



Bulloo Interlink Pipeline

Environmental Authority

Waste Assessment

APA Bulloo Interlink Pipeline Pty Ltd

June 2026



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Executive summary

The project

APA Bulloo Interlink Pipeline Pty Ltd (APA), which is part of the APA group of companies (the APA Group), is planning to develop the Bulloo Interlink Pipeline, an underground high-pressure gas pipeline linking the South West Queensland Pipeline in Queensland with the Moomba to Wilton Pipeline in New South Wales (NSW). The Queensland section of the Bulloo Interlink Pipeline (referred to as 'the project' for the purposes of this document) is approximately 236 kilometres (km) long. Overall, the pipeline has a total length of approximately 339 km and will provide a more direct route for natural gas to travel from Australia's northern production areas to southern gas markets.

This report

This report has been prepared by GHD Pty Ltd (GHD) as part of the environmental authority (EA) for the project. The EA supports an application for approval of the project in accordance with the *Environmental Protection Act 1994* (Qld) (EP Act).

This report assesses the potential waste impacts of the project in accordance with the environmental assessment requirements of the *Application requirements for petroleum activities guidelines* (DESI, 2024).

Existing environment

The dominant land use within the project site is grazing native vegetation by cattle, sheep and goats.

Waste Impacts from the project during construction

Key construction waste streams are expected to include waste generated from site clearance, surplus spoil from site preparation and earthworks, surplus construction materials, general wastes and wastewater from the construction compound and temporary accommodation facility.

Potential impacts associated with construction waste include contaminated runoff and leachate generation, visual impacts from improper waste storage, health and safety risks of waste handling, fire hazards from vegetation stockpiling, illegal dumping by third parties at stockpile sites and loss of disposal facility capacity due to insufficient reuse and recycling.

Waste impacts from the project during operation

Operational waste is expected to be minimal and include general waste from maintenance staff and minor quantities of maintenance-related waste such as packaging and faulty components. Given the small amounts of operational waste, there would be a low risk of impacts on the environment and/or human health.

Waste Impacts from the project during decommissioning

Waste generated during decommissioning will primarily arise from the removal of surface infrastructure. These waste streams are expected to include both non-regulated and regulated waste and are anticipated to be insignificant in volume. All decommissioning waste will be managed in accordance with applicable legislative requirements, with a focus on reuse and recycling where practicable and disposal at suitably licensed facilities. There would be a low risk of impacts on the environment and/or human health associated with decommissioning activities.

Recommended waste mitigation measures

Waste-related impacts will be mitigated through application of the waste and resource management hierarchy, appropriate classification and segregation of waste streams, use of licensed contractors and waste tracking systems for regulated waste, controlled management of hydrostatic testing wastewater, and implementation of project-specific environmental management plans.

With implementation of the identified mitigation measures, waste-related impacts are not expected to result in environmental or human health effects, and the project is considered acceptable from a waste management perspective.

Abbreviations and acronyms

Abbreviation/term	Definition
APA	APA Bulloo Interlink Pipeline Pty Ltd an APA Group company
AHD	Australian Height Datum
APGA	Australian Pipelines and Gas Association
ASS	Acid sulfate soils
CEMP	Construction Environmental Management Plan
CRoW	Construction Right of Way
EA	Environmental Authority
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth)
EP Act	<i>Environmental Protection Act 1994</i> (Qld)
EP Regulation	<i>Environmental Protection Regulation 2019</i> (Qld)
GHD	GHD Pty Ltd
ha	Hectares
HDD	Horizontal directional drilling
IBC	Intermediate bulk container
km	Kilometres
LGA	Local Government Area
m	metres
ML	millilitres
NSW	New South Wales
QLD	Queensland
WRR Act	<i>Waste Reduction and Recycling Act 2011</i> (Qld)
WRR Regulation	<i>Waste Reduction and Recycling Regulation 2023</i> (Qld)

Glossary

Glossary	Definition
Construction right of way (CRoW)	The area that would be directly disturbed to construct the pipeline within the project site (includes the trench, temporary storage areas and construction manoeuvring areas). Corridor width up to 40 m.
Project	The project includes constructing, operating (including maintaining) and decommissioning about 236 km of underground natural gas transmission pipeline located in Queensland, and associated above ground infrastructure to connect to the South West Queensland Pipeline.
Project site	The term project site is used to refer to the land required to construct, operate (including maintain) and decommission the project, and defines the extent of land subject to project approval. The project site comprises the 40 metre wide construction right of way, within which the permanent 30 m easement and surface operational facilities would be located. It also includes additional land required outside the construction right of way for temporary and ancillary facilities, including construction compounds, temporary workspaces, temporary accommodation facilities, access track works, and land required to support the project's water servicing strategy.
Study area	The full extent of land with the potential to be directly or indirectly affected by the project (e.g. by noise and vibration, visual or traffic impacts), assessed for environmental values, including the project site, survey area, and surrounding context.

1. Introduction

1.1 Project overview

APA Bulloo Interlink Pipeline Pty Ltd (APA), which is part of the APA group of companies (the APA Group) is planning to develop the Bulloo Interlink Pipeline, an underground high-pressure gas pipeline that will link the South West Queensland Pipeline in Queensland with the Moomba to Wilton Pipeline in New South Wales (NSW).

