Health, Safety and Environment Management System

Plan

QSN.2373-PL-HSE-0001

QSN Link Pipeline, QSN Expansion Pipeline and Moomba Interconnect Pipeline Environmental Impact Report

Version Control and Authorisation

Version	Date	Status	Originated /Custodian	Checked	Approved	Approved
2.5	28/7/2026	5 Yearly Renewal Draft for Public Consultation.	Alice Skipper, Senversa	Michelle Jennings	-	
2.4	12/06/2026	5 Yearly Renewal Revision based on DEM feedback.	Alice Skipper, Senversa	Michelle Jennings	-	
2.3	24/11/2025	5 Yearly Renewal Revision based on Stakeholder feedback.	Alice Skipper, Senversa.	Michelle Jennings	-	
2.2	29/08/2025	5 Yearly Renewal Revision based on DEM feedback.	David Geng, Alice Skipper, Senversa	Michelle Jennings	-	
2.1	16/04/2025	5 Yearly Renewal For submission to DEM.	David Geng, Alice Skipper, Senversa	Michelle Jennings	-	-
2.0	11/05/2021	Removal of weed and nature reserve singage mitigation requirements as a result from audit outcomes. DEM regulatory approval not required for updating EIR. Issued for Use.	Stephanie Franceschini	Glenn Platt	-	Alice Rawlinson
			Environment Advisor	Senior Regulatory Specialist		Environment Manager
1.0	21/04/2020	Issued for Use.	Angela Gamble Environment Lead	Glenn Platt Senior Regulatory Specialist	-	Alice Rawlinson Environment Manager
0.6	21/04/20	Finalisation following Stakeholder consulation and final DEM comments.	Angela Gamble Environment Lead	Glenn Platt Senior Regulatory Specialist	-	Alice Rawlinson Environment Manager
0.5	04/03/20	Update following DEM Stakeholder Consultation.	Angela Gamble Environment Lead	Glenn Platt Senior Regulatory Specialist	-	Alice Rawlinson Environment Manager
0.4	13/12/19	Updated following DEM feedback.	Angela Gamble Environment Lead	Glenn Platt Senior Regulatory Specialist	-	Alice Rawlinson Environment Manager
0.3	15/11/19	Updated following DEM feedback.	Angela Gamble Environment Lead	Glenn Platt Senior Regulatory Specialist	-	Glenn Platt Senior Regulatory Specialist
0.2	25/07/19	Updated to incorporate DEM comments.	Angela Gamble Environment Lead	Glenn Platt Regulatory Specialist	Paul Thorley Manager Operations QLD	Alicia Zillman Environment Manager
0.1	12/04/19	Updated into current National APA Environment Plan template; Five yearly renewal; new document number.	Lisa Graham Environment Advisor	Glenn Platt Regulatory Specialist	Paul Thorley Manager Operations QLD	Alicia Zillman Environment Manager
1 (Previous Document Control number: Q-02-102-LAE-	02/11/17	Final.	Z.Bowen / S.Milne	R.Brooks	-	R.Brooks

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Distribution Record

Version No	Name / Location	Date
1.0	Issued for Use.	22/05/2020
2.0	Issued for Use.	11/05/2021
3.0	Draft for Public Consultation.	28/07/2026

Revision History

Version No	Summary of Amendment	Date
0.1	Updated in line with APA National Environment Management Template; Construction activities removed; Five-yearly renewal.	12/04/2019
0.2	Incorporation of Department for Energy and Mining comments	25/07/2019
0.3	Update following Department for Energy and Mining comments.	15/11/2019
0.4	Update following Department for Energy and Mining comments.	13/12/2019
0.5	Update following Department for Energy and Mining stakeholder consultation.	03/04/2020
0.6	Update following Department for Energy and Mining stakeholder consultation.	21/04/2020
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2	Issued for Use.	11/05/2021
2.1	Draft for DEM Review.	16/04/2025
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2.3	Final for DEM Review (following Stakeholder Feedback).	24/11/2025
2.4	Draft for DEM Review.	12/06/2026
2.5	Draft for Public Consultation.	28/07/2026

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1 Introduction

This Environmental Impact Report (EIR) is for the operation of:

- Pipeline Licence 18 (PL18) – QSN Link (Ballera Qld to Moomba SA).

This EIR has been prepared by APA Group in accordance with the requirements of Section 97 of the South Australian *Energy Resources Act 2000* (ER Act) and the *Energy Resources Regulations 2013* (ER Regs).

1.1 Background

APA (SWQP) Pty Limited (ABN 67 066 656 219), a wholly owned subsidiary of the APA Group, holds the licence for, and operates the Queensland, South Australia and New South Wales (QSN) Link and the QSN Expansion Gas Pipeline, covered by Pipeline Licence (PL) PL18.

The QSN Link and QSN Expansion Pipeline transport natural gas between APA's Moomba Compressor Station in South Australia (SA) and the South West Queensland Pipeline (SWQP) Ballera Gas Facility in Queensland (Qld). Both pipelines are bi-directional transporting sales quality natural gas between the SWQP at Ballera, the Moomba to Adelaide Pipeline (MAP) and the Moomba to Wilton Pipeline (MWP) at Moomba.

The QSN Link is approximately 182.7 km in length and has a nominal outside diameter of 400 mm. The QSN Expansion is approximately 182.7 km in length and has a nominal outside diameter of 450 mm. The pipelines are contained within a common easement. The pipelines traverse SA for 92.6 km (KP90.1 to KP182.7 measured from Ballera) and are subject to the conditions of SA Licence PL18.

Also included in PL18 is a section of the 660 mm nominal outside diameter Moomba Interconnect Pipeline (MIP), approximately 374 m long from the Moomba Compressor Station to the intersection of the PL7 easement. The remaining section of the MIP is within PL7.

The scope of this document covers the SA section of the QSN Link, the QSN Expansion Pipeline and the MIP, herein collectively referred to as 'the Pipeline'.

1.2 Location

The South West Queensland Pipeline System is located in rural, regional and remote areas of SA and Qld.

The SWQP traverses 65 Freehold and 43 Leasehold properties in Queensland. The Pipeline passes through the Maranoa Regional Council, Murweh Shire Council, Quilpie Shire Council and Bulloo Shire Council areas.

Land use associated with the broader regional area is predominantly for agricultural and grazing purposes, oil and gas production as well as tourism and conservation. Most of the project area is sparsely populated and remote from residential communities with the nearest townships located between 13 km and 32 km north of the existing pipelines.

The QSN is located within the Shire of Bulloo (Qld) and the Pastoral Unincorporated Area (SA) which is managed and governed by the Outback Communities Authority (OCA).

The QSN Link crosses three active pastoral stations, two of which are in the SA section of the Pipeline. The region is also used for oil and gas production, and there is significant oil and gas infrastructure crossing or paralleling the pipeline route in numerous locations.

The route passes through the Innamincka Regional Reserve in South Australia for approximately 55 km. This is a multiple use reserve, and is managed under a conservation framework while permitting the sustainable use of resources (i.e. oil and gas production and grazing). The South Australian Department for Environment and Water (DEM) have specific requirements for operation in this reserve.

1.3 Timeframe

The SWQP was commissioned in 1996 with a design life of 50 years.

The QSN Link was commissioned in 2008 with a design life of 50 years.

The SWQPE and QSNE were commissioned in 2012 with design life of 50 years.

The pipelines were designed to AS 2885 as applicable at the time of design. The pipelines are operated to the current version of AS 2885 and the APA Group pipeline management system. Remaining life reviews are required to be carried out at typically 10-year intervals.

Please refer to Table 1 for the Pipeline Licence details.

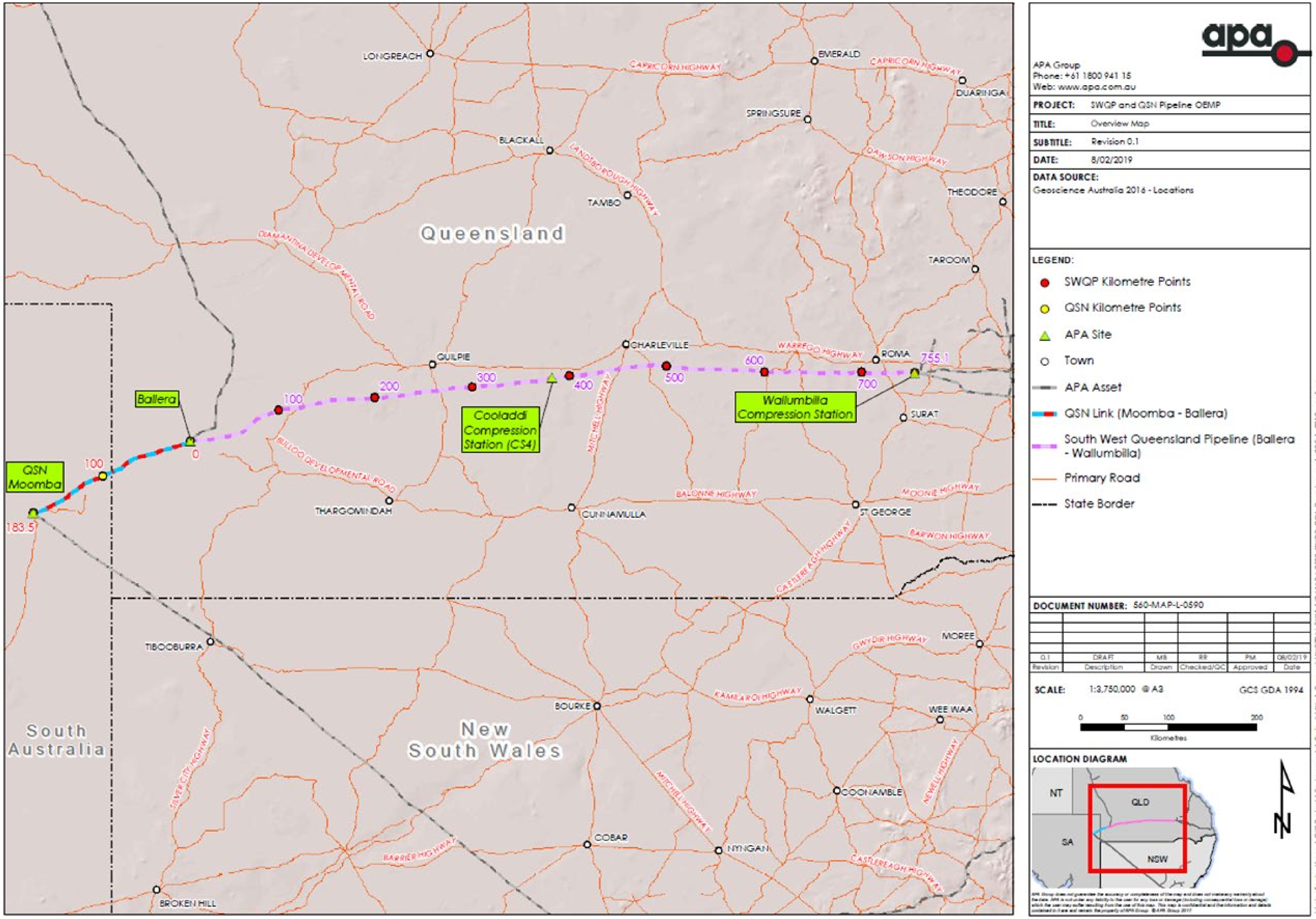
Please refer to

DEW	Comments focussed on native vegetation. As both of these are high level documents, there's no details about how the Significant Environmental Benefit (SEB) obligations are being met, thus we cannot comment on this. The documents refer to the old version of the *Guide for a significant environmental benefit for the clearance of native vegetation associated with the minerals and petroleum industry.* The current version is from March 2025 and available here. If APA is doing staged offsetting, then it may need to engage an accredited consultant to undertake an updated vegetation assessment as per section 3.4 of the Guide. This is to ensure that the SEB results in a net gain. APA should demonstrate the application of mitigation hierarchy to avoid, minimise, rehabilitate/restore and offset the impact on native vegetation.	Noted opera native the E relati text i Mana ensur veget APA all pr met,
AGD - AAR	The revised EIR includes AAR comments from the previous review at Stakeholder Consultation, AAR appreciates the responses to those comments and changes applied. The EIR and SEO relate to the ongoing operation and maintenance of the Pipeline, which is located across several states, AAR's comments apply to the South Australian section only. The SA section of the Pipeline is in the Yandruwandha/Yawarrawarrka Native Title lands. AAR notes that there are Aboriginal sites intersecting or close to the Pipeline as recorded on AAR's central archives. APA acknowledges its awareness of these sites within the Pipeline easement and cites several searches of the Central Archive the most recent being February 2025. Please note that AAR's central archives are not an exhaustive record of all Aboriginal sites, objects and remains (together, heritage) in the state. Section 23 of the *Aboriginal Heritage Act 1988* (SA) (AH Act) prohibits any damage, disturbance, or interference with Aboriginal heritage without authorisation from the Minister for Aboriginal Affairs. AAR notes from the documents that APA has engaged with Aboriginal stakeholders, including native title bodies, and has undertaken cultural heritage searches and surveys in relation to the Pipeline. AAR encourages APA to continue engaging with Traditional Owners to ensure that any Aboriginal heritage that may exist in the Project area is avoided and protected (before, during and after any works associated with the Pipeline). AAR highlights that, since the previous iterations of the EIR and SEO AAR now sits in the Attorney General's Department (AGD) and APA when referring to its obligations under the AH Act should change references from the Department of Premier and Cabinet to AGD. Notifications to the Minister should be made through AAR. In relation to unknown Aboriginal heritage, section 20 of the AH Act requires APA to report heritage discoveries to the Minister for Aboriginal Affairs (through AAR) as soon as possible. In line with the *Coroners Act 2003* (SA), APA must immediately notify SA Police in if the discovery includes potential human remains. If the discovery cannot be avoided by works associated with the Pipeline, then ministerial authorisations under the AH Act must be sought before any impacts to the discovered heritage may occur. Please note changes to the AH Act came into effect since the last revision of the EIR and SEO including increased penalties under section 20 of the AH Act – see AAR's website here for further details. APA should review, and if necessary, update the documents considering the recent amendments to the AH Act. I have attached AAR's factsheet 'A guide to Aboriginal heritage in South Australia' as well as AAR's Aboriginal heritage discovery protocols that should be adhered to in the event Aboriginal heritage is discovered during Pipeline works and no authorisation is in place.	Noted to the been comm APA event Any r and C Gene APA Act, i comp

for the Pipeline Locality Maps.

Table 1 Pipeline Licence Details

Pipeline Licence	Licensee	Date of Issue	Expiry Date
PL 18	APA (SWQP) Pty Limited	7 April 2008	6 April 2029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New South Wales
South Australia
LONGREACH
EMERALD
DUARINGA
SPRINGSURE
BLACKALL
TAMBO
THEODORE
TAROOM
QUILPIE
CHARLEVILLE
ROMA
SURAT
THARGOMINDAH
CUNNAMULLA
ST GEORGE
TIBOOBURRA
MOREE
BOURKE
WALGETT
WEE WAA
COONAMBLE
COBAR
NYNGAN
BROKEN HILL
CAPRICORN HIGHWAY
LANDSBOROUGH HIGHWAY
DAWSON HIGHWAY
DIAMANTINA DEVELOPMENTAL ROAD
WARREGO HIGHWAY
MITCHELL HIGHWAY
BULLOO DEVELOPMENTAL ROAD
BALONNE HIGHWAY
MOONIE HIGHWAY
BARWON HIGHWAY
CASTLEREAGH HIGHWAY
GWYDIR HIGHWAY
KAMILAROI HIGHWAY
NEWELL HIGHWAY
SILVER CITY HIGHWAY
BARRIER HIGHWAY
Ballera
QSN Moomba
Cooladdi Compression Station (CS4)
Wallumbilla Compression Station
0
100
183.5
200
300
400
500
600
700
755.1
APA Group
Phone: +61 1800 941 15
Web: www.apa.com.au
PROJECT: SWQP and QSN Pipeline OEMP
TITLE: Overview Map
SUBTITLE: Revision 0.1
DATE: 8/02/2019
DATA SOURCE:
Geoscience Australia 2016 - Locations
LEGEND:
SWQP Kilometre Points
QSN Kilometre Points
APA Site
Town
APA Asset
QSN Link (Moomba - Ballera)
South West Queensland Pipeline (Ballera - Wallumbilla)
Primary Road
State Border
DOCUMENT NUMBER: 560-MAP-L-0590
0.1 | DRAFT | MB | RR | PM | 08/02/19
Revision | Description | Drawn | Checked/QC | Approved | Date
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Kilometres
LOCATION DIAGRAM
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QLD
SA
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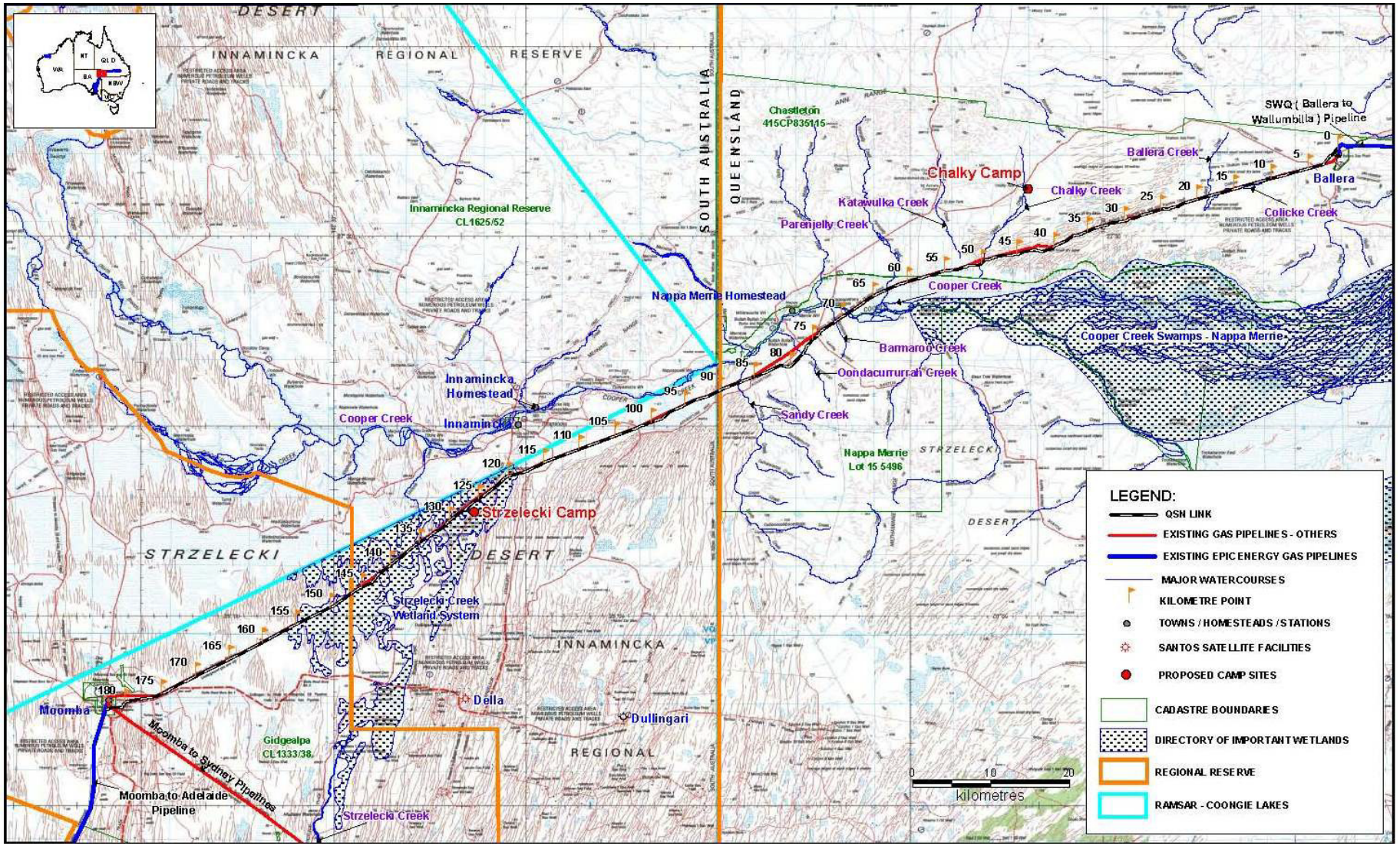
N


DESERT
INNAMINCKA
REGIONAL
RESERVE
SOUTH AUSTRALIA
QUEENSLAND
Chastleton
415CP835115
SWQ (Ballera to
Wallumbilla) Pipeline
Ballera Creek
Ballera
Chalky Camp
Chalky Creek
Katawulka Creek
Colicke Creek
Innamincka Regional Reserve
CL1625/52
Parenjelly Creek
Nappa Merrie Homestead
Cooper Creek
Cooper Creek Swamps - Nappa Merrie
Barnaroo Creek
Oondacurrurah Creek
Innamincka
Homestead
Innamincka
Cooper Creek
Sandy Creek
Nappa Merrie
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STRZELECKI
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DESERT
Strzelecki Creek
Wetland System
INNAMINCKA
Moomba
Della
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Gidgealpa
CL1333/38
REGIONAL
Moomba to Sydney Pipelines
Moomba to Adelaide
Pipeline
Strzelecki Creek
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20
kilometres
LEGEND:
QSN LINK
EXISTING GAS PIPELINES - OTHERS
EXISTING EPIC ENERGY GAS PIPELINES
MAJOR WATERCOURSES
KILOMETRE POINT
TOWNS / HOMESTEADS / STATIONS
SANTOS SATELLITE FACILITIES
PROPOSED CAMP SITES
CADASTRE BOUNDARIES
DIRECTORY OF IMPORTANT WETLANDS
REGIONAL RESERVE
RAMSAR - COONGIE LAKES

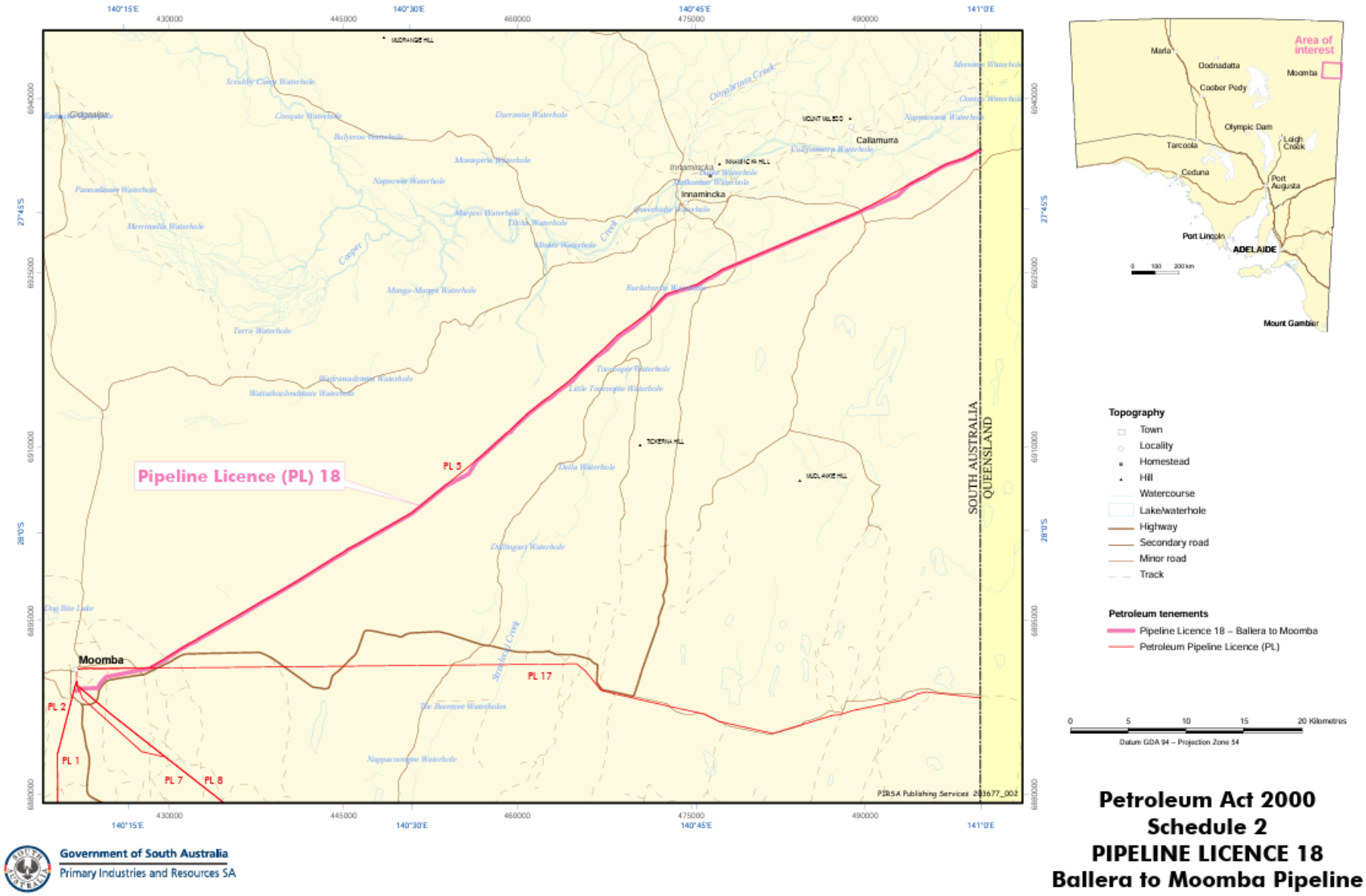

Figure 1 Pipeline Locality Maps

1.4 Purpose

This EIR has been prepared to satisfy the requirements of the ER Act with regard to the operation and maintenance of the Pipeline. This document:

- Outlines legislative approvals required for operations (Section 2);
- Provides a description of the Pipeline and associated pipeline infrastructure (Section 3);
- Describes the natural environment which the Pipeline intercepts (Section 4); and
- Describes the specific features of the environment that are reasonably expected to be affected by the Pipeline operation and the management strategies to mitigate potential aspects and impacts (Section 5).

A Statement of Environmental Objectives (SEO) has also been developed in conjunction with this EIR. It outlines the environmental objectives that will be achieved and the criteria upon which APA's performance against the objectives are to be measured. The SEO has been developed on the basis of the information provided in this EIR.

1.5 Environmental Commitment

APA is committed to responsible environmental management for the operation of the Pipeline and believes that any potential adverse environmental effects can be effectively managed in a manner that complies with the requirements of this document, as well as:

- All relevant State and Commonwealth laws and regulations;
- APA Group's Health, Safety, Environment and Heritage Policy (refer to Appendix 1);
- Relevant industry standards (e.g. Australian Standard AS 2885: Pipelines – Gas and Liquid Petroleum); and
- The Australian Pipeline and Gas Association (APGA) Code of Environmental Practice – Onshore Pipelines (2022).

2 Legislative and Regulatory Context

2.1 Energy Resources Act 2000

The *Energy Resources Act 2000* (SA) (ER Act) requires all regulated activities, carried out under the Act, to be covered by an approved EIR and SEO. The requirements are set out in the following sections of the Act and the *Energy Resources Regulations 2013* (ER Regs):

- The EIR must be prepared in accordance with:
  - Section 97 of the Act, which requires the EIR to take into account cultural, amenity and other values of Aboriginal and other Australians relevant to the assessment, risks to public health and safety of regulated activities, and to contain sufficient information to make an informed assessment of the likely environmental impact of the activities possible. Section 97 of the Act also requires that the environmental impact report must include an assessment of the environmental impact of regulated activities to which the report applies against the environmental impact assessment criteria.
  - Regulation 10 of the Regulations, which requires the EIR to include descriptions of activities and environmental features which may be affected, assessment of possible effects on cultural values and public health and safety, identification and assessment of consequences of potential environmental hazards, and details of consultation.
  - The Environmental Impact Assessment Criteria (July 2024) as a requirement under Part 12 of the Act, which requires the EIR to include the following key elements:
    - Criteria 1 – Elements of the Environment;
    - Criteria 2 – Potential Impact Events;
    - Criteria 3 – Confirmation of Impact Events;
    - Criteria 4 – Control and Management Strategies and Uncertainty Assessment;
    - Criteria 5 – Environmental Significance Assessment; and
    - Criteria 6 – A Statement of Environmental Objectives.
- The SEO must be prepared in accordance with Sections 99 and 100 of the Act and Regulations 12 and 13.

2.2 Commonwealth Legislation

Please refer to Table 2 for relevant Commonwealth legislation.

Table 2 Commonwealth Legislation

Legislation	Administering Department	Requirement
Aboriginal and Torres Strait Islander Heritage Protection Act 1984	Department of Climate Change, Energy, the Environment and Water.	Requirements for notification of Aboriginal remains are found are also covered by State legislation.
Environment Protection and Biodiversity Conservation Act 1999	Department of Climate Change, Energy, the Environment and Water.	No requirement for operations, as all works contained within previously disturbed area. New construction (outside of pre-disturbed area – in particular conservation area), should be assessed on a case by case basis to determine if the *Environment Protection and Biodiversity Conservation Act 1999* is triggered and whether approval is required.

Legislation	Administering Department	Requirement
***National Environment Protection (Assessment of Site Contamination) Measure 1999* (ASC NEPM)**	National Environment Protection Council.	South Australia is a participating State to this NEPM, and reporting requirements are also described in the State legislation. All assessment and remediation of site contamination (including spills) is to be completed in accordance with the ASC NEPM.
National Environment Protection (National Pollutant Inventory) Measure 1998	National Environment Protection Council.	South Australia is a participating State to this NEPM, and reporting requirements are also described in the State legislation. Gas distribution and transmission is a reportable activity. APA reports for the Moomba Meter and Compressor Station are publicly available at the NPI website.
National Greenhouse and Energy Reporting Act 2007	Clean Energy Regulator.	Annual reporting of fugitive emissions. Retain fuel usage and gas release data.
Native Title Act 1993	Attorney General's Department, Aboriginal Affairs and Reconciliation.	New construction (outside of pre-disturbed areas) should be assessed on a case-by-case basis to determine requirements regarding Cultural Heritage.

2.3 State Legislation

Please refer to Table 3 for relevant State legislation.

Table 3 State Legislation

Legislation	Administering Department	Requirement
Aboriginal Heritage Act 1988	Attorney General's Department, Aboriginal Affairs and Reconciliation (AGD – AAR).	Provides for the protection of all Aboriginal sites, objects and remains, including recorded, reported or undiscovered heritage. This protection extends to sites that may have been disturbed in past, or subject to culture heritage surveys or clearance. Do not contravene any Aboriginal heritage agreement. Notify the minister (through AAR) as soon as possible upon discovery of any Aboriginal sites, objects or remains on land, giving the particulars of the nature and location of the discovery. Do not, without the authority of the minister: • Damage, disturb, sell or dispose of any Aboriginal site, object or remains; • Remove the object or remains; • excavate land for the purpose of uncovering any Aboriginal site, object or remains; • Divulge information relating to an Aboriginal site, object, remains or tradition in contravention of Aboriginal tradition, except as required to notify the minister. Should works be required outside the existing easement they will be assessed under the Act.

Legislation	Administering Department	Requirement
Biosecurity Act 2025	Department of Primary Industries and Regions.	Introduces a general biosecurity duty to take, so far as is reasonably practicable, measures to prevent, eliminate, minimise, control, or manage a biosecurity matter, or a carrier, if the person knows or reasonable ought to know that the biosecurity matter, carrier or dealing poses a biosecurity risk. This Act has not yet commenced. When this Act is in force, APA will adjust controls to ensure legislative requirements are met.
Coroners Act 2003	SA Police.	APA must immediately notify the SA Police if a discovery contains potential human remains.
Crown Land Management Act 2009	Department for Environment and Water.	On Crown land do not, without authority, among other things: • Occupy Crown land for longer than any period prescribed by regulation; • Cultivate Crown land or cause or permit animals (for which the person is responsible) to enter or remain on Crown land; • Drive a motor vehicle on Crown land, other than on an established road or track; • Damage or remove fossils from Crown land; • Excavate or otherwise damage or interfere with Crown land, or anything on Crown land; • Cut down, lop branches or otherwise damage, any tree or bush (whether alive or dead); • Erect any structure or fixture or carries out any works on Crown land; • Deposit litter or abandon property; • Close off or obstruct (whether by fences, gates or any means) a road or track on Crown land.

