Fitzroy to Gladstone Pipeline Project (GSDA)

Planning Report for Material Change of Use for the Pipeline within the GSDA

Gladstone Area Water Board

26 June 2022

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* Refer to Section 1.2 for details of the changes in the Planning Report between Revision 1 and Revision 2.

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Abbreviations

Abbreviation	Definition
AHD	Australian Height Datum
AIPP	Australian Industry Participation Plan
APA Group	APA WGP Pty Ltd
APLNG	Australia Pacific LNG Gladstone Pipeline Pty Ltd
ASRIS	Australian Soil Resource Information System
ASS	Acid Sulfate Soils
Aurizon	Aurizon Network Pty Ltd
BGGGTB	Bailai, Gurang, Gooreng Gooreng, Taribelang Bunda People
BPP	Best Practice Principals
CEMP	Construction Environmental Management Plan
CPESC	Certified Professional in Erosion and Sediment Control
CH	Chainage
CHMP	Cultural Heritage Management Plan
CLR	Contaminated Land Register
CMD	Coastal Management District
DAF	Department of Agriculture and Fisheries
DAWE	Department of Agriculture, Water and the Environment
DERM	Department of Environment, Resources and Mines
DES	Department of Environment and Science
DoR	Department of Resources
DRDMW	Department of Regional Development, Manufacturing and Water
DSDILGP	Department of State Development, Infrastructure, Local Government and Planning
DSDSATSIP	Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships
EA	Environmental Authority
ERA	Environmentally Relevant Activity
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EMR	Environmental Management Register
ESCP	Erosion and Sediment Control Plan
EP Act	*Environmental Protection Act 1994*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPP	*Environmental Protection Policy*
FGP	Fitzroy to Gladstone Pipeline
GAWB	Gladstone Area Water Board
GBRWHA	Great Barrier Reef World Heritage Area
GRC	Gladstone Regional Council
GRP	Glass Reinforced Plastic

Abbreviation	Definition
GSDA	Gladstone State Development Area
GFP	Gladstone to Fitzroy Pipeline
GHD	GHD Pty Ltd
GHG	Greenhouse Gas Emissions
GLNG	Santos GLNG Pty Ltd
GPR	Ground Penetrating Radar
GPS	Gladstone Ports Corporation Limited
Ha	Hectares
HDPE	High Density Polyethylene
Jemena	Jemena Queensland Gas Pipeline
Km	Kilometres
Lat	Latitude
LGA	Local Government Areas
Long	Longitude
m	Meters
MEDQ	Minister for Economic Development Queensland
ML	Megalitres
MCU	Material Change of Use
m	Metres
mm	Millimetres
MSCL	Mild Steel Cement Lined
MP	Member of Parliament
MNES	Matters of National Environmental Significance
MSES	Matters of State Environmental Significance
NC Act	*Nature Conservation Act 1992*
OCG	Office of the Coordinator-General
OEMP	Operational Environmental Management Plan
OUV	Outstanding Universal Value
Planning Act	*Planning Act 2016*
PMAV	Property Map of Assessable Vegetation
PMST	Protected Matters Search Tool
PPL	Petroleum Pipeline Licence
RE	Regional Ecosystem
ROW	Right of Way
RRF	Rubber Ring Joints
Qld	Queensland
QLNG	QGC Pty Ltd
QPP	Queensland Procurement Policy
RTA	Rio Tinto Alcan
SDA	State Development Area
SDPWO Act	*State Development and Public Works Organisation Act 1971*

Abbreviation	Definition
SGIC SDA	Stanwell-Gladstone Infrastructure Corridor State Development Area
SEIS	Supplementary Environmental Impact Statement
SLAM	State Land Asset Management
SPP	*State Planning Policy 2017*
TEC	Threatened Ecological Community
TMR	Department of Transport and Main Roads
VM Act	*Vegetation Management Act 1999*
Water Act	*Water Act 2000*
WTP	Water Treatment Plant

1. Introduction

1.1 Background

On the 23 February 2023, the Queensland Government approved the Fitzroy to Gladstone Pipeline (FGP) (previously referred to as the Gladstone to Fitzroy Pipeline/GFP) project, (the Project) to progress to construction. Gladstone Area Water Board (GAWB) has been appointed to manage the design and construction of the FGP. Following construction, GAWB will own and operate the FGP.

The McConnell Dowell and BMD Constructions Joint Venture (MBJV) has been appointed as the design and construction contractor for the FGP. The MBJV will also be responsible for operation and maintenance for five years following construction completion.

The FGP has the potential to provide water security to urban and industrial customers and, potentially provide water for the emerging hydrogen industry in the Gladstone region.

The FGP traverses the Rockhampton Regional Council and Gladstone Regional Council (GRC) Local Government Areas (LGAs). The 116 kilometres (km) long pipeline will run from the Lower Fitzroy River at Laurel Bank, with the majority of its length within the Stanwell-Gladstone Infrastructure Corridor State Development Area (SGIC SDA), and then connect with GAWB's existing water infrastructure near Yarwun within the Gladstone State Development Area (GSDA).

Part of the FGP is the pipeline which extends for approximately 20.4 km within the GSDA. It is considered that these works trigger the requirement for a State Development Area (SDA) application, specifically for a Material Change of Use (MCU) and Operational Works (for clearing of native vegetation), in accordance with the GSDA Development Scheme.

The subject of this Planning Report is the Project within the GSDA section of the alignment (referred to as the FGP GSDA alignment). The FGP GSDA alignment traverse the localities of East End, Aldoga, West Stowe and Yarwun. The pipeline will be underground and has a design capacity of 30 gigalitres (GL)/annum and will largely be a mild steel cement lined (MSCL) (8 millimetre (mm) thickness) pipeline with a 1,067 mm diameter, with sections of density polyethylene (HDPE) 900mm and 1200 mm diameter at the beginning and end sections of the FGP, respectively.

This Planning Report was submitted to the Office of the Coordinator-General (OCG) for informal assessment on 14 November 2022. The OCG also referred the informal application to the nominated referral and advice agencies for comment. Only minor changes have been made to this Planning Report between the informal and formal assessment as outlined in Section 1.2.

A separate SDA application was made by GAWB for Aldoga Reservoirs and ancillary infrastructure on Lot 2 on SP260764 and the Aldoga Road reserve within the GSDA. A corresponding SDA Approval has been issued, reference AP2022/003 (dated 30 August 2022). The applications for works in the GSDA have been separated to align with the construction phases of the Project and following consultation with the OCG (date 03 December 2021).

Construction works of the FGP GSDA alignment are expected to commence in November 2023 and conclude in April 2024.

1.2 Planning Report Changes

There have been minor changes to this planning report since the initial submission for the informal assessment on 14 November 2022 (Revision 1). For the ease of assessment, the changes are presented in Table 1.1.

Table 1.1 Planning Report Changes (from Revision 1 to Revision 2)

Section	Brief Description
1.1 Background	Information provided regarding the announcement of the Project moving to construction. Design and construction contractor information added. Information about the informal assessment process added.

Section	Brief Description
1.2 Planning Report changes	New section added outlining the changes in the Planning Report from Rev 1 to Rev 2.
1.3 About GAWB	Drought conditions updated.
2.2 Overview of Project and Proposed Use	Project description information updated. Project construction timeline updated.
3.3.1 Road	Road design and permit information updated.
3.3.2 Rail	Rail design and wayleave information updated
3.4.3 Noise and Vibration	Construction work hours updated.
3.5.2 Hydrology and Coastal	Sandy and Boat creek trenched construction method updated
4 Statutory Consideration	Table 4-1 updated to reflect status.
5.1 Design	Design information updated i.e. addition of HDPE pipe for the section from Aldoga Reservoirs to the connection. Design drawing list updated.
5.2 Construction	Main construction stages updated.
5.2.1 Commissioning	Commissioning information updated.
5.2.3 Construction timeframe	Construction timeframe updated.
7 Impacts of Proposal and Management	Mitigation measures in Table 7.1 updated.
Appendix F	Updated design drawings attached.
Appendix G	Updated CEMP attached.

1.3 About GAWB

GAWB is a Queensland Government statutory Water Authority with the purpose of ensuring the long- and short-term water needs of current and future customers are met in ways that are environmentally, socially and commercially sustainable.

On 1 October 2000, GAWB commenced operations as a Category 1 commercialised Water Authority under the *Water Act 2000* (Qld) (Water Act). From 1 July 2008, GAWB became a registered service provider under the *Water Supply (Safety and Reliability) Act 2008* (Qld). GAWB is responsible to Mr Glenn Butcher Member of Parliament (MP), Minister for Regional Development and Manufacturing and Minister for Water.

The proposed Project is an option to address the single source water supply risk from Awoonga Dam, enabling long-term water security for Gladstone's urban and industrial customers in the Gladstone region. The pipeline also has the potential to provide water for the emerging hydrogen industry in the Gladstone region.

Gladstone was officially drought declared on 1 May 2019. Awoonga Dam due to three consecutive failed wet seasons in 2018-19, 2019-20 and 2020-21. Despite the recent rainfall in the region, Awoonga Dam capacity remains at 60% capacity (19 June 2023) and a Low Supply Alert remains in place for Awoonga Dam and the Gladstone region. The Gladstone region has a long history of drought. Water security and reliability is a key consideration for the region.

On the 23 February 2023, the Queensland Government approved the FGP to progress to construction. GAWB has been appointed to manage the design and construction of the FGP. Following construction, GAWB will own and operate the FGP.

In addition, GAWB and MBJV is undertaking several technical investigations and baseline surveys for the Project to assess existing environment and the potential impacts. GAWB is also developing environmental management plans and procedures to manage potential impacts from the Project.

1.4 Purpose of this Report

The purpose of this Planning Report is to provide supporting information required for assessment of the SDA application (MCU and Operational Works) within the GSDA. This report pertains to the proposed underground water pipeline, 20.4 km of which is located within the GSDA.

This SDA application (MCU and Operational Works) has been prepared in accordance with the *State Development and Public Works Organisation Act 1971* (SDPWO Act) and the GSDA Development Scheme (May 2022). Its aim is to assist the OCG and relevant referral agencies in the assessment of the application. In summary, the following information is provided in this Report:

– Background.
– Subject land and locality details.
– Statutory considerations for the FGP GSDA alignment.
– Development details.
– An assessment of the developments' consistency with the objectives and land use designations of the Development Scheme for the GSDA.
– Identification of potential impacts and proposed solutions/management plans to manage adverse impacts.

1.5 Development Application Details

This SDA application (MCU and Operational Works) is for a use defined as "utility installation" within the GSDA where utility installation includes land used to provide the supply or treatment of water. Specifically, this SDA application (MCU and Operational Works) is for installation of a new underground water pipeline from The Narrows Road at pipeline chainage (CH) 96500 to Hanson Road. The FGP GSDA alignment traverses the localities of East End, Aldoga, West Stowe and Yarwun.

The proponent and application details are summarised in Table 1.2. In addition, the following is provided as part of the SDA Application (MCU and Operational Works):

– Application form required for this SDA application (refer to the online submission).
– Landowner consents (refer to Table 3.2 and Appendix A).
– Fee of $7,534 (GST exclusive) payable by GAWB (supplied separately).

Table 1.2 Proponent and Application Details

Item	Description
Proponent / Applicant	GAWB
Property Details	From The Narrows Road (pipeline CH 96500) to Hanson Road (pipeline CH 116900) Refer to Table 3.1 for a full list of the impacted properties.
Name of Landowner	Detail of landowners are provided in Section 3.1, Table 3.2.
Current Land Use	Various land uses including: – Grazing. – Native vegetation. – Transport and communication. – Yarwun Key Resource Area 20 Separation Area and Transport Route. – Gladstone priority port precincts – Port Industry and Commerce.
GSDA Precinct	Materials Transportation and Services Corridor Precinct.
Development Proposal	Construction of utility infrastructure, namely an underground water pipeline.
Development Assessment	MCU and Operational Woks in accordance with the SPDWO Act and the Gladstone SDA Development Scheme. The proposed development is identified as a "utility installation" use that is consistent with the preferred development intents and the assessment criteria within the GSDA Development Scheme.

Item	Description
Assessment Manager	OCG
State Interests	– Clearing of native vegetation. – Agricultural land classification – class A and B. – Key resource area – transport route along Mount Larcom Yarwun Road reserve. – Key resources area -separation areas. – Various Matters of State Environmental Significance (MSES). – Priority ports: Gladstone priority port precincts. – Works within State controlled infrastructure corridors (road and rail). – Major electricity infrastructure and pipelines. Refer to Section 2.4 for further information.
Contact Details for Application	GHD Pty Ltd – Amanda Smedley (Senior Environmental Consultant) Level 2, 100 Goondoon Street, Gladstone QLD 4680 Phone: (07) 4973 1613 | Email: **amanda.smedley@ghd.com** *Or* GAWB – Simon Wakefield (Approvals Manager – Fitzroy to Gladstone Pipeline) 147 Goondoon Street, Gladstone QLD 4680 Phone: 0401 712 962 Email: **swakefield@gawb.qld.gov.au**

1.6 Limitations

This Planning Report was prepared by GHD in performing services under the Service Provider Agreement dated 4 June 2015 between GHD and GAWB (the Contract). The report does not amend the Contract or take away from the rights or obligations of GAWB and GHD under the Contract or in respect of the standard and quality of the services performed under the Contract. If there is any inconsistency between the Contract and this report, the Contract prevails to the extent of the inconsistency.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report. GHD has prepared this report on the basis of information provided by GAWB and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

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. Background

2.1 Project Objectives

The objectives established for the Project are outlined in Table 2.1

Table 2.1 Project Objectives

Project Objective	Description
Water security	Deliver infrastructure that connects communities, deliver a sustainable and resilient network and a network that provides for immediate drought response.
Reliability	Deliver a network that runs efficiently, effectively and is fit for its intended purpose, that considers operation and whole-of-life design for replacement and availability of components, and that establishes trust in the local community that the Principal delivers as an authority on time and to its commitments.
Cost	Deliver the works within the agreed construction value and demonstrate a value for money outcome to the State Government. Ensure that cash moves quickly through the supply chain, and all subcontractors, suppliers, professional service providers are paid in a timely manner.
Time	Delivery of the asset as per the delivery program to meet water security and planning objectives.
Safety	Deliver and construct the Project with a zero rate of incidents and be injury free. Create a culture where the safety of the Project workforce, operators of the network and the general community is paramount.
Quality	Ensure that constructed works are fit for purpose and meet all Project design requirements, standards and warranties and achieve a zero defects status.
Environment	Actively manage the Project to eliminate environmental harm and demonstrate genuine sensitivity and care for the environment.
Community and Stakeholders	Engage commercially competitive local suppliers, where possible. Recruit local skilled workers. Develop and maintain productive relationships with community and stakeholders. Effectively plan and deliver communication and engagement strategies to support Project works, minimise impacts to community and stakeholders, contribute to a positive Project reputation and produce economic benefits to the local area.
Values and behaviours	Alignment with GAWB's corporate philosophy and 'the way we work' including: – Engage – We work together. Always. – Accountable – We all contribute. Openly. – Safety & Wellbeing – We look after ourselves. And each other. – One Team – We Deliver. You and I.
QPP Compliance	Demonstrate and comply with each category of the Queensland Procurement Policy (QPP) including the Best Practice Principles (BPP), Local Benefits Test and all statutory requirements. Demonstrate and comply with the Australian Industry Participation Plan (AIPP) and all other Project-related regulatory requirements.
Skill and system development	Provide training and skills development opportunities for all people working in the Project team and enable GAWB to increase its overall capability as an organisation. Contribute to local and Indigenous supply chain capability and capacity development and skill development of local and Indigenous labour.

2.2 Overview of Project and Proposed Use

The Project is a 116 km pipeline (approximately) that will transport up to 30,000 ML of water per annum from an intake point at Laurel Bank on the Fitzroy River to GAWB's existing water infrastructure at Yarwun (a Project schematic is presented in Figure 2.1 and a locality plan is provided in Figure 2.2).

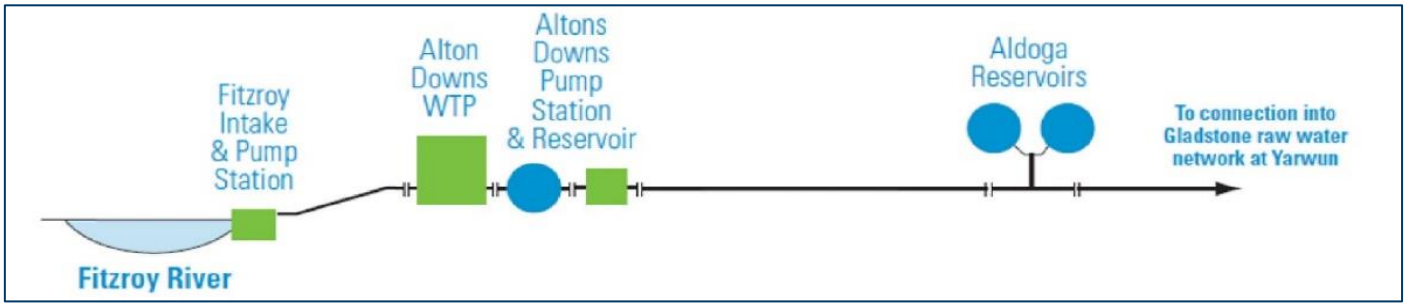


Figure 2.1 Project Schematic

The Project comprises the following key elements (as shown on Figure 2.2):

– An intake and pump station on the southern bank of the Fitzroy River, approximately 17 km upstream of Rockhampton's Alexandra Bridge near Laurel Bank, and in the vicinity of an existing Sunwater pump station that supplies the Stanwell Energy Park.
– A Water Treatment Plant (WTP) at Alton Downs near the Fitzroy River, occupying an area of approximately 11.5 hectares (ha).
– A pipeline with a length of approximately 116 km constructed within a right of way (ROW) corridor up to 30 metres (m) in width:
  - 3 km 900 mm diameter HDPE pipeline between the intake facility and the WTP at Alton Downs
  - 105 km 1,067 mm diameter MSCL pipeline between the Alton Downs pump station and the Aldoga Reservoirs
  - 8 km 1,200 mm diameter HDPE pipeline between the Aldoga Reservoirs and the connection into the existing distribution system on the Mt Miller pipeline, at Yarwun
  - Fibre optic cable will run alongside the pipeline within the trench to transmit signals along the FGP alignment.
– Pump stations, at the Fitzroy River water intake and Alton Downs WTP, each occupying an area of approximately one hectare. Associated with each pump station there may be:
  - A single building (approximately 30 m x 25 m) housing the pumps, complete with motors, controls and starters
  - A small substation
  - Connection manifolds and valves.
– Reservoirs at Aldoga consisting of two x 50 ML water storage tanks (hydraulically acting as one).

(Note that detailed design has determined that the proposed Raglan Pump Station of Reservoir is no longer required and therefore does not form part of the Project).

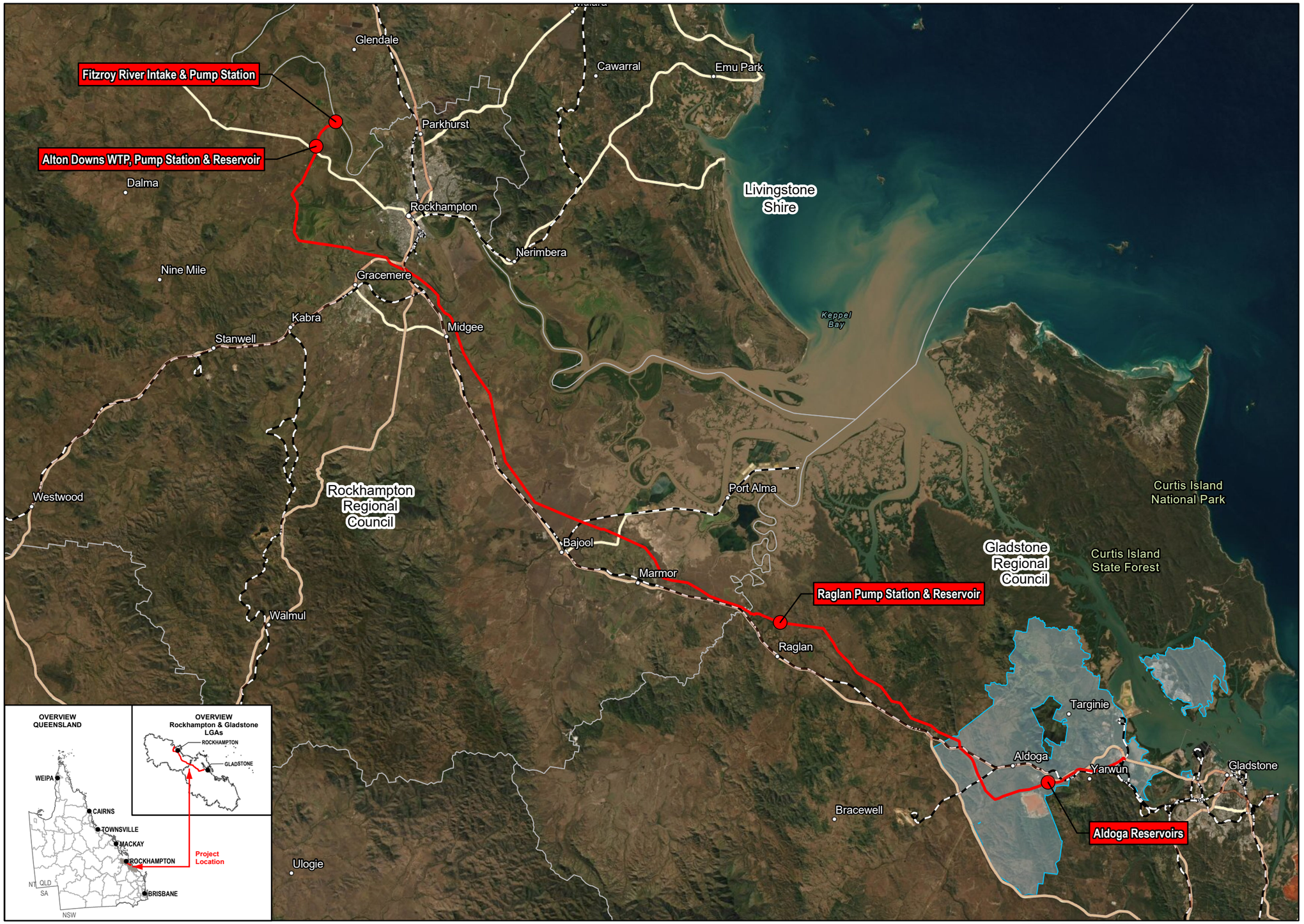
The FGP will be buried for its full length with a nominal cover of 900 mm. The depth of the FGP will vary depending upon the pipe material, ground conditions and loading. GAWB is currently securing land access and tenure for the FGP.

An Environmental Impact Statement (EIS) was completed for the overall Project in 2007 (Arup, 2008), with a supplementary EIS (SEIS) completed in 2009 (Arup, 2009). The OCG issued an evaluation of the project's EIS on 2 February 2010 which established the framework for the State approvals required for the Project (noting the report lapsed in February 2018). In addition, Commonwealth approval under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) was received on 4 November 2011 and varied on 25 October 2021 and 20 June 2022.

GAWB is in the process of securing secondary approvals for the Project, which includes approvals under the SGIC SDA and GSDA Development Schemes, the *Planning Act 2016* and other State or local statutory requirements.

The intention is to commence preparatory works on the Project as early as practicable. The overall construction period for the Project is to commence and complete construction in June 2023 and March 2026 respectively (weather and construction conditions permitting and all relevant approvals are in place). For the FGP GSDA alignment it is anticipated construction will commence in November 2023 and be completed by April 2024.

This SDA application (MCU and Operational Works) specifically pertains to the proposed underground water pipeline within the GSDA within the localities of East End, Aldoga, West Stowe and Yarwun as identified in Figure 2.3a and Figure 2.3b.



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Legend

- Infrastructure Locations
- Fitzroy Gladstone Pipeline Alignment
- Roads
- Railways
- Gladstone State Development Area
- LGA Boundaries

Data Sources:
1. Base Layers (Roads, waterway, locality, LGA etc) @ QSpatial, 2021
2. Cadastral data - Queensland series @ QSpatial, 2022
3. State Development Area precincts - Gladstone SDA @ QSpatial, 2015
4. Imagery @ Esri, Maxar, GeoEye, Earthstar Geographics, CNES-Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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PROJECTION UTM Zone 56
(Datum GDA2020)

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FITZROY TO GLADSTONE PIPELINE PROJECT

Figure 2.2 Fitzroy to Gladstone Locality Plan

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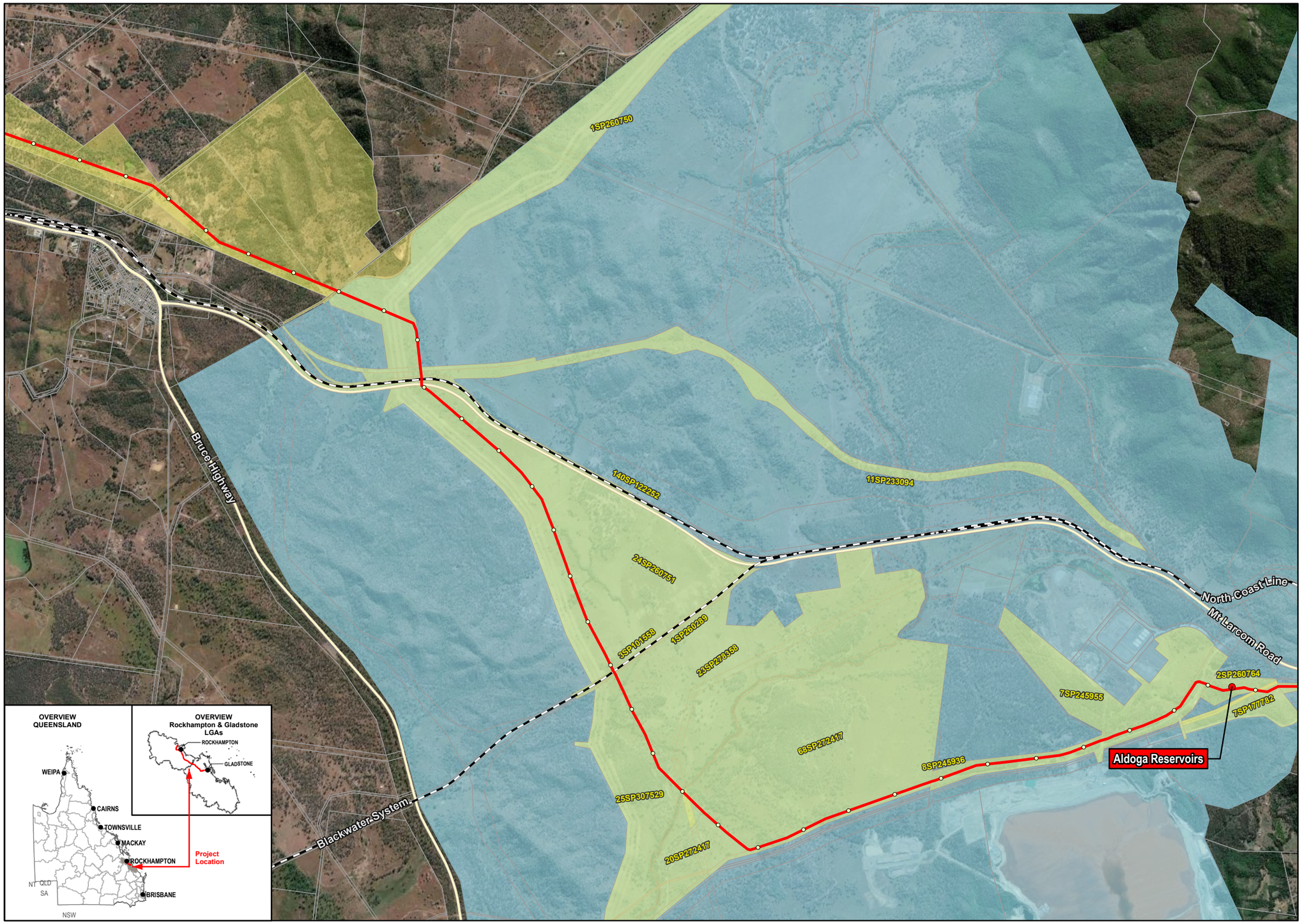

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Legend

- Chainage (500m)
- Infrastructure Locations
- Pipe Alignment
- Roads
- Railways
- Impacted Properties
- Gladstone State Development Area
- Property Boundary

Data Sources:
1. Base Layers (Roads, waterway, locality, LGA etc) @ QSpatial, 2021
2. Property Boundary @ Department of Resources 2021.
3. Indicative Ecology Survey Location(s) @ GAWB 2022
4. Imagery @ Esri, Maxar, GeoEye, Earthstar Geographics, CNES-Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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FITZROY TO GLADSTONE PIPELINE PROJECT
FIGURE 2.3a FGP GSDA Alignment Locality
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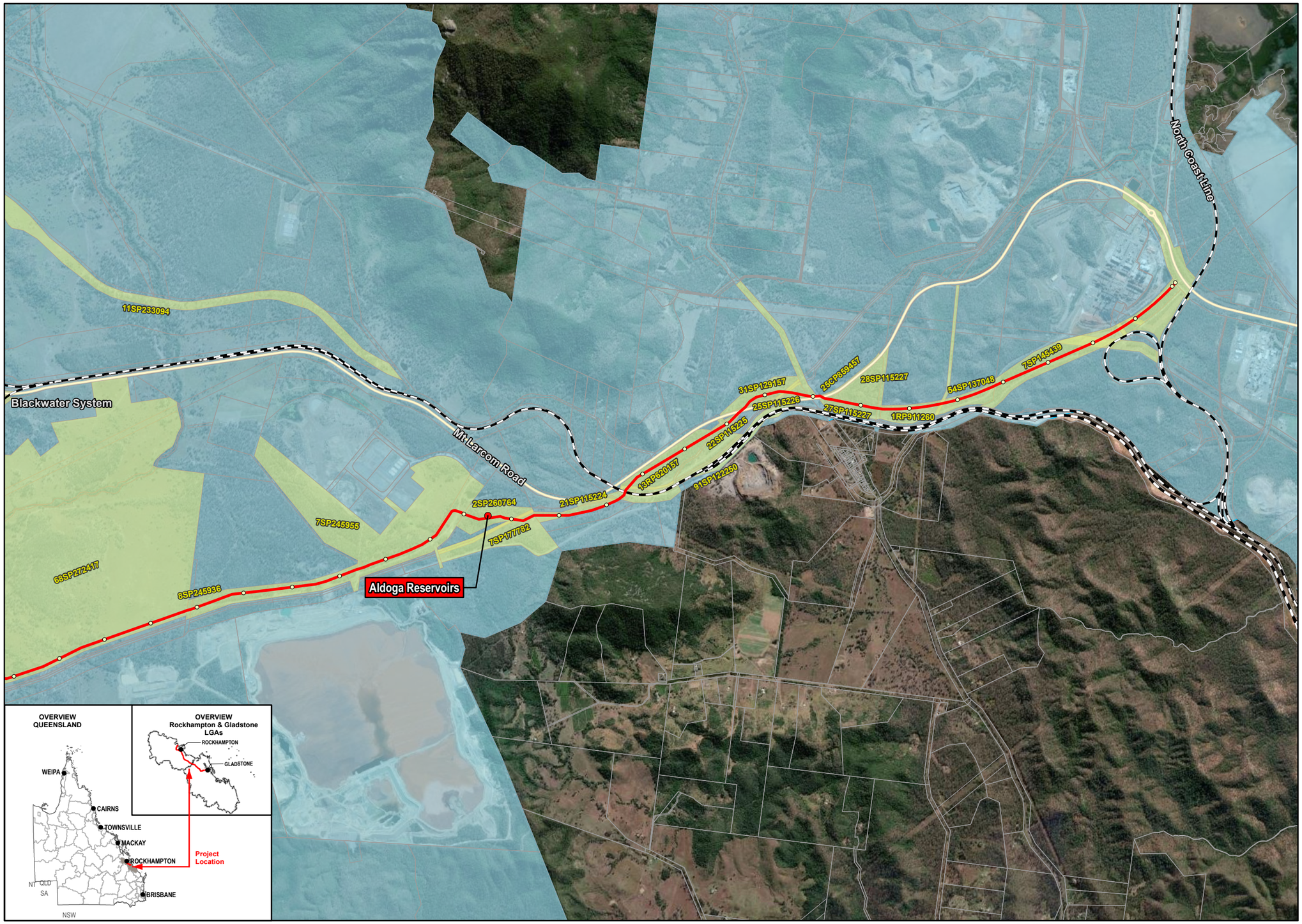

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Legend

- Chainage (500m)
- Infrastructure Locations
- Pipe Alignment
- Roads
- Railways
- Impacted Properties
- Gladstone State Development Area
- Property Boundary

Data Sources:
1. Base Layers (Roads, waterway, locality, LGA etc) @ QSpatial, 2021
2. Property Boundary @ Department of Resources 2021.
3. Indicative Ecology Survey Location(s) @ GAWB 2022
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PROJECTION UTM Zone 56
(Datum GDA2020)

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FITZROY TO GLADSTONE PIPELINE PROJECT
FIGURE 2.3b FGP GSDA Alignment Locality
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2.3 Use Being Applied For

No person may carry out regulated development within the GSDA without prior approval from the OCG as specified in Section 1.3 of the GSDA Development Scheme. An MCU is defined by the Department of State Development, Infrastructure, Local Government and Planning (DSDILGP) as:

– The start of a new use of the premises.
– The re-establishment on the premises of a use that has been abandoned.
– A material change in the intensity or scale of the use of the premises (DSDILGP, 2022).

It is considered that the proposed FGP GSDA alignment constitutes the start of a new use and the material increase in the intensity and scale of the use of the premises.

The application is therefore to be assessed against the objectives of the GSDA Development Scheme, including the preferred development intent of the applicable land use precinct within which the use is located, as well as the overall assessment criteria of the Scheme.

2.4 State Interests and Referral Triggers

This application identifies the referral triggers under the *Planning Act 2016* and referral entities for the application as per Schedule 2, Section 2.1 of the GSDA Development Scheme. The Sate interests and referrals associated with the FGP GSDA alignment are outlined in Table 2.2. Further information related to State interests and statutory considerations is provided in Section 4.

Table 2.2 State Interests and Referral Triggers Applicable to the FGP GSDA alignment

State Interests and Referral Triggers	Comments	Referral Triggers Under the *Planning Act 2016*	Agency
Agriculture	Part of the alignment intersects Agricultural land classification – class A and B.	Nil	Nil
Economic growth	The alignment is within the GSDA within the 'Materials Transportation and Services Corridor Precinct'.	Works within an SDA	OCG
	The alignment intersects a key resource area (number 20): – Transport route along Mount Larcom Yarwun Road reserve. – Separation area. – Transport route separation area.	Nil	Department of Resources (DoR)
Environment and heritage	The alignment intersects the following mapped MSES related to regulated vegetation: – MSES – regulated vegetation (category B that is endangered or of concern) – MSES – regulated vegetation (within a defined distance from the banks of a watercourse or relevant drainage feature) – MSES – regulated vegetation that is essential habitat (critically endangered, endangered or vulnerable plants or wildlife) – MSES – regulated vegetation that is essential habitat (near threatened plants or wildlife) – MSES – connectivity areas – MSES – protected wildlife habitat (high risk area on a flora survey trigger map) – MSES – protected wildlife habitat (habitat for an animal that is critically endangered, endangered, vulnerable or special least concern)	Clearing of native vegetation Wildlife habitat	DoR [1] Department of Environment and Science (DES)

State Interests and Referral Triggers	Comments	Referral Triggers Under the *Planning Act 2016*	Agency
	Regulated vegetation (where not an MSES): – Category C – Category R – Category X (exempt clearing on freehold land)	Clearing of native vegetation	DoR [1]
	Fisheries matters will be intersected by the alignment: – Waterways for the purpose of waterway barrier works.	Operational work for waterway barrier works	Department of Agriculture and Fisheries (DAF)
Safety and resilience to hazards	The alignment is located within the following hazard areas: – Flood hazard area – Local Government flood mapping. – Bushfire prone areas.	Nil	GRC
Infrastructure	The alignment intersects the following mapped State interests: – State controlled road. – State controlled railway.	Works within a State-controlled road Works within a State controlled railway	Department of Transport and Main Roads (TMR)
	The alignment intersects a number of local government road reserves.	Nil	GRC
Note: 1- With the GSDA operational works for clearing native vegetation is regulated under the GSDA Development Scheme.			

In addition to referral parties/agencies, a number of other parties may act as advice agencies. The following parties may be consulted for advice during the assessment of the SDA application (MCU and Operational Works) for the following impacted land:

– Designated premises for Lot 20 SP272417 and Lot 7 SP145439 for a transmission line: Department of Energy and Public Works.
– Alignment intersecting premises that are subject to easements for the benefit of a distribution entity under the *Electricity Act 1994*:
  - Ergon Energy Corporation Limited (referred to as Ergon).
  - Powerlink Queensland (referred to as Powerlink).
– Properties where all or part of the premises are subject to an easement for the benefit of the holder of a pipeline licence under the *Petroleum and Gas (Production and Safety) Act 2004*:
  - Arrow Bowen Pipeline Pty Ltd (referred to as Arrow Bowen Pipeline).
  - Santos GLNG Pty Ltd (referred to as GLNG).
  - APA WGP Pty Ltd (referred to as the APA Group), formerly QGC Pty Ltd (or QCLNG).
  - Australia Pacific LNG Gladstone Pipeline Pty Limited (referred to as APLNG).
  - Jemena Queensland Gas Pipeline (referred to as Jemena).
  - Australian Gas Networks (QLD) Limited, formerly Envestra (Qld) Limited.
– Sublessee of State controlled railways: Aurizon Network Pty Ltd (Aurizon).
– Watercourses where riverine protection provisions or taking of construction water apply: DRDMW.
– Sewer network crossing: GRC.
– Other infrastructure owners including GRC, Cement Australia, Rio Tino Alcan (RTA) Yarwun Pty Ltd.