The Bulloo Interlink Pipeline includes an approximately 236-kilometre (km) long section in Queensland, which will provide a more direct route for natural gas to travel from Australia's northern production areas to southern gas markets. The pipeline has a total length of approximately 339 km, comprising about 103 km in NSW.

The section of the Bulloo Interlink Pipeline located in Queensland (referred to as 'the project' for the purposes of this document) will require an environmental authority (EA) under the *Environmental Protection Act 1994* (Qld) (EP Act). Approval for the NSW section of the Bulloo Interlink Pipeline will be sought under a separate approval process in accordance with NSW legislation and approval requirements.

1.1.1 Location

The project is located within the Bulloo Shire local government area in the vicinity of the Noccundra township within the traditional Country of the Wangkumarra People and Kullilli People. The project site extends south from the tie-in point with the South West Queensland Pipeline for about 186 km, then traverses south-west for about 30 km, and south about 20 km to the Queensland–NSW border. The project location and key project features are shown in Figure 1.1.

1.1.2 Key project features

The project will be designed, constructed and operated in accordance with the *AS 2885 Pipelines – Gas and Liquid Petroleum* series of standards (AS 2885) and the Australian Pipelines and Gas Association (APGA) *Code of Environmental Practice – Onshore Pipelines* (APGA Code of Environmental Practice) (APGA, 2022).

The key operational features of the project include:

- an underground high pressure, steel gas transmission pipeline with a length of about 236 km
- a permanent easement of up to 30 metres (m)
- supporting surface infrastructure, including:
 - beginning of line facility, including a connection to the South West Queensland Pipeline
 - temperature control station, including main line valve
 - cathodic protection units
 - main line valve
 - pipeline marker signs
 - permanent access tracks.

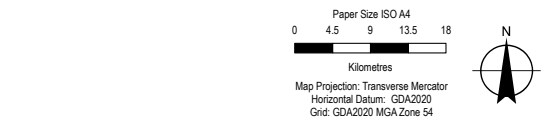
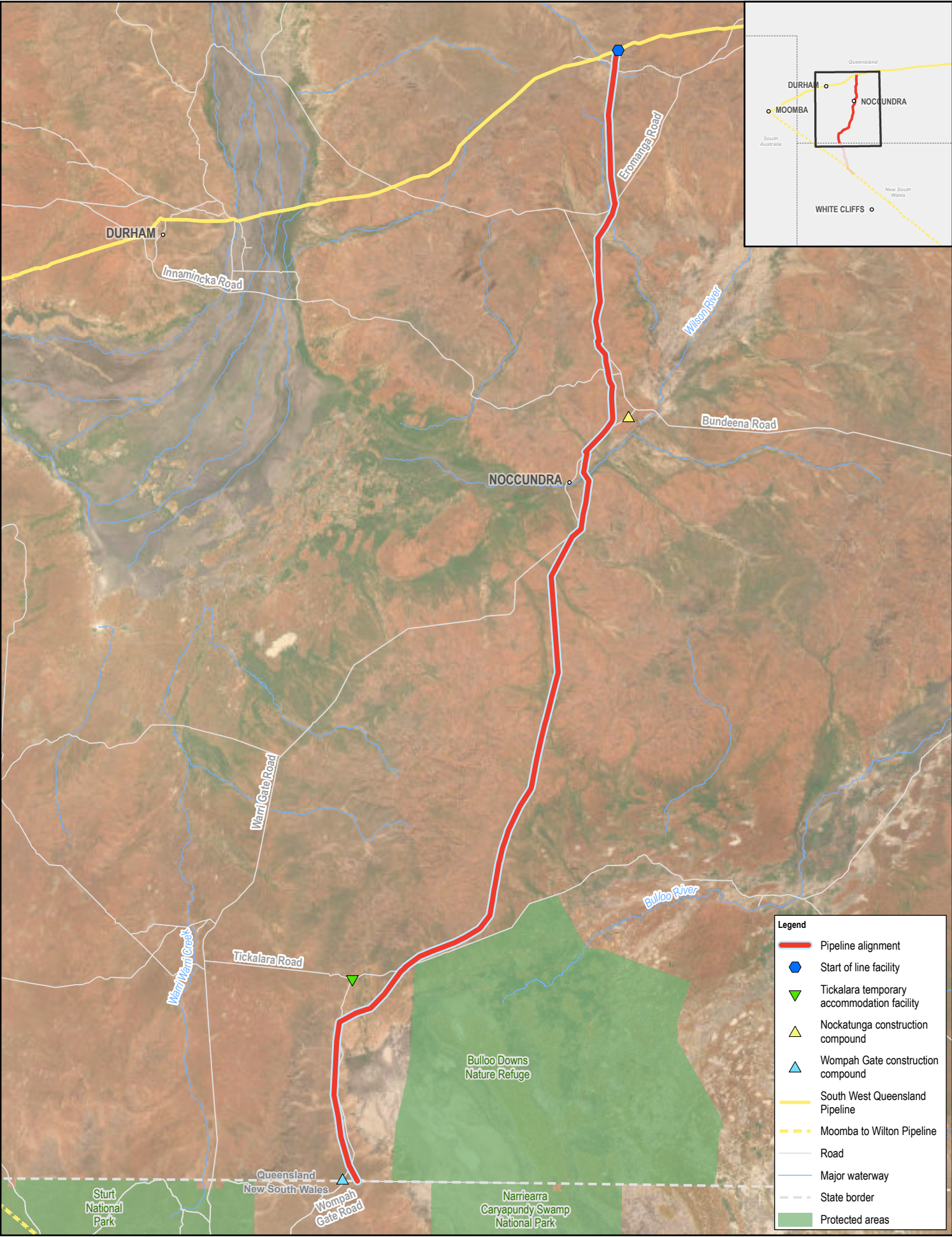
An approximately 40 m wide CRoW will be established to facilitate construction and access.

