]. **Material Environmental Harm**: environmental harm that: • Is neither trivial nor negligible; or • Results in actual or potential loss, property damage; or • Damage costs of an amount, or amounts in aggregate, exceeding the threshold amount.	**Email:** pollutionwatch@dwer.wa.gov.au **Online Pollution Reporting Form:** www.der.wa.gov.au/your-environment/reporting-pollution/report-pollution-form

[4] The threshold amount means $100,000, or if a greater amount is prescribed by regulation, that amount (*Environmental Protection Act [1986]*).

9.7 Monitoring and Assessment

Monitoring and surveillance of spill movement is required throughout the response exercise. The information gathered allows the responder to understand:

- Where the oil is going and which areas could be affected.
- How the spilled substance is reacting in the environment (i.e. dispersing, evaporating, degrading, etc).

The movement and properties of the spilled substance will provide the information needed to determine the appropriate method of response. The main action in the event of a spill will be focused on containment and recovery of the spilt material. Monitoring the movement of the oil on the surface and the proximity to sensitive areas will also dictate the urgency of the response operations. Factors to be considered include:

- Size/volume of the spill;
- The likelihood of further spills;
- Type(s) of oil;
- Weather, including wind direction and force;
- Position of the spill in relation to sensitive areas; and
- Likely movement of the spill.

9.8 Control and Recovery

In the event of a spill, factors to be considered in determining the containment and recovery include:

- Size of the spill – the volume spilled (or likely to be spilled);
- Characteristics of the oil – the type of oil may be one for which specialist response expertise or equipment is needed;
- Location of the spill – the location of the spill may be difficult to reach, may be in the proximity of sensitive resources; and/or
- Nature or extent of the impacts of the spill – any combination of oil type and character, spill location, environmental conditions and proximity to sensitive resources that could influence the size of any impacts created.

Spill clean-up kits and SDSs, will be available in ATCO field vehicles where necessary (refer to Appendix H). The contents of the spill kit should be relevant to the area and the anticipated type and volume of spill. Spillages will be contained and managed by the use of absorbent material and the excavation and removal of contaminated soil off site to a Licenced waste disposal facility.

9.9 Waste Management

Waste disposal is a major oil spill response consideration. For large spills, the waste volumes generated can be as great as the amount of oil spilled and in some cases considerably more (underlying surface material [e.g. soils] will need to be considered). Each type of waste has a different optional disposal method and it is important to:

- Segregate wastes by type;
- Minimise the quantity of each type;
- Avoid mixing hazardous and non-hazardous wastes together to prevent creating a larger volume of hazardous waste; and
- Label all waste containers and identify the source.

Any waste resulting from a spill will be collected and appropriately labelled for disposal. The waste is then transported by an authorised contractor off-site to a licenced waste disposal facility. A waste tracking form must be requested from the contractor upon completion of the delivery run.

9.10 Restoration and Cost Recovery

Post spill environmental surveys, including soil testing in instances where soil has been contaminated, may be required and will be organised by ATCO to determine the potential environmental impacts (i.e. the rate and success of recovery of the impacted area[s]).

The extent and feasibility of environmental restoration of impacted areas will be determined during post spill environmental surveys. A subsequent report detailing results of any monitoring surveys or restoration work will be prepared and submitted to relevant government authorities as is necessary.

ATCO acknowledges it may also be required to participate in recovery activities to support the affected community in reconstruction of the environment and infrastructure. ATCO will incur all expenses associated with spill events including, but not limited to spill response, recovery, remediation and monitoring.

9.11 Final Actions

Upon conclusion of the response, the following tasks are to be undertaken:

- Advise all relevant personnel and contractors;
- Advise all relevant government authorities where applicable;
- Prepare detailed reports and collate all documents including statements concerned with the incident.;
- Undertake an inventory of consumables and prepare accounts for dissemination;
- Confirm that equipment has not been damaged in use;
- Arrange for the recovery and return of equipment to various locations from which it may have been dispatched;
- Arrange for the refurbishment of consumed equipment and stocks;
- Conduct an investigation, including conducting soil testing in instances where soil has been contaminated by the spill and assess environmental monitoring requirements; and
- Ensure stewardship of documentation and adequate resourcing to manage long-term environmental monitoring as well as ongoing insurance and legal matters.

10. MEASUREMENT AND EVALUATION

10.1 Monitoring

Environmental monitoring will be undertaken to assess compliance with the stated environmental objectives, relevant regulatory requirements and to ensure that the operation and maintenance is conducted in a manner which minimises impact on the environment.

A monthly ROW inspection and monitoring program is completed of PL83 and includes the mitigation measures detailed in Section 8.2 Performance Objectives, Standards and Measurement Criteria.

All inspections and audits are documented and made available and discussed with the workforce to ensure awareness of issues and ability to address hazards before they become incidents. During operations, additional preventative actions may be identified through review of Take 5 or JRA and work processes. As new preventative actions are identified, they are incorporated into relevant Take 5 or JRAs, and where appropriate into the relevant procedures and the Environmental Risk Register.

Corrective actions may be required to address an actual environmental impact (for instance a spill or erosion event) or near miss and will be developed through incident and hazard investigations according to HSE Event Notification. These corrective actions may include actions intended to prevent a recurrence, such as an update of relevant procedures and documentation, Take 5 or JRA and training materials.

Corrective actions identified through incident and hazard investigations are recorded as part of that system. Through this system, actions will be assigned to a responsible person, given a due date and tracked to completion.

MAOP reviews are carried out to ensure that High Pressure pipelines continue to be suitable for operation at its nominated MAOP. Pipeline designed to AS: 2885 are subjected to a MAOP review at intervals not exceeding 5 years.

Review of these pipelines is conducted to assess:

- MAOP; and
- Condition and ongoing operational ability of the pipe at the end of its design life.

High Pressure (HP) regulators, defined as those designed to have an inlet pressure above 350 kPa, such as those at PRS015 are scheduled to be maintained at 4 monthly intervals in accordance with AGA-S&P-ST09 Asset Lifecycle Strategy - Pressure Regulating. PRS015 is scheduled to be inspected once every 4 months for condition of pipework, and associated equipment.

As part of condition monitoring, a survey of above ground pipework is to include a visual inspection of:

- MGL condition at ground entry and exit locations.
- Insulations pads.
- Brackets, saddles and supports condition and for signs of crevice corrosion.

- Casing integrity (no bridging).
- Vent condition (if present) and testing for the presence of gas at the vents.
- Signs of soil erosion for water crossing mains and coating condition for exposed pipe section;
- Blistered or coating disbondment areas for signs of corrosion.
- Pipe coating at crevice areas such as under the pipe supports and on the underside of the pipe work, especially around the interface between carrier pipe and pipe support.
- Insulation joints such that water cannot reach and collect within the joint. A check on insulation performance and short-circuiting is also to be conducted; and
- Polarisation cell across the insulation flange.

Where severe corrosion is present, the wall thickness and pit depths are to be measured to ascertain the integrity of the pipe work and a field report is to be submitted for assessment.

Natural gas does not possess a natural distinctive odour. An odorant is added to the gas to provide a warning of the presence of the flammable gas during a leak. The relevant odorant that is added is as prescribed in the *Gas Standards (Gas Supply and System Safety) Regulations (2000).* The odorant additive is injected into the natural gas within PL 40 (DBNGP) and is not part of any PL83 activities. Monthly and six-monthly sampling downstream of PL83 above ground facilities is conducted to monitor odorant levels and composition of natural gas throughout the distribution system respectively. Layout diagrams of above ground facilities are depicted in Appendix A and B.

The *National Greenhouse Emissions Reporting Act (2007)* (NGER) is the national framework under which Australian operations must quantitatively report greenhouse gas emissions, energy consumption and production and other information specified under NGER legislation.

ATCO is responsible for collating data from emissions sources that include:

- Unaccounted for Gas (UAFG), including planned venting of gas,
- Vehicle emissions; and
- Building emissions.

Emissions data is reported quarterly in accordance with the requirements set out in Table 14 and annually as per the requirements of NGER Act. Data relating to total pipeline emissions is also contained in the PL83 Annual Environmental Report submitted annually in accordance with the requirements set out in Table 14. All reports must contain adequate information that can be used to verify the relevance, completeness, consistency, transparency and accuracy of reported energy and greenhouse data.

10.2 Auditing

The purpose of the Audit Plan is to ensure ATCO has an effective audit and review process to ensure continuous improvement and EP compliance.

Audits will be conducted in accordance with the Audit Plan. This plan includes one internal OEP compliance audit every year with provision for a third party independent OEP compliance audit once every 5 years.

Internal audits are regularly conducted to assess effectiveness and compliance of the management system and to facilitate continuous improvement. Where non-conformance or problems are identified, actions are established, implemented and followed up to ensure rectification.