Further information regarding land uses (tenements and resource areas) and infrastructure (road, rail and utilities is located at sections 3.2 and 3.3 respectively.

2.5 Public Consultation

During the assessment of the SDA application (MCU and Operational Works), the Coordinator-General is to decide if the application requires public consultation in accordance with the Public Consultation Policy State Development Areas (State of Queensland, OCG, 2021), as per Schedule 2 Part 2.3 of the GSDA Development Scheme, Public Consultation Stage.

The decision that no public consultation is required may be made by the Coordinator-General because the proposed development has been subject to some other form of public consultation that would satisfy the consultation requirements under the GSDA Development Scheme. Examples outlined within the Public Consultation Policy include if the development has undergone public consultation under a formal environmental impact assessment process where extensive public consultation was undertaken.

The Project has undergone an extensive public consultation process as part of the EIS process. The EIS (Arup, 2008) was on display for a public consultation period of 30 business days (1 November 2008 to 15 December 2008) and invited written comments from any interested stakeholders. The public consultation for the Project included letters to impacted stakeholders, advertising, media, community information sessions, Project update newsletters, EIS document display and presentations, summary of major findings, 1800 number/project email address. During the public consultation period, 27 submissions were received. In accordance with the relevant legislation, a SEIS was issued to the OCG that addressed the issues and comments raised in the submissions received (Arup, 2009).

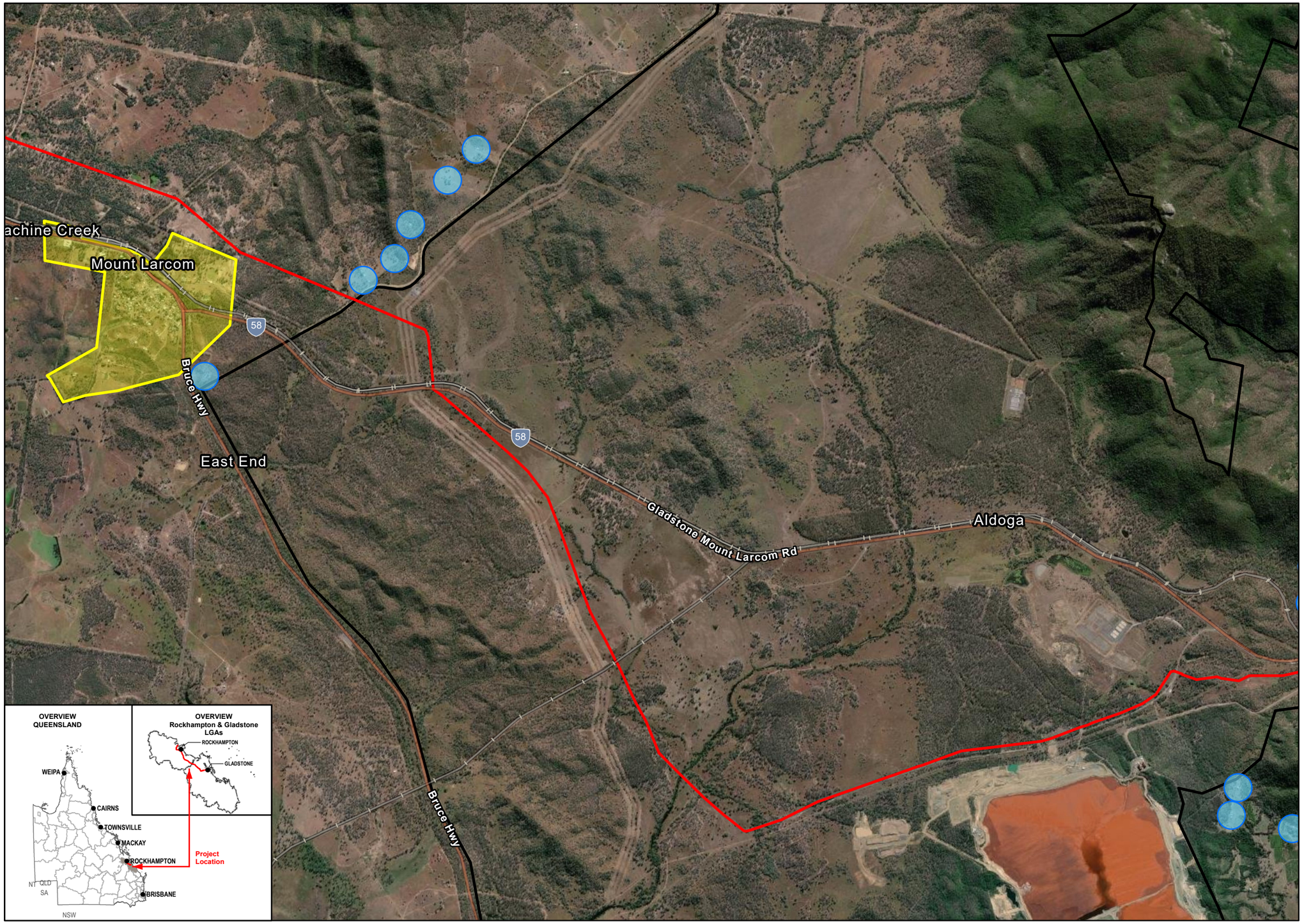
This process took place over 14 years ago, and as such may not meet the requirements of the Public Consultation Policy, or the GSDA Development Scheme. However, GAWB has actively been consulting with Commonwealth, State and local regulatory agencies, impacted landholders and First Nations' groups over the last year and has received positive feedback about the progression of the Project. Based on environmental assessments for the Project and with appropriate management the FGP GSDA alignment is not expected to significantly impact any sensitive receptors.

The Public Consultation Policy outlines additional matters that are to be considered in the public consultation stage to determine if public consultation is required. These are outlined in Table 2.3. Based on the assessment of the underground pipeline SDA application (MCU and Operational Works), it is considered that further public notification is not required due to the extensive consultation that occurred as part of the EIS and SEIS and the ongoing consultation with State government departments, Local governments and affected landholders regarding the Project. Regardless of the determination, GAWB is committed to undertaking the required tasks.

Table 2.3 Factors for Consideration in Requiring Public Consultation

Factor	Response
The age of the relevant development scheme	The Gladstone SDA Development Scheme commenced in 2001. The latest version of the Gladstone SDA Development Scheme was approved in May 2022. This SDA application has also been prepared in consideration of the following additional planning instruments: – State interest review against the *State Planning Policy* (July 2017). – Review against the Central Queensland Regional Plan (October 2013). – Review against the *Gladstone Regional Council Planning Scheme* (Version 2, July 2017). As the proposed Project has been reviewed against the most up to date versions of relevant State and local planning legislation in this SDA application (MCU and Operational Works), the Project is considered to have regard to the current constraints and intent over the FGP GSDA alignment. The proposed development is generally compliant with the relevant planning legislation.
Whether the proposed development is likely to adversely impact on sensitive receptors	A number of sensitive receptors, as defined by the Environmental Protection (Noise) Policy 2019, are located within approximately 2 km of the FGP GSDA alignment. There are also natural environmental features and cultural heritage values located along, adjacent to and/or in the vicinity of the FGP GSDA alignment. The sensitive receptors within 2 km of the FGP GSDA alignment are displayed in Figure 2.4a and Figure 2.4b. Further information regarding sensitive receptors is provided in Section 3.4.

Factor	Response
	The proposed FGP GSDA alignment is considered to have short term impacts on surrounding sensitive receptors during the construction phase. GAWB will be implementing management plans during construction to mitigate any adverse impacts to sensitive receptors. It is proposed that the consultation being undertaken in general as part of the Project, including landowner consultation, would be a suitable means for any concerns by sensitive receptors to be raised.
Whether the proposed development is likely to adversely impact existing development within the SDA	The potential impacts of the proposal and proposed mitigation measures, informed by detailed assessments, are detailed in Section 7 of this report. A range of infrastructure and land types are proposed to be impacted; these impacts will be addressed during Project specific consultation with landowners and asset owners as appropriate.
Whether the proposed development is consistent with the preferred development intent for the precinct, or the purpose of the precinct (depending on the development scheme)	The proposed Project is consistent with the: – The strategic vision for GSDA. – The overall objectives for development in the GSDA. – The preferred development intent for each development precinct. – SDA-wide assessment criteria. Compliance has been demonstrated in Section 6.2.
Whether the proposed development would be subject to public consultation under the local council's planning scheme	Under the Gladstone Regional Council Planning Scheme, the FGP GSDA alignment is zoned 'special purpose'. An MCU for a new utility installation in the special purposes zone is subject to accepted development, where undertaken by a public sector entity, and would not require public notification.
Whether the proposed development would be subject to public consultation if the application was made under the *Planning Act 2016*.	In accordance with Chapter 3, Part 2, Division 2, Section 53 of the *Planning Act 2016*, public notification is required if a development application requires impact assessment, or the application includes a variation request. As the proposed development would be accepted development under the Gladstone Regional Council Planning Scheme, and does not include a variation request, public notification would not be required.



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Legend

- Sensitive Receptors
- Pipe Alignment
- Community Areas
- Gladstone State Development Area

Data Sources:
1. Base Layers (Roads, waterway, locality, LGA etc) @ QSpatial, 2021
2. Property Boundary @ Department of Resources 2021.
3. Indicative Ecology Survey Location(s) @ GAWB 2022
4. Imagery @ Esri, Maxar, GeoEye, Earthstar Geographics, CNES-Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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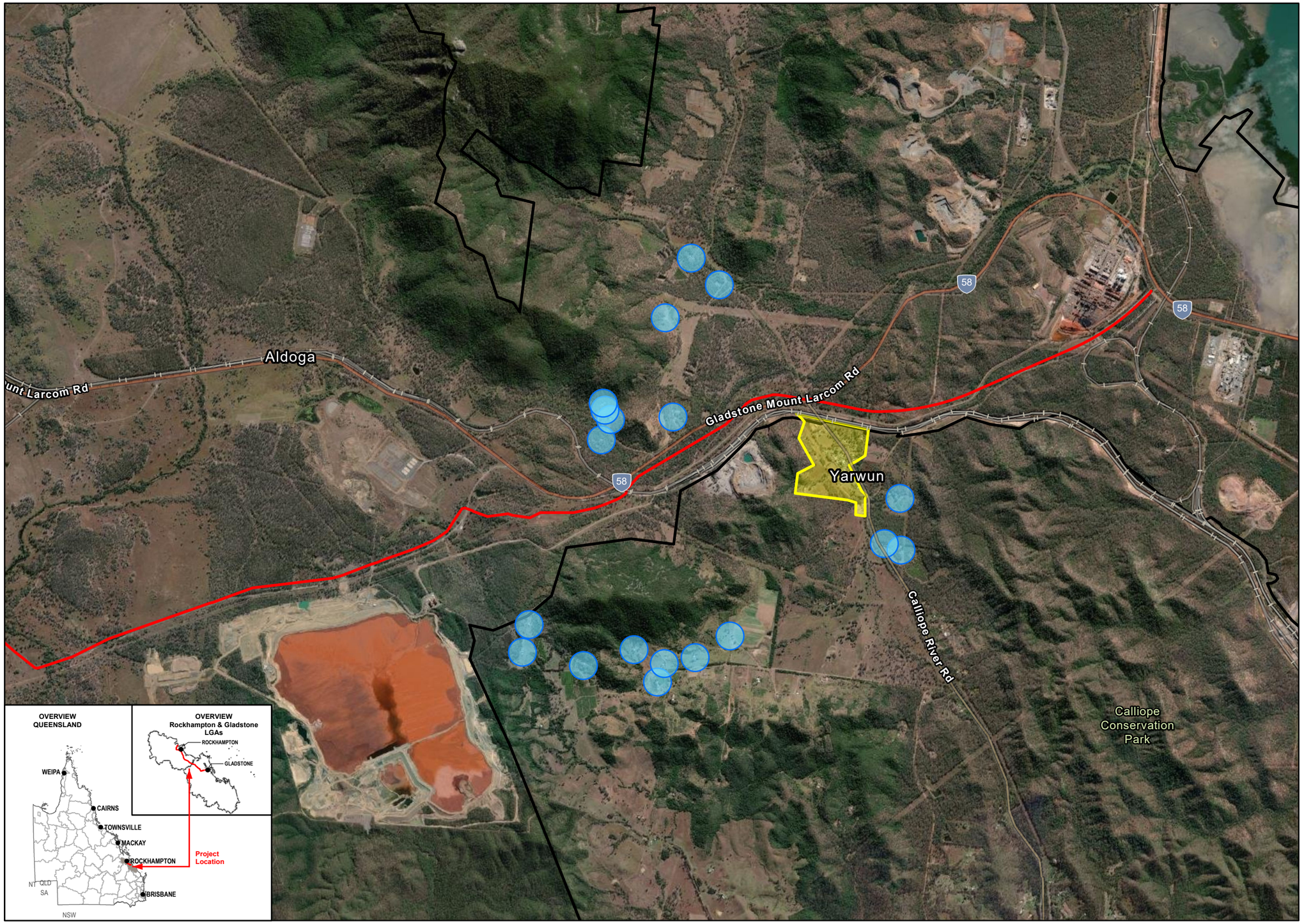
PROJECTION UTM Zone 56
(Datum GDA2020)

Compiled by:ZD17041 Date 10/11/2022

FITZROY TO GLADSTONE PIPELINE PROJECT
FIGURE 2.4a Sensitive Receptors within 2 km
Mount Larcom
000-G-MAP-2638 Version: 1 Date: 10/11/2022



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Legend

- Sensitive Receptors
- Pipe Alignment
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PROJECTION UTM Zone 56
(Datum GDA2020)

Compiled by:ZD17041 Date 10/11/2022

FITZROY TO GLADSTONE PIPELINE PROJECT
FIGURE 2.4b Sensitive Receptors within 2 km
Mount Larcom
000-G-MAP-2638 Version: 1 Date: 10/11/2022

3. Subject Land and Locality

3.1 Location

The FGP GSDA alignment is located within the localities of East End, Aldoga, West Stowe and Yarwun (refer to Figure 2.3a and Figure 2.3b). The FGP GSDA alignment starts at The Narrows Road (pipeline CH 96500) and extends to Hanson Road. The FGP GSDA alignment intersects a number of properties, road reserves and waterways as outlined in Table 3.1. The proposed ROW corridor is presented in Appendix B.

The land tenure types traversed by the FGP GSDA alignment include:

– State-controlled road reserve.
– Local government road reserves, including:
  - Mylrea Road reserve.
  - Algoda Road reserve.
  - Mount Larcom Yarwun Road reserve.
  - Halls Road reserve.
  - Tariginnie Road reserve.
  - Lindherr Road reserve.
  - Two unnamed roads and associated road reserves.
– Freehold land parcels.
– Leased land parcels.
– Unallocated state land / waterway tenure (Larcom Creek).

Appropriate landowner consents have been sought to enable lodgement of this SDA application (MCU and Operational Works). Refer to Table 3.1 and Appendix A.

GAWB is in the process of securing appropriate land tenure for the pipeline infrastructure in the GSDA. This will be in the form of easements and other licences (including wayleaves) as appropriate. GAWB will also obtain Road Corridor Permits and Works on a Road Corridor Permits for pipeline crossings of State government and local government-controlled roads respectively.

The FGP GSDA alignment is subject to further alignment refinement as a result of engagement with landowners (such as GPC) and design refinement for the connection into GAWB's network.

Table 3.1 Properties Traversed by the FGP GSDA Alignment

GAWB Property ID #	Lot and Plan	Landowner	Tenure	Suburb	Landholder	Owners Consent Provided By	Easements Burdening the Land
211	1 SP260750	State of Queensland – (administered via (DoR)	Freehold	Aldoga	OCG	The State of Queensland (represented by DoR / State Land Asset Management (SLAM))	Easements intersected: Nil Other easements: – A on RP610585 to Powerlink
212	Unnamed road	State of Queensland (administered via DoR)	Road Reserve	Aldoga	GRC	The State of Queensland (represented by DoR / SLAM)	-
213	11 SP233094	Aurizon Network Pty Ltd (Aurizon)	Leased Land	Aldoga	Aurizon (as sublessee)	The State of Queensland (represented by TMR (Rail))	Easements intersected: Nil Other easements: – T SP157677 to Powerlink – ZL on SP270568 to APLNG – C SP275210 to GLNG and others
214	1 SP232672	Aurizon	Leased Land	Aldoga	Aurizon (as sublessee)	The State of Queensland (represented by TMR (Rail))	Easements intersected: Nil Other easements: – ZK on SP270567 to APLNG – B SP275210 to GLNG and others
215	140 SP122252	Aurizon	Leased Land	Aldoga	Aurizon (as sublessee)	The State of Queensland (represented by TMR (Rail))	Easements intersected: Nil Other easements: – Easement ZJ on SP270566 to APLNG – Easement A SP275210 to GLNG and others
216	Gladstone Mt Larcom Road	State of Queensland (administered via DoR)	Road Reserve	East End	TMR	The State of Queensland (represented by TMR)	-
216A	2 RP616271	QRN Property Pty Ltd	Freehold	East End	QRN Property Pty Ltd – now Aurizon	Aurizon	-
216B	Gladstone Mt Larcom Road	State of Queensland (administered via DoR)	Road Reserve	East End	TMR	State of Queensland (administered via DoR)	-

GAWB Property ID #	Lot and Plan	Landowner	Tenure	Suburb	Landholder	Owners Consent Provided By	Easements Burdening the Land
217 & 220	25 SP307529	OCG	Freehold	East End	OCG	OCG	Easements intersected: – N on SP157674 to Powerlink Other easements: – B on RP614042 to GAWB – P on SP200847 to GAWB – E on SP114464 to Cement Australia (Queensland)
218	3 SP101558	Aurizon	Leased Land	East End	Aurizon (as sublessee)	The State of Queensland (represented by TMR (Rail))	Other easements: – ZI on SP270565 to APLNG – AB on SP275209 to GLNG
219	1 SP260289	Aurizon	Leased Land	East End	Aurizon (as sublessee)	The State of Queensland (represented by TMR (Rail))	Easements intersected: Nil Other easements: – ZH on SP270564 to APLNG – AA on SP275209 to GLNG
221	Larcom Creek	State of Queensland (administered via DoR)	Unallocated State Land	East End	-	The State of Queensland (represented by DoR / SLAM)	-
222	20 SP272417	OCG	Freehold	East End	OCG	OCG	Easement intersected: – M on SP157673 to Powerlink Other easements: – C and D on RP614043 to GAWB – F and G on SP114464 to Cement Australia (Queensland) – B on SP147877 to MIDQ – K on and Easements L on SP157673 to Powerlink – R on SP200847 to Powerlink – Q on SP200847 to GAWB – J on SP228453 to MIDQ
224	68 SP272417	Minister for Economic Development Queensland (MEDQ)	Freehold	Aldoga	MEDQ	MEDQ	Easements intersected: Nil Other easements: – M on SP157673 to Powerlink

GAWB Property ID #	Lot and Plan	Landowner	Tenure	Suburb	Landholder	Owners Consent Provided By	Easements Burdening the Land
225	Road Reserve	State of Queensland (administered via DoR)	Road Reserve	Aldoga	GRC	The State of Queensland (represented by DoR / SLAM)	-
226	8 SP245936	MEDQ	Freehold	Aldoga	MEDQ	MEDQ	-
227	Mylrea road	State of Queensland (administered via DoR)	Road Reserve	Aldoga	GRC	The State of Queensland (represented by DoR / SLAM)	-
229	Algoda Road	State of Queensland (administered via DoR)	Road Reserve	Aldoga	GRC	The State of Queensland (represented by DoR / SLAM)	-
230	2 SP260764[1]	GAWB	Freehold	Aldoga	GAWB	Not applicable	
231	7 SP177782	Gladstone Ports Corporation Limited (GPC)	Freehold	Aldoga	GPC	GPC	Easements intersected: – A on RP614350 to GAWB – H on RP621001 to Duke Queensland + DEI Queensland (TiC) Other easements: – A on RP14745 to GAWB – A on RP614349 and Easement B on RP614900 to GAWB – A on RP14349 and Easement A on RP14350 to POR 32 and 51 and Lot 2 on RP14356 – F on RP620999 to PGT Australia – G on RP621000 to Duke Queensland + DEI Queensland (TiC) – I on SP165457 to Comalco Aluminium

[1] A separate SDA application was made by GAWB for Aldoga Reservoirs and ancillary infrastructure on Lot 2 on SP260764 and the Aldoga Road reserve within the GSDA. A corresponding SDA Approval has been issued, reference AP2022/003 (dated 30 August 2022). Lot 2 on SP260764 is therefore not required to be assessed as part of this SDA application (MCU and Operational Works).

GAWB Property ID #	Lot and Plan	Landowner	Tenure	Suburb	Landholder	Owners Consent Provided By	Easements Burdening the Land
232	21 SP115224	GPC	Freehold	West Stowe	GPC	GPC	Easement intersected: – C on RP614750 to GAWB Other easements: – J on RP621002 to Alinta Energy (now Jemena) – A and B on RP614750 to GAWB
233	Mount Larcom Yarwun Road	State of Queensland (administered via DoR)	Road Reserve	West Stowe	GRC	The State of Queensland (represented by TMR)	-
234	91 SP122250	Aurizon	Leased Land	West Stowe	Aurizon (as sublessee)	The State of Queensland (represented by TMR (Rail))	-
235 & 237	13 RP620157	GPC	Freehold	Yarwun	Gladstone Ports Corporation	GPC	Easement intersected: – K on RP621003 to Alinta Energy Other easement: – A and B on RP616339 to GAWB – L on RP621003 to Alinta Energy (now Jemena)
236	Halls Road	State of Queensland (administered via DoR)	Road Reserve	Yarwun	GRC	The State of Queensland (represented by DoR / SLAM)	Easements intersected: Nil Other easements: – Easement A on RP614345 to GAWB – Easement M on RP803405 to Alinta
238	22 SP115225	GPC	Freehold	Yarwun	GPC	GPC	-
239	Gladstone Mount Larcom Road	State of Queensland (administered via DoR)	Road Reserve	Yarwun	TMR	The State of Queensland (represented by TMR)	-

GAWB Property ID #	Lot and Plan	Landowner	Tenure	Suburb	Landholder	Owners Consent Provided By	Easements Burdening the Land
241	25 SP115226	GPC	Freehold	Yarwun	GPC	GPC	Easements intersected: – D on SP119065 to Alinta Energy (now Jemena), GAWB and Queensland Cement Limited – C on SP119065 to GAWB and Queensland Cement Limited
242	31 SP129157	GPC	Freehold	Yarwun	GPC	GPC	Easements intersected: – B on RP614758 to GAWB – N on RP801043 to Alinta Energy (now Jemena)
243	Tariginnie Road	State of Queensland (administered via DoR)	Road Reserve	Yarwun	GRC	The State of Queensland (represented by DoR / SLAM)	-
244	Gladstone Mount Larcom Road	State of Queensland (administered via DoR)	Road Reserve	Yarwun	TMR	The State of Queensland (represented by TMR)	-
245	25 CP859457	GPC	Freehold	Yarwun	GPC	GPC	-
247	28 SP115227	GPC	Freehold	Yarwun	GPC	GPC	-
248	Lindherr Road	State of Queensland (administered via DoR)	Road Reserve	Yarwun	GRC	The State of Queensland (represented by DoR / SLAM)	-
249	1 RP911260	GPC	Freehold	Yarwun	GPC	GPC	-
250	54 SP137048	GPC	Freehold	Yarwun	GPC	GPC	Easement intersected: – B on RP215237 to Ergon
251	7 SP145439	GPC	Freehold	Yarwun	GPC	GPC	Easements intersected: – Y on SP111748 to Powerlink – F on SP218635 to Powerlink – A on SP159092 to Ergon
255	Gladstone-Mt Larcom Road / Hanson Road	State of Queensland (administered via DoR)	Road Reserve	Yarwun	TMR	The State of Queensland (represented by TMR)	-

3.2 Land Uses

The proposed FGP GSDA alignment is within the GDSA 'Materials Transportation and Services Corridor Precinct'. The FGP GSDA alignment is considered to be compatible with the objectives of the GSDA as it will support the expanding industrial development in Gladstone, due to the growing need to provide a reliable supply of water for growth of current customers and future demands. An assessment of the proposed FGP GSDA alignment against the provisions of the GSDA Development Scheme is presented in Section 6.2.

The FGP GSDA alignment traverses a range of different land uses. The dominant land uses of the properties intersected by the alignment of interest are defined as 'grazing native vegetation', 'transport and communication' and 'other minimal use'.

The following sections describe the key land uses and potential effects of the FGP GSDA alignment. Potential impacts to relevant infrastructure and utilities, including roads and rail, is discussed in Section 3.3.

3.2.1 Surrounding Land Uses

Existing Land Uses

Land uses surrounding the FGP GSDA alignment include:

- Existing Infrastructure including State-controlled roads (Gladstone Mount Larcom Road and the Bruce Highway), local government-controlled roads, rail lines, electricity infrastructure and gas pipelines.
- Industrial uses are present in the vicinity of the FGP GSDA alignment including RTA Yarwun site, Northern Oil Refinery quarrying, RTA Red Mud Repository and land where exploration permits for minerals are held.
- Established agricultural properties.
- SGIC SDA to the north of the FGP GSDA alignment.
- Sensitive receptors (such as residential properties).
    - These are further detailed in Section 3.4.
- Environmental areas and waterways including Calliope Conservation Park and Mount Stowe State Forest.
    - These are further detailed in Section 3.5.

The FGP GSDA alignment is considered to be consistent and compatible with the surrounding land uses. The Project is also in support of the surrounding land uses in the provision of water security.

Future Land Uses

Future land uses within this area of the GSDA may include industry, infrastructure, or agriculture. The FGP GSDA alignment typically follows other linear infrastructure and is located within the 'Materials Transportation and Services Corridor Precinct' limiting the impact the FGP GSDA alignment may have on future development. The Project is also in support of the future development via the provision of water security.

3.2.2 Intersected Land Uses

Existing Land Uses

Land uses associated with freehold land traversed by the FGP GSDA alignment are discussed in Table 3.2. The FGP GSDA alignment will be underground / buried its full length enabling above ground land uses to continue where compatible.

Table 3.2 Freehold Land Uses

GAWB Property ID #	Lot and Plan	Landowner	Existing Land Use	Compatibility of Pipeline
211	1 SP260750	State of Queensland	Linear infrastructure, grazing, native vegetation	The FGP GSDA alignment intersects this property approximately 150 m from its' southern boundary, the alignment is required in this locality due to the existing easement in SGIC SDA.
216A	2 RP616271	Aurizon Properties Pty Ltd	Aurizon infrastructure	The FGP GSDA alignment intersects the western extent of this property, it forms part of the North Coast Line operation, impacts are not anticipated. A wayleave application has been submitted to Aurizon.
217 & 220	25 SP307529	OCG	Linear infrastructure, grazing, native vegetation	The FGP GSDA alignment runs parallel to existing linear infrastructure (offset by approximately 100 m) minimising impact to other portions of the property.
222	20 SP272417	OCG	Grazing, native vegetation	The FGP GSDA alignment is parallel and adjacent to the property boundary minimising impact to other portions of the property.
224	68 SP272417	MEDQ	Grazing, native vegetation	The FGP GSDA alignment is parallel and adjacent to the property boundary and the road reserve, minimising impact to other portions of the property.
226	8 SP245936	MEDQ	Grazing, native vegetation	The FGP GSDA alignment is parallel and adjacent to the property boundary and the road reserve, minimising impact to other portions of the property.
231	7 SP177782	GPC	Grazing, native vegetation	The FGP GSDA alignment impacts the northern corner of this lot and is in proximity to the property boundary.
232	21 SP115224	GPC	Grazing, native vegetation	The FGP GSDA alignment follows the property boundaries where practical.
235	13 RP620157	GPC	Other minimal use	The FGP GSDA alignment is parallel to the property boundary (offset by approximately 70 m).
237	13 RP620157	GPC	Other minimal use	The FGP GSDA alignment intersects corner of the property boundary.
238	22 SP115225	GPC	Other minimal use	The FGP GSDA alignment follows an existing access track and property boundaries where practical, minimising impact.
241	25 SP115226	GPC	Grazing, native vegetation	The FGP GSDA alignment follows property boundaries where practical, minimising impact.
242	31 SP129157	GPC	Grazing, native vegetation	The FGP GSDA alignment follows property boundaries where practical, minimising impact.
245	25 CP859457	GPC	Other minimal use	The FGP GSDA alignment intersects this small property.
247	28 SP115227	GPC	Other minimal use	The FGP GSDA alignment follows property boundaries where practical, minimising impact.
249	1 RP911260	GPC	Other minimal use	The FGP GSDA alignment impacts the northern corner of this lot and is in proximity to the property boundary.
250	54 SP137048	GPC	Other minimal use	The FGP GSDA alignment is parallel to the property boundary (offset by approximately 30 m).
251	7 SP145439	GPC	Infrastructure, other minimal use	The FGP GSDA alignment was selected to minimise impact upon existing infrastructure. Consultation with infrastructure owners is ongoing.

Future Land Uses

There are no known future land uses of freehold properties at this stage; however, consultation with landowners is ongoing. There will be future land development constraints on the directly impacted land (e.g., the FGP GSDA alignment is to remain accessible); however, the impact of this has been minimised where possible by aligning the FGP GSDA alignment near property boundaries or aligning parallel with other infrastructure.

3.2.3 Mining Tenements

The current mining tenements traversed by the FGP GSDA alignment are summarised as follows:

– Production permits: Nil.
– Infrastructure permits, namely petroleum pipeline licences (PPL):
  - Arrow Bowen Pipeline (PPL 2016) (potential future pipeline).
  - GLNG (PPL 166).
  - APA Group (PPL 154).
  - APLNG (PPL 163).
  - Jemena (PPL 30).
  - Australia Gas Networks (QLD) Limited (PPL 60).

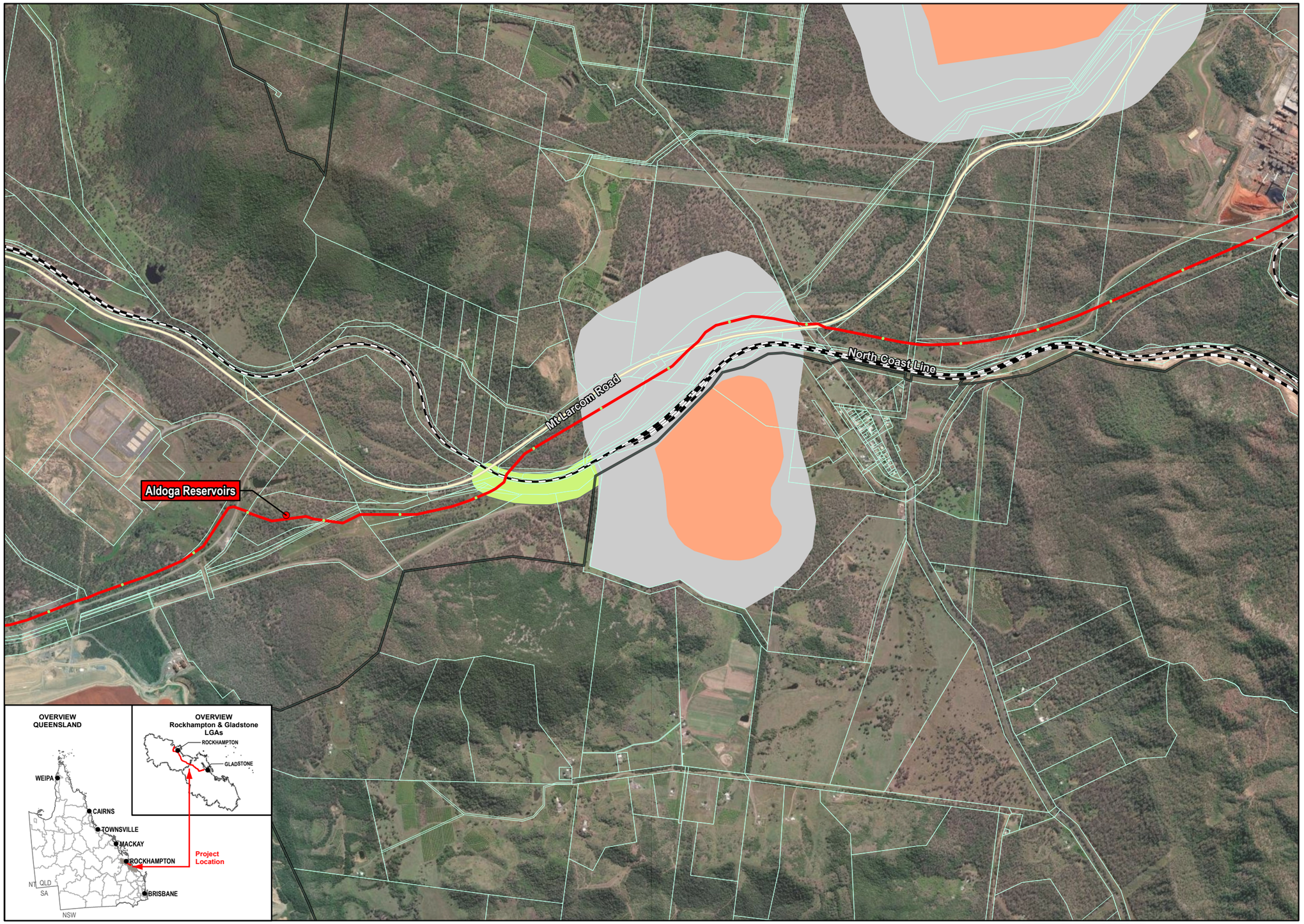
  Infrastructure proponents are discussed in Section 3.3.3.
– Exploration permits:
  - Exploration permit geothermal for Within Energy Pty Ltd (permit number 2028).
  - No impacts to the exploration permit are anticipated as the FGP GSDA alignment is within the 'Materials Transportation and Services Corridor Precinct' of the GSDA and follows existing linear infrastructure where possible.

A number of other current mining tenements are surrounding the FGP GSDA alignment (within 2 km) including a mineral development licence and a mineral exploration permit, impacts to these areas are not anticipated.

3.2.4 Key Resource Area

The FGP GSDA alignment intersects the Yarwun Key Resource Area (KRA) 20 Separation Area and Transport Route as shown in Figure 3.1. KRAs protect quarry materials, or extractive resources, from being rendered inaccessible by urban expansion. KRAs are designed to maintain adequate separation distances between sensitive uses and any future extractive industry. Any development proposal within a KRA is assessed to ensure that existing or future extractive industries cannot be significantly affected by the encroachment of sensitive uses.

The FGP GSDA alignment traverses the Transport Route, which is identified as Mount Larcom Yarwun Road, a local road reserve. As the road is immediately adjacent to the North Coast Rail Line the crossing method proposed is trenchless (micro tunnelling). GAWB will consult with interested parties during construction to minimise impacts to the Transport Route. Overall, the FGP GSDA alignment is considered to be a compatible use within the Yarwun KRA 20 Separation Area as it is not sensitive use.



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Legend

- Chainage
- Infrastructure Locations
- Pipe Alignment
- Roads
- Railways
- Gladstone State Development Area
- Property Boundary

Key Resource Areas

- Resource Processing Area
- Separation Area
- Transport Route Separation Area

Data Sources:
1. Base Layers (Roads, waterway, locality, LGA etc) @ QSpatial, 2021
2. Cadastral data - Queensland series @ QSpatial, 2022
3. State Development Area precincts - Gladstone SDA @ QSpatial, 2015
4. Imagery @ Esri, Maxar, GeoEye, Earthstar Geographics, CNES-Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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FITZROY TO GLADSTONE PIPELINE PROJECT
Figure 3.1 Key Resource Area
000-G-MAP-2201 Version: 3 Date: 13/06/2022

3.3 Infrastructure and Utilities

The FGP GSDA alignment intersects a number of infrastructure and utility alignments. GAWB has starting consulting with various infrastructure and utility providers and is committed to further consultation throughout the Project. The following sections outline these intersections and the compatibility of the FGP GSDA alignment.

3.3.1 Roads

Existing Road Infrastructure

A number of road reserves will be traversed or impacted directly by the FGP GSDA alignment as identified in Table 3.3. The FGP GSDA alignment design is being advanced to minimise direct impact to roads where practical by the use of trenchless installation methods (such as horizontal thrust boring or micro tunnelling).

Works within the road reserves will progress in consultation with the relevant authority, either GRC or TMR, and under relevant road corridor permits. A preliminary works on roads application has been submitted to GRC for local road reserve crossings and an in-principal approval has been received, MBJV is in the process of submitting the full application(s). Constructing pipelines within road reserves, including crossing of roads, is standard practice and impacts are anticipated to the temporary and minor for most roads. Appropriate management will be implemented in accordance with the road corridor permits and legislative requirements.