Key ancillary facilities and infrastructure outside the CRoW would include:

- a temporary accommodation facility located at the intersection of Wompah Gate Road and Tickalara Road
- a construction compound facility to stockpile line pipe located on Wompah Gate Road near the southern end of the project site.

Smaller temporary workspaces are also proposed at regular intervals along the CRoW to support construction activities.

Further information on the project's features and indicative construction methodology is provided in Chapter 4 (Project description) of the Environmental Authority Supporting Information Report.



APA Group
Bulloo Interlink Pipeline

Project location and key features

Project No. 12661648
Revision No. 0
Date 15/06/2026

Figure 1.1

1.2 Purpose and scope of this document

This report assesses the potential waste impacts of the project in accordance with the environmental assessment requirements of the *Application requirements for petroleum activities guidelines* (DESI, 2024). This report:

- describes the existing environment with respect to waste
- assesses the impacts of constructing, operating and decommissioning the project in relation to waste
- recommends measures to mitigate and manage the impacts identified.

1.3 Report structure and content

The structure and content of this report are shown in Table 1.1.

Table 1.1 *Structure and content*

Section	Description
Section 1 – Introduction	Outlines the key elements of the project and the purpose of this report (this section).
Section 2 – Legislative and policy context	Outlines the legislative and governance framework relevant to the project.
Section 3 – Methodology	Describes the study area and methodology for the assessment and details the key assumptions on which the assessment has been based.
Section 4 – Existing environment	Describes the existing environmental values of the study area and project site relevant to waste.
Section 5– Construction impacts	Examines the potential for waste impacts during construction.
Section 6 – Operational impacts	Examines the potential for waste impacts during operation (which includes maintenance).
Section 7 – Cumulative impacts	Provides an assessment of cumulative impacts.
Section 8 – Decommissioning impacts	Examines the potential for waste impacts during decommissioning.
Section 9 – Recommended mitigation and management measures	Recommends measures to mitigate and manage the potential impacts identified.
Section 10 – Conclusion	Provides the key findings of the assessment.

1.4 Limitations

This report has been prepared by GHD for APA Bulloo Interlink Pipeline Pty Ltd and may only be used and relied on by APA Bulloo Interlink Pipeline Pty Ltd for the purpose agreed between GHD and APA Bulloo Interlink Pipeline Pty Ltd as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than APA Bulloo Interlink Pipeline Pty Ltd arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations and assumptions set out in this report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

2. Legislative and policy context

The key legislative requirements and guidelines relevant to waste management for the project are described in the following sections.

2.1 Commonwealth legislation

2.1.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the Commonwealth's primary environmental legislation, providing a framework to protect matters of national environmental significance (MNES). While not all MNES are directly relevant to waste, waste-related activities have the potential to result in indirect impacts to MNES through pathways such as contamination or pollution.

Accordingly, this assessment considers and manages waste to avoid or minimise any indirect impacts on relevant protected environmental values.

2.2 Queensland legislation

2.2.1 Environmental Protection Act 1994

The EP Act is the primary legislation regulating QLD waste management and establishes the general environmental duty to prevent environmental harm. It provides a detailed definition of waste, which directly impacts the handling and disposal of materials generated during the project.

According to Section 4.4.4, subsection 13, waste is defined as any material that is either surplus to or leftover from an industrial, commercial, domestic, or other activity. Specifically, waste includes:

- Unwanted by-products or leftovers from an activity (e.g., abandoned or discarded materials) as per subsection (1)(a)
- Materials that are surplus to the activity generating the waste (as defined in subsection (1)(b)).

This definition extends to various forms of waste, which can include gases, liquids, solids, or energy, either independently or in combination (subsection 2). Importantly, a material is considered waste regardless of whether it has value (subsection 3).

The Act specifies the transition of materials from being resources to waste. Under subsection (4), an end of waste resource, a material approved for recycling or reuse, becomes waste if disposed of improperly, such as when deposited at a waste disposal site or in a manner that contravenes littering or illegal dumping provisions. It also prescribes requirements relating to regulated waste transport, tracking and disposal.

The identification of waste streams, assessment of potential impacts and development of mitigation measures in this report are undertaken to demonstrate compliance with the general environmental duty and to support the EA approval process for the project.

2.2.2 Environmental Protection Regulation 2019

The Environmental Protection Regulation 2019 (Qld) (EP Regulation) prescribes waste classification and management requirements, including the identification of regulated waste under Section 42 and Schedule 9. These definitions provide clarity on how different types of waste should be handled, stored, and disposed of under the EP Act.

This regulation determines how waste generated during construction, operation and decommissioning must be classified and managed, particularly in relation to regulated waste. The requirements prescribed under the EP Regulation directly inform the waste classification, storage, transport, tracking and disposal measures assessed and recommended in this report.

2.2.3 Waste Reduction and Recycling Act 2011

The *Waste Reduction and Recycling Act 2011* (Qld) (WRR Act) provides the strategic framework for waste avoidance and resource recovery in QLD and embeds the waste and resource management hierarchy principles of avoidance, reuse and recycling prior to disposal.