External audits are carried out by an independent third party contracted by ATCO to determine the extent of compliance of operational systems of ATCO with the PL83 and this OEP.

10.3 Record Keeping

Records for the monitoring and auditing of the environmental performance of the activity against the environmental performance objectives, standards and measurement criteria will be kept for a period of five (5) years and provided to DMIRS upon request.

Records will be kept including the following:

- Verification records and documents associated with performance objectives, standards and measurement criteria.
- Internal audits and external audits.
- Monitoring and inspection records; and
- Any records included as part of the reporting information.

10.4 Reporting

Environmental reporting includes annual compliance, emissions and discharges reporting and monthly incident reporting. All reporting will be in compliance with *Petroleum Pipelines (Environment) Regulations (2012)*.

All written environmental reports to DMIRS will be submitted to the Petroleum Environment Branch via petroleum.environment@dmirs.wa.gov.au.

Reportable incidents, should they occur, will be reported to DMIRS via the incident shared phone (08) 9222 3727 and via e-mail to petroleum.environment@dmirs.wa.gov.au

A summary of the legislative reporting requirements is provided in Table 5 and has been extracted from the Auditing and Reporting Requirements for Petroleum Activities in Western Australia, DMIRS October 2012.

10.4.1 Routine Reporting

The routine reporting requirements for PL83 are detailed in Table 15.

Table 14: Routine Reporting Requirements

Frequency	Date	Requirement
Monthly	All months on or before 15th calendar day.	In accordance with Regulation 30(5) of the *Petroleum Pipelines (Environment) Regulations (2012)* a report of recordable incidents occurring within a calendar month is to be submitted to DMIRS. If no recordable incidents

Frequency	Date	Requirement
		have occurred, then a report including a statement to that effect is required
Quarterly	January, April, July, October on or before 15th calendar day.	To monitor all emissions and discharges to any land, air, marine, seabed, groundwater, subsurface or inland waters environment and submit to DMIRS a written report of emissions and discharges
Annual	On or before March 30th	Reporting to DMIRS at least annually providing evidence of compliance that environmental performance objectives and environmental performance standards of the OEP have been met, and that the implementation strategy in the OEP has been met
5 Yearly		A revised OEP is to be submitted to DMIRS every 5 years.
Close Out	Close out reports will be submitted to DMIRS within three months of completion of the activity.	Provide close out report to DMIRS on completion of the activity in place of an annual report if the activity is completed within the year.

Due to the pipeline being relatively small (~7km) there are minimal planned emissions and discharges to the environment.

The planned maintenance discharges occur on two (2) 1,800kpa streams producing a total estimated discharge of approximately 7m^3 (3.5m^3 per stream) at least every 4 months. Methane gas is also released to depressurise pipework prior to maintenance activities.

Methane gas is released annually for the filter strainer at 3,500kpa per filter (2 filters used) which produces a total volume discharged of approximately 1.4m^3 including venting (0.7m^3 per filter and piping around).

10.4.2 Incident Reporting

All personnel involved in PL83 will report all environmental hazards and incidents using the HSE Event Notification Process and will be monitored via the HSEQ Incident Management System. The reporting system has an incident and action tracking process to facilitate timely and effective close out of any identified actions arising from the incident.

All personnel are encouraged to report all hazards and events to act as an alert to environmental risks and to maintain a program of continual improvement.

All incidents will be classified as per the Emergency Response Management Plan (AGA-R&R-PL01) which includes a detailed emergency response flow chart.

Where an incident has the potential to have a significant impact on the environment, government agencies will be notified to aid with the mitigation of impacts on the environment. The DMIRS will be notified for incidents within the Pipeline Licence area. Incidents outside the Pipeline Licence area are covered under the *Environmental Protection Act (1986)* and must be reported to DWER.

Recordable incidents include incidents arising from an activity that 'breaches an environmental performance objective or environmental performance standard in the Environment Plan' and 'is not a reportable incident'. Written reports are to be sent to DMIRS of all recordable incidents occurring within a calendar month by no later than 15 days after the end of that calendar month. If no recordable incidents occur during the month, the then monthly report will include a statement to that effect.

Recordable incidents resulting in a breach of environmental performance objective or performance standard detailed in the EP include but are not limited to:

- Introduction or spread of listed weed species;
- Excessive erosion;
- Fauna deaths;
- Noise disturbances to local residents and other land users;
- Disturbance to existing native vegetation; and
- Unacceptable reinstatement following maintenance activity.

A reportable incident can be an incident arising from the activity if the incident has caused, or has the potential to cause, an adverse environmental impact; and under the environmental risk assessment process described in the Environment Plan for the activity, that the environmental impacts is categorised as 'intermediate or more serious than intermediate'.

Initial notice to DMIRS shall be verbal and must be provided at within 2 hours, and initial report within 3 days after the first occurrence of the accident or incident or the detection of the accident or incident by the operator (unless a written extension is obtained).

Reportable incidents include but are not limited to:

- Vehicle and personnel damage to matter of National Environmental Significance (as per the *E*PBC Act);
- Spread of declared plants or Weeds of National Significance (WONS) into clean areas by vehicles or personnel;
- Ignition of fire resulting from pipeline activities which causes damage to persons, property, infrastructure or the environment and requires external assistance from emergency services to control;
- Unauthorised clearing of rare flora;
- Vehicle and personnel causing death or injury to fauna of conservation significance;
- Vehicle and personnel damage to environmentally sensitive areas;
- Impacts to items or areas of cultural heritage significance;
- Gas release which causes serious environmental harm; and
- Any significant spills of hydrocarbons (defined as any spill to Inland Waters greater than 80L or in other areas > 500L) or significant hydrocarbon gaseous emissions (defined as any gaseous emission greater than 500 m^3).
- A report in writing of any occurrence referred above shall be submitted to DMIRS as soon as practicable after the occurrence specifying:

- The nature of the incident;
- The date, time and place of the occurrence;
- The estimated quantity of liquid that escaped or burned;
- Particulars of damage caused by the incident;
- The events as they are known, or suspected that caused or contributed to the escape;
- Particulars of methods used to control the incident;
- Particulars of methods used or proposed to be used to repair property damaged by the incident; and
- Measures taken, or to be taken, to prevent a possible recurrence of the incident.

A record of all environmental incidents, including complaints, will be maintained in the HSEQ Incident Management System, and will include details of the action implemented to minimise potential reoccurrence. A summary of legislative reporting requirements is shown in Table 16.

Table 15: Summary of Legislative Reporting Requirements *(Legislation: Petroleum Pipelines Act 1969)*

Regulations & Schedules	Incident reporting	Routine Reporting
Petroleum Pipelines (Environment) Regulations (2012)	**Regulation 28 and 29** Reportable incident reporting: Reportable incidents are required to be reported to DMIRS within 2 hours and a written report provided within 3 days. **Regulation 30** Recordable incident reporting: A record of all recordable incidents that occurred during the calendar month to be submitted to DMIRS not later than 15 days after the end of that calendar month.	**Regulation 16** Requires the operator to report to DMIRS at least annually to provide evidence of compliance. A close out report is acceptable on completion of an activity if the activity is of short duration. **Regulation 33** The operator of an activity must monitor all emissions and discharges to any land, air, marine, seabed, groundwater, sub-surface or inland waters environment and submit a written report of emissions and discharges every three months commencing when the EP for the activity is approved.
Schedule of Onshore Petroleum and Production Requirements – 1991 (amended 2010) (For spills, ATCO has adopted the reporting thresholds outlined in *Schedule of Onshore Petroleum Exploration and Production Requirements 1991*)	**Clause 290 (1)(a) and (1)(b)** Report shall be made forthwith (2 hours) upon the occurrence of: Spill of hydrocarbon in inland waters > 80L; Spill in hydrocarbon in other areas > 500L; Significant quantity of petroleum in gaseous form > 500m3; and Uncontrolled escape or ignition of petroleum or other flammable or combustible material causing a potentially hazardous situation.	
DMIRS Direction issued 22 April 2003	**DMIRS Direction:** Spillage of hydrocarbons or other material[5] that affects a ground surface area > 100m2.	

[5] Other materials include drilling fluids, chemicals, produced formation water or substances that have the potential to adversely affect surface vegetation, soil or subsurface ground water.

10.5 Decommissioning

A decommissioning plan will be developed as required for PL83. As described in Section 5.3.2, for decommissioning activities, a detailed Environmental Plan will also be developed. This plan will be submitted to DMIRS for approval within 6 months of cessation of operations.