Table 3.3 Roads Land Uses

GAWB Property ID #	Road	Pipeline CH	Authority	Road Infrastructure Present	Compatibility
212	Unnamed road	CH 97300	GRC	Reserve only	Minor road crossing - trenched method proposed. Consultation with Council is occurring.
216, 216B	Gladstone Mount Larcom Road (and North Coast Line)	CH 97,860	TMR	Sealed State road	Major road trenchless crossing – micro-tunnel method proposed. Consultation with TMR is occurring.
225	Aldoga Road	CH 105400 to CH 105800	GRC	Sealed road	Parallel with the road. Consultation with Council is occurring.
227	Mylrea road	CH 107200	GRC	Sealed road	Minor road crossing – trenched method proposed. Consultation with Council is occurring.
229	Algoda Road	CH 107200 to CH 108500	GRC	Sealed road	The alignment is partly parallel with road. Minor road crossing – thrust bore method proposed. Consultation with Council is occurring.
233	Mount Larcom Yarwun Road	CH 110650	GRC	Gravel road	Major road trenchless crossing – micro-tunnel method proposed. Consultation with Council is occurring.
236	Halls Road	CH 111300	GRC	Gravel road	Minor road crossing - trenched method proposed. Consultation with Council occurring.
239	Gladstone Mount Larcom Road	CH 112915	TMR	Sealed State road	Major road trenchless crossing – micro-tunnelling method proposed. Consultation with TMR is occurring.
243	Tariginnie Road	CH 112500	GRC	Gravel road	Minor road crossing - trenched method proposed. Consultation with Council is occurring.

GAWB Property ID #	Road	Pipeline CH	Authority	Road Infrastructure Present	Compatibility
248	Lindherr Road	CH 113200	GRC	Gravel road	Minor road crossing - trenched method proposed. Consultation with Council is occurring.
255	Gladstone-Mt Larcom Road / Hanson Road	CH 116700	TMR	Sealed State road	The pipeline does not cross the road, it joins with the existing water network in the road corridor.

Future Road Infrastructure

At the time of preparing this Planning Report, there were no known future road upgrades or projects planned. GAWB is consulting with relevant authorities as part of the Project planning, part of this consultation will include consideration of any planned or proposed road upgrades.

3.3.2 Rail Land

Existing Rail Infrastructure

The leased land parcels impacted are Aurizon railway land as described in Table 3.4. GAWB has submitted Wayleave applications to Aurizon for the FGP GSDA alignment where Aurizon land is impacted and is currently finalising the commercial terms and conditions. The final design of the railway crossing is being undertaken in consultation with Aurizon, and in consideration of relevant design guidelines. The FGP GSDA alignment design and construction has been advanced in a way to minimise impacts upon rail infrastructure and railway use.

Table 3.4 Leased Land / Rail Land

GAWB Property ID #	Lot and Plan	Pipeline CH	Rail Line	Rail Infrastructure Present	Compatibility of Pipeline
213	11 SP233094	CH 97800	North Coast Line	Vacant land	Pipeline will likely be trenched in this property. Pipeline is compatible with vacant land use.
214	1 SP232672	CH 97800		Vacant land and access routes	Entry/exit put for the trenchless methods of the crossing may be located within this lot. Pipeline is compatible with vacant land and allows for future access via this lot to continue.
215	140 SP122252	CH 97800		Railway	Pipeline will cross the railway at an approximate 90º angle to the reserve via trenchless methods. Pipeline is compatible and has been designed in accordance with relevant Aurizon requirements. A wayleave application has been submitted to Aurizon.

GAWB Property ID #	Lot and Plan	Pipeline CH	Rail Line	Rail Infrastructure Present	Compatibility of Pipeline
218	3 SP101558	CH 101500	Blackwater System	Railway	Pipeline will cross the railway at an approximate 90º angle to the reserve via trenchless methods (thrust bore). Pipeline is compatible and has been designed in accordance with relevant Aurizon requirements. A wayleave application has been submitted to Aurizon.
219	1 SP260289	CH 101500		Vacant land and access routes	Entry/exit put for the trenchless methods of the crossing may be located within this lot. Pipeline is compatible with vacant land and allows for future access via this lot to continue.
234	91 SP122250	CH 110675	North Coast Line	Railway	Pipeline will cross the railway at an approximate 90º angle to the reserve via trenchless methods. Pipeline is compatible and has been designed in accordance with relevant Aurizon requirements. A wayleave application has been submitted to Aurizon.

Future Rail Infrastructure

At the time of preparing this Planning Report there were no known future rail upgrades or projects planned. GAWB is consulting with relevant authorities as part of the Project, and consultation includes consideration of any planned or proposed rail upgrades.

3.3.3 Other Infrastructure and Utilities

GAWB has been working to identify affected third party infrastructure and services, and corresponding owners and operators, to put in place relevant interface arrangements (including crossing deeds or other agreements, approvals and/or consents) with those affected owners and/or operators to enable the construction, as well as the ongoing operation and maintenance, of the Project.

GAWB has identified affected third party infrastructure, including electricity, water, sewer, gas, telecommunication services, through information from the OCG, Queensland government databases and mapping platforms (e.g. Queensland Globe), searches at Queensland government departments (e.g. land title and mining tenement searches at DoR) and other publicly available information. This information has been uploaded into GAWB's GIS (web) portal. GAWB has been, and continues to, seek to independently verify this information and refine the GIS portal through Before You Dig Australia investigations, Public Utility Plans and discussions with relevant landowners/third party infrastructure owners.

The information has allowed GAWB to assess whether any of the activities associated with construction, operation and maintenance of the FGP GSDA alignment will impact any third-party infrastructure and to understand what actions would be required for the FGP and third-party infrastructure to co-exist. This information also continues to inform the FGP GSDA alignment, design and construction methodology that will ultimately be used by MBJV.

Where GAWB has identified the FGP GSDA alignment intersects with third party owned infrastructure, it has considered whether the interaction between the FGP GSDA alignment and the relevant third-party infrastructure requires a crossing deed or other agreement to manage the interface, or whether relocation of the infrastructure, or other design feature, may be required. MBJV will be responsible for the detailed design of the FGP GSDA alignment so will need to develop and confirm the technical requirements to the satisfaction of GAWB, the third-party infrastructure owners and/or operators as well as the relevant landowners (including any requirements in the interface or land tenure arrangements).

If impacts are identified, MBJV will ensure that disruption in disconnecting, relocating and reconnecting third party infrastructure, including public utilities, is kept to a minimum. MBJV and GAWB have been in consultation with all affected infrastructure owners and/or operators as well as affected landowners and/or occupiers to arrange for a mutually acceptable time for such works. MBJV will provide temporary supply arrangements, if required.

Emergency response and incident management and investigation procedures will be in place for any unplanned disruption to services as a result of the construction contactor's activities.

The process adopted for managing the interfaces with third party infrastructure includes:

– Undertaking a desktop assessment to identify the infrastructure (largely complete).
– Identifying any land tenure (e.g. easement, licence etc) conditions and/or requirements. This will be undertaken by GAWB.
– Requesting Before You Dig Australia information. This will be undertaken by MBJV.
– Surveying the actual locations of the infrastructure and confirming clearance distances. This will be undertaken by MBJV.
– Ground proofing the location through undertraining utility locating, potholing and/or ground penetrating radar (GPR). This will be undertaken by MBJV.
– Consulting with the infrastructure owners and/or operators as well as relevant landowners and/or occupiers to confirm and agree the management of the interface. This will be undertaken by GAWB and MBJV.
– Providing design drawings of the crossing or relocation as required. This will be undertaken by MBJV.
– Consulting with affected third party infrastructure owners and/or operators as well as affected landowners and/or occupiers to agree to protocols around any disruption to services. This will be undertaken by GAWB and MBJV.

To date GAWB has consulted with the following third-party infrastructure owners and operators:

– APLNG.
– GLNG.
– APA (owner) and QGC (operator).
– Rio Tinto Yarwun.
– Jemena.
– Cement Australia.
– GRC.
– Telstra.

Existing Land Uses

The FGP GSDA alignment intersects several existing infrastructure and utilities in addition to rail and road (refer to Sections 3.2.1 and 3.3.2). These are outlined in Table 3.5 and depicted in Figure 3.2a and Figure 3.2b.

The key existing infrastructure directly impacted includes:

– Telstra and Optus communication network:
  - The design process has considered the Telstra and Optus communication networks. GAWB will consult with Telstra and Optus to determine a suitable outcome for the infrastructure crossings.
  - Design has been progressed in accordance with relevant design standards and requirements.
– Pipelines:
  - Pipelines traversed include:
    – Gas pipelines owned and managed by:
      - GLNG.
      - APA Group.
      - APLNG.
      - Jemena Queensland Gas Pipeline.

        - Australian Gas Networks Limited.
        - APA Group.
    - GRC owned sewer rising main.
    - GAWB owned water pipelines.
    - Cement Australia and RTA slurry pipelines.
  - The design process has considered these pipeline localities and will meet utility provider requirements, such as depth of cover and access.
  - GAWB will consult with the various utility providers to determine a suitable outcome for the infrastructure.
- Electricity network:
  - The design process has considered the existing electricity infrastructure including Ergon and Powerlink. GAWB will consult with Ergon and Powerlink to determine a suitable outcome for the infrastructure.
- GAWB watermains:
  - The design process has included an appropriate depth of cover as per GAWB standard procedures to minimise impact.

Water pipelines are commonly designed in consideration of these types of utility interactions and no major impacts to the utilities are anticipated (e.g. no relocations of existing utilities are proposed). Section 7 provides a discussion of the potential impacts the proposed works may have on existing infrastructure during the construction and operational phases.

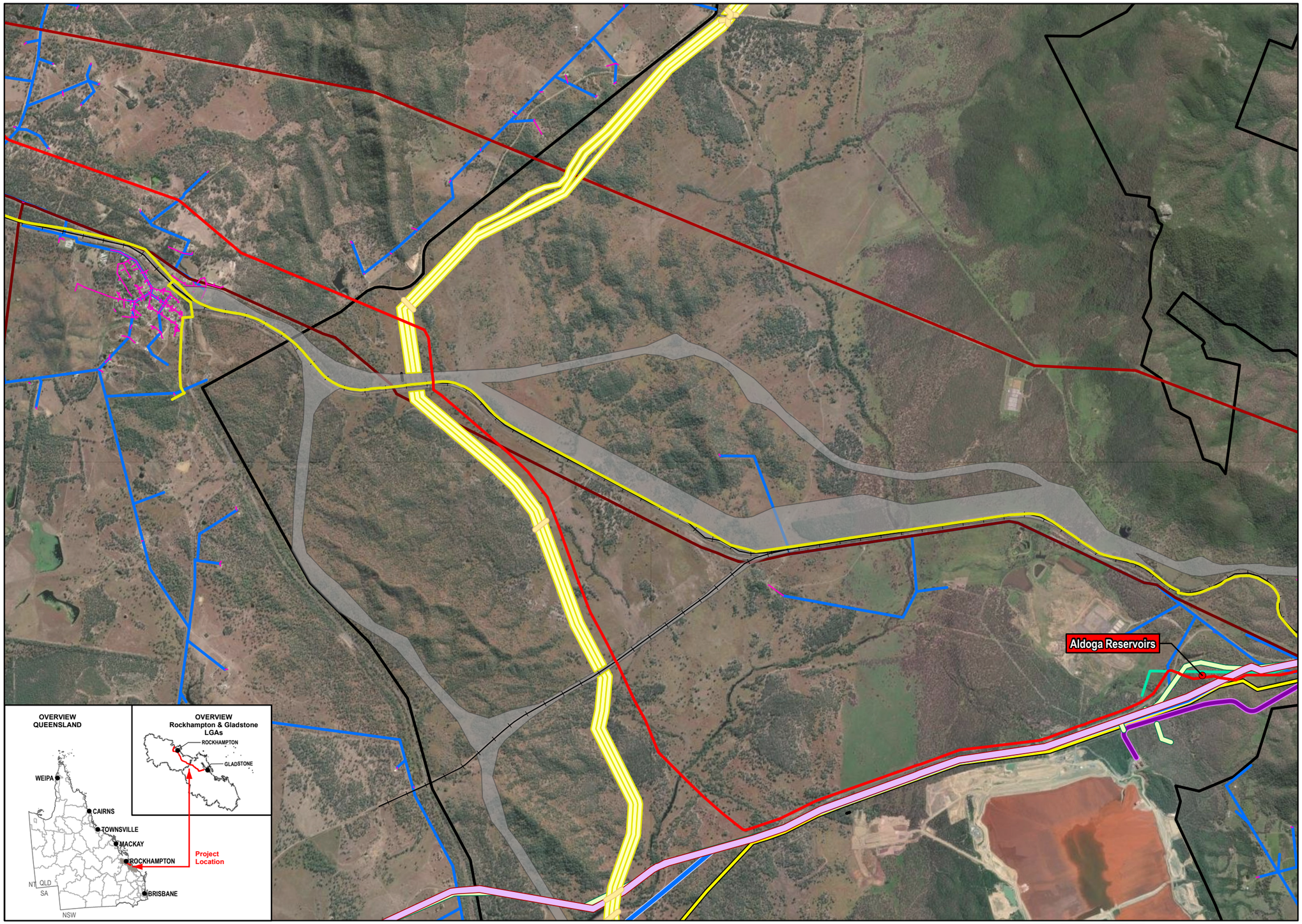
Table 3.5 Existing Infrastructure and Utilities that Intersect the Pipeline

Component/ Infrastructure	Approx. Pipeline CH	Lot and Plan	Approximate Coordinates	Additional Information
GLNG pipeline APA Group pipeline APLNG pipeline	CH 96500	1 SP260750	151.005, -23.814	Three pipelines are traversed. APA Group pipeline is the former QCLNG pipeline. The GLNG, APA and APLNG pipelines have corresponding PPLs (166, 154 and 163 respectively).
Optus phone network	CH 97400	140 SP122252	151.009, -23.820	
Ergon transmission line	CH 98500	26 SP307529	151.016, -23.827	
Telstra infrastructure	CH 102400	25 SP307529	151.033; -25.858	
Powerlink transmission line	CH 103000	20 SP272417	151.034, -23.859	Easement is designated land for transmission purposes. Not constructed, easement only.
Telstra infrastructure	CH 108350	Road reserve – Aldoga Road	151.085, -23.849	
Ergon transmission line	CH 108350	Road reserve – Aldoga Road	151.086, -23.849	
Telstra infrastructure	CH 108400	Road reserve – Aldoga Road	151.086, -23.849	
GAWB existing pipelines	CH 108500	2 SP260764	151.119, -23.839	Treated water and East End pipelines.
Cement Australia slurry pipeline	CH 109000	2 SP260764 and 7 SP177782	151.092, -23.850	
Jemena Pipeline	CH 109000	7 SP177782	151.092, -23.850	PPL 30
Ergon transmission line	CH 109800	21 SP115224	151.099, -23.850	
Ergon transmission line	CH 109900	21 SP115224	151.101, -23.849	
Ergon transmission line	CH 110000	21 SP115224	151.101, -23.849	

Component/ Infrastructure	Approx. Pipeline CH	Lot and Plan	Approximate Coordinates	Additional Information
Cement Australia slurry pipeline	CH 110100	21 SP115224	151.102, -23.849	
GAWB existing pipeline	CH 110100	21 SP115224	151.102, -23.849	
Telstra infrastructure	CH 110250	Road reserve – Quarry Road	151.103, -23.848	
Optus phone network	CH 110250	91 SP122250	151.103, -23.848	
Jemena Pipeline	CH 110300	13 RP620157	151.103, -23.847	PPL 30
Ergon transmission line	CH 110800	13 RP620157	151.107, -23.845	
Telstra infrastructure	CH 111300	Road reserve – Halls Road	151.112, -23.843	
Telstra infrastructure	CH 111600	22 SP115225	151.114, -23.841	
Telstra infrastructure	CH 111800	25 SP115226	151.115, -23.840	
Telstra infrastructure	CH 112200	31 SP129157	151.119, -23.839	
Cement Australia slurry pipeline	CH 112200	31 SP129157	151.119, -23.839	
GAWB existing pipeline	CH 112200	31 SP129157	151.119, -23.839	
Jemena Pipeline	CH 112250	31 SP129157	151.119, -23.839	PPL 30
Ergon transmission line	CH 112600	Road reserve – Gladstone Mount Larcom Road.	151.123, 23.839	
Telstra infrastructure	CH 113000	28 SP115227	151.124, -23.840	
Ergon infrastructure	CH 114000	54 SP137048	151.135, -23.840	
RTA Slurry pipeline	CH 114000	54 SP137048	151.140, -23.839	
Australian Gas Networks (QLD) Limited	CH 115000	7 SP145439	151.142, -23.838	Formerly Envestra (Qld) Limited gas pipeline. PPL 60
APA Group gas pipeline	CH 115350	7 SP145439	151.143, -23.838	
Powerlink high voltage transmission line	CH 115500	7 SP145439	151.151, -23.835	
RTA Coal Conveyor Firewater Line	CH115750	7 SP145439	151.152, -23.833	
Powerlink high voltage transmission line	CH 115800	7 SP145439	151.153, -23.834	Easement designated land for transmission purposes.
Ergon transmission line	CH 116000	7 SP145439	151.155, -23.833	
GRC sewer main	CH 116000	7 SP145439	151.159, -23.829	
Ergon transmission line	CH 116600	Gladstone-Mount Larcom Road	151.158, -23.830	

Future Land Uses

At the time of preparing this Planning Report, the Arrow Bowen Pipeline was the only identified potential future infrastructure and/or utilities. GAWB is consulting with relevant authorities as part of the Project planning, which includes identifying any planned or proposed infrastructure and/or utilities that may impact the FGP GSDA alignment.



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Legend

- Infrastructure Locations
- Pipe Alignment
- LNG DAP (20210909)
- LNG DAP (20210909)
- Cement Australia Slurry Pipeline
- GAWB Existing Pipeline East End
- Jemena Pipelines
- OPTUS Phone Network
- POWERLINK High Voltage Lines
- RTA Slurry Pipelines
- SGP Proposed Pipelines
- Telstra Communication Network
- Railways SHG
- Future Rail Corridor

ERGON LV Network (within 5km)

- LV Cable
- LV Overhead Line

ERGON Network (within 5km)

- HV Cable; HV Line
- TR Cable; TR Line
- Gladstone State Development Area

Data Sources:
1. Base Layers (Roads, waterway, locality, LGA etc) @ QSpatial, 2021
2. Cadastral data - Queensland series @ QSpatial, 2022
3. State Development Area precincts - Gladstone SDA @ QSpatial, 2015
4. Imagery @ Esri, Maxar, GeoEye, Earthstar Geographics, CNES-Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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FITZROY TO GLADSTONE PIPELINE PROJECT
Figure 3.2a Existing Infrastructure and Utilities
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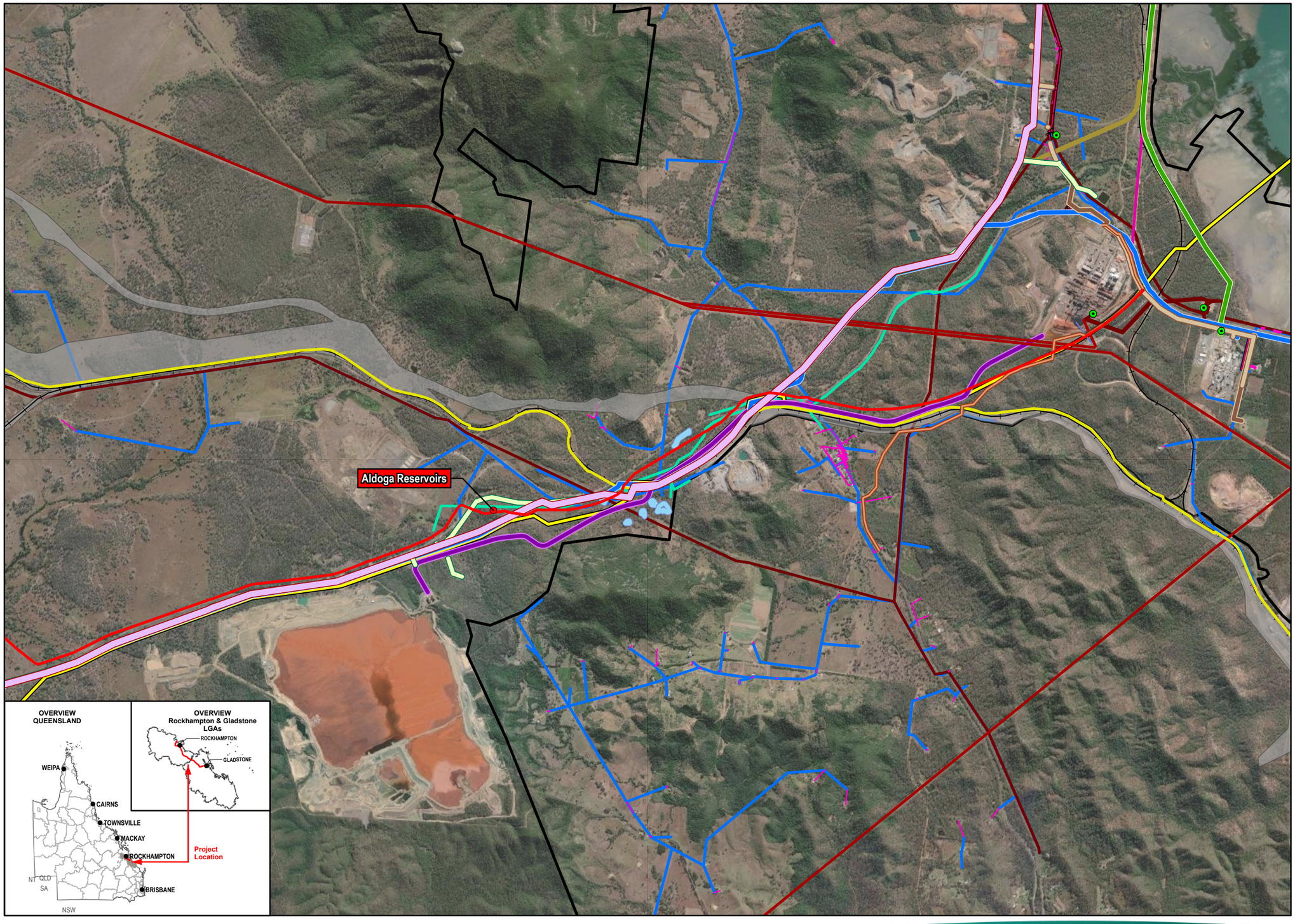

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Legend

- Infrastructure Locations
- ERGON Zone Substations (within 5km)
- Pipe Alignment
- APA (New Easements) DBYD
- Cement Australia Slurry Pipeline
- Dams SHG
- GAWB Existing Pipeline East End
- GRC Sewer Mains (Comfirm)
- GRC Sewer Rising Main (Comfirm)
- Jemena Pipelines
- OPTUS Phone Network
- Orica Ammonia 150AUW (DBYD)
- Orica Cables (DBYD)
- Orica Caustic (DBYD)
- POWERLINK High Voltage Lines
- RTA Coal Conveyor Firewater Lines
- RTA Multiple Infrastructure SHG
- RTA Overland Conveyor
- RTA Slurry Pipelines
- RTA Weatherstations
- SGP Proposed Pipelines
- Telstra Communication Network
- Tradewaste Pipelines
- Transpacific TICOR Pipelines
- Railways SHG
- Future Rail Corridor

ERGON LV Network (within 5km)

- LV Cable
- LV Overhead Line

ERGON Network (within 5km)

- HV Cable; HV Line
- TR Cable; TR Line
- Gladstone State Development Area

Data Sources:
1. Base Layers (Roads, waterway, locality, LGA etc) @ QSpatial, 2021
2. Cadastral data - Queensland series @ QSpatial, 2022
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FITZROY TO GLADSTONE PIPELINE PROJECT

Figure 3.2b Existing Infrastructure and Utilities

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3.4 Community Values

Community values include surrounding landscape and amenity of the area, tourism values and sensitive receptors.

Sensitive receptors are identified within the Queensland Environmental Protection Policies (EPPs), specifically the *Environmental Protection (Air) Policy 2019* and *Environmental Protection (Noise) Policy 2019*. Sensitive receptors include places such as residences, education facilities, hospitals, commercial and retail activities, and protected areas. A number of sensitive receptors are located within approximately 2 km of the FGP GSDA alignment and are identified as follows and displayed in Figure 2.4:

– Mount Larcom township approximately 750 m to the west of the FGP GSDA alignment:
  - Local residences.
  - Mount Larcom State School.
  - Mount Larcom Medical Centre.
  - Open space parks and gardens including Mount Larcom Showground.
  - Commercial and retail infrastructure including Mount Larcom Police Station.
  - Mt Larcom Library.
– Yarwun township approximately 600 m to the south of the FGP GSDA alignment:
  - Local residences.
  - Yarwun State School.
  - Open space parks and gardens.
  - Commercial and retail infrastructure.
– Nineteen rural residences.
– Agricultural properties.
– Environmental values (refer to Section 3.5).
– Cultural heritage values (refer to Section 3.6).

Aspects that may affect community values were assessed within *Chapter 15 – Social and Economic Environment* and *Chapter 17 – Landscape and Visual Amenity Assessment* of the EIS (Arup, 2008) (refer to Appendix C) with key outcomes summarised below. The community values outlined within the EIS, including sensitive receptors, are similar to the current values, therefore the assessment within the EIS is still relevant. The part of the Project subject to this SDA application (MCU and Operational Works) is the section of Project within the GSDA only, and community value impacts are anticipated to be localised and manageable.

Section 7 provides a discussion of the potential impacts the proposed works may have on community values during the design, construction and operational phases and the associated management.

3.4.1 Transport and Traffic

The road network in the GSDA that may be utilised includes regionally and locally significant roads, with the major roads established for the industry located within the GSDA.

The traffic generated during construction of the FGP GSDA alignment will include:

– Transportation of construction equipment to/from the FGP GSDA alignment.
– Delivery of pipe.
– Delivery of construction materials.
– Transport for construction workers.

MBJV will identify and confirm preferred access routes and obtain any required permits from TMR or GRC as relevant. The current base case for the construction is to utilise the existing road network to access the alignment, with access undertaken along the FGP GSDA alignment within the ROW.

During operation, there is expected to be negligible increase in traffic on the local road network. Occasional access via four-wheel drive or maintenance by heavy machinery may be required (refer to Section 5.3) via the local road network and along the FGP GSDA alignment.

Refer to Section 7 for further discussion on impacts and management.

3.4.2 Air Quality

The air quality along the FGP GSDA alignment is characterised by a primarily rural setting for the initial half of its length (Rockhampton to Gladstone direction). Existing air quality impacts are related to agricultural land use, bushfire, traffic, rail and maintenance to other infrastructure. The second half of the FGP GSDA alignment is made up of a combination of rural and industrial land uses with potential for more industrial land use as part of future GSDA development. The air quality is impacted on a local scale by industry.

Air quality impacts (including increased Greenhouse Gas (GHG) emissions) from construction activities will depend on a combination of the potential for emission, meteorological conditions and the effectiveness of control measures. The two key sources of potential air quality impacts include:

– Exhaust emissions from construction plant, equipment and vehicles (increased GHG emissions).
– Fugitive dust emissions from construction activities (primarily earthworks).

The sources of air quality impact are temporary and localised in nature and primarily associated with the construction phase.

During operation, air quality impacts will be minor and related to infrequent access or maintenance works.

Refer to Section 7 for further discussion on impacts and management.

3.4.3 Noise and Vibration

Similar to air quality, current noise and vibration environment is influenced by agricultural, industrial and infrastructure land uses.

Noise and vibration impacts from the Project during construction have the potential to impact upon sensitive receptors. The sources of noise and vibration impact are temporary and localised in nature and primarily associated with the construction phase.

Construction activities will take place during Monday to Sunday from 6:30am to 6:30pm in consultation and agreement with landholders. Blasting will not occur on Sundays.

There may also be special circumstances, such as major crossings, commissioning or other critical works, where construction activities are required outside Monday to Sunday from 6:30am to 6:30pm. An assessment will be undertaken to ensure the activities will not impact landholders. Landholders will be consulted, and the activity conducted in accordance with any relevant regulatory notification requirements.

During operation, noise and vibration impacts will be minor and related to infrequent access or maintenance works.

Refer to Section 7 for further discussion on impacts and management.

3.4.4 Visual Amenity

A review of landscape context and visual amenity values was presented in *Chapter 17 – Landscape and Visual Impact Assessment* of the EIS (Arup, 2008) (refer Appendix C). The landscape for the FGP GSDA alignment is influenced by rural, industry and infrastructure land uses. The visual amenity values outlined within the EIS are similar to the current values, therefore the assessment presented within the EIS is still relevant. The EIS found that the FGP GSDA alignment will not be a prominent feature as it will be underground. The key visual amenity impact from the Project is the loss of trees and vegetation along the ROW.

Refer to Section 7 for further discussion on impacts and management.

3.5 Existing Environmental Values

This section outlines the existing environmental values related to the FGP GSDA alignment.

3.5.1 Land

3.5.1.1 Soils

Soil types have been mapped for the FGP GSDA alignment with the dominant soil types including (Atlas of Australian Soils, 2014):

– Tenosols: Tenosols have a weakly developed soil profile which is typically very sandy and without obvious horizons. These soils can have a range of surface conditions and textures but are generally shallow and rocky. Tenosols can be susceptible to soil creep, sheet and rill erosion.
– Sodosols: Sodosols are soils which display a strong texture contrast between surface and subsoils. These soils generally have a weak structure in the surface with a firm to hard setting surface condition. The subsoils are sodic in nature and are generally quite dense, coarsely structured and disperse when wet.

Tenosol and sodosol soils are likely to be erodible once disturbed and exposed. Therefore, erosion and sediment controls will be required.

Earthworks undertaken during the construction phase will require an erosion and sediment control plan (ESCP) to be developed and implemented prior to construction to manage potential adverse impacts to the character of the soils, nearby waterways and sensitive receptors. The ESCP will be required to be developed in accordance with current practice for construction projects including the International Erosion Control Association (IECA) 2008 guidelines.

Impacts on environmental values of land (soils and geology) are expected to be minor and temporary as the impacts are largely confined to the construction phase. Impact mitigation measures are expected to be relatively typical of a construction project and conform to industry best practice.

Section 7 provides a discussion of the potential impacts (and associated mitigations) the proposed works may have on soils and the landform during the design, construction and operational phases.

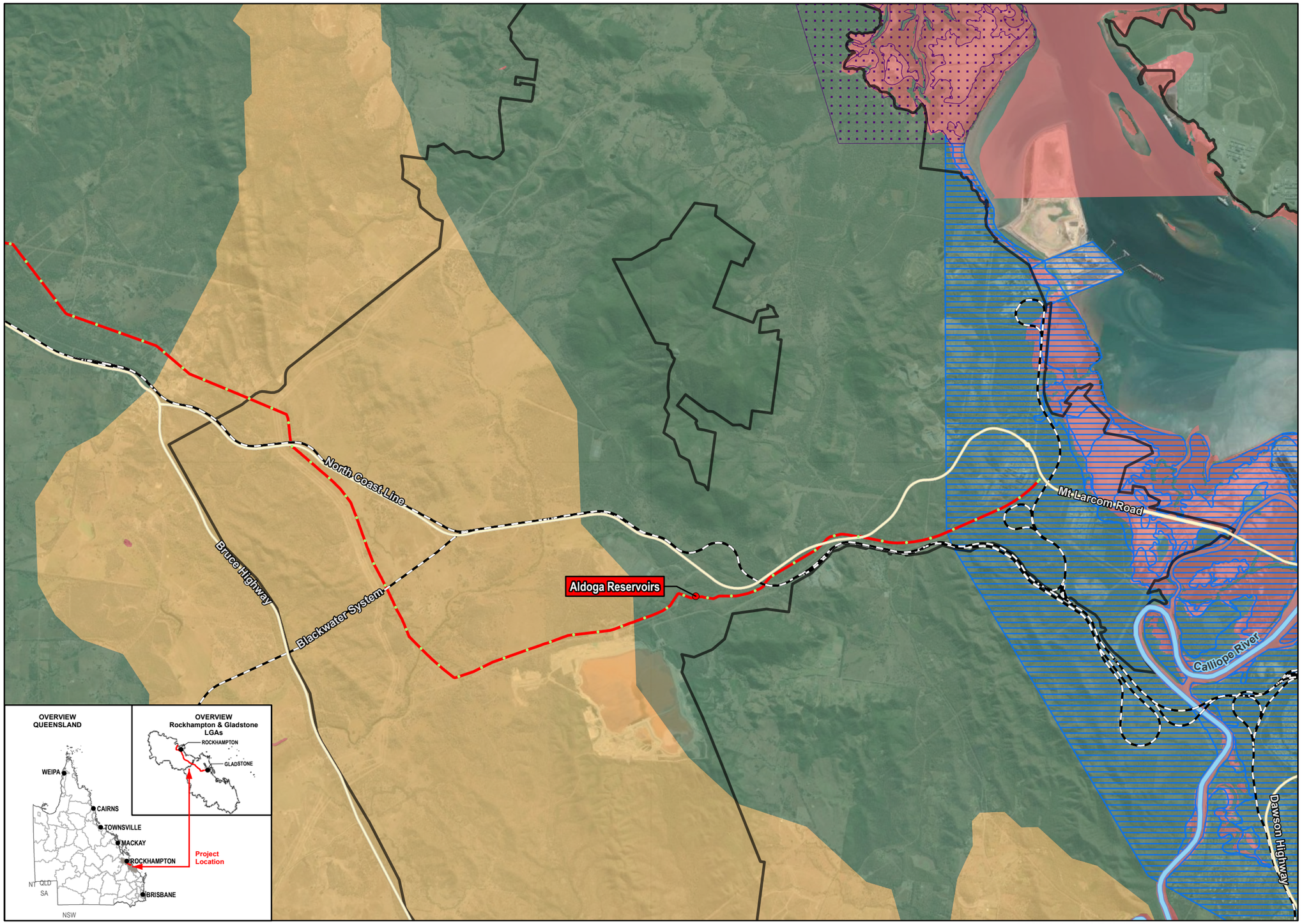
3.5.1.2 Acid Sulfate Soils

While ASS can be associated with alluvial soils, they are generally found in low lying areas below 5 m Australian Height Datum (AHD), on alluvial plains where groundwater is generally close to the surface, and where materials have generally been in reducing conditions. However, ASS may also be found at elevations as high as 20 m AHD. Under both the State Planning Policy (Atlas of Australian Soils, 2014) and the Gladstone Regional Council Planning Scheme, the FGP GSDA alignment is situated within potential risk of acid sulfate soil (ASS) areas (refer to Figure 3.3).

Near Gladstone, the FGP GSDA alignment intersects the mapped ‘ASS of the Tannum Sands to Gladstone area, Central Queensland’, which indicates a potential risk of ASS or potential acid sulfate soils (PASS) occurring based on various site investigations. Due to this, it is considered likely that there are additional areas that have potential for ASS due to the FGP GSDA alignment’s proximity to the coast and waterways.

Earthworks in the form of excavation are required to establish the pipeline. These proposed earthworks have the potential to disturb ASS practically where land elevation is less than 5 m AHD. An ASS investigation commissioned by MBJV has commenced and if encountered, an ASS management plan will be developed in alignment with DES guidelines and technical manuals.

Section 7 provides a discussion of the potential impacts (and associated mitigation) the proposed works may have on soils and the landform during the design, construction and operational phases.



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Legend

- Chainage
- Infrastructure Locations
- Pipe Alignment
- Roads
- Railways
- Watercourse
- Gladstone State Development Area

Acid Sulfate Soils

- CQAG | Tannum Sands to Gladstone
- CQAN | Narrows area

Atlas of Australian Acid Sulfate Soils

- High Probability of Occurence
- Low Probability of Occurence
- Extremely Low Probability of Occurence

Data Sources:
1. Base Layers (Roads, waterway, locality, LGA etc) @ QSpatial, 2021
2. Cadastral data - Queensland series @ QSpatial, 2022
3. State Development Area precincts - Gladstone SDA @ QSpatial, 2015
4. Imagery @ Esri, Maxar, GeoEye, Earthstar Geographics, CNES-Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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FITZROY TO GLADSTONE PIPELINE PROJECT
Figure 3.3 Acid Sulfate Soils
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3.5.1.3 Agricultural Land

Mapped or protected agricultural land is identified as:

1. An area of regional interest: strategic cropping land.
2. Agricultural land class A and B as mapped by the State Planning Policy Interactive Mapping System.

An assessment of agricultural land was undertaken for the FGP GSDA alignment; the following properties are mapped as agricultural land and are traversed by the FGP GSDA alignment as shown on Figure 3.4:

– Lot 28 SP115227– Agricultural land class A and B crop land - horticulture only.
– Lot 1 RP911260 – Strategic cropping land, and agricultural land class A and B crop land - horticulture only.
– Lot 54 SP137048 – Agricultural land class A and B crop land - horticulture only.
– Lot 13 RP620157 – Agricultural land class A and B limited crop land and crop land - horticulture only.

The properties identified above are already subject to some form of impact, such as existing linear infrastructure, and as such, their value as cropping land is reduced. The FGP GSDA alignment has been selected to minimise sterilisation and fragmentation of cropping land where practical. The economic development opportunities that would result from this Project will apply to all sectors of the economy including agriculture.