The WRR Act establishes several schemes including a waste levy for waste disposal sites and product stewardship schemes. It also establishes a range of offences for littering and illegal dumping.

The project's construction phase is likely to produce large quantities of waste including construction waste, regulated waste, general waste (particularly from the construction compound and temporary accommodation facility), and recyclables. Waste that cannot be reused within the project site will require disposal at an offsite licenced facility, which may require payment of levies.

The WRR Act informs the assessment approach by prioritising waste minimisation, reuse and recycling in the identification and management of waste streams associated with the project, and by guiding decisions relating to off-site disposal where avoidance or recovery is not practicable.

2.2.4 Waste Reduction and Recycling Regulation 2023

The Waste Reduction and Recycling Regulation 2023 (Qld) (WRR Regulation) supports the WRR Act by providing a regulatory framework for waste management. Its objective is to promote waste avoidance, reuse, recycling, and safe disposal. The WRR Regulation includes provisions for waste levies, bans on single-use plastics, the container refund scheme, waste reporting requirements, and standards for the management of various types of waste, such as polychlorinated biphenyls, clinical waste, and used packaging materials.

The WRR Regulation provides the operational detail that supports implementation of the WRR Act, including requirements relating to waste levies, reporting and specific waste management controls. Where waste generated by the project is disposed of at licensed facilities, the WRR Regulation informs applicable compliance and reporting obligations.

2.2.5 Environmental Protection (Water and Wetland Biodiversity) Policy 2019

The *Environmental Protection (Water and Wetland Biodiversity) Policy 2019* (Queensland Government, 2019a) – the purpose of this policy is to achieve the objective of the EP Act in relation to waters and wetlands by:

- Identifying environmental values for waters and wetlands
- Identifying management goals for waters
- Stating water quality guidelines and water quality objectives to enhance or protect the environmental values
- Providing a framework for making consistent, equitable and informed decisions about waters
- Monitoring and reporting on the condition of waters.

This policy informs the assessment of risks associated with wastewater storage, handling and discharge, including hydrostatic testing wastewater, and supports the identification of measures to protect water quality and aquatic environmental values.

2.2.6 Water Act 2000

The *Water Act 2000* provides for the sustainable management of water resources in QLD and is administered by the Department of Local Government, Water and Volunteers. It provides that the State may make plans for the sustainable management of water resources by preparing and implementing water plans.

The *Water Act 2000* is relevant where waste and wastewater management activities interact with QLD water resources, including watercourses and land subject to water planning controls. The *Water Act 2000* informs consideration of wastewater management measures associated with construction activities, including hydrostatic testing and camp wastewater, where approvals or controls relating to water resources may apply.

2.2.7 Water Supply (Safety and Reliability) Act 2008

The *Water Supply (Safety and Reliability) Act 2008* regulates drinking water in QLD to protect public health. It applies to all drinking water service providers, including councils and organizations involved in harvesting, collecting, treating, transmitting, or reticulating water for drinking purposes, as well as those intending to charge for the water supply. It also provides definitions regarding wastewater and sludge, as well as provisions regarding the management of wastewater.

This Act is relevant in relation to the management of wastewater generated from construction compound and amenities associated with the project. The definitions and regulatory requirements established under the *Water Supply (Safety and Reliability) Act 2008* inform the assessment of wastewater storage, transport and treatment arrangements to ensure wastewater is managed in a manner that protects public health and the environment.

2.3 Guidelines and policies

Guidelines, specifications and policy documents relevant to the assessment of waste for this project include:

- *National Waste Policy 2018* (Australian Government, 2018)
- *National Waste Policy Action Plan 2019 and Annexure 2022* (Australian Government, 2022)
- *Queensland Organics Strategy and Action Plan 2022-2032* (Queensland Government, 2022a, 2022b)
- *Queensland Waste Avoidance and Resource Productivity Strategy (2014-2024)* (Queensland Government, 2014)
- *Queensland Waste Management and Resource Recovery Strategy 2019* (Queensland Government, 2019a)
- *Queensland Waste Reduction and Recycling Plan 2022-25* (Queensland Government, 2022c)
- *Queensland Waste Strategy (2025-2030) – DRAFT* (Queensland Government, 2025)
- Application requirements for petroleum activities guideline ESR/2016/2357 V4.01 (Queensland Government 2024)
- *Southwest Regional Waste Management Plan 2012* (South West Regional Organisation of Councils, 2012)
- *Bulloo Shire Council Corporate Plan 2021-2026* (Bulloo Shire Council, 2021)
- *Bulloo Shire Planning Scheme 2019* (Bulloo Shire Council, 2019).

3. Methodology

This section outlines the method used to identify waste streams and types and qualitatively assess potential waste management risks associated with activities undertaken as part of the project.

3.1 Assessment approach

This waste management assessment has been prepared to quantify the waste generated by the project during construction, operation and decommissioning and address the potential environmental impacts associated with waste handling, storage and disposal.

The waste management assessment involved:

- desktop review of project description and project design information
- review of the regulatory framework for waste management as it applies to the project
- identification and description of the type, quantity and classification of waste to be produced at the during construction, operation and decommissioning
- identification and description of the proposed waste management and handling measures including transport, identification, receipt, stockpiling and quality control
- development of the mitigation measures proposed to be implemented to establish that the construction, operation and decommissioning of the project is consistent with the aims, objectives and guidance of the WRR Act, including waste minimisation and reuse.