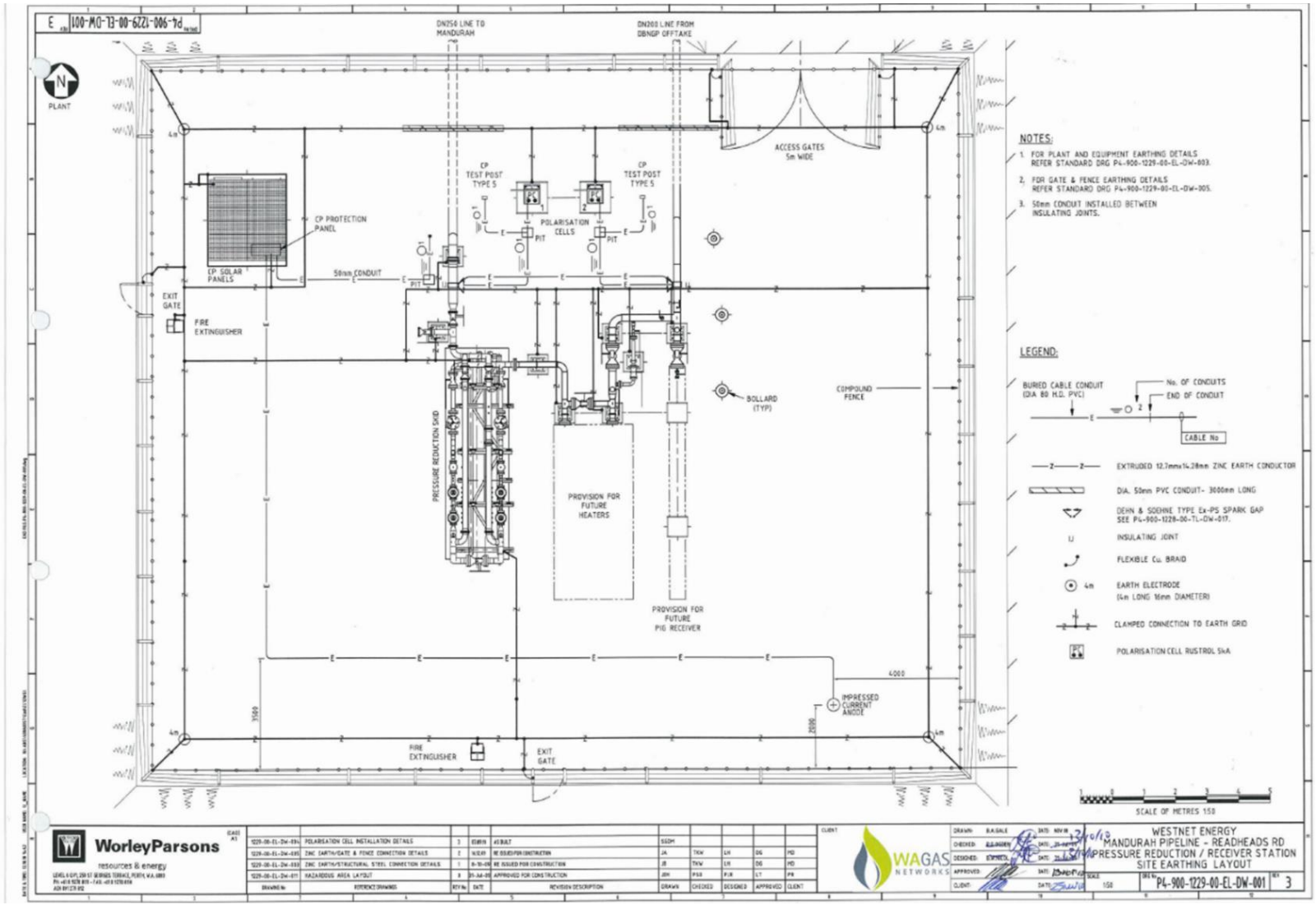
11. DOCUMENT APPROVAL

	Title	Name	Date
Owner:	General Manager HSE	Leonard Santana	
Reviewer:	Senior Environmental Advisor	Alan Lam	30/05/2024
Approver:	General Manager HSE	Leonard Santana	30/05/2024

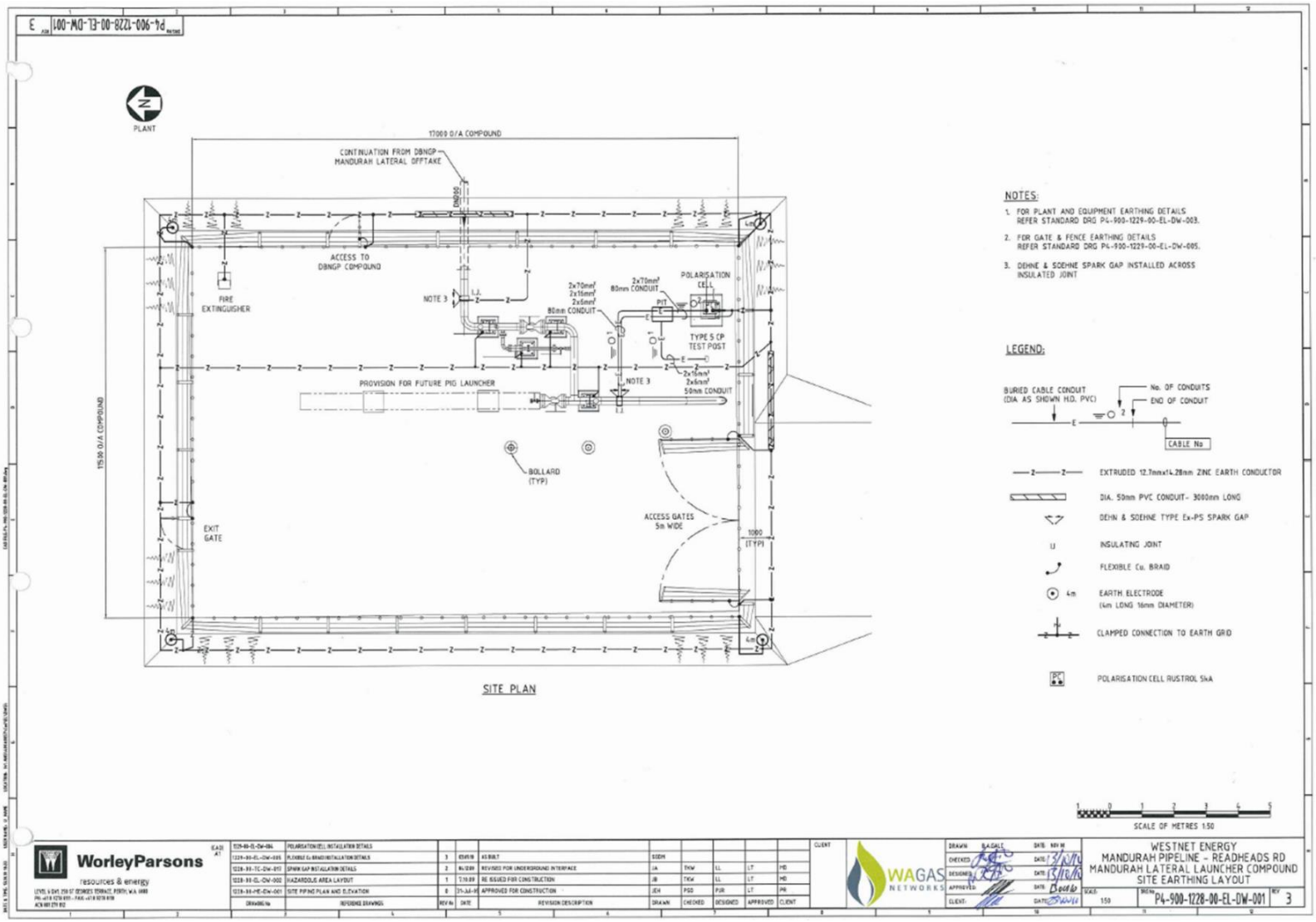
12. DOCUMENT HISTORY

Rev	Date	Amended By	Reason for Change
0	06/09/2010	Jodi Gratton	New document created
1	01/11/2010	Caitlin Bridgland	Update DMP contact details
2	02/08/2013	Jodi Gratton	Update to reflect changes in legislation
3	17/12/2014	Gemma Grigg	Update to reflect DMP comments
4	07/04/2019	Brad Wallace	Updated to reflect DMIRS comments
5	15/11/2019	Brad Wallace	Updated to reflect DMIRS comments
6	21/01/2020	Brad Wallace	Updated to reflect DMIRS comments
7	25/03/2020	Brad Wallace	Updated section 8.2.1 to 8.2.14 to reflect DMIRS comments.
8	04/09/2020	Brad Wallace	Update to include decommissioning, rehabilitation and closure activities.
9	03/12/2020	Brad Wallace	Updated based on DMIRS feedback relating to decommissioning, rehabilitation and closure activities.
10	14/12/2020	Brad Wallace	Document number updated.
11	06/10/2022 02/07/2023	Alan Lam	Updated accordingly to ensure compliance in relation to OSCP requirements. **NOT PUBLISHED TO MASTERCOPY**
12	28/04/2023	Alan Lam	Updated accordingly to reflect DMIRS comments (OTM Letter, dated 30/03/2023) **NOT PUBLISHED TO MASTERCOPY**
13	10/05/2024	Alan Lam	Updated accordingly to address/reflect DMIRS comments (OTM Letter 2, dated 21/06/2023).