Legislation	Administering Department	Requirement
***Environment Protection Act 1993* (EP Act)**	Environment Protection Authority.	Outlines the general duty to ensure that all reasonable and practicable measures are taken to protect, restore and enhance the quality of the environment while having regard to the principles of ecologically sustainable development. Grant of environmental authorisations to undertake a prescribed activities of environmental significance. Moomba Compressor Station operates under Authorisation Licence Number 45002 (refer to Appendix 2): • The Licensee must appropriately complete a Waste Transfer Certificate (WTC) regarding any waste specified in the 'Controlled Waste' attachment to the Licence, before that waste is transported to a place outside South Australia. • The Licensee must obtain a Consignment Authorisation from the appropriate environmental agency in the state or territory of destination of that waste before that waste is transported to a place outside South Australia. • The Licensee must ensure that all chemicals or chemical products are stored, loaded or unloaded in an appropriately bunded area. • The Licensee must ensure that an appropriate emergency spill kit is kept on the Premises at all times and is used in the event of a spill. Note: this refers to a selection of conditions included in the EPA Licence. The Full Licence including conditions is included at Appendix 2. Disposal of wastewater (i.e. trench or hydro-test water) to inland waters may require approval under the Act. Protects water quality and waterways as per the *Environment Protection (Water Quality) Policy 2015.*
***Environment Protection (Air Quality) Policy 2016* (Air Quality EPP)**	Environment Protection Authority.	An occupier of premises (other than domestic premises), must take all reasonable measures to minimise pollution to air by ensuring that: • Fuel burning equipment, control equipment or any other plant or equipment is efficiently maintained, operated and serviced • All goods or materials are processed, handled and stored in a proper and efficient manner.
Environment Protection (National Pollutant Inventory) Policy 2008	Environment Protection Authority.	Submit annual National Pollutant Inventory (NPI) returns.
Environment Protection (Commercial and Industrial Noise) Policy 2023	Environment Protection Authority.	If a premise emitting noise, ensure that the source noise level (continuous) at the at noise-affected premises does not exceed the: • Background noise level plus 5 dB(A), or • Indicative noise level for the noise source.
***Environment Protection (Waste to Resources) Policy 2010* (Waste EPP)**	Environment Protection Authority.	Provides the regulatory framework for managing waste and promoting the recovery of resources from waste materials. The policy applies to all waste and promotes waste avoidance, minimisation and management.

Legislation	Administering Department	Requirement
***Environment Protection (Water Quality) Policy 2015* (Water Quality EPP)**	Environment Protection Authority.	An operator of works must ensure that: • Waste generated at the premises is not discharge to any waters or land in a place from which it is reasonably likely to enter any waters; • The premises incorporate a wastewater management system that is effectively operating in respect of any wastewater generated at the premises while the premises is being used for the works.
Heritage Places Act 1993	Department for Environment and Water.	Allows for the identification, recording and conservation of places and objects of non-Aboriginal heritage significance. Should works be required outside the existing easement they will be assessed under the *Heritage Places Act 1993*. If an archaeological artefact of possible heritage significance has been discovered or located (other than under a permit) ensure that: • The excavation or disturbance of the place where the object has been discovered ceases; • The South Australian Heritage Council is notified of the location of the object and furnish with any required such information within the time period specified by the regulations; • No further action is taken to recover the object without a permit; • The object is surrendered if required.
National Parks and Wildlife Act 1972	Department for Environment and Water.	Do not without authority, take a native plant from: • Crown land or forest reserve; • Any reserve, wilderness protection area or wilderness protection zone; • Any land reserved for or dedicated to public purposes; • Private land (if the native plant of a prescribed species) • Import, export, sell or give away a native plant of a prescribed species; • Possess a native plant that has been illegally taken or acquired. Do not, without a permit interfere with or harass, or permit the interference or harassment of, a protected animal.
Native Title (South Australia) Act 1994	Department for Environment and Water.	New works (and some maintenance activities) may require formal notification to Native Title Claimants.
***Native Vegetation Act 1991* (NV Act)**	Department for Environment and Water.	Ensure clearing of native vegetation incidental to mining operations authorised under the *Energy Resources Act 2000* is in accordance with: • A management plan approved by the Native Vegetation Council; • A statement of environmental objectives under that Act.
Landscape South Australia Act 2019	SA Arid Lands Landscape Board.	Take all reasonable steps to prevent damage to the bed or banks/shore of a watercourse or lake and to the dependent ecosystems. In areas covered by a Regional Landscape Plan, do not, without a permit, destroy vegetation growing in a watercourse, its floodplains or in a lake, nor excavate or remove rock, sand or soil from these places (including any areas near the banks of a lake which could cause damage to these banks).

Legislation	Administering Department	Requirement
South Australian Public Health (Wastewater) Regulations 2013	Department for Health and Wellbeing.	Ensures the safe and effective management of wastewater including compliance of waste disposal systems.

2.4 Guidelines and Australian Standards

- Australian Pipelines and Gas Association (APGA) Code of Environmental Practice Onshore Pipelines (April 2022);
- AS 2885 Pipelines – Gas and Liquid Petroleum;
- AS 60079 Electrical Apparatus for explosive gas atmospheres - Hazardous Areas;
- EPA 080/16 Bunding and Spill Management Guideline (May 2016)
- SA EPA Septage Management Guidelines (May 2020)
- SA Native Vegetation Council, Guide for a Significant Environmental Benefit for the clearance of native vegetation associated with the minerals and petroleum industry (March 2025)
- Attorney-General's Department, A guide to Aboriginal Heritage in South Australia (January 2025).

3 Facility Area and Activity Description

This Section and Section 6 seek to address *Criteria 1 – Elements of the Environment* of the Environmental Impact Assessment Criteria. This Section specifically addresses the requirement of Regulation 10(1)(a), which requires:

- Provision of a description of the regulated activities to be carried out under the licence (including their location).

3.1 Pipeline Route

The Pipeline extends from the Ballera Gas Facility in Queensland and heads in a south- westerly direction. It passes approximately 7 km to the south of Innamincka in SA and terminates at the Moomba plant. The Pipeline is approximately 183 km in length, with approximately 90 km in Queensland and 93 km in South Australia. Please refer to

DEW	Comments focussed on native vegetation. As both of these are high level documents, there's no details about how the Significant Environmental Benefit (SEB) obligations are being met, thus we cannot comment on this. The documents refer to the old version of the *Guide for a significant environmental benefit for the clearance of native vegetation associated with the minerals and petroleum industry.* The current version is from March 2025 and available here. If APA is doing staged offsetting, then it may need to engage an accredited consultant to undertake an updated vegetation assessment as per section 3.4 of the Guide. This is to ensure that the SEB results in a net gain. APA should demonstrate the application of mitigation hierarchy to avoid, minimise, rehabilitate/restore and offset the impact on native vegetation.	Noted opera native the E relati text i Mana ensur veget APA all pr met,
AGD - AAR	The revised EIR includes AAR comments from the previous review at Stakeholder Consultation, AAR appreciates the responses to those comments and changes applied. The EIR and SEO relate to the ongoing operation and maintenance of the Pipeline, which is located across several states, AAR's comments apply to the South Australian section only. The SA section of the Pipeline is in the Yandruwandha/Yawarrawarrka Native Title lands. AAR notes that there are Aboriginal sites intersecting or close to the Pipeline as recorded on AAR's central archives. APA acknowledges its awareness of these sites within the Pipeline easement and cites several searches of the Central Archive the most recent being February 2025. Please note that AAR's central archives are not an exhaustive record of all Aboriginal sites, objects and remains (together, heritage) in the state. Section 23 of the *Aboriginal Heritage Act 1988* (SA) (AH Act) prohibits any damage, disturbance, or interference with Aboriginal heritage without authorisation from the Minister for Aboriginal Affairs. AAR notes from the documents that APA has engaged with Aboriginal stakeholders, including native title bodies, and has undertaken cultural heritage searches and surveys in relation to the Pipeline. AAR encourages APA to continue engaging with Traditional Owners to ensure that any Aboriginal heritage that may exist in the Project area is avoided and protected (before, during and after any works associated with the Pipeline). AAR highlights that, since the previous iterations of the EIR and SEO AAR now sits in the Attorney General's Department (AGD) and APA when referring to its obligations under the AH Act should change references from the Department of Premier and Cabinet to AGD. Notifications to the Minister should be made through AAR. In relation to unknown Aboriginal heritage, section 20 of the AH Act requires APA to report heritage discoveries to the Minister for Aboriginal Affairs (through AAR) as soon as possible. In line with the *Coroners Act 2003* (SA), APA must immediately notify SA Police in if the discovery includes potential human remains. If the discovery cannot be avoided by	Noted to the been comm APA event Any r and C Gene APA Act, i comp

	works associated with the Pipeline, then ministerial authorisations under the AH Act must be sought before any impacts to the discovered heritage may occur. Please note changes to the AH Act came into effect since the last revision of the EIR and SEO including increased penalties under section 20 of the AH Act – see AAR's website here for further details. APA should review, and if necessary, update the documents considering the recent amendments to the AH Act. I have attached AAR's factsheet 'A guide to Aboriginal heritage in South Australia' as well as AAR's Aboriginal heritage discovery protocols that should be adhered to in the event Aboriginal heritage is discovered during Pipeline works and no authorisation is in place.	

Pipeline locality map.

For most of the route, the Pipeline is adjacent to the existing Santos pipeline, which carries gas and liquids between Moomba and Ballera. The Pipeline is approximately 50 m to the south of the Santos pipeline, however deviations of up to several hundred metres from the Santos pipeline occur in several locations, to achieve optimal alignment through areas of sand dunes and features such as Aboriginal heritage sites.

3.2 Design and Engineering

The Pipeline consists of the following facilities and infrastructure:

- Two buried, bidirectional, high pressure, steel, natural gas pipelines, (DN400 QSN Link Pipeline and DN450 QSN Expansion Pipeline), over a route of approximately 93 km between the South Australia/Queensland border and Moomba;
- A midline mainline valve for both pipelines, located at KP 102.7, near the township of Innamincka;
- A Midline Pressure Regulating Station for both pipelines located at KP 102.7;
- Two hot tap connections located at KP 102.7 on the Mainline, connecting the Mainline to the Midline Pressure Regulating Station;
- A hot tap connection at KP180 on the Mainline, connecting the Mainline to the Loop line;
- A system for mitigating pipeline corrosion;
- A telemetry and communications system;
- A remote monitoring and control system for supervision and operation of the pipeline system;
- A compressor station comprising of scraper station, station inlet filtration, three Solar Turbines Mars 90 gas compressor sets, station piping, valving, instrumentation, control systems, station utilities and ancillaries;
- A buried high pressure, steel, natural gas pipeline for the conveyance of natural gas pipeline, (DN660 Moomba Interconnect Pipeline (MIP)), between the isolation valve at the Moomba Compressor Station and proceeding parallel with the QSN pipeline for approximately 374 m to the intersection of the PL 7 easement;
- A tie-in to the Santos-owned Moomba Southern Third Party Gas Treatment Pipeline (MSTPGT) (Petroleum Production Licence 8) located at the TIP 215 flange downstream of the valve VB-00804; and
- A steel pipeline for the conveyance of natural gas being an interconnect pipeline with pipes of a nominal diameter of 200mm from the Moomba Compressor Station discharge header proceeding for approximately 650m to a tie-in point at approximately KP0.825 on the Moomba to Sydney Ethane pipeline (Pipeline Licence 8).

The Pipeline is designed in accordance with the requirements of AS 2885 Pipelines – Gas and Liquid Petroleum. Key engineering and design features of the pipeline are provided in Table 4.

Table 4 Pipeline Engineering and Design Features

	QSN Link	QSN Expansion	MIP
Commissioned	2009	2011	2014
Substance Conveyed	Natural Gas.	Natural Gas.	Natural Gas.
Length of Pipeline	182.7km (92.6km in SA).	182.7km (92.6km in SA).	374m
Nominal Diameter	DN400	DN450	DN660
Outside Diameter	406.4mm	457mm	677mm
Wall Thickness	8.1mm (Normal), 9.7mm (Heavy Wall).	10.8 mm (Normal). 12.7mm (Heavy Wall).	8.7mm
Pipe Specification	API -5L X70	API 5L X70	API 5L X70
Pipe coating	3LPE	FBE	3LPE
MAOP	15,300kPa	15,300kPa	7,240KPa
MOP	14,920 kPa	14,920 kPa	7,240 kPa
Minimum Depth of Cover	In accordance with AS 2885.1, typically: • Cross country sections – 750 mm. • Beneath roads and watercourses – 1200 mm. • Heavy industrial location classifications – 1200 mm.		
Easement Width	Approx. 25m	Approx. 25m	Approx. 25m
Buried Marker Tape	Installed at crossings, throughout Heavy Industrial Secondary Land. Classification adjacent to Moomba and Ballera.		
Corrosion Protection	Impressed Current Cathodic Protection Two cathodic protection (CP) units are located in SA; at Moomba and at the MV102 site at KP102.7.		Cross-bonded to MWP.
Corrosion Test Points	CP test points are located approximately every 2 km. The test posts are required to allow for monitoring of the effectiveness of the corrosion protection system.		Refer MWP test points.
Pipeline Markers	Pipeline marker signs are located at intervals along the pipeline easement in accordance with AS 2885, so that a person can clearly see a marker sign in either direction. The maker signs are placed closer at bends, on either side of road and watercourse crossings and at fence lines.		

3.3 Pipeline Operations and Maintenance Activities

A summary of the Pipeline operational activities is provided in Table 5 and discussed below.

A routine operation and maintenance program exists, which includes leak detection surveys, ground and aerial patrols, repair or replacement of faulty pipe or other equipment, pigging and cleaning of the pipeline, corrosion monitoring and remediation and easement and lease area maintenance. Aerial and/or ground inspections will include checking vegetation for discolouration, which can be an indicator of a gas leak, detection of erosion, monitoring of rehabilitation success and detection of weed species.

A light vehicle access track is maintained along the pipeline to allow inspection and maintenance.

More significant maintenance activities, such as dig-ups to address coating defects, are likely to be infrequently required. Dig-ups involve the excavation of material from around the pipeline (typically referred to as a bellhole), to allow sufficient room for Technicians to safely undertake any remedial works that may be required. Topsoil will be

stockpiled separately from trench spoil and the site will be restored as soon as practical following completion of maintenance works.

Regular consultation is maintained with landowners whose properties are traversed by the pipeline. The Dial Before You Dig service will be promoted for use by third parties wishing to locate the pipeline prior to undertaking excavations. Operational pipelines generally have very little environmental or landholder impact.

Table 5 Summary of Pipeline Operational Activities

Activity	Description
Easement Maintenance	
Weed Control	Localised spraying of weeds is undertaken along the easement, as required.
Line-of-sight clearance	Clearance of the right-of-way to maintain line-of-sight is generally not required as it is an arid region with predominantly low open grassland or shrubland. Trees retained on the easement during construction will not be removed, however it may be necessary to remove trees that regenerate within 2 m of the pipeline as they pose a threat to pipeline integrity.
Patrolling/ inspections - easement access	These are undertaken by travelling along the right-of-way, on private/public roads or over paddocks and involve access to private property and use of private tracks. Frequency depends on whether particular issue(s) require monitoring; frequency can range from weekly to monthly or longer.
Aerial inspection of easement	Inspections are undertaken using low-flying aircraft and typically carried out every 1 to 3 months.
Pipeline Operations	
Cathodic Protection Surveys	Surveys involve travelling the right-of-way and stopping to inspect Cathodic Protection points (above-ground post) on foot. Typically conducted twice per year. Survey may also involve repairs - see “Excavations” below.
Testing & Inspection of Relief Valves	Controlled venting of minimal quantities of gas to atmosphere is involved. Typically occurs once per year with a duration of approximately 30 seconds.
Erosion events	Following major rainfall events creek lines or run-off areas on right-of-way can experience soil erosion. Repairs are effected following the erosion event and include the replacement of similar materials and re-profiling.
Emissions	Methane gas 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. Occurs for duration of operational life.
Pipeline Maintenance	
Pigging	A pipeline 'pig' is placed in the pipe via a launch bay. The pig travels along inside the pipe before being removed at a pig exit site. Removal of a pig from the pipeline results in minor venting of gas to atmosphere and the collection of some oil sludge and debris. Major pigging programs are typically carried out very infrequently (e.g. every 10 years).
Excavations, including coating refurbishment, installation of anode beds, emergency response exercises and new tie-ins	Once vegetation and topsoil have been cleared and stockpiled, the excavation is performed and spoil stockpiled. The Pipeline maintenance is then undertaken (this may include welding, painting, sand blasting). Once complete, the trench is then backfilled, the ground surface is re-contoured and the topsoil and vegetation respread. These activities are expected to be very rare during the life of the Pipeline.

Activity	Description
Replacement of pipeline section	A section of the pipeline is isolated and a controlled release of gas is undertaken from the affected section. The affected area is then excavated, the old pipeline removed and replaced (includes welding, blasting, coating) and the site reinstated. This is expected to be very infrequent.
Welding	Welding is usually required when pipeline repairs or modifications are made to existing infrastructure. Pipeline welding usually occurs following the excavation of the Pipeline.
Coating	Sleeves or tape are expected to be used to coat welds or repair areas of pipeline or above ground pipeline. Epoxy painting (spray) may be used.
Hydro-Testing	Hydro-testing of any replacement pipeline section/s may be required. Water would likely be sourced from potable water sources and waste water will be disposed of appropriately onsite.
Facility Operation and Maintenance	
Metering and gas delivery stations	Metering stations consist of a valving, metering and gas analysis and scraper launch station. A gas delivery station consists of a station limit valve, scraper receiver, gas filters, gas heaters and pressure regulation. These operate continuously.
Weed Control	Localised spraying of weeds is undertaken in and around compounds, as required.
Production of Hazardous Waste	Waste hydrocarbons are generated from maintenance/ pigging operations (ex pipeline/product). Liquids and heavy metals (e.g. mercury) are not expected in the product, but if present they would be trapped in coalescing filters. Contaminated filters are generated from maintenance change-overs. Contaminated waste and oils will be removed from site for disposal by a licensed contractor.
Waste disposal	General waste generated during operations is collected on site and removed to licensed facilities for disposal.
Station blow downs	Uncontrolled venting which is a result of equipment failure e.g. regulator failure. Duration would depend on type and duration of failure.
Upgrades	Upgrades to facilities for continual process improvement. Upgrades exclude major plant upgrades, e.g. new compressor units, or new pipelines. Scope of works remain within the current disturbance footprint.

3.4 Decommissioning

Decommissioning of a pipeline or subsection may occur for a number of reasons, for example, exhaustion of supply, safety reasons, commercial due to reduced market demand, or change to facility operations. Decommissioning as defined in the Australian Pipeline and Gas Association (APGA) Code of Environmental Practice – Onshore Pipelines (2022) includes;

- Suspension: pipelines are not depressurised but are physically isolated from the pipeline system. The pipelines are maintained as per an operating pipeline, including relevant standards, the monitoring of the pressure, maintenance to the Cathodic Protection system and maintenance as determined in the Pipeline Management Plan;
- Abandonment in place: pipelines or a section of pipeline are physically disconnected from the pipe system, purged and cleaned with water or inert material and sealed (capped) at the ends. The pipelines are not pressurised and are not maintained, and cathodic protection systems disconnected, with pipelines left to corrode and biodegrade in situ. All above ground structures are removed, including marker signs, and the easement rehabilitated. Maintenance of the easement is discontinued after an agreed monitoring period and the easement is relinquished. Depending on state requirements, the pipeline may be required to be filled with concrete slurry to prevent subsidence when the pipeline corrodes;
- Removal: pipelines are entirely removed from the pipeline easement, (typically only applicable to above ground pipelines due to potential environmental disturbance with underground pipelines). The pipeline is depressurised and purged with inert material such as nitrogen. All above ground and below ground structures are removed and the pipeline easement is relinquished.

In the event that the pipeline is decommissioned, the Pipeline will be decommissioned in accordance with the regulatory requirements and accepted environmental best practices of the day inclusive of extensive risk assessment and management. Legislative and licence conditions will apply, and work will be undertaken based on the standards of the day and/or as directed by the relevant Minister. Currently decommissioning procedures require the removal of all above ground infrastructure and the restoration of associated disturbed areas.

At the time of decommissioning, a decision will be made regarding the opportunities for future use of the Pipeline. If no longer required, the Pipeline will be purged of gas and below ground facilities allowed to gradually degrade in-situ. However, if it is considered that the Pipeline may offer some future benefits, it will be filled with an inert material and the cathodic protection system maintained to prevent corrosion. All above ground facilities will be removed in any event.

Site remediation will be undertaken according to a site specific rehabilitation/remediation management plan which may be required as part of a decommissioning plan. This plan will be submitted to the appropriate regulatory body for review and acceptance within one year of complete cessation of operational activities at the site.

No decommissioning is proposed or foreseeable within the 5-year term of this EIR.

4 Description of the Environment

This section addresses Regulation 10(1)(b)(i) of the ER Act and *Criteria 1 – Elements of the Environment* (from the EIAC) in providing a description of the specific elements of the environment that can reasonably be expected to be affected by the activities, with particular reference to the environment and land uses. This section should be read in conjunction with Section 6 below.

The term "environment" has the same meaning as the ER Act and includes:

(a) land, air, water (including both surface and underground water and sea water), organisms, ecosystems, flora and fauna; and

(b) buildings, structures and other forms of infrastructure and cultural artefacts; and

(c) existing and potential land use; and

(d) public health, safety or amenity; and

(e) the heritage, aesthetic or cultural values of an area; and

(f) the economic or social impact on an area.

4.1 Climate

The region has an arid climate, with low average rainfall and high evaporation. Seasons are generally characterised by hot dry summers and mild dry winters. Rainfall in the area is highly erratic, with the annual average being about 150 to 200 mm. There is no distinct seasonal rainfall pattern and rainfall is often associated with thunderstorm activity and as a consequence can be intense. For example, a rainfall event of 13 mm per hour for one hour can be expected to occur every year (SEA, 1989).

Evaporation is extremely high, with average annual evaporation ranging from 3,000 to 3,800 mm (Queensland Government 1974, Laut et al. 1977).

Temperatures vary from cool in winter to hot in summer, with diurnal variations also being high. In summer, the average maximum and minimum temperatures are approximately 39°C and 25°C respectively, and in winter 20°C and 6.0°C. The maximum recorded temperature is 49.6°C and the minimum -0.5°C (BOM 2025.

The most common wind direction throughout the year is from the south-east, with the wind direction becoming more easterly in the north of the project area. Light winds (<20 km/h) are most common from May to August, while the greatest frequencies of strong winds (>40 km/h) occur from September to January.

A summary of climate records for Moomba Airport (1995-2025) (Station 017123; BOM 2025) is provided in Table 6.

Table 6 Climate Record summaries for Moomba Airport (1995- 2025) (Station 017123; BOM 2025)

Measurement	J	F	M	A	M	J	J	A	S	O	N	D	Annual
Mean Daily Max (^{O}C)	39.0	37.1	34.2	29.2	23.7	19.9	19.8	22.7	27.2	30.9	34.3	37.0	29.6
Mean Daily Min (^{O}C)	24.9	23.6	20.7	15.7	10.6	7.3	6.4	8.1	12.1	15.9	19.6	22.6	15.6
Mean Rainfall (mm)	19.2	26.2	25.7	8.6	10.3	10.6	11.6	5.1	14.2	9.9	18.8	15.9	175.4
Median Rainfall (mm)	3.6	4.0	3.0	1.0	3.2	6.0	0.8	1.0	1.3	3.8	7.5	7.0	-

4.2 Physical Environment

4.2.1 Geology and Landforms

The Pipeline overlies sediments which are over four kilometres thick and have been deposited over a period of more than 500 million years. These include the deeper sediments that contain the oil and gas reservoirs of the Cooper Basin and the shallower and widespread sediments of the Eromanga Basin, which form the Great

Artesian Basin aquifers that support pastoral activity throughout much of the broader region. The Eromanga Basin sediments are overlain by the Lake Eyre Basin, a succession of Tertiary and Quaternary age sediments that occur extensively throughout central Australia.

Deposition in the Lake Eyre Basin began about 50 million years ago with extensive sand deposits of the Eyre Formation laid down by river systems in a warm and wet monsoonal climate. The silcretes in the Eyre Formation form hard, massive layers which result in the production of tablelands with hard caps. The gibbers that are a common feature of the soil surface in the region are predominantly the pebbles of silica cemented capping that has been left behind as subsequent erosion has slowly worn back these tablelands (Marree SCB, 2004).

The climate became drier about 25 million years ago, and the landscape was dominated by extensive and shallow brackish lakes surrounded by open forest and woodland, which led to the deposition of magnesium-rich limestones, dolomites and siltstones of units such as the Etadunna Formation (Marree SCB, 2004; Krieg *et al.*, 1990). Much of the current landscape was shaped by geological events over the last million years when a drier climate led to the formation of the present day salt lakes and dune fields. It was during this drier interval that red brown fluvial sands, yellow and red dune sands and saline lake sediments were deposited (Krieg *et al.*, 1990). Dry windy periods about 200,000 years ago commenced the creation of the current dunefields (Marree SCB, 2004).

The resulting landforms traversed by the Pipeline route include undulating gibber plain, dunefield, floodplain, river channel and sandplain. Dissected residual tableland, consisting of mesas, buttes and plateaux, occurs in adjoining areas but is not traversed by the pipeline route.

Gibber Plains

The pipeline route traverses areas of undulating gibber plain south-east of Innamincka in South Australia. The silcrete stones that pave the surface of the gibber plains are usually embedded in a thin loamy surface layer, which overlies red to brown clayey subsoils. These clayey subsoils are moderately to strongly saline, easily dispersed and very susceptible to water erosion. The surface layer and subsoils are together known as red-duplex soils.

In their undisturbed state, gibber soils are highly resistant to erosion, as the gibber stones and loamy surface layer protect the unstable sub-soils from rainfall and runoff. When the protective crust and gibbers are removed severe erosion can occur, even on relatively gentle slopes (e.g. 2 to 3 degrees).

Dunefields and Sandplains

The Pipeline route traverses the northern edge of the vast dunefields of the Strzelecki Desert. These dunefields consist of generally parallel (but sometimes reticulate) dunes of red to yellow sand, 5 to 10 metres high. Interdune corridors often contain claypans or massive (non-cracking) red sandy clay loams.

The Pipeline traverses dunefields to the west (from KP 116 to Moomba). The dunes in this area are sparse, parallel and sparsely vegetated. Interdune corridors are wide and characterised by sandy clay loams or pale sandy clays (e.g. in the vicinity of Strzelecki Creek), and for much of this section, individual dunes are separated by broad areas of Cooper Creek floodplain.

River Channels and Floodplains

The Pipeline route traverses the Strzelecki Creek approximately 10 km south-west of Innamincka. A number of smaller watercourses with narrower channels of sandy or clayey soils are also crossed.

The landforms present along the pipeline route and the approximate length of the pipeline within each landform are shown in Table 7.

Table 7 Landforms along the Pipeline Route

KP	Description	Gibber	Dunes	Sandplain	Channel	Floodplain
0-5	Gibber west of Ballera.	✓			✓	
5-25	Sandplain.			✓	✓	
25-52	Jumbled dune		✓		✓	

52-66	Floodplain.				✓	✓
66-86	Gibber; includes Cooper crossing.	✓			✓	
86-90 (SA/QLD boarder)	Floodplain.		✓		✓	✓
Approximate total length in SA (km).		15	10	25	0.5	41

4.2.2 Soils

The characteristics of the soils traversed by the pipeline route are summarised in ***Table 8***.

Table 8 Dominant soil types occurring along the Pipeline

	Dunes	Sandplain	Floodplain/dune swale	Gibber
Description	Whitish siliceous sands.	Red massive earths.	Grey self mulching cracking clays.	Crusty duplex soils.
Symbol	Uc1.21	Gn2.12	Ug5.24	Dr1.32
Surface Roughness	None.	None.	None.	Stones.
Depth	Deep.	Deep.	Deep.	Moderately deep.
Drainage	Well drained.	Well drained.	Poorly drained.	Well drained.

4.2.3 Hydrology

Surface Water

The Cooper Creek is the dominant surface water feature in the region. The main channel of the Cooper Creek is generally well defined and connects a series of ephemeral swamps and permanent and semi-permanent waterholes. During floods, the main channels overflow and floodwaters spill into the vast floodplain via numerous distributary channels.

During low flows, most water flows through the North West Branch of the Cooper (which is approximately 85 km downstream of the pipeline crossing of the creek) into the Coongie Lakes and Lake Goyder. If flows are large enough to fill these lakes, additional water flows down the main branch of the Cooper towards Lake Hope and, if flows are sufficient, eventually to Lake Eyre. The water in the Cooper Creek is of sufficient quality to support a diverse aquatic ecosystem.

Flow in the Creek is extremely variable. Flow occurs in one or more discrete pulses each year and several months may pass without flow (Puckridge et al. 1999). It has been estimated that there is a 98% chance that flow rates will exceed 1 m^3/s at Innamincka each year (Kotwicki, 1986). There are, on average, three months per year where no flow occurs at Nappa Merrie.

Mean monthly flow volumes at Nappa Merrie for the period from 1949 to 2025 are shown in Table 9.

Table 9 Monthly Flows of Cooper Creek at Nappa Merrie (Gauge# 003103A) ('000 of ML) (DLGWV, 2025)

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Mean	48.02	284.79	399.18	236.56	109.11	106.15	36.60	17.64	13.27	9.39	12.46	13.46

During periods of high flow, floodwaters overtop the banks of the Cooper and flow south down the Strzelecki and Ooranie Creeks in South Australia. The Ooranie and Strzelecki Creeks flow when the level at Nappa Merrie reaches 4.6 m and 6.2 m respectively (SEA 1992). The average frequency of these events has been estimated as 1 in 2 to 5 years and 1 in 10 years, respectively (SEA 1992, Puckridge et al. 1999). Flow in Ooranie Creek terminates in various ephemeral lakes to the south east of Moomba. Strzelecki floodwaters however, flow much further south, terminating in Lakes Blanche, Callabonna, Frome and Gregory.

Local rainfall and run-off can result in flow in ephemeral watercourses in the region. Most of these watercourses drain into either the Cooper or Strzelecki Creeks. There is no flow data available for these watercourses, but it has been estimated that a rainfall of 15 mm over one hour would be required to cause flow, which is expected to occur once per year, based on Intensity-Frequency- Duration curves for rainfall at Innamincka (SEA 1992). Creeks typically flow for six to twelve hours after rainfall has ceased, before contracting to a series of waterholes.

Significant local rainfall events can also result in shallow inundation of floodplains, inter-dune claypans and other areas of poorly drained impermeable soil, which can persist for days to weeks or longer.

The QSN Link Pipeline crosses the Cooper Creek in Queensland, approximately 20 km upstream from the border with South Australia. The QSN Link Pipeline also crosses approximately 30 drainage lines and ephemeral watercourses marked on 1:250,000 topographic mapping, including Colicke Creek, Ballera Creek, Chalky Creek, Katawulka Creek, Parenjelly Creek, Barmaroo Creek, Oondacurrurrah Creek and Sandy Creek in Queensland and Strzelecki Creek in South Australia.

Groundwater

Groundwater of suitable quality for use by stock is obtainable throughout the region from a number of formations, some of which are part of the Great Artesian Basin. The principal deep formations (e.g. the Hutton sandstone) are generally too deep for use and the most commonly used intermediate depth formations are the Wallumbilla and Winton formations (SEA 1992). Shallow (60m) sub-artesian supplies are obtained from the Tertiary and Quaternary sediments throughout the area. No natural artesian springs are known to occur in the region traversed by The Pipeline.

The alluvium along some of the major streams is a frequent source of sub-artesian water (Division of Land Utilisation, 1974). In particular, sandy sequences underlying the Cooper Creek provide a shallow aquifer, which provides baseflow to semi-permanent waterholes during extended dry periods. Water quality is good, although availability is inconsistent and reliant on infrequent flood recharge events.