3.2 Waste classification

Table 3.1 provides likely waste classifications that would apply to the project in accordance with the EP Regulation 2019 and the WRR Act 2011.

Table 3.1 *Waste classification in QLD*

Type of waste	Definition
Regulated waste	Commercial waste or industrial waste of a type, or containing a constituent of a type, unless it is specifically excluded or shown by testing to meet non-regulated waste thresholds. It is classified into Type 1 and Type 2 regulated waste according to Column 1, Part 1, Schedule 9 of the EP Regulation.
Non-regulated waste	Waste that is not classified as regulated waste.

4. Existing environment

The existing environmental information for environmental features are described in the Chapter 4 of the EA Supporting Information Report.

4.1 Land use

Located on the southern end of the Channel Country bioregion in Qld, land uses within and surrounding the project site predominantly consists of grazing native vegetation (utilised for extensive cattle and sheep grazing), the Bulloo Downs Nature Refuge (managed as resource protection) and lakes including the Bulloo River.

4.2 Acid sulfate soils

It is considered unlikely that ASS is present within the project site, as it is located well above 20 m AHD and is not located near the coastline.

4.3 Contamination

Historical land uses in the study area may have introduced diffuse (such as broadacre application of pesticides or herbicides on agricultural land) or localised (such as accidental fuel spills or leaks of hazardous or dangerous goods) contamination into the soil.

5. Construction impacts

Construction of the project is expected to generate a range of waste streams. The key waste generating construction activities include:

- operation of construction compound (temporary accommodation facility 1 and 2)
- site preparation including vegetation clearing, removal of old fencing material, establishment of laydown areas and installation/relocation of services
- pipeline installation by open trenching and trenchless methods
- construction of new access roads and upgrades to existing access roads.

The key waste streams expected to be generated during construction and estimated quantities, end uses and recommended handling methods are shown in Table 5.1.

Table 5.1 *Estimated key waste streams quantities – construction*

Construction activity	Waste types that may be produced	Likely classification	Estimated quantity (m ³ unless indicated otherwise)	End use	Recommended handling method
Clear and grade	Vegetation	Non-regulated waste	Insignificant	Reuse on-site	Reuse on-site for erosion and sediment control Reinstate on-site after construction
	Old fencing material	Non-regulated waste	428	Landfill	Dismantle and dispose into general waste skip
Clear and grade, access tracks construction, pipeline trenching	Excavated spoil	Non-regulated waste unless contaminated	Minimal excess spoil expected	Reuse Landfill	Reuse on-site as trench backfill, diversion berms and erosion management
Survey and fencing	Survey pegs	Non-regulated waste	3	Landfill	Collect and place in general waste
Stringing and bending	Bevel protectors	Non-regulated waste (recyclable)	103	Reuse / Recycle	Segregate metals; store in scrap bin for periodic collection
	Rope spacers	Non-regulated waste	18	Landfill	Bag and dispose via general waste skip
	Timber skids	Non-regulated waste	27,000-28,000	Reuse	Stack in designated reuse area
Trenching	HDD cuttings	Non-regulated waste unless contaminated	Quantities subject to confirmation of construction methods and further investigation during detailed design	Reuse Landfill	Store in skips or temporary holding ponds; remove by sucker trucks; reuse as trench backfill, diversion berms and erosion management and dispose surplus at a licensed landfill
	Trencher teeth (steel)	Non-regulated waste	<3	Recycle	Segregate as scrap steel
Welding, testing and coating	Epoxy drums	Regulated waste	15	Landfill	Triple-rinse if allowed; store sealed; regulated waste collection
	Epoxy pots	Regulated waste	6	Landfill	Collect in sealed hazardous waste containers

Construction activity	Waste types that may be produced	Likely classification	Estimated quantity (m ³ unless indicated otherwise)	End use	Recommended handling method
	Grinding discs/electrode stubs	Non-regulated waste	3	Landfill	Collect in small debris drums; dispose as general waste
Lowering-in and backfilling	Pipe offcuts	Non-regulated waste	103	Reuse / recycle	Keep long offcuts aside for reuse; shorter pieces into scrap metal skip for recycling
	Sawdust bags	Non-regulated waste	161	Landfill	Keep dry; place in general waste
Hydrostatic testing	Hydrostatic testing wastewater	Regulated waste	43ML	Reuse / disposal	Temporarily stored on-site within engineered turkey nests and either discharged on-site to suitable areas or managed via controlled evaporation, in accordance with relevant approvals and management plans.
	Pigging wastewater	Regulated waste	Minimal	Landfill	Store in sealed IBCs/drums; transport under regulated-waste tracking
Reinstatement and rehabilitation	Temporary sediment fencing	Non-regulated waste	17	Reuse / landfill	Remove stakes/mesh; dispose in general waste
Plant and equipment maintenance	Waste oils	Regulated waste	11	Landfill	Store in bunded oil tanks; dispose of to a licenced waste facility
	Oil filters	Regulated waste	1	Landfill	Drain, place in sealed drums, send to regulated waste facility
	Fuel filters	Regulated waste	7	Landfill	Store in sealed labelled containers; licensed disposal
	Air filters	Non-regulated waste (unless contaminated)	8	Landfill	Place in sturdy bags; dispose with general waste
	Tyres	Regulated waste	20-25	Landfill / recycling	Store in tyre cage; send to approved tyre recycler
PPE use	Disposable spray suit	Non-regulated waste	1	Landfill	Dispose via general waste skip
	Gloves	Non-regulated waste	1	Landfill	Bag and bin
Site compounds	Office waste	Non-regulated waste	28	Landfill / recycling	Segregate paper/cardboard/plastics into recycling streams
Temporary accommodation facility use	Wastewater	Regulated waste	12,744	On-site treatment facility	Designated area for spray irrigation of treated water
	Temporary accommodation general waste	Non-regulated waste	142 tonnes	Landfill / recycling	Store in covered skips; regular removal