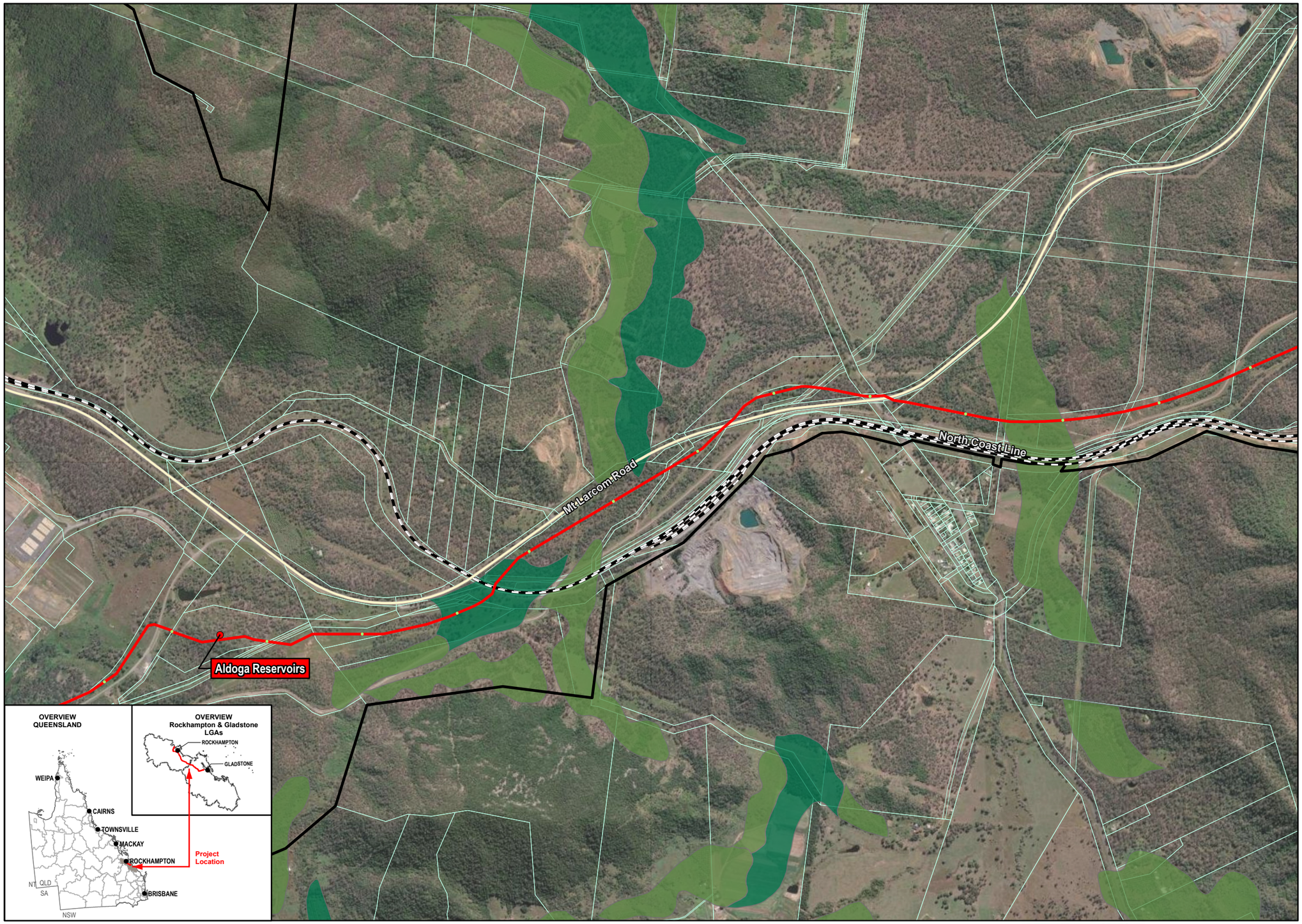
Other agricultural land is the Queensland stock route network which has a long and rich history of supporting landholders. There are no stock routes or stock route reserves directly impacted by the FGP GSDA alignment.

3.5.1.4 Contaminated Land

Potentially contaminated land is identified by reviewing past and historical land uses and by searching the Environmental Management Register (EMR) and Contaminated Land Register (CLR). The Preliminary Contamination Assessment Report (GHD, 2021) was undertaken (refer to Appendix D). It was identified that the following properties (or general areas) pose a moderate to high contamination risk for the FGP GSDA alignment:

– Lot 1 on RP911260: Listed on the EMR for landfilling and waste disposal.
– Lot 91 on SP122250, Lot 140 on SP122252 and Lot 3 on SP101558: Listed on the EMR for historical railway yards / corridor due to either workshop activities or potential high arsenic concentrations.
– Lot 7 on SP145439 and Lot 8 on SP218634: Listed on the EMR for alumina refinery, gun, pistol or rifle range.
– Lot 1 on SP144430: Listed on the EMR for various activities associated with the red mud repository.

The proposed works may result in the disturbance of contaminated material from these properties. Additional unreported contaminated land may also be encountered. Potential impacts and management are further discussed in Section 7.



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Legend

- Chainage
- Infrastructure Locations
- Pipe Alignment
- Roads
- Railways
- Property Boundary
- Gladstone State Development Area

Queensland Agricultural Land Classes

- A
- B

Data Sources:
1. Base Layers (Roads, waterway, locality, LGA etc) @ QSpatial, 2021
2. Cadastral data - Queensland series @ QSpatial, 2022
3. State Development Area precincts - Gladstone SDA @ QSpatial, 2015
4. Imagery @ Esri, Maxar, GeoEye, Earthstar Geographics, CNES-Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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FITZROY TO GLADSTONE PIPELINE PROJECT

Figure 3.4 Agricultural Land

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3.5.2 Hydrology and Coastal

3.5.2.1 Waterways

The FGP GSDA alignment is located within the Calliope River drainage basin where water is managed in accordance with the *Water Plan (Calliope River Basin) 2006*.

The FGP GSDA alignment intersects a number of waterways. The main waterways that will be traversed are Larcom Creek, Sandy Creek and Boat Creek which are ephemeral in nature. Mapped waterways are identified based on:

– Topographical mapping.
– Watercourse identification map identifying water features managed under the Water Act.
– Waterways for the purpose of waterway barrier works as defined by the *Fisheries Act 1992* and managed for the purpose of fish passage and fish habitat.
– Waterways under the DoR regulated vegetation mapping (including MSES waterways).

A list of the waterways traversed by the FGP GSDA alignment is provided in Table 3.6 and depicted in Figure 3.5a and Figure 3.5b. In summary the FGP GSDA alignment traverses:

– 26 unmapped waterway features under the Water Act. The features at CH 103000 (Larcom Creek), CH 104050 (Police Creek), CH 104680, CH 108250 and CH 108580 have features that indicate they may be watercourses and are to be treated as such. The other unmapped features traversed as most likely drainage features for the purpose of the Water Act.
– One red or high-risk waterway for the purpose of waterway barrier works.
– Six amber or moderate risk waterways for the purpose of waterway barrier works.
– Eight green or low risk waterways for the purpose of waterway barrier works.
– 25 waterways that are MSES for regulated vegetation (intersecting a watercourse).

The majority of the waterway features identified have been subject to past disturbance, such as land clearing for agriculture; however, the amber and red waterways for the purpose of waterway barrier works have intact riparian margins to varying degrees (refer to Table 3.6).

There is potential for temporary impacts to waterway features (including changes in water flow regimes and localised water quality) during construction of the FGP GSDA alignment (e.g. where trenched crossings are required), or where temporary access tracks cross waterways (which may not identified in Table 3.6) and disturb waterway features. The impacts as a result of construction are anticipated to be temporary in nature as waterway restoration and rehabilitation will mitigate permanent impacts. For sensitive waterways, namely Larcom Creek, trenchless methods are proposed for construction to minimise impacts to these waterways. No permanent waterway impacts are anticipated.

During construction there is also the potential for water quality to be impacted by:

– Sediments entering drainage lines and waterways causing a reduction in downstream water quality.
– Accidental release of hazardous substances (e.g. fuel, chemicals).
– Construction activities loosening topsoil (e.g. removing vegetation) and adding higher sediment to watercourses via runoff or wind.
– Flooding of construction sites during construction.

The water quality in the area is subject to existing impacts from existing land uses (agriculture, industrial and infrastructure), and the FGP GSDA alignment is not anticipated to introduce a new significant source of risk for water quality.

Section 7 provides a discussion of the potential impacts (and associated mitigations) the proposed works may have on waterways which are intersected by the FGP GSDA alignment.

Table 3.6 Waterways Traversed by the FGP GSDA Alignment

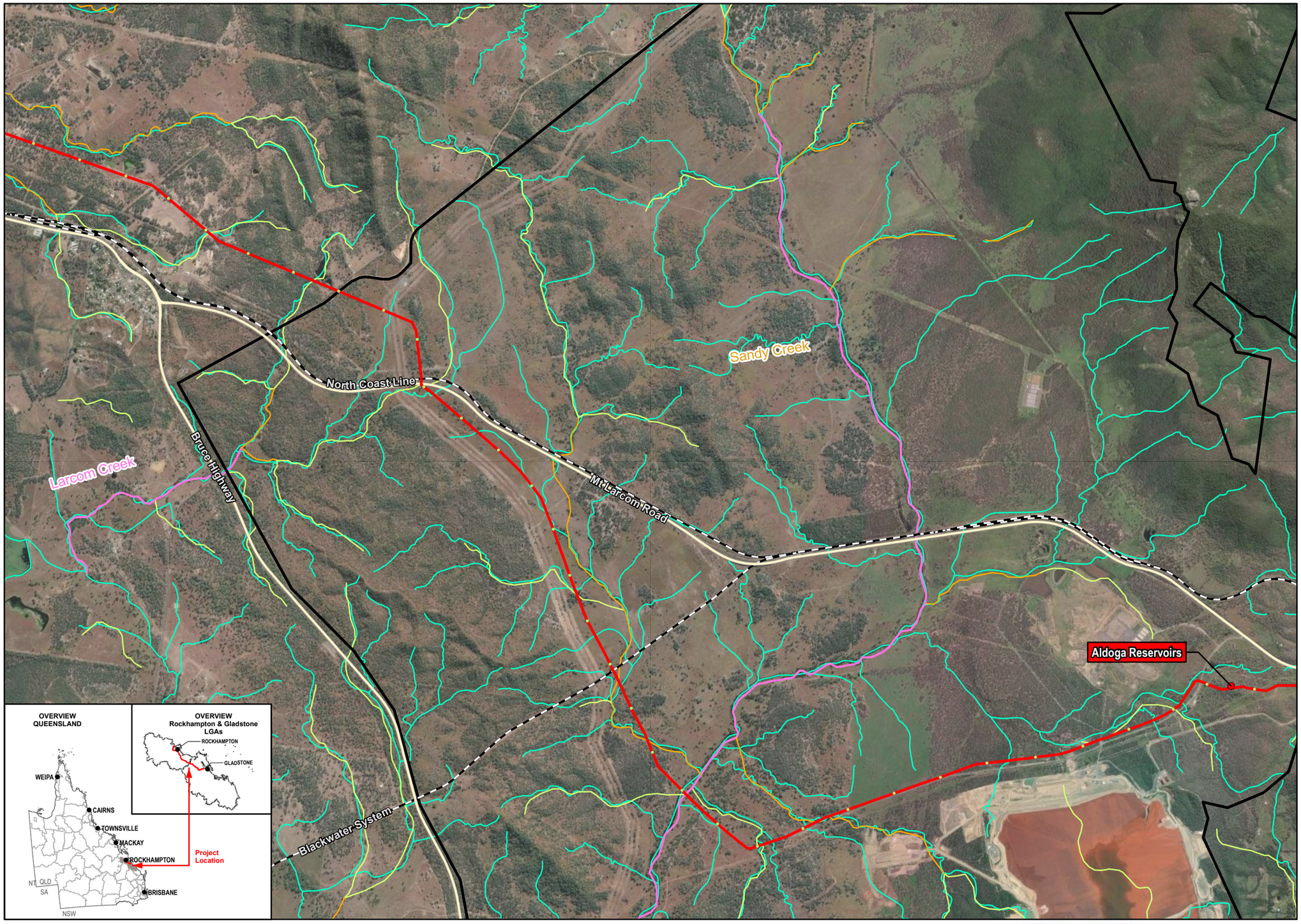
Name of Watercourse	Stream Order	Water Act Classification[1]	Waterways for Waterway Barrier Works[2]	MSES[3]	Chainage (Approx.)	Lot Type Parcel	Coordinates	Description
Unnamed	N/A	Unmapped	N/A	Intersecting	CH 96600	1 SP260750	151.006, -23.814	No watercourse features present due to gas infrastructure, mapping incorrect.
Unnamed	2	Unmapped	Green	Intersecting	CH 97600	25 SP307529	151.010, -23.822	Minor drainage pathway features present.
Unnamed	1	Unmapped	N/A	Intersecting	CH 98200	25 SP307529	151.014, -23.825	Minor drainage pathway features present, crossed twice.
					CH 98800	25 SP307529	151.018, -23.830	
Unnamed	3	Unmapped	N/A	Intersecting	CH 99300	25 SP307529	151.021, -23.832	Very minor drainage pathway features present.
Unnamed	2	Unmapped	Green	Intersecting	CH 100200	25 SP307529	151.024, -23.840	Minor drainage pathway features present, landholder dam located on the alignment.
Unnamed	N/A	Unmapped	N/A	N/A	CH 100650	25 SP307529	151.024, -23.840	Very minor drainage pathway features present.
Unnamed	1	Unmapped	N/A	Intersecting	CH 100600	25 SP307529	151.026, -23.844	Minor drainage pathway features present.
Unnamed	3	Unmapped	Amber	Intersecting	CH 101200	25 SP307529	151.028, -23.849	Some watercourse features and riparian margins present.
Unnamed	3	Unmapped	Amber	Intersecting	CH 101800	25 SP307529	151.031, -23.854	Some watercourse features and riparian margins present.
Larcom Creek	4	Unmapped	Red	Intersecting	CH 102500	Larcom Creek	151.034, -23.859	Watercourse features and riparian margins present.
Police Creek	1	Unmapped	Green	Intersecting	CH 103500	68 SP272417	151.042, -23.864	Some watercourse features and riparian margins present.
Unnamed	1	Unmapped	N/A	Intersecting	CH103700	68 SP272417	151.043, -23.864	Minor drainage pathway features present.
Unnamed	1	Unmapped	N/A	Intersecting	CH104000	68SP272417	151.047, -23.862	Very minor drainage pathway features present.
Unnamed	2	Unmapped	Amber	Intersecting	CH 104200	Aldoga Road	151.048, -23.862	Watercourse features and riparian margins present, mapping and aerial imagery shows the waterway being intersected 3 times.
					CH 104300	Aldoga Road	151.049, -23.862	
Unnamed	1	Unmapped	N/A	Intersecting	CH 106200	8 SP245936	151.067, -23.857	Minor drainage pathway features present.
Unnamed	N/A	Unmapped	N/A	N/A	CH 106600	8 SP245936	151.071, -23.856	Very minor drainage pathway features present.

Name of Watercourse	Stream Order	Water Act Classification[1]	Waterways for Waterway Barrier Works[2]	MSES[3]	Chainage (Approx.)	Lot Type Parcel	Coordinates	Description
Unnamed	N/A	Unmapped	N/A	N/A	CH 107200	Aldoga Road	151.077, -23.854	Very minor drainage pathway features present.
Unnamed	1	Unmapped	N/A	Intersecting	CH 107700	Aldoga Road	151.082, -23.853	Some watercourse features and riparian margins present.
Unnamed	1	Unmapped	Green	Intersecting	CH 108100	Aldoga Road	151.984, -23.851	Watercourse features and riparian margins present.
Unnamed tributary of Sandy Creek	2	Drainage feature	Green	Intersecting	CH 110300	13 RP620157	151.104, -23.846	Drainage pathway features present.
Unnamed	2	Drainage feature	N/A	Intersecting	CH110400	13 RP620157	151104, -23.846	Drainage pathway features present.
Sandy Creek	3	Watercourse	Amber	Intersecting	CH 111200	13 RP620157	151.111, -23.843	Watercourse features and riparian margins present.
Unnamed tributary of Sandy Creek	1	Drainage feature	N/A	Intersecting	CH 111300	13 RP620157	151.111, -23.843	Drainage pathway features present.
Unnamed tributary of Sandy Creek	N/A	Drainage feature	N/A	N/A	CH 111500	22 SP116225	151.111, -23.843	Drainage pathway features present.
Boat Creek	3	Drainage feature	Green	Intersecting	CH 113000	27 SP115227	151.127, -23.840	Drainage pathway features present.
Unnamed tributary of Boat Creek	N/A	Drainage feature	N/A	N/A	CH 113200	27 SP115227	151.127, -23.840	Drainage pathway features present.
Unnamed tributary of Boat Creek	N/A	Drainage feature	N/A	N/A	CH 113400	54 SP137048	151.131, -23.841	Drainage pathway features present, crossed twice.
					CH 113700	54 SP137048	151.132, -23.840	
Unnamed tributary of Boat Creek	N/A	Drainage feature	N/A	N/A	CH 113800	54 SP137048	151.135, -23.840	Drainage pathway features present.
Unnamed tributary	2	Drainage feature	Green	Intersecting	CH 114200	54 SP137048	151.138, -23.839	Drainage pathway features present.

Name of Watercourse	Stream Order	Water Act Classification[1]	Waterways for Waterway Barrier Works[2]	MSES[3]	Chainage (Approx.)	Lot Type Parcel	Coordinates	Description
Unnamed tributary	1	Drainage feature	Amber	Intersecting	CH 114400	7 SP145439	151.141, -23.838	Drainage pathway features present.
Unnamed tributary	1	Drainage feature	N/A	N/A	CH 114600	7 SP145439	151.143, -23.837	Drainage pathway features present.
Unnamed tributary	1	Drainage feature	N/A	N/A	CH 114700	7 SP145439	151.144, -23.837	Drainage pathway features present.
Unnamed tributary	1	Drainage feature	N/A	N/A	CH 115200	7 SP145439	151.147, -23.836	Drainage pathway features present.
Unnamed tributary	1	Drainage feature	Green	Intersecting	CH 115700	7 SP145439	151.152, -23.834	Drainage pathway features present.

Table Notes:

1. Water Act Classification: Unmapped identifies features that have not yet been characterised by DRDMW but are identified as unmapped on the watercourse identification map.
2. Waterway barrier works classification: green is a low risk waterway, amber is a moderate risk waterway, red is a high risk waterway.
3. MSES waterway values, intersecting means regulated vegetation (intersecting a watercourse).



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- Chainage
- Infrastructure Locations
- Pipe Alignment
- Roads
- Railways
- MSES - Regulated Vegetation (intersecting a watercourse)
- Gladstone State Development Area

Queensland waterways for waterway barrier works

- 1 - Low
- 2 - Moderate
- 3 - High

Data Sources:
1. Base Layers (Roads, waterway, locality, LGA etc) @ QSpatial, 2021
2. Cadastral data - Queensland series @ QSpatial, 2022
3. State Development Area precincts - Gladstone SDA @ QSpatial, 2015
4. Imagery @ Esri, Maxar, GeoEye, Earthstar Geographics, CNES-Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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FITZROY TO GLADSTONE PIPELINE PROJECT

Figure 3.5a Watercourses and waterways

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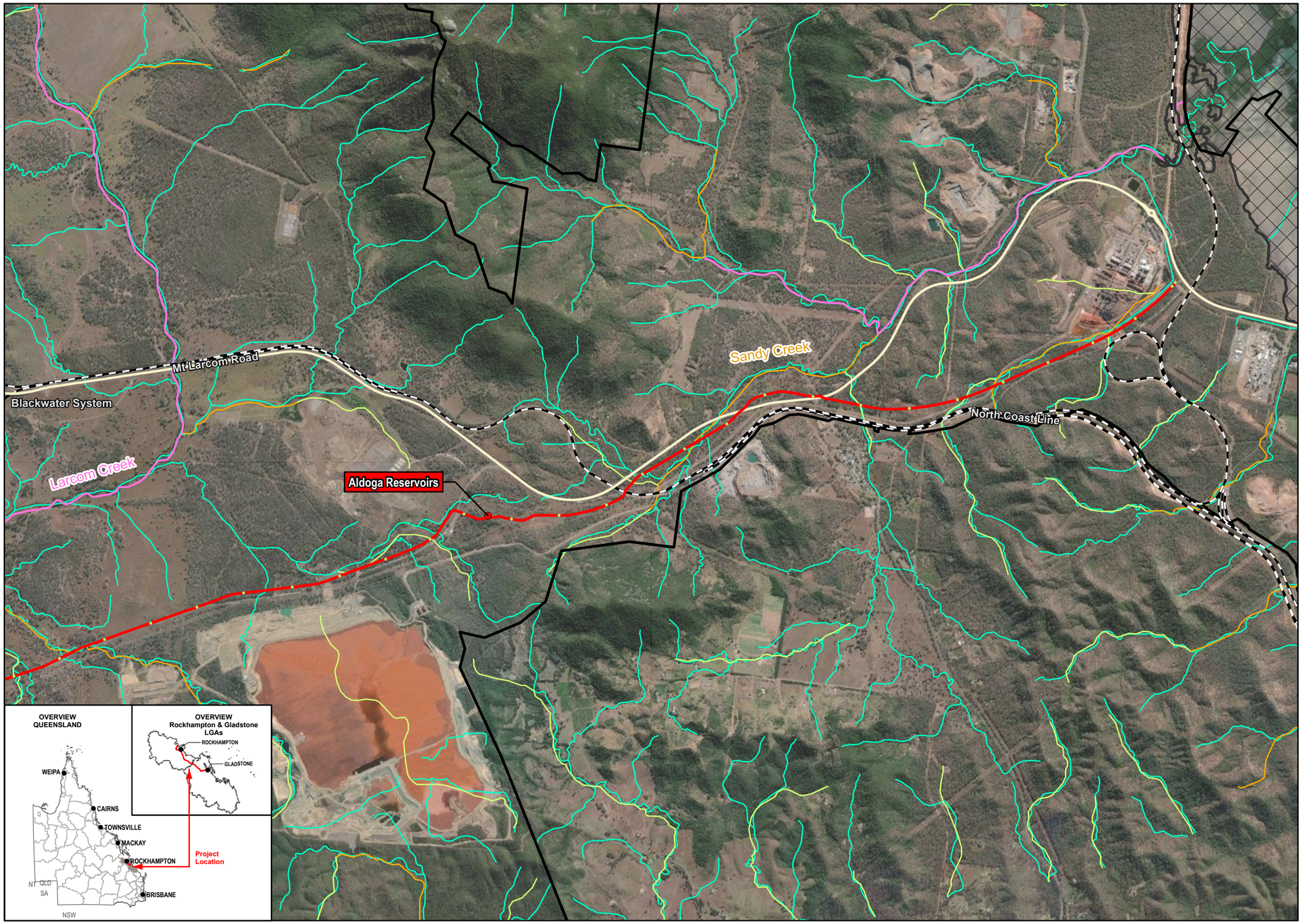

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- Chainage
- Infrastructure Locations
- Pipe Alignment
- Roads
- Railways
- MSES - Regulated Vegetation (intersecting a watercourse)
- Gladstone State Development Area
- Tidal Waterways

Queensland waterways for waterway barrier works

- 1 - Low
- 2 - Moderate
- 3 - High

Data Sources:
1. Base Layers (Roads, waterway, locality, LGA etc) @ QSpatial, 2021
2. Cadastral data - Queensland series @ QSpatial, 2022
3. State Development Area precincts - Gladstone SDA @ QSpatial, 2015
4. Imagery @ Esri, Maxar, GeoEye, Earthstar Geographics, CNES-Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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FITZROY TO GLADSTONE PIPELINE PROJECT
Figure 3.5b Watercourses and waterways
000-G-MAP-2205 Version: 4 Date: 13/09/2022

3.5.2.2 Coastal

The FGP GSDA alignment is not located within a Coastal Management District (CMD) and will not impact upon any tidal waters or waterways.

3.5.2.3 Groundwater

A number of DRDMW and private registered groundwater bores are located within 5 km of the FGP GSDA alignment. The proposed development is not anticipated to impact on any existing groundwater bores. The Bureau of Meteorology (BOM) identifies groundwater characterises to include:

– Standing water levels ranging from 5 m below ground level to 12 m below ground level.
– Groundwater is predominately brackish (approximate electrical conductivity of 2,000 µS/cm) to saline (electrical conductivity > 12,000 µS/cm).
– The hydrogeology is predominantly classified as “porous with extensive aquifers of low to moderate productivity” (i.e. available groundwater to be pumped), with some areas of “fractured low – moderate productivity” (BOM, 2019). Depth to water in the aquifers the Bajool to Gladstone region is generally in the order of 10 m to 20 m.
– The aquifers are underlain by basalt and granitic formations.

The FGP GSDA alignment does not intersect any mapped groundwater dependent ecosystems (State of Queensland, 2021).

Potential impacts to groundwater during the construction and operation are described below:

– Construction trenching activities interacting with aquifers.
– Disturbance of ASS resulting in soil acidification with through leaching to groundwater and subsequent groundwater acidification.
– Spill or leaching of contaminants resulting from servicing of equipment, spills of fuel or liquid chemicals.
– Pipeline rupture or degradation (e.g. corrosion) affecting groundwater level and quality.
– Vegetation clearance resulting in increased groundwater recharge.

Section 7 provides a discussion of the potential impacts (and associated mitigations) the proposed works may have on groundwater.

3.5.3 Aquatic Ecology Values

3.5.3.1 Aquatic Habitat

As mentioned in Section 3.5.2.1, waterways for the purpose of waterway barrier works (fish passage and fish habitat) are traversed by the FGP GSDA alignment including:

– One red or high-risk waterway.
– Six amber or moderate risk waterways.
– Eight green or low risk waterways.

GHD undertook an ecology assessment of the FGP GSDA Alignment between 21 and 25 February 2022 which included an assessment of aquatic ecology matters. The Ecology Assessment Report (GHD 2022; Appendix E) included a detailed assessment of Larcom Creek, a red waterway, and a number of important aquatic ecological and habitat features were identified. The key ecological values were identified as:

– Overall habitat condition rating was fair.
– Instream habitat consisted of both shallow and deep pool areas, large woody debris and macrophytes.
– Adjacent riparian zone had moderate amounts of grasses, shrubs and trees <10 m tall, there was only presence of exotic species in the understory of the riparian zone. The canopy consisted of Callistemon.
– The pool supports both small and larger bodied fish species as well as turtles.

The Ecology Assessment Report (GHD 2022; Appendix E) did not identify any threatened aquatic species or species habitat as either present or likely to occur.

Impacts to this important aquatic habitat are to be minimised by the use of trenchless construction methods.

Section 7 provides a discussion of the potential impacts (and associated mitigations) the proposed works may have on aquatic habitat.

3.5.3.2 Wetlands

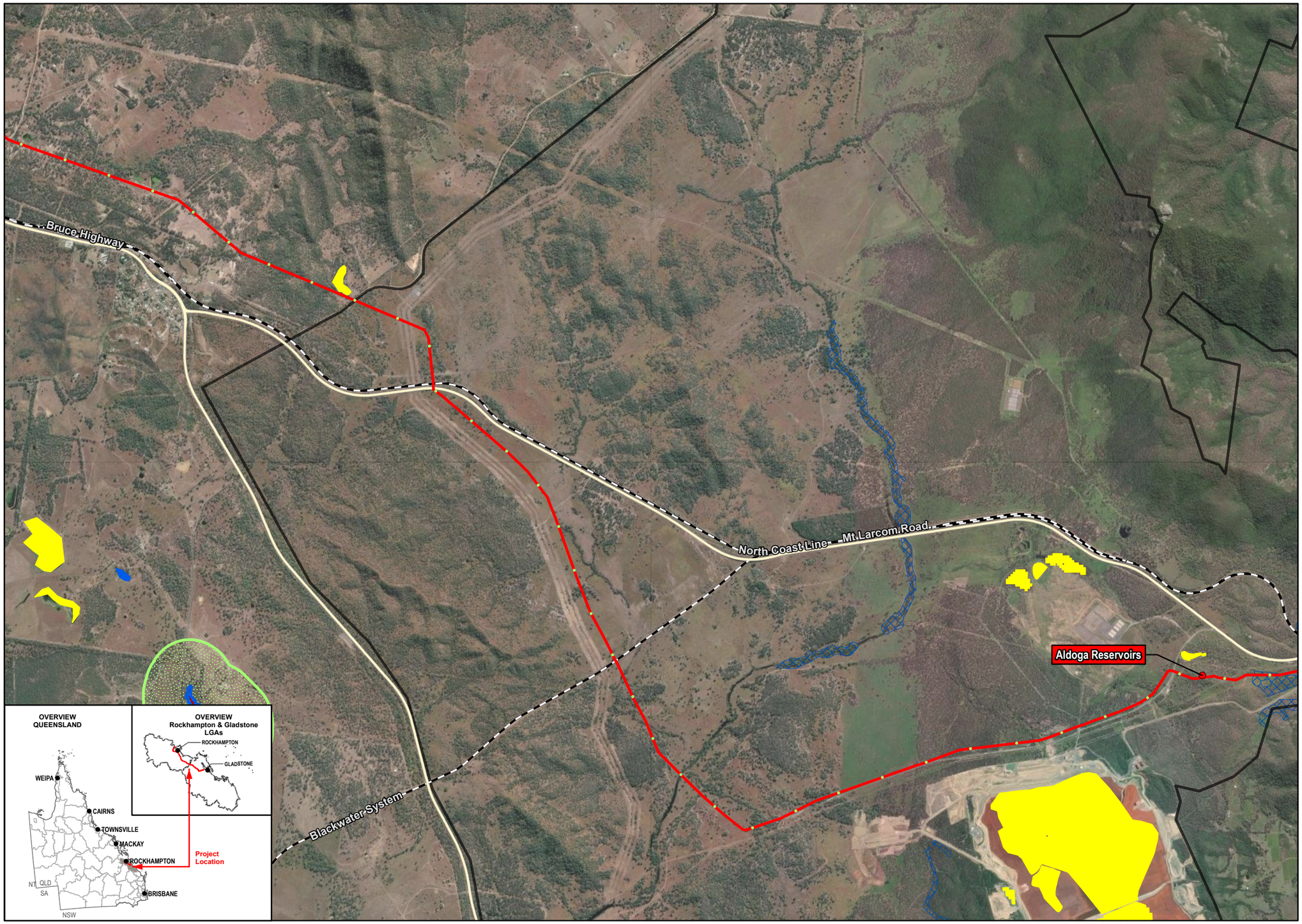
The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Search Tool (PMST) identified the nationally important, Port Curtis wetland, within 1 km of the FGP GSDA alignment. The Port Curtis wetland will not be impacted by the Project. There are no Ramsar wetlands within or directly adjacent to the FGP GSDA alignment.

MSES wetland values incorporate regulated vegetation within a defined distance of a watercourse, high ecological value waters (watercourses and wetlands), and high ecological significance (HES) wetlands. There are no MSES wetlands mapped over the FGP GSDA alignment, refer to Figure 3.6. However, there are mapped riverine wetland areas over Lot 21 on SP115224, Lot 13 on RP620157, and Lot 22 on SP115225 (refer to Figure 3.6).

The proposed FGP GSDA alignment will be a buried pipeline and potential impacts to wetlands during the construction phase are outlined below:

– Sediments entering wetlands causing a reduction in downstream water quality.
– Accidental release of hazardous substances (e.g. fuel, chemicals).
– Construction activities loosening topsoil (e.g. removing vegetation) and adding higher sediment to wetlands via runoff or wind.
– Flooding of construction site during construction.

Section 7 provides a discussion of the potential impacts the proposed works may have on identified wetland values during the construction and operational phases.



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Legend

- Chainage
- Infrastructure Locations
- Pipe Alignment
- Roads
- Railways
- Gladstone State Development Area
- Wetland Protection Area Wetland
- Wetland Protection Area Trigger Area
- R_WB - Riverine wetland (from waterbody data)
- L_WB - Lacustrine wetland (from waterbody data)
- P_WB - Palustrine wetland (from waterbody data)
- R_RE - Riverine wetland (from regional ecosystem data)

Data Sources:
1. Base Layers (Roads, waterway, locality, LGA etc) @ QSpatial, 2021
2. Cadastral data - Queensland series @ QSpatial, 2022
3. State Development Area precincts - Gladstone SDA @ QSpatial, 2015
4. Imagery @ Esri, Maxar, GeoEye, Earthstar Geographics, CNES-Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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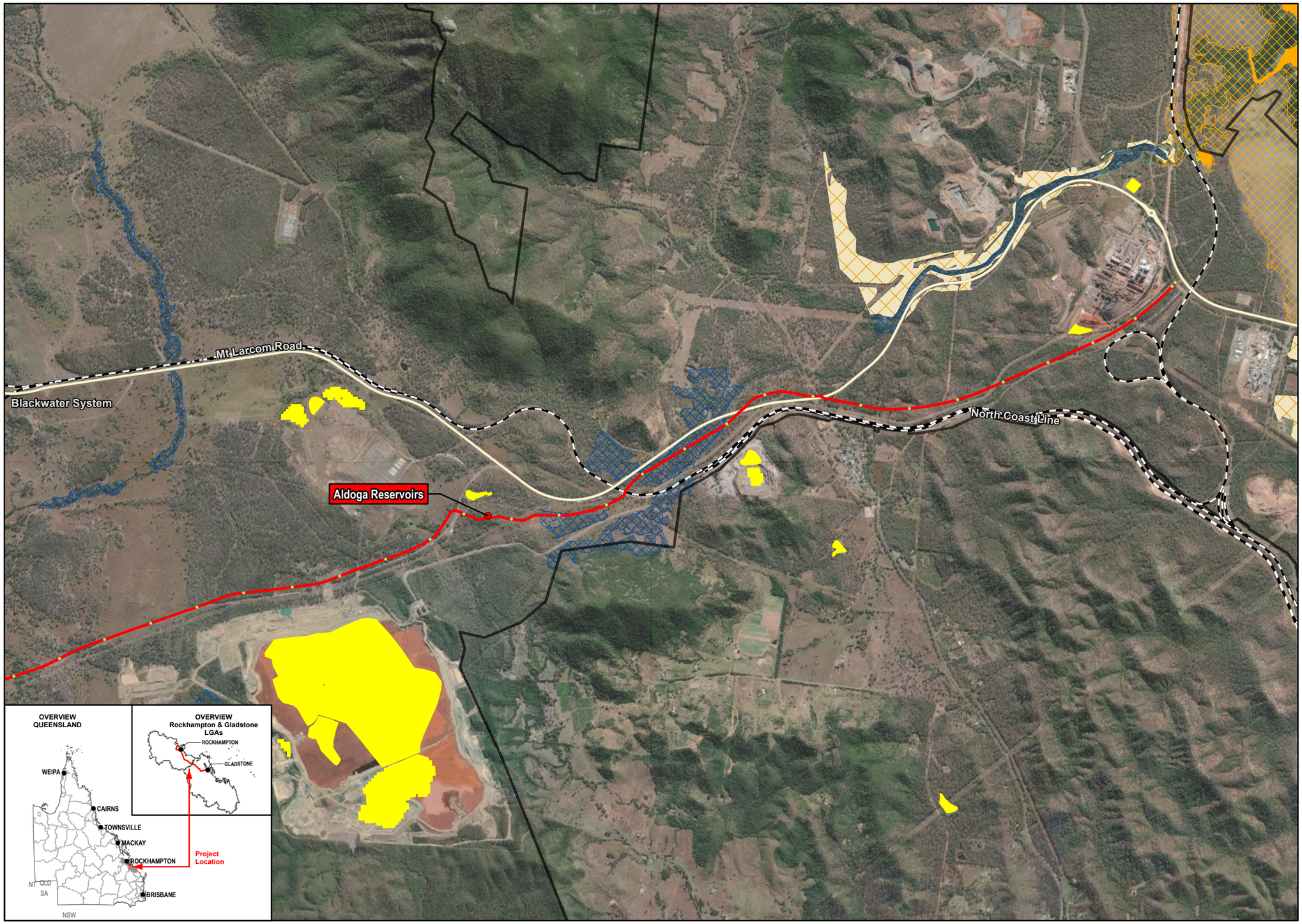
FITZROY TO GLADSTONE PIPELINE PROJECT
Figure 3.6a Wetland Values
000-G-MAP-2206 Version: 3 Date: 13/06/2022



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- Chainage
- Infrastructure Locations
- Pipe Alignment
- Roads
- Railways
- Gladstone State Development Area
- W_WB - Estuarine wetland (from waterbody data)
- L_WB - Lacustrine wetland (from waterbody data)
- E_RE - Estuarine wetland (from regional ecosystem data)
- R_RE - Riverine wetland (from regional ecosystem data)
- L_RE - Lacustrine wetland (from regional ecosystem data)
- 01-50_RE - Wetlands are subdominant (comprising 50 % or less of the area)

Data Sources:
1. Base Layers (Roads, waterway, locality, LGA etc) @ QSpatial, 2021
2. Cadastral data - Queensland series @ QSpatial, 2022
3. State Development Area precincts - Gladstone SDA @ QSpatial, 2015
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FITZROY TO GLADSTONE PIPELINE PROJECT
Figure 3.6b Wetland Values
000-G-MAP-2206 Version: 4 Date: 13/09/2022

3.5.4 Terrestrial Ecology Values

Terrestrial ecological values of the FGP GSDA alignment have been identified using the following methods:

– Review of the EIS (Arup, 2008) to identify any Matters of National Environmental Significance (MNES) that were identified for the FGP GSDA alignment and would be required to be managed in accordance with the EPBC Approval:
  - Appendix C of this Planning Report presents a chapter from the EIS that assessed MNES relevant to this Planning Report *Appendix G Potential Impact on MNES*. Appendix C of this Planning Report also includes *Chapter 6 – Terrestrial Flora* and *Chapter 7 – Terrestrial Fauna* which provided additional details about MNES.
  - The EPBC Approval reference: EPBC 2007/3501 (approved 4 November 2011) included a number of conditions for the Project that are required to be met to minimise impact upon MNES. These matters, where relevant, have been clarified.
– Review of the EIS (Arup, 2008) to identify any State listed species under the Queensland Nature Conservation Act 1992 (NC Act) that were identified for the FGP SGIC SDA alignment and would be required to be managed in accordance with:
  - Appendix C of this Planning Report presents a chapter from the EIS that assessed terrestrial values that are relevant to this Planning Report, *Chapter 7 Terrestrial Fauna* and *Chapter 7 – Terrestrial Fauna*.
  - The Coordinator-General's evaluation report was reviewed for requirements associated with terrestrial ecology.
– Current desktop database searches as outlined within this section and included in Appendix E where relevant to identify MNES and MSES and other ecological values.
– Ecological field survey from 21 to 25 February 2022 was undertaken by suitably qualified persons to assess MNES and MSES. The survey methods included:
  - Verification of vegetation communities using a combination of Quaternary level assessments and informal observations. Data and observations were collected on the structural and floristic composition of vegetation communities to determine the regional ecosystem (RE) type.
  - Searches for potentially occurring conservation significant flora species were undertaken in potential habitat at the Site, a timed meander method was also utilised.
  - Targeted fauna species searches, and habitat assessments were undertaken.
  - A copy of the Ecology Assessment Report (GHD, 2022) is provided in Appendix E.