4.3 Biological Environment

4.3.1 Flora

The QSN Link Pipeline (SA and QLD) alignment transects ten vegetation communities. Please refer to Table ***10*** for vegetation community description. These consist of:

- Two riparian woodland communities;
- Two Eucalypt woodland communities;
- Two shrubland communities;
- Four grassland / herbland communities.

None of the vegetation communities identified are listed as Critically Endangered, Endangered, Vulnerable or Of Concern under the Commonwealth *Environment Protection and Biodiversity and Conservation Act 1999* (EPBC Act).

Table 10 Vegetation Communities Identified on the Pipeline Route

Vegetation Community	Estimated area on 30m ROW (ha)
Low riparian Coolibah (*Eucalyptus coolabah*) woodland.	0.3
Very low open Coolibah woodland on floodplain.	86.8
Low Coolibah woodland over Queensland Bluebush (*Chenopodium auricomum*) and Lignum (*Muehlenbeckia florulenta*) open shrubs on floodplain lake.	0.9
Chenopod (*Atriplex* and *Chenopodium* spp) and Lignum open shrubland on floodplain.	31.1
Grass/herbland on floodplain.	53.5

Very low open *Acacia* woodland on drainage line through stony (gibber) plain.	0.3
Low open Mitchell Grass (*Astrebla pectinata*) tussock grass/herbland on stony (gibber) plain.	51.0
Very open Acacia and Senna spp. shrubland over open grasses and herbs on low sand dunes and swales.	21.0
Sandhill Cane Grass (*Zygochloa paradoxa*) ± Spinifex (*Triodia basedowii*) open grassland on sand dunes.	11.1
Grass/herbland on low sand dunes.	18.5

Riparian Coolibah woodland occurs in the riparian zone of the Strzelecki Creek crossing. The tree line is discontinuous, with an open canopy and few shrubs. Very low open Acacia riparian woodland occurs in very narrow strips at the crossing of the Strzelecki Creek tributary that runs through stony gibber plains. This vegetation is very sparse and discontinuous with sections devoid of shrubs. These habitats represent significant value in linear vegetated wildlife corridors (although continuity is variable), protection of stream water quality, bank stability and provision of hollow-bearing “habitat” trees.

Very low open Coolibah woodland on floodplains is one of the major components of the pipeline route, with ten occurrences along the route. The Coolibah trees are less than 5 m in height and canopy coverage is 10 % or less. Shrub cover is sparse to non-existent as is the groundcover of herbs, grasses and low chenopods. This vegetation community provides shelter and shade for fauna.

A 300 m section of the alignment passes through a Coolibah woodland over Queensland Bluebush and Lignum open shrubs which surround a large floodplain lake at KP 153. This lake represents an important wetland for the area, providing habitat for an array of water birds and a watering point for cattle and other fauna. Extensive use of this watering point by cattle is evident with a high degree of grazing and trampling of the vegetation.

Chenopod and Lignum open shrubland occurs on floodplains at five locations, mostly as part of a mosaic with Coolibah woodland and Grass/herbland on floodplain and low sand dunes. The shrub coverage ranges from 10-35% and the groundcover is composed of low chenopod shrubs (*Sclerolaena* app.) and a variety of grasses and herbs and would provide significant shelter and habitat for fauna.

The low sand dune and swales occurring along the alignment support very open Acacia and Senna shrubland over open grasses and herbs, while Sandhill Cane Grass and Spinifex open grassland are common to the taller dune systems. Whitewood (*Atalaya hemiglauca*) is sometimes present as a taller emergent shrub. These communities assist in the stabilisation of dune systems and provide fauna habitat.

Low open Mitchell Grass tussock grassland and herbland on stony (Gibber) plain occurs in numerous places along the alignment. The conditions at the time of the field survey were dry and, as a result, many of the grasses had died back and the hardier low chenopod shrubs were dominating. It appeared that Button Grass (*Dactyloctenium radulans*) had been quite prominent prior to the grass dieback, which is regarded as an indication of disturbance, most likely from cattle grazing. However, it is likely that the composition of these habitats would alter significantly after periods of good rain. This vegetation community is very expansive and the distributions of the species present are scattered and widespread.

The grassland / herbland growing on floodplains occurs frequently along the alignment and consists of low chenopod shrubs (Atriplex spp.), and a diverse array of herbs, such as Sago weed (*Plantago cunninghamii*) and Bogan Flea (*Calotis hispidula*). The grassland / herbland community growing on sand dunes is composed of low chenopod shrubs (*Salsola kali*), grasses (Aristida spp.and Enneapogon spp.), and herbs such as Wild Stock (*Blennodia pterosperma*), Poached-egg Daisy (*Polycalymma stuartii*) and Fleshy Groundsel (*Othonna gregorii*). The species composition of these communities is seasonally variable.

The conditions at the time of the field survey were dry and many of the ephemeral lakes and watercourses were without water. As a result, few aquatic plants were observed along the alignment. Aquatic plants were recorded at Strzelecki Creek tributary, Strzelecki Creek, a floodplain lake and numerous drainage lines and depressions on floodplains. The plants recorded included *Cyperus* spp. and Nardoo (*Marsilea drummondii*).

Significant Flora

A review of the Biological Database of South Australia (BDBSA) (for the SA section of the Pipeline) was

undertaken in February 2025 that identified 10 threatened plant species (i.e. species classified as Threatened, Vulnerable or Endangered), which have records with in 10 km of the area. These species may have suitable habitat on the pipeline route, however no recent records are located within the Pipeline Right-of-Way (ROW) and no rare or threatened plant species were observed during the previous field survey carried out. Whilst the occurrence of such flora species cannot be completely ruled out, it is considered that if any are present, they would be in very low numbers.

Weeds

The BDBSA search (2025) identified several records of weed species occurring within the surrounding area of the pipeline. There are several records of buffel grass (*Cenchrus ciliaris*) around the Moomba and Innaminka areas, and along the Strzelecki track. Buffel grass is a declared weed under the *Landscape South Australia Act 2019* (SA), and is a significant threat to biodiversity across the entire Australian arid zone.

No declared or non-declared environmental weed species were observed during the previous field survey carried out in South Australia.

4.3.2 Fauna

The initial desktop fauna assessment of the QSN Pipeline (SA and QLD) identified 256 fauna species that may potentially utilise habitat within the wider area. These comprised eight amphibians, 58 reptiles, 168 birds and 22 mammals. 21 of these species are listed as rare or threatened, all of which could potentially utilise habitats within the QSN Link (SA and QLD) corridor. These species are listed in

Table 11.

A review of the BDBSA database (for the SA section of the pipeline) was undertaken in February 2025 that identified additional fauna species that have records with in 10 km of the area within the previous five years and

Table 11 has been updated to reflect this. Of the 26 species, six are listed under the EPBC Act and all 26 are listed under the *National Parks and Wildlife Act 1972* (NPW Act).

Table 11 Rare or Threatened Fauna Identified from Database Searches

Common Name	Species Name	Conservation Status*	Known Records**
Birds			
Australian Painted Snipe	*Rostratula australis.*	E^1/E^2	1
Grey Grasswren (Bulloo)	*Amytornis barbatus barbatus.*	E^1/R^2	1
Australian Bustard	*Ardeotis australis.*	V^2	2
Bush Stone-curlew	*Burhinus grallarius.*	R^2	2
Brown Quail	*Coturnix ypsilophora.*	V^2	2
Brolga	*Grus rubicunda.*	V^2	2
Flock Bronzewing	*Phaps histrionica.*	R^2	2, 3
Freckled Duck	*Stictonetta naevosa.*	V^2	2
Australasian Shoveler	*Anas rhynchotis.*	R^2	2
Red-winged Parrot	*Aprosmictus erythropterus.*	R^2	2
Intermediate Egret	*Ardea intermedia.*	R^2	2
Musk Duck	*Biziura lobata.*	R^2	2
Red-tailed Black-Cockatoo	*Calyptorhynchus banksia.*	E^2	2

Common Name	Species Name	Conservation Status*	Known Records**
White-browed Treecreeper	*Climacteris affinis.*	R[2]	2
Grey Falcon	*Falco hypoleucos.*	V[1]/R[2]	2, 3
Black-breasted Buzzard	*Hamirostra melanosternon.*	R[2]	2, 3
Barking Owl	*Ninox connivens.*	R[2]	2
Blue-billed Duck	*Oxyura australis.*	R[2]	2, 3
Glossy Ibis	*Plegadis falcinellus.*	R[2]	2
Great Crested Grebe	*Podiceps cristatus.*	R[2]	2
Southern Whiteface	*Aphelocephala leucopsis leucopsis.*	V[1]/R[2]	1
Blue-winged Parrot	*Neophema chrysostoma.*	V[1]/V[2]	4
Mammals			
Dusky Hopping Mouse	*Notomys fuscus.*	V[1]/V[2]	45
Reptiles			
Woma	*Aspidites ramsayi.*	R[2]	21
Blacksoil Skink	*Austroablepharus kinghorni.*	R[2]	2
Macquarie River Turtle	*Emydura macquarii.*	V[2]	7

* Status: [1] Commonwealth (EPBC) listed – EN = Endangered, V = Vulnerable

[2] State (NPW Act) listed – EN = Endangered, V = Vulnerable, R = Rare

** Records: 1 = EPBC Protected Matters Search, 2 = Biological Database of SA, 3 = HLA ENSR field survey.

During the previous field assessment carried out, 59 fauna species were recorded (one reptile, 45 birds and 13 mammals). Four rare or threatened species were observed: Black-breasted Buzzard (*Hamirostra melanosternon*); Grey Falcon (*Falco hypoleucos*), Flock Bronzewing (*Phaps histrionica*) and Blue-billed Duck (*Oxyura australis*).

An additional 63 bird species listed under the EPBC Act as Migratory and/or Marine protected species were identified as previously recorded from the study area. These include species listed under the Japan/Australia Migratory Bird Agreement (JAMBA), China/Australia Migratory Bird Agreement (CAMBA) and the Bonn Convention on the Conservation of Migratory Species. Whilst these are not listed as rare or threatened fauna, they are protected under the EPBC Act. Twenty of the 63 species identified from the desktop assessment were recorded during the field assessment.

Introduced Fauna

Nine introduced species have been recorded within the wider area (1 bird and 8 mammals). Six of these species were recorded during the previous field assessment: Rabbit (*Oryctolagus cuniculus*), House Mouse (*Mus musculus*), Camel (*Camelius dromedarius*), Red Fox (*Vulpes vulpes*), Horse (*Equus caballus*) and Wild Dog/Dingo (*Canis lupus familiaris*/C. lupus dingo).

Fauna Habitat

The SA section of the QSN Link Pipeline falls within the Channel Country (CHC) bioregion (EA 2000). This bioregion is dominated by low hills with forbfields and Mitchell Grass downs and intervening braided river systems of Coolibah woodlands and lignum / saltbush shrublands and it includes small areas of sand plains. The Channel Country is characterised by extensive river systems that have flood events on an irregular basis. These floods cover large areas and provide extensive habitats for bird and mammal reproductive cycles, resulting in "boom" and "bust"

sequences (NLWRA 2002).

Seven broad fauna habitat types were identified on the pipeline route, based on the stratification of vegetation communities into habitats and on field habitat assessments. These habitats are listed in Table 12.

Table 12 Fauna Habitats Present Within the Corridor

Fauna Habitat	Description
Gibber Plain	Treeless plains with a dense surface stone pavement dominated by Barley Mitchell Grass, with range of short grasses and forbs.
Riparian Woodland	Creeks and rivers, from small ephemeral or seasonal drainage lines, through to larger creeks including waterholes. Open woodland on drainage lines, dominated by Coolibah.
Floodplain Coolibah Open Woodland	Coolibah open woodland on alluvial floodplains and braided channels. Trees are generally lower and sparser than in Riparian Woodland.
Floodplain Saltbush and Lignum Shrubland	Chenopod and Lignum open shrubland on floodplains.
Floodplain Grassland/Herbland	Sparse to open grassland and/or herbland on cracking clay soils of alluvial floodplains and braided channels.
Dunefield	Low sand dunes and interdune swales. Orange dunes with Sandhill Canegrass and/or Spinifex hummock grasslands; pale dunes dominated by seasonally variable grasses and herbs. Occasional claypans between dunes with sparse grassland and/or herbland.
Watercourses and waterholes	Creeks and rivers, from small ephemeral or seasonal drainage lines, through to larger creeks, including waterholes.

Two key habitats were identified: Riparian Woodland / Floodplain Coolibah Open Woodland, and the Strzelecki Creek Floodplain. The alignment transects approximately 0.1 km of Riparian Woodlands and 33.5 km of Floodplain Coolibah Open Woodland.Riparian Woodland is considered to be a key habitat due to its significance in forming wildlife corridors and refugia, the high levels of moisture and nutrients, and the relatively complex vegetation structure compared to surrounding areas.

The Strzelecki Creek Floodplain can support abundant fish, frogs and waterbirds during its very infrequent periods of inundation, when large flow pulses in the Cooper Creek or from heavy local runoff result in an explosion of biological productivity.

Significant Wetlands

The alignment traverses one wetland listed on the Directory of Important Wetlands in Australia (Strzelecki Creek Wetland System, SA003) and passes close to the southern boundary of a Ramsar site (Coongie Lakes, SA001). The alignment is generally 5-10 km from the boundary of the Coongie Lakes wetland area, but approaches to approximately 1 km where the route crosses Strzelecki Creek downstream from the wetland area's boundary. The Coongie Lakes Ramsar wetland will not be impacted during operations and it is unlikely there will be any impact on the Strzelecki Creek wetland system value (when inundated) as waterbird habitat.

4.4 Social Environment

4.4.1 Aboriginal Heritage

An aboriginal heritage survey and work area clearance of the SA portion of the QSN Link corridor was undertaken in August 2007 by an archaeologist and representatives from the Yandruwandha/ Yawarrawarrka Native Title Claimant Group. The entire corridor was examined and given clearance for the proposed developments by those stakeholders present, with the exception of 70 areas that were recommended to be excluded from impact by the pipeline. Exclusion areas located within the proposed pipeline corridor were mapped and the Pipeline alignment was modified to avoid these areas as far as possible.

The archaeological material found during the clearance consisted predominantly of flaked/ground stone artefacts

and occasional charcoal staining from cooking hearths in eroded scald areas in the dunefields of the Strzelecki Desert; with silcrete quarry sites occurring on the gibber slopes and uplands and associated scatters of stone artefacts (Australian Heritage Services 2007).

A search of the central archive including the Register of Aboriginal Sites and Objects, maintained by the Aboriginal Affairs and Reconciliation Division of the SA Department of the Premier and Cabinet, was requested in September 2018, March 2020, and February 2025. One registered site was identified within 100m of the pipeline in the locality of Moomba. APA are aware that the Central Archives are not an exhaustive record of all Aboriginal sites, objects and remains in the State.

Spatial data is available via the APA GIS System (called ARGO). Some areas do remain close to and directly adjacent to the pipeline and work should be assessed on a case by case basis. The Environment and Heritage Team should be contacted in the event that work is planned to be completed on the Pipeline.

4.4.2 Historic Heritage

Historic heritage in the region dates back to early exploration of the region in the mid to late 1800's and the expansion of pastoralism. Many of the historical sites in the region are associated with the failed Burke and Wills expedition of 1860-61 (including the Dig Tree and grave sites) and the subsequent settlement of inland SA and Queensland and the establishment of transport routes and pastoralism in the region.

Natural historical sites in the region (including the Innamincka, Cooper Creek and Nappa Merrie areas) contain a diverse range of arid land systems including floodplains, wetlands, lakes, dunefields and plateau country.

A search of the National Heritage List and the State Heritage Places Database has indicated that there are a number of listed sites present in the region. A summary of listed heritage sites (including natural and historic sites) located within or adjacent to the pipeline corridor and their location is provided in Table 13. Places listed within the Register of the National Estate (a non-statutory archive) are also included.

Table 13 Historic Heritage Sites within the Vicinity of the Pipeline Corridor

Register Source	Site Type	Name	Place ID	Location
Australian National Heritage List.	Historic.	The Burke, Wills, King and Yandruwandha National Heritage Place.	Place ID: 106061	North of the pipeline route. Birdsville Tk, Innamincka, SA, Australia.
SA Heritage Places Database.	Natural.	Innamincka/Cooper Creek State Heritage Area.	State Heritage ID: 12836	1.5 km north of the pipeline. Located within Innamincka Regional Reserve.
SA Heritage Places Database.	Historic.	Australian Inland Mission Nursing Home (former) / Regional Reserve Headquarters.	State Heritage ID: 12759	Innamincka.
SA Heritage Places Database.	Historic.	(Grays) Tree, possibly marking the burial site of Charles Gray, member of Burke & Wills' 1861 expedition', Lake Massacre, Innamincka Regional Reserve.	State Heritage ID: 12754	Off Strzelecki Track INNAMINCKA VIA LEIGH CREEK About 77km north-west of Innamincka at Lake Massacre off Gidgeala - Kudriemitchie Road.
RNE (non statutory archive).	Natural.	Cooper Creek Floodplain.	RNE Place ID: 16750	Runs in parallel to the north of the pipeline route.
RNE (non statutory archive).	Natural.	Coongie Lake and Adjacent Area.	RNE Place ID: 5926	65km north-west of Innamincka off the Strzelecki Track.

Register Source	Site Type	Name	Place ID	Location
RNE (non statutory archive).	Historic.	Burke's Memorial.	RNE Place ID: 5933	North of the pipeline route.
RNE (non statutory archive).	Historic.	Burke and Wills National Heritage Place.	RNE Place ID: 105139	North of the pipeline route.
RNE (non statutory archive).	Historic.	Strzelecki Creek National Heritage Place.	RNE Place ID: 105141	Intercepted by the pipeline route at KP 116.4 to KP121.

4.4.3 Visual Amenity

Buried pipelines, by their very nature, have a low level of impact on visual amenity. Generally, this is restricted to short term disturbances associated with construction earthworks and localised impacts associated with the presence of above ground facilities. There are unlikely to be any significant long-term impacts to the visual amenity of the project area.

The majority of the pipeline corridor is considered to have low visual sensitivity as it is removed from general viewing and there are few elevated vantage points where the pipeline would be visible. The Pipeline is only likely to be visible at road crossings.

Pipeline line of sight markers and warning signs denoting the location of the buried pipeline are already in place and are installed and maintained according to regulatory requirements.

Given no new construction is occurring along the Pipeline and this EIR relates to its operations and maintenance, visual amenity has not been further assessed as an environmental element that can reasonably be expected to be affected by the operation and maintenance of the Pipeline.

4.4.4 Socio-economic

The Pipeline route is located in the unincorporated (i.e. out of councils) area of SA. Jurisdiction for the area falls under the responsibility of the Outback Areas Community Development Trust, which provides limited local government-type support.

The major regional industries are pastoralism, oil and gas production and tourism.

The only township in the region of the pipeline is Innamincka, which has a resident population of approximately 18 (Marree SCB, 2004). Innamincka is located 70 km north-east of Moomba and 7 km north of the pipeline route. Moomba, Ballera and the satellite production facilities have accommodation and recreation facilities that house the petroleum industry workforce, which operates on a 'fly-in, fly-out' basis.

During operations there is no significant adverse social impacts.

4.4.5 Land Use

The current land uses in the project area include pastoralism, oil and gas production and processing, conservation and tourism.

Pastoralism

Pastoralism, mainly in the form of cattle grazing, began in the region in the late 1800s and has continued despite dramatic seasonal and economic fluctuations. The floodplains surrounding the Cooper Creek (the channel country) in particular provide pasture and reliable water supplies in the form of permanent waterholes. The adjoining gibber plains and dunefields are also utilised for pasture but this use is dependent on the use of bores to supply water and these areas can generally only support stock on an opportunistic basis after rain. Stocking rates in the region are relatively low.

Pastoral operations in the region are certified under Quality Assurance systems such as the Livestock Production Assurance Program or Cattlecare, which places emphasis on minimising the risk of chemical contamination, bruising and hide damage and ensuring effective herd management and improvement. Several properties in the region are certified for organic beef production but at this stage the properties on the pipeline route do not have organic certification.

Pastoral lease intercepted by the pipeline is the Gidgealpa in South Australia. Crown lease intercepted by the pipeline is the Innamincka in South Australia.

Land owners on the South Australian section of the pipeline are listed in **Table *14*.**

Table 14 Land Owners on the South Australian Section of the QSN Pipeline

Name	Registered Proprietor/ Lessee	Tenure
Gidgealpa	DOCE Pty Ltd	Leasehold
Innamincka Regional Reserve	Landowner – Crown S Kidman & Co Ltd (Crown Lessee)	Leasehold
Moomba	Executor Trustee Australia Ltd	Freehold

Oil and Gas Exploration and Production

Oil and gas exploration in the Cooper Basin commenced in 1954 and the Cooper Basin has become a major supplier of oil and gas in Australia since the discovery of gas reserves at Gidgealpa, near Moomba, in 1963.

Significant oil and gas infrastructure in the region includes:

- The Santos operated oil and gas production plants at Ballera and Moomba (located at the commencement and termination points of the QSN Link pipeline).
- Satellite production facilities including Della and Dullingari.
- Santos Ballera to Moomba pipeline (located adjacent to and north of the QSN Link pipeline).
- Moomba to Adelaide gas pipeline and the adjacent Santos Moomba to Port Bonython liquids pipeline.
- The Moomba to Sydney gas and ethane pipelines.

The Pipeline route passes through a number of petroleum production and exploration licence areas. Numerous oil wells and gathering lines are located throughout the region, and drilling of new oil, gas and geothermal wells is ongoing.

Conservation

The Pipeline traverses the Innamincka Regional Reserve for approximately 55 km. This is a multiple use reserve, with the regional reserve category designed to enable areas to be managed under a conservation framework while permitting the sustainable use of resources (i.e. oil and gas production and grazing). There are a number of sites within the Innamincka Regional Reserve that are listed on the State Heritage Register or Register of the National Estate Section.

The wetlands of the Cooper Creek, and the Coongie Lakes in particular, have been recognised as uniquely valuable due to their diverse, and in places unique, biota. The Coongie Lakes are now included in the Coongie Lakes National Park, which was proclaimed in 2005 and is located within Innamincka Regional Reserve. The Coongie Lakes are also listed under the Ramsar Convention as a Wetland of International Significance. The Pipeline passes to the south of the Ramsar area.

The Pipeline also traverses the Strzelecki Creek wetland system, which is listed in the Directory of Important Wetlands in Australia (Environment Australia 2001). This system is predominantly dry and flows very intermittently from Cooper Creek south to Lake Blanche during large Cooper floods (Strzelecki Creek flows are thought to occur with an average frequency of 1 in 10 years; Puckridge *et al.* 1999). When flooded, it provides significant habitat for large numbers of waterbirds.

Tourism

The Innamincka, Coongie Lakes and Cooper Creek regions in north-eastern South Australia and south-west Queensland have become increasing popular as tourist destinations over the past 30 years. It is estimated that more than 45,000 people now visit the Innamincka region annually (Desert Channels Queensland, 2004). Cullyamurra Waterhole, Coongie Lake, the Dig Tree, Burke's grave and Wills' grave receive the greatest visitation particularly between May and September. Recreational opportunities in the region include outback camping, fishing, bird watching, canoeing, swimming, archaeology and general exploration.

The majority of the tourist traffic in the region is restricted to the Strzelecki Track and 'Adventure Way' roads which are used by tourists as an outback highway between South Australia and Queensland.

The Pipeline passes to the south of a number of sites that receive high visitation, including Innamincka (located 7 km north), Cullyamurra Waterhole (8 km north) and the Dig Tree (5 km north).

5 Environmental Impact Assessment

This EIR has been prepared in accordance with the requirements of Section 97 of the ER Act and ER Regs. This EIR also relies upon the Environmental Impact Assessment Criteria (EIAC) set out by DEM as required under Part 12 of the ER Act, dated July 2024 and the EIAC Guidelines (ERG 015) prepared by DEM (dated June 2024).

5.1 Initial Environmental Risk Assessment

An original Environmental Risk Assessment (ERA) workshop was conducted on 18 September 2018 for the operation of the Pipeline with a cross section of APA personnel who were best placed to determine the environmental risks associated with the pipeline's operations. This initial ERA was reviewed again in June 2025 as part of updating this EIR, to ascertain an undertaking of previous and current environmental risks.

5.2 Environmental Impact Assessment Methodology

In accordance with Part 12 of the ER Act and the EIAC, an impact assessment against the environmental impact criteria has been undertaken by the APA and documented in this EIR.

The environmental impact assessment was undertaken using the following steps:

- **Step 1: Identify environmental elements** that could be impacted by the proposed regulated activity (which aligns to Criteria 1 – Elements of the Environment (addressed in Section 3 and Section 6 of this EIR).
- **Step 2: Identify potential impact events** that could impact elements of the environment during operations and maintenance of the pipeline (which aligns to Criteria 2 – Potential Impact Events (Section 7).
- **Step 3: Confirm the potential of impact events to occur** (which aligns to Criteria 3 – Confirmation of Impact Events (Section 7).
- **Step 4: Identify relevant controls and management measures** for each potential impact event to eliminate or reduce any potential environmental harm to as low as reasonably practicable, and **identify uncertainties and assumptions** associated with the effectiveness of controls and management measures (which aligns to Criteria 4 – Control and Management Strategies and Uncertainty Assessment (Section 8).
- **Step 5: Assess environmental significance** for each potential impact event, based on the sensitivity of the receiving environment and the magnitude of potential impacts, and taking into account frequency, duration, extent and severity of impacts as well as potential cumulative impacts (which aligns to Criteria 5 – Environmental Significance Assessment (Section 9).
- **Step 6: Develop environmental objectives and assessment criteria** for all potential impacts for each environmental element (which aligns with Criteria 6 – Statement of Environmental Objectives (addressed in Section 8 and in a standalone SEO document).

Results of this impact assessment have been captured below in Section 7 (Environmental Risk Assessment – **Table *20***) and Section 8 (Controls and Management Strategies) with any residual impacts captured in Section 9 (Environmental Significance Assessment -

Table *32*).

The impact assessment was carried out in accordance with ISO 31000 Risk Management Guidelines and the APA HSE ENV – Guideline 001 Environmental Risk Assessment Guideline.

Each step is described in more detail below.

5.2.1 Identify Environmental Elements

The environmental elements that could potentially be impacted by the regulated activities were identified, taking into account both operations and maintenance of the Pipeline. The following list outlines these elements:

- Native vegetation and fauna (including biodiversity and sensitive ecosystems)
- Pests, weeds and diseases (includes plant pathogens)
- Noise (including vibration), dust and odour emissions (including air quality)
- Chemical spills and contamination
- Waste
- Soil and Land Use
- Water (includes groundwater and surface water, both quantity and quantity)
- Heritage (Aboriginal and non-Aboriginal)
- Fire
- Third parties and public health and safety

Note that 'existing land use and infrastructure' has been considered as part of the elements above as opposed to a separate and distinct element (for example, as part of native vegetation, soil and water, heritage or third parties).

For each of these elements, a description of the specific elements of the environment that can reasonably be expected to be affected by the activities has been provided below in Section 6, with particular reference to the environment and existing land uses.

5.2.2 Identify Potential Environmental Impact Events

Environmental elements may be affected by the regulated activity. All potential impacts associated with the regulated activity were identified and defined as potential impact events. Each potential impact event was assessed in terms of:

- The **source** of the impact (i.e. the activity that has the potential to cause an adverse effect on an element of the environment, during operations and maintenance of the pipeline, and may involve physical disturbance, emissions, discharges or other interactions with the environment)

- The impact **pathway** (i.e. the route by which a potential impact arising from a source may be transferred to an environmental element or receptor. Pathways describe how an activity may interact with the environment)

- The environmental **receptor** (i.e. the specific component of the environment that may be adversely affected by the activity, in the absence of control measures).

Any uncertainties arising from assumptions or gaps in knowledge related to the identification or description of impact sources, pathways and environmental receptors have been documented for each potential impact event (see Section 7 Environmental Risk Assessment - **Table *20***).

5.2.3 Confirm the Potential of Impact Events to Occur

For each potential impact event, an analysis was undertaken of whether a source, impact pathway and environmental receptor within the scope of the regulated activity exists. Where a complete source–pathway–receptor linkage was established (noting none were excluded and where one was identified as uncertain, it was treated as established), the potential impact event was considered capable of occurring and appropriate control and management measures were identified (as documented in Section 8 (Controls and Management Measures).

An assessment was made as to the estimated frequency of the impact events and likely impact of the source on

the environmental receptor (prior to any controls in place) using APA's likelihood and consequence definitions in the Risk Matrix (Table 19). Each was allocated a subsequent inherent risk rating as outlined in Section 7 (Environmental Risk Assessment – **Table 20**). Note that this risk matrix is only relevant for determining the inherent and residual risk rating. For the environmental significance assessment, refer to **Table *15***, **Table *16*** and **Table *17***.

5.2.4 Identify Relevant Controls and Management Measures and Uncertainties and Assumptions

Controls and management measures were identified to manage each potential impact, using the hierarchy of controls outlined in the EIAC (in the following order):

- Elimination
- Substitution
- Design and Engineering (physical) controls
- Management system controls.

These controls and management measures have been designed to limit or remedy each impact event to as low as reasonably practical and are commensurate with the potential impacts, achieve compliance with statutory requirements.

Uncertainties and assumptions related to the likely effectiveness of the proposed controls and management measures, as well as sensitivity to change, have also been identified and included in Section 8 (Controls and Management Strategies).

5.2.5 Assessment of Environmental Significance

Potential impact events identified from the ERA have been assessed in terms of their significance, considering the following:

- The level to which a potential impact can be **avoided** through elimination (prevention);
- The estimated **frequency** of the potential impact occurring;
- The anticipated **duration** of the potential impact;
- The **extent** of the potential impact;
- The **severity** of the potential impact;
- The **cumulative effects** (if any) of the potential impact when considered in conjunction with other impacts on the same receptor; and
- The **sensitivity** of the receiving environment.

This assessment of environmental significance is outlined in Section 9 and considers the outcomes of the potential impact events and the environmental management measures identified for each impact event in Section 7.

Table 15 below defines the criteria (and definitions of each criteria) used to undertake the environmental significance assessment (to obtain a "magnitude of impact"), as per the EIAC.

Table 15: Environmental Significance Assessment Criteria

Criteria	Descriptor	Magnitude Criteria**
Avoidance	Yes – Potential impacts may be avoided through implementation of controls.	
	No – Potential impacts may not be avoided through implementation of controls.	
Frequency	Constant – Impact occurs constantly or is present throughout the life of the activity.	High

Criteria	Descriptor	Magnitude Criteria**
	Frequent – Impact occurs regularly but not constantly, or occurs several times during the lifespan of the activity.	Moderate
	Infrequent – Impact occurs seldomly, unlikely to occur but possible when certain circumstances prevail.	Low
	Rare – Impact only occurs in certain circumstances, impact not anticipated but may occur if abnormal circumstances prevail.	Low
Duration	Permanent – Impacts to the environment are permanent and unable to be remediated.	High
	Long term – Impacts to the environment continue for a number of years but may be remediated.	Moderate
	Short term – Impacts to the environment last for less than 1 year and may be remediated.	Low
Extent	Regional – Impacts are widespread offsite.	Moderate
	Localised – Impacts are onsite or in the immediate vicinity offsite (i.e. within the pipeline licence area and in localised places in its immediate vicinity).	Low
Severity	High – Significant change to environmental conditions from existing conditions.	High
	Moderate – Moderate change to environmental conditions from existing conditions.	Moderate
	Low – Minor change to environmental conditions from existing conditions.	Low
Cumulative Effects	Yes – Receptors are already impacted by similar activities.	High
	Potential – Receptors could be impacted by similar activities.	Moderate
	Unlikely – Receptors are not already impacted by similar activities.	Low
Sensitivity of the Environment	Refer to **Table *16*** below.	

**Where an impact event contains various levels of magnitude, the highest magnitude of impact is taken.

The above table gives each environmental element a “magnitude” rating. This is combined with the “Sensitivity” rating using the **Table *16*** below to obtain the overall “environmental significance” rating.