APPENDIX A. PRS015 ABOVE GROUND FACILITY SCHEMATIC



APPENDIX B. LAUNCHER COMPOUND ABOVE GROUND FACILITY SCHEMATIC



APPENDIX C. HEALTH, SAFETY AND ENVIRONMENT POLICY

AA-HSE-PC04 Health Safety and Environment Practice

https://csprod-atco.opentext.cloud/otcs/llisapi.dll/link/96332674

APPENDIX D. INTERNAL REFERENCES

Document Name	Document Number
Asset Lifecycle Strategy - Corrosion Protection Systems	AGA-S&P-ST06
Asset Lifecycle Strategy - Distribution Mains and Services	AGA-S&P-ST08
Asset Lifecycle Strategy - Pressure Regulating Facilities	AGA-S&P-ST09
ATCO – Gas Division Emergency Exercises	AGA-R&R-PL01-WI02
ATCO Gas Australia Risk Matrix	AGA-GRC-RG08
Complaints Handling Procedure	AGA-O&M-PR31
Control of Hot Work	TOC PR0007 WI003
Construction Environmental Management Plan	ML-5.6-PA-001-1
Emergency Control Request Transmission Operator Gate Station	AGA-R&R-PL01-WI01
Emergency and Operational Contacts	AGA-R&R-PL01-FM04
Emergency Response Management Plan	AGA-R&R-PL01
Emergency Response Action Checklists	AGA-R&R-PL01-FM14
Dust Management Plan	AA-ENV-PLA-005
Excavation and Backfilling Requirements	AGA-SWI-EX01
Health Safety and Environment Practice	AA-HSE-PC04
Hydrostatic Testing	AGA-A&C-GL06
Incident Reporting & Investigation Procedure	AA-HSE-PR20
Landowner Occupier Liaison Procedure	AGA-R&R-PR08
Management of Acid Sulphate Soils	AGA-HSE-PR03
Management of Decommissioned Assets	AGA-ENG-GL12
Managing Hazardous Chemicals and Dangerous Goods	AA-HSE-PR39
Metro Pipeline Patrol	AGA-SWI-ST01-FM02
National Greenhouse and Energy Reporting System Handbook (NGERS Handbook)	AA-HSE-MA01
Noise Management Plan	AA-HSE-PL02
Notifiable Incident Reporting	AGA-R&R-PR03
Permit to Work System	AGA-R&R-PR06
Project Advice Checklist	AGA-ENG-PL02-FM01
Project Advice Checklist Environmental Considerations Guideline	AGA-HSE-GL02
Risk Management Framework	AA-GRC-PL05
Safe Work Instruction: Field Emergency Response Unit (FERU): Use of FERU	AGA-SWI-FERU01
Safe Work Instruction: Maintenance: Natural Gas Networks Leak Survey and Leak Detection	AGA-SWI-MA08
Safe Work Instruction: Maintenance of Regulator Sets	AGA-SWI-MW04
Safe Work Instruction: Pipeline Patrol	AGA-SWI-ST01

Document Name	Document Number
Safe Work Instruction: Site Setup Barricading	AGA-SWI-SSU04
Safe Work Instruction Weed Removal	AGA-HSE-PR20-WI01
Erosion and Sediment Control	AGA-HSE-WI04
Site Inspection – Pipeline Patrol	AGA-R&R-PR01-FM21
Spill Management Procedure	AA-HSE-PR04
Spill Response Flow Diagram	AA-HSE-PR04-FM01
Stockpile Management Guideline	AGA-HSE-GL09
Site Setup	AGA-SWI-SSU01
Waste Management Plan	AA-ENV-PLA-001
Weed and Pathogen Management	AGA-HSE-PR20
Weed Removal Work Instruction	AGA-HSE-PR20-WI01

APPENDIX E. EXTERNAL REFERENCES

External Reference Document
Aboriginal Heritage Act 1972
Bush Fires Act 1954
Conservation and Land Management Act 1984
Contaminated Sites Act 2003
Dangerous Goods Safety Act 2004
Dampier to Bunbury Pipeline Act 1997
Environmental Protection Act 1986
Environmental Protection Regulations 1987
Environmental Protection (Clearing Of Native Vegetation) Regulations 2004
Environmental Protection (Controlled Waste) Regulations 2004
Environmental Protection (Noise) Regulations 1997
Environmental Protection (Abrasive Blasting) Regulations 1998
Environment Protection and Biodiversity Conservation Act 1999 (Cth)
Explosives and Dangerous Goods Act 1961
Health Act 1911
Heritage of Western Australian Act 1990
Land Administration Act 1997
Local Government Main Roads Act 1930
Native Title Act 1993
Petroleum Pipelines Act 1969
Petroleum Pipelines (Environment) Regulations 2012
Rights in Water and Irrigation Act 1914
Rights in Water and Irrigation Regulations 2000
Schedule of Onshore Petroleum Exploration and Production Requirements 1991
Soil and Land Conservation Act 1945
Wildlife Conservation Act 1950
APIA Code of Environmental Practice
APGA Code of Environmental Practice – Onshore Pipelines Revision 5
AS 2885.0-2018 Pipelines – Gas and Liquid Petroleum General Requirements
AS/NZS 2885.1-2018 Pipelines - Gas and Liquid Petroleum - Design and Construction
AS/NZS 2885.2-2016 Pipelines - Gas and Liquid Petroleum – Welding
AS 2885.3-2012 Pipelines - Gas and Liquid Petroleum - Operation and Maintenance
AS/NZS 2885.5-2012 Pipelines - Gas and Liquid Petroleum - Field Pressure Testing

APPENDIX F. ENVIRONMENTAL RISK ASSESMENT

Summary of MGL Environmental Hazards																
REF (Item No.)	LOCATION (specific location or whole of asset)	ASPECT	SOURCE OF RISK (HAZARD) (The source with potential to harm)	ENVIRONMENTAL IMPACT (CONSEQUENCE)	CAUSES (How and Why can it happen)	Pre-Treatment Risk Ranking			PHYSICAL SAFEGUARDS (Identify existing Controls)	PROCEDURAL SAFEGUARDS (Identify existing Controls)	RECOVERY SAFEGUARDS (Identify existing Controls)	Residual Risk Analysis			ALARP (Yes/No/ N/A)	Justification /consideration/ description for ALARP
						L	C	R				L	C	R		
Right of Way (ROW)																
1	Whole of asset	Weed Control	Localised spraying and hand removal of weeds	• Death to fauna • Impact on fauna • Impact to native vegetation • Chemical spills • General waste from containers and equipment • Spread of weeds	• Interaction with fauna and native flora • Inadequate storage of chemicals and equipment • Inadequate knowledge of weed control • Uncontrolled spraying	4 - Occasional	2 - Minor	8 - Low	• Gates and fencing e.g. rare flora locations	• Environmental Plan • Weed and Pathogen Management and Vehicle Hygiene Plan, Work Instruction Weed removal, • Site Inspection - Pipeline Patrol, • Safe Work Instruction: Pipeline Patrol, • Employee HSE Manual and Induction.	• Incident Notification – Control Room Procedure • Incident Report Form • HSE Event Investigation, Corrective and Preventative Action and Close out Procedure	3 - Unlikely	2 - Minor	6 - Low	Yes	Given the existing mitigation measures in place and the experience personnel that the Operations and Maintenance (O&M) team have, and including the additional mitigation measures identified that would reduce the risk, therefore it is considered ALARP
2	Whole of asset	Line of sight clearance	Clearance of the Licence area to maintain line-of-sight and removal of vegetation identified as a risk to operational integrity	• Death to fauna • Impact on fauna habitat • Impact to native vegetation • Spread of weeds	• Uncontrolled clearing • Lack of knowledge surrounding habitat trees e.g. cockatoo nesting hollows • Inadequate weed control	3 - Unlikely	3 - Severe	9 - Intermediate		• Environmental Plan • Weed and Pathogen Management and Vehicle Hygiene Plan, Work Instruction Weed removal, • Site Inspection - Pipeline Patrol, • Safe Work Instruction: Pipeline Patrol, • Employee HSE Manual and Induction • Liaison between Environment Advisor and Pipeline Patrol • Procurement process for contractor selection	• Incident Notification – Control Room Procedure • Incident Report Form • HSE Event Investigation, Corrective and Preventative Action and Close out Procedure	2 - Remote	2 - Minor	4 - Negligible	Yes	Given the existing mitigation measures in place and the experience personnel that the O&M team have, and including the additional mitigation measures identified that would reduce the risk, therefore it is considered ALARP