3.5.4.1 Regulated Vegetation and Regional Ecosystems

Regulated vegetation categories intersecting the FGP GSDA alignment include Category B (remnant vegetation), Category R (Great Barrier Reef riverine regrowth vegetation); Category C (high-value regrowth vegetation) and Category X (non-remnant). The regulated vegetation condition categories identified along the FGP GSDA alignment are mapped in Figure 3.7a and Figure 3.7b.

The currently mapped regulated vegetation comprises various RE. Figure 3.8a and Figure 3.8b maps the REs identified along the FGP GSDA alignment, as well as their classification under the *Vegetation Management Act 1999* (VM Act).

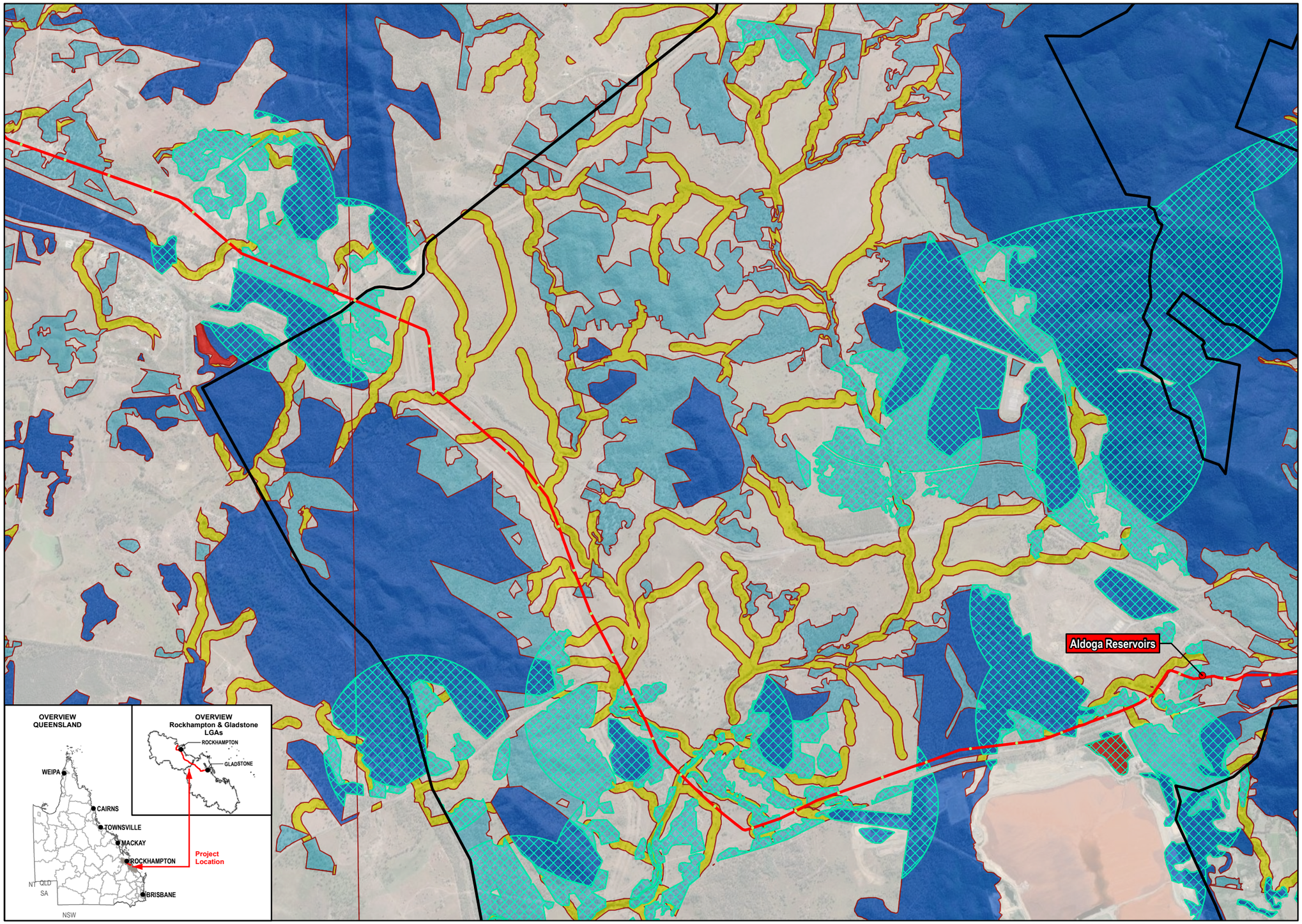
Field verification of the on-ground REs occurred during the ecology survey for the sites assessed. Most commonly, mapped heterogenous polygons comprising multiple REs were comprised of single RE within the extent of the alignment. In most cases, the VM Act status (least concern, of concern, or endangered) and/or the remnant status (remnant, regrowth, non-remnant) of the field verified polygons remained the same, despite the change in RE composition. Where changes occurred, all resulted in a lower VM Act status (i.e. less threatened). Notably, the one patch of remnant endangered vegetation mapped within the FGP GSDA alignment (i.e. RE 11.11.4/ 11.11.15/ 11.11.4c/ 11.11.5/ 11.11.18) was field verified as comprising remnant least concern vegetation (RE11.11.15) and non-remnant vegetation. Further information on regulated vegetation and REs is provided in in Ecology Assessment Report (GHD, 2022; Appendix E).

To amend regulated vegetation a Property Map of Assessable Vegetation (PMAV) process is required prior to lodging any application for operational works that is clearing native vegetation. DoR have advised, through the pre-lodgement process, that detailed surveys are required including transects of the community/polygon, not just the impact site, with a PMAV also impacting underlying landowners. Therefore, GAWB is not proposing to amend any regulated vegetation mapping via the PMAV process.

Due to the advancement of the FGP GSDA alignment and design and GAWB land ownership and leases, alternatives to vegetation clearing are not practical.

Potential impacts to regulated vegetation during the construction and operation are detailed in Section 7.

The GSDA Development Scheme assesses operational work that is vegetation clearing, for details about assessable and self-assessable operational works refer to Section 6.2.5.



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- Chainage
- Infrastructure Locations
- Pipe Alignment
- Gladstone State Development Area
- MSES Regulated Vegetation Essential Habitat

Regulated Vegetation Management Map

- Category A - vegetation offsets; compliance notices; VDecs
- Category B - remnant vegetation
- Category C - high-value regrowth vegetation
- Category R - reef-regrowth watercourse vegetation
- Category X - exempt clearing on freehold land

Data Sources:
1. Base Layers (Roads, waterway, locality, LGA etc) @ QSpatial, 2021
2. Cadastral data - Queensland series @ QSpatial, 2022
3. State Development Area precincts - Gladstone SDA @ QSpatial, 2015
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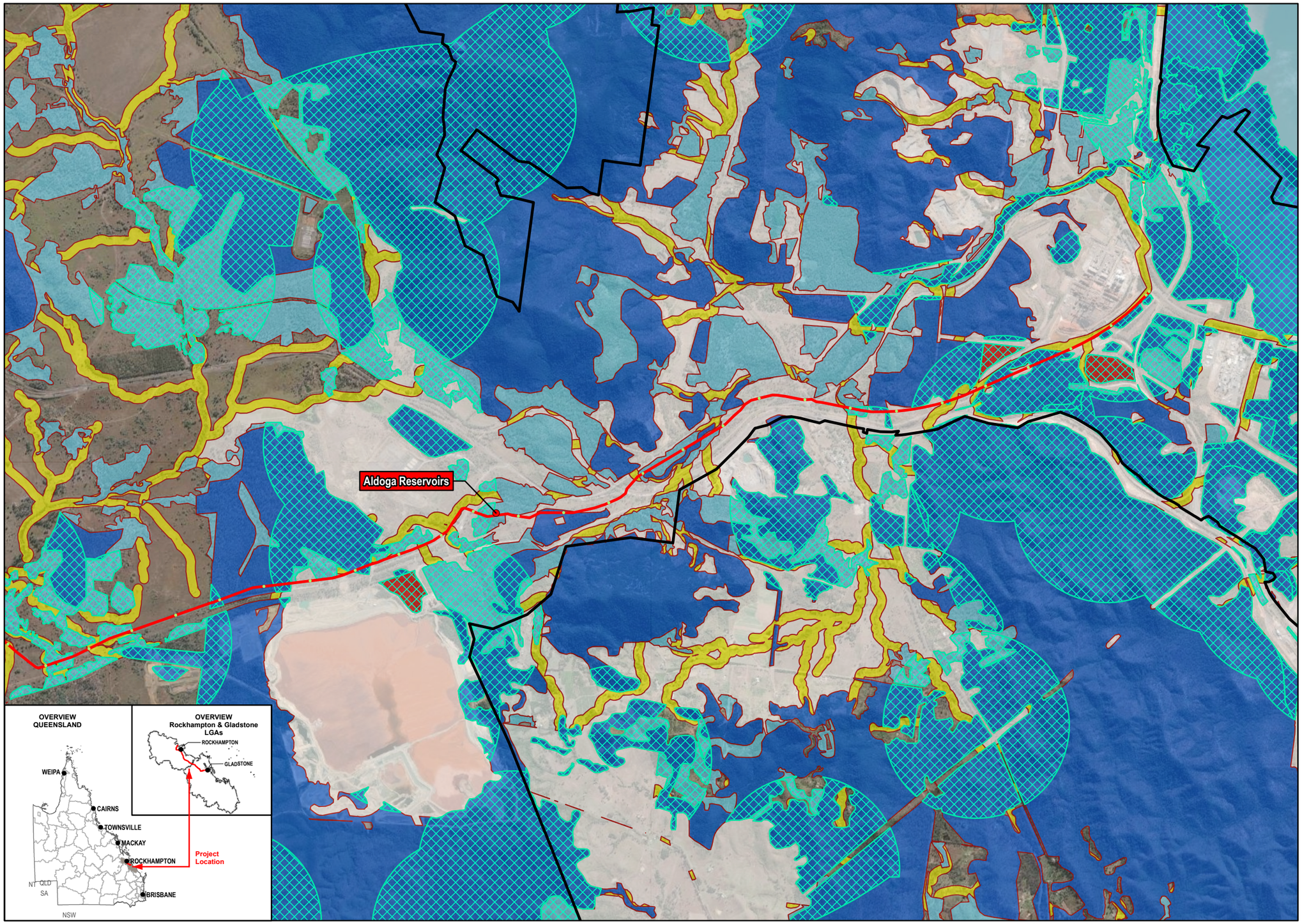
FITZROY TO GLADSTONE PIPELINE PROJECT
Figure 3.7a Regulated Vegetation and Essential Habitat
000-G-MAP-2207 Version: 5 Date: 13/09/2022



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- Chainage
- Infrastructure Locations
- Pipe Alignment
- Gladstone State Development Area
- MSES Regulated Vegetation Essential Habitat

Regulated Vegetation Management Map

- Category A - vegetation offsets; compliance notices; VDecs
- Category B - remnant vegetation
- Category C - high-value regrowth vegetation
- Category R - reef-regrowth watercourse vegetation
- Category X - exempt clearing on freehold land
- Water

Data Sources:
1. Base Layers (Roads, waterway, locality, LGA etc) @ QSpatial, 2021
2. Cadastral data - Queensland series @ QSpatial, 2022
3. State Development Area precincts - Gladstone SDA @ QSpatial, 2015
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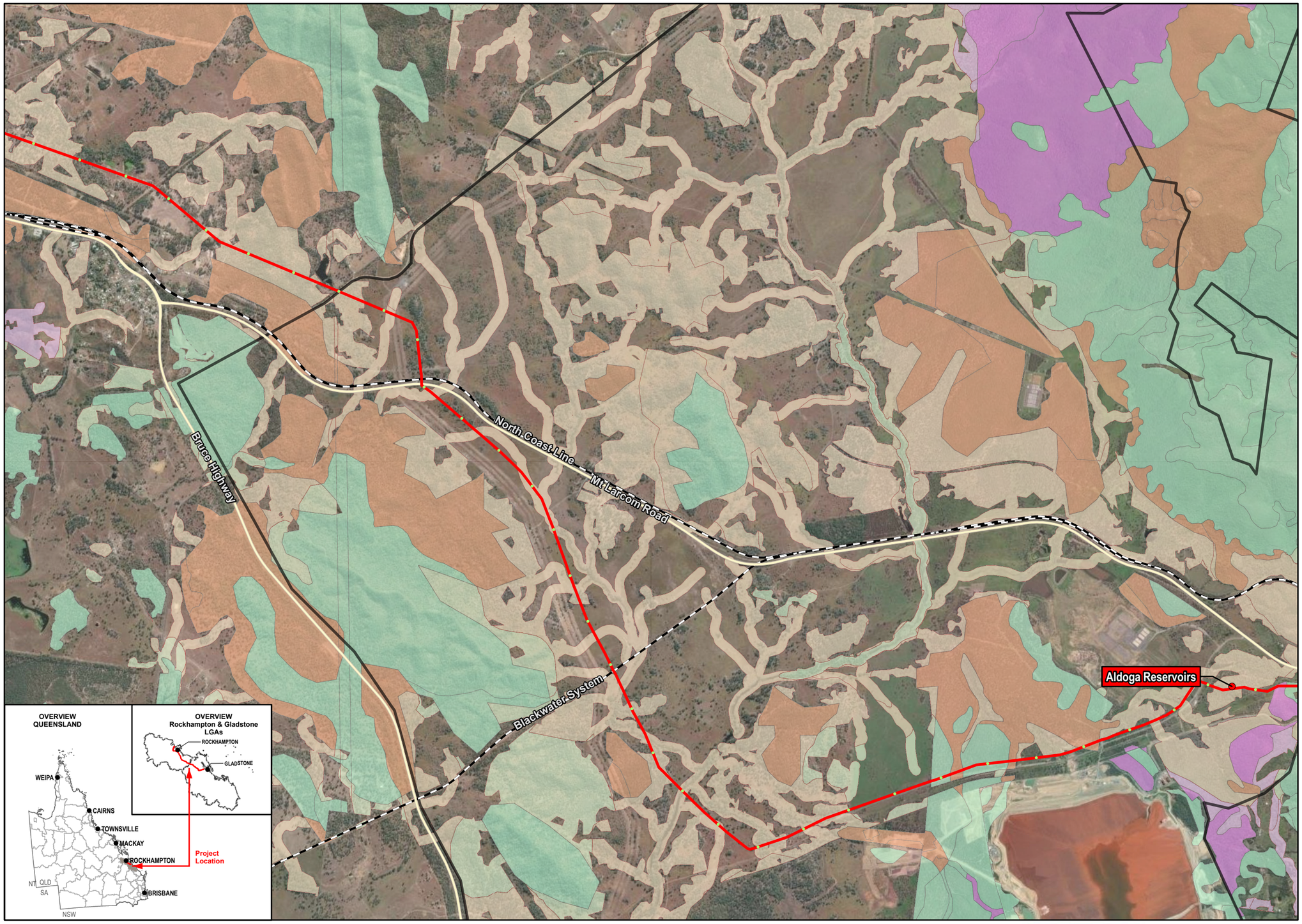
FITZROY TO GLADSTONE PIPELINE PROJECT
Figure 3.7b Regulated Vegetation and Essential Habitat
000-G-MAP-2207 Version: 5 Date: 13/09/2022



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- Chainage
- Infrastructure Locations
- Pipe Alignment
- Roads
- Railways
- Gladstone State Development Area

Vegetation management regional ecosystem map

- Category A or B area containing endangered
- Category A or B area containing of concern
- Category A or B area that is least concern
- Category C or R area containing endangered
- Category C or R area containing of concern
- Category C or R area that is of least concern

Data Sources:
1. Base Layers (Roads, waterway, locality, LGA etc) @ QSpatial, 2021
2. Cadastral data - Queensland series @ QSpatial, 2022
3. State Development Area precincts - Gladstone SDA @ QSpatial, 2015
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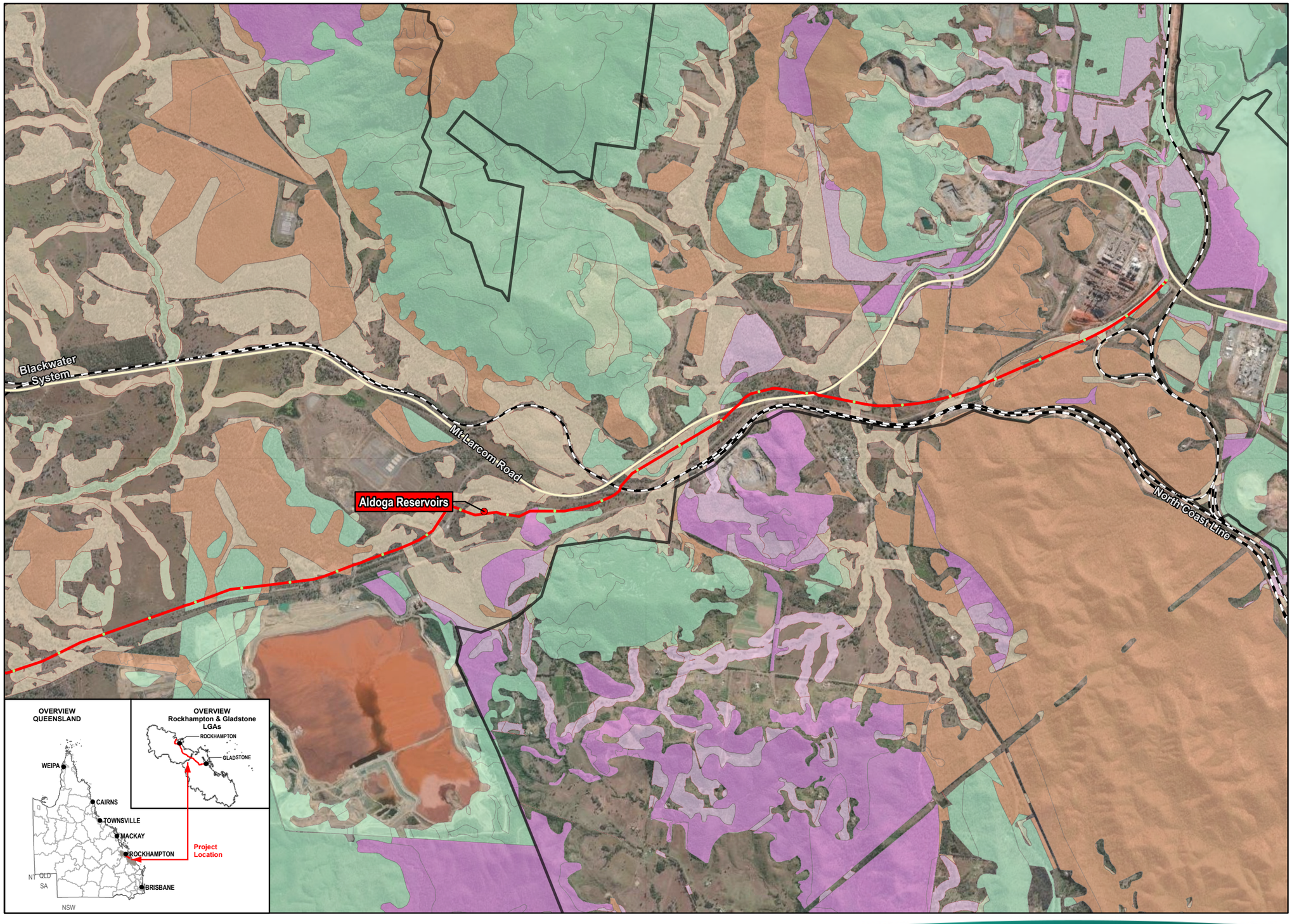
FITZROY TO GLADSTONE PIPELINE PROJECT
Figure 3.8a Regulated Vegetation and Essential Habitat
000-G-MAP-2207 Version: 2 Date: 13/06/2022



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Legend

- Chainage
- Infrastructure Locations
- Pipe Alignment
- Roads
- Railways
- Gladstone State Development Area

Vegetation management regional ecosystem map

- Category A or B area containing endangered
- Category A or B area containing of concern
- Category A or B area that is least concern
- Category C or R area containing endangered
- Category C or R area containing of concern
- Category C or R area that is of least concern

Data Sources:
1. Base Layers (Roads, waterway, locality, LGA etc) @ QSpatial, 2021
2. Cadastral data - Queensland series @ QSpatial, 2022
3. State Development Area precincts - Gladstone SDA @ QSpatial, 2015
4. Imagery @ Esri, Maxar, GeoEye, Earthstar Geographics, CNES-Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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FITZROY TO GLADSTONE PIPELINE PROJECT

Figure 3.8b Regulated Vegetation

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3.5.4.2 Threatened Ecological Communities

The EIS assessed Threatened Ecological Communities (TECs) which are MNES (Arup, 2008). The TECs there were identified as potentially occurring included:

– Brigalow (*Acacia harpophylla* dominant and co-dominant) (currently listed as endangered).
– Semi-evergreen vine thickets of the brigalow belt and Nandewar bioregions (currently listed as endangered).

Appendix C presents a chapter from the EIS that assessed the potential impacts to MNES including TECs. It was found that the Project would not result in a significant impact to TECs.

During the February 2022 ecology survey (GHD, 2022), the absence or presence of these TECs was reviewed. There were no vegetation communities observed that met the diagnostic or condition criteria of the TECs (nor any TECs that have been listed since the EPBC Approval), refer to the Ecology Assessment Report (GHD, 2022; Appendix E. Therefore, potential impacts to TECs are not anticipated and management of TECs in accordance with the EPBC Approval is not required.

3.5.4.3 Threatened Flora Species

The EIS (Arup, 2008) assessed threatened flora that are MNES. Whilst a number of species were identified as potentially occurring in the FGP GSDA alignment, no species were observed along the alignment. The EIS found that a significant impact upon flora MNES will not occur, refer to Appendix C. Therefore, threatened flora do not require management in accordance with the EPBC Approval.

For the purpose of this report and the ecology assessment, a review of flora species associated with the FGP GSDA alignment has been undertaken due to changes in State legislation, State species listing protected plants trigger mapping and species likelihoods.

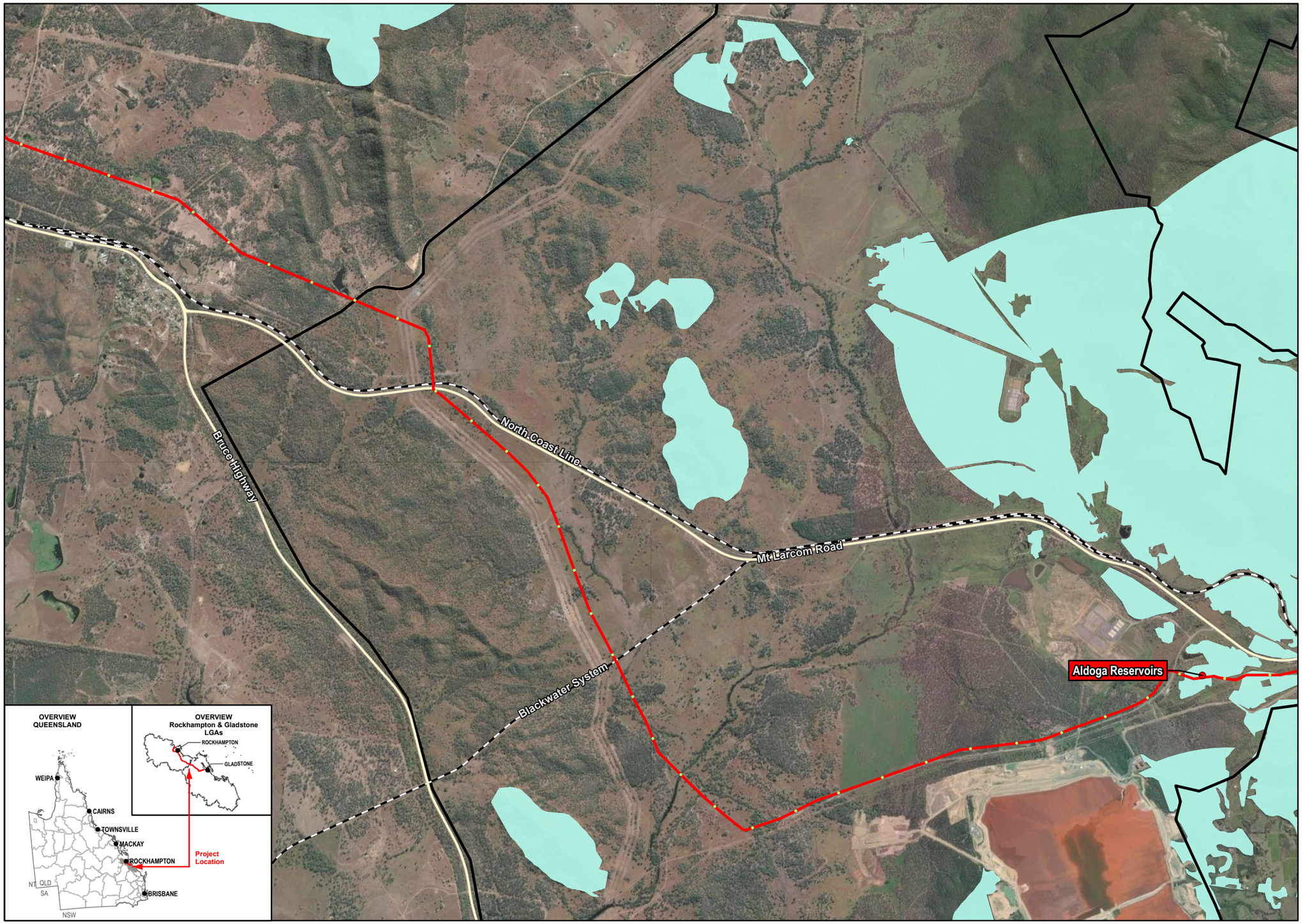
The Ecology Assessment Report (GHG, 2022; Appendix E), includes the findings of the desktop assessment and the ecology surveys. Of importance are the areas mapped by DES as high risk area under the protected plants flora survey trigger mapping (refer to Figure 3.9). Within these areas, ecology surveys were undertaken in accordance with the DES Protected Plants Flora Survey Guidelines, refer to the Ecology Assessment Report (GHD, 2022; Appendix E). The ecology survey did not identify any threatened flora species at the sites surveyed. In addition, a habitat assessment identified that only two threatened flora species are likely to occur (but not observed):

– *Samadera bidwillii,* listed as vulnerable under the NC Act and EPBC Act. It occurs in lowland rainforest or on rainforest margins. Also found in open forests and woodlands. Associated with permanent and temporary watercourses. Occurs on lithosols, skeletal soils, loam soils, sands, silts and sands with clay subsoils.
– *Cycas megacarpa*, listed as endangered under the NC Act and EPBC Act. It occurs in woodland, open woodland and open forests, often in conjunction with a grassy understory. Also found in or on the edge of rainforest habitats.

A significant impact assessment was undertaken for *Samadera bidwillii* and *Cycas megacarpa*. It was identified that a significant impact is unlikely (GHG, 2022; Appendix E).

A protected plant Exemption Notification was submitted to DES via email 3 August 2022 with an Acknowledgement issued by DES 15 August 2022.

Potential impacts to protected plant species during the design, construction and operational phases and described in Section 7.



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- Chainage
- Infrastructure Locations
- Pipe Alignment
- Roads
- Railways
- Gladstone State Development Area
- Flora Survey Trigger Map for Clearing Protected Plants in Queensland

Data Sources:
1. Base Layers (Roads, waterway, locality, LGA etc) @ QSpatial, 2021
2. Cadastral data - Queensland series @ QSpatial, 2022
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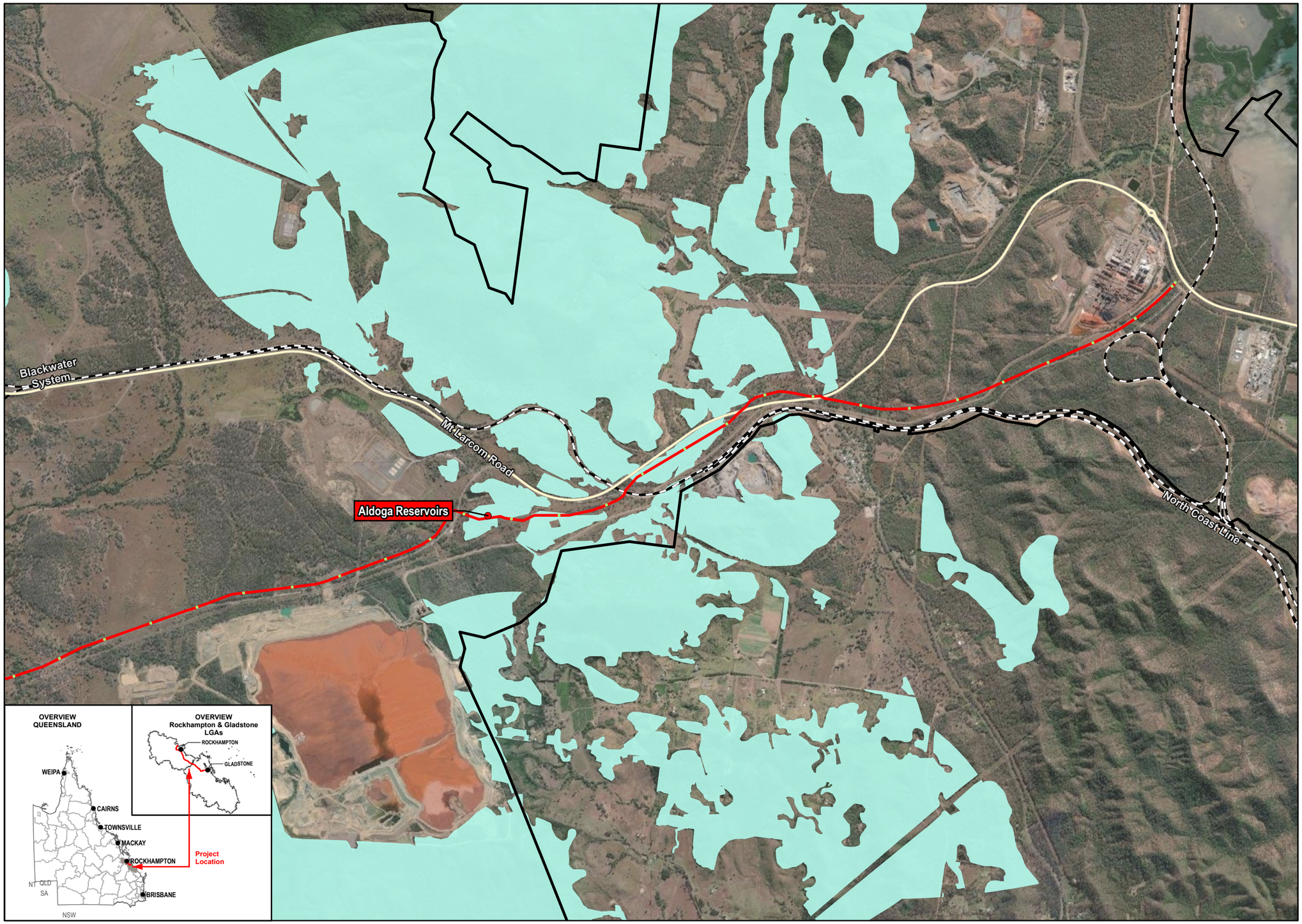
FITZROY TO GLADSTONE PIPELINE PROJECT
Figure 3.9a Flora Survey Trigger Mapping
000-G-MAP-2208 Version: 3 Date: 13/06/2022



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- Gladstone State Development Area
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Data Sources:
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2. Cadastral data - Queensland series @ QSpatial, 2022
3. State Development Area precincts - Gladstone SDA @ QSpatial, 2015
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FITZROY TO GLADSTONE PIPELINE PROJECT
Figure 3.9b Flora Survey Trigger Mapping
000-G-MAP-2208 Version: 4 Date: 13/09/2022

3.5.4.4 Marine Plants

Marine plants are not located along the FGP GSDA alignment as the unnamed watercourses are non-perennial watercourses and no tidal areas are impacted. There is no risk of impacts to marine plants.

3.5.4.5 Threatened Fauna Species

Threatened fauna species and species habitat can be identified as MNES or MSES. MNES for the FGP GSDA alignment are identified as listed threatened species at the time of the EPBC Approval (i.e. the EIS). While MSES associated with threatened fauna species (as per the current NC Act) includes protected wildlife habitat that is:

– An area of essential habitat on the essential habitat map for an animal or plant that is endangered or vulnerable wildlife.
– An area of habitat (e.g. foraging, roosting, nesting or breeding habitat) for an animal that is endangered, vulnerable or a special least concern animal.

MNES

The EIS (Arup, 2008) assessed threatened fauna species that are MNES. The MNES threatened fauna species confirmed present during the EIS associated with the FGP GSDA alignment was the Squatter pigeon southern subspecies (*Geophaps scripta scripta*) that was listed as endangered at the time of the EIS, refer to Appendix C. The habitat for this species was found to be mostly associated with grasslands. MNES, as listed at the time of the EPBC Approval, were re-assessed as part of the Ecology Assessment Report (GHD, 2022; Appendix E). The assessment identified that the following MNES species were considered likely to occur or confirmed present within the FGP GSDA alignment:

– Squatter pigeon (southern subspecies) (*Geophaps scripta* (*scripta*)), listed as vulnerable under the EPBC Approval.
– Grey-headed flying fox (*Pteropus poliocephalus*), listed as vulnerable under the EPBC Approval.

MSES

MSES fauna values have been assessed for the FGP GSDA alignment. The ecology assessment undertook a desktop assessment and site survey to identify MSES fauna values (GHD, 2022; Appendix E).

In summary:

– State mapping and field verification identified that the FGP GSDA alignment intersects multiple areas of mapped essential habitat for threatened species listed under the NC Act as shown in Figure 3.7a and Figure 3.7b. These areas include essential habitat for:
  - Squatter pigeon, listed as vulnerable under the NC Act.
  - Powerful owl (*Ninox strenua*), listed as vulnerable under the NC Act.
  - Greater glider (*Petauroides volans*), listed as vulnerable under the NC Act.
  - Koala (*Phascolarctos cinereus*), listed as endangered under the NC Act.
– In addition to the MNES and essential habitat species listed above the following threatened species or species habitat were identified as likely to occur:
  - Glossy black-cockatoo (*Calyptorhynchus lathami*), listed as vulnerable under the NC Act.
  - White-throated needletail (*Hirundapus caudacutus*), listed as vulnerable under the NC Act.
  - Yellow-bellied glider (south-eastern) (*Petaurus australis australis*), listed as vulnerable under the NC Act.

The MNES and MSES species or species habitat likely to occur or confirmed present is summarised in Table 3.7. Further information is presented in the Ecology Assessment Report (GHD, 2022; Appendix E).

Table 3.7 MNES and MSES Threatened Fauna Species Likely to Occur or Confirmed present

Threatened Species	EPBC Act Status [1]	NC Act Status	Likelihood of occurrence	MNES	MSES
Glossy black-cockatoo (*Calyptorhynchus lathami*)	NL	Vulnerable	**Confirmed present** One individual was confirmed present within the study area during the Arup (2008) field surveys. Habitat has also been identified (GHD, 2022).	No	**Yes**
Squatter pigeon (southern subspecies) (*Geophaps scripta (scripta*))	Vulnerable	Vulnerable	**Confirmed present** Two individuals were confirmed present within the study area during the field surveys. Suitable habitat has also been identified.	**Yes**	**Yes**
White-throated needletail (Hirundapus caudacutus)	NL	Vulnerable	**Likely to occur** The species has four records within the desktop search extent, the most recent recorded in 1999. The species has potential to forage aerially across the study area.	No	**Yes**
Powerful owl (*Ninox strenua*)	NL	Vulnerable	**Likely to occur** The species has 15 records within the desktop search extent, the most recent recorded in 2011. The nearest record occurs approximately 100 m from the GSDA alignment. Mature woodland retaining potentially suitable nesting habitat was recorded within the study area.	No	**Yes**
Greater glider (*Petauroides volans*),	NL	Vulnerable	**Likely to occur** The species has been historically recorded within the desktop search extent. The nearest record occurs approximately 100 m from the FGP GSDA alignment. Tall, mature woodland retaining suitable foraging and denning habitat was recorded within the study area.	No	**Yes**
Yellow-bellied glider (south-eastern) (*Petaurus australis australis*)	NL	Vulnerable	**Likely to occur** The species has been historically recorded within the desktop search extent. The nearest record occurs approximately 100 m from the FGP GSDA alignment. Tall, mature woodland retaining suitable denning habitat was recorded within the study area.	No	**Yes**
Grey-headed flying-fox (*Pteropus poliocephalus)*	Vulnerable	Least concern	**Likely to occur** The species has been historically recorded within the desktop search extent. Suitable foraging habitat was recorded within the study area.	**Yes**	No
Koala (Phascolarctos cinereus)	NL	Vulnerable	**Likely to occur** The species has been historically recorded within the desktop search extent. Suitable foraging habitat was recorded within the study area.	No	**Yes**
Note: 1- EPBC Act status at the time of the EPBC Approval 2007/3501 (approved 4 November 2011); NL indicates Not Listed at the time of the EPBC Approval.					