Table 16: Sensitivity of the Receiving Environment Criteria

Criteria	Descriptor	Rating
Sensitivity of Receiving Environment	The environmental value is: • Protected as a result of Australia’s international commitments or holds a statutory protection (such as a National Park / Threatened Species / Heritage) • Intact • Unique to the environment in which it occurs and is isolated from other regions / occurs infrequently anywhere else • Has not been exposed to any threatening processes (or they have not had a noticeable impact on the integrity of the environmental value)	High
	Environmental value is: • Recorded as regionally or locally important • In moderate / good conditions despite being exposed to threatening processes • Is relatively well represented in the area in which it occurs but its abundance or distribution is limited by threatening processes	Moderate

Criteria	Descriptor	Rating
	• Threatening processes have reduced its resilience to change	
	Environmental value is: • Not listed on any statutory list or register • In poor / moderate condition as a result of threatening processes • Abundant and widely distributed or representative examples exist throughout the area • Not likely to change due to further degradation	Low

The overall environmental significance of each potential impact event was assessed using the matrix in **Table 17**, which combines the "magnitude" of the impact and the "sensitivity" of the receiving environment.

Table 17: Environmental Significance Assessment Matrix

	Magnitude of Impact		
Sensitivity of receiving environment	**High**	**Moderate**	**Low**
High	Extreme	High	Moderate
Moderate	High	Moderate	Low
Low	Moderate	Low	Negligible

Impacts were considered acceptable if they were in the 'Negligible' or 'Low' category of environmental significance (using the matrix above) after all controls are in place. Impacts in the 'Moderate' category would generally be considered acceptable if they were as low as reasonably practicable (ALARP) following the application of all control and mitigation measures (noting there were no 'Moderate' impacts). 'High' and' Extreme' impacts would be considered unacceptable necessitating some form of additional control or change to the regulated activity.

5.2.6 Develop Environmental Objectives and Assessment Criteria

Environmental objectives and associated assessment criteria and leading performance criteria were then developed for all potential impacts identified through the environmental impact assessment process. The objectives were aligned with the relevant elements of the environment and are presented in the impact assessment tables below, as well as the Statement of Environmental Objectives (stand alone document).

6 Environmental Elements

This Section and Section 4 above seek to address *Criteria 1 – Elements of the Environment* of the Environmental Impact Assessment Criteria. This Section specifically addresses the requirement of Regulation 10(1)(b)(i), which requires:

- Provision of a description of the specific elements of the environment that can reasonably be expected to be affected by the activities, with particular reference to the environment and existing land uses.

Under the EIAC, APA is required to provide (for each environmental element) a summary of any relevant issues or considerations raised by stakeholders, and any relevant legislated or recognised standards in relation to the element of the environment, identify potential receptors, and undertake an impact assessment of how the element could be potentially impacted by the activity.

Consultation with external stakeholders was undertaken between 22 September 2025 and 7 November 2025 with the parties and all their responses listed in Appendix 3 – Stakeholder Consultation. Where relevant, this EIR has been updated to take responses into account.

The below **Table 18** outlines each relevant environmental element, the views of affected parties, and relevant legislation and standards applicable to each element. Further sections provide additional detail about potential impacts and receptors.

Table 18: Environmental Elements, Views of Affected Parties, Relevant Legislation and Environmental Receptors

Environmental Element	Views of Affected Parties	Applicable Legislation and Relevant Standards	Environmental Receptors
Native Vegetation and Fauna	Stakeholder noted an accredited consultant for vegetation assessment may need to be engaged in the event of staged offsetting.	*Environment Protection and Biodiversity Conservation Act 1999 (Cth)* *National Parks and Wildlife Act 1972 (SA)* *Native Vegetation Act 1991 (SA)* *Landscape South Australia Act 2019 (SA)* *SA Native Vegetation Council, Guide for a Significant Environmental Benefit for the clearance of native vegetation associated with the minerals and petroleum industry (March 2025)*	• Native vegetation • Fauna • Landowners
Pests, Disease and Weed	Stakeholder noted that after heavy rain there is an increased potential for the spread of weeds and recommended surveys and monitoring.	*Biosecurity Act 2025 (SA)*	• Land • Native vegetation • Landowners
Noise, Dust and Odour Emissions	Stakeholder noted approval required if Naturally Occurring Radioactive Material (NORM) is found in the form of scale or residues, and noted regulatory requirements for Abrasive Blasting.	*National Environment Protection (National Pollutant Inventory) Measure 1998 (Cth)* *National Greenhouse and Energy Reporting Act 2007 (Cth)*	• Atmosphere • Land • Third parties • Landowners

Environmental Element	Views of Affected Parties	Applicable Legislation and Relevant Standards	Environmental Receptors
		Environment Protection Act 1993 (EP Act) (SA) *Environment Protection (Air Quality) Policy 2016 (Air Quality EPP) (SA)* *Environment Protection (National Pollutant Inventory) Policy 2008 (SA)* *Environment Protection (Commercial and Industrial Noise) Policy 2023 (SA)*	
Chemical Spills and Contamination	Stakeholder noted potential for herbicides and hydrotest water to enter watercourses, and reinforced contamination reporting requirements	*Environment Protection Act 1993 (EP Act) (SA)* *EPA 080/16 Bunding and Spill Management Guideline (May 2016)* *National Environment Protection (Assessment of Site Contamination) Measure 1999 (ASC NEPM) (Cth)*	• Land • Water resources
Waste	Stakeholder reinforced waste management regulatory obligations.	*Environment Protection (Waste to Resources) Policy 2010 (Waste EPP) (SA)* *South Australian Public Health (Wastewater) Regulations 2013 (SA)* *Environment Protection Act 1993 (EP Act) (SA)* *SA EPA Septage Management Guidelines (May 2020)*	• Land • Water resources
Soil	Stakeholder provided advice in the implementation of a soil erosion management plan where relevant.	*National Environment Protection (Assessment of Site Contamination) Measure 1999 (ASC NEPM) (Cth)* *Crown Land Management Act 2009 (SA)* *Environment Protection Act 1993 (EP Act) (SA)*	• Land • Water resources • Native vegetation • Landowners
Water (including surface and ground water)	Stakeholder provided advice in the implementation of drainage management plans where relevant and commentary on water affecting activities, including their applicability, relevance and timeframes.	*Australian and New Zealand guidelines for fresh and marine water quality.* *National Environment Protection (Assessment of Site Contamination) Measure 1999 (ASC NEPM) (Cth)* *Crown Land Management Act 2009 (SA)* *Environment Protection (Water Quality) Policy 2015 (Water Quality EPP) (SA)* *Environment Protection Act 1993 (EP Act) (SA)* *Landscape South Australia Act 2019 (SA)*	• Land • Water resources • Native vegetation • Landowners

Environmental Element	Views of Affected Parties	Applicable Legislation and Relevant Standards	Environmental Receptors
Heritage (Aboriginal and Non-Aboriginal)	Stakeholders identified one registered Aboriginal site within the project. Stakeholders provided commentary around various heritage aspects, including management of Aboriginal objects / relics, undertaking of cultural heritage assessments and updates to wording of various heritage-relevant sections.	*Aboriginal and Torres Strait Islander Heritage Protection Act 1984 (Cth)* *Coroners Act 2003 (SA)* *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* *Native Title Act 1993 (Cth)* *Aboriginal Heritage Act 1988 (SA)* *Heritage Places Act 1993 (SA)* *Native Title (South Australia) Act 1994 (SA)* Attorney-General's Department, A guide to Aboriginal Heritage in South Australia (January 2025).	• Aboriginal heritage and communities (includes Traditional Owners / Native Title holders) • Non-Aboriginal Heritage
Fire	Stakeholder noted adequate consideration of the potential for fire.	*Environment Protection Act 1993 (EP Act) (SA)* *AS 60079 Electrical Apparatus for explosive gas atmospheres - Hazardous Areas*	• Land • Native vegetation • Third Party Infrastructure • Landowners
Third Parties and Public Health and Safety	Stakeholders did not comment on any third party or public health and safety considerations.	*Australian Pipelines and Gas Association (APGA) Code of Environmental Practice Onshore Pipelines (April 2022)* *AS 2885 Pipelines – Gas and Liquid Petroleum* *AS 60079 Electrical Apparatus for explosive gas atmospheres - Hazardous Areas*	• Landowners • Third Party Infrastructure

6.1 Native Vegetation and Fauna

Potential impacts to vegetation and fauna may include habitat destruction, fauna mortality and impacts to threatened species and communities as a result of pipeline operation and maintenance activities.

Critically Endangered, Endangered, and Vulnerable ecological communities (as listed under the EPBC Act) and Endangered, Vulnerable and Rare ecosystems (as provisionally listed by DEW) are not known or likely to occur within a 10 km buffer of the pipeline easement and therefore are very unlikely to be impacted by the pipeline operations. The flora assessment established that 10 rare or threatened plant species could potentially occur within the pipeline corridor. The field survey did not identify any of these species as being present and indicated that there is very limited potential for the pipeline to have adverse impacts on any rare or threatened species.

Permanent access along the easement is required for the operation and maintenance of the Pipeline. However, access along the entire length of the easement is only required when completing ground patrols or cathodic protection surveys. Should access tracks exist on the easement then vehicle activity will be confined to those tracks whenever practicable so as not to damage surrounding vegetation.

Under pipeline licence regulations, warning signs denoting the approximate location of buried high pressure pipelines must be installed and line of sight between these marker signs must be maintained. Therefore, vegetation on the easement must be maintained at low levels to enable line of sight. Ground cover and low lying vegetation (approximately < 300mm) will be encouraged as it assists with ground stability and reduces the development of erosion from wind and water and provides habitat for fauna. The level of ground cover should be consistent with surrounding areas. Remnant or retained vegetation at the edges of the easement is left in-situ where it does not interfere with line of sight or the Pipeline. This provides habitat and movement pathways for fauna, while low growing ground cover along the easement provides cover and interconnection for fauna movement.

Occasionally, earthworks will be required to complete operational activities, such as pipeline integrity digs or the installation of cathodic protection infrastructure. Clearing of the low-lying vegetation on the easement is isolated to the immediate project area and all efforts are made not to disturb remnant or retained vegetation. Excavations are fenced if left open overnight and ramps are constructed to allow fauna to exit the trench should they enter it. The loss of vegetation as a result of these activities is likely to be short-term and restricted to the existing easements that have previously been used for pipeline construction and maintenance activities.

Routine aerial or ground surveillance is used to monitor for excessive or poor vegetation growth. Fauna movement along and across the easement is not restricted except where existing agricultural or residential fencing is already in place.

Vehicle movement and pipeline facilities (line valves, end of line stations etc.) may cause noise or lighting disturbance to fauna. These impacts would be particularly isolated or infrequent.

6.2 Pests, Disease and Weed

Movement along easements of operational and maintenance personnel have the potential to spread weeds, pests and disease by transferring matter attached to vehicles, equipment or personnel. Soil disturbance and transfer during pipeline construction and maintenance has the potential to encourage weed growth.

Weeds reduce farm productivity; they invade crops, smother pastures and in some cases can harm livestock. They aggressively compete for water, nutrients and sunlight, resulting in reduced crop yield and poor crop quality.

Pest and Diseases may adversely affect plant and animal health or welfare; pose a serious threat to livestock, horticultural, and forestry industries, water catchments, nature reserves and national parks as well as general public amenity. In agricultural areas pests and diseases can have extremely detrimental effects on agricultural productivity and operations.

Routine ground patrols are used to monitor presence of weeds. The hygiene procedures include clean-in and clean-out requirements for known infested and non-infested areas. Areas of existing infestations will be avoided where possible and all vehicle movement will remain on the easement. Vehicles accessing the easement will be kept clean of debris and soil and washed down on an as needs or periodic basis to prevent the introduction of new weed, pest and diseases. Machinery and other earth moving equipment brought to site must be certified as being clean, particularly, if sourced from a third party.

6.3 Noise, Dust and Odour Emissions

The normal operation of the pipeline is silent along the right-of-way and will not generally involve significant noise impact. Some low level noise will be generated at the metering stations at each end of the pipeline at Ballera and Moomba, however given the industrial location of these sites, the noise will be insignificant compared to the background noise. In an emergency, high pressure gas venting may occur at valve sites or at the site of a pipeline rupture. The duration of the venting and the volume of gas vented would be dependent upon the nature of the emergency. As there are no residences in close proximity to the pipeline, no significant impacts are likely from noise.

The impact to air quality during operations is expected to be negligible. Minor dust generation from light vehicles and activities associated with the maintenance and monitoring of the pipeline will occur. Minor emissions from the pipelines may occur at above-ground facilities during maintenance operations. Remote operation of valves (in the event of damage or programmed maintenance) uses gas pressure to drive valve actuators and will result in the release of small amounts of gas. Minor emissions from scraper stations will occur during loading and removal of the pipe pig, which would normally occur every five to ten years during intelligent pigging.

Fugitive emissions are extremely low from pipeline operations. Fugitive emissions are already taken into account for vented gas by default as per APA's National Greenhouse and Energy Reporting (NGER) requirements and using NGER-aligned methodologies.

The risk of pipeline ruptures or leaks is also extremely low due to the implementation of protection measures and the routine monitoring, inspection and maintenance that will be carried out.

Given the isolated nature of potential emission generation, minor impacts on air quality associated with the pipeline are expected.

6.4 Chemical Spills and Contamination

Minor quantities of fuel and chemicals are required during operation of the pipeline, presenting a potential risk for minor land contamination.

6.5 Waste

Relatively small amounts of general and regulated wastes are generated during pipeline operations. Regulated wastes are high risk waste types that are subject to specific management requirements in relation to handling, storage, transport and disposal.

Typical wastes include;

- General putrescible and recyclables.
- Filters (non-oily).
- Sludge (pigging).
- Packaging (maintenance).
- Septic & greywater (at Compressor stations).

If stored and disposed incorrectly, the above waste may potentially cause land contamination.

6.6 Soil and Water (including ground and surface water)

Potential localised impacts to the soil include erosion and sedimentation, inversion, compaction, and contamination. Potential impacts on ground and surface water resources include alteration to flow regimes, increased sediment load and turbidity, and contamination.

Pipeline projects involve relatively small quantities of chemicals and the risks to soil and water associated with minor spills are extremely low. Fuel and chemical handling and storage measures will be implemented to minimise the risk of contamination.

Due to the nature of pipeline operational activities, no impacts to deep aquifers are likely to occur and these are not considered further.

Occasionally, earthworks will be required to complete operational activities.

This may include pipeline integrity digs, coating refurbishment work, installation of new anode beds and projects requiring new tie in facilities. This occurs infrequently, however, it is likely to increase as the Pipeline ages. Excavations usually occur on the pipeline easement or in designated compounds and are a short term, temporary event. Compaction of the backfilled excavation will occur to prevent the disturbed soil from subsiding. All excavations will be rehabilitated so that landforms and drainage patterns are restored, however due to the relatively shallow excavation depths significant impacts are unlikely.

Vehicle traffic on the easement can lead to soil compaction. Soil compaction may change local drainage patterns and prevent effective plant growth. Access to the Pipeline is restricted to access tracks and the right of way. The condition of soil and terrain will be monitored through regular ground and aerial surveillance programs. These programs will seek to identify areas of erosion, soil inversion, poor vegetation cover and suspected areas of soil contamination. Should an issue be identified then it will be reported so that rectification works can be determined and scheduled.

Very minimal quantities of water will be required for pipeline operations. The source of water will be accessed on a case-by-case basis and will be dependent on the availability and location of surrounding sources.

All efforts will be made to avoid discharge of wastewater, and it will be disposed of in a manner that minimises runoff. Should discharge potentially result in runoff to watercourses then all reasonable and practical measures (i.e. water testing) will be taken to ensure that the water quality guidelines associated with that waterway are met.

6.7 Heritage (Aboriginal and non-Aboriginal)

Heritage includes both Aboriginal and European heritage sites and artefacts. Prior to the construction of the pipeline a cultural heritage and initial site clearance was undertaken. It is not considered likely that there will be significant adverse impacts to indigenous cultural heritage.

Routine maintenance activities are unlikely to disturb undiscovered cultural heritage as the easement was heavily disturbed during construction. However, some activities such as excavations and dig-ups, may have the potential to disturb archaeological material, should it be present. Impacts include:

- Damage to shallow artefact scatters.
- Damage to subsurface material.
- Damage to significant vegetation.

Such work is required infrequently and occurs within the easement. Pipeline personnel are made aware that they may uncover areas of undiscovered cultural heritage within the easement. If during operations evidence is discovered, the work is to stop and exclusion barrier is to be installed. Police will be contacted in the event a burial site is uncovered, and the appropriate government department will be contacted should a suspected heritage site be uncovered.

Provisions under the *Aboriginal Heritage Act 1988* make it an offence to damage, disturb or interfere with any Aboriginal site, object or remains. Aboriginal Affairs and Reconciliation with the Department of the Premier and Cabinet administers the *Aboriginal Heritage Act 1988* on behalf of the Premier, and should be contacted in the event of damage, disturbance or interference.

6.8 Fire

The potential for fire is highly unlikely and would be a result of maintenance activities described in Section 3.3.

Bushfires caused by operational activities are expected to be very rare. Fire Bans will be adhered to unless specific approval for the activity has been acquired from the relevant authorities. All hot work activities, such as welding, require appropriate site preparation to remove potential ignition sources and the use of a fire-spotter. A job specific SWMS will assess the level of risk the activity poses in the planning stage and should additional control measures be required they will be implemented. This may include having fire-fighting equipment on-site or postponing the work to a period of lower fire risk.

6.9 Third Parties and Public Health and Safety

Impacts to public health and safety as a result of pipeline operations will be rare and would likely be a result of bushfire, vehicle traffic, earthworks or pipeline rupture.

Unauthorised third party activity around the Pipeline poses the greatest risk with the potential to result in full-bore pipeline rupture. The Pipeline is buried at depth and physical protection controls, such as concrete slabbing, are installed at high-risk areas. Pipeline markers are installed in accordance with AS2885 requirements to identify the presence of a gas pipeline and warn of the dangers of excavations.

7 Environmental Risk Assessment

Table 20 further below outlines the ERA that has been undertaken as part of the five-yearly review of this Environmental Impact Report. The ERA below addresses **Criteria 2 – Potential Impact Events** and **Criteria 3 - Confirmation of Impact Events of the EIAC**.

Criteria 2 requires the licensee to identify potential impact events associated with its regulated activities during each phase of operations and how these relate to elements of the environment. Criteria 3 requires, for each potential impact event, an analysis of whether a source, pathway or receptor exists, information on the estimated frequency of the events and a description of the likely impact prior to engineering and/or administrative controls.

As the Pipeline has already been fully constructed, references to 'Construction' in the Project Phase are not included in the ERA. Similarly, any decommissioning would only be undertaken after an updated environmental impact assessment was undertaken and is not anticipated in the 5-year period to which this EIR applies. The ERA is therefore for the Pipeline's Maintenance and Operation as outlined below in Table 20.

Residual and Inherent Risk Rating

Table 19 below outlines the APA Risk Matrix that has been applied to each impact to determine an inherent risk rating (i.e. the risk without any controls in place) and a residual risk rating (the risk with control measures applied). Note that this matrix is only relevant for determining the inherent and residual risk rating. For the environmental significance assessment and associated risk ratings, refer to **Table *15*: Environmental Significance Assessment Criteria**, **Table 16: Sensitivity of the Receiving Environment Criteria** and **Table *17*: Environmental Significance Assessment Matrix**.

Table 19 APA Enterprise Risk Matrix (for Inherent and Residual Risk)

Likelihood	**Frequent (many times in year)** Expected to occur on a regular basis and many times	**5**	**Low**	**Moderate**	**High**	**Extreme**	**Extreme**
	Occasional (every 2 years) May occur occasionally or in many circumstances	**4**	**Low**	**Low**	**Moderate**	**High**	**Extreme**
	Unlikely (every 5 years) Unlikely to occur but possible when certain circumstances prevail	**3**	**Negligible**	**Low**	**Moderate**	**High**	**High**
	Remote (every 20 years) Not anticipated but may occur if certain abnormal circumstances prevail	**2**	**Negligible**	**Negligible**	**Low**	**Moderate**	**High**
	Rare (every 50 years) Conceivable, but has not been known to arise previously	**1**	**Negligible**	**Negligible**	**Negligible**	**Low**	**Moderate**
	Definition: Environment, Heritage or Social Impact Environmental harm or impacts to heritage or negative social impacts without approvals. Social impacts may include quality of life, livelihoods, access to shared resources/services. Communities include landowners, townships, First Nations People etc. Human rights relate to those rights and freedoms that everyone should be entitled to and is enshrined in the Universal Declaration of Human Rights. eg. dignity, recognition of our values, rights to work, adequate standard of living etc.		**1. Minimal** At least one of the following: • onsite and impacting < 1 ha • no remediation needed • impact continues for < 1 wk • fauna death of a non-conservation significant species A process failure not affecting the overall significance of the heritage place or negligible damage that is fully repairable. At least one of the following: • dissatisfaction or one off low level negative impacts on social environment/values or Human Rights. • damage to relationships with local or key communities which can be immediately resolved	**2. Minor** At least one of the following: • onsite and impacting > 1 ha • able to be remediated easily • impact continues for <1 yr • fauna death of a conservation significant species • Overall significance of the heritage place not affected or minor damage to heritage site that is not fully repairable At least one of the following: • isolated negative impacts on social environment/values or Human Rights. • damage to relationships with local or key communities which can be resolved within 3 months.	**3. Significant** At least one of the following: • offsite and impacting < 1 ha • able to be remediated with some difficulty • impact continues for <5 yrs • multiple fauna deaths of a of conservation significant species • Overall significance of the heritage place not affected but does impact upon an aspect of its significance or causes moderate damage to heritage site that is not fully repairable. At least one of the following: • negative impacts on social environment/values or Human Rights. • damage to relationships with local or key communities which can be recovered within 6 months	**4. Major** One or a combination of the following consequences: • offsite and impacting > 1 ha • able to be remediated with difficulty • impact continues for <10 yrs • Overall significance of the heritage place affected or causes serious harm to a heritage site that is not fully repairable. • At least one of the following: • multiple instances or substantial negative impacts on social environment/values or Human Rights. • damage to relationships with local or key communities which would take up to 12 months to resolve.	**5. Catastrophic** At least one of the following: • offsite and impact is widespread >1ha unable to be remediated • impact is irreversible or lasts >10 yrs Overall significance of the heritage place destroyed or substantially damages the important aspects of a heritage site and is not fully repairable At least one of the following: • extensive and systemic negative impacts on social environment/values or Human Rights. • enduring non-recoverable relationships with local communities.
		Impact (Consequence)					

Table 20 Environmental Risk Assessment

Impact ID	Environmental Element	Project Phase	Impact Event	Potential Environmental Impact	Source	Pathway	Environmental Receptor	Uncertainty / Assumptions	Sensitivity to Change	Confirmation of Source-Pathway-Receptor	Likelihood Rating	Consequence Rating	Inherent Risk Rating
NV1	Native Vegetation and Fauna.	Maintenance, Operation.	Clearing and / or works off easement. Scope not clearly defined, new contractor, overspray.	Unauthorised clearing / clearing native vegetation / exceed easement clearing limits.	Earthworks / Clearance of Native Vegetation. Erosion Repairs. Integrity Dig-ups.	Soil disturbance.	Native vegetation. Landowners.	Assumption that prior site clearances have been undertaken with good understanding of vegetation and clearing requirements and contractors have been appropriately inducted.	Low sensitivity to change due to understanding of site from prior site clearances. Potential to change if vulnerability categories of species change.	Source, pathway and receptor confirmed (based on searches of State and National databases and past surveys).	4	2	Low
NV2	Native Vegetation and Fauna.	Maintenance, Operation.	Vehicle strike (single), equipment or plant interaction and general activities.	Fauna injury or death.	Vehicle / Plant used in operation or maintenance of pipeline.	Vehicle / Plant movements.	Fauna.	Uncertainty that numbers of plant / vehicles and their movements is not exactly known.	Sensitive to change, dependent on factors such as density of vehicles and movements, dependent on phase of project, extent of works required.	Source, pathway and receptor confirmed (based on searches of State and National databases and past surveys).	4	1	Low
NV3	Native Vegetation and Fauna.	Maintenance, Operation.	Excavation / dig-up leading to impacts to fauna.	Ecological impacts / negative impacts to reputation / inadequate rehabilitation.	Earthworks. Erosion Repairs. Integrity Dig-ups.	Soil disturbance.	Native vegetation. Fauna.	Assumption that prior site clearances and excavations have been undertaken with good understanding of the vegetation considerations at the site.	Low sensitivity to change due understanding of site from prior investigations. Potential to change if vulnerability categories of species change.	Source, pathway and receptor confirmed (based on searches of State and National databases and past surveys).	3	3	Moderate.
S1	Soil.	Operation.	Inadequate or poorly maintained erosion control devices / rehabilitation / general weathering.	Sedimentation, loss of soil, landholder dissatisfaction.	Earthworks. Erosion Repairs. Integrity Dig-ups.	Soil disturbance.	Land. Water Resources. Landowners.	Assumption that erosion / weathering profile of the site is not well known. Weather conditions may determine impact of erosion.	Sensitive to change, dependent on the frequency of site inspections and maintenance and increased climate variability.	Source, pathway and receptor confirmed (based on evidence confirming areas are subject to erosion, especially after major rainfall).	3	3	Moderate
S2	Soil.	Maintenance, Operation.	Excavation / dig-up leading to impacts to erosion, impacts to landholders, inadequate rehabilitation.	Ecological impacts / negative impacts to reputation.	Earthworks. Erosion Repairs. Integrity Dig-ups.	Soil disturbance.	Land. Water Resources. Landowners.	Assume prior site clearances and excavations have been undertaken with good understanding of the ecology at the site.	Sensitive to change, dependent on the frequency of site inspections and maintenance and increased climate variability.	Source, pathway and receptor confirmed (based on evidence confirming areas are subject to erosion, especially after major rainfall).	3	3	Moderate.
S3	Soil.	Maintenance, Operation.	Spills and over-clearing of vegetation.	Soil contamination and clearing of native vegetation.	Earthworks / Clearance of Native Vegetation. Erosion Repairs. Integrity Dig-ups.	Soil disturbance.	Native vegetation.	Prior site clearances have been undertaken with good understanding of the vegetation considerations at the site.	Low sensitivity to change due understanding of site from prior investigations. Potential to change if vulnerability categories of species change.	Source, pathway and receptor confirmed (based on evidence confirming areas are subject to erosion, and native vegetation searches).	3	3	Moderate.
WA1	Water.	Maintenance, Operation.	Excavation / dig-up / maintenance leading to impacts to ground and surface water bodies, including alteration of flow regimes and increased sediment / turbidity.	Sedimentation, impacts to ground and surface water bodies, landholder dissatisfaction, negative impacts to reputation.	Earthworks. Integrity Dig-ups.	Surface runoff. Direct disturbance.	Surface and ground water.	Water courses well known and documented. Weather conditions or plant/equipment failure may determine impact.	Low sensitivity to change due to understanding of site from prior investigations. Potential to change due to climate variability.	Source, pathway and receptor confirmed (based on evidence of known water courses).	3	3	Moderate

Impact ID	Environmental Element	Project Phase	Impact Event	Potential Environmental Impact	Source	Pathway	Environmental Receptor	Uncertainty / Assumptions	Sensitivity to Change	Confirmation of Source-Pathway-Receptor	Likelihood Rating	Consequence Rating	Inherent Risk Rating
WA2	Water.	Maintenance, Operation.	Spills leading to ground or surface water contamination.	Water contamination, landholder dissatisfaction, negative impacts to reputation.	Earthworks. Integrity Dig-ups.	Surface runoff. Direct disturbance.	Surface and ground water.	Water courses well known and documented. Weather conditions or plant/equipment failure may determine impact.	Low sensitivity to change due to understanding of site from prior investigations.	Source, pathway and receptor confirmed (based on evidence of known water courses).	3	3	Moderate
H1	Heritage (Aboriginal and non-Aboriginal).	Maintenance.	Excavation / dig-up leading to disturbance of cultural heritage site / material.	Loss of heritage value / negative impacts to reputation.	Earthworks. Erosion Repairs. Integrity Dig-ups.	Soil disturbance.	Aboriginal heritage and communities. Traditional Owners / Native Title Holders. Non-Aboriginal Heritage.	Prior cultural heritage investigations, site clearances and engagement with Traditional Owners undertaken with good understanding of the heritage considerations at the site.	Low sensitivity to change due to understanding of site from prior investigations. If heritage identified during project works, likelihood of additional heritage discoveries would increase.	Source, pathway and receptor confirmed (based on engagement with Traditional Owners, searches of AAR archives and previous surveys)	4	4	High
P1	Pest, Disease and Weed.	Maintenance, Operation.	Spread of weeds on and off easement. Breach of property biosecurity controls (sign in, clean down records, etc). Weed infestations / spread.	Ecological impacts, spread of weeds / disease and landholder dissatisfaction.	Earthworks. Erosion Repairs. Integrity Dig-ups. Vehicle / Plant used in operation or maintenance of pipeline.	Soil disturbance. Weeds attaching to vehicle / plant wheels.	Land. Native vegetation. Landowners.	Uncertainty as numbers of vehicles and their movements is not exactly known.	Sensitive to change, dependent on factors such as density of vehicles and movements, depending on phase of project, extent of works required, etc. Depends on changes to landowners' biosecurity controls.	Source, pathway and receptor confirmed (based on database searches of weeds and records kept of landowner biosecurity requirements).	4	4	High
P2	Pest, Disease and Weed.	Operation.	Incorrect pest management. Overspray of chemical - APA personnel generally only spraying within facilities. Contractors utilised for ROW.	Unintended poisoning non-target species.	Use of chemicals to poison unwanted pests / weeds.	Spraying chemicals.	Native vegetation. Land.	Contractors to be used for weed / pest management of outdoor weeds, under the assumption that they understand the appropriate chemicals and amounts to be used.	Sensitive to change, dependent on frequency of site inspections and the propagation rate of pests and weeds across the site.	Source, pathway and receptor confirmed (based on database searches of weeds, and information kept on weed spraying chemicals).	4	3	Moderate.
W1	Waste.	Operation.	Leaching to ground from compressor stations, septic systems and water treatment / drainage.	Soil contamination.	Water treatment systems. Compressor stations.	Loss of containment from compressor stations and water treatment systems.	Land. Water resources.	Amount of liquid released is not predictable. Assumes some level of maintenance of equipment.	Low sensitivity to change with regular site inspections and maintenance.	Source, pathway and receptor confirmed (based on water treatment systems, compressor stations and septic systems' presence along the pipeline and knowledge of maintenance requirements).	3	2	Low.
W2	Waste.	Operation.	Incorrect disposal of batteries.	Contamination of landfill.	Battery waste from battery replacements.	Waste disposal.	Land.	Amount of battery waste to be generated and frequency of use / disposal is not exactly known.	Low sensitivity to change due to established practice for managing waste.	Source, pathway and receptor confirmed (waste will be generated during pipeline operations).	3	2	Low.
W3	Waste.	Operation.	Incorrect disposal of filter elements - covered in oil residue.	Contamination of landfill.	Oily waste from filters.	Waste disposal.	Land.	Amount of filter waste to be generated and frequency of disposal is not exactly known.	Low sensitivity to change due to established practice for managing waste.	Source, pathway and receptor confirmed (waste will be generated during pipeline operations).	3	2	Low.