Summary of MGL Environmental Hazards																
REF (Item No.)	LOCATION (specific location or whole of asset)	ASPECT	SOURCE OF RISK (HAZARD) (The source with potential to harm)	ENVIRONMENTAL IMPACT (CONSEQUENCE)	CAUSES (How and Why can it happen)	Pre-Treatment Risk Ranking			PHYSICAL SAFEGUARDS (Identify existing Controls)	PROCEDURAL SAFEGUARDS (Identify existing Controls)	RECOVERY SAFEGUARDS (Identify existing Controls)	Residual Risk Analysis			ALARP (Yes/No/ N/A)	Justification /consideration/ description for ALARP
						L	C	R				L	C	R		
3	Whole of asset	Patrolling and inspections	Driving along the access track	Unauthorised impact on native vegetation • Death to fauna • Spread of weeds • Spread of phytophthora dieback • Oil and diesel spills from vehicle • Unauthorised activity	• Lack of familiarity with the Pipeline area and procedures and protocols • failure to stick to designated access areas • inadequate fencing • Inadequate weed control	3 - Unlikely	4 - Major	12 - High	• Signs • physical barriers (e.g. Gates, fences, log and rock barriers, trenches)	Environmental Plan Designated access tracks and parking areas, Commissioning inductions, Landholder consultation, inspections and monitoring, Inductions, Awareness and training, Speed limits, COE points (as required per weather conditions), Weed and Pathogen Management and Vehicle Hygiene Plan, Work Instruction Weed removal, Site Inspection - Pipeline Patrol, Traffic Management Plan, Safe Work Instruction: Pipeline Patrol, Employee HSE Manual and Induction Regular servicing of vehicles	• Incident Notification – Control Room Procedure • Incident Report Form • HSE Event Investigation, Corrective and Preventative Action and Close out Procedure	1 - Hypothetical	4 - Major	4 - Negligible	Yes	Given the existing mitigation measures in place and the experience personnel that the O&M team have, and including the additional mitigation measures identified that would reduce the risk, therefore it is considered ALARP

Summary of MGL Environmental Hazards																
REF (Item No.)	LOCATION (specific location or whole of asset)	ASPECT	SOURCE OF RISK (HAZARD) (The source with potential to harm)	ENVIRONMENTAL IMPACT (CONSEQUENCE)	CAUSES (How and Why can it happen)	Pre-Treatment Risk Ranking			PHYSICAL SAFEGUARDS (Identify existing Controls)	PROCEDURAL SAFEGUARDS (Identify existing Controls)	RECOVERY SAFEGUARDS (Identify existing Controls)	Residual Risk Analysis			ALARP (Yes/No/ N/A)	Justification /consideration/ description for ALARP
						L	C	R				L	C	R		
Above Ground Facility Inspections																
4	Launcher/ PRS	Above Ground Facility Inspections	Driving along the access track and conducting a physical inspection of sites by walking around each site	• Death to fauna • Spread of weeds • Spread of phytophthora dieback • Oil and diesel spills from vehicle • Unauthorised activity • General waste from containers and equipment	• Lack of familiarity with the Pipeline area and procedures and protocols • failure to stick to designated access areas • inadequate fencing • Inadequate weed control • Interaction with fauna • Inadequate storage of chemicals and equipment	3 - Unlikely	4 - Major	**12 - High**	• Signs • physical barriers (e.g. Gates, fences, log and rock barriers, trenches)	Environmental Plan Designated access tracks and parking areas, Commissioning inductions, Landholder consultation, inspections and monitoring, Inductions, Awareness and training, Speed limits, COE points (as required per weather conditions), Weed and Pathogen Management and Vehicle Hygiene Plan, Work Instruction Weed removal, Site Inspection - Pipeline Patrol, Traffic Management Plan, Safe Work Instruction: Pipeline Patrol, Employee HSE Manual and Induction Regular servicing of vehicles	• Incident Notification – Control Room Procedure • Incident Report Form • HSE Event Investigation, Corrective and Preventative Action and Close out Procedure	1 - Hypothetical	4 - Major	**4 - Negligible**	Yes	Given the existing mitigation measures in place and the experience personnel that the O&M team have, and including the additional mitigation measures identified that would reduce the risk, therefore it is considered ALARP

Summary of MGL Environmental Hazards																
REF (Item No.)	LOCATION (specific location or whole of asset)	ASPECT	SOURCE OF RISK (HAZARD) (The source with potential to harm)	ENVIRONMENTAL IMPACT (CONSEQUENCE)	CAUSES (How and Why can it happen)	Pre-Treatment Risk Ranking			PHYSICAL SAFEGUARDS (Identify existing Controls)	PROCEDURAL SAFEGUARDS (Identify existing Controls)	RECOVERY SAFEGUARDS (Identify existing Controls)	Residual Risk Analysis			ALARP (Yes/No/ N/A)	Justification /consideration/ description for ALARP
						L	C	R				L	C	R		
Pipeline Operations																
5	Whole of asset	Cathodic Protection Surveys & DCVG Surveys	Inspection of Cathodic Protection Points on foot	• Death to fauna • Spread of weeds • Spread of phytophthora dieback	• Interaction with fauna • Lack of familiarity with the Pipeline area and procedures and protocols • failure to stick to designated access areas • inadequate fencing • Inadequate weed control	3 - Unlikely	4 - Major	**12 - High**	• Signs • physical barriers (e.g. Gates, fences, log and rock barriers, trenches)	Environmental Plan Designated access tracks and parking areas, Commissioning inductions, inspections and monitoring, Inductions, Awareness and training, COE points (as required per weather conditions), Weed and Pathogen Management and Vehicle Hygiene Plan, Work Instruction Weed removal, Site Inspection - Pipeline Patrol, Safe Work Instruction: Pipeline Patrol, Employee HSE Manual and Induction	• Incident Notification – Control Room Procedure • Incident Report Form • HSE Event Investigation, Corrective and Preventative Action and Close out Procedure	2 - Remote	4 - Major	**8 - Intermediate**	Yes	Given the existing mitigation measures in place and the experience personnel that the O&M team have, and including the additional mitigation measures identified that would reduce the risk, therefore it is considered ALARP

Summary of MGL Environmental Hazards																
REF (Item No.)	LOCATION (specific location or whole of asset)	ASPECT	SOURCE OF RISK (HAZARD) (The source with potential to harm)	ENVIRONMENTAL IMPACT (CONSEQUENCE)	CAUSES (How and Why can it happen)	Pre-Treatment Risk Ranking			PHYSICAL SAFEGUARDS (Identify existing Controls)	PROCEDURAL SAFEGUARDS (Identify existing Controls)	RECOVERY SAFEGUARDS (Identify existing Controls)	Residual Risk Analysis			ALARP (Yes/No/ N/A)	Justification /consideration/ description for ALARP
						L	C	R				L	C	R		
6	Launcher /PRS	Testing and Inspection of Relief Valves	Venting of minimal quantities of gas to the atmosphere	• Greenhouse gas emissions • Spills • General waste from containers and equipment • Noise due to testing activities • Debris e.g. dirt in pipe, that fall over flora	• Inadequate storage and handling of chemicals • Faulty equipment	5 - Frequent	1 - Trivial	5 - Low		• Environmental Plan • The planned release of gas will only take place under favourable meteorological conditions, • Adjacent landholders, local authorities and regulatory authorities will be advised of pipeline venting operations prior to the activity commencing, periodic leakage surveys conducted, • Gas vents located at appropriate distances from residential areas and infrastructure, • Emissions are monitored and recorded in accordance with commonwealth legislation, • Greenhouse Gas Emissions Reporting Procedure, • Site Inspection - Pipeline Patrol, • Safe Work Instruction: Pipeline Patrol, • Land Owner Liaison, • Employee HSE Manual and Induction. • Emergency shutdown process	• Incident Notification – Control Room Procedure • Incident Report Form • HSE Event Investigation, Corrective and Preventative Action and Close out Procedure • Complaints handling procedure	5 - Frequent	1 - Trivial	5 - Low	N/A	Acceptable against objectives