The potential impacts associated with aspects of waste generation and management during construction are summarised below:

- contaminated runoff and leachate generation, which could impact water quality and aquatic ecosystems (if wastes are located near watercourses)
- visual impacts of improper waste storage on construction sites and litter generation
- health and safety risks due to handling of waste
- fire hazards from stockpiling of vegetation (unlikely due to minimal vegetation clearing)
- illegal dumping from third parties on stockpile sites or other waste storage areas (unlikely due to remote location)
- unnecessary loss of capacity at available waste disposal facilities due to insufficient reuse and recycling.

Other potential indirect impacts in relation to water, air quality, noise and vibration and traffic, , have been considered in the respective technical assessments for these environmental matters (see Appendix A (Water Assessment), Appendix D (Air Quality Impact Assessment), Appendix E (Noise and Vibration Impact Assessment) and Appendix G (Traffic Impact assessment).

6. Operational impacts

Operation of the project is expected to generate minimal quantities of waste due to the nature of the infrastructure. The key waste generating operational activities include:

- operation of end-of-line site facility
- maintenance activities (pipeline component repair and replacement).

The key operational waste streams and estimated quantities, end uses and recommended handling methods are shown in Table 6.1.

Given the small amounts of operational waste, which would be disposed of at a suitably licensed facility, there would be a low risk of impacts on the environment and/or human health.

Table 6.1 *Estimated key waste streams quantities – operation*

Operational activity	Waste types that may be produced	Waste classification	Estimated quantity	End use	Recommended handling method
Maintenance activities	Faulty/damaged components	Regulated waste	Minimal	Landfill	Temporary on-site storage; periodic removal
	General waste from maintenance staff	Not-regulated waste	Minimal	Landfill	Temporary on-site storage; periodic removal

7. Cumulative impacts

Cumulative impacts may occur where the construction, and operation of a nearby project coincides with that of the activities in the project during operation and construction. Some potential cumulative impacts that may occur include exceeding the capacity of regional waste facilities and the resultant refusal of waste materials by operators.

The potential for cumulative impacts is low as no relevant major future projects in the vicinity of the project site have been identified from publicly available information including the QLD Department of Housing and Public Works website, the Office of the Coordinator General Coordinated Projects website, DETSI's public information portal with current EA applications or EPBC Act Public Notices List that would be considered to be developed concurrently with the project area.

8. Decommissioning impacts

At end of pipeline design life, the pipeline would be decommissioned as described in section 3.9 of the EA, including compliance with the *Petroleum and Gas (Production and Safety) Act 2004*, AS 2885 and relevant environmental and waste management guidelines. AS 2885 mandates a structured, risk-based approach to decommissioning, including segment analysis and a safety management study, which ensures that potential risks to the environment and human health are systematically identified, assessed and mitigated.

Decommissioning is not expected to generate significant quantities of waste. The main activity with the potential to generate waste would be removal of surface facilities and infrastructure, including:

- cathodic protection test points
- pipeline marker signs
- facility fencing
- infrastructure associated with the start of line connection facility
- main line valves
- temperature control station
- structural pipeline.

Final decommissioning activities would be determined through the segment analysis and safety management, as required by AS 2885. These processes inform the decommissioning environmental management plan, which would define actual waste types, quantities and management approaches. This structured planning would ensure that environmental and health risks associated with waste generation and disposal are effectively managed, resulting in a low potential for adverse impacts.

All surface facilities would be dismantled and removed for off-site disposal or recycling in accordance with the relevant waste classification framework in place at the time and the waste management hierarchy. The key decommissioning waste streams and estimated quantities, end uses and recommended handling methods are shown in Table 8.1.

Table 8.1 *Estimated key waste streams quantities – decommissioning*

Decommissioning activity	Waste types that could be produced	Waste classification	Estimated quantity	End use	Recommended handling method
Removal of surface facilities	Metal, electrical and mechanical equipment, concrete, etc.	Regulated waste and non-regulated waste	Insignificant	Landfill / recycling	Temporary on-site storage; periodic removal
	General waste from decommissioning staff	Non-regulated waste	Insignificant	Landfill	Temporary on-site storage; periodic removal

The waste management strategy described here is indicative and subject to refinement through the safety management study and decommissioning planning process. Final waste handling procedures would be defined in the decommissioning environmental management plan and implemented in accordance with the regulatory requirements and standards applicable at the time of decommissioning.

The decommissioning environmental management plan will outline the approach to managing potential environmental impacts from waste, ensuring that all activities are risk-based, compliant and aligned with best practice environmental standards that exist at the time. By implementing these plans and processes, waste generation and the potential for environmental impacts would be effectively managed, supporting a safe and responsible transition from operational to decommissioned status.

9. Recommended mitigation and management measures

The majority of waste will be generated during construction of the project, with limited quantities of waste expected to be generated during operations and decommissioning.