Impacts and Mitigation

The proposed works have been designed to avoid or, where this has not been practicable due to factors such as topographic constraints, minimise impacts to areas of remnant vegetation. There is existing vegetation along the alignment and clearing will be required to accommodate the proposed works and threatened fauna species could be impacted by clearing activities.

A significance of impact assessment is presented in the EIS (refer to Appendix C) and the Ecology Assessment Report (GHD, 2022; Appendix E). The assessment is presented as a conservative assessment based on information available about the Project and specific species to date. It has been determined that there may be a significant impact to the following MNES or MSES fauna species or species habitat:

– Squatter pigeon is identified as an MNES and MSES species. The FGP GSDA alignment will require the clearing of 22.36 ha of suitable foraging and breeding habitat.
– Greater glider (southern and central) is identified as a MSES species. The FGP GSDA alignment will require the clearing of 25.37 ha of woodland areas retaining preferred food trees and suitable denning habitat.
– Yellow-bellied glider (south-eastern) is identified as an MSES specie. The FGP GSDA alignment will require the clearing of 24.14 ha of woodland areas retaining preferred food trees and suitable denning habitat.
– Koala is identified as an MSES species. The FGP GSDA alignment will require the clearing of 35.92 ha of suitable foraging habitat (i.e. *Melaleuca*, *Eucalyptus* and *Corymbia* species) and potential breeding habitat.
– Grey-headed flying fox is identified as an MNES species. The FGP GSDA alignment will require the clearing of 35.92 ha of suitable foraging habitat, likely to be habitat critical to the survival of the species due to the abundance of important winter and spring foraging tree species (i.e. *Eucalyptus tereticornis*, *E. crebra*, *Corymbia citriodora* and *Melaleuca quinquenervia*).

Section 7 provides a discussion of the potential impacts the proposed works may have on habitat and fauna species during the design, construction and operational phases.

3.5.4.6 Biosecurity

Weed species where commonly observed throughout the FGP GSDA alignment. Weed species were observed along the FGP GSDA alignment that are either (or both) listed as Weeds of National Significance (WoNS) or restricted invasive weeds listed under the Queensland *Biosecurity Act 2014* (Biosecurity Act) are listed in Table 3.8.

Table 3.8 Weed Species Identified along the FGP GSDA alignment

Species name	Common name	WoNS	State declaration Biosecurity Act
Parthenium hysterophorus	Parthenium	X	Category 3 (restricted)
Lantana camara	Lantana	X	Category 3 (restricted)
Opuntia stricta	Common pest pear	X	Category 3 (restricted)
Opuntia stricta	Common pest pear	X	Category 3 (restricted)
Sporobolus pyramidalis	Giant rat's tail grass		Category 3 (restricted)
Cryptostegia grandiflora	Rubber vine	X	Category 3 (restricted)
Cascabela thevetia syn. Thevetia peruviana	Yellow oleander		Category 3 (restricted)
Baccharis halimifolia	Groundsel bush		Category 3 (restricted)
Harrisia martinii	Harrisia cactus		Category 3 (restricted)
Parkinsonia aculeata	Parkinsonia	X	Category 3 (restricted)
Lantana montevidensis	Creeping lantana		Category 3 (restricted)

Construction and operation of the FGP GSDA alignment has the potential to introduce and/or spread exotic weeds and pests throughout the footprint and surrounding areas.

Potential impacts and mitigation measures are summarised in Section 7.

The FGP GSDA alignment traverses the following biosecurity zones that have been declared under the Biosecurity Act:

– Cattle tick area.
– Sugar cane pest (zone 4).
– Grape phylloxera.

These zones may require consideration for the Project where agricultural land is being impacted.

3.5.5 Protected Areas

The FGP GSDA alignment does not traverse any national and/or State protected areas (such as National Parks or declared Fish Habitat Areas). The closest protected areas (i.e. within 3 km) are:

– Mount Stowe State Forest approximately 250 m south of the FGP GSDA alignment in Lot 53 on SP137048.
– Calliope Conservation Park approximately 2.2 km south of the FGP GSDA alignment in Lot 53 on SP137048.

Impacts to protected areas are not anticipated.

3.6 Cultural Heritage and Native Title

3.6.1 Aboriginal Cultural Heritage

The Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships (DSDSATSIP) identified the Cultural Heritage body for the FGP GSDA alignment is the First Nations BGGGTB People Aboriginal Corporation RNTBC (C/ - PO Box 537, Bundaberg Queensland, 4670) and the Cultural Heritage party is the Bailai, Gurang, Gooreng Gooreng, Taribelang Bunda People (BGGGTB) (C/ - PCCC Land Trust PO Box 537, Bundaberg Queensland, 4670).

GAWB has entered into a CHMP, approved under the *Aboriginal Cultural Heritage Act 2003* (Qld), for the FGP GSDA alignment (the Approved CHMP). Some areas within the FGP GSDA alignment have been surveyed for cultural heritage. These surveys identified two sites of cultural heritage significance in close proximity to the FGP GSDA alignment. These sites are further detailed in Table 3.9.

The ongoing nature of determining Aboriginal cultural heritage is acknowledged. The unsurveyed areas will be surveyed in accordance with the requirements of the Approved CHMP. Unexpected finds of cultural heritage significance when carrying out work on the Project will be managed in accordance with the Approved CHMP.

Section 7 provides a discussion of the potential impacts (and associated mitigations) the proposed works may have on cultural heritage values during the construction and operational phases.

Table 3.9 Aboriginal Cultural Heritage Assessment

Object ID	Site Type	Easting	Northing	Description	Primary Management Actions	Party
1	Stone Artefact/s - Debitage	305057	7361091	8 small pieces of light green chert in area 2 m x 2 m	Relocate	BGGGTB
2	Stone Artefact/s - Isolate	305180	7361145	Broken dark green chert flake 25 x 20 x 10 mm.	Lies outside of corridor - no management actions	BGGGTB

3.6.2 Non-Indigenous Cultural Heritage

A search of the commonwealth and world heritage places register did not identify any places in the vicinity of the FGP GSDA alignment. Similarly, there are no State significant places within close proximity (<1 km) to the FGP GSDA alignment.

There are three local heritage places identified by the Gladstone Regional Council Planning Scheme and GSDA Development Scheme within proximity to the FGP GSDA alignment. No impacts are proposed to these places:

– Euro Homestead: At its closest point the western boundary of the Euroa Homestead allotment is approximately 1.14 km north east from the FGP GSDA alignment.
– Mount Larcom Station Original Homestead: At its closest point the eastern boundary of the Mount Larcombe Station Original Homestead (as mapped by Gladstone Regional Council Planning Scheme mapping) is approximately 1 km south west of the FGP GSDA alignment.
– Targinnie Cemetery: At its closest point Targinnie Cemetery is 6.2 km north of the FGP GSDA alignment.

3.6.3 Native Title

Native title exists in the following area relevant to the FGP GSDA alignment:

a. Watercourse – Larcom Creek (GAWB Property ID # 221).

GAWB is of the view that granting of the SDA approval (MCU and Operational Works) is a future act to which section 24KA of the *Native Title Act 1993* (Commonwealth) applies, on the basis that:

i. The SDA approval (MCU and Operational Works) relates to an onshore place, being the proposed Fitzroy to Gladstone Pipeline.
ii. The SDA approval (MCU and Operational Works):
    A. permits the construction, operation, use, maintenance or repair; or
    B. consists of the construction, operation, use, maintenance or repair,

    by GAWB of infrastructure that is expressly referred to in section 24KA(2)(h) (that this, a pipeline for water supply), and which will be operated for the general public.
iii. Noting that the pipeline will be underground, the SDA approval (MCU and Operational Works) does not prevent native title holders in relation to land or waters on which the pipeline will be located from having reasonable access to such land or waters in the vicinity of the pipeline (except while the pipeline is being constructed, or for reasons of health and safety).
iv. The *Aboriginal Cultural Heritage Act 2003* (Queensland) provides for the preservation or protection of areas or sites that may be in the area of the SDA approval (MCU and Operational Works) which are of particular significance to Aboriginal people, in accordance with their traditions.

3.7 Natural Hazards

The Queensland Government Development Assessment Mapping System (State of Queensland, 2022) and Gladstone Regional Council Planning Scheme mapping (2021) identifies susceptibility of the area to natural hazards. Those hazards with relevance to the FGP GSDA alignment are outlined below.

3.7.1 Bushfire

Bushfires are a natural part of the Australian environment. Historically, Indigenous people practiced traditional burning for cultural hazard mitigation and conservation purposes. The primary drivers that determine bushfire behaviour and intensity include weather, topography, localised fuel type and load. Bushfires require a source of ignition which can occur naturally, for example through dry lightning strikes or anthropogenically, either unintentional or deliberate means. Increased risks occur with landscapes bearing slopes greater than 10% which can increase the potential for fires to establish in tree canopies and cause difficulties with accessing undulating terrain and establishing containment lines.

The FGP GSDA alignment intercepts very high, high and medium potential bushfire intensities. The coastal regions of the FGP GSDA alignment are within a band of very high potential for bushfire intensity areas. Approximately 11.5 km of the FGP GSDA alignment is within a bushfire prone area.

Bushfires have the potential to impact works, and there is potential that hot works along the FGP GSDA alignment may ignite and start a bushfire. Bushfire risks include, but are not limited to, equipment / plant damage and personnel injury or loss of like. During construction of the FGP GSDA alignment appropriate emergency management plans will be implemented to identify and manage the risk of bushfire.

The FGP GSDA alignment is buried its full length, with above ground infrastructure being valves only, therefore the potential to increase bushfire risk during operation is minor.

Any impacts to above ground infrastructure will be managed by a Bushfire Management Plan as part of the Operational Environmental Management Plan (OEMP).

3.7.2 Flooding

Riverine flooding is a significant hazard which is a great risk to Queensland. There are approximately 37 waterways which may be susceptible to flooding along the FGP GSDA alignment. These include:

– Tributaries of Vallis Creek.
– Tributaries of Calliope River.
– Tributaries of Larcom Creek including Larcom Creek itself.
– Police Creek.
– Tributaries off Sandy Creek and Sandy Creek itself.
– Tributaries of Boat Creek and Boat Creek itself.
– Coastal areas such as the tidal discharge points between Boat Creek and Calliope River.
– Approximately 11.7 km is potentially impactable by flood in the event of a severe weather event.

The FGP GSDA alignment is buried its full length, with above ground infrastructure being valves which are relatively minor pieces of infrastructure when compared to other infrastructure in the GSDA. Therefore, the potential to alter flooding regimes is primarily restricted to the construction phases where impacts will be localised and temporary.

4. Statutory Considerations

In 2007, the Coordinator-General declared the Project a 'significant project', requiring an EIS under Section 26(1) of the SDPWO Act. An EIS was prepared for the Project under the Queensland and Commonwealth bilateral agreement (EPBC Act Referral Reference EPBC 2007/3501, approved 11th July 2007).

Following the EIS process, the Project obtained the following:

– Commonwealth government EIS approval under EPBC Act (reference: EPBC 2007/3501, approved 4 November 2011) for the proposed construction and operation of a 110 km pipeline and associated infrastructure to transport up to 30 GL of water per annum from an intake point at Laurel Bank on the Fitzroy River to Gladstone, near Aldoga, Queensland.
– Coordinator-General's evaluation report of the project's EIS on 2 February 2010 which established the framework for the State approvals required for the Project (noting the report lapsed in February 2018).

Table 4.1 provides a summary of the key State and local environmental and planning legislation and their applicability to the proposed FGP GSDA alignment.

Table 4.1 Legislative Requirements and Approval Triggers

Legislation	Agency	Activity Trigger	Applicability	Licence/Permit/ Approval Required	Process and Supporting Information	Additional Notes for Consideration
Aboriginal Cultural Heritage Act 2003	DSDSATSIP	Require those conducting activities in areas of significance to take all reasonable and practical measures to avoid harming cultural heritage.	**Applicable** Section 23 of the *Aboriginal Cultural Heritage Act 2003* states that a person who carries out an activity must take reasonable and practicable measures to ensure the activity does not harm Aboriginal Cultural Heritage.	Approved CHMP, another agreement or Duty of Care Guidelines. The ongoing nature of determining cultural heritage is acknowledged.	GAWB and BGGGTB have entered into the Approved CHMP for the area covered by the FGP GSDA alignment.	Some areas within the FGP GSDA alignment have been surveyed for cultural heritage significance. The unsurveyed areas will be surveyed in accordance with the requirements of the Approved CHMP.
Environmental Protection Act 1999	DES	Disposal of contaminated material.	**Applicable** There is contaminated land within the FGP GSDA alignment.	Soil Disposal Permit	Contaminated Land Investigation and agreement for spoil disposal.	Applications required will be sought prior to the commencement of construction works on the particular property if spoil is to be removed from the property.

Legislation	Agency	Activity Trigger	Applicability	Licence/Permit/ Approval Required	Process and Supporting Information	Additional Notes for Consideration
Fisheries Act 1994	DAF	Permanent works within waterways are the construction or raising of a waterway barrier.	**To be confirmed (following detailed design)** The FGP GSDA alignment buried below the bed of the waterways and is not considered to be waterway barrier works in the majority of instances.	Operational works for constructing or raising waterway barrier works.	Detailed design Planning Report DA Form 1 and template form 4	If the detailed design of the FGP GSDA alignment indicates a barrier forming at the waterway crossing, approvals need to be sought. This will include where the trenched pipeline in waterways require scour protected to be placed in the bed of the waterway.
		Temporary works within waterways that form waterway barriers.	**Applicable** Should any temporary works be required within a mapped waterway they are considered waterway barrier works (including excavations and access tracks).	Assessment against Accepted development requirements for operational work that is constructing or raising waterway barrier works.	-	MBJV is responsible for meeting the Accepted development requirements. If the requirements cannot be met an approval, as above, will be required.
Gladstone Regional Council - Local Laws	GRC	Local laws in relation to carrying out work interfering with roads or within road reserves.	**Applicable**	Application to carry our works on a council road or interfere with a road or its operation (including driveways).	Relevant form Detailed design Traffic Management Plan	A preliminary application to carry out works on a council road has been lodged with GRC (5 August 2022) with in-principal agreement provided (19 September 2022). Permit to be sourced by the Contractor and GAWB prior to undertaking works.
Gladstone Regional Council Planning Scheme	GRC	Undertaking operational works (excavation or filling) within the LGA.	**Not Applicable** The Planning Regulation 2017 states that the Planning Scheme does not apply to operational works for a public sector entity authorised under State Legislation to carry out the work. Therefore, it is considered that a development permit for operational works is not required.	N/A	N/A	Pre-lodgement advice from GRC has confirmed that operational works are not assessable.

Legislation	Agency	Activity Trigger	Applicability	Licence/Permit/ Approval Required	Process and Supporting Information	Additional Notes for Consideration
Land Act 1994	DoR	Owners consent requirements for work on State land for certain activities and certain approvals.	**Applicable** Required for the MCU application for the FGP GSDA alignment intersects land not owned by GAWB.	Owners Consent	-	Refer to Appendix A.
Native Title Act 1993	DATSIP Native Title Tribunal	Suppression of Native Title Rights and Interests that is inconsistent with the construction of FGP.	**Applicable** Refer to 3.6.3	Native title assessment	-	-
Nature Conservation Act 1992 *Nature Conservation (Wildlife) Regulation 2006*	DES	Clearing of protected plants for construction of the proposed works.	**Applicable** Parts of the FGP GSDA alignment occur within areas mapped as high risk flora trigger area. The ecology survey did not identify any protected plant species.	Clearing Permit or Exemption Notification.	Protected Plan Survey Report Relevant form	As no protected plant species were identified an exempt clearing notification was lodged on 3 August 2022 and acknowledged by DES on 15 August 2022.
		Tampering with an animal breeding place of a protected animal.	**Applicable** Vegetation clearing is required potential animal breeding places where identified. It is likely that a high-risk Species Management Program will be required.	Species Management Program and Damage Mitigation Permit (or other if not held by Fauna Spotter Catcher).	Ecological survey required to determine if animal breeding places will be tampered with.	A Species Management Program will be prepared, and approval obtained.

Legislation	Agency	Activity Trigger	Applicability	Licence/Permit/ Approval Required	Process and Supporting Information	Additional Notes for Consideration
State Development and Public Works Organisation Act 1971	Department of State Development (OCG)	Works within a SDA.	**Applicable** The FGP GSDA alignment is within the Gladstone SDA and is considered MCU as the use is defined as utility installation.	SDA approval (MCU).	This application	Refer to this application.
State Development and Public Works Act 1971 and *Vegetation Management Act 1999*	Department of State Development (OCG) DoR	Clearing of native vegetation assessable under the *Vegetation Management Act 1999*.	**Applicable** The clearing of vegetation for the FGP GSDA alignment is considered partly self-assessable and partly assessable (refer to Section 6.5.1).	SDA approval (Operational Works).	This application	Refer to this application, Section 6.5.1.
Transport Infrastructure Act 1994	TMR	Work that is located within or interferes with a State-controlled road corridor.	**Applicable** State-controlled roads are traversed by the FGP GSDA alignment.	Road Corridor Permit(s)	Issued for construction drawings Traffic Management Plan Health, safety and environmental management plans	In principle agreement received from TMR 22 May 2023.
Transport Infrastructure Act 1994	Aurizon	Work that is located within or interferes with a State-controlled railway.	**Applicable** A State-controlled railway is traversed by the FGP GSDA alignment.	Wayleave	Issued for construction drawings Traffic Management Plan Health, safety and environmental management plans	Technical approvals received Commercial terms and conditions are currently being negotiated.

Legislation	Agency	Activity Trigger	Applicability	Licence/Permit/ Approval Required	Process and Supporting Information	Additional Notes for Consideration
Water Act	DRDMW	Where works require the destruction of vegetation, excavating or placing fill in a watercourse, lake or spring.	**Applicable** A number of watercourses or potential watercourses are traversed. GAWB are an entity for the Riverine Protection Permits Exemption Requirements WSS/2013/726.	Riverine Protection Permits Exemption Requirements	-	Contractor is to meet the Riverine Protection Permit Exemption Requirements.

5. Development Proposal

The development details relevant to this report will consist of the underground water pipeline (between The Narrows Road and Hanson Road from approximate chainage 96,000 m to 117,000 m). The FGP GSDA alignment will connect into the existing distribution system on the Mt Miller pipeline, at Yarwun. A summary of the infrastructure and construction methodology for the underground pipeline is detailed below. The current design information is summarised in the sections below and representative design drawings are included in Appendix F.

The design and construction of the FGP GSDA alignment will be in accordance with water industry standards and codes of practice with a view to achieving generally a design lifespan of a minimum of 80 years, taking into account the conditions of the sites and the nature of the materials and processes involved.

The FGP GSDA alignment is subject to further alignment refinement as a result of engagement with landowners (such as GPC) and design refinement for the connection into GAWB's network.

5.1 Design

The FGP GSDA alignment will be buried for its full length with varying cover (nominal 900 mm) depending on pipe material, ground conditions and loading. It will be laid with a minimum grade of 1 in 500. A fibre optic cable will run alongside the pipeline within the trench. This will be used to transmit signals between FGP infrastructure sites.

MBJV is currently progressing the design, and in general the design is between 50% and 85% complete, depending on facility and/or location.

The FGP will be MSCL (external diameter of 1,067 mm) with rubber ring joints (RRJ) (Sinta Joints) for the majority of its length . RRJ pipes will require welded lugs to provide electrical connection for cathodic protection. Welded ball and socket type joints will be used where pipeline is laid in areas of steep gradients (>30%), at minor creek crossings, major creek crossings, major roads and rail and at changes in direction to reduce large thrust blocks. Cathodic protection is considered necessary for the proposed MSCL pipeline, to provide additional protection against corrosion and ensure an asset life of 80 years.

In addition, an 8 km section of HDPE 1200 mm diameter will be installed from the Aldoga Reservoirs to the connection at Yarwun.

Table 5.1 provides a summary of the pipeline material for FGP GSDA alignment.

Table 5.1 Pipeline Design and Material

Capacity (GL/annum)	Design Flow (L/S)	Pipeline External Diameter (mm)	Pipeline Material	Cathodic Protection
30	1,057	1,067 mm	MSCL	Required
30	1,057	1,200 mm	HDPE	Not required

Valves are included within the pipeline design to allow for maintenance, control and surge protection. The valves are the above ground infrastructure proposed for the GSDA FGP alignment. Where possible, design is being advanced so that valves are located in proximity to property boundaries or easy to access locations. The valves are the only above ground infrastructure associated with the pipeline as part of this SDA application (MCU and Operational Works). The types of values required include:

– Air valves:
  - Allow the expulsion of dissolved air from the water during normal operation.
  - Approximately 240 air valves are included in the design of the Project between 500 m to 1,000 m spacing, maximum allowance of 40 within the GSDA.
– Flow meter and Flow Control Valve:
  - A flow control valve has been designed near the Mt Miller connection point for the Aldoga to Mt Miller gravity pipeline to connect with the existing raw water network.

- A flow meter is located near the downstream end of the Aldoga to Mt Miller pipeline upstream of the flow control valve.

– Isolation valves:
  - Allow isolation of sections of the pipeline in the case of failure in the adjacent pipeline, pump station, storage reservoir or WTP.
  - Isolation valves will typically be installed every 5 km and will be installed at the inlet and outlets of all pump stations and storage reservoirs (namely Alton Downs and Aldoga Reservoirs).
– Scour valves
  - Are used to drain the pipeline and to allow scouring of the main pipe.
  - Scour valves are to be included at all low points in the pipeline and will function under gravity where possible. There are approximately 230 scour valves along the FGP GSDA alignment and are located at every 200 m to 800 m, final locations and discharge arrangements will be developed during the detailed design.
– Branch tees – future connections:
  - Will be provided to allow cross connection to any future duplication.
  - These are not intended to provide water supply from the transmission mains; however, branch tees may also be included in a limited number of locations near populated areas.

The design is currently approaching 85% complete. The alignment is currently being finalised, and major alterations are not anticipated. Appendix F provides representative design drawings presented in Table 5.2.

Table 5.2 Design Drawings

Title	Prepared by	Date / Rev	Drawing number
General Drawing Register	MBJV	04/04/23 / Rev C	1151-DL00-W3P-CIV-DRG-10000
Standard Details Trench types	MBJV	08/06/23 / Rev E	1151-DL00-W3P-CIV-DRG-10001
Typical Right of Way – 30 m	MBJV	08/06/23 / Rev D	1151-DL00-W3P-CIV-DRG-10008
Typical Right of Way – 15 m	MBJV	08/06/23 / Rev D	1151-DL00-W3P-CIV-DRG-10009
DL05 Pipeline Key Plan 5 of 5	MBJV	08/06/23 / Rev C	1151-DL05-W3P-PLE-DRG-65005
DL07 Pipeline Key Plan	MBJV	08/06/23 / Rev B	1151-DL07-W3P-PLE-DRG-67001
DL05 Pipeline CH96485.10 – 97185.10	MBJV	08/06/23 / Rev B	1151-DL05-W3P-PLE-DRG-65139
DL05 Pipeline CH97185.10 – 97885.10	MBJV	08/06/23 / Rev B	1151-DL05-W3P-PLE-DRG-65140
DL05 Pipeline CH97885.10 – 98585.10	MBJV	08/06/23 / Rev B	1151-DL05-W3P-PLE-DRG-65141
DL05 Pipeline CH98585.10 – 99285.10	MBJV	08/06/23 / Rev B	1151-DL05-W3P-PLE-DRG-65142
DL05 Pipeline CH99285.10 – 99985.10	MBJV	08/06/23 / Rev B	1151-DL05-W3P-PLE-DRG-65143
DL05 Pipeline CH99985.10 – 100685.10	MBJV	08/06/23 / Rev B	1151-DL05-W3P-PLE-DRG-65144
DL05 Pipeline CH100685.10 – 101385.10	MBJV	08/06/23 / Rev B	1151-DL05-W3P-PLE-DRG-65145
DL05 Pipeline CH101385.10 – 102085.10	MBJV	08/06/23 / Rev B	1151-DL05-W3P-PLE-DRG-65146
DL05 Pipeline CH102085.10 – 102785.10	MBJV	08/06/23 / Rev B	1151-DL05-W3P-PLE-DRG-65147
DL05 Pipeline CH102785.10 – 103485.10	MBJV	08/06/23 / Rev B	1151-DL05-W3P-PLE-DRG-65148
DL05 Pipeline CH103485.10 – 104185.10	MBJV	08/06/23 / Rev B	1151-DL05-W3P-PLE-DRG-65149
DL05 Pipeline CH104185.10 – 104885.10	MBJV	08/06/23 / Rev B	1151-DL05-W3P-PLE-DRG-65150
DL05 Pipeline CH104885.10 – 105585.10	MBJV	08/06/23 / Rev B	1151-DL05-W3P-PLE-DRG-65151
DL05 Pipeline CH105585.10 – 106285.10	MBJV	08/06/23 / Rev B	1151-DL05-W3P-PLE-DRG-65152
DL05 Pipeline CH106285.10 – 106.985.10	MBJV	08/06/23 / Rev B	1151-DL05-W3P-PLE-DRG-65153
DL05 Pipeline CH106.985.10 – 107685.10	MBJV	08/06/23 / Rev B	1151-DL05-W3P-PLE-DRG-65154

Title	Prepared by	Date / Rev	Drawing number
DL05 Pipeline CH107685.10 – 108385.10	MBJV	08/06/23 / Rev B	1151-DL05-W3P-PLE-DRG-65155
DL05 Pipeline CH108385.10 – 108.385.10	MBJV	08/06/23 / Rev B	1151-DL05-W3P-PLE-DRG-65156
DL07 Pipeline CH108899.44 – 109579.44	MBJV	08/06/23 / Rev B	1151-DL07-W3P-PLE-DRG-67002
DL07 Pipeline CH109579.44 – 110279.44	MBJV	08/06/23 / Rev B	1151-DL07-W3P-PLE-DRG-67003
DL07 Pipeline CH110279.44 – 110979.44	MBJV	08/06/23 / Rev B	1151-DL07-W3P-PLE-DRG-67004
DL07 Pipeline CH110979.44 – 111679.44	MBJV	08/06/23 / Rev B	1151-DL07-W3P-PLE-DRG-67005
DL07 Pipeline CH111679.44 – 112.379.44	MBJV	08/06/23 / Rev B	1151-DL07-W3P-PLE-DRG-67006
DL07 Pipeline CH112.379.44 – 113079.44	MBJV	08/06/23 / Rev B	1151-DL07-W3P-PLE-DRG-67007
DL07 Pipeline CH113079.44 – 113779.44	MBJV	08/06/23 / Rev B	1151-DL07-W3P-PLE-DRG-67008
DL07 Pipeline CH113779.44 – 114479.44	MBJV	08/06/23 / Rev B	1151-DL07-W3P-PLE-DRG-67009
DL07 Pipeline CH114479.44 – 115179.44	MBJV	08/06/23 / Rev B	1151-DL07-W3P-PLE-DRG-67010
DL07 Pipeline CH115179.44 – 115879.44	MBJV	08/06/23 / Rev B	1151-DL07-W3P-PLE-DRG-67011
DL07 Pipeline CH115879.44 – 116568.03	MBJV	08/06/23 / Rev B	1151-DL07-W3P-PLE-DRG-67012
Larcom Creek Critical Crossing – General arrangement	MBJV	08/06/23 / Rev B	1151-DL05-W3P-CIV-DRG-35140
Larcom Creek Critical Crossing – Crossing detail	MBJV	08/06/23 / Rev B	1151-DL05-W3P-CIV-DRG-35141
Bajool Port Alma Road Critical Crossing – General arrangement	MBJV	08/06/23 / Rev B	1151-DL05-W3P-CIV-DRG-35170
Bajool Port Alma Road Critical Crossing – Crossing detail	MBJV	08/06/23 / Rev B	1151-DL05-W3P-CIV-DRG-35171
Gladstone Mt Larcom Road Critical Crossing – General arrangement	MBJV	08/06/23 / Rev B	1151-DL07-W3P-CIV-DRG-37020
Gladstone Mt Larcom Road Critical Crossing – Crossing detail	MBJV	08/06/23 / Rev B	1151-DL07-W3P-CIV-DRG-37021
DL07 Standard Details – Isolation valve assembly	MBJV	08/06/23 / Rev D	1151-DL07-W3P-CIV-DRG-17001
DL07 Standard Details – Air valve assembly	MBJV	08/06/23 / Rev D	1151-DL07-W3P-CIV-DRG-17002
DL07 Standard Details – Scour assembly	MBJV	08/06/23 / Rev D	1151-DL07-W3P-CIV-DRG-17003

5.2 Construction

Construction will begin with the establishment of the ROW. The ROW is the area where the FGP will be located as well as the temporary work area needed to construct the FGP. The ROW width is approximately 30 m, but it will be reduced over short distances (e.g. in environmentally sensitive areas) and may vary depending on Project or site specific considerations. The ROW will allow room for the pipeline trench, vegetation and soil stockpiles, an access track with appropriate width for passing and the pipeline preparation area.

A typical ROW layout is shown in Figure 5.1. The nominated ROW for the FGP GSDA alignment is depicted in Appendix B.

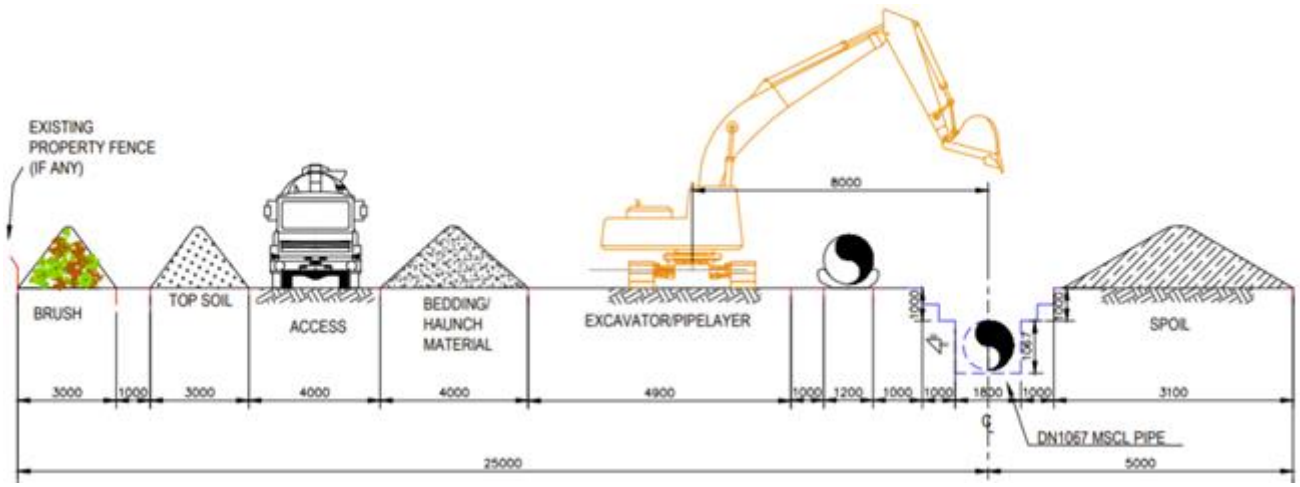


Figure 5.1 Typical ROW

Main Construction Stages

The main stages of construction are outlined as follows.

Survey – in preparation for construction, the ROW will be fully surveyed, and the pipeline centre line will be pegged.

Potholing – some potholing may need to be carried out to identify the location of existing underground services. This will involve digging small test holes using hydro vacuum excavation and/or hand tools. Any underground services will be identified and marked with survey pegs/conduits. Overhead powerlines will be marked with colour-coded flags.

Clearing – the ROW will be cleared of all topsoil, vegetation, rocks and obstructions, in compliance with regulatory approvals. Topsoil and vegetation will be stockpile similar to as shown in Figure 5.1.

Grading – bulldozers and graders will level the ground in certain areas within the ROW to prepare a safe construction platform for the pipeline.

Fencing – some fencing may need to be constructed with gates to access the ROW.

Pipeline stringing – pipes will be delivered to the site by truck from a centralised pipe stockpile location and 'strung' end-to-end along the ROW next to where the trench will be dug. The pipes will be laid on sand or sawdust bags to protect the pipes from damage.

Trenching – the pipeline trench will generally be 2 m deep but could be up to 5 m deep depending on pipeline design and location. The top of the excavation trench will generally be 12 m wide but could be up to 16 m wide in some locations depending on trench wall soil stability and pipeline design. Specialist heavy earth moving machinery will be used to excavate the pipeline trench. Trench spoil will be stockpiled separately as shown in Figure 5.1.

Pipe laying and backfilling – after the pipe is laid, the trench will be backfilled and compacted using a combination of imported material (sand or crusher dust) to be placed under and around the pipe and selected subsoil for the remainder of the trench. The surface will be reinstated using the stripped topsoil and seedstock.

Pipeline Marker Posts and Signs – posts and signs containing necessary contact details applicable to the operation and maintenance of the pipeline will be installed along the pipeline in various locations.

Cathodic Protection – the pipeline shall be protected from corrosion by cathodic protection. Accordingly, cathodic protection test point stands shall be required aboveground along the pipeline alignment**.**

Clean up and rehabilitation – all areas affected by construction including ROW, work areas, access tracks, and temporary site office areas will be cleaned up and rehabilitated to pre-construction conditions as far as practicable. The stockpiled vegetation will be utilised in the rehabilitation process, where possible (e.g. use of mulch and placement of logs etc. in the ROW (pending end land use).

Pipeline cleaning and testing – this process occurs at the end of construction to remove debris from the inside of the pipe and test for leaks.

Crossing Methods

Trenchless construction methods are the preferred method where the pipeline crosses creeks, roads and rail. Details of the crossing methods are summarised as follows:

– Open trenching (non-trenchless):
  - It involves excavation of the trench directly though the stream or roadway. Excavators or backhoes are generally used with the trench spoil to be stockpiled away from the stream bed or road. The prefabricated pipe is strung out, lowered in and the trench backfilled immediately.
  - This method is proposed for minor roads and minor/dry creeks.

– Thrust boring or pipe-jacking:
  - Trenchless method involving launch and receival pits which are excavated on both sides of the crossing location.
  - An enveloper pipe with an open face is pressed into the ground with hydraulic jacks from the launch pit to the reception pit and an auger or drill removes the materials inside the pipe. The carrier pipe is then laid inside the enveloper pipe. The annular space between the enveloper and carrier pipes are then grouted.
  - The launch pit would be approximately 8 m by 4 m and the receival pit approximately 4 m by 3 m.
  - This method is proposed for major road and rail crossings.

– Micro-tunnelling or horizontal directional drilling:
  - Trenchless method involving launch and reception pits on either side of the crossing.
  - A tunnelling machine is used to excavate an underground path for the pipeline.
  - Powerful hydraulic jacks are used to push specially designed enveloper pipes through the ground behind a shield at the same time as excavation is taking place within the shield. The enveloper pipe is pushed from the launch pit to the reception pit. After the installation of the enveloper pipe, the carrier pipe is laid inside the enveloper pipe. The annular space between the enveloper and carrier pipes are then grouted. This method is suitable for sections up to 350 meters in length. Provided the working pits are set well back there is minimal impact to fringing riparian vegetation and river banks.
  - Within the GSDA, Larcom Creek (CH 102500), will be crossed using this method due to the sensitive nature of the creek (as identified in the OCG Evaluation Report).

    Considerations in deciding if a waterway is to be crossed by this method include:
    – Whether the waterway is ephemeral or perennial
    – Presence of riparian vegetation and its ecological value
    – Aquatic ecology values of the waterway and substrate type
    – Length of the crossing
    – Geotechnical considerations
    – Engineering feasibility
    – Cost of the crossing
    – Construction duration.

– Major road and rail crossings are detailed in Table 5.3, refer to Table 3.3 and Table 3.4 for construction methods for the crossing.

Table 5.3 Major Road and Rail Crossings

Crossing	Approx. Chainage	Approx. length (m)
Gladstone Mount Larcom Road and North Coast Rail Line	97,860	91
Aldoga Road	108,400	20
Mount Larcom Road and North Coast Rail Line	110,675	55

Crossing	Approx. Chainage	Approx. length (m)
Gladstone Mount Larcom Road	112,130	45
Gladstone Mount Larcom Road	112,900	85

Access

The current base case for the construction is to utilise the existing road network to access the alignment, with access undertaken along the FGP GSDA alignment within the ROW. Temporary gravel access tracks will be constructed along the FGP GSDA alignment where required to temporarily access facilities and work areas.

The Contractor will ensure that any vehicles that are used in the execution of the works, deliveries or consignments to and from the FGP GSDA alignment have the relevant permits, escorts and can access the FGP GSDA alignment with minimal disruption to the existing infrastructure. All vehicles or equipment hauling material on public roads must be fitted with tight tailgates and comply with the relevant road safety and transport legislation.

5.2.1 Commissioning

The commissioning of GAWB's assets will be completed by MBJV in collaboration with its Partner, Ventia. A detailed Commissioning Plan is currently being prepared to manage all aspects of commissioning including the water intake and discharge for hydrotesting.

The commissioning process will be undertaken in two stages for each section of the pipeline and its associated infrastructure. These include pressure testing and leak testing, i.e. hydrotesting.

The FGP will be commissioned in various sections of approximately 5 km lengths. The commissioning will include flushing each section with water to test the pressure of the pipe and for any leaks. It is expected that approximately 5 ML of water will be required for this testing. Following the successful commissioning of a particular pipeline section, the water will be stored in the pipeline until the next section is ready for commissioning.

For the FGP GSDA alignment, it is expected that up to 5 ML of water will be required for this testing and most of the hydrotest water will be discharged at the end of the pipe into an open swale drain that feeds into Boat Creek. The water will only be discharged if it meets the appropriate water quality release criteria. The water is expected to contain residual sediments from within the pipeline, no chlorine will be used in the commissioning process. It should be noted, there may be some minor discharges along the ROW, where leaks are identified.