Summary of MGL Environmental Hazards																
REF (Item No.)	LOCATION (specific location or whole of asset)	ASPECT	SOURCE OF RISK (HAZARD) (The source with potential to harm)	ENVIRONMENTAL IMPACT (CONSEQUENCE)	CAUSES (How and Why can it happen)	Pre-Treatment Risk Ranking			PHYSICAL SAFEGUARDS (Identify existing Controls)	PROCEDURAL SAFEGUARDS (Identify existing Controls)	RECOVERY SAFEGUARDS (Identify existing Controls)	Residual Risk Analysis			ALARP (Yes/No/ N/A)	Justification /consideration/ description for ALARP
						L	C	R				L	C	R		
7	Launcher /PRS	Filter Inspection or Replacement	Replacing the filter when the filter differential pressure exceeds prescribed limits	• Noise exposure • Spills • General waste from containers and equipment • Gas release	• Inadequate storage and handling of chemicals and equipment • Noise due to venting / gas release • Noise due to testing activities	4 - Occasional	1 - Trivial	4 - Low	Minimum 300m between machinery and residents/ businesses	Environmental Plan Experienced personnel, Commissioning procedures, Take 5/JRAs Awareness and training, Employee HSE Manual and Induction Environmental Noise Control Procedure • Emergency shutdown process	• Incident Notification – Control Room Procedure • Incident Report Form • HSE Event Investigation, Corrective and Preventative Action and Close out Procedure • Complaints handling procedure	4 - Occasional	1 - Trivial	4 - Low	N/A	Acceptable against objectives
8	Whole of asset	Emissions	Pipeline and facility maintenance operations	• Noise due to venting / gas release • Contamination of environment due to emissions	• Uncontrolled venting • Unit blow downs/venting • Valve opening/ testing	3 - Unlikely	1 - Trivial	3 - Negligible	Controlled pressures	Environmental Plan Experienced personnel, Commissioning procedures, Take 5/JRAs Awareness and training, Employee HSE Manual and Induction Environmental Noise Control Procedure Rated equipment used • Emergency shutdown process Emissions are monitored and recorded in accordance with commonwealth legislation, Greenhouse Gas Emissions Reporting Procedure,	• Incident Notification – Control Room Procedure • Incident Report Form • HSE Event Investigation, Corrective and Preventative Action and Close out Procedure • Complaints handling procedure	3 - Unlikely	1 - Trivial	3 - Negligible	N/A	Acceptable against objectives

Summary of MGL Environmental Hazards																
REF (Item No.)	LOCATION (specific location or whole of asset)	ASPECT	SOURCE OF RISK (HAZARD) (The source with potential to harm)	ENVIRONMENTAL IMPACT (CONSEQUENCE)	CAUSES (How and Why can it happen)	Pre-Treatment Risk Ranking			PHYSICAL SAFEGUARDS (Identify existing Controls)	PROCEDURAL SAFEGUARDS (Identify existing Controls)	RECOVERY SAFEGUARDS (Identify existing Controls)	Residual Risk Analysis			ALARP (Yes/No/ N/A)	Justification /consideration/ description for ALARP
						L	C	R				L	C	R		
9	Whole of asset	Pipeline Incident	Pipeline damage e.g. third party, corrosion etc.	• Noise due to venting / gas release • Contamination of environment due to emissions • Fire due to ignition of flammable substances	• Pipeline wall rupture • Pipeline wall penetration	3 - Unlikely	4 - Major	12 - High	Concrete slabs installed over pipeline where third party risks involved.	Environmental Plan Experienced personnel, Commissioning procedures, Awareness and training, Employee HSE Manual and Induction Environmental Noise Control Procedure Rated equipment used Emergency shutdown process Site Inspection - Pipeline Patrol, Safe Work Instruction: Pipeline Patrol, Safety Management Study - Pipeline specific Hazop	• Incident Notification – Control Room Procedure • Incident Report Form • HSE Event Investigation, Corrective and Preventative Action and Close out Procedure • Complaints handling procedure	1 - Hypothetical	4 - Major	4 - Negligible	Yes	Given the existing mitigation measures in place and the experience personnel that the O&M team have, and including the additional mitigation measures identified that would reduce the risk, therefore it is considered ALARP
Pipeline Maintenance																
10	Whole of asset	Erosion Event	Major rainfall events, vehicle/machinery movement along ROW	• Loss of top soil • Contamination of water bodies due to sedimentation • Spread of weeds due to water flow • Spread of phytophthora dieback due to water flow	•Vehicular movements • Weather events and weather patterns	2 - Remote	2 - Minor	4 - Negligible	• Erosion and sediment control structures e.g. limestone track	Environmental Plan Designated access tracks, Speed limits, Only use ROW for inspections, not as general access (reduction of traffic), Stockpiled Soil and Dust Control, Management of ASS, Excavation & Backfilling Requirements, Safe Work Instruction: Pipeline Patrol, Employee HSE Manual and Induction,	• Incident Notification – Control Room Procedure • Incident Report Form • HSE Event Investigation, Corrective and Preventative Action and Close out Procedure • Complaints handling procedure	2 - Remote	2 - Minor	4 - Negligible	N/A	Acceptable against objectives

Summary of MGL Environmental Hazards																
REF (Item No.)	LOCATION (specific location or whole of asset)	ASPECT	SOURCE OF RISK (HAZARD) (The source with potential to harm)	ENVIRONMENTAL IMPACT (CONSEQUENCE)	CAUSES (How and Why can it happen)	Pre-Treatment Risk Ranking			PHYSICAL SAFEGUARDS (Identify existing Controls)	PROCEDURAL SAFEGUARDS (Identify existing Controls)	RECOVERY SAFEGUARDS (Identify existing Controls)	Residual Risk Analysis			ALARP (Yes/No/ N/A)	Justification /consideration/ description for ALARP
						L	C	R				L	C	R		
11	Launcher /PRS	Pigging	Pigging - Cleaning, dimensioning and or inspecting the inside of the pipeline	• Noise due to venting / gas release • Contamination of environment due to emissions • Spills • General waste from containers and equipment and general consumables • Minimal dust is expected as the pipeline was cleaned after hydrostatic testing and is only 7.05 kilometres long.	• Inadequate storage and handling of chemicals and equipment • Inadequate dust management (for exiting of pig) • Venting of gas into atmosphere	4 - Occasional	2 - Minor	8 - Low	Controlled pressures and Catchment trays are maintained in place at receiver	• Environmental Plan • Ensure control equipment is available on-site and follow • Structured pigging program • lidded waste receptacles to be bought onto site and taken off site • Sump pumps are available to decant products from catchment trays to the storage drums • Spill kits are available on-site • Allow any gas in the oil to dissipate prior to decanting • Awareness and training • Experienced personnel	• Incident Notification – Control Room Procedure • Incident Report Form • HSE Event Investigation, Corrective and Preventative Action and Close out Procedure • Complaints handling procedure	4 - Occasional	1 - Trivial	4 - Low	Yes	Given the existing mitigation measures in place and the experience personnel that the O&M team have, and including the additional mitigation measures identified that would reduce the risk, therefore it is considered ALARP

Summary of MGL Environmental Hazards																
REF (Item No.)	LOCATION (specific location or whole of asset)	ASPECT	SOURCE OF RISK (HAZARD) (The source with potential to harm)	ENVIRONMENTAL IMPACT (CONSEQUENCE)	CAUSES (How and Why can it happen)	Pre-Treatment Risk Ranking			PHYSICAL SAFEGUARDS (Identify existing Controls)	PROCEDURAL SAFEGUARDS (Identify existing Controls)	RECOVERY SAFEGUARDS (Identify existing Controls)	Residual Risk Analysis			ALARP (Yes/No/ N/A)	Justification /consideration/ description for ALARP
						L	C	R				L	C	R		
12	Whole of asset	Pressure testing	Pressure testing and hydrostatic testing (with water)	• Erosion • Noise due to venting / gas release • Contamination of environment • Spills • General waste from containers and equipment • Discharge of chemically treated water (salt)	• Inappropriate water disposal • Emissions • Inadequate storage and handling of chemicals and equipment	4 - Occasional	1 - Trivial	**4 - Low**	Hydrostatic testing not carried out on the MGL pipeline where possible - carried out at depot instead. Disposal options (other than release to environment) will be explored prior to discharge.	• Environmental Plan • Maintenance Management System • Water quality guidelines (to determine ability to discharge to environment) • Relevant dangerous goods and environmental legislation and industry standards. • Oil Spill Contingency Plan and Emergency Response Management Plan • Hydro-test water discharge options explored on case-by-case basis to ensure chemically treated water is not discharged into the environment.	• Incident Notification – Control Room Procedure • Incident Report Form • HSE Event Investigation, Corrective and Preventative Action and Close out Procedure • Complaints handling procedure	2 - Remote	1 - Trivial	**2 - Negligible**	N/A	Acceptable against objectives