Key waste streams associated with each project phase have been identified based on information available at this stage, and indicative handling and management approaches have been proposed. Waste types, quantities and management measures will be further refined during detailed design and finalisation of the construction methodology, up to commencement of construction activities.

9.1 Waste and resource management hierarchy

The waste and resource management hierarchy prioritises waste avoidance, reduction, reuse, recycling and recovery over treatment and disposal. Circular economy principles represent a shift from a linear take-make-use-dispose approach towards a circular system and product cycle whereby products and materials are kept circulating within the economy at their highest value for as long as possible, through reuse, recycling, remanufacturing, delivering products as services, and sharing of resources.

Construction and operational activities that generate, transport, and dispose waste will be managed in accordance with the waste and resource management hierarchy defined in the WRR Act, and the circular economy framework of the National Waste Policy.

The preferred waste and resource management hierarchy and measures to facilitate conformance for this project are shown in Table 9.1.

Table 9.1 Waste and resource management hierarchy

Waste and resource management hierarchy	Mitigation and management measures
Waste avoidance and reduction	Waste avoidance and minimisation are the two most preferred strategies in the waste and resource hierarchy. During construction and operation, the following measures will be implemented to minimise waste generation at source: – Accurate estimation and ordering of materials to prevent over-supply and excess waste generation. – Efficient procurement, delivery and storage planning to prevent spoilage, contamination or damage to materials and minimise reliance on single-use or non-recyclable packaging. – Detailed design incorporating cut-and-fill modelling to maximise reuse of suitable on-site materials and minimise the importation of external materials. – Training of staff, contractors and operators to prevent damage to equipment, avoid cross-contamination of materials, and minimise wastage during procurement, construction, operation and maintenance activities.
Reuse, recycling and recovery	Waste generated from construction, maintenance activities, packaging, and staff amenities will be assessed for reuse, recycling or recovery potential prior to disposal. – On-site source separation will be implemented, with clearly labelled bins and collection areas to facilitate reuse and recycling in accordance with the QLD Waste Strategy. – Materials such as concrete, metals, timber, packaging and suitable excavated material will be segregated to maximise recycling and beneficial reuse opportunities. – Excess construction material suitable for engineering or landscaping purposes will be reused on site where practicable. – Where recycling is not feasible, recovery options (including energy recovery at appropriately licensed facilities) will be considered prior to disposal.
Treatment	Waste will be treated prior to disposal where required to reduce volume, mobility or hazardous characteristics. – Regulated waste will be managed in accordance with the Environmental Protection Regulation 2019, including classification and disposal requirements. – Treatment methods may include stabilisation, solidification, dewatering, neutralisation or other approved processes to reduce environmental or human health risks.

Waste and resource management hierarchy	Mitigation and management measures
Disposal	Disposal is the least preferred option and will only occur where avoidance, reuse, recycling, recovery or treatment are not viable. – Residual waste will be transported to and disposed of at appropriately licensed facilities in accordance with the EP Regulation. – Waste transport will be undertaken by appropriately licensed operators where required.

9.2 Management of waste

Waste generated during construction, operation and decommissioning will be managed in accordance with the waste and resource management hierarchy and relevant legislative requirements. Management measures are designed to prevent or minimise waste-related environmental and human health impacts through source separation, appropriate storage, licensed transport and disposal, and implementation of project-specific management plans.

The measures outlined in this section summarise the overarching management approach applied across all project phases.

Table 9.2 Recommended mitigation measures

Activity	Project phase	Waste stream	Potential impact	Mitigation and management measures
Handling and storage of waste	All phases	All waste streams	Release of waste to land or water resulting in contamination of soils and waterways (medium term)	– Apply the waste and resource management hierarchy throughout the project lifecycle – Identify and maximise opportunities for reuse and recycling in support of circular economy outcomes – Classify waste in accordance with the EP Regulation and manage in accordance with the WRR Act – Prepare and implement a CEMP incorporating waste management procedures – Site inductions covering waste segregation, classification and legal obligations – Cover waste storage areas where practicable – Locate temporary waste storage areas at least 50 m from waterways – Provide sufficient lidded bins and skips, emptied regularly – Store liquid wastes in bunded containers
Storage and handling of regulated waste	All phases	Regulated waste streams	Improper handling or disposal of regulated waste resulting in land and water contamination and human health risks (medium term)	– Manage regulated waste in accordance with Safety Data Sheets and legislative requirements – Use appropriate PPE and safe handling practices – Store in suitable, bunded containers – Use licensed contractors – Verify licenses and maintain a Waste Management Register
Waste segregation and stream management	All phases	All waste streams	Cross-contamination of waste streams leading to regulatory non-compliance and increased landfill disposal (short term)	– Separate waste streams – Provide labelled and colour-coded bins and signage – Training and site notices – Regular inspections and corrective actions