Impact ID	Environmental Element	Project Phase	Impact Event	Potential Environmental Impact	Source	Pathway	Environmental Receptor	Uncertainty / Assumptions	Sensitivity to Change	Confirmation of Source-Pathway-Receptor	Likelihood Rating	Consequence Rating	Inherent Risk Rating
W4	Waste.	Maintenance, Operation.	Loss of containment / control of pigging waste potentially including NORMS.	Soil contamination.	Pigging waste from pigging operations.	Waste disposal.	Land. Landowners.	Amount of pigging waste to be generated is not exactly known, depending on whether pyrophoric dust is present and if there is a need for washdown.	Low sensitivity to change due to infrequent nature of pigging.	Source, pathway and receptor confirmed (waste will be generated during pipeline operations).	3	3	Moderate.
W5	Waste.	Operation.	Chemical spill from insufficient maintenance / inspections or incorrect waste disposal.	Soil contamination.	Pipeline equipment / infrastructure.	Loss of containment.	Land. Water resources.	Extent of potential spills is not exactly known.	Low sensitivity to change due to established practice for managing waste.	Source, pathway and receptor confirmed (based on knowledge there is plant / machinery using fuels / chemicals along the pipeline).	3	1	Negligible.
C1	Chemical Spills and Contamination.	Maintenance, Operation.	Uncontained chemical spill (hose, or oil < 10L) from light vehicles, heavy equipment, etc.	Soil contamination.	Vehicle / Plant using in operation and maintenance of pipeline.	Loss of containment from vehicles / plant.	Land. Water resources	Numbers of vehicles and their movements is not exactly known.	Sensitive to change, dependent on factors such as density of vehicles and movements, depending on phase of project, extent of works required.	Source, pathway and receptor confirmed (based on knowledge there is plant / machinery using fuels / chemicals along the pipeline).	4	2	Low.
C2	Chemical Spills and Contamination.	Operation.	Chemical spill, loss of containment of water from waterbath heaters.	Soil contamination.	Waterbath heater units.	Loss of containment from waterbath heaters.	Land.	Amount of chemicals released is not predictable and should be able to be captured with effective controls.	Low sensitivity to change with regular site inspections and maintenance.	Source, pathway and receptor confirmed (based on knowledge of waterbath heater use).	3	2	Low.
C3	Chemical Spills and Contamination.	Operation.	Chemical spill from hazardous materials storage and facility fuel storage tanks.	Soil contamination.	Chemical storage.	Loss of containment from chemical storage.	Land.	Amount of chemicals released is not predictable and should be able to be captured with effective controls.	Low sensitivity to change with regular site inspections and maintenance.	Source, pathway and receptor confirmed (based on knowledge there is storage of fuels / chemicals along the pipeline).	3	2	Low.
C4	Chemical Spills and Contamination.	Operation.	Loss of containment / potential for release of coolant through the separator in oily water collection systems.	Soil contamination.	Oily water collection system.	Loss of containment from oily water collection system.	Land.	Amount of chemicals released is not predictable and should be able to be captured with effective controls.	Low sensitivity to change with regular site inspections and maintenance.	Source, pathway and receptor confirmed (based on knowledge there is coolant used along the pipeline).	3	2	Low.
C5	Chemical Spills and Contamination.	Operation.	Chemical release / uncontained chemical spill from compressor units and Gas Engine Alternators.	Soil contamination.	Compressor units, Gas engine alternators.	Loss of containment from equipment.	Land.	Amount of chemicals released is not predictable and should be able to be captured with effective controls.	Low sensitivity to change with regular site inspections and maintenance.	Source, pathway and receptor confirmed (based on knowledge there is plant / machinery using fuels / chemicals along the pipeline).	3	2	Low.
C6	Chemical Spills and Contamination.	Maintenance, Operation.	Transport of chemicals along ROW - generally less than 20L accepting fuel up to 400L.	Soil contamination.	Chemical transport – vehicles / plant.	Loss of containment.	Land.	Numbers of vehicles and their movements is not exactly known.	Sensitive to change, dependent on factors such as density of vehicles and movements, depending on phase of project, extent of works required.	Source, pathway and receptor confirmed (based on knowledge there is plant / machinery using fuels / chemicals along the pipeline).	2	2	Negligible.

Impact ID	Environmental Element	Project Phase	Impact Event	Potential Environmental Impact	Source	Pathway	Environmental Receptor	Uncertainty / Assumptions	Sensitivity to Change	Confirmation of Source-Pathway-Receptor	Likelihood Rating	Consequence Rating	Inherent Risk Rating
N1	Noise, Dust and Odour Emissions.	Maintenance, Operation.	Unplanned Release of gas emissions - NOx and CH4 from exhaust gases (SWQP), general plant operations, emergency shut downs and venting.	Contribution to greenhouse gases (GHG) in atmosphere.	Exhaust gas from pipelines. Gases from Vehicle / Plant used to operate and maintain pipeline.	Air.	Atmosphere.	Amount of gases released to the atmosphere is not exactly known.	Sensitive to change, depending on factors such as vehicle use, abnormal events requiring additional venting.	Source, pathway and receptor confirmed (based on knowledge there is release of gases during operation the pipeline).	3	2	Low.
N2	Noise, Dust and Odour Emissions.	Operation.	Unplanned Release of gas emissions – Methane from general venting.	Contribution to GHG in atmosphere.	Methane Gas venting.	Air.	Atmosphere.	Amount of gas vented at any given time is not exactly known.	Sensitive to change, depending on factors such as phase of project, abnormal events requiring additional venting.	Source, pathway and receptor confirmed (based on knowledge there is release of gases during operation the pipeline).	5	2	Moderate
N3	Noise, Dust and Odour Emissions.	Operation.	Unplanned Release of gas emissions - FM200 - fire suppression system.	Contribution to GHG in atmosphere.	Operation of Fire suppression system.	Air.	Atmosphere.	Use of fire suppression systems is only applicable during fire events.	Low sensitivity to change due to maintenance requirements of fire suppression system.	Source, pathway and receptor confirmed (based on knowledge there is release of gases during operation of fire suppression systems).	3	2	Low
N4	Noise, Dust and Odour Emissions.	Operation.	Coating defect repairs could include buffing, sand/grit blasting, rewrapping, use of epoxy resins resulting in dust, blasting material, coating removal media and chemical waste.	Contamination surrounding soils / landfill.	Maintenance activities generating fine material.	Air.	Land. Third Parties.	Frequency of coating defect repairs is assumed to be at a similar frequency to pigging.	Sensitive to change, dependent on frequency of site inspections / maintenance and whether welding / grinding is required.	It is uncertain whether fine, airborne materials generated will reach third parties, included as precaution.	3	2	Low.
F1	Fire.	Maintenance, Operation.	Welding and Grinding.	Potential for fire leading to loss of fauna, flora and habitats.	Maintenance activities requiring welding or grinding.	Sparks from welding and grinding.	Native vegetation. Land. Third Parties.	Frequency of welding and grinding is not exactly known.	Sensitive to change, dependent on frequency of site inspections / maintenance and whether welding / grinding is required.	Source, pathway and receptor confirmed (based on knowledge that welding and grinding will be required during operations and maintenance of the pipeline).	3	3	Moderate
TP1	Third Party and Public Health and Safety.	Maintenance, Operation.	Pipeline rupture.	Injury to public and damage to third party infrastructure.	Pipeline.	Damage to pipeline.	Third party infrastructure. Third Parties.	Frequent maintenance will aid in monitoring pipeline integrity, however locations of and specific activities of third parties around the pipeline during the pipeline's lifetime are not exactly known.	Low sensitivity to change due to ongoing regulatory and maintenance requirements.	Source, pathway and receptor confirmed (based on knowledge that there are inherent risks to pipeline operation that can include rupture).	2	4	Moderate.

8 Control and Management Strategies

This Section addresses **Criteria 4 – Control and Management Strategies and Uncertainty Assessment of the Environmental Impact Assessment Criteria**.

Environmental aspects associated with the operation and maintenance of the pipeline and their risks are identified during the ERA process. The following section provides an overview of the potential environmental risks, impacts and management methods employed to address those risks. Residual likelihood, consequence and risk ratings have been provided.

In accordance with the EIAC, “Assessment Criteria” and “Leading Performance Criteria” have been detailed to outline the criteria used by APA to inform the effectiveness of their management measures. Assessment criteria for each item have been developed in line with one of the following:

- Defined conditions – objectives for activities that can only be managed through the prevention of unacceptable actions (e.g. “No new outbreak or spread of weeds or pathogens as a result of pipeline activities”); and
- Defined requirements – the achievement of an objective can be assessed against the implementation of specific procedures or actions required for an activity (e.g. “Demonstrated compliance with AS2885”).

The ER Act defines Leading Performance Criteria as “criteria used to give an early warning that a control or other strategy necessary for compliance with a statement of environmental objectives— (a) is absent; or (b) may fail or be failing.”

Table 19 above outlines the APA Risk Matrix that has been applied to each impact to determine a residual risk rating (the risk with control measures applied). Note that this matrix is only relevant for determining the inherent and residual risk rating. For the environmental significance assessment, refer to **Table *15*: Environmental Significance Assessment Criteria**, **Table 16: Sensitivity of the Receiving Environment Criteria** and **Table *17*: Environmental Significance Assessment Matrix**.

APA incorporate various protocols into management of their environmental aspects which include the following and are referred to throughout the “Management Measures” column in the Tables below:

- Heritage Management Protocol (May 2025)
- Pests, Weeds and Disease Management Protocol (June 2022)
- Native Vegetation and Fauna Management Protocol (May 2025)
- Soil and Water Management Protocol (September 2024)
- Excavation and Trenching Fatal Risk Protocol (May 2024).

Where audits, patrols and inspections are listed as a control measure in the tables below, please refer to Table 37.

8.1 Vegetation and Fauna Management

The potential impacts and management and control measures that will be applied to manage the risks posed to vegetation and fauna, along with APA's integration system, the assessment criteria and the leading performance criteria, is outlined in the following Table 21.

Table 21 Vegetation and Fauna Management Measures

Objective	ID	Impact Event	Potential Impacts	Management Measures	APA System	Uncertainty and Assumptions	Sensitivity to Change	Assessment Criteria	Leading Performance Criteria	Likelihood Rating	Consequence Rating	Residual Risk Rating
No clearance of native vegetation or disturbance to native fauna unless prior approval under the relevant legislation is obtained	NV1	Clearing and / or works off easement. Scope not clearly defined, new contractor, overspray.	Un-authorised clearing / clearing native vegetation / exceed easement clearing limits.	• Compliance with *APA Native Vegetation and Fauna Management Protocol*. • For native vegetation clearing, mitigation hierarchy must be followed, which requires avoidance wherever possible, followed by minimize, rehabilitate or restore, then offset. • No works to occur outside of easement during normal operation and maintenance without prior approval. • No herbicide sprayed around watercourses or in locations where herbicide could be washed into watercourse by rain. • Pre-activity assessments must be completed prior to undertaking ground disturbing works and clearing. • Spotter / guide engaged during line-of-sight (LOS) clearing. • Environment awareness sheet (must include environmentally sensitive areas). • Dedicated Scope of Works for contractors working within environmentally sensitive areas. • GIS / mapping of environmentally sensitive areas must be available to all field personnel/ contractors (to be implemented during 24-month Improvement Program). • Provision of environmental line list must be noted on Job Hazard Analysis (JHA) / Permit to Work (PTW). • PTW training. • Mulching shall be used in preference to ground disturbing methods. • If clearing native vegetation outside easement, Native Vegetation Council's (NVC) *Guide for a significant environmental benefit for the clearance of native vegetation associated with the minerals and petroleum industry* (March 2025) must be followed, which outlines process for obtaining approval for clearing native vegetation and the Significant Environmental Benefit (SEB) requirements.	Maximo, ARGO.	Prior site clearances have been undertaken with good understanding of vegetation, fauna locations and clearing requirements.	Low sensitivity to change due to understanding of site from prior site clearances. Potential to change if vulnerability categories of species change.	• SG+ records of audits / inspections demonstrate vegetation/ fauna surveys carried out by suitably qualified person in accordance with regulatory survey standards / guidelines. • Records of *APA's Land Disturbance Assessment* (LDA) verify vegetation clearing is within approved area in accordance with NV Act. • Audits / inspections / daily pre-start and clearing records confirm non-ground disturbance clearing methods (slashing/mulching) are used in preference to ground disturbing methods to maintain rootstock, and facilitate effective rehabilitation. • Records demonstrate no herbicide sprayed around watercourses or in location where herbicide could be washed into watercourse by rain. • Records of audits / inspections / patrols demonstrate vegetation and species abundance on easement is reasonably consistent with the surrounding areas. Note: assessment of the consistency with surrounding areas will take into account that regrowth is a time and rainfall dependent process. • SG+ and XIC records demonstrate no reasonable complaints received from landholders in relation to vegetation regrowth on easement. • SG+ records of audits/inspections demonstrate that SEB approved by DEM (where delegated authority applies) or NVC, and the SEB obligation satisfied / implemented.	• Prior to activities impacting protected vegetation/ fauna, relevant manager has approved LDA outlining controls to meet statutory approvals (including measures to minimise fauna entrapment and / or injury in open excavations and pipework), with exemptions/ agreements obtained. • Records demonstrate work supervisor has complied with conditions of LDA, daily checks of compliance undertaken during clearing/ land disturbance activities, records completed and activities have remained within authorised disturbance boundaries. • Prestart/site induction records demonstrate work supervisor has communicated relevant vegetation/ fauna management requirements and responsibilities to workers. • SG+ audit and inspection records demonstrate that sites with known native fauna are identified, flagged (where appropriate) and avoided and protection measures (such as reduced speed limits) are in place. • SG+ audit/inspection records demonstrate vegetation clearing within easement or on land adjacent to easement limited to previously disturbed areas, unless prior regulatory approval obtained under NV Act (as evidenced by approved LDA).	2	2	Negligible.
	NV3	Excavation / dig-up leading to impacts to fauna.	Ecological impacts / negative impacts to reputation / inadequate rehabilitation.	• Compliance with *APA Excavation and Trenching Fatal Risk Protocol*. • Fencing and fauna ramps (45 degrees) for excavations left overnight. • Fauna inspections undertaken in excavations and trenches that are left open overnight prior to work commencing.	Maximo, ARGO.	Prior site clearances have been undertaken with good understanding of fauna locations and clearing	Low sensitivity to change due to understanding of site from prior site clearances. Potential to change if	• SG+ records of audits / inspections demonstrate vegetation/ fauna surveys carried out by suitably qualified person in accordance with regulatory survey standards / guidelines. • Records of audits / inspections / patrols demonstrate	• Prior to activities impacting protected vegetation/ fauna, relevant manager has approved LDA outlining controls to meet statutory approvals (including measures to minimise fauna entrapment and / or injury in open excavations and	2	3	Low.

Objective	ID	Impact Event	Potential Impacts	Management Measures	APA System	Uncertainty and Assumptions	Sensitivity to Change	Assessment Criteria	Leading Performance Criteria	Likelihood Rating	Consequence Rating	Residual Risk Rating
				Dig ups / excavations: • Dig up works managed as Stay in Business (SIB) projects. • Additional assessment of dig up locations and any potential additional work space required prior to works. • Notification of landholders prior to works. • Ongoing monitoring of dig up locations via ground and aerial patrol. • Daily site reports / check sheets / log of works. • The location of protected vegetation and fauna, where relevant to ongoing operations, must be added to the Enterprise Environment and Heritage GIS database in accordance with *APA Environment and Heritage - Spatial Data Process Flow.*		requirements.	vulnerability categories of species change.	vegetation and species abundance on easement is reasonably consistent with the surrounding areas. Note: assessment of the consistency with surrounding areas will take into account that regrowth is a time and rainfall dependent process.	pipework), with exemptions/ agreements obtained. • Prestart/site induction records demonstrate work supervisor has communicated relevant vegetation/ fauna management requirements and responsibilities to workers. • SG+ audit and inspection records demonstrate that sites with known native fauna are identified, flagged (where appropriate) and avoided and protection measures (such as reduced speed limits) are in place.			
	NV2	Vehicle strike (single), equipment or plant interaction and general activities.	Fauna injury or death.	• Driving in accordance with *APA Fatal Risk Protocol - Driving.* • Vehicles remain on existing roads/ tracks. • Fauna handling must be carried out by a suitably qualified and licenced fauna handler. • Adequate first response spill materials and equipment must be available for the spill hazards and risks associated with a particular location or task. • Refueling on the right-of-way (ROW) is avoided in nature reserves. • Refueling trailers are bunded and contain drip trays. • All plant and equipment have spill kits in environmentally sensitive areas. • Fauna injuries / fatalities reported in Safeguard (SG+). Within key fauna habitats and protected areas; • Accessing the ROW is kept to a minimum. • Driving occurs during the day and inactive periods, driving at dusk and dawn is avoided. • Vehicles travel at low speeds. • No access outside the easement or approved access.	Maximo, ARGO, SG+	Numbers of vehicles and their movements is not exactly known.	Sensitive to change, dependent on factors such as density of vehicles and movements, depending on phase of project, extent of works required, etc.	• SG+ records verify fauna injuries/ fatalities reported and no native fauna casualties associated with operations that could have reasonably been prevented.	• Prior to activities impacting protected vegetation/ fauna, relevant manager has approved LDA outlining controls to meet statutory approvals (including measures to minimise fauna entrapment and / or injury in open excavations and pipework), with exemptions/ agreements obtained. • Prestart/site induction records demonstrate work supervisor has communicated relevant vegetation/ fauna management requirements and responsibilities to workers. • SG+ audit and inspection records demonstrate that sites with known native fauna are identified, flagged (where appropriate) and avoided and protection measures (such as reduced speed limits) are in place.	3	1	Negligible.
	F1	Welding and Grinding.	Potential for fire leading to loss of fauna, flora and habitats.	• Prior to commencing work fire ban requirements for the day are reviewed. • Fire response training. Welding and grinding: • Fire breaks around compound • Designated areas for welding and grinding – within facilities only.	Maximo, ARGO.	Frequency of welding and grinding is not exactly known.	Sensitive to change, dependent on frequency of site inspections/ maintenance and if welding / grinding required.	• SG+ records of audits / inspections and incident management system demonstrate no fires related to pipeline activities.	• SG+ records of audits / inspections / daily pre-starts demonstrate fire ban requirements are checked and documented daily, fire response equipment is within service life.	2	2	Negligible.

8.2 Pest, Weeds and Disease Management

The potential impacts and management and control measures that will be applied to manage the risks posed by pests, weeds and diseases, along with the integration system, the assessment criteria and the leading performance criteria, is outlined in the following Table 22.

Table 22 Pest, Weeds and Disease Management Measures

Objective	ID	Impact Event	Potential Impacts	Management Measures	APA System	Uncertainty and Assumptions	Sensitivity to Change	Assessment Criteria	Leading Performance Criteria	Likelihood Rating	Consequence Rating	Residual Risk Rating
No introduction or spread of weeds, pest animals and pathogens as a result of these activities	P1	Spread of weeds on and off easement. Breach of property biosecurity controls (sign in, clean down records, etc). Weed infestations / spread.	Ecological impacts, spread of weeds / disease and landholder dissatisfaction	• Compliance with APA Pest, Weeds and Disease Management Protocol. • Vehicles/ equipment kept clean and free of weeds and seeds. • Clearing and excavation: equipment clean upon arrival. Pest control: • Licensed contractor used for pest control. • Only undertaken within fenced facilities (not located near threatened species). • Baits are secured as advised by contractor. • Housekeeping inspection includes looking for infestations and ensuring baits are secured. • If sourcing fill potentially contaminated with PWD, source location must be inspected for presence of Declared Weeds or alternatively, written verification obtained from supplier that material is free of Declared Weeds. • Weed spraying along the easement conducted by contractors. • Environmental Line List is referenced on JHA/Permit to Work. • Known parthenium infested properties are captured in ARGO. • ARGO and XIC to be consulted for weed washdown and biosecurity requirements prior to accessing ROW. • Consultation with landholders on works. • Weed ID books and weeds in the region are communicated to APA staff and contractors accessing/working on APA assets. • Weed washdowns are conducted for properties identified in XIC as requiring clean vehicles, equipment and machinery. • Weed washdown records retained, stapled to work order. • SDS for all chemicals. • Spraying weeds including base inspections: • Check ARGO/XIC for property with chemical restrictions. • Specific awareness of properties with biosecurity requirements and instructions for APA staff and contractors (to be implemented during 24-month Improvement Program). • Agricultural Chemicals Distribution Control (ACDC) License held by those applying chemicals. • Spraying only within compound by APA. • Contractor used on ROW for large scale treatments, APA staff conduct spot spraying only. • Location of weeds treated along the ROW is captured. • Management of declared weeds in accordance with controls recommended by SA Department of Primary Industries and Regions. • No herbicide should be sprayed around watercourses or in a location where the herbicide could be washed into a watercourse by rain. • Additional patrols / surveys considered following heavy rainfall events or known weed outbreaks / infestations in certain areas.	XIC, ARGO.	Numbers of vehicles and their movements is not exactly known.	Sensitive to change, dependent on factors such as density of vehicles and movements, depending on phase of project, extent of works required, etc. Landowner biosecurity controls are known but could be subject to change.	• SG+ records of audits/inspections patrols demonstrate presence of weeds on easement consistent with or better than adjacent land. • SG+ records of audits/inspections patrols demonstrate no new outbreak or spread of weeds or pathogens as a result of pipeline activities. • SG+ and XIC records demonstrate hygiene forms and vehicle wash-down registers completed. • Records of herbicide use demonstrate only used according to registration/ permit label instructions in accordance with the *Agricultural and Veterinary Products (Control of Use) Act 2002.*	• A register of known and potential pests, weeds and diseases (PWD risks) is in place for locations (e.g. operational regions, project areas) within which APA undertakes activities, and any new outbreaks recorded. • SG+ records of audits and inspections demonstrate individual PWDs have been risk assessed to identify priority PWD applicable to the activity area. • Maximo records demonstrate aerial and ground patrols have been undertaken to look for evidence of weeds on easement and adjacent land and additional patrols have been considered following heavy rain fall events or in known weed outbreak / infestation areas	2	3	Low
	P2	Incorrect pest management Overspray of chemical - APA personnel generally only spraying within facilities. Contractors utilised for ROW.	Unintended poisoning of non-target species.		XIC, ARGO.	Contractors to be used for weed / pest management of outdoor weeds, under the assumption that they understand the appropriate chemicals and amounts to be used.	Sensitive to change, dependent on frequency of site inspections and the propagation rate of pests and weeds across the site.			2	2	Negligible

8.3 Noise, Dust and Odour Emission Management

The potential impacts and management and control measures that will be applied to manage the risks posed by noise, dust and odour emissions, along with the integration system, the assessment criteria and the leading performance criteria, is outlined in the following Table 23.

Table 23 Noise, Dust and Odour Management Measures

Objectives	ID	Impact Event	Potential Impacts	Management Measures	APA System	Uncertainty and Assumptions	Sensitivity to Change	Assessment Criteria	Leading Performance Criteria	Likelihood Rating	Consequence Rating	Residual Risk Rating
Minimise disturbance to receptors, land use and infrastructure due to operation and maintenance activities **Minimise atmospheric emissions**	N1	Unplanned Release of gas emissions - NOx and CH4 from exhaust gases (SWQP), general plant operations, emergency shut downs and venting.	Gas release, contribution of GHG in atmosphere.	• Exhaust gases, general plant operations, emergency shut downs and venting must be undertaken by competent maintenance personnel. • Venting is reduced via work practices (automatic vents are stopped or prevented). • Maintenance of plant and equipment to reduce release. • Monitoring systems are installed on all units.	Maximo, SCADA.	Amount of gases released to the atmosphere is not exactly known.	Sensitive to change, depending on factors such as vehicle use, abnormal events requiring additional venting, etc., future changes to GHG emissions regulations.	• SG+ records of audits / inspections demonstrate activities comply with noise regulations under the *Environment Protection (Commercial and Industrial Noise) Policy 2023* (Noise EPP) and EP Act. • SG+ and XIC records confirm no reasonable complaints received. • SG+ and XIC records confirm no non-compliances noted or received. • SG+ records of audits / inspections demonstrate activities comply with the Air Quality EPP and Waste EPP. • SG+ records of audits / inspections demonstrate no uncontrolled atmospheric emissions (e.g. due to malfunction or mis-operation).	• Audit and inspection records demonstrate location of sensitive receptors (e.g. residences) considered when planning noise/dust/odour-generating activities, and avoidance/ mitigation measures implemented where required. • SG+ records of audits / inspections demonstrate infrastructure, plant and equipment are operated and maintained in accordance with manufacturer's specifications. • Records demonstrate that prior to any Abrasive Blasting or Surface Coating, Schedule 1 of the EP Act has been checked to confirm whether the works trigger a licence requirement.	2	2	Negligible
	N2	Unplanned Release of gas emissions – Methane from general venting.	Gas release, contribution of GHG in atmosphere.			Amount of gas vented at any given time is not exactly known.	Sensitive to change, depending on factors such as phase of project, abnormal events requiring additional venting, etc., future changes to GHG emissions regulations.			3	2	Low
	N3	Unplanned Release of gas emissions - FM200 - fire suppression system.	Gas release, contribution of GHG in atmosphere.	• Control buildings – FM200 – fire suppression system: • Managed by third party contractor. • Monthly system testing without release. • Monthly inspection. • System maintenance.	Maximo.	Use of fire suppression systems is only applicable during fire events.	Low sensitivity to change.			2	1	Negligible
	N4	Coating defect repairs could include buffing, sand/grit blasting, rewrapping, use of epoxy resins resulting in dust, blasting material, coating removal media and chemical waste.	Contamination surrounding soils / landfill.	• Coating defect repairs (including buffing, sand/grit blasting, rewrapping, use of epoxy resins): ○ National Paint Coating Procedure. ○ Refer to SIB procedures if outside normal operations. ○ Competent maintenance personnel undertake activities. ○ Drip trays / containment used to capture coating. ○ Waste material is captured and licensed third party contractor used for disposal. ○ Waste tracking certificates obtained and retained and (where necessary) provided to the EPA.		Frequency of coating defect repairs is assumed to be at a similar frequency to pigging.	Sensitive to change, dependent on frequency of site inspections / maintenance and whether welding / grinding is required.			2	2	Negligible

8.4 Chemical and Contamination Management

The potential impacts and management and control measures that will be applied to manage the risks posed by chemicals and contamination, along with the integration system, the assessment criteria and the leading performance criteria, is outlined in the following Table 24.

Table 24 Chemical and Contamination Management Measures

Objective	ID	Impact Event	Potential Impacts	Management Measures	APA System	Uncertainty and Assumptions	Sensitivity to Change	Assessment Criteria	Leading Performance Criteria	Likelihood Rating	Consequence Rating	Residual Risk Rating
No significant adverse changes in soil stability, structure, composition or quality resulting from activities. **No significant adverse impacts to existing surface water resources, including aquatic ecosystems and no changes to groundwater quality.** **No new contamination or regulatory breaches associated with waste resulting from activities**	C 1 C 3	Uncontained chemical spill (hose, or oil < 10L) from light vehicles, heavy equipment, etc. Chemical spill from hazardous materials storage and facility fuel storage tanks.	Soil contamination.	• No refueling in sensitive areas or near surface water. • Refueling is undertaken within facilities or on hard stand areas, where possible. • Spill Kit E-Learning – safeguard protocol, toolboxes and pre-starts include hazardous chemicals. • Emergency Response Plan and Exercises. • SDS and chemical register in Chemwatch. • Chemicals stored undercover in bunded areas (shed area) that drains to the oily water system. • Vehicles, plant and equipment parked in dedicated areas. • Regular maintenance and scheduled servicing undertaken on all vehicles, plant and equipment. • Spill response equipment available in all plant and equipment and inspected yearly and during housekeeping then replenished if used. • Emergency response exercises including spill response. • If soil is contaminated it is cleaned up and stored in a regulated waste bin until contractor collection. • Contaminated soil and regulated waste is disposed of by a licensed contractor. • Waste Tracking Certificates are obtained and retained and (where necessary) required to be provided to the EPA.	Maximo, SG+, Workday Learning Chemwatch	Numbers of vehicles / equipment and their movements not exactly known. Amount of chemicals released is not predictable however should be able to be captured with effective controls.	Vehicle use – Sensitive to change, dependent on factors such as density of vehicles and movements, depending on phase of project, extent of works required, etc. Chemical Use - Low sensitivity to change with regular site inspections and maintenance.	• SG+ records of audits / inspections and incident management system demonstrate no soil or water contamination as a result of spills during pipeline activities. • SG+ records of audits / inspections demonstrate compliance with EP Act including the *Environment Protection (EP) (Waste to Resources) Policy* and *EP (Water Quality) Policy* including discharge limits. • SG+ records of audits / inspections and incident management system demonstrate any escape of petroleum, processed substance, chemical or fuel is either immediately contained and removed or assessed in accordance with the National Environmental Protection Measure (NEPM) Assessment of Site Contamination (ASC) guidelines and remediated in accordance with relevant SA EPA guidelines in a timely manner. • SG+ records demonstrate pipeline integrity actions as defined in the Pipeline Integrity Management Plan, are completed in line defined timeframes / frequencies. • SG+ records of audits / inspections and incident management system demonstrate waste segregated and securely stored, no pipeline related rubbish on easement, at facilities or on surrounding land and no evidence of impacts to soil, water and vegetation as a result of water disposal (e.g. soil erosion, dead vegetation, water discoloration). • Records demonstrate discharge water meets	• SG+ records and audits / inspections demonstrate Waste Tracking Certificates obtained and retained and (where necessary) provided to the EPA and waste disposed of at an EPA licenced facility or via an approved process under the *Environment Protection Act 1993*. • SG+ records and audits / inspections demonstrate stored chemicals are segregated in accordance with the Australian Dangerous Goods (ADG) Code, and the requirements of their SDSs, and flammable and combustible liquids are stored in accordance with AS1940 (Storage and handling of flammable and combustible liquids). • SG+ records and audits / inspections demonstrate secondary containment bunding and the control and management of chemical (including flammable and combustible liquid) spills is in accordance with EPA Guideline EPA 080/16 and APA HSE EP Spill Preparedness and Response. • SG+ and Maximo records demonstrate yearly inspection of spill response kits completed and any non-conformances closed out • SG+ records / inspections	2	2	Negligible
	C 2	Chemical spill, loss of containment of water from waterbath heaters.	Soil contamination.	Waterbath Heaters: • Concrete and hard stand pad at Moomba. • Specific contractor for large scale Waterbath Heater activities. • Pump and lay flat hose available. • Daily and weekly visual inspections. • 6 yearly vessel inspections and water testing by contractor.	Maximo	Amount of chemicals released is not predictable however should be able to be captured with effective controls.	Low sensitivity to change with regular site inspections and maintenance.			2	2	Negligible
	C 4	Loss of containment / potential for release of coolant through the separator in oily water collection systems.	Soil contamination.	Oil water collection systems including waste oil tanks (WCS): • The amount of oil entering the system is minimized. • Inspections in accordance with Maximo.	Maximo	Amount of chemicals released is not predictable however should be able to be captured with effective controls.	Low sensitivity to change with regular site inspections and maintenance.			2	2	Negligible
	C 5	Chemical release / uncontained chemical spill from	Soil contamination.	Compressor units and Gas Engine Alternators: • Remote from sensitive areas. • Located on hard stand / compacted areas.	Maximo	Amount of chemicals released is not predictable however should	Low sensitivity to change with regular site			2	2	Negligible

		compressor units and Gas Engine Alternators.		• Compressor units bunded excluding after coolers for recips and oil coolers for the turbines. • Maintenance regime.		be able to be captured with effective controls.	inspections and maintenance.	appropriate ANZECC and EPA criteria for point of disposal. • Records demonstrate EPA has been notified if serious or material environmental harm from pollution is caused or threatened,or site contamination of groundwater found.	demonstrate waste water disposal system complies with the *South Australian Public Health (Wastewater) Regulations 2013* or is to the satisfaction of the Department for Health and Wellbeing.			
	C 6	Transport of chemicals along ROW - generally less than 20L accepting fuel up to 400L.	Soil contamination.	Hazardous materials storage, handling and transfers (including at facility and transport of chemicals along ROW generally less than 20L and 400L of fuel): • All storage facilities located on hard stand / compacted areas remote from sensitive areas. • Double skinned tanks and bunds for bulk storage. • Bunded storage for minor storage. • Use of specialised contractors for refueling bulk storage. • Materials contained within truck / toolbox. • Routine inspections in line with Maximo.	Maximo	Numbers of vehicles and their movements is not exactly known.	Sensitive to change, dependent on factors such as density of vehicles and movements, depending on phase of project, extent of works required.			2	2	Negligible

8.5 Waste Management

The potential impacts and management and control measures that will be applied to manage the risks posed by waste, along with the integration system, the assessment criteria and the leading performance criteria, is outlined in Table 25.