Summary of MGL Environmental Hazards																
REF (Item No.)	LOCATION (specific location or whole of asset)	ASPECT	SOURCE OF RISK (HAZARD) (The source with potential to harm)	ENVIRONMENTAL IMPACT (CONSEQUENCE)	CAUSES (How and Why can it happen)	Pre-Treatment Risk Ranking			PHYSICAL SAFEGUARDS (Identify existing Controls)	PROCEDURAL SAFEGUARDS (Identify existing Controls)	RECOVERY SAFEGUARDS (Identify existing Controls)	Residual Risk Analysis			ALARP (Yes/No/ N/A)	Justification /consideration/ description for ALARP
						L	C	R				L	C	R		
13	Whole of asset	Maintenance Excavations Replacement of Pipeline Section	• Use of machinery • Soil stockpiling • Pipeline maintenance e.g. welding, coating	• General waste • Fire risk • Spills • Death of fauna • Impact on fauna habitat • Damage to vegetation • Inability to reinstate • Soil compaction • Erosion • Emissions • Noise exposure • Oxidisation of ASS	• Poor housekeeping • Inadequate chemical storage and handling of fuel and hazardous materials • Interaction with fauna • Exposure to vibration • Unauthorised clearing • Inadequate stockpiling of soil and reinstatement • Lack of adherence to vehicle / machinery hygiene requirements • poor communication with residents • lack of exclusion zones	3 - Unlikely	4 - Major	**12 - High**	Catchment trays for pigging (during maintenance)	• Environmental Plan • Maintenance Management System • Relevant dangerous goods and environmental legislation and industry standards. • Oil Spill Contingency Plan and Emergency Response Management Plan • Excavation and Backfilling SWI • Weed and Pathogen Management and Vehicle Hygiene Plan • Structured pigging program •Environmental Noise Control and Noise Measurement Report Form; • Maintenance and construction scheduled for approved work hours; •Shire instructions/permit and noise management plan development if required by local government • Commissioning procedures, • Equipment selected that is likely to result in the lowest noise impact, • No equipment left running for extended periods (greater than 2 hours) when not in use, • Land Owner Liaison, • Employee HSE Manual and Induction. Management of ASS Procedure. Environmental Awareness Training. Project Checklist (identification of environmental aspects).	• Incident Notification – Control Room Procedure • Incident Report Form • HSE Event Investigation, Corrective and Preventative Action and Close out Procedure • Complaints handling procedure • Noise monitoring, response to complaints	2 - Remote	4 - Major	**8 - Intermediate**	Yes	Given the existing mitigation measures in place and the experience personnel that the O&M team have, and including the additional mitigation measures identified that would reduce the risk, therefore it is considered ALARP

Summary of MGL Environmental Hazards																
REF (Item No.)	LOCATION (specific location or whole of asset)	ASPECT	SOURCE OF RISK (HAZARD) (The source with potential to harm)	ENVIRONMENTAL IMPACT (CONSEQUENCE)	CAUSES (How and Why can it happen)	Pre-Treatment Risk Ranking			PHYSICAL SAFEGUARDS (Identify existing Controls)	PROCEDURAL SAFEGUARDS (Identify existing Controls)	RECOVERY SAFEGUARDS (Identify existing Controls)	Residual Risk Analysis			ALARP (Yes/No/ N/A)	Justification /consideration/ description for ALARP
						L	C	R				L	C	R		
14	Whole of asset	Welding	• Pipeline repairs or modifications are made to existing infrastructure	• General waste • Fire risk	• Poor housekeeping • Inexperienced personnel (welder)	3 - Unlikely	4 - Major	12 - High	Fire extinguisher onsite	• Environmental Plan • Maintenance Management System • Training and awareness • Emergency Response Management Plan • Isolation of pipe - gas free	• Incident Notification – Control Room Procedure • Incident Report Form • HSE Event Investigation, Corrective and Preventative Action and Close out Procedure • Complaints handling procedure	2 - Remote	4 - Major	8 - Intermediate	N/A	Acceptable against objectives
15	Whole of asset	Abrasive blasting Coating	Preparation of the pipeline surface for the application of sleeves, tape or epoxy coating in the pipeline refurbishment program.	• Poor air quality • Noise exposure • Contaminated water	• Poor housekeeping • Inadequate dust control / cabinet not implemented • Inadequate noise management • Blasting grit entering waterways	3 - Unlikely	2 - Minor	6 - Low		• Environmental Plan • Maintenance Management System • Training and awareness • Emergency Response Management Plan • Isolation of pipe - gas free • Environmental Protection Abrasive Blasting Regulations 1998 • Abrasive Blasting SWI (details the use of an Encapsulation Method if Depot cabinet unable to be used) • Compliance with *Environmental Protection (Noise) Regulations 1996.*	• Incident Notification – Control Room Procedure • Incident Report Form • HSE Event Investigation, Corrective and Preventative Action and Close out Procedure • Complaints handling procedure	2 - Remote	2 - Minor	4 - Negligible	N/A	Acceptable against objectives

Summary of MGL Environmental Hazards																
REF (Item No.)	LOCATION (specific location or whole of asset)	ASPECT	SOURCE OF RISK (HAZARD) (The source with potential to harm)	ENVIRONMENTAL IMPACT (CONSEQUENCE)	CAUSES (How and Why can it happen)	Pre-Treatment Risk Ranking			PHYSICAL SAFEGUARDS (Identify existing Controls)	PROCEDURAL SAFEGUARDS (Identify existing Controls)	RECOVERY SAFEGUARDS (Identify existing Controls)	Residual Risk Analysis			ALARP (Yes/No/ N/A)	Justification /consideration/ description for ALARP
						L	C	R				L	C	R		
Other																
16	Launcher/ PRS	Temporary maintenance	Temporary high pressure hoses and fittings, and temporary launcher and receiver facilities	• Emissions	• Faulty equipment, fittings unchecked during construction, • low temperature failures during commissioning, • loose or faulty fittings • vibration	3 - Unlikely	2 - Minor	6 - Low	Controlled pressures, hoses are anchored and restrained	Environmental Plan Rated equipment used, Experienced personnel, Commissioning procedures, Pre-start checks, JRAs Adequate design of temporary piping and supports, appropriate QA/QC, NDT and pressure testing of temporary spooling, Inductions, Awareness and training, Site Inspection - Pipeline Patrol, Safe Work Instruction: Pipeline Patrol, Employee HSE Manual and Induction.	• Incident Notification – Control Room Procedure • Incident Report Form • HSE Event Investigation, Corrective and Preventative Action and Close out Procedure • Complaints handling procedure	2 - Remote	2 - Minor	4 - Negligible	N/A	Acceptable against objectives
17	Launcher	Stakeholder liaison	Operating gas pipelines and facilities in the working vicinity	• Annoyance to adjacent stakeholders	• Lack of notification to adjacent stake holder/failure to notify • Inadequate stakeholder management process	3 - Unlikely	1 - Trivial	3 - Negligible		Environmental Plan Notification of all stakeholders adjacent asset owners) and adjacent land owners prior to commissioning, Site Inspection - Pipeline Patrol, Safe Work Instruction: Pipeline Patrol, Employee HSE Manual and Induction, Land Owner Liaison	• Incident Notification – Control Room Procedure • Incident Report Form • HSE Event Investigation, Corrective and Preventative Action and Close out Procedure • Complaints handling procedure	2 - Remote	1 - Trivial	2 - Negligible	N/A	Acceptable against objectives

Summary of MGL Environmental Hazards																
REF (Item No.)	LOCATION (specific location or whole of asset)	ASPECT	SOURCE OF RISK (HAZARD) (The source with potential to harm)	ENVIRONMENTAL IMPACT (CONSEQUENCE)	CAUSES (How and Why can it happen)	Pre-Treatment Risk Ranking			PHYSICAL SAFEGUARDS (Identify existing Controls)	PROCEDURAL SAFEGUARDS (Identify existing Controls)	RECOVERY SAFEGUARDS (Identify existing Controls)	Residual Risk Analysis			ALARP (Yes/No/ N/A)	Justification /consideration/ description for ALARP
						L	C	R				L	C	R		
18	Whole of asset	General	Use of hazardous materials and chemicals	• Minor environmental damage, • contamination of soil and water, including groundwater, • damage to native vegetation	• Inadequate storage and handling of chemicals and equipment • Lack of Material Safety Data Sheets	3 - Unlikely	2 - Minor	6 - Low	Spill kits	Environmental Plan All training (including Safety Focus Talks) to relevant staff under taken via training matrix (including Transmittals for Country). No fuel storage on-site, Spill Training Video Material Safety Data Sheets All hazardous materials will be self bunded for containment of 110%, Chemicals will not be stored or handled in the vicinity of natural or built waterways or water storage areas Site Inspection - Pipeline Patrol, Safe Work Instruction: Pipeline Patrol, Employee HSE Manual and Induction, Waste Management Procedure	• Spill Management Procedure • Spill Response Flow Diagram • Emergency Response Management Plan, • Incident Notification – Control Room Procedure • Incident Report Form • HSE Event Investigation, Corrective and Preventative Action and Close out Procedure • Complaints handling procedure • Notifiable Incident Reporting	2 - Remote	2 - Minor	4 - Negligible	N/A	Acceptable against objectives.
19	Whole of asset	General	Generation of dust	• Localised impact/contamination of surrounding area	•Driving on ROW, • blow down/through of pipe work/pipeline • Inadequate dust management	4 - Occasional	1 - Trivial	4 - Low		Environmental Plan Commissioning procedure, Inductions, Experienced and competent personnel, Awareness and training, Speed limits, Dust suppression employed if required, Monthly ROW inspections, Stockpiled Soil and Dust Control Procedure, Site Inspection - Pipeline Patrol, Safe Work Instruction: Pipeline Patrol, Employee HSE Manual and Induction.	• Incident Notification – Control Room Procedure • Incident Report Form • HSE Event Investigation, Corrective and Preventative Action and Close out Procedure • Complaints handling procedure • Notifiable incident reporting	4 - Occasional	1 - Trivial	4 - Low	N/A	Acceptable against objectives