Activity	Project phase	Waste stream	Potential impact	Mitigation and management measures
Storage of putrescible waste	All phases	Food and putrescible waste	Attraction of pests and vermin, resulting in amenity and health impacts (short term)	– Store food waste in lidded containers – Restrict storage to designated, fenced areas where applicable
Wastewater management	All phases	Wastewater	Soil contamination and nutrient loading due to inappropriate wastewater discharge (medium term)	– Apply wastewater only to pre-approved areas with suitable soil characteristics – Monitor soil infiltration and groundwater where required
Wastewater management	All phases	Wastewater	Contamination of surface water and groundwater from untreated or poorly managed effluent (medium term)	– Monitor effluent quality and comply with regulatory limits – Implement secondary containment – Prepare and implement a Water Management Plan
Hydrostatic testing wastewater storage and management	Construction	Hydrostatic testing wastewater	Uncontrolled discharge, overtopping, seepage or erosion resulting in land or water quality impacts (short to medium term)	– Store hydrostatic testing wastewater in engineered turkey nests designed to accommodate expected volumes – Inspect turkey nests regularly for integrity, freeboard and seepage – Manage water via controlled on-site discharge to suitable areas or evaporation – Implement erosion controls around discharge and storage areas – Manage wastewater in accordance with the Water Management Plan and relevant approvals
Spoil disposal and stockpiling	All phases	Waste rock and excavated material	Dust generation resulting in human health and environmental impacts (medium term)	– Monitor weather conditions – Keep stockpiles covered or moist – Manage spoil under a Spoil Management Plan
Stockpiling of topsoil	All phases	Topsoil	Sediment loss and off-site sedimentation impacts (short term)	– Implement erosion and sediment controls in accordance with the CEMP – Re-vegetate as soon as practicable

9.3 Segregation and storage

Waste storage areas during construction will be established and managed to support effective segregation, safe handling and minimisation of environmental impacts.

Waste management areas and receptacles distributed across the site will be clearly identifiable through the use of appropriate signage and colour coding to promote correct waste segregation. Sufficient numbers of appropriately sized bins will be provided to maximise recycling opportunities and enable appropriate separation of waste streams, including regulated waste where applicable.

Solid wastes will be stored in wheelie bins and skip bins, while liquid wastes will be contained within appropriately bunded areas to minimise the risk of spills or accidental release prior to off-site disposal. Smaller bins and larger bins or skips will be covered where practicable to reduce the potential for odour generation and the attraction of insects and vermin.

Temporary waste storage areas will not be located within 50 m of a waterway and will be appropriately contained to prevent litter, soil contamination and uncontrolled runoff. Waste storage and handling measures will be implemented in accordance with Technical Report – Concept Erosion and Sediment Control Plan. to minimise the risk of sediment-laden runoff, leachate generation and impacts to surface waters.

Segregation of waste streams and measures to prevent cross-contamination will be implemented at all waste storage locations.

Waste handling and storage activities will be undertaken in a manner that minimises potential environmental impacts, including odour, noise from transfer and transport activities, dust generation, leachate from storage vessels and the attraction of vermin or pests. This will be achieved through:

- designated locations for waste collection, sorting and transfer to collection vehicles
- use of covered storage vessels where practicable
- implementation of good housekeeping practices
- regular monitoring and reporting.

Waste will be sorted and stored for the minimum practicable time prior to removal from site by a licensed waste contractor.

9.4 Regulated waste transport and tracking

All regulated waste is considered a trackable waste and will be required to be transported by a licensed waste transporter to a facility licensed to accept that waste type. Waste tracking documentation will be completed in accordance with the EP Regulation. A waste management register will be maintained and include:

- waste type and classification under the EP Regulation
- quantity of waste (tonnes)
- origin (generator) and receiving facility details
- date the waste is given to the transporter (or received)
- any other required fields on the approved form (e.g. transport details, destination).

9.5 Monitoring and reporting

The following monitoring and reporting procedures are proposed as part of waste management practices during all phases of the project:

- Waste Management Register to record all incoming and outgoing waste in accordance with the record keeping requirements of all state and federal legislation.
- Monitor and inspect waste management practices to establish all practicable environmental management measures are being followed to minimise excess waste generation and energy consumption.
- Undertake regular inspections against site-specific environmental and waste management plans. Maintain records of the completed inspection checklists.
- Conduct internal and external audits to verify the waste management controls are implemented.
- Reporting will include a qualitative estimate of compliance with the Waste Management Plan, actions outstanding per performance requirements, and a short summary of any pollution incidents and their causes.
- Regulated waste tracking requirements for all regulated waste for transportation and disposal.

10. Conclusion

This assessment has evaluated the waste streams and waste-related risks associated with the construction, operation and decommissioning of the project, in accordance with relevant QLD legislation, policies and the waste and resource management hierarchy.

The assessment identifies that the construction phase will generate the majority of waste, primarily associated with construction compound, trenching and spoil management, pipeline installation and welding activities, hydrostatic testing, and plant and equipment maintenance. Waste generation during operation and decommissioning is expected to be minimal due to the largely passive nature of the infrastructure and the limited removal of surface components at end of life.

The key waste streams anticipated to be generated by the project include excavated spoil and surplus soil, hydrostatic testing wastewater, regulated wastes (such as waste oils, filters and epoxy products), and general construction and camp waste. Indicative quantities have been estimated based on available project information and documented assumptions and will be refined as project design and construction methodologies are finalised.

Key management measures include application of the waste and resource management hierarchy, appropriate classification and segregation of waste streams, use of licensed contractors and waste tracking systems for regulated waste, engineered containment and controlled management of hydrostatic testing wastewater, and implementation of project-specific environmental management plans.

Overall, the assessment concludes that waste generation associated with the project can be effectively managed through established waste management practices and regulatory controls. With implementation of the identified mitigation measures, waste-related impacts are not expected to result in environmental or human health effects, and the project is considered acceptable from a waste management perspective.

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