Table 25 Waste Management Measures

Objectives	ID	Impact Event	Potential impacts	Management Measures	APA System	Uncertainty and Assumptions	Sensitivity to Change	Assessment Criteria	Leading Performance Criteria	Likelihood Rating	Consequence Rating	Residual Risk Rating
No significant adverse changes in soil stability, structure, composition or quality resulting from activities. **No significant adverse impacts to existing surface water resources, including aquatic ecosystems and no changes to groundwater quality.** **No new contamination or regulatory breaches associated with waste resulting from activities**	W 1	Leaching to ground from compressor stations, septic systems and water treatment / drainage.	Soil Contamination.	Compressors stations – septic systems and associated water treatment and drainage: • Licensed plumber / competent contractor maintains septic systems. • Systems are alarmed and alerts occur prior to issues. • Moomba holding tank is pumped out fortnightly and waste tracking certificates retained (inclusive of greywater) and (where necessary) provided to the EPA. • General waste disposed of at base. • Grey water is released to ground (evaporation) / transportation trenches at compressor station.	Maximo.	Amount of liquid released is not predictable however should be able to be captured with effective controls.	Low sensitivity to change with regular site inspections and maintenance.	• SG+ records of audits / inspections and incident management system demonstrate no soil or water contamination as a result of spills during pipeline activities. • SG+ records of audits / inspections demonstrate compliance with EP Act including the *EP (Waste to Resources) Policy* and *EP (Water Quality) Policy* including discharge limits. • SG+ records of audits / inspections and incident management system demonstrate any escape of petroleum, processed substance, chemical or fuel is either immediately contained and removed or assessed in accordance with the National Environmental Protection Measure (NEPM) Assessment of Site Contamination (ASC) guidelines and remediated in accordance with relevant SA EPA guidelines in a timely manner. • SG+ records demonstrate pipeline integrity actions as defined in the Pipeline Integrity Management Plan, are completed in line defined timeframes / frequencies. • SG+ records of audits / inspections and incident management system demonstrate waste segregated and securely stored, no pipeline related rubbish on easement, at facilities or on surrounding land and no evidence of impacts to soil, water and vegetation as a result of water disposal (e.g. soil erosion, dead vegetation, water discoloration). • Records demonstrate discharge water meets appropriate ANZECC and EPA criteria for point of disposal. • Records demonstrate EPA has been notified if serious or material environmental harm from pollution is caused or threatened, or site contamination of groundwater found. • SG+ records of audits / inspections and incident management system demonstrate EPA notified and approval obtained for disposal if NORMS is found in the form of scale or residues. • SG+ records of audits / inspections demonstrate compliance with the SA EPA Septage Management Guidelines (2020).	• SG+ records and audits / inspections demonstrate Waste Tracking Certificates obtained and retained and (where necessary) provided to the EPA and waste disposed of at an EPA licenced facility or via an approved process under the *Environment Protection Act 1993*. • SG+ records and audits / inspections demonstrate stored chemicals are segregated in accordance with the Australian Dangerous Goods (ADG) Code, and the requirements of their SDSs, and flammable and combustible liquids are stored in accordance with AS1940 (Storage and handling of flammable and combustible liquids). • SG+ records and audits / inspections demonstrate secondary containment bunding and the control and management of chemical (including flammable and combustible liquid) spills is in accordance with EPA Guideline EPA 080/16 and *APA HSE EP Spill Preparedness and Response*. • SG+ and Maximo records demonstrate yearly inspection of spill response kits completed and any non-conformances closed out • SG+ records / inspections demonstrate waste water disposal system complies with the *South Australian Public Health (Wastewater) Regulations 2013* or is to the satisfaction of the Department for Health and Wellbeing.	2	2	Negligible
	W 2	Incorrect disposal of batteries.	Contamination of Landfill.	Battery building: • Long life, gel batteries replaced every 5 years except MLV and truck batteries (lead acid). • Undercover, hardstand, bunded area. • Licensed third party contractor used for regulated waste disposal (Veolia or Cleanaway for QSN via Moomba) and waste tracking certificates obtained and retained.		Amount of battery waste to be generated and frequency of use / disposal is not exactly known.	Low sensitivity to change.			1	2	Negligible
	W 3	Incorrect disposal of filter elements - covered in oil residue.	Contamination of Landfill.	Filtration skid, discharge coalesce: • Competent maintenance personnel. • Designated bin for filters (WCS). • Change outs every 6-12 months or as required. • Licensed third party contractor used for regulated waste disposal (WCS and Moomba) and waste tracking certificates obtained and retained and (where necessary) provided to the EPA.		Amount of filter waste to be generated and frequency of disposal is not exactly known.	Low sensitivity to change.			2	2	Negligible
	W 4	Loss of containment / control of pigging waste potentially including NORMS.	Soil Contamination.	Cleaning Pigging: • Pigging risk assessments are conducted and pigging activities planned. • Liquid waste is captured and disposed of by a licensed contractor. • Spill response equipment in vehicle is checked prior to commencing.		Amount of pigging waste generated not exactly known, depending on whether pyrophoric dust is present and if there is a need for washdown.	Low sensitivity to change with regular site inspections and maintenance.			2	2	Negligible
	W 5	Chemical spill from insufficient maintenance / inspections or incorrect waste disposal.	Soil contamination.	• Inspections: Ensure spill response equipment available prior to commencing. • Licensed third party contractor used for regulated waste disposal and waste tracking certificates obtained and retained and (where necessary) provided to the EPA.		Extent of potential spills is not exactly known.	Low sensitivity to change with regular site inspections and maintenance.			2	1	Negligible

8.6 Soil Management

The potential impacts and management and control measures that will be applied to manage the risks posed to soil, along with the integration system, the assessment criteria and the leading performance criteria, is outlined in the following Table 27.

Table 26 Soil Management Measures

Objective	ID	Impact Event	Potential Impacts	Management Measures	APA System	Uncertainty and Assumptions	Sensitivity to Change	Assessment Criteria	Leading Performance Criteria	Likelihood Rating	Consequence Rating	Residual Risk Rating
No significant adverse changes in soil stability, structure or composition resulting from activities.	S1	Inadequate or poorly maintained erosion control devices / rehabilitation / general weathering.	Sedimentation, loss of soil, landholder dissatisfaction.	Compliance with the Soil and Water Management Protocol. • Environment toolbox talks. • Clear Scope of Works for erosion repair works linked in with Contractor HSE Assessment Tool (CHAT). • Water affecting activities permits to be obtained where required, including for erosion rectification works. • Provision of environmental line list is noted on JHA / Permit to Work. • Erosion identification and remediation (information available in guideline or toolbox). • GIS / mapping of erosive areas is available to all field personnel and contractors. • Installation of erosion and sediment controls including berms, matting, repair or existing controls and engineering controls as required, particularly in areas of surface water. • Work is restricted during wet periods. • Specialist civil works as required. • Reseeding after disturbance were required– seed mix as required by landholder. • Material erosions shall be rectified as soon as practicable. Compliance with the Excavation and Trenching Fatal Risk Protocol. Dig ups / excavations: • Dig up works managed as SIB projects. • Additional assessment of dig up locations and any potential additional work space required prior to works. • Notification of landholders prior to works. • Ongoing monitoring of dig up locations via ground and aerial patrol. • Daily site reports / check sheets / log of works. • Maintenance and repair activities to be conducted during dry spells where possible. If not possible, appropriate erosion and soil management plan will be developed. • Topsoil must be stripped and stockpiled prior to, or at the commencement of, land disturbance activities. • Vegetation/mulch to be respread following reinstatement.	Maximo, ARGO	Erosion and weathering profile of the site is not well known. Weather conditions may determine impact of erosion.	Sensitive to change, dependent on the frequency of site inspections and maintenance and climatic changes in future.	• SG+ audit records, LDA documents and aerial / vehicle patrol inspections demonstrate the extent of soil erosion, surface contours, remediation of soil erosion and vegetation on the easement is consistent with surrounding land. • Records of completion confirm 0, +1 or +2 GAS criteria are obtained for borrow pit construction and restoration, as listed in Appendix 2 (of SEO). • SG+ records verify no reasonable landholder complaints associated with soil disturbance within or adjacent to the easement. • Records of audits / inspections demonstrate no un-remediated subsidence.	• SG+ audit records demonstrate erosion hazard assessments have been completed prior to undertaking soil disturbance that: • Will disturb more than >1000m2 of land at any one time • Is within or adjacent to a watercourse, or • Is on a slope >10% gradient and >30m in length. • SG+ audit records demonstrate annual land survey completed to look for soil discolouration and vegetation health. • SG+ audit records demonstrate ground and aerial patrols undertaken following specific works, and significant storm events.	2	2	Low.
	S2	Excavation / dig-up leading to impacts to erosion, impacts to landholders, inadequate rehabilitation.	Ecological impacts / negative impacts to reputation.			Prior site clearances and excavations have been undertaken with good understanding of the vegetation considerations at the site.	Low sensitivity to change due understanding of site from prior investigations.			2	2	Low.
	S3	Spills and over-clearing of vegetation.	Soil contamination. Sedimentation, loss of soil, landholder dissatisfaction.			Prior site clearances and excavations have been undertaken with good understanding of the vegetation considerations at the site.	Low sensitivity to change due understanding of site from prior investigations.			2	2	Low.

8.7 Water Management

The potential impacts and management and control measures that will be applied to manage the risks posed to water, along with the integration system, the assessment criteria and the leading performance criteria, is outlined in the following Table 27.

Table 27 Water Management Measures

Objective	ID	Impact Event	Potential Impacts	Management Measures	APA System	Uncertainty and Assumptions	Sensitivity to Change	Assessment Criteria	Leading Performance Criteria	Likelihood Rating	Consequence Rating	Residual Risk Rating
No significant adverse impacts to existing surface water resources, including aquatic ecosystems and no changes to groundwater quality.	WA1	Excavation / dig-up / maintenance leading to impacts to ground and surface water bodies, including alteration of flow regimes and increased sediment / turbidity.	Sedimentation, impacts to surface water bodies, landholder dissatisfaction, negative impacts to reputation.	Comply with Soil Water Management Protocol. • Environment toolbox talks. • Clear Scope of Works for erosion repair works linked with Contractor HSE Assessment Tool (CHAT). • Water affecting activities permits obtained where required, including for erosion rectification works. • Provision of environmental line list is noted on JHA / Permit to Work. • Erosion ID and remediation (info available in guideline or toolbox). • GIS / mapping of erosive areas available to field personnel / contractors. • Installation of erosion / sediment controls including berms, matting, repair or existing controls and engineering controls as required, particularly in areas of surface water. • Work is restricted during wet periods. • Specialist civil works as required. • Reseeding after disturbance where required – seed mix as required by landholder. • Material erosions rectified as soon as practicable.	Maximo, ARGO	Water courses well known and documented. Weather conditions or plant/ equipment failure may determine impact.	Sensitive to change, dependent on the frequency of site inspections and maintenance and climatic changes in future.	• SG+ audit / inspection records demonstrate compliance with *EPA Environment Protection (Water Quality) Policy 2015* • SG+ records of audits demonstrate no water affecting activities have been undertaken (as defined under the *Landscape South Australia Act 2019*) without relevant approvals in place. • SG+ records verify no reasonable complaints received from landholders or third party users regarding use of surface waters or groundwater quality. • Audit / inspection / incident management system records demonstrate no adverse impacts (i.e. to downstream ecology, land use, altered watercourse, groundwater, pipeline-related erosion to watercourse) resulting from pipeline operation and maintenance activities. • Audit records demonstrate inspections of easement, surface drainage and watercourse undertaken in accordance with Maximo regime. • Consultation records verify stakeholders contacted for any potential disruptions	• SG+ audit records, LDA documents and aerial / vehicle patrol inspections demonstrate surface drainage patterns are restored to pre-maintenance condition or better. • SG+ training records demonstrate 100% of personnel undertaking land-disturbing activities have completed required environmental and erosion control training prior to commencing work. • SG+ records of audits demonstrate APA's third party consultation and engagement procedures are up to date and documented, and records of communications with landowners / third parties maintained. • Maximo records confirm patrols undertaken following significant storm events • Maximo records confirm easement patrols are completed to survey for evidence of erosion or abnormal vegetation growth • LDA records verify maintenance activities with potential to impact water flow are only completed in accordance with LDA controls.	2	2	Low.
	WA2	Spills leading to ground or surface water contamination	Water contamination, landholder dissatisfaction, negative impacts to reputation.	Comply with Excavation and Trenching Fatal Risk Protocol for dig ups / excavations: • Dig up works managed as SIB projects. • Additional assessment of dig up locations and any potential additional work space required prior to works. • Notify landholders prior to works. • Ongoing monitoring of dig up locations via ground and aerial patrol. • Daily site reports / check sheets / log of works. • Maintenance/ repair activities conducted during dry spells where possible. If not, appropriate erosion / soil management plan developed. • Topsoil stripped /stockpiled prior to, or at commencement of, land disturbance activities. • Vegetation/mulch to be respread following reinstatement.		Water courses well known and documented. Weather conditions or plant/ equipment failure may determine impact. Prior site clearances and excavations have been undertaken with good understanding of the vegetation considerations at the site	Low sensitivity to change due to understanding of site from prior investigations.			2	2	Low.

8.8 Aboriginal and non-Aboriginal Heritage Management

The potential impacts and management and control measures that will be applied to manage the risks posed to Aboriginal and non-Aboriginal heritage, along with the integration system, the assessment criteria and the leading performance criteria, is outlined in the following Table 28.

Table 28 Aboriginal and non-Aboriginal Heritage Management Measures

Objective	ID	Impact Event	Potential Impacts	Management Measures	APA System	Uncertainties and Assumptions	Sensitivity to Change	Assessment Criteria	Leading Performance Criteria	Likelihood Rating	Consequence Rating	Residual Risk Rating
No damage, disturbance or interference to Aboriginal or non-Aboriginal heritage unless authorised under the relevant legislation.	H1	Excavation / dig-up leading to disturbance of cultural heritage site / material.	Loss of heritage value / negative impacts to reputation.	Compliance with APA Heritage Management Protocol. • Specific awareness regarding heritage sites along the easement and process for accidental finds • Knowledge holders contacted prior to any ground disturbing works inside heritage areas. • Pre-activity assessments completed prior to undertaking ground disturbing works and clearing. • Heritage surveys to identify, document and assess heritage values must be undertaken by a suitably qualified person and, where related to First Nations heritage, in consultation with relevant First Nations stakeholders. • Spotter / guide during LOS clearing. • If heritage values or suspected human remains are unexpectedly discovered, or suspected to exist in the activity area, the activity must immediately cease in the vicinity (10m from extent) of the heritage discovery and be reported as per *APA HSE GP 07.01 Incident Reporting*. • Refer to SIB procedures if outside normal operations. • Provision of environmental line list is noted on JHA / Permit to Work. • Ensure access / driving are without ground disturbance. • Operation and maintenance activities are undertaken in previously cleared areas. • Ground disturbing works require further assessment prior to commencement. • GIS / mapping of environmentally and culturally sensitive areas is available to field personnel and contractors via the Environment and Heritage Team. • Consult with Traditional Owners (Yandruwandha Yawarrawarrka) where appropriate. Compliance with Excavation and Trenching Fatal Risk Protocol. Dig ups / excavations: • Dig up works managed as SIB projects. • Additional assessment of dig up locations and any potential additional work space required prior to works. • Notification of landholders prior to works. • Ongoing monitoring of dig up locations via ground and aerial patrol. • Daily site reports / check sheets / log of works. • Maintenance and repair activities to be conducted during dry spells where possible. If not possible, appropriate erosion and soil management plan will be developed. • Topsoil must be stripped and stockpiled prior to, or at the commencement of, land disturbance activities. • Vegetation / mulch to be respread following reinstatement.	Maximo, ARGO.	Prior cultural heritage investigations and site clearances have been undertaken with good understanding of the cultural heritage considerations at the site.	Low sensitivity to change due to understanding of site from prior investigations.	• SG+ records of audits / inspections demonstrate no impact to non-Aboriginal heritage places and related objects protected under the *Heritage Places Act 1993* unless approval has been obtained. • SG+ records of audits / inspections demonstrate any breaches (damage, disturbance or interference) to Aboriginal sites, objects and remains (as defined under *Aboriginal Heritage Act 1988*) are appropriately reported, investigated and remediation in consultation with the relevant Aboriginal heritage group. • Records of approved APA LDA verify controls associated with heritage protection are implemented in accordance with APA protocols and relevant legislation. • Records of audits confirm if sites, remains or objects are discovered during operations, the discovery is reported to appropriate authority and recorded, consistent with the *Aboriginal Heritage Act 1988.* • SG+ records demonstrate that if suspected remains are discovered, the SA Police are notified immediately. • Records of training confirm relevant personnel have completed appropriate cultural heritage training.	• SG+ records of audits demonstrate the potential for an activity to impact on heritage has been assessed prior to activity commencement in accordance with APA HSEH GP 47.00 T04 Heritage Management Flow Chart and attached to the LDA for internal approval. • SG+ records of audit demonstrate control measures outlined in the APA LDA to mitigate heritage impacts have been developed in consultation with external heritage stakeholders (where required) unless the activity is subject to a statutory exemption that does not require consultation. • SG+ audit records indicate that prior to work, the work supervisor has been provided with the approved LDA and a copy of, and completed a review of, the heritage obligations applicable to the work. • Prestart and site induction records demonstrate the work supervisor has ensured any relevant heritage obligations are communicated to relevant workers as part of the job prestart / site induction. • Prestart and site induction records demonstrate the work supervisor has ensured any exclusion or restricted zones are appropriately marked out or otherwise defined prior to and during work.	2	3	Low

8.9 Fire Management

The potential impacts and management and control measures that will be applied to manage the risks posed by fire, along with the integration system, the assessment criteria and the leading performance criteria, is outlined in the following Table 28.

Table 29 Fire Management Measures

Objectives	ID	Impact Event	Potential Impacts	Management Measures	APA System	Uncertainties and Assumptions	Sensitivity to Change	Assessment Criteria	Leading Performance Criteria	Likelihood Rating	Consequence Rating	Residual Risk Rating
No injuries, deaths or health impacts to the public or third parties from activities that could have been reasonably prevented by the operator	F1	Welding and Grinding.	Potential for fire leading to loss of fauna, flora and habitats.	• Check fire ban requirements each day prior to commencement of works. • Fire response training. • Permit to work. • Fire breaks around compounds. • Designated areas for welding and grinding, within facilities only. • Emergency response procedure. • Fire response equipment (fire extinguishers, sprinklers). • Fire prevention and control procedure.	Maximo, ARGO.	Frequency of welding and grinding is not exactly known.	Sensitive to change, dependent on frequency of site inspections / maintenance and whether welding / grinding is required.	• Records of audits / inspections demonstrate no fires related to pipeline activities.	• SG+ records of audits and inspections demonstrate fire ban requirements are checked and documented daily, fire response equipment are within service life.	2	2	Negligible.

8.10 Third Party and Public Health and Safety

The potential impacts and management and control measures that will be applied to manage the risks posed to third parties and public health and safety, along with the integration system, the assessment criteria and the leading performance criteria, is outlined in the following Table 30.

Table 30 Third Party and Public Health and Safety Management Measures

Objective	ID	Impact Event	Potential Impacts	Management Measures	APA System	Uncertainties and Assumptions	Sensitivity to Change	Assessment Criteria	Leading Performance Criteria	Likelihood Rating	Consequence Rating	Residual Risk Rating
No injuries, deaths or health impacts to the public or third parties from activities that could have been reasonably prevented by the operator	TP1	Pipeline rupture.	Injury to public and damage to third party infrastructure.	• Landholders, residents within proximity and any relevant third parties are notified in advance of any non-routine activities likely to cause a hazard. • SWMS to include hazards to third parties and outline mitigation. All work sites compliant with Safe Work requirements. • Earthworks to be rehabilitated to a condition the same or better than current condition. • Fencing with security fencing to prevent unauthorized access. • Spill response equipment to be available. • Ensure emergency preparedness (equipment, machinery, pressure tested pipe). • Emergency Response Training. • Compliance with design and operations requirements of *AS2885 – Pipeline Integrity Management Plan, Emergency Response Procedure.* • 24-hour Gas Controller incorporating monitoring and control systems that continuously receive and analyse pipeline operating reports. • Regular ground and aerial patrols to identify third party activity. • Implement pipeline awareness program with all land owners and stakeholders. • Provision of 24 hour ‘Dial Before you Dig’ contact number and free pipeline location service. • Installation and maintenance of pipeline warning signs along the pipeline route. • Fencing with security fencing to prevent unauthorized access.	Maximo.	Frequent maintenance will aid in monitoring pipeline integrity, however locations of and specific activities of third parties around the pipeline during the pipeline’s lifetime are not exactly known.	Low sensitivity to change.	• SG+ and Xinfo records confirm comprehensive liaison programs communicated to landowners. • SG+ and Xinfo records confirm no reasonable landowner complaints received (associated with disturbance or restoration of land/infrastructure following unavoidable disturbance), XInfo records of landholder complaints verify the duration of disturbance does not exceed agreed timeframe. • Records of audits / inspections demonstrate no disturbance outside the easement and approved access and work areas. • Records of completed APA LDA confirm that adverse impacts to Innamincka Regional Reserve operations or conservation values are minimised. • Records of audits / inspections and incident management system demonstrate no injuries, fires related to pipeline activities, incidents involving the public or unauthorised activity that has potential to impact pipeline integrity. • Records of inspections identifying unauthorised activities confirm investigations are completed and reported.	• SG+ records of audits demonstrate APA’s third party consultation and engagement procedures, including formal easement agreements outlining the legal responsibilities of APA and landholders, are up to date and documented, with records of communications with landowners and third parties maintained. • SG+ records of audits demonstrate ground and aerial patrols are conducted and documented. • SG+ records demonstrate pipeline integrity testing has been completed to schedule. • SG+ records of audits and inspections demonstrate fire ban requirements are checked and documented daily, fire response equipment within service life.	2	3	Low.

8.11 Security of Gas Supply

The primary potential impact of a compromised gas security is the loss of gas supply via an emergency event such as a full-bore rupture. The potential impacts and management and control measures that will be applied to manage the risks posed to security of gas supply, along with the integration system, the assessment criteria and the leading performance criteria, is outlined in the following Table 31.

Table 31 Security of Gas Supply Management Measures

Objectives	ID	Impact Event	Potential Impacts	Management Measures	APA System	Uncertainties and Assumptions	Sensitivity to Change	Assessment Criteria	Leading Performance Criteria	Likelihood Rating	Consequence Rating	Residual Risk Rating
No injuries, deaths or health impacts to the public or third parties from activities that could have been reasonably prevented by the operator **Ensure that security of natural gas supplies is maintained to gas consumers**	**TP1**	Pipeline rupture.	Injury to public and damage to third party infrastructure.	• Ensure emergency preparedness (equipment, machinery, pressure tested pipe). • Emergency Response Training. • Compliance with design and operations requirements of AS2885 – Pipeline Integrity Management Plan, Emergency Response Procedure. • 24 hour System Controller incorporating monitoring and control systems that continuously receive and analyse pipeline operating reports. • Regular ground and aerial patrols to identify third party activity. • Implement pipeline awareness program with all land owners and stakeholders. • Provision of 24 hour 'Before you Dig' contact number and free pipeline location service. • Installation and maintenance of pipeline warning signs along the pipeline route.	Maximo.	Frequent maintenance will aid in monitoring pipeline integrity, however locations of and specific activities of third parties around the pipeline during the pipeline's lifetime are not exactly known.	Low sensitivity to change.	• Records of audits / inspections demonstrate no unplanned interruption to gas supply that impacts the public. • Training records confirm emergency response procedures are effectively implemented in the event of an emergency to reinstate gas supply in a timeframe consistent with good industry practice, as assessed by post incident debrief.	• SG+ records of audits demonstrate emergency response training has been conducted and logged, emergency response exercises have been carried out, and an Emergency Response Plan is in place. • SG+ records of audits demonstrate ground and aerial patrols are conducted and documented. • SG+ records of audits demonstrate pipeline integrity testing has been completed in accordance with the required schedule.	1	3	Negligible

9 Environmental Significance Assessment

This Section addresses the significance of the residual environmental impact, taking into account the application of the controls and management measures set out in Section 8. This section addresses Criteria 5 – Environmental Significance Assessment of the Environmental Impact Assessment Criteria.

An environmental significance assessment has been prepared, outlined below in

Table *32*.

This Environmental Significance Assessment uses Tables 15, 16 and 17 (copied again below) to assess avoidance, frequency, duration, extent, severity, cumulative impact (described as “Magnitude of Impact”) and the “Sensitivity of the Receiving Environment” to give an outcome of Low, Moderate, High or Extreme.

Environmental Significance Assessment Criteria

Criteria	Descriptor	Magnitude Criteria**
Avoidance	Yes – Potential impacts may be avoided through implementation of controls.	
	No – Potential impacts may not be avoided through implementation of controls.	
Frequency	Constant – Impacts occur constantly or is present throughout the life of the activity.	High
	Frequent – Impacts occur regularly but not constantly, or occurs several times during the lifespan of the activity.	Moderate
	Infrequent – Impacts occur seldomly, unlikely to occur but possible when certain circumstances prevail.	Low
	Rare – Impacts only occur in certain circumstances, impact not anticipated but may occur if abnormal circumstances prevail.	Low
Duration	Permanent – Impacts to the environment are permanent and unable to be remediated.	High
	Long term – Impacts to the environment continue for a number of years but may be remediated.	Moderate
	Short term – Impacts to the environment last for less than 1 year and may be remediated.	Low
Extent	Regional – Impacts are widespread offsite.	Moderate
	Localised – Impacts are onsite or in the immediate vicinity offsite (i.e. within the pipeline licence area and in localised places in its immediate vicinity).	Low
Severity	High – Significant change to environmental conditions from existing conditions.	High
	Moderate – Moderate change to environmental conditions from existing conditions.	Moderate
	Low – Minor change to environmental conditions from existing conditions.	Low
Cumulative Effects	Yes – Receptors are already impacted by similar activities.	High
	Potential – Receptors could be impacted by similar activities.	Moderate
	Unlikely – Receptors are not already impacted by similar activities.	Low

Criteria	Descriptor	Magnitude Criteria**
Sensitivity of the Environment	Refer to Table below.	

**Where an impact event contains various levels of magnitude, the highest magnitude of impact is taken.

The above table gives each environmental element a “magnitude” rating. This is combined with the “Sensitivity” rating using the table below to obtain the overall environmental significance rating.

Sensitivity of the Receiving Environment Criteria

Criteria	Descriptor	Rating
Sensitivity of Receiving Environment	The environmental value is at least two of the following: • Protected as a result of Australia’s international commitments or holds a statutory protection (such as a National Park / Threatened Species / Heritage) • Intact • Unique to the environment in which it occurs and is isolated from other regions / occurs infrequently anywhere else • Has not been exposed to any threatening processes (or they have not had a noticeable impact on the integrity of the environmental value)	High
	Environmental value is at least two of the following: • Recorded as regionally or locally important • In moderate / good conditions despite being exposed to threatening processes • Is relatively well represented in the area in which it occurs but its abundance or distribution is limited by threatening processes • Threatening processes have reduced its resilience to change	Moderate
	Environmental value is either: • Not listed on any statutory list or register • In poor / moderate condition as a result of threatening processes • Abundant and widely distributed or representative examples exist throughout the area • Not likely to change due to further degradation	Low

The overall environmental significance of each potential impact event was assessed using the matrix in the table below, which combines the “magnitude” of the impact and the “sensitivity” of the receiving environment.

Environmental Significance Assessment Matrix

	Magnitude of Impact		
Sensitivity of receiving environment	**High**	**Moderate**	**Low**
High	Extreme	High	Moderate
Moderate	High	Moderate	Low
Low	Moderate	Low	Negligible

Table 32 Environmental Significance Assessment

ID	Potential Impact Event	Avoidance	Frequency	Duration	Extent	Severity	Cumulative Effects	Sensitivity of Receiving Environment	Outcome
NV1	Clearing and / or works off easement. Scope not clearly defined, new contractor, overspray.	No – maintenance activities, including movement of maintenance personnel and excavations required.	Infrequent.	Short term.	Localised.	Low.	Unlikely.	Low – the majority of activities will occur within the pipeline easement, which has already been modified from its original condition.	Negligible
NV2	Vehicle strike (single), equipment or plant interaction and general activities.	No - movement of vehicles and plant is necessary for construction, operation and maintenance activities.	Rare	Short term.	Localised.	Low.	Unlikely.	Moderate – impacted fauna could potentially include protected species but likely to be well represented in area/ threatening processes have reduced its resilience to change	Low
NV3	Excavation / dig-up leading to impacts to fauna.	No – ground-breaking activities are required as part of maintenance works.	Rare.	Short term.	Localised.	Low.	Unlikely.	Moderate – could potentially include protected species but likely to be well represented in area/ threatening processes have reduced its resilience to change.	Low
S1	Inadequate or poorly maintained erosion control devices/ rehabilitation / general weathering.	No – likely avoided through implementation of controls and monitoring but may still occur.	Rare.	Short term.	Localised.	Low	Unlikely.	Low – the majority of activity will occur in previously disturbed areas within the easement, which has already been modified from its original condition.	Negligible
S2	Excavation / dig-up leading to erosion, impacts to landholders, inadequate rehabilitation.	No – ground-breaking activities are required to complete certain maintenance works.	Rare.	Short term.	Localised.	Low.	Unlikely.	Low – the majority of activity will occur in previously disturbed areas within the easement, which has already been modified from its original condition.	Negligible
S3	Spills and over clearing vegetation.	No – whilst impacts may be avoided through effective implementation of chemical management controls and land clearing preparation, may still occur.	Rare.	Short term.	Localised.	Low.	Unlikely.	Low - the majority of activities will occur within the pipeline easement, which has already been modified from its original condition.	Negligible

ID	Potential Impact Event	Avoidance	Frequency	Duration	Extent	Severity	Cumulative Effects	Sensitivity of Receiving Environment	Outcome
WA1	Excavation / dig-up / maintenance leading to impacts to ground and surface water bodies, including alteration of flow regimes and increased sediment / turbidity.	No – activities impacting ground and surface water bodies could potentially be required to complete certain maintenance works.	Rare.	Short term.	Localised.	Low.	Unlikely.	Low - the number of potential receptors is low and unlikely to result in further degradation.	Low
WA2	Spills leading to ground or surface water contamination.	No – whilst impacts may be avoided through effective implementation of sediment control and chemical management controls and land clearing preparation, could potentially occur.	Rare.	Short term.	Localised.	Low.	Unlikely.	Low - the number of potential receptors is low and unlikely to result in further degradation.	Low
H1	Excavation / dig-up leading to disturbance of cultural heritage site / material	No – ground-breaking activities are required from time-to-time.	Rare.	Short term.	Localised.	Low.	Unlikely.	High – a potential cultural heritage receptor (that may not be registered or is currently known) could potentially be found.	Low
P1	Spread of weeds on and off easement. Breach of property biosecurity controls (sign in, washdown records, etc); Weed infestations / spread.	No – movement of vehicles and plant is necessary for construction, operation and maintenance activities.	Infrequent.	Short term.	Localised.	Low.	Unlikely.	Moderate – area could potentially be regionally/locally important and in moderate / good condition.	Low
P2	Incorrect pest management. Overspray of chemical - APA personnel generally only spraying within facilities. Contractors utilised for ROW.	No – whilst impacts may be avoided through effective implementation of controls and training of APA personnel, may potentially occur.	Infrequent.	Short term.	Localised.	Low.	Unlikely	Moderate – area could potentially be regionally/locally important and in moderate / good condition.	Low