For all waste waters that are discharged during commissioning, measures will be taken to:

– Reuse water for each section.
– Minimise the waste volumes of water generated.
– Minimise the water to be discharged to the environment.
– Ensure that the water to be discharged meets the requirements of any relevant guidelines, water quality objectives and the requirements of stakeholders.
– Ensure erosion protection measures are in place.

5.2.2 Rehabilitation

All areas affected by construction including work areas, temporary access tracks (where constructed) and temporary site office areas will be cleaned up and rehabilitated to pre-construction conditions as far as practicable. Clean up will include removal of waste material and equipment, compaction relief (particularly on heavily trafficked areas) and profiling to stable contours.

Signs, fences and barriers will be installed where required to prevent unauthorised access to sensitive areas, and to prevent damage. Rehabilitation measures will be conducted according to recommendations in the *Australian Pipeline Industry Association Code of Environmental Practice - Onshore Pipelines 2017* and will consider the application of vegetation regeneration and/or revegetation techniques as appropriate. These will encourage the natural regeneration of disturbed vegetation, which may include topsoil replacement, weed management, re-spreading stockpiled vegetation over disturbed area and seed planting to promote soil stabilisation.

The Project's Construction Environmental Management Plan (CEMP) (GAWB, 2023) includes a rehabilitation and revegetation control plan which includes the following measures, to be undertaken progressively as works are staged:

– Recontouring and compaction – this will include monitoring and the re-instatement of any subsidence and other associated works.
– Topsoil replacement – topsoil will be stockpiled and replaced after works to enable ground layer species to re-establish.
– Weed control – weeds will be managed according to the CEMP and relevant control plans.
– Erosion protection – erosion will be managed according to the CEMP and relevant control plans.
– Revegetation – consistent with surrounding conditions. The vegetation stockpile will be utilised in the rehabilitation process.

GAWB will develop and finalise a CEMP for approval and implementation that includes, at a minimum, the requirements of the draft CEMP and any additional measures required to address approval conditions. The draft CEMP is included in Appendix G. The MBJV will develop site, and activity-specific CEMP and CEMP sub-plans.

5.2.3 Construction Timeframe

It is proposed that the FGP GSDA alignment will be completed within 5 months from the commencement of construction. An indicative construction timeframe is outlined in Table 5.4.

Table 5.4 Indicative FGP GSDA Alignment Construction Timeframe

Activity	Start	Completion
Right of Way Preparation: survey and set out, clear and grade, marine plant collection and management, erosion and sediment control device establishment and pipe stringing		
Ch 96000 to Ch 117,000	November 2023	March 2024
Pipe Installation: trenching, pipe install, trenchless crossings backfilling and fibre optic cable installation		
Ch 96000 to Ch 117,000	January 2024	April 2024
Valve installation: air valve and scour valve installation		
Ch 96000 to Ch 117,000	February 2024	April 2024
Reinstatement Activities: land stabilisation and revegetation		
Ch 96000 to Ch 117,000	January 2024	April 2024

5.3 Operation

There will be minimal operational activities associated with the FGP GSDA alignment. Indicative maintenance activities and frequencies for the FGP GSDA alignment would include:

– Routine easement maintenance: 2-3 times per year.
– Routine pipeline inspections and valve maintenance: 2-3 times per year.
– Abnormal pipeline maintenance and repairs: as required.

Easement maintenance activities typically tie in with pipeline inspection activities (within 2-3 weeks) so that grass is slashed, and ground is visible for the pipeline infrastructure inspection.

Occasional access via four-wheel drive or maintenance by heavy machinery, where required, will be undertaken via the local road network and along the FGP GSDA alignment.

6. Development Assessment

6.1 State Development and Public Works Organisation Act 1971

The main purpose of the SDPWO Act is to facilitate co-ordinated and environmentally responsible infrastructure planning and development in Queensland. The GSDA Development Scheme, which relates to the FGP GSDA alignment, is created under Section 77 of the SDPWO Act.

6.2 Gladstone State Development Area Development Scheme

The GSDA was declared in 1993 with the GSDA Development Scheme applicable to all development within the GSDA. The FGP GSDA alignment, between The Narrows Road and Hanson Road is located within the GSDA. The GSDA Development Scheme is the relevant categorising instrument, with the CG as the assessment manager. The current GSDA Development Scheme is dated May 2022.

Regulated development associated with the FGP GSDA alignment includes:

– Assessable development in both the Materials Transportation and Services Corridor Precinct:
  - Utility installation as a MCU.
  - Operational works (clearing native vegetation) where unable to comply with the SDA self-assessable requirements.
– Self-assessable development in both the Materials Transportation and Services Corridor Precinct:
  - Operational works (clearing native vegetation) where able to comply with the SDA self-assessable development requirements.

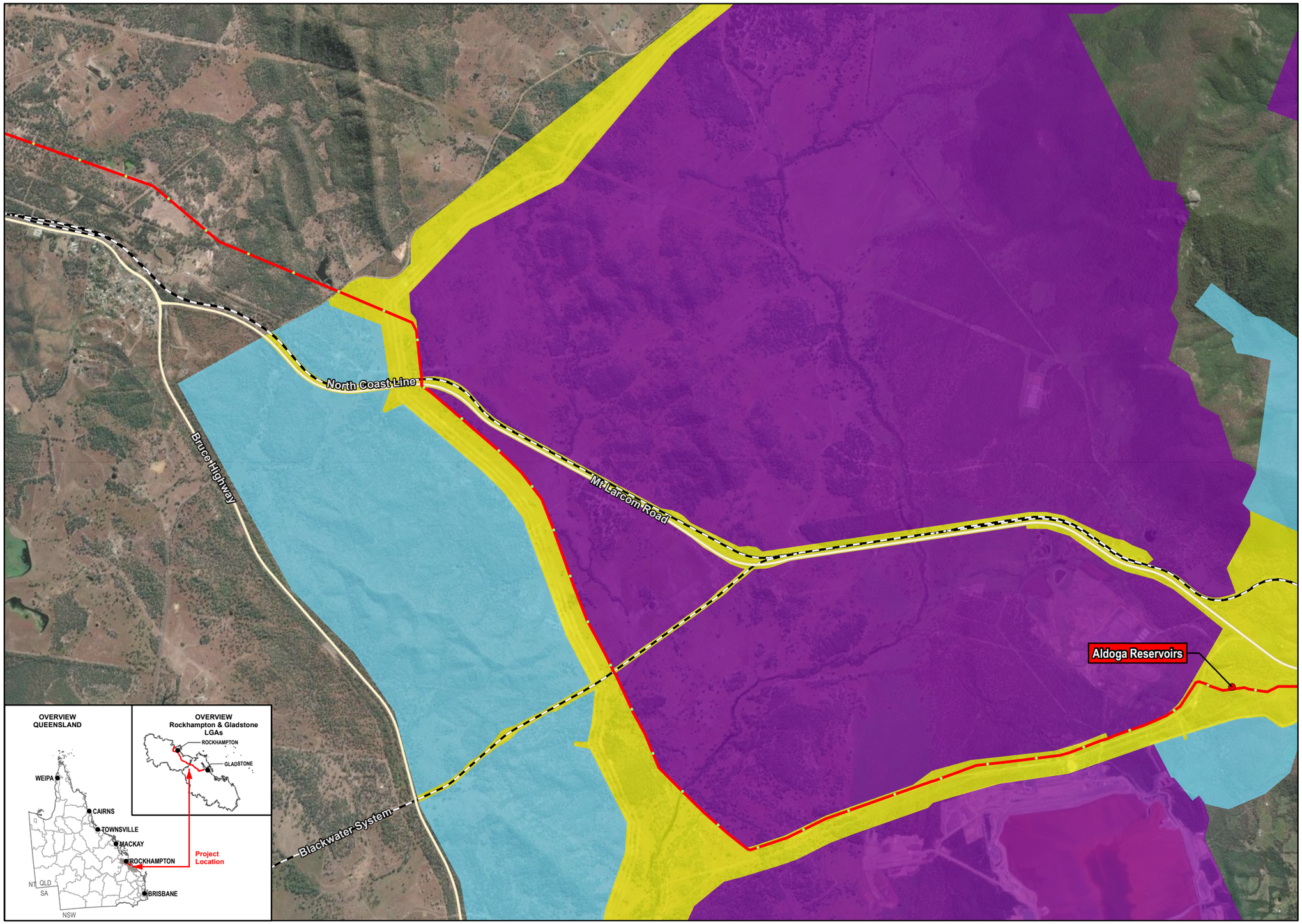
In accordance with Section 1.3.1(2) of the GSDA Development Scheme, self-assessable development must comply with the requirements in Schedule 3 of the Scheme. Section 6.2.5 provides details of the operational works that are assessable or self-assessable. Section 6.2.5 also presents an assessment of the self-assessable operational works against Schedule 3 of the Scheme.

In accordance with Section 2.1.1(3) of the GSDA Development Scheme, a properly made SDA application will be assessed against the development assessment framework, as outlined in Table 6.1. The assessment applies to both MCU and operational works (where operational works is not self-assessable).

Table 6.1 GSDA Assessable Development Assessment Framework

Development Assessment Framework	Relevant Section of Report
The strategic vision for GSDA	Refer to Section 6.2.1.
The overall objectives for development in the GSDA	Refer to Section 6.2.2.
The preferred development intent for each development precinct	The FGP GSDA alignment is located within the Materials Transportation and Services Corridor Precinct. Refer to Section 6.2.3.
SDA-wide assessment criteria	Refer to Section 6.2.4.

The following sub-sections provide an assessment of the proposed FGP GSDA alignment against the relevant framework of the GSDA Development Scheme.



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Legend

- Chainage
- Infrastructure Locations
- Pipe Alignment
- Railways
- Roads

Gladstone State Development Area

PRECINCT

- High Impact Industry Precinct
- Materials Transportation and Services Corridor Precinct
- Medium Impact Industry Precinct

Data Sources:
1. Base Layers (Roads, waterway, locality, LGA etc) @ QSpatial, 2021
2. Property Boundary @ Department of Resources 2021.
3. Indicative Ecology Survey Location(s) @ GAWB 2022
4. Imagery @ Esri, Maxar, GeoEye, Earthstar Geographics, CNES-Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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PROJECTION UTM Zone 56
(Datum GDA2020)

Gladstone Area Water Board
P.O. Box 466, Gladstone QLD 4680
Ph: 07 4976 3000 www.gawb.qld.gov.a

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FITZROY TO GLADSTONE PIPELINE PROJECT
Figure 6.1a GSDA Precincts
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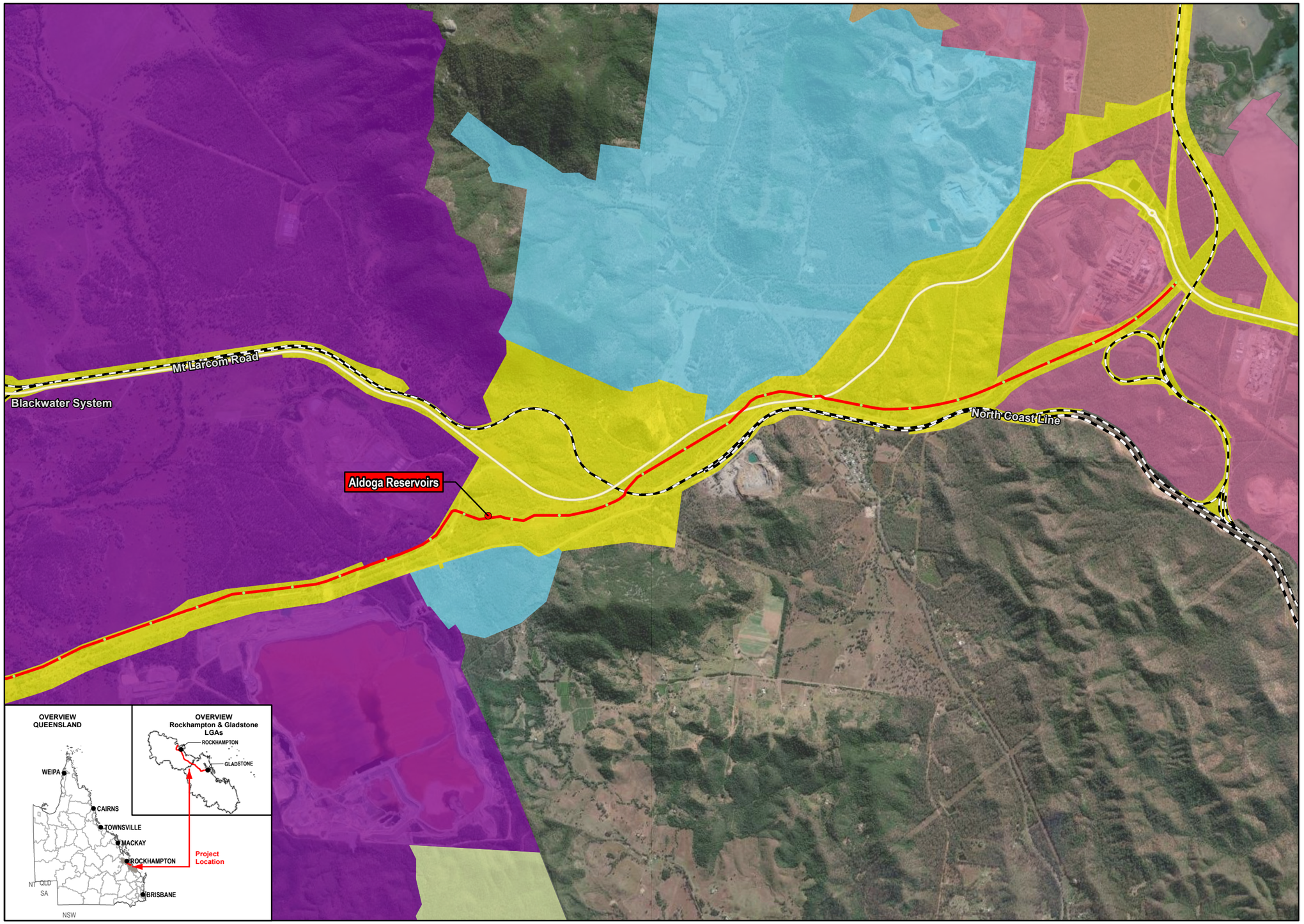

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Legend

- Chainage
- Infrastructure Locations
- Pipe Alignment
- Railways
- Roads

Gladstone State Development Area

PRECINCT

- High Impact Industry Precinct
- Industry Investigation Precinct
- Materials Transportation and Services Corridor Precinct
- Medium Impact Industry Precinct
- Environmental Management Precinct
- Port Related Industry Precinct

Data Sources:
1. Base Layers (Roads, waterway, locality, LGA etc) @ QSpatial, 2021
2. Property Boundary @ Department of Resources 2021.
3. Indicative Ecology Survey Location(s) @ GAWB 2022
4. Imagery @ Esri, Maxar, GeoEye, Earthstar Geographics, CNES-Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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FITZROY TO GLADSTONE PIPELINE PROJECT

Figure 6.1b GSDA Precincts

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6.2.1 Strategic Visions of the GSDA

An assessment of the FGP GSDA alignment against the strategic visions of the GSDA is provided in Table 6.2.

Table 6.2 Assessment Against the Strategic Visions for the GSDA

Strategic Vision	Proposal Response
1. The vision for the GSDA is:	
a. Be Central Queensland's economic powerhouse, with an efficient concentration of large-scale industry of national, State and regional significance that benefit from the SDA's strategic location near the Port of Gladstone and major road and rail networks.	**Complies** The FGP GSDA alignment is located within the GSDA. It will support the expanding industrial development of national, State and regional benefit in Gladstone by providing a reliable supply of water for growth of current customers and future demands. The Project is a response to the lower performance of Awoonga Dam in supplying necessary water allocations, which has negative impacts both in terms of drought and demand responses.
b. Support development that aligns with the Queensland Government's strategic priorities for the region, particularly related to the hydrogen industry.	**Complies** The FGP GSDA alignment directly support the strategic priorities of the region by assisting with a reliable supply of water to industry, including hydrogen. GAWB is committed to providing greater certainty of water reliability to support business investment in the emerging hydrogen industry.
c. Maintain environmental, cultural heritage and community values where possible to support wider ecological processes and provide community benefits.	**Complies** The FGP GSDA alignment was selected based on a number of requirements including minimising impact upon environment, cultural heritage and community values. Potential impacts and management associated with the underground water pipeline are discussed in Sections 3.5, 3.6, 3.7 and 7. Community benefit will be provided by the Project as a result of increasing reliability of water supply to the region for community and industrial users.
d. The strategic vision is supported by the overall objectives for development and preferred development intents of development precincts within the GSDA.	**Complies** Refer to Sections 6.2.2 and 6.2.3.

6.2.2 Overall Objectives for Development in the GSDA

An assessment of the FGP GSDA alignment against the overall objectives for development within the GSDA is provided in Table 6.3.

Table 6.3 Assessment Against the Overall Objectives of the GSDA

Overall Objectives	Proposal Response
1. Development within the GSDA will:	
a. Capitalise on Gladstone SDA's strategic location and support the role and function of the Port of Gladstone	**Complies** The FGP GSDA alignment is not reliant on the Port of Gladstone; however, it will support industry and development through increasing water security for the Port of Gladstone.
e. Identify and implement opportunities for synergies and co-location between other uses, services and infrastructure to minimise waste and inefficiencies	**Complies** The FGP GSDA alignment is a linear development. The pipeline alignment has considered impacts on land use through a combination of methods including: – Being located within the Materials Transportation and Services Corridor Precinct. – Aligning with existing linear infrastructure where practical. – Following property boundaries where practical.

Overall Objectives	Proposal Response
	– Impacting land that is suitable for the pipeline (such as land parcels not suitable for future larger scale development). These methods, along with consultation with landowners, have identified potential synergies associated with co-location and reduced land sterilisation where possible. Refer to Section 3.3 for further information.
f. Use land and infrastructure efficiently and be adequately serviced by infrastructure	**Complies** The FGP GSDA alignment is considered to be infrastructure itself. The FGP GSDA alignment will require support from the local transport network where available. No other permanent infrastructure is required to service the alignment. The proposed underground pipeline has been sited taking in consideration existing infrastructure and other land uses and to minimise any impact. There is the potential for the proposed works to impact on existing utilities. GAWB is in the process of liaising with impacted utility providers. Refer to Section 3.3 for further information.
g. Ensure the integrity and functionality of the Gladstone SDA, including infrastructure corridors and future development opportunities, is maintained and protected from incompatible land uses	**Complies** It is considered that the FGP GSDA alignment will maintain functionality of the GSDA as the infrastructure supports industrial development and consequently does not introduce incompatible uses.
h. Ensure new lots are appropriately sized to accommodate preferred development	**Not applicable** No new lots are proposed to be created. Nevertheless, the FGP GSDA alignment siting has minimised impact to potential new development.
i. Be designed, constructed, and operated to a high quality consistent with best practice	**Complies** The FGP GSDA alignment is being designed in accordance with current design requirements for water pipelines. During construction MBJV will meet design requirements, any permits/approval conditions, other regulatory requirements and best practice methods as appropriate. Refer to the CEMP in Appendix G. Operation of the pipeline will be in accordance with an OEMP. The OEMP will be prepared and updated as needed, for example upon change in site conditions or best practice.
j. Avoid impacts on environmental, cultural heritage, and community values (including sensitive land uses), or minimise or mitigate impacts where they cannot be avoided and offset any residual impacts	**Complies** Impacts to environmental values are unavoidable; however, they will be minimised and managed by reducing the footprint (i.e. ROW) in sensitive areas, implementing a CEMP and implementing specific Management Plans as required. A CEMP is provided in Appendix G. Impacts to community values are anticipated to be minor due to the nature of the Project (a buried water pipeline), and the predominately rural and developed nature of the area. Nevertheless, a CEMP will be implemented to mitigate impacts. The surveyed areas in the Approved CHMP identified that the risk of impacts to cultural heritage are low. To mitigate impacts, the requirements of the Approved CHMP will be implemented. Potential impacts and management associated with the FGP GSDA alignment are further discussed in Sections 3.5, 3.6, 3.7 and 7. Operational impacts are anticipated to be minor; however, environmental, cultural heritage and community values will be managed in accordance with an OEMP.

Overall Objectives	Proposal Response
k. Not adversely impact on the outstanding universal values of the Great Barrier Reef World Heritage Area (GBRWHA)	**Complies** The FGP GSDA alignment will not directly impact upon the GBRWHA. A CEMP will be implemented to protect and maintain water quality values, as well as any relevant downstream GBRWHA values. The most southern extent of the FGP GSDA alignment is located approximately 2 km from the boundary of the GBRWHA and 8 km from the Great Barrier Reef (GBR) Marine Park. A CEMP is provided in Appendix G. The FGP GSDA alignment will be operated an accordance with an OEMP which will include mitigation of water quality impacts to the surrounding catchments that drain to Port Curtis. Refer to Section 7 of this report for further information.
l. Manage the risks associated with the projected impacts of climate change and natural hazards to protect people and property	**Not applicable** The Project is a response to the lower performance of Awoonga Dam, which may worsen as a result of climate change, in supplying necessary water allocations, which has negative impacts both in terms of drought and demand responses. The FGP GSDA alignment is not required to consider flood immunity. Ground levels will be returned to natural profiles following construction.
m. Manage impacts of air quality on the capacity of the Gladstone airshed.	**Complies** Impacts to air quality as a result of dust and exhaust emissions may occur during construction, these will be managed in accordance with the CEMP. A CEMP is provided in Appendix G. The Project will not negatively impact the capacity of Gladstone's airshed.

6.2.3 Materials Transportation and Services Corridor Precinct

The preferred development intent for the Materials Transportation and Services Corridor Precinct and its relation to the proposed FGP GSDA alignment is described in Table 6.4. The majority of the FGP GSDA alignment is within this precinct.

Table 6.4 Materials Transportation and Services Corridor Precinct – Preferred Development Intent Assessment

Development Intent	Proposal Response
1. The preferred development intent for the Materials Transportation and Services Corridor Precinct is described below.	
a. This precinct provides an efficient, effective and safe route for linear infrastructure to link development in the GSDA and the Port of Gladstone.	**Complies** The FGP GSDA alignment directly complies with the intent as it is linear infrastructure and a water pipeline. One purpose of the pipeline is to support the GSDA and industrial development within Gladstone by providing water security for the region.
b. Development in the precinct is to: i. Minimise construction and operation footprints and follow a logical sequence of development to maximise opportunity for future linear infrastructure ii. Avoid adverse impacts of existing infrastructure iii. Provide and maintain access to the corridor for the construction, operation and maintenance of existing and future linear infrastructure iv. Coexist with other linear infrastructure internal and external to the GSDA	**Complies** i. The FGP GSDA alignment has been designed to minimise the footprint and consider existing linear infrastructure, and where possible follow their alignments. This will also assist in minimising any impacts on future linear infrastructure. ii. The underground water pipeline has been designed in consideration of the existing infrastructure and any known future infrastructure. GAWB is in the process of liaising with infrastructure owners to minimise impacts and meet their requirements. Refer to Sections 3.2 and 3.3. iii. Existing access tracks will be used where feasible. Existing infrastructure will not be compromised. MBJV will be responsible for ensuring safe access during construction. During operation, where existing access is not available access will be via the FGP GSDA alignment where possible.

Development Intent	Proposal Response
v. Recognises and manages adverse impacts to sensitive land uses adjacent to the GSDA.	iv. Design has considered other infrastructure, the FGP GSDA alignment can coexist safely with other infrastructure. v. The FGP GSDA alignment is a buried pipeline and as such, impacts to adjacent sensitive land uses are not anticipated. Above ground infrastructure, valves, locations will consider land use where practical.
2. Defined uses that support the preferred development intent include a linear infrastructure facility or utility installation.	**Complies** The underground water pipeline is considered a linear infrastructure facility and utility installation under the GSDA.

6.2.4 SDA Wide Assessment Criteria

Table 6.6 provides an assessment of the FGP GSDA alignment against the SDA wide assessment criteria provided in the GSDA Development Scheme.

Table 6.5 ***SDA Wide Assessment Criteria Assessment***

Assessment Criteria	Proposal Response
2.5.1 Infrastructure and Services	
1. Development:	-
a. is designed to maximise efficiency and minimise the cost for infrastructure and services	**Complies** During the design of the pipeline, MBJV will be required to ensure the construction maximises efficiency and minimise costs for supporting infrastructure and services.
b. plans for and manages its impacts on existing and planned infrastructure and services	**Complies** During the design of the pipeline, the existing infrastructure in the area was considered to avoid conflicts with current and future known service networks, where possible. The alignment of the pipeline parallel to existing linear infrastructure (where feasible) will reduce the potential for impacts. Impacts upon existing infrastructure and utilities will occur as a result of the FGP GSDA alignment. The impacts will be managed through design and consultation with infrastructure owners (refer to Sections 3.2 and 3.3), and during construction through a CEMP and other relevant procedures.
c. is adequately serviced by the infrastructure and services necessary to meet the demand generated by the development	**Complies** Limited infrastructure and services are required for the Project. The development will ensure existing infrastructure and services are not impacted within the GSDA.
d. integrates with existing and planned infrastructure and services where possible.	**Complies** During the design of the pipeline, the existing infrastructure in the area was considered to maximise integration where possible. This included identifying a location for the connection to the existing GAWB raw water network (Mt Miller) which is within the GSDA.
Note: infrastructure and services include telecommunications, transport (including corridors and operations), water, wastewater, recycled water and energy networks, and State or local government infrastructure and services.	
2.5.2 Transport	
1. Increased traffic arising from the development is either able to be accommodated within existing road networks, or works are undertaken to minimise adverse impacts on existing and future uses and road networks.	**Complies** It is anticipated that temporary increases in traffic during construction and maintenance periods will occur on roads within the GSDA. No alterations to the road networks within the GSDA are proposed as a result of the FGP GSDA alignment. Traffic Management Plans will be developed to minimise adverse traffic related impacts during construction and operation.

Assessment Criteria	Proposal Response
2. Road networks in the GSDA are designed to accommodate the proposed vehicle type and predicted traffic volumes associated with the development and the precinct/s.	**Not applicable** No permanent alterations to the road networks within the GSDA are proposed as a result of the FGP GSDA alignment.
3. Development is designed to facilitate safe and efficient vehicular ingress and egress and does not unduly impact on the safe and efficient operation of transport infrastructure, including corridors.	**Complies** The FGP GSDA alignment intersects Gladstone-Mt Larcom Road, which is a State-controlled road and a number of GRC managed road reserves. GAWB proposes lower impact construction methods (such as pipe jacking) to cross major road reserves to avoid permanent impacts to the structure of the roads and impacts with other road users. GAWB is in the process of obtaining relevant corridor permits from TMR and GRC to enable works to occur safely and efficiently in the road reserves. During construction appropriate Traffic Management Plans / Guidance Schemes will be enacted to manage construction traffic.
4. Adequate onsite parking for the number and nature of vehicles expected is provided.	**Not applicable** It is anticipated that temporary increases in traffic during construction and maintenance periods will occur. There will be no requirement for on-site parking within the GSDA.
2.5.3 Environmental nuisance	
1. Development is located, designed, and operated to avoid, minimise or manage: a. adverse impacts from air, noise and other emissions that will affect the environment and/or health and safety, wellbeing, and amenity of communities and individuals b. conflicts with sensitive uses arising from (but not limited to) spray drift, odour, noise, light spill, dust, smoke, or ash emissions.	**Complies** The FGP GSDA alignment potential impacts during construction associated with assessment criteria 2.5.3 include: – Air impacts as a result of dust or vehicle/machinery emissions. – Noise and vibration impacts as a result of earthworks (including trenchless methods). The FGP GSDA alignment is located in a combination of rural and industrial areas with limited environmental or community sensitive receptors (such as residences). The implementation of a CEMP will assist in mitigating impacts to sensitive receptors. A CEMP is provided in Appendix G. Stakeholder and community consultation will assist in managing expectations. Operational impacts will be restricted to maintenance activities only and managed in accordance with an OEMP; the underground water pipeline will not result in any emissions.
2. The location, design and operation of development achieves the relevant acoustic objectives of the Environmental Protection (Noise) Policy 2019 and achieves the relevant air quality objectives of the Environmental Protection (Air) Policy 2019.	**Complies** The construction of the Project will be undertaken in accordance with the CEMP, which includes compliance with the Environmental Protection (Noise) Policy and Environmental Protection (Air) Policy. A CEMP is provided in Appendix G.
3. Development: a. avoids adverse impacts on the cumulative air quality of the Gladstone airshed or b. where impacts cannot be avoided, conducts air shed modelling in accordance with current best practice to demonstrate compliance with air quality standards.	**Not applicable** Air emissions contributing to the Gladstone airshed are not anticipated.

Assessment Criteria	Proposal Response
2.5.4 Contaminated Land	
1. Development on land likely to be contaminated or recorded on the Environmental Management Register or Contaminated Land Register does not adversely impact on human health or the environment by exposure, management, or movement of contaminants.	**Complies** The FGP GSDA alignment traverses seven properties that have been identified as being on the EMR (refer to Section 3.5.1.4). Earthworks on these properties has the potential to result in impacts as a result of contaminated land disturbance. MBJV is required to implement a CEMP and other required management procedures to manage risk. A CEMP is provided in Appendix G. If spoil is to be removed from any properties on the EMR a Soil Disposal Permit will be sought from DES.
2. Where required, develop a strategy to manage any existing contamination and the potential for additional contamination, so that human health and the environment are not adversely affected.	**Complies** A CEMP is provided in Appendix G. It includes a strategy for the management of EMR listed properties, incidental finds of potentially contaminated land, and measures should contamination occur as a result of construction. Operational impacts will be restricted to maintenance activities only and managed in accordance with an OEMP. Impacts are anticipated to be minor and incident related only.
2.5.5 Natural Hazards	
1. Development, in accordance with current best practice: a. identifies relevant natural hazards that may impact upon the project b. appropriately manages risk associated with identified hazards c. avoids increasing the severity of natural hazards d. avoids adverse impacts from natural hazards to protect people and property and enhances the community's resilience to natural hazards, or where adverse impacts cannot be avoided, impacts are minimised, mitigated, or offset e. avoids directly or indirectly increasing the severity of coastal erosion either on or off the site.	**Complies** Development will be in accordance with best practice in consideration of natural hazards. Additionally, given the pipeline will be buried, it is considered that it will not increase the severity of a natural hazards in the area. The above ground infrastructure for the Project includes valves. Valve designs can consider natural hazards where relevant and will not increase the severity of natural hazards in the area.
2. Development, in accordance with current best practice, achieves an appropriate level of flood immunity and: a. does not adversely affect existing flow rates, flood heights, or cause or contribute to other flooding impacts on upstream, downstream, and adjacent properties, or the State transport network (including potential impacts from changes to stormwater flows and local flooding).	**Complies** The proposed development consists of a buried pipeline. It is proposed that existing surface levels will be retained and therefore no impact upon flood conditions or flows are considered applicable. The above ground infrastructure for the Project includes valves. Valve designs can consider natural hazards where relevant.
2.5.6 Climate change	
1. Development: a. avoids or, if avoidance cannot be achieved, minimises net increases in the emission of greenhouse gases b. can adapt to current and future impacts of a changing climate. *Note: projected climate change conditions include potential impacts from sea level rises, increased maximum cyclone intensity, increased rainfall intensity or increased likelihood and intensity of bushfires.*	**Complies** It is expected the FGP GSDA alignment will have minimal GHG emissions during the construction and operation phases. In addition, all infrastructure associated with the FGP GSDA alignment will be designed to not be affected by the risk of climate change, i.e. risks relating to sea level rise, increased bushfire and increased extreme weather events.

Assessment Criteria	Proposal Response
2.5.7 Acid Sulfate Soils	
1. Development, in accordance with current best practice, is to: a. Avoid the disturbance of ASS or b. Ensure that the disturbance of ASS avoids or minimises the mobilisation and release of contaminants.	**Complies** The Project has sought to minimise disturbance to ASS through restricting earthworks (where feasible). An ASS investigation and management plan will be undertaken to develop targeted mitigation and management measures as appropriate. The Contractor will manage potential ASS in accordance with relevant guidelines and the CEMP. A CEMP is provided in Appendix G.
2.5.8 Water Quality	
1. Consistent with the Environmental Protection (Water and Wetland Biodiversity) Policy 2019, development avoids or, if avoidance cannot be achieved, minimises, mitigates or offsets adverse impacts on the environmental values and water quality objectives of receiving waters and wetlands arising from: a. Altered stormwater quality and/or flow b. Wastewater (other than contaminated stormwater and sewage) c. The creation or expansion of regulated structures or non-tidal artificial waterways d. The release and mobilisation of nutrients and sediments.	**Complies** Potential impacts to water quality during construction and commissioning will be managed via the CEMP and site specific ESCP(s) to protect local waterways and meet water quality objectives. A CEMP is provided in Appendix G. As identified in the report, no wetlands are proposed to be impacted. Further, no regulated structures on waterways (or artificial waterways) are proposed within the GSDA. During operation it is likely that water from the pipeline may be locally discharged, for example during cleaning or maintenance works requiring an empty pipe. Where discharge is required, it will occur if the water is not contaminated and meets discharge water quality guidelines. If there is potential for water to be contaminated it will be removed from site and discharged to a licenced treatment plant. Measures for discharge management will be included in the OEMP.
2. Development encourages a precinct-wide stormwater management approach that achieves an improved water quality outcome.	**Complies** The FGD GSDA alignment is not proposed to impact stormwater quantity or quality. Potential impacts are during the construction phase which will be managed by the CEMP (refer Appendix G). Appropriate rehabilitation and maintenance procedures will minimise ongoing risks of erosion along the ROW during operation.
3. Development protects the ecological and hydraulic function of waterway corridors in and adjacent to the GSDA, with particular regard to the Great Barrier Reef World Heritage Area, fish passage and marine plants.	**Complies** Design of the FGP GSDA alignment has considered locations of waterways. For major waterways, trenchless installation methods are being implemented to minimise impact. For minor waterways, the design has allowed for trenched installation of the pipeline, with natural waterway profiles being re-established and rehabilitation occurring. Temporary waterway barrier works will be undertaken in accordance with the Accepted Development Requirements. At this stage no permanent waterway barrier works are required or proposed. Should design require scour protection to be placed in waterways the works will progress following approval by DAF. No marine plants are proposed to be impacted.
2.5.9 Risk Management – Activities	
4. Development is located, designed, and operated to: a. minimise the health and safety risks to communities and individuals b. avoid any potential adverse impacts from emissions and hazardous activities, or where adverse impacts cannot be avoided, impacts are minimised or mitigated c. protect high pressure gas pipelines from encroachment that would compromise the ability of the pipelines to function safely and effectively.	**Complies** The FGP GSDA alignment has been located and designed to minimise health and safety risks to communities. The water pipeline itself does not present a major health and safety risk, nor will it result in impacts from emissions or hazardous activities. The FGP GSDA alignment crosses a number of gas pipelines. The design process has considered these pipeline localities and will meet utility provider requirements, such as depth of cover and access. GAWB will consult with the various utility providers. Refer to Section 3.3.1 for further information.

Assessment Criteria	Proposal Response
5. Activities involving the use, storage, and disposal of hazardous materials and prescribed hazardous chemicals, dangerous goods, and flammable or combustible substances are located and managed to minimise the health and safety risks to communities and individuals.	**Complies** During construction of the FGP GSDA alignment, hazardous materials or chemicals may be required (such as fuels and oils). These will be managed in accordance with the CEMP (refer to Appendix G). During operation, for FGP GSDA alignment, there is no permanent storage of hazardous materials or chemicals on site. Occasionally hazardous materials or chemicals may be required during maintenance activities. Such use will be managed in accordance with the OEMP.
6. Development provides adequate protection from the harmful effects of noxious and hazardous materials and chemicals manufactured or stored in bulk during natural hazard events.	**Not applicable** There will be no noxious or hazardous materials and chemicals stored in bulk.
2.5.10 Cultural Heritage and Community	
1. Indigenous and non-Indigenous cultural heritage values, and community values of the premises on which the development is undertaken, and immediate surrounds, are identified and managed, consistent with current best practice. *Note: Duty of Care under Section 23 of the Aboriginal Cultural Heritage Act 2003 should be considered a minimum requirement of all development*	**Complies** Indigenous cultural heritage will be managed in accordance with the Approved CHMP. Refer to Section 3.6.1 for further information. No non-indigenous cultural heritage sites are proposed to be impacted by the FGP GSDA alignment. An incidental find procedure will be implemented.
2. Development is located, designed and operated to avoid adverse impacts on cultural heritage and community values, or where adverse impacts cannot be avoided, impacts are minimised, mitigated, or offset.	**Complies** Where practical, direct impacts on Aboriginal cultural heritage will be avoided. Where this is not possible Aboriginal cultural heritage will be managed in accordance with the Approved CHMP. Refer to Section 3.6.1 for further information. No non-indigenous cultural heritage sites are proposed to be impacted by the FGP GSDA alignment. An incidental find procedure will be implemented.
3. Development recognises and protects the cultural heritage values associated with: a. the Euroa Homestead on Lot 200 on SP239672 b. the Mount Larcombe Station Original Homestead Site on Lot 73 on SP272417 and Lot 20 on SP272417 c. the Targinnie Cemetery on Lot 95 on DS287.	**Complies** Direct impacts to the listed places are not expected due to: – At its closest point the western boundary of the Euroa Homestead allotment is approximately 1.14 km northeast from the FGP GSDA alignment. – At its closest point the eastern boundary of the Mount Larcombe Station Original Homestead (as mapped by Gladstone Regional Council Planning Scheme mapping) is approximately 1 km south west of the FGP GSDA alignment. – At its closest point Targinnie Cemetery is 6.2 km north of the FGP GSDA alignment.
4. Where development requires a buffer to mitigate the adverse amenity impacts of the development, including, but not limited to, visual and acoustic impacts, that buffer is accommodated within the development site	**Not applicable** The FGP GSDA alignment will be buried, therefore buffers are not proposed as visual and acoustic impacts are not expected. The above ground infrastructure for the Project includes valves. Valve designs can consider amenity where relevant.
2.5.10 Environment	
1. Environmental values of the premises on which the development is undertaken, and immediate surrounds are identified and managed, consistent with current best practice.	**Complies** The FGP GSDA alignment has been sited to reduce potential impact on the environment where practical. A review of environmental values is presented in Section 3.5 with impacts and mitigation measures discussed in Section 7. Environmental impacts will be managed during construction through a CEMP (refer to Appendix G) and during operational through an OEMP.