Summary of MGL Environmental Hazards																
REF (Item No.)	LOCATION (specific location or whole of asset)	ASPECT	SOURCE OF RISK (HAZARD) (The source with potential to harm)	ENVIRONMENTAL IMPACT (CONSEQUENCE)	CAUSES (How and Why can it happen)	Pre-Treatment Risk Ranking			PHYSICAL SAFEGUARDS (Identify existing Controls)	PROCEDURAL SAFEGUARDS (Identify existing Controls)	RECOVERY SAFEGUARDS (Identify existing Controls)	Residual Risk Analysis			ALARP (Yes/No/ N/A)	Justification /consideration/ description for ALARP
						L	C	R				L	C	R		
20	Pipeline	General	Use of machinery/ vehicles or other potential ignition sources	• Fire could spread to surrounding bushland in dry summer (could spread any time of year) • loss of flora/fauna/habitats	• Ignition sources in dry vegetated areas • catalytic converters on 4WD's • vehicle accident on ROW	3 - Unlikely	4 - Major	12 - High	fire breaks	Environment Plan Monthly ROW inspections, Training and awareness, Inductions, Operations comply with relevant fire restrictions, Notification requirements and permitting procedures, All equipment complies with relevant fire safety standards, Designated parking areas, Vehicle inspections, appropriate storage of flammable liquids, Site Inspection - Pipeline Patrol, Safe Work Instruction: Pipeline Patrol, Employee HSE Manual and Induction Blue metal on ground at above ground facilities External fire ban notifications and restrictions	Firefighting equipment on site and in vehicles, appropriate storage of flammable liquids, Emergency Response Management Plan, • Incident Notification – Control Room Procedure • Incident Report Form • HSE Event Investigation, Corrective and Preventative Action and Close out Procedure • Notifiable incident reporting	2 - Remote	4 - Major	8 - Intermediate	Yes	given the existing mitigation measures in place and the experience personnel that will be e O&M, no additional mitigation measures were identified that would reduce the risk, therefore it is considered ALARP

Summary of MGL Environmental Hazards																
REF (Item No.)	LOCATION (specific location or whole of asset)	ASPECT	SOURCE OF RISK (HAZARD) (The source with potential to harm)	ENVIRONMENTAL IMPACT (CONSEQUENCE)	CAUSES (How and Why can it happen)	Pre-Treatment Risk Ranking			PHYSICAL SAFEGUARDS (Identify existing Controls)	PROCEDURAL SAFEGUARDS (Identify existing Controls)	RECOVERY SAFEGUARDS (Identify existing Controls)	Residual Risk Analysis			ALARP (Yes/No/ N/A)	Justification /consideration/ description for ALARP
						L	C	R				L	C	R		
21	Whole of asset	General	Impacts to Aboriginal Heritage sites/artefacts	• Damage / removal of heritage significance	• Driving off access tracks • Excavations • Lack of awareness	3 - Unlikely	2 - Minor	6 - Low		Environmental Plan Project Checklist (identification of environmental aspects). Environmental Awareness Training. Heritage boundary layer available on GIS. Advice rolled out to relevant personnel (Engineering Services, Projects and Maintenance Planning). Department of Indigenous Affairs Due Diligence Guidelines Operations will be in accordance with the Heritage Management Protocol and relevant Heritage Agreement. Site Inspection- Pipeline Patrol, Safe Work Instruction: Pipeline Patrol, Excavation and Backfilling Requirements, Employee HSE Manual and Induction.	• Incident Notification – Control Room Procedure • Incident Report Form • HSE Event Investigation, Corrective and Preventative Action and Close out Procedure • Notifiable incident reporting	2 - Remote	2 - Minor	4 - Negligible	N/A	Acceptable against objectives
22	Whole of asset	General	Pipe wall exposure to water and contaminants	• corrosion • gas release causing environmental harm	• corrosive compounds in soil • corrosive compounds in gas supply • long term exposure to air and moisture	3 - Unlikely	2 - Minor	6 - Low	• Impresses current cathodic protection on whole of asset • 3 layer polyethylene coating on pipeline • painted coating on PRS	• Gas quality analysis • Site inspection and maintenance • Cathodic Protection • Dedicated Cathodic Protection and Facilities Maintenance team • Pigging	• Isolation Plan, • Incident Notification – Control Room Procedure • Incident Report Form • HSE Event Investigation, Corrective and Preventative Action and Close out Procedure • Notifiable incident reporting	2 - Remote	1 - Trivial	2 - Negligible	N/A	Acceptable against objectives

APPENDIX G. ATCO AUSTRALIA RISK MATRIX

AGA-GRC-RG08 ATCO Gas Australia Risk Matrix

https://csprod-atco.opentext.cloud/otcs/llisapi.dll/link/86047833

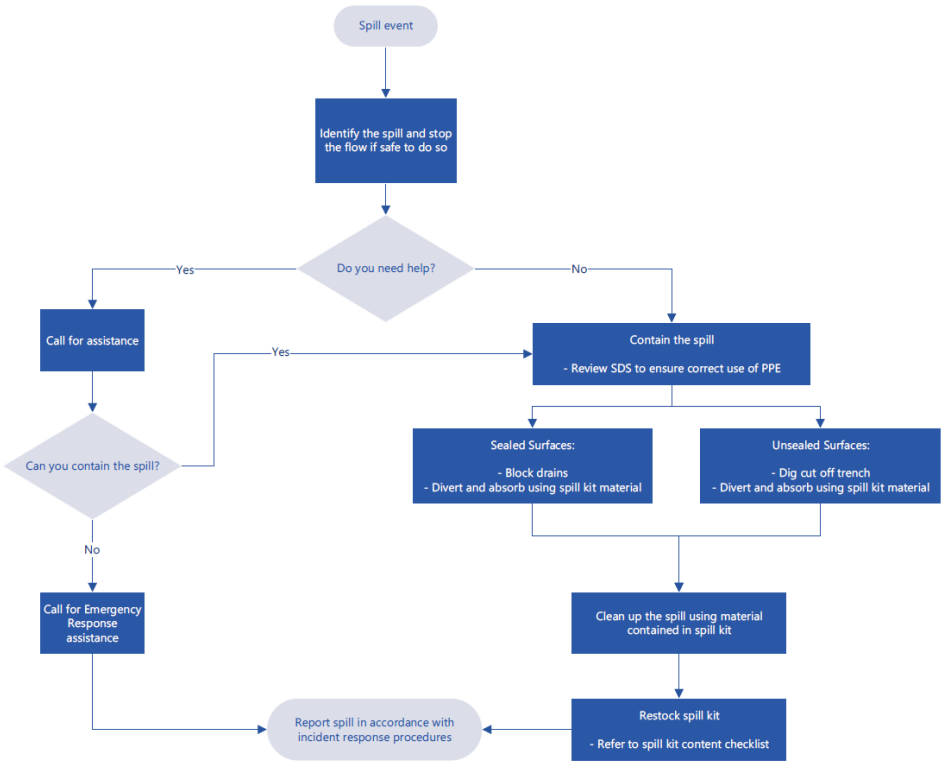
APPENDIX H. SPILL MANAGEMENT PROCEDURE

AA-HSE-PR04 Spill Management Procedure

https://csprod-atco.opentext.cloud/otcs/cs.exe/link/101183877

APPENDIX I. SPILL RESPONSE FLOW DIAGRAM

SPILL RESPONSE FLOW DIAGRAM



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APPENDIX J. ATCO GAS EMERGENCY RESPONSE MANAGEMENT PLAN

AGA-R&R-PL01 Emergency Response Management Plan

https://csprod-atco.opentext.cloud/otcs/llisapi.dll/link/84413037

APPENDIX K. ATCO GAS EMERGENCY RESPONSE ACTION CHECKLISTS

AGA-R&R-PL01-FM14 Emergency Response Action Checklists

https://csprod-atco.opentext.cloud/otcs/llisapi.dll/link/86427561

APPENDIX L. ATCO GAS EMERGENCY AND OPERATIONAL CONTACTS

AGA-R&R-PL01-FM04 Emergency and Operational Contacts

https://csprod-atco.opentext.cloud/otcs/llisapi.dll/link/81317494