ID	Potential Impact Event	Avoidance	Frequency	Duration	Extent	Severity	Cumulative Effects	Sensitivity of Receiving Environment	Outcome
W1	Leaching to ground from compressor stations, septic systems and water treatment / drainage.	No - compressor stations, septic systems and water treatment are required to operate the pipeline.	Rare.	Short term.	Localised.	Low.	Unlikely.	Low – the number of potential receptors is low and activity unlikely to cause further degradation.	Negligible
W2	Incorrect disposal of batteries.	No – whilst impacts may be avoided through effective implementation of controls and waste management processes, could potentially still occur.	Rare.	Short-term.	Localised.	Low.	Unlikely.	Low – the number of potential receptors is low and activity unlikely to cause further degradation.	Negligible
W3	Incorrect disposal of filter elements - covered in oil residue.	No – whilst impacts may be avoided through effective implementation of controls and waste management processes, could still potentially occur.	Rare.	Short-term.	Localised.	Low.	Unlikely	Low – the number of potential receptors is low and activity unlikely to cause further degradation.	Negligible
W4	Loss of containment / control of pigging waste potentially including NORMS.	No – whilst impacts may be avoided through effective implementation of controls and waste management processes, could still potentially occur.	Rare.	Short-term.	Localised.	Low.	Unlikely	Low – the number of potential receptors is low and activity unlikely to cause further degradation.	Negligible
W5	Chemical spill from insufficient maintenance / inspections or incorrect waste disposal.	No – whilst impacts may be avoided through effective implementation of maintenance schedules and waste management processes, could still potentially occur.	Rare.	Short-term.	Localised.	Low.	Unlikely	Low – the number of potential receptors is low and activity unlikely to cause further degradation.	Negligible
C1	Uncontained chemical spill (hose, or oil < 10L) from light vehicles, heavy equipment, etc.	No – use of vehicles and plant is necessary for construction, operation and maintenance activities.	Infrequent.	Short term.	Localised.	Low.	Unlikely.	Low – the number of potential receptors is low and activity unlikely to cause further degradation.	Negligible
C2	Chemical spill, loss of containment of water from waterbath heaters.	No – waterbath heaters are required to operate the pipeline.	Rare.	Short term.	Localised	Low.	Unlikely.	Low – the number of potential receptors is low and activity unlikely to cause further degradation.	Negligible

ID	Potential Impact Event	Avoidance	Frequency	Duration	Extent	Severity	Cumulative Effects	Sensitivity of Receiving Environment	Outcome
C3	Chemical Spill from hazardous materials storage and facility fuel storage tanks.	No – use and storage of hazardous materials and fuel are required for operation of the pipeline and refuelling of vehicles and plant.	Infrequent.	Short term.	Localised.	Low.	Unlikely.	Low – the number of potential receptors is low and activity unlikely to cause further degradation.	Negligible
C4	Loss of containment / potential for release of coolant through the separator in oily water collection systems.	No – oily water collection system is required to operate the pipeline.	Rare.	Short term.	Localised.	Low.	Unlikely	Low – the number of potential receptors is low and activity unlikely to cause further degradation.	Negligible
C5	Chemical release / uncontained chemical spill from compressor units and Gas Engine Alternators.	No – use and storage of hazardous materials and fuel are required for operation of the pipeline.	Infrequent.	Short term.	Localised.	Low.	Unlikely.	Low – the number of potential receptors is low and activity unlikely to cause further degradation.	Negligible
C6	Transport of Chemicals along ROW - generally less than 20L accepting fuel up to 400L	No – use and storage of hazardous materials and fuel are required for operation of the pipeline.	Infrequent.	Short term.	Localised.	Low.	Unlikely.	Low – the number of potential receptors is low and activity unlikely to cause further degradation.	Negligible
N1	Unplanned Release of gas emissions - NOx and CH4 from exhaust gases (SWQP), general plant operations, emergency shut downs and venting.	No - generation and release of these gases cannot be avoided.	Rare	Long term – GHG emissions remain in the atmosphere and cannot be immediately remediated.	Regional – greenhouse gas emissions cannot be contained within easement.	Low.	Unlikely.	Low - these releases are not likely to change the existing condition of the environment.	Low
N2	Unplanned Release of gas emissions – Methane from general venting.	No - generation and release of these gases cannot be avoided.	Rare	Long term – GHG emissions remain in the atmosphere and cannot be immediately remediated.	Regional – greenhouse gas emissions cannot be contained within easement.	Low.	Unlikely.	Low - these releases are not likely to change the existing condition of the environment	Low

ID	Potential Impact Event	Avoidance	Frequency	Duration	Extent	Severity	Cumulative Effects	Sensitivity of Receiving Environment	Outcome
N3	Unplanned Release of gas emissions - FM200 - fire suppression system.	No - generation and release of these gases cannot be avoided when used in the event of a fire.	Rare.	Long term – GHG gas emissions remain in the atmosphere and cannot be immediately remediated.	Regional – greenhouse gas emissions cannot be contained within easement.	Low.	Unlikely.	Low - these releases are not likely to change the existing condition of the environment	Low
N4	Coating defect repairs could include buffing, sand/grit blasting, rewrapping, use of epoxy resins resulting in dust, blasting material, coating removal media and chemical waste.	No – repair works will require these activities to be done, which will generate fine airborne particles.	Infrequent.	Short term.	Localised.	Low.	Unlikely.	Low - the number of potential receptors is low, and any release not likely to change condition of environment.	Negligible
F1	Welding and Grinding	No – maintenance and repair works will require these activities to be done, which will generate sparks.	Infrequent.	Short term.	Localised.	Low.	Unlikely.	Low – the number of potential receptors is low.	Negligible
TP1	Pipeline rupture.	No – maintenance activities and excavations around pipeline cannot be completely avoided.	Infrequent.	Short term.	Localised.	Low.	Unlikely.	Low - the number of potential receptors is low.	Negligible

10 Implementation

10.1 Environmental Framework

The APA HSEH Management System is called ‘Safeguard’ and provides a framework by which the processes relating to the company's Health, Safety, Environment and Heritage (HSEH) activities are defined, implemented and controlled. Additionally, local business unit processes and procedures provide instruction to workers on performing activities. SG is supported by a database, referred to as SG+. SG+ is used for functions such as incident reporting, auditing, action tracking and reporting.

The APA business tools and systems used to manage and maintain all information relating to asset operations include:

- Maximo – Asset maintenance system (Work Order/Job Plan/Work Instruction);
- Safeguard+ (SG+) - Risk, auditing and reporting system;
- XIC – Landholder Contact Program, landowner information, access conditions, stakeholder consultation;
- Audits and Inspections;
- Learning Management System (LMS) – Training system used to capture APA staff information and learning materials;
- Workday Learning (Workday) – APA’s Enterprise Resource Platform. APA’s primary system for tracking and managing APA staff training and inductions, supported by the Skill Pass (contractor training, competency and accreditation system under LMS) and Birch platforms for external contractors and personnel; and
- APA GIS – ARGO and NetMap mapping systems used to store, display and analyse information on planned and operational assets and associated environmental, heritage and land features. Information on environment, heritage and land features is sourced from external government and public sources and APA commissioned surveys and studies. Information on site-specific environmental management requirements is recorded for against individual sensitive features. Information on sensitive features will be sourced from the GIS to support implementation of the OEMP. Information is made available via a range of methods, including static maps and drawings, tabulated reports / environmental line lists, desktop and mobile (field) mapping.

10.1.1 Environmental Procedures

As part of Safeguard, APA has a suite of procedures for environmental management. These procedures provide guidance to all APA staff and contractors for applying management process and considerations to minimise harm to the environment.

10.2 Competency Controls

APA has a dedicated procedure in place (APA HSE GP 04.01 HSE Education and Training) to identify the training requirements for all personnel working on its behalf. All Managers are responsible for identifying training and competency requirements for personnel under their control, and for ensuring that personnel have the requisite competencies, skills and training to carry out their assigned tasks. Managers are also responsible for ensuring training records are maintained. Training may include formal external courses, inductions, and toolbox meetings.

10.2.1 Induction

National Induction

As a minimum, all personnel are required to complete the APA HSEH Induction covering the standard requirements for HSEH management prior to accessing APA sites. This includes generic environmental aspects and management.

Local Induction

Local induction includes all the Key Environmental Requirements, summarised in **Table *33***, which highlight key environmental management measures to address specific environmental risks.

Table 33 Key Environmental Requirements

Definition	Further Details
Surrounding Environment	• Innamincka Regional Reserve (QSN (SA Section) between KP 90 and KP 140). • Strzelecki Creek Wetland System (QSN (SA Section) between KP 119 and KP 157). • Dusky hopping-mouse habitat (Recorded from sand dunes along the Strzelecki Creek). • Cultural Heritage (including Artefact scatters, burials, quarries, hearth, scarred / Carved trees, engravings and stone arrangements).
General environmental duty	• A person must not carry out any activity that causes or is likely to cause environmental harm, unless measures to prevent or minimise the harm have been taken.
Duty to notify of environmental harm	• To inform the administering authority and landowner or occupier when an incident has occurred that may have caused or threatens serious or material environmental harm.
Cultural Heritage	• There is a “Duty of Care” on all people to avoid damage, disturbance or interference to Aboriginal heritage. • If suspected cultural heritage material is discovered during operations (eg. discovery of artefacts, objects or bones etc), immediately stop any further work in the area, secure the site, ensure no further ground disturbance activity takes place in the immediate area and notify the Environmental Manager. If the discover is suspected to be remains, the Police must be immediately notified. Contact YY to identify an appropriate course of action. Damage, disturbance or interference to Aboriginal heritage sites, objects or remains will be reported to AAR. • Yandruwandha Yawarrawarrka Traditional Owners to be contacted for works that are outside the facility and outside previously disturbed areas.
Wildlife Interactions:	• Use nominated, licenced contractor for all animal relocations.
Vegetation:	• Permit to Work / JHA required. • Check fire danger rating prior to commencing work. • No removal of vegetation beyond existing cleared areas. • No vegetation clearing outside of operational area without IPP Approval – field assessment and/or additional approvals may be required prior to works.
Regulated Waste:	• To be stored in a dedicated bin and includes: filters, oily rags, spill waste, waste water etc. • Licensed contractor and waste Tracking Certificates required for areas identified.
Housekeeping/Biosecurity:	• Pest control to be undertaken by licensed contractor. • Weed hygiene declaration required for vehicles, equipment, machinery and fill. • Licensed contractor (ACDC Licence) for weed treatment. • Septic systems to be serviced regularly by licensed plumber.

Definition	Further Details
General:	• Check XIC/ARGO prior to access ROW. • Access via approved access tracks. • Ensure storage facilities for hazardous substances are bunded and in good condition. • Know location of SDS and spill kits. • Contractor Awareness – APA HSE Level 1 and Level 2 and site induction (including this key requirements) to be completed and recorded.
Resources/Further Info:	• SWQP and QSN OEMP. • Corporate Environment Procedures 13.00. • Environment Advisor.

All operators and contractors working on the asset will be required to understand these requirements prior to undertaking any works. Local induction will also include the requirements of the EPA Licence (Appendix 2).

Should any small-scale construction works be undertaken, site-specific induction may be developed, commensurate with the size of works.

Please refer to Table 34 for summary of inductions.

Table 34 Inductions

ERA ID	Who Trained	Management Method / Control	Integration System / Method
ALL	All staff and contractors conducting work.	Complete the APA HSEH Induction covering the standard requirements for HSEH management prior to accessing APA sites.	Workday.
ALL	All staff and contractors conducting work.	Key Environmental Features including Environmentally Sensitive Areas.	Workday.
C1	All staff and contractors conducting work.	Chemical E-Learning – safeguard protocol. Toolboxes on hazardous chemicals. Toolbox - chemical management /refueling.	E-Learning / Toolbox.

10.2.2 Training

Please refer to Table 35 for summary of training.

Table 35 Training

ERA ID	Who Trained	Management Method / Control	Integration System / Method
W1	Contractors conducting work.	Licensed plumber / competent contractor maintains septic system.	Workday.
C3	All staff and contractors conducting work.	Forklift tickets.	Workday.
N3	Contractors conducting work.	FM200 - fire suppression system.	Workday.
P2	Contractors conducting work.	Pest Control – Licensed contractor.	Workday.
P2	All staff and contractors conducting work.	Weed Control – ACDC Licenses***.**	Workday.
N4	Contractors conducting work.	Coating defect repairs could including buffing, sand/grit blasting, rewrapping, use of epoxy resins – competent operator.	Workday.

ERA ID	Who Trained	Management Method / Control	Integration System / Method
F1	All staff and contractors conducting work.	Fire response training and PTW training.	Workday.

10.2.3 Awareness

Please refer to Table 36 for summary of training awareness packages.

Table 36 Awareness

ERA ID	Who Trained	Management Method / Control	Integration System / Method
S1	All staff and contractors conducting work.	Erosion identification and remediation.	Guideline / Toolbox.
H1	All staff and contractors conducting work.	Specific awareness regarding heritage sites along the easement and process for accidental finds (as per APA HSE EP 13.07.02 and 13.07.01).*	Guideline / Toolbox.
P1	All staff and contractors conducting work.	Weed ID books and weeds in the region*.	Guideline / Toolbox.
P1 P2	All staff and contractors conducting work.	Specific awareness of properties with biosecurity requirements and what APA staff / contractors have to do - linked with Infrastructure Planning and Protection.*	Guideline / Toolbox.
C1	All staff and contractors conducting work.	Chemical E-Learning - safe guard protocol. Toolboxes on hazardous chemicals.*	Workday / Toolbox.
C3 C6	All staff and contractors conducting work.	Emergency response exercises including spill response.	Workday.
N1 N2 C5 W3 H2/ NV3/ S2	All staff and contractors conducting work.	Competent maintenance personnel.	Workday.

*To be implemented during 24-month Improvement Program.

10.3 Assurance Controls

10.3.1 Monitoring and Inspections

Monitoring of environmental performance will be undertaken by operations personnel on an ongoing basis via a number of patrols, inspections and audits. These include:

- Daily pre-starts
- Routine site inspections (weekly, monthly or 3-monthly depending on maintenance schedule)
- Workplace HSEH/housekeeping inspections (weekly, monthly or 3-monthly depending on maintenance schedule)
- Aerial patrols / inspections of the easement (using low-flying aircraft, typically carried out 1 – 3 monthly)
- Ground patrols / inspections of the easement (frequency ranging from weekly to monthly or longer, dependent on particular issues that require monitoring, or every six-months)
- Annual Spill Kit Response Inspections
- Audits (minimum every 3 years for SEO, EIR, OEMP and APA Protocols).

Environmental performance is measured against the objectives and commitments of this SEO and the OEMP, which is assessed annually as part of the Annual Licence Report (ALR). The ALR includes a review of operational

compliance with objectives and standards specified within this SEO and the OEMP, and takes into consideration the routine inspections outlined above.

The ALR includes details of:

- Any significant disturbance during the reporting period
- Any rehabilitation undertaken
- A list of all valid complaints relating to environmental issues (by date, source, reason for complaint and description of investigation to resolve complaint)
- Results of all monitoring.

Gas emissions are monitored by direct and calculated event-based data. Monitoring uses metered data. Fugitive emissions calculations account for vented gas by default as per National Greenhouse and Energy Reporting (NGER) methodologies. Emissions are captured annually as part of NGER and National Pollutant Inventory (NPI) reporting, and annual Sustainability Reporting.

Waste generation is monitored by direct event-based data, recorded by the waste contractor (reported through invoices).

Please refer to Table 37 for a summary of inspections and audits including evidence collected, the frequency and the integration system used.

Table 37 Audits and Inspections

ERA ID	Inspection / Monitoring	Evidence or Compliance Record	Frequency	Integration System / Method
All	Daily Pre-Starts	• Daily Pre-Start Records	Daily	Maximo SG+
NV1, W1, W2, W3, W4, W5, C1 – C6, F1, TP1	Licensed Contractors	• Purchase Orders • Maintenance Records • Contractor HSE Assessment Tool (CHAT) • Waste Tracking Certificates	As required	Maximo CHAT
C1 – C6	Spills	• SG+ Records • Incident Reports	As required	SG+
C1 – C6	Testing undertaken by NATA accredited laboratory	• SG+ Records of lab results • Purchase Orders	As required	SG+
All	Routine site inspections: • Native vegetation and fauna • Soil erosion and subsidence • Surface and ground water • General housekeeping • Pollution / oil / chemical spills / waste • Weeds and pests • Heritage • Bunds drained / inspected • Noise, dust, odour • Fire • Third Party / Public health and safety	• Work Orders • Daily Pre-start Records • Routine Site Inspection Checklist • Maintenance Records • SG+ Incident Reports • Waste Tracking Certificates • Consignment Notes • Inspection Records in Maximo • Contractor Records / Reports • Location of weeds sprayed along the ROW • Washdown Records • Landholder requirements in XIC	Weekly, monthly or three-monthly frequency (dependent on the maintenance regime in Maximo)	Maximo XIC SG+

ERA ID	Inspection / Monitoring	Evidence or Compliance Record	Frequency	Integration System / Method
All	Workplace HSEH/housekeeping inspections (i.e. at maintenance bases): • Soil erosion and subsidence • General housekeeping • Pollution / oil / chemical spills • Weeds and pests • Bunds drained / inspected • Noise, dust and odour • Fire • Fuel and chemical storage • Waste management • Availability of spill kits	• HSEH Housekeeping Inspection Checklist • Contractor HSE Assessment Tool (CHAT)	Weekly, monthly or three-monthly frequency (dependent on the maintenance regime in Maximo)	Maximo XIC
P1, P2, S1, S2, S3, NV1, NV2, NV3, WA1, WA2	Aerial patrols / inspections: • Weeds • Erosion, subsidence, stability issues • Vegetation growth • Line of sight • Third party encroachments • Exposed pipe • Condition of signage and aerial markers	• Work Orders • Patrol Reports / Sightings • Location of weeds sprayed along the ROW	1 – 3 Monthly	Maximo
P1, P2, S1, S2, S3, H1, WA1, WA2, C1 – C6, W1 – W5, NV1, NV2, NV3	Ground patrols / inspections: • Weeds and pests • Erosion, subsidence, stability issues • Vegetation growth • Line of sight • Third party encroachments • Exposed pipe • Condition of signage and aerial markers • Heritage • Native vegetation and fauna • Surface and groundwater • Contamination	• Work Orders • Patrol Reports / Sightings • Location of weeds sprayed along the ROW • Washdown Records	Weekly - Minimum 6 monthly (frequency dependent on particular issues that require monitoring)	Maximo
C1 – C6, W – W5	Annual inspection of spill kit response equipment	• Work Orders • Daily Pre-Starts • Maintenance Records • Incident Reports • Waste Tracking Certificates • Consignment Notes • Inspection Records in Maximo • Contractor Records / Reports	Annual	Maximo

ERA ID	Inspection / Monitoring	Evidence or Compliance Record	Frequency	Integration System / Method
TP1, N1 – N4	Monthly inspections of Control Buildings (FM200 Fire Suppression System).	• Work Orders • Daily Pre-starts • Maintenance Records • Incident Reports • Contractor Records / Reports • Monthly system testing without release • Monthly inspection • System maintenance	Monthly	Maximo
TP1, C2, W1, W5	Inspection of plant and equipment as part of maintenance including Compressor Units and Gas Engine Alternators	• Patrol Reports / Sightings • Work Orders • Daily Pre-starts • Maintenance Records • Incident Reporting • Waste Tracking Certificates • Consignment Notes • Inspection Records in Maximo • Contractor Records / Reports • HSEH Housekeeping Inspection Checklist	As per maintenance schedule	Maximo
W1, C5	Compressors Stations (CS) – septic systems and associated water treatment and drainage (note: water discharged to ground is estimated by monitoring CS water input and outputs)	• Station water input and outputs • Water delivery invoices (water input) • Oily water controlled waste tracking receipts (water output)	As per maintenance schedule	Maximo
C2	Waterbath heaters (by contractors)	• Inspection Records	Daily or Weekly	Maximo
All	Daily Checks – when doing Excavations / Dig ups	• Daily Pre-Starts • Monitoring Reports • Annual Licence Report • Landholder Requirements in XIC • Washdown Records • Daily Check Sheets / Log of Works	Daily	Work Orders XIC
N1, N2	Gas Emissions Vehicle and Equipment emissions via diesel usage	• Gas emissions are estimated by monitoring gas delivered downstream, gas input upstream and compressor station fuel gas usage • NGERS and NPI Reporting • Annual Sustainability Report • Diesel delivery invoice records	As required and annually for NGER, NPI and Sustainability Reporting	Maximo
W1 – W5	Waste generation is monitored by direct event-based data, recorded by the waste contractor (reported through invoices)	• Waste Records	Monthly	Maximo

10.3.2 Audits

All environmental auditing on the asset is undertaken in line with the APA Line 2 Assurance Schedule. The SEO, EIR, APA Environmental Protocols and the OEMP are audited at a minimum once every three years. Suitably qualified and experienced environmental professionals undertake the audits. The audits are undertaken using the APA Environment Audit tool and focus on the risks identified in the SEO, EIR, APA Environmental Protocols and the OEMP. A dedicated team are responsible for scheduling the audit to ensure they meet the regulatory requirements and timeframes under the ER Act and Regulations.

The Annual Licence Reports (ALRs) are submitted annually and include details of previous audits undertaken, and the next scheduled audit, and submitted to DEM within the required timeframes. Following an environmental audit, the audit report is circulated to relevant personnel detailing the audit findings, including any non-conformances, corrective actions or opportunities for improvement. A timeframe for addressing audit actions is agreed to by management, and audit actions are reviewed by the Environment Advisor to ensure they have been adequately addressed and closed out.

Following an audit, the OEMP may be reviewed, updated and re-issued to reflect any findings, including regulatory and organisational changes. Dependent on the type of non-conformances, additional environmental training will be scheduled. Non-conformances are entered into SG+. Additional auditing may be undertaken commensurate with the level of works being undertaken on the pipeline.

11 Stakeholder Consultation

APA maintains regular contact with the landholders and other directly affected stakeholders (e.g. local government) as a standard part of the pipeline operations.

Key stakeholders include, but are not limited to:

- Department for Energy and Mining (DEM);
- Department for Environment and Water (DEW);
- Environment Protection Authority (EPA);
- Department for Infrastructure and Transport (DIT);
- SA Arid Lands Landscape Board;
- Department of Primary Industries and Regions (PIRSA); and
- Landholders.

Consultation with relevant stakeholders regarding environmental objectives for operations was carried out during the review of the SEO and EIR, as per Regulation 11 of the ER Regs. Refer to Appendix 3 for key stakeholders consulted, a summary of feedback received and updates made to the SEO and EIR.

APA maintains landholder information and access arrangements in X-info Connect (managed by the Infrastructure Protection team). X-info Connect (XIC) contains property access details specific to each property requiring access by APA. All landholders are identified and recorded in XIC along with details of the Landholder Contact Program. Interaction records with registered owners and occupiers are recorded in XIC, including attachment of any communication materials provided or received, where relevant.

The EIR and SEO were revised and submitted to DEM and consultation was sought from relevant government agencies. Comments were received from various agencies. The consultation comments received and the APA responses are also provided in Appendix 3 – Stakeholder Consultation.

12 Reporting

12.1 Data Capture, Storage Systems and Sources

Please refer to Table 38 for data capture, storage systems and sources.

Table 38 Data capture, storage systems and sources

Data Type	System Name and Access Info	Data Owner
Worker Induction.	Hard copy at base and scanned copy in LMS.	Regional Manager.
Toolbox attendance.	Hard copy at base.	Regional Manager.
Complaints response records.	XIC and/or SG+.	Regional Manager.
Patrol records.	Maximo.	Regional Manager.
Landholder communication record.	XIC.	Regional Manager.
Landholder approval record.	XIC.	Regional Manager.
Incident reporting.	SG+.	Regional Manager.
Weed Hygiene Declarations and records.	In triplicate book, scanned to XIC.	Regional Manager.
Regulated Waste certificates.	Hard copy at base.	Regional Manager.
Excavation permits.	Hard copy at base and in Maximo.	Regional Manager.
Agricultural chemical usage.	Hard copy at base and scanned copy.	Regional Manager.

12.2 Internal Reporting

12.2.1 Environmental Incident Reporting

Environmental Incident Reporting occurs in line with APA HSE GP 07.01 Incident, Near Miss and Hazard Management Protocol All incidents which cause or hazards which have the potential to cause environmental harm are to be reported, regardless of size of impacts.

Please refer to Table 39 for internal reporting summary.

Table 39 Internal Reporting

Type	Definition	Requirement
Environmental Incident	An incident is an unplanned event that causes harm to people or the environment. As a result of an incident people could be injured or made ill, while the environment could be damaged. An environmental incident at APA Group is when environmental harm has occurred. Environmental harm can occur because of a breach of one, or a combination of, three environmental management parameters: 1) Environmental law and/or regulation (including license/approval conditions); 2) Environmental harm to a technical environmental area (e.g. physical biological harm, loss of public amenity); 3) Failure of an environmental risk management method.	Reported via Safeguard + or Incident Report E form or form APAHSEGP07.01T4 Incident Report Form. Report and investigate in accordance with: APA HSE GP 07.01 Incident, Near Miss and Hazard Management Protocol. http://thehub.apa.com.au/workareap/Safeguard/Safeguard Document Library/APA HSE GP 07.02 Incident Investigation and Analysis.pdf
Near Miss	A near miss is an unplanned event that doesn't actually cause harm to people or the environment, but had circumstances been different the event could have resulted in harm.	Reported via Safeguard + or Incident Report E form or form APAHSEGP07.01T4 Incident Report Form. Report and investigate in accordance with: APA HSE GP 07.01 Incident, Near Miss and Hazard Management Protocol.

12.3 External Reporting

APA assigns roles and responsibilities to appropriate staff within the business. This assist with ensuring periodic reporting is completed within the regulatory timelines.

12.3.1 Periodic Reporting

Please refer to Table 40 for external periodic reporting summary.

Table 40 External Periodic Reporting

Type	Definition	Requirement	Timing	DLA Ref
Annual Return and Payment of Annual Fees (Environmental Authorisation Licence 45002; Moomba)	NA.	For the purposes of section 48(2)(a) of the *Environment Protection Act 1993*, the date in each year for the lodgment of the Annual Return is no later than 90 days before the anniversary of the grant or renewal of the Licence; and For the purposes of section 48(2(b) of the *Environment Protection Act 1993*, the date in each year for the payment of Annual Authorisation Fee is the anniversary of the grant of the Licence.	Annual Return: February, Annually. Annual Authorisation Fee: May, Annually.	**Regulatory Compliance Manager**
Annual Return and Payment of Annual Fees (Pipeline Licence 18)	N/A.	For the purposes of section 33 of the *Energy Resources Regulations 2013* the date in each year for the lodgement of the Annual Return within 2 months after the end of each licence year. For the purposes of Section 48(2)(b) of the *Environment Protection Act 1993* the date in each year for the payment of Annual Fee is the anniversary of the grant of the Licence.	Annual Return: March Annually. Annual Licence Fee: March Annually.	**Regulatory Compliance Manager**
Fitness for Purpose Reporting (Pipeline Licence 18)	Report on the "Fitness For Purpose" of the pipeline.	For the purposes of Section 30 of the *Energy Resources Regulations 2013* carry out fitness-for-purpose assessment within 5 years after completion of previous assessment and lodge a report within 2 months.	5 Yearly.	**Regulatory Compliance Manager**
Emergency Drill Report (Pipeline Licence 18)	Report on Emergency Practice Drills.	For the purposes of section 31 of the *Energy Resources Regulations 2013* at intervals not exceeding 2 years, conduct a practice drill of the emergency response procedures and lodge a report within 2 months.	2 Yearly.	**Regulatory Compliance Manager**

Type	Definition	Requirement	Timing	DLA Ref
NGERS Reporting	National Greenhouse and Energy Reporting. APA is required to report on its greenhouse gas emissions and energy usage annually to NGERs from all activities.	Include GHG emissions and energy use from pipeline operation in APA annual NGER report.	31 October, Annually.	**Sustainability Manager**
NPI Reporting	National Pollutant Inventory emissions reporting may be required for the pipeline operation.	If NPI thresholds are triggered, submit an annual NPI report for the pipeline assets.	30 September, Annually.	**Sustainability Manager**

12.3.2 Incident Reporting

Please refer to Table 41 for external incident reporting summary.

Table 41 External Incident Reporting

Type	Definition	Requirement	Resp. Person
All incidents causing or threatening serious or material environmental harm	The Licensee must report to the EPA (on the EPA emergency phone number 1800 100 833) all incidents causing or threatening serious or material environmental harm, upon becoming aware of the incident, in accordance with Section 83 of the *Environment Protection Act 1993*. Note - In the event that the primary emergency phone number is out of order, phone the secondary number (08) 8204 2004.	EPA Licence 45002 (Moomba).	**Environmental Manager / Regulatory Compliance Manager**
All incidents causing or threatening serious or material environmental harm	If serious or material environmental harm from pollution is caused or threatened in the course of an activity undertaken by a person, the person must, as soon as reasonably practicable after becoming aware of the harm or threatened harm, notify the EPA of the harm or threatened harm, its nature, the circumstances in which it occurred and the action taken to deal with it.	*Environmental Protection Act 1993* - Section 83.	**Environment Manager / Regulatory Compliance Manager**

Type	Definition	Requirement	Resp. Person
Immediately Reportable and Reportable Incidents	It is a requirement under Section 85 of the *Energy Resources Act 2000* that any incidents that are determined to be 'reportable' or 'immediately reportable' incidents must be reported to the Minister. **Immediately Reportable Incidents** must be reported to the Minister as soon as practicable after the occurrence, as per Section 85 of the *Energy Resources Act 2000* and Section 32 of the *Energy Resources Regulations 2013*. **Reportable Incidents** must be reported on a quarterly basis within 1 month of the end of the quarter, as per Section 32 of the *Energy Resources Regulations 2013*.	*Energy Resources Act 2000* - Section 85.	**Environment Manager / Regulatory Compliance Manager**

13 Definitions & Acronyms

Item	Definition/Acronym
ALARP	As Low As Reasonably Practicable
AS 2885	Australian Standard AS 2885: Pipelines - Gas and liquid petroleum
ARGO	Spatial information system - Assets, Resources and GIS Online.
CH	Cultural Heritage
CHAT	Contractor HSE Assessment Tool
DBYD	Dial Before You Dig
DEM	Department of Energy and Mining
DEW	Department for Environment and Water
EIR	Environmental Impact Report
GIS	Geographical Information System
JHA	Job Hazard Analysis
IPP	APA Group Infrastructure Planning and Protection Team
LMS	Learning Management System
Maximo	APA national maintenance and management system
NORMs	Naturally Occurring Radioactive Materials
OEMP	Operational Environmental Management Plan
PM/CM	Planned Maintenance /Corrective Maintenance
PTW	Permit to Work
ROW	Right-of-way
QSN	Queensland-South Australia – New South Wales
SA	South Australia
SIB	Stay in Business
SEO	Statement of Environmental Objectives
SCADA	Supervisory Control and Data Acquisition is a system of software and hardware elements that allows industrial organizations to control industrial processes locally or at remote locations. Monitor gather and process real-time data.
SG+	Safeguard Plus
SWQP	South West Queensland Pipeline
XIC	X-Info Connect is a fully customizable software application that allows you to store, maintain track and analyse information.

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Appendix 1 – Health, Safety, Environmental and Heritage (HSEH) Policy

APA Group Policy

Health, Safety, Environment and Heritage Policy

Document type	Policy
Effective from	1 January 2023
Key contact	Manager, HSEH Systems and Governance
Document owner	General Manager, HSEH
Approved by	Board
Approved date	15 December 2022
Next review date	15 October 2024
Review cycles	Every 2 years
Legend	Hyperlink to either a location in this document or to an intranet site or website *Reference to an APA document* ***Glossary terms*** (in the Glossary in this document) ***Version control*** (in the Version Control in this document) *Document Guidance {to be removed when the document is created}*

1 Purpose

At APA Group (APA) we strive to be world class in health, safety, environment and heritage performance. Our foremost priorities are the health, safety and wellbeing of our workers and protection of the environment, heritage and the communities in which we operate.

APA is committed to managing and minimising our impact on the environment and heritage. We foster a culture of responsibility, leadership and awareness of our environment and heritage obligations and practices. We recognise our role as land stewards and aspire to not just respect the past but protect values for the future.

2 Scope

This policy applies to all APA employees as well as directors, contingent workers, contractors and visitors.

3 Strategic intent

We are committed to establishing a workplace culture that values and prioritises safety, respect and inclusion. We aspire for our workers to be free of illness and injury which includes the health, wellbeing and psychological safety such that the whole person is considered.

4 Objectives

The APA's Health, Safety Environment and Heritage (HSEH) Management System outlines accountabilities to implement this Policy and requires that we:

- Proactively identify hazards and aim to eliminate or implement effective controls to minimise the risk of injury, illness to people or unacceptable impacts on the environment and heritage as far as reasonably practicable;
- Provide systems of work that focus on guiding workers to manage and control critical risk;
- Provide a work environment and fit for purpose equipment that minimises the risk to workers so far as is reasonably practicable;
- Provide systems of work that empower workers to control the risks to themselves, others and the environment, whilst carrying out their duties;
- Meet or exceed applicable HSEH statutory, regulatory, legal and social obligations;
- Adopt and monitor measurable, fit for purpose objectives and targets around HSEH performance;
- Consult, engage and educate with our workers and communities on HSEH matters that affect them;
- Undertake early intervention and support the rehabilitation of workers in the event of injury or illness;
- Establish a learning culture through investigation of incidents to embed learnings and reduce the risk of repeated events;
- Ensure HSEH leadership is visible across the organisation to promote a strong culture;
- Undertake activities to continuously improve the effectiveness of the HSEH Management System and controls.

5 Key roles and responsibilities

For the purposes of this policy, the following specific responsibilities apply:

Position	Responsibility
APA Board	• Oversight of, and support for, APA's commitment to HSEH in accordance with this Policy • Monitoring the performance of the HSEH Management System.
Safety and Sustainability Committee	• Assisting the Board to carry out its role in overseeing APA's safety and sustainability matters, including APA's compliance with this Policy
CEO	• Resourcing the implementation of the HSEH Management System to ensure these Policy commitments are being achieved.
Executive Leadership Team	• Implementation of the HSEH Management System within their area of responsibility.
General Manager HSEH	• Facilitating the implementation of the HSEH Management System, collating information and reporting on APA's performance.
APA Employees	• Managing HSEH risks that impact themselves, others, the environment and communities in which they operate • All workers have the authority to stop work if the HSEH risks cannot effectively be managed to an acceptable level.

6 Glossary

Term	Definition
HSEH Definitions	*Refer to HSEH Definitions*

7 Related Documents

- Health, Safety, Environment & Heritage Operating Mandate
- HSEH Management System

8 Version Control

Date	Changes
15/12/2022	Combination of Health Safety & Wellbeing Policy and Environment & Heritage Policy

Appendix 2 – EPA Environmental Authorisation 45002

Licence No. 45002

ISSUED:
01 Jun 2024

EXPIRY:
31 May 2029

ACN:
066 656 219

APA (SWQP) PTY LIMITED

Environmental Authorisation
under Part 6 of the
Environment Protection Act 1993

South Australian Environment Protection Authority
GPO Box 2607
Adelaide SA 5001
Tel: 08 8204 2004

Environment Protection Authority

LICENCE NUMBER 45002

LICENSEE DETAILS

Licence Holder: APA (SWQP) PTY LIMITED

ACN: 066 656 219

Registered Address: L12/141 St Georges Terrace, PERTH WA 6000

LICENSED ACTIVITIES

The Licensee is authorised to undertake, at the location(s) shown above, the following prescribed activities of environmental significance under Schedule 1 Part A of the Act, subject to the conditions in this Licence.

3(5)(a)	Activity producing listed waste
8(2)(a)	Fuel burning not coal or wood

TERMS OF LICENCE

Commencement Date: 01 Jun 2024

Expiry Date: 31 May 2029

PREMISES ADDRESS

Section 1479 Out of Hundreds Strezelecki,
MOOMBA SA 5001

Table of Contents

Licence Explanatory Notes – Do Not Form Part of the Licence

Compliance with this licence

The EPA seeks to ensure that all reasonable and practicable measures are taken to protect, restore and enhance the quality of the environment according to the principles of ecologically sustainable development. To achieve this objective, the EPA uses a number of regulatory decision making principles and actions outlined in the 'Compliance and enforcement regulatory options and tools' document available on the EPA website.

Notification – serious or material environmental harm caused or threatened

If serious or material environmental harm from pollution is caused or threatened in the course of an activity, the licence holder must, as soon as reasonably practicable after becoming aware of the harm or threatened harm, notify the EPA (preferably on EPA emergency phone number 1800 100 833) of the harm or threatened harm, its nature, the circumstances in which it occurred and the action taken to deal with it in accordance with section 83 of the *Environment Protection Act 1993* (the Act). In the event that the primary emergency phone number is out of order, the licence holder should phone (08) 8204 2004.

Variations, transfers and surrender of a licence

The EPA may impose or vary the conditions of a licence by notice in writing to the licence holder in accordance with sections 45 and 46 of the Act. Public notice may be required where the variation of licence conditions results in a relaxation of the requirements imposed for the protection or restoration of the environment and results in an adverse effect on any adjoining land or its amenity.

If a licence holder wishes to vary the conditions of a licence, transfer a licence to another entity, or surrender a licence, the licence holder must submit an application to the EPA in accordance with the applicable provisions of the Act (sections 45, 49 and 56, respectively). A licence remains in effect and in its original form until such time as any proposed variation, application for surrender, or transfer has been made and approved in writing by the EPA.

Suspension or cancellation of a licence

The EPA may suspend or cancel a licence by notice in writing to the licence holder in accordance with section 55 of the Act if satisfied the licence holder has either obtained the licence improperly, contravened a requirement under the Act or if the holder is a body corporate, a director of the body corporate has been guilty of misconduct of a prescribed kind (whether in this State or elsewhere).

Responsibilities under Environment Protection legislation

In addition to the conditions of any licence, a licence holder must comply with their obligations under all State and Federal legislation (as amended from time to time) including: the *Environment Protection Act 1993;* the *Environment Protection Regulations 2023;* all Environment Protection Policies made under the *Environment Protection Act 1993;* and any National Environment Protection Measures not operating as an Environment Protection Policy under the *Environment Protection Act 1993*

Public Register Information

The EPA maintains and makes available a Public Register of details related to its determinations and other information it considers appropriate (i.e. excluding trade processes or financial information) in accordance with section 109 of the Act. These details include, but are not limited to:

- licensing and beverage container applications and approvals
- enforcement actions
- site contamination
- serious or material environmental harm caused or threatened in the course of an activity
- environment improvement programmes and environment performance agreements
- environment assessment reports; results of testing, monitoring or evaluation required by a licence
- EPA advice or direction regarding development approvals referred to the EPA by a planning authority

Definitions

Unless the contrary intention appears, terms used in this licence that are defined in the Act (including any regulations or environment protection policies made pursuant to the Act) have the respective meanings assigned to those terms by the Act.

THE ACT: The *Environment Protection Act 1993*

PREMISES: The whole of the land comprised in Titles Register - Certificate of Title, Crown Lease and Crown Record.

CT6169/72	CT6181/958
CT6181/959	/

AUTHORISATION FEE PAYMENT DATE: means the anniversary of the grant or renewal of this authorisation.

CONSIGNMENT AUTHORISATION: as defined in the National Environment Protection (Movement of Controlled Waste between States and Territories) Measure, 'Consignment Authorisation' means an approval which includes a unique identifier granted by an agency or a facility delegated by an agency in the jurisdiction of destination to allow the movement of Controlled Waste.

CONTROLLED WASTE: means any wastes of a category listed in Column 1 of the Table in Schedule 1 that has 1 or more characteristics listed in the Table in Schedule 2 of the Environment Protection (movement of Controlled Waste) Policy 2014.

EMERGENCY SPILL KIT: means a kit containing materials that when used would prevent and/or minimise listed waste from entering the stormwater or groundwater system in the event of a spill.

ENVIRONMENTAL HARM: means the same as is defined in section 5 of the Environment Protection Act 1993.

LISTED WASTE: means wastes listed in Part B of Schedule 1 of the Environment Protection Act 1993.

POLLUTION CONTROL EQUIPMENT: means 'control equipment' as defined in the Environment Protection (Air Quality) Policy: any device that controls, limits, measures, records or indicates air pollution.

WASTE: means -

1. As defined under the Environment Protection Act 1993,

1(a) any discarded, dumped, rejected, abandoned, unwanted or surplus matter, whether or not intended for sale or for purification or resource recovery by a separate operation from that which produced the matter; or

1(b) any matter declared by regulation to be waste for the purposes of this Act (following consultation by the Minister on the regulation with prescribed bodies in accordance with the regulations); or

1(c) any matter declared by an environment protection policy to be waste for the purposes of this Act,

whether or not of value.

2. However, waste does not include—

2(a) an approved recovered resource whilst it is being dealt with in accordance with the declaration of that resource—see section 4A; or

2(b) anything declared by regulation or an environment protection policy not to be waste for

the purposes of this Act,

even though the resource or the thing so declared might otherwise, but for the declaration, fall within the definition of waste in subsection (1).

Acronyms

EPA: means Environment Protection Authority

WTC: means Waste Transport Certificate.

WTF: means Waste Tracking Form.

Conditions of Licence

The Licensee is authorised to conduct the prescribed activities as described in this Licence at the Premises nominated, subject to the following conditions:

1 WASTE MANAGEMENT

1.1 WASTE TRACKING REQUIREMENTS FOR INTERSTATE TRANSPORT (S - 28)

The Licensee must:

1.1.1 appropriately complete a WTC regarding any waste specified in the "Controlled Waste" attachment to the Licence, before that waste is transported to a place outside South Australia; and

1.1.2 obtain a Consignment Authorisation from the appropriate environmental agency in the state or territory of destination of that waste before that waste is transported to a place outside South Australia.

1.2 WASTE TRACKING REQUIREMENTS WITHIN SA (S - 27)

The Licensee must:

1.2.1 appropriately complete a WTC or WTF regarding any waste specified in the “Listed Waste” attachment to the Licence before that waste is transported to any place within South Australia;

1.2.2 provide copies of the WTC or WTF (as relevant) to the transporter of the waste and the EPA, as specified on the WTC or WTF; and

1.2.3 retain a copy of all completed WTFs and WTCs for a period of 12 months.

2 OPERATIONAL MANAGEMENT

2.1 BUNDING (S - 5)

The licensee must ensure that all chemicals or chemical products are stored, loaded or unloaded in an appropriately bunded area.

NOTES

The EPA will assess the appropriateness of any bund against the EPA's 'Bunding and Spill Management Guidelines'.

2.2 COMPLAINTS REGISTER (S - 1)

The Licensee must:

2.2.1 prepare and maintain a register of all complaints concerning environmental issues.

2.2.2 ensure the register includes:

a the date and time that the complaint was made;

b details of the complaint including the likely cause of events giving rise to the complaint;

c the contact details of the complainant (if permitted by the complainant); and

d details of any action taken in response to the complaint by the Licensee.

2.3 EMERGENCY SPILL KIT (S - 21)

The Licensee must ensure that an appropriate emergency spill kit is kept on the Premises at all times and is used in the event of a spill.

2.4 POLLUTION CONTROL EQUIPMENT REGISTER (S - 2)

The Licensee must:

2.4.1 maintain all Pollution Control Equipment to ensure that pollution is minimised; and

2.4.2 keep a written record of all inspections of Pollution Control Equipment, which includes:

a the name of the recording officer;

b the date of each inspection of the equipment;

c details of the equipment that was inspected;

d an assessment of whether the equipment was working effectively; and

e the action taken (if required) to rectify any faults or failures.

3 ADMINISTRATION

3.1 ANNUAL RETURN AND PAYMENT OF ANNUAL FEES (A - 4)

For the purposes of section 48(2)(a) of the Act, the date in each year for the lodgement of the Annual Return is no later than 90 days before the anniversary of the grant or renewal of the Licence; and

3.1.1 For the purposes of section 48(2)(b) of the Act, the date in each year for the payment of Annual Authorisation Fee is the anniversary of the grant of the Licence.

3.2 APPROVAL OF OPERATING PROCESSES (A - 6)

The Licensee must not undertake changes to operating processes conducted pursuant to the Licence at the Premises without written approval from the EPA, where such changes:

3.2.1 have the potential to increase emissions or alter the nature of pollutants or waste currently generated by, or from the licensed activity; or

3.2.2 have the potential to increase the risk of environmental harm; or

3.2.3 would relocate the point of discharge of pollution or waste at the Premises.

3.3 APPROVAL OF WORKS (A - 5)

The Licensee must not construct or alter a building or structure, or install or alter any plant or equipment, for use of an activity undertaken pursuant to the Licence at the Premises without written approval from the EPA, where such changes:

3.3.1 have the potential to increase the emissions or alter the nature of pollutants or waste currently generated by, or from the licensed activity; or

3.3.2 have the potential to increase the risk of environmental harm; or

3.3.3 would relocate the point of discharge of pollution or waste at the Premises.

3.4 CHANGE OF LICENSEE DETAILS (A - 3)

If the Licensee's name or postal address (or both) changes, the Licensee must inform the EPA within 28 days of the change occurring.

3.5 LICENCE RENEWAL (A - 2)

For the purposes of section 43(3) of the Act, an application for Renewal of the Licence must be made no later than 90 days before the expiry date of the Licence.

3.6 OBLIGATIONS TO EMPLOYEES, AGENTS AND CONTRACTORS (A - 1)

The Licensee must ensure that every employee, agent or contractor responsible for undertaking any activity regulated by the Licence, is informed as to the conditions of the Licence.

Attachments

CONTROLLED WASTE.pdf"

LISTED WASTE.pdf"

Controlled Waste Attachment

Controlled Waste
– per the National Environment Protection (Movement of Controlled Waste between States and Territories) Measure 1998, requiring provision of Waste Transport Certificate (WTC) from State or Territory where waste originates

Waste stream or wastes having as constituents:

Acidic solutions or acids in solid form
Animal effluent and residues (abattoir effluent, poultry and fish processing waste)
Antimony; antimony compounds
Arsenic; arsenic compounds
Asbestos
Barium compounds (excluding barium sulphate)
Basic solutions or bases in solid form
Beryllium; beryllium compounds
Boron compounds
Cadmium; cadmium compounds
Ceramic-based fibres with physico-chemical characteristics similar to those of asbestos
Chlorates
Chromium compounds (hexavalent and trivalent)
Clinical and related wastes
Cobalt compounds
Containers which are contaminated with residues of substances referred to in this list
Copper compounds
Cyanides (inorganic)
Cyanides (organic)
Cyanides (organic) / nitriles
Encapsulated, chemically-fixed, solidified or polymerised wastes referred to in this list
Ethers
Filter cake contaminated with residues of substances referred to in this list
Fire debris and fire washwaters
Fly ash, excluding fly ash generated from Australian coal fired power stations
Grease trap waste
Halogenated organic solvents
Highly odorous organic chemicals (including mercaptans and acrylates)
Inorganic fluorine compounds excluding calcium fluoride
Inorganic sulfides
Isocyanate compounds
Lead; lead compounds
Mercury; mercury compounds
Metal carbonyls
Nickel compounds
Non-toxic salts

Controlled Waste Licence Attachment (continued)

– per the National Environment Protection (Movement of Controlled Waste between States and Territories) Measure 1998, requiring provision of Waste Transport Certificate (WTC) from State or Territory where waste originates

Waste stream or wastes having as constituents:

Organic phosphorus compounds
Organic solvents excluding halogenated solvents
Organohalogen compounds - other than substances referred to in this list
Oxidising agents
Perchlorates
Phenols, phenol compounds including chlorophenols
Phosphorus compounds excluding mineral phosphates
Polychlorinated dibenzo-furan (any congener)
Polychlorinated dibenzo-p-dioxin (any congener)
Reactive chemicals
Reducing agents
Residues from industrial waste treatment/disposal operations.
Selenium; selenium compounds
Soils contaminated with a controlled waste
Surface active agents (surfactants), containing principally organic constituents and which may contain metals and inorganic materials
Tannery wastes (including leather dust, ash, sludges and flours)
Tellurium, tellurium compounds
Thallium; thallium compounds
Triethylamine catalysts for setting foundry sands
Tyres
Vanadium compounds
Waste chemical substances arising from research and development or teaching activities including those which are not identified and/or are new and whose effects on human health and/or the environment are not known
Waste containing peroxides other than hydrogen peroxide
Waste from heat treatment and tempering operations containing cyanides
Waste from the manufacture, formulation and use of wood-preserving chemicals
Waste from the production, formulation and use of biocides and phytopharmaceuticals
Waste from the production, formulation and use of inks, dyes, pigments, paints, lacquers and varnish
Waste from the production, formulation and use of organic solvents
Waste from the production, formulation and use of photographic chemicals and processing materials
Waste from the production, formulation and use of resins, latex, plasticisers, glues and adhesives
Waste from the production and preparation of pharmaceutical products
Waste mineral oils unfit for their original intended use
Waste oil/water, hydrocarbons/water mixtures or emulsions
Waste pharmaceuticals, drugs and medicines
Waste resulting from surface treatment of metals and plastics
Waste tarry residues arising from refining, distillation, and any pyrolytic treatment
Waste, substances and articles containing or contaminated with polychlorinated biphenyls (PCBs), polychlorinated naphthalenes (PCNs), polychlorinated terphenyls (PCTs) and/or polybrominated biphenyls (PBBs)
Waste of an explosive nature not subject to other legislation
Wool scouring waste
Zinc compounds

Listed Waste Attachment

Listed Waste
– per part B of Schedule 1 to the Environment Protection Act 1993, requiring provision of Waste Transport Certificate (WTC) for all transport movements

Waste stream or wastes having as constituents:

Acids and acidic solutions
Adhesives (excluding solid inert polymeric materials)
Alkali metals and alkaline earth metals
Alkalis and alkaline solutions
Antimony and antimony compounds and solutions
Arsenic and arsenic compounds and solutions
Asbestos
Barium compounds and solutions
Beryllium and beryllium compounds
Boron and boron compounds
Cadmium and cadmium compounds and solutions
Calcium carbide
Carbon disulphide
Carcinogens teratogens and mutagens
Chlorates
Chromium compounds and solutions
Copper compounds and solutions
Cyanides or cyanide solutions and cyanide complexes
Cytotoxic wastes
Dangerous substances within the meaning of the *Dangerous Substances Act 1979*
Distillation residues
Fluoride compounds
Halogens
Heterocyclic organic compounds containing oxygen, nitrogen or sulphur
Hydrocarbons and their oxygen, nitrogen and sulphur compounds (including oils)
Isocyanate compounds (excluding solid inert polymeric materials)
Laboratory chemicals
Lead compounds and solutions
Lime sludges or slurries
Manganese compounds
Medical waste consisting of—

(a) a needle, syringe with needle, surgical instrument or other article that is discarded in the course of medical*, dental or veterinary practice or research and has a sharp edge or point capable of inflicting a penetrating injury on a person who comes into contact with it; or
(b) human tissue, bone, organ, body part or foetus; or
(c) a vessel, bag or tube containing a liquid body substance; or
(d) an animal carcass discarded in the course of veterinary or medical* practice or research; or
(e) a specimen or culture discarded in the course of medical*, dental or veterinary practice or research and any material that has come into contact with such a specimen or culture; or
(f) any other article or matter that is discarded in the course of medical*, dental or veterinary practice or research and that poses a significant risk to the health of a person who comes into contact with it.

medical practice *includes the practice of pathology and the operation of an immunisation clinic.*

Listed Waste Licence Attachment

– per part B of Schedule 1 to the Environment Protection Act 1993, requiring provision of Waste Transport Certificate (WTC) for all transport movements

Waste stream or wastes having as constituents (*continued*):

Mercaptans
Mercury compounds and equipment containing mercury
Nickel compounds and solutions
Nitrates
Organic halogen compounds (excluding solid inert polymeric materials)
Organic phosphates
Organic solvents
Organometallic residues
Oxidising agents
Paint sludges and residues
Perchlorates
Peroxides
Pesticides (including herbicides and fungicides)
Pharmaceutical wastes and residues
Phenolic compounds (excluding solid inert polymeric materials)
Phosphorus and its compounds
Polychlorinated biphenyls
Poisons within the meaning of the *Drugs Act 1908*
Reactive chemicals
Reducing agents
Selenium and selenium compounds and solutions
Silver compounds and solutions
Solvent recovery residues
Sulphides and sulphide solutions
Surfactants
Thallium and thallium compounds and solutions
Vanadium compounds
Zinc compounds and solutions

Appendix 3 – Stakeholder Consultation

Key stakeholders consulted during the initial SEO/EIR development.

Stakeholder Category	Organisation/Agency	Consultation / Issues Raised
Regulatory Authorities	Department for Energy and Mining (DEM)	Comments already incorporated.
	Department of Primary Industries & Resources (PIRSA)	No comments.
	Environment Protection Authority (EPA)	Updates to NEPM, waste tracking requirements, EPA Policies, EP Act reporting requirements in EIR. Updates to Leading Performance Criteria in SEO.
State Government Departments	Department of Environment and Water (DEW)	Updates to significant environmental benefits section
	Department for Infrastructure and Transport (DIT)	No response.
	Aboriginal Heritage Branch, Aboriginal Affairs & Reconciliation Division of the SA Attorney General's Department (AAR-AGD)	AAR encourages APA to continue engaging with Traditional Owners to ensure that any Aboriginal heritage.
	SA National Parks and Wildlife (NPW)	No response.
Other State Government Bodies	SA Arid Land Natural Resource Management Board	Consideration of erosion impacts, floodplain areas and weeds
Heritage/Native Title	Yandruwandha/Yawarrawarrka Native Title Claimants	No response.
Utility Operators	APA	Comments already incorporated.
Interested Parties.	Friends of Innamincka Reserve	No response.
	Nature Conservation Society of South Australia	No response.
	Outback Communities Authority	No response.
Petroleum, Geothermal and Mining Tenement Holders / Operators	Santos, Beach Energy, Hydro Lit, and Cooper Basin JV partners	No response.
	Other tenement holders (Gidgealpa Station, Innamincka Station, Nappa Merrie Station).	No response.

Stakeholder Consultation

Stakeholder	Response	APA Response
EPA	The Environment Protection Authority (EPA) has assessed of the relevant documentation and now provides comments listed below.	
	EIR: Table 2: Add reference to the National Environment Protection (Assessment of Site Contamination) Measure (ASC NEPM) 1999, as amended 2013. Please note, all assessment and remediation of site contamination, (including spills) is to be completed in accordance with the ASC NEPM. Update both EIR and SEO accordingly.	Updated Table 2 (Legislation) and Table 24 (Chemical and Contamination Management Measures) and Table 25 (Waste) of EIR to specifically reference NEPM ASM. Updated Appendix 1 of SEO Assessment Criteria reference to NEPM ASM.
	Table 3 – EPA: The license also has requirements for waste tracking within SA. Add statement along the lines of 'Note this refers to a selection of conditions included in the EPA license only. Full license is included in Appendix 10.'	Updated Table 3 (State Legislation) updated to include this reference. Note: Full Licence is now Appendix 2.
	Table 3: Add Environment Protection (Waste to Resources) Policy 2010 in Table 3 and as appropriate in remainder of document.	Noted and updated in Table 3 and in Assessment Criteria Table in the EIR and SEO.
	Table 19 Assessment Criteria: Update Compliance with *Environment Protection (Air Quality) Policy 1994* to **2016.** Reference should also be made to the Waste Management Hierarchy, Section 4NB of *Environment Protection Act 1993* (EP Act) and Waste EPP.	Noted and updated Table 3, and Table 23 in EIR and in SEO.
	Table 19: Management Measures: Note abrasive blasting is a Schedule 1 Activity under the EP Act and may require an EPA License. As is surface coating.	Noted and updated the text to refer to required licences in Table 23.
	Table 20: Management Measures: Note, under EPA License, Waste Tracking certificates are to be obtained and retained and (where necessary) required to be provided to the SA EPA.	Noted and updated text in Tables 24 and 25 as well as all other references to Waste Tracking Certificates in the document.
	Table 20: Assessment Criteria: Add reporting obligations pursuant to section 83 and 83A of the EP Act.	Noted and updated text in Tables 24 and 25 of the EIR and in the SEO.
	Table 21: Assessment Criteria: Add reference to: Environment Protection (Waste to Resources) Policy 2010;	Noted and updated text in Tables 24 and 25 of the EIR and the SEO.

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	Assessment/remediation in accordance with ASC NEPM; EP Act reporting obligations (83 and 83A) to be completed as soon as reasonably practicable; *Compliance with South Australian Public Health (Wastewater) Regulations 2013;* and EPA Septage Management Guideline (EPA 247/20).	
	Table 21: Impact Event: Note if material containing Naturally Occurring Radioactive Materials (NORM) is found in the form of scale or residues, the EPA must be contacted to obtain approval for disposal. Update table as appropriate.	Noted and updated text in Table 25 (Waste) Assessment Criteria in EIR and SEO.
	10.2.2 Training: Note obligations under EPA License Condition A-1, that the Licensee must ensure that every employee, agent or contractor responsible for undertaking any activity regulated by the License, is informed as to the conditions of the License.	Noted. Text in Section 10.2.1. Local Induction has been added to include requirements of the EPA Licence (Appendix 2).
	SEO: Appendix 1, P1, P2: No herbicide should be sprayed around watercourses or in a location where the herbicide could be washed into a watercourse by rain. Herbicide use must be according to registration/permit label instructions in accord with the *Agricultural and Veterinary Products (Control of Use) Act 2002.*	Noted. Text in Tables 21 Vegetation and Fauna Management Measures, Table 22 Pests, Weeds and Diseases Management Measures and Assessment Criteria in SEO updated.
	Appendix 1 C1-C4: Add reporting obligations under s83 and 83A of EP Act and assessment/remediation in accordance with the ASC NEPM.	Noted. Added text to Assessment Criteria regarding reporting obligations.
	Appendix 1 C5, C6: Add reference to Waste Tracking obligations under EPA License.	Noted. Added text to Table 25 (Waste) Assessment Criteria in the EIR and the SEO regarding Waste Tracking obligations.
	Appendix 1, W2, W3: Add reference to Waste EPP into Leading Performance Criteria.	Noted. Added text in Table 25 (Waste) of the EIR and the SEO to specifically refer to the Waste EPP.
	Appendix 1, W1: As the hydrotest water may contain biocides or other chemicals this water must not be discharged to a watercourse or onto land where it is reasonably likely to enter waters (including groundwater) if it does not comply with the *Environment Protection (Water Quality) Policy 2015.*	Noted. Amended the wording of the Assessment Criteria in Tabe 24 (Chemical Management) and Table 25 (Waste) of the EIR and SEO to clarify compliance and discharge requirements and add specific reference to *EP (Water Quality) Policy.*

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	Appendix W4, W5: As per comment in EIR, if material containing NORMs is found in the form of scale or residues, the EPA must be contacted to obtain approval for disposal.	Noted and updated text in Table 25 (Waste) Assessment Criteria in EIR and SEO.
	Appendix 1, C2, W5: Add reference to Water Quality EPP into Leading Performance Criteria.	Noted. Updated text in Table 24 (Chemical and Contamination Management Measures) and Table 25 (Waste) of the EIR and SEO to ensure Leading Performance Criteria specifically refers to the Water Quality EPP including discharge limits.
DEW	Comments focussed on native vegetation. As both of these are high level documents, there's no details about how the Significant Environmental Benefit (SEB) obligations are being met, thus we cannot comment on this. The documents refer to the old version of the *Guide for a significant environmental benefit for the clearance of native vegetation associated with the minerals and petroleum industry.* The current version is from March 2025 and available here. If APA is doing staged offsetting, then it may need to engage an accredited consultant to undertake an updated vegetation assessment as per section 3.4 of the Guide. This is to ensure that the SEB results in a net gain. APA should demonstrate the application of mitigation hierarchy to avoid, minimise, rehabilitate/restore and offset the impact on native vegetation.	Noted. As there are no changes to the Pipeline operations and no plans or need to clear any native vegetation outside the pipeline easement, the EIR and SEO do not need updating in relation to these comments. In any event, the text in Table 21 (Vegetation and Fauna Management Measures) has been updated to ensure the Guide is referred to and the native vegetation mitigation hierarchy. APA notes the comments in relation to ensuring all previously agreed SEB obligations are being met, including a net gain.
AGD - AAR	The revised EIR includes AAR comments from the previous review at Stakeholder Consultation, AAR appreciates the responses to those comments and changes applied. The EIR and SEO relate to the ongoing operation and maintenance of the Pipeline, which is located across several states, AAR's comments apply to the South Australian section only. The SA section of the Pipeline is in the Yandruwandha/Yawarrawarrka Native Title lands. AAR notes that there are Aboriginal sites intersecting or close to the Pipeline as recorded on AAR's central archives. APA acknowledges its awareness of these sites within the Pipeline easement and cites several searches of the Central Archive the most recent being February 2025. Please note that AAR's central archives are not an exhaustive record of all Aboriginal sites, objects and remains (together, heritage) in the state. Section 23 of the *Aboriginal Heritage Act 1988* (SA) (AH Act) prohibits any damage,	Noted. AAR has not requested specific updates to the EIR and SEO however the document has been reviewed taking into account AAR's comments. APA has an Aboriginal Heritage Protocol, in the event of an unexpected find on site. Any references to the Department of Premier and Cabinet have been updated to the Attorney-General's Department. APA notes the recent amendments to the AH

Stakeholder	Response	APA Response
	disturbance, or interference with Aboriginal heritage without authorisation from the Minister for Aboriginal Affairs. AAR notes from the documents that APA has engaged with Aboriginal stakeholders, including native title bodies, and has undertaken cultural heritage searches and surveys in relation to the Pipeline. AAR encourages APA to continue engaging with Traditional Owners to ensure that any Aboriginal heritage that may exist in the Project area is avoided and protected (before, during and after any works associated with the Pipeline). AAR highlights that, since the previous iterations of the EIR and SEO AAR now sits in the Attorney General's Department (AGD) and APA when referring to its obligations under the AH Act should change references from the Department of Premier and Cabinet to AGD. Notifications to the Minister should be made through AAR. In relation to unknown Aboriginal heritage, section 20 of the AH Act requires APA to report heritage discoveries to the Minister for Aboriginal Affairs (through AAR) as soon as possible. In line with the *Coroners Act 2003* (SA), APA must immediately notify SA Police in if the discovery includes potential human remains. If the discovery cannot be avoided by works associated with the Pipeline, then ministerial authorisations under the AH Act must be sought before any impacts to the discovered heritage may occur. Please note changes to the AH Act came into effect since the last revision of the EIR and SEO including increased penalties under section 20 of the AH Act – see AAR's website here for further details. APA should review, and if necessary, update the documents considering the recent amendments to the AH Act. I have attached AAR's factsheet 'A guide to Aboriginal heritage in South Australia' as well as AAR's Aboriginal heritage discovery protocols that should be adhered to in the event Aboriginal heritage is discovered during Pipeline works and no authorisation is in place.	Act, including increased penalties for non-compliance.
SA Arid Lands Landscape Board	EIR - Table 3 and Section 11: Refer to the SA Arid Lands Landscape Board. Please refer to the SA Arid Lands Landscape Board as an administering department for the Landscape South Australia Act. The Board has responsibilities for Water Affecting Activities and Biosecurity, and an interest in the ecological aspects of the project (given on-ground projects) The Board is also a stakeholder.	Noted and updated Table 3 and Section 11.

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	EIR - Table 16, S1, S2: Environmental Receptor: Water Resources: Agree with the Impact Event and Environmental Impact. However, there needs to be consideration to erosion impacts that may occur on drainage lines, clay pans and flood out areas and therefore the Environmental Receptor should also include surface water features. The Landscape South Australia Act covers all surface water environments.	Noted and updated. S1 and S2 Environmental Receptors now relate to Soil. WA1 and WA2 have been added relating to “Water Resources” which includes ground and surface water features. Updated Goal at 2.1 of SEO to include reference to drainage lines, clay pans and flood out areas.
	SEO: Appendix 1: S1 – Water Management: We note the reference to water courses, drainage lines and changes to flow patterns. However, it would be worth mentioning the floodplain, flood out areas and other water features, including clay pans, given the ecological sensitivity of the region. Similar to the comment above, all water resources are considered for Water Affecting Activities.	Updated Goal at 2.1 of SEO to include reference to drainage lines, clay pans and flood out areas.
	SEO – Table 18, P1, P2 & Appendix 5 (Pest, Weeds and Disease Management Protocol): Spread of weeds and PWD MP surveys / monitoring: After the recent flooding event in the region and additional recent heavy rain, it is expected that weeds (especially Buffel grass) may have spread. Please ensure that ongoing (or additional) surveys and monitoring are undertaken to pick up new incursions within the project footprint before additional spread could take place from operations.	Noted. Table 22 (Pests, Weeds and Disease Management Measures) in the EIR and SEO has been updated to include additional surveys as required following heavy rain fall events or weed outbreaks in the region.