Assessment Criteria	Proposal Response
	The CEMP and OEMP will be prepared in consideration of best practices at the time.
2. Development is located, designed, and operated to: a. Avoid adverse impacts on environmental values including matters of local, State, and national environmental significance or where adverse impacts cannot be avoided, impacts are minimised, mitigated, or offset b. Maintain ecological connectivity and processes c. Maintain the outstanding universal value (OUV) of the Great Barrier Reef World Heritage Area including the local attributes of the OUV identified in the Master plan for the Priority Port of Gladstone and Port overlay d. Retain, to the greatest extent possible, tidal fish habitat and marine plants.	**Complies** Refer to response for item 1 above. In addition: – Impacts to local matters of environmental significance, MSES and MNES will be minimised where practical and/or managed. Management measures include rehabilitation of areas not part of the operational ROW. Where required, GAWB has committed to obtaining environmental offsets for significant residual impacts. – The impact on ecological connectivity has been minimised where possible by maximising use of previously disturbed areas and other linear infrastructure. Due to its linear nature, some local connectivity impact will occur. As the pipeline is buried, impacts are anticipated to be minor with most fauna able to cross the ROW. The exception would be the greater glider. – The most southern extent of the FGP GSDA alignment is located approximately 2 km from the boundary of the GBRWHA. Direct impacts to the GBRWHA are not proposed. The risk of indirect impacts during construction, for example as a result of erosion and sediment control, are to be mitigated in accordance with a CEMP (refer to Appendix G). The OUV of the GBRWHA is not proposed to be impacted. – No tidal habitat or marine plants will be impacted by the FGP GSDA alignment.
3. Any residual significant adverse impacts are offset in accordance with the relevant Commonwealth or Queensland environmental offset framework	**Complies** Environmental offsets will be further reviewed following the FGP GSDA alignment ecological surveys that GAWB are currently implementing. Environmental offsets will be determined using a whole of Project approach and be determined by relevant approval requirements and conditions. Required offsets will be delivered in accordance with relevant environmental offset frameworks.
4. Lighting associated with the construction and operation of development is designed to limit the impacts on aquatic wildlife, including turtles and migratory species.	**Complies** Temporary lighting of worksites will be required during construction; however, construction will be limited to daylight hours (6:30am to 6:30pm). If work outside routine hours is required, affected landholders will be consulted and the activity conducted in accordance with any relevant regulatory notification requirements. Lighting will be managed in accordance with a CEMP (refer to Appendix G for the CEMP). During operation no permanent lighting is proposed.
5. Where development requires a buffer to mitigate the impacts of the development, that buffer must be accommodated within the development site.	**Not applicable** Due to the pipeline being buried, it does not trigger the need for a buffer to mitigate the impacts of the development on surrounding areas.
6. Development avoids native vegetation clearing, or where avoidance is not reasonably possible, minimises clearing to: a. conserve vegetation b. avoid land degradation c. avoid fragmentation and conserve connectivity.	**Complies** Given the length of the pipeline and topographic constraints, it is not possible to avoid all areas of native vegetation. Where possible, the use of existing disturbed areas has been maximised to minimise impacts to vegetation communities. Within the ROW rehabilitation will occur to minimise risk of ongoing land degradation. Any fragmentation will be minor and it is considered that some regrowth may occur within the ROW. Fragmentation has been minimised where possible by aligning the pipeline with other linear infrastructure or along property boundaries.
2.5.12 Engineering and Design Standards	
1. Development is to be designed and constructed in accordance with the relevant engineering and design standards (and any subsequent revisions to the relevant standards) stated in *Table 7*. Alternative and	**Complies** Where appropriate the relevant engineering and design standards will be met during Project design and construction.

Assessment Criteria	Proposal Response
innovative solutions that demonstrate compliance with the relevant standards are encouraged.	The design and construction will be in accordance with water industry standards and codes of practice with a view of generally achieving a design lifespan of 80 years, taking into account the conditions along the FGP GSDA alignment and the nature of the materials and processes involved.
2.5.13 Other Government Matters	
1. Development is to demonstrate consistency with any other relevant legislative requirements that may be necessary for the development to proceed and to the extent practicable, be consistent with regional plans, the State Planning Policy, the Port Overlay for the priority Port of Gladstone, and the State Development Assessment Provisions, where the State interests articulated by these instruments are likely to be affected by the development.	**Complies** The FGP GSDA alignment development will be undertaken in consideration of other legislative requirements: – Section 4 presents a summary of key permits and approval that are required. – Section 6.2 provides a review of the SPP. – Section 6.4 provides a review of the Central Queensland Region Plan. – Section 6.5.6 provides a review of the Port Overlay for the priority Port of Gladstone. – Section 6.5.1 provides an assessment against the relevant State Development Assessment Provisions (SDAP).
2. Development recognises and protects the long-term availability of the extractive resource and access related to the Targinnie Key Resource Area (Number 119).	**Complies** The FGP GSDA alignment intersects the Transport Route and Separation Area for the KRA (refer to Sections 3.2.3 and 6.5.2): – The crossing of the Transport Route is proposed by trenchless methods, reducing impacts to the roads use. – The water pipeline is not considered a sensitive use and as such can occur in the Separation Area.
3. Development does not compromise existing or future port facilities and operation on Strategic Port Land.	**Complies** Strategic Port Land is not impacted by the FGP GSDA alignment.
2.6.14 Energy and Water Efficiency	
1. Building, site design and layout maximises energy efficiency having regard to: a. Building orientation and passive solar design b. Maximising opportunities for cross ventilation c. Appropriate shade treatments and d. Landscaping treatments to the western side of the building.	**Not applicable** The development within the GSDA is an underground water pipeline. As such energy efficiency is not required to be considered.
2. Water efficiency is optimised through the use of alternative water supply sources, including: a. Rainwater harvesting systems b. Recycled water sources.	**Generally complies** Water will be required during construction. MBJV will identify suitable sources of water in accordance with legislative and stakeholder requirements. During operation and maintenance: – The pipeline will improve reliability of water supply to the region. – Significant water use along the pipeline is not required during operation. – For maintenance or cleaning activities appropriate water sources will be used. This may include water already within the infrastructure.
3. Where practicable, development should be consistent with the Queensland government's renewable energy policies.	**Complies** Where appropriate the Project outcomes will be consistent with the Queensland government's renewable energy policies.

Assessment Criteria	Proposal Response
2.5.15 Visual Impacts	
1. Visual impacts of buildings, retaining structures, or other development are minimised through building design, landscaping, and use of appropriate materials when viewed from a publicly accessible viewpoint such as major roads and the Mount Larcom landform.	**Complies** The FGP GSDA alignment is in an existing industrial environment suggesting that this infrastructure will be of low visual sensitivity. The FGP GSDA alignment is underground and the only visual impacts upon rehabilitation will include the valves and a maintained ROW. It will not cause any significant visual impacts to viewpoints. The EIS included an assessment of visual impacts (Arup, 2008). Chapter 17 of the EIS is provided in Appendix C. The visual amenity values outlined within the EIS are similar to the current values. Therefore, the assessment presented within the EIS is still relevant. Additional information is provided in 3.4.4.
2. Development maintains and enhances significant vegetation where possible and provides landscaping that: a. minimises the visual impacts of the development b. incorporates at least 50 per cent local species c. is low maintenance.	**Complies** Impacts to significant vegetation have been minimised through site selection and design measures. Rehabilitation of the ROW is primarily proposed to be via local grass species.

6.2.5 Operational Works that is Clearing Native Vegetation

Operational work that is clearing native vegetation is regulated under the GSDA Development Scheme. Clearing of native vegetation is classified as either:

– Exempt clearing: as per section 1.3.2(e) of the GSDA Development Scheme “development is operational work for clearing native vegetation in accordance with Schedule 21 of the Planning Regulation, except for clearing that is for urban purposes in an urban area”.
– Self-assessable: as per schedule 3 of the GSDA Development Scheme.
– Assessable: as per schedule 3 of the GSDA Development Scheme.

The ROW corridor that will be subject to clearing is depicted in Appendix B.

Exempt Clearing:

Exempt clearing is defined within Schedule 21 of the Planning Regulation. There are no overarching exemptions for water infrastructure projects such as this Project. Other exemptions listed in Schedule 21 are related to the land tenure. The types of land tenure traversed by the project include:

– Freehold land.
– Road reserve.
– Lands lease.

Schedule 21 defines the following clearing types as exempt clearing for the Northern Section:

– Freehold where clearing is Category X non-remnant vegetation.

No other exemptions were identified as applicable for the FGP GSDA alignment.

Self-assessable Operational Works:

Self-assessable operational work that is clearing native vegetation is defined within Schedule 3 of the GSDA Development Scheme as:

Vegetation type:

1. Clearing is for the following vegetation:
    a. Regulated regrowth vegetation (that is in a Category C or Category R area).
    b. An of concern RE in a Category B area.
    c. A least concern RE in a Category B area.

Land use:

1. Clearing is associated with reconfiguring a lot that is authorised by an SDA approval or
2. Clearing is associated with a material change of use that is authorised by an SDA approval and is for development listed in Schedule 1 Part 2, but
3. Does not include development associated with animal husbandry, animal keeping or cropping.

The land use requirements are met by the FGP GSDA alignment. A review of the vegetation type to identify self-assessable vegetation is provided in Table 6.6.

For self-assessable development, the compliance documentation as per the GSDA Development Scheme will be met.

Assessable Operational Works:

Assessable development includes clearing that is not identified as either exempt or self-assessable operational work. For the purposes of the FGP GSDA alignment, this includes:

– An endangered RE in a Category B area
– Category X non-remnant clearing within a road reserve or leased land as:
    - It is not identified as self-assessable operational works, and
    - Schedule 21 of the Planning Regulation 2017 does not include Category X non-remnant vegetation within road reserves and leased land as exempt clearing.

For further information regarding assessable operational works refer to Section 6.5.1.

Summary:

Determination of vegetation clearing type for the FGP GSDA alignment is provided in Table 6.6. In summary the following clearing is proposed:

– Exempt: 237,610 m^2.
– Self-assessable: 458,212 m^2.
– Assessable clearing area of 48,230 m^2:
    - Category X within road reserves or lease land is 44,450 m^2.
    - Category B vegetation that is an endangered RE is 3,780 m^2.

Table 6.6 Clearing Vegetation: Exempt, Self-assessable or Assessable Operational Works

GAWB Property ID #	Lot and Plan	Tenure	Regulated Vegetation	Regional Ecosystems	Exempt. Self-assessable or Assessable
211	1SP260750	Freehold	Category C – high-value regrowth vegetation	Of concern regrowth	Self-assessable
			Category R – reef-regrowth watercourse	Of concern regrowth	Self-assessable
			Category X – non-remnant	Non-remnant	Exempt

GAWB Property ID #	Lot and Plan	Tenure	Regulated Vegetation	Regional Ecosystems	Exempt. Self-assessable or Assessable
212	Unnamed road	Road Reserve	Category X – non-remnant	Non-remnant	Assessable
213	11SP233094	Leased Land	Category X – non-remnant	Non-remnant	Assessable
214	1SP232672	Leased Land	Category X – non-remnant	Non-remnant	Assessable
215	140SP122252	Leased Land	Category X – non-remnant	Non-remnant	Assessable
216A	2RP616271	Freehold	Category X – non-remnant	Non-remnant	Exempt
216B	Gladstone Mt Larcom Road	Road Reserve	Category X – non-remnant	Non-remnant	Assessable
217 & 220	25SP307529	Freehold	Category C – high-value regrowth vegetation	Of concern regrowth	Self-assessable
			Category R – reef-regrowth watercourse	Of concern regrowth	Self-assessable
			Category X – non-remnant	Non-remnant	Exempt
218	3SP101558	Leased Land	Category X – non-remnant	Non-remnant	Assessable
219	1SP260289	Leased Land	Category X – non-remnant	Non-remnant	Assessable
221	Larcom Creek	USL/waterway	Category R – reef-regrowth watercourse	Of concern regrowth	Self-assessable
			Category C – high-value regrowth vegetation	Of concern regrowth	Self-assessable
222	20SP272417	Freehold	Category R – reef-regrowth watercourse	Of concern regrowth	Exempt
225	Aldoga Road	Road Reserve	Category X – non-remnant	Non-remnant	Assessable
			Category C – high-value regrowth vegetation	Of concern regrowth	Self-assessable
			Category R – reef-regrowth watercourse	Of concern regrowth	Self-assessable
224	68SP272417	Freehold	Category X – non-remnant	Non-remnant	Exempt
			Category C – high-value regrowth vegetation	Of concern regrowth	Self-assessable
			Category R – reef-regrowth watercourse	Of concern regrowth	Self-assessable
226	8SP245936	Freehold	Category B – remnant vegetation	Of concern RE Least concern RE	Self-assessable
			Category R – reef-regrowth watercourse	Of concern regrowth	Self-assessable

GAWB Property ID #	Lot and Plan	Tenure	Regulated Vegetation	Regional Ecosystems	Exempt. Self-assessable or Assessable
			Category C – high-value regrowth vegetation	Of concern regrowth	Self-assessable
227	Mylrea Road	Road Reserve	Category R – reef-regrowth watercourse	Of concern regrowth	Self-assessable
			Category X – non-remnant	Non-remnant	Assessable
229	Aldoga road	Road Reserve	Category B – remnant vegetation	Of concern RE Least concern RE	Self-assessable
231	7SP177782	Freehold	Category B – remnant vegetation	Endangered RE	Assessable
			Category X – non-remnant	Non-remnant	Exempt
232	21SP115224	Freehold	Category B – remnant vegetation	Endangered RE	Assessable
			Category B – remnant vegetation	Least concern RE	Self-assessable
			Category X – non-remnant	Non-remnant	Exempt
233	Mount Larcom Yarwun Road	Road Reserve	Category X – non-remnant	Non-remnant	Assessable
234	91SP122250	Leased Land	Category X – non-remnant	Non-remnant	Assessable
235	13RP620157	Freehold	Category B – remnant vegetation	Least concern RE	Self-assessable
			Category R – reef-regrowth watercourse	Of concern regrowth	Self-assessable
			Category C – high-value regrowth vegetation	Of concern regrowth	Self-assessable
			Category X – non-remnant	Non-remnant	Exempt
236	Halls Road	Road Reserve	Category C – high-value regrowth vegetation	Of concern regrowth	Self-assessable
237	13RP620157	Freehold	Category C – high-value regrowth vegetation	Of concern regrowth	Self-assessable
238	22SP115225	Freehold	Category C – high-value regrowth vegetation	Of concern regrowth	Self-assessable
239	Gladstone Mount Larcom Road	Road Reserve	Category X – non-remnant	Non-remnant	Assessable
242	31SP129157	Freehold	Category X – non-remnant	Non-remnant	Exempt
241	25SP115226	Freehold	Category X – non-remnant	Non-remnant	Exempt

GAWB Property ID #	Lot and Plan	Tenure	Regulated Vegetation	Regional Ecosystems	Exempt. Self-assessable or Assessable
243	Tariginnie Road	Road Reserve	Category X – non-remnant	Non-remnant	Assessable
244	Gladstone Mount Larcom Road	Road Reserve	Category X – non-remnant	Non-remnant	Assessable
245	25CP859457	Freehold	Category X – non-remnant	Non-remnant	Exempt
247	28SP115227	Freehold	Category C – high-value regrowth vegetation	Of concern regrowth	Self-assessable
248	Lindherr Road	Road Reserve	Category C – high-value regrowth vegetation	Of concern regrowth	Self-assessable
			Category X – non-remnant	Non-remnant	Assessable
249	1RP911260	Freehold	Category X – non-remnant	Non-remnant	Exempt
			Category B – remnant vegetation	Of concern RE	Self-assessable
250	54SP137048	Freehold	Category X – non-remnant	Non-remnant	Exempt
			Category B – remnant vegetation	Of concern RE	Self-assessable
			Category R – reef-regrowth watercourse	Of concern regrowth	Self-assessable
251	7SP145439	Freehold	Category X – non-remnant	Non-remnant	Exempt
			Category B – remnant vegetation	Of concern RE Least Concern RE	Self-assessable
			Category R – reef-regrowth watercourse	Least concern regrowth Endangered regrowth	Self-assessable
255	Gladstone-Mt Larcom Road / Hanson Road	Road Reserve	Category C – high-value regrowth vegetation	Of concern regrowth	Self-assessable

Note:
– Assessable development is highlighted grey.

6.3 State Planning Policy

The SPP sets out the State's interests in land-use planning and development across Queensland. The SPP was updated and introduced in 2017 to coincide with the release of the *Planning Act 2016*. The SPP details the matters of State interest in land use planning which enables development, protects our natural environment, and allows communities to grow and prosper.

The State interests relevant to the FGP GSDA alignment are detailed below including where they are addressed in this Planning Report):

– Liveable communities and housing:

- Liveable communities: The Project will support water security to Gladstone communities.

– Economic growth:
  - Agriculture: Four mapped agricultural land parcels will be impacted, refer to Section 3.5.1.3. These land parcels are relatively small and have existing impacts from other infrastructure.
  - Development and construction: Development in an SDA creating jobs and providing water to communities and industry (refer to this Planning Report).
  - Mining and extractive resources:
    – A Key Resource Area Transport Route will be traversed, refer to Section 3.2.3.
    – A number of gas pipeline will be traversed, refer to Section 3.3.1.

– Environment and heritage:
  - Biodiversity:
    – MSES – wildlife habitat (endangered or vulnerable). Refer to Sections 3.5.4.3 and 3.5.4.5, and Appendix E.
    – MSES – regulated vegetation (Category B, Category C, Category R and essential habitat). Refer to Section 3.5.4.1 and Appendix E.
  - Cultural heritage: matters that require management have been addressed in CHMPs, refer to Section 3.6.1 for a summary.
  - Water quality: Water resource catchments – water is proposed to be used for construction only, no further consideration is required.

– Safety and resilience to hazards:
  - Natural hazards risk and resilience:
    – Flood hazard – Local Government flood mapping area, refer to Section 3.7.
    – Bushfire prone area, refer to Section 3.7.

– Infrastructure:
  - Strategic airports and aviation facilities: Wildlife hazard buffer zone.
  - Priority ports: Gladstone priority port precincts.
  - Other infrastructure: refer to Sections 3.2 and 3.3.

The proposed development has considered these matters in the likely impacts of the development and proposed mitigations measures as outlined in Section 7.

6.4 Central Queensland Regional Plan

The FGP GSDA alignment is within the boundaries of the Central Queensland Regional Plan. The Central Queensland Regional Plan provides a regional planning framework to *"address emerging regional issues of land use competition between the agricultural and resource sectors, and the need to protect areas required for the growth of towns."*

The FGP GSDA alignment is located outside priority living areas. The intent of the priority living area is to identify areas for urban expansion for towns likely to experience growth. The proposed FGP GSDA alignment will however support the expanding industrial development in Gladstone that has a growing need to provide a reliable supply of water for growth of current customers and future demands.

6.5 Other State Matters Relevant to the GSDA Development Scheme

6.5.1 The clearing of native vegetation with the GSDA

The construction of the FGP GSDA alignment will involve the clearing of native vegetation as defined by the *Vegetation Management Act 1999*, with relevant vegetation clearing context and requirements described further below.

Assessable

Assessable development is applicable to land that is not Freehold and vegetation that is Category X, or freehold land where Category B endangered REs are present. Refer to Table 6.6. The areas of regulated vegetation to be cleared as part of the FGP GSDA alignment ROW which are assessable include:

– Category B remnant vegetation:
  - Endangered RE: 4,550 m^2 (0.45 ha) of mapped vegetation, approximately half of this area has been previously cleared and is currently grassland.
  - The mapped polygon is significantly impacted by other infrastructure, clearing is required for a portion of the polygon that is less than 0.5 ha in size in total. It does not present a continuous polygon.
– Category X non-remnant vegetation:
  - 17,500 m^2 (1.75 ha) of Category X vegetation within road reserves (the clearing area excludes existing cleared areas for road infrastructure).
  - No clearing of Category X vegetation within lease land is proposed as trenchless construction methods will be utilised.

Relevant Purpose Determination

– To assist with assessment of vegetation clearing requirements for the project, an assessment of the proposed works against the relevant purpose determination in *Vegetation Management Act 1999* is provided.

The criteria for determining whether proposed clearing is for a relevant purpose is under Section 22A of the *Vegetation Management Act 1999*. A vegetation clearing application is for a relevant purpose under section 22A if the applicant satisfies the chief executive that the development applied for is:

a. a project declared to be a coordinated project under the State Development and Public Works Organisation Act 1971, section 26; or
b. necessary to control non-native plants or declared pests; or
c. to ensure public safety; or
d. for relevant infrastructure activities and the clearing cannot reasonably be avoided or minimised; or
e. a natural and ordinary consequence of other assessable development for which a development approval was given under the repealed Integrated Planning Act 1997, or a development application was made under that Act, before 16 May 2003; or
f. for fodder harvesting; or
g. for thinning; or
h. for clearing of encroachment; or
i. for an extractive industry; or
j. for necessary environmental clearing; or
k. for high value agriculture clearing; or
l. for irrigated high value agriculture clearing.

The clearing of vegetation for the proposed FGP GSDA alignment is considered to meet the definition of Section 22 A (d) under the *Vegetation Management Act 1999.* The proposed works is considered to be relevant infrastructure activities and the clearing cannot reasonably be avoided or minimised. Under the *Vegetation Management Act 1999* relevant infrastructure activities is defined as 'constructing and maintaining necessary built infrastructure'.

GAWB, in consultation with State and Local governments and landholders, has considered various locations for the proposed FGP GSDA alignment. The alignment selected is consistent with existing land uses, in an area that has previously been disturbed in areas, and in a location that allows lower impact construction methods to be used to reduce impacts to the surrounding environment.

SDAP State Code 16

To assist with the assessment of vegetation clearing, an assessment of the proposed works against the SDAP State code 16 – Native vegetation clearing is provided in Appendix H. The assessment found that the proposed assessable clearing complies with the State Code and a significant residual impact will not occur.

6.5.2 Works within KRA Separation Area and Transport Route

The FGP GSDA alignment intersects the Yarwun KRA 20 Separation Area and Transport Route as shown in Figure 3.1. KRAs protect quarry materials, or extractive resources from being rendered inaccessible by urban expansion. The proposed FGP GSDA alignment is considered to be a compatible use within the Yarwun KRA 20 Separation Area as it is not sensitive use. This is demonstrated in the assessment against the State interest – mining and extractive resources in the State Planning Policy (refer to Table 6.7).

Table 6.7 Assessment Against the State Interest – Mining and Extractive Resources

State Interest Intent	Response
1. Key resource areas (KRAs) are identified, including the resource/ processing area, separation area, transport route and transport route separation area.	The FGP GSDA alignment intersects the Yarwun KRA 20 Separation Area and Transport Route.
2. KRAs are protected by: a. maintaining the long-term availability of the extractive resource and access to the KRA b. avoiding new sensitive land uses and other incompatible land uses within the resource/ processing area and the related separation area of a KRA that could impede the extraction of the resource c. avoiding land uses along the transport route and transport route separation area of a KRA that are likely to compromise the ongoing use of the route for the haulage of extractive materials d. avoiding new development adjacent to the transport route that is likely to adversely affect the safe and efficient transportation of the extractive resource	The proposed FGP GSDA alignment is considered to be a compatible use within the Yarwun KRA 20 Separation Area as it is not sensitive use. The construction works associated with the project are considered to be short term and are not considered to have permanent impacts to the use of the transport route.

6.5.3 Works Within State-Controlled Road with the GSDA

The proposed FGP GSDA alignment intersects the Gladstone-Mount Larcom Road, which is a State-controlled road. GAWB proposes lower impact construction methods (e.g., the use of trenchless methods) within the State-controlled road reserve to avoid permanent impacts to the structure of the roads and impacts with road users. GAWB will apply for any relevant road corridor permits for the construction and operation of the pipeline. Meetings have been held with TMR on this matter, with an agreement in principle received 22 May 2023.

6.5.4 Works Within an Easement for a Distribution Entity or Transmission Entity Under the Electricity Act 1994

The FGP GSDA alignment intersects a number of existing electricity infrastructure (transmission lines) managed by Ergon and Powerlink. The design process has considered the existing Ergon and Powerlink electricity infrastructure. GAWB will consult with Ergon and Powerlink to determine a suitable outcome for the infrastructure.

As part of the construction phase, the proposed works have the potential to impact existing infrastructure. GAWB will liaise with Ergon and Powerlink to manage potential impacts.

An assessment against the State interest – energy and water supply – in the State Planning Policy has been undertaken for the proposed works as outlined in Table 6.8.

Table 6.8 State Interest – Energy and Water Supply

State Interest Intent	Response
1. Existing and approved future major electricity infrastructure locations and corridors (including easements and electricity substations), and bulk water supply infrastructure locations and corridors (including easements) are protected from development that would compromise the corridor integrity, and the efficient delivery and functioning of the infrastructure.	The FGP GSDA alignment intersects a number of existing electricity infrastructure features managed by Ergon and Powerlink. The design process has considered the existing Ergon and Powerlink electricity infrastructure. GAWB will consult with Ergon and Powerlink to determine a suitable outcome for the infrastructure As part of the construction phase, the proposed works have the potential to impact existing infrastructure and GAWB will liaise with Ergon and Powerlink to manage potential impacts.
2. Major electricity infrastructure and bulk water supply infrastructure such as pump stations, water quality facilities and electricity substations, are protected from encroachment by sensitive land uses where practicable.	The proposed FGP GSDA alignment does not impact on pump stations, water quality facilities and electricity substations. These facilities are located away from the proposed works.
3. Development of major electricity infrastructure and bulk water supply infrastructure avoids or otherwise minimises adverse impacts on surrounding land uses and the natural environment.	The proposed FGP GSDA alignment is considered to be compatible with the existing land uses and it will support the expanding industrial development in Gladstone, as there is a growing need to provide a reliable supply of water for growth of current customers and future demands. GAWB has considered various locations for the proposed FGP GSDA alignment and has selected the alignment that is consistent with existing land uses and have utilised previously disturbed areas where possible. The alignment is in a location that allows lower impact construction methods to be used to reduce impacts to the surrounding environment.
4. The development and supply of renewable energy at the regional, local and individual scale is enabled in appropriate locations.	Not applicable for the Project.

6.5.5 Works Within a Premise Subject to a Pipeline Easement

The FGP GSDA alignment intersects existing pipeline infrastructure (see Section 3.3.1). As part of the design process, GAWB has considered interactions of the proposed works with existing pipelines. GAWB will consult with the various utility providers to determine a suitable outcome for the co-existing infrastructure.

The FGP GSDA alignment is considered to be compatible with the existing land uses and it will support the expanding industrial development in Gladstone, due to the growing need to provide a reliable supply of water for growth of current customers and future demands.

GAWB has considered various locations for the proposed FGP GSDA alignment and has selected the alignment that is consistent with existing land uses, is located in areas that have previously been disturbed, where possible. The alignment is in a location that allows lower impact construction methods to be used to reduce impacts to the surrounding environment.

6.5.6 Priority Ports – Gladstone

The FGP GSDA alignment is located within the Gladstone priority port precincts – Port Industry and Commerce. The *Sustainable Ports Development Act 2015* was passed by the Queensland Parliament in November 2015 to sustainably manage port-related development in and adjoining the GBRWHA. The *Sustainable Ports Development Act 2015* declared the Port of Gladstone as a priority port and will optimise the use of existing infrastructure and address operational, economic, environmental relationships, as well as surrounding land uses, through port master plans and port overlays.

The FGP GSDA alignment is within the boundaries of the Master Plan for the Priority Port of Gladstone, namely the Port Industry and Commerce Precinct (TMR, 2020). The Master Plan and associated Port Overlay recognises the purpose of the GSDA and refers to the GSDA Development Scheme. The outcomes for the precinct are:

> "Development within this precinct provides for a range of industries which are of regional, State, national and global economic significance, and supply chain infrastructure that supports the operation of the port and industry. For example, uses in this precinct may include manufacturing industries, refineries, warehouses, wholesale trade, transport services, distribution centres and associated residue storage and waste management facilities.
>
> The precinct may include associated infrastructure required for daily operations of the port such as security, customs and quarantine requirements, parking facilities, utility installations, and materials transportation infrastructure to support industry.
>
> This precinct may also include other development that does not compromise the existing and future expansion of port operations, port related industry and supply chain infrastructure."

The FGP GSDA alignment is a utility project with an objective to provide water security to urban and industrial customers in the Gladstone region, including the Port of Gladstone. Therefore, the FGP GSDA alignment aligns with the outcomes of the Port Industry and Commerce Precinct and the Master Plan.

7. Impacts of Proposal and Management

A significant portion of the FGP GSDA alignment will be located within previously disturbed areas. However, there is potential for impacts on environmental values and existing infrastructure during the construction and operation phases. Table 7.1 outlines the potential impacts that may occur to the following matters during the design, construction and operational phases:

– Land tenure and landowners.
– Land.
– Water resources including surface and groundwater.
– Biodiversity including fauna, flora and vegetation communities.
– Sensitive receptors.
– Existing infrastructure.
– Cultural heritage.
– Community values.

Impacts to these matters will be required to be managed by GAWB and its relevant Contractors. Key commitments and mitigation measures applicable to the FGP GSDA alignment have been summarised in Table 7.1. The mitigation measures have been developed in accordance with legislative requirements with respect to Commonwealth, State (Queensland) and local legislation and anticipated statutory approvals associated with the Project. The mitigation measures are further detailed in the CEMP provided in Appendix G. In addition, MBJV will prepare site and activity-specific CEMP and CEMP sub-plans.

The impacts and proposed mitigation measures outlined in Table 7.1 were informed by previous and current studies and reports relevant to the Project including:

– Gladstone Fitzroy Pipeline Project Environmental Impact Statement and Supplementary Environmental Impact Statement (Arup, 2008).
– Coordinator-General's evaluation report for an environmental impact statement: Gladstone-Fitzroy Pipeline Project (Queensland Government, 2010).
– Gladstone to Fitzroy Pipeline DA Draft Environmental Technical Report (Ref no. 30032656) (SMEC, 2021).
– Ecology Assessment Report (GHD, 2022).
– Draft CEMP (GHD, 2022).
– CEMP (GAWB, 2023)

As part of the EIS process, GAWB made a number of key commitments in the EIS which involved implementing a number of measures during design, construction and/or operation of the Project. The key commitments have been captured in the CEMP which is included in Appendix G. Additional management plans for the Project may be required prior to the commencement of construction as outlined in the Coordinator-General's evaluation report, which is referred to within the EPBC Approval, for the Project. Management Plan requirements are being worked through by GAWB, with the updated ecological surveys expected to influence management plan outcomes and offset requirements.

Table 7.1 Key Potential Impacts During Design, Construction and Operation Phases and Proposed Mitigation Measures

Values	Potential Impacts – Design	Potential Impacts – Construction	Potential Impacts – Operation	Proposed Mitigation Measures
Land	**Soils** – Changes in landform may influence erosion and sedimentation in the area. **ASS** – ASS has the potential to corrode pipelines if not addressed. **Contaminated Land** – Contaminated land impacts to be identified and confirmed.	**Soils** – Erosive and dispersive soils are not recognised or treated appropriately, leading to erosion and sedimentation, and associated water quality and ecosystem health impacts. – Subsidence of backfilled trench, which could lead to gully erosion and affect local catchment hydrology if soils have not been compacted to a level corresponding with the surrounding soils. **ASS** – Exposure of ASS and inappropriate management or treatment leading to adverse environmental impacts. **Contaminated Land** – Disturbance of potentially contaminated soil associated with land parcels identified as moderate and high risk sites in the Preliminary Contamination Report, leading to release of toxic leachate, mobilisation of pollutants and exposure of workers or public to contaminated water or soil.	**Soils** – Erosive and dispersive soils are not recognised or treated appropriately during maintenance of the pipeline, leading to erosion and sedimentation, and associated water quality and ecosystem health impacts. **ASS** – Exposure of PASS / ASS during maintenance of the underground pipeline. **Contaminated Land** – Disturbance of potentially contaminated during maintenance of the underground pipeline.	**Design** – Minimise land disturbance as much as practical. – Design appropriate stabilisation of waterway banks and steep areas. – Undertake ASS investigations. Where ASS has been identified design appropriately. – Undertake Contaminated Land Investigations where spoil may be required to be removed from site, or where a high risk is present for workers/environment. **Construction** – Implement a CEMP. – Develop, implement and maintain an ESCP that is prepared by a Certified Professional in Erosion and Sediment Control (CPESC). – Minimise the stockpiling of spoil as much as possible, particularly during the wet season. Progressively stabilise exposed trenches and work areas. – Compact backfilled soils to a level commensurate with the surrounding soils. – Implement progressive revegetation and rehabilitation or install temporary protection measures to reduce erosion. – Only import fill materials (for structural or landscaping purposes) that are certified as contaminant free. – Maintain, monitor and remediate, as required, stabilisation works including landscaping and rehabilitation works. – Develop and implement an ASS Management Plan to effectively manage ASS identified and outline procedures for encountering ASS in unidentified areas. – Implement contaminated land management requirements as required, including obtaining a Soil Disposal Permit where spoil requires removal from the listed property. **Operation** – Minimise soil disturbance when undertaking maintenance earthworks. – Prepare and implement an OEMP.

Values	Potential Impacts – Design	Potential Impacts – Construction	Potential Impacts – Operation	Proposed Mitigation Measures
Waterways and surface water quality	The pipeline traverses a number of waterways, there is potential for impact to waterway features (flow, banks, etc.) if the design of crossings is not appropriate.	– Contamination through the release of polluting substances (e.g. spills of fuels or oil, litter, and disturbance of ASS), disturbance of contaminated material, or inappropriate waste disposal. – Changes due to surface and stormwater discharge from the pipeline during construction works (e.g. release of sediment laden water) and reduced bank stability (erosion) of receiving watercourses. – Changes to the hydrological regime and reliant vegetation associated with the extraction of water from existing sources for construction purposes. – Scouring of bed and bank around structures in and near waterways and drainage lines, exposure of in-stream infrastructure or re-suspension of suspended solids within the waterway. – Changes to river morphology (fluvial processes) and altered flood flows due to the Project infrastructure. – Sediments entering drainage lines, waterways or wetlands	– Changes due to surface and stormwater discharge from the Project during maintenance works (e.g. release of sediment laden water) and reduced bank stability (erosion) of receiving watercourses – Release of chlorinated water to waterways and subsequent harm to aquatic ecosystems (for example from pipeline rupture. – During maintenance activities sediments have the potential to enter drainage lines, waterways or wetlands causing a reduction in downstream water quality.	**Design** – Design to consider all mapped waterways, watercourses and drainage pathways: • Trenchless methods to be designed for major waterways, at a minimum Larcom Creek. • Trenched pipeline crossings to be at a depth so that scour during waterway flows does not occur. • Reestablishment of waterway profiles (bed and bank) to be allowed for, including use of natural materials. – Identify where ROW can be reduced to minimise impact to waterways (e.g. 15 m width clearing in riparian margins). – Conduct flood risk assessment to identify at risk properties during construction phase and develop mitigation and communication strategies. – Locate key infrastructure associated with the Project outside of flood risk areas where reasonable and feasible to do so, and managing flows, velocities and afflux through appropriately sized drainage infrastructure. **Construction** – Implement ESCP. – Implement the Special Area Plans (SAPs). – Implement CEMP, that includes: • Measures for managing fuel and chemical handling, storage, distribution and spill response during construction. • Measures to minimise commissioning water discharges and ensure discharges meet regulatory requirements and water quality objectives. • Drainage, erosion and sediment control measures. • ASS Management Plan to manage potential water quality impacts. • Measures to manage any identified contaminated land and to manage potential water quality impacts. • Regular site inspections and monitoring, including of storage areas, water quality parameters, water levels, waterway crossing points, presence of flora and fauna to inform management measures. • Where reasonably practicable, water used during testing and commissioning of the FGP GSDA alignment will be

Values	Potential Impacts – Design	Potential Impacts – Construction	Potential Impacts – Operation	Proposed Mitigation Measures
		and causing a reduction in downstream water quality.		reused within the system or passed down the pipe if of sufficient quality, in preference to disposal. • Water disposed during commissioning to land or waterways will be in compliance with regulatory requirements and have relevant controls in place to reduce impacts. • Test water disposal will not occur on areas of exposed soil in dry ephemeral creeks without appropriate erosion prevention measures such as a rock lined channel or into a grassed area. – Retain vegetation in riparian margins as much as possible or implementing stabilisation of exposed/disturbed soils (e.g. temporary geofabric/revegetation). – Dispose wastewater offsite at a licenced facility to manage potential water quality impacts. – Implement water sensitive urban design principles. – Restore local drainage profiles following construction. – Implement measures to meet the Riverine Protection Permit Exemption Requirements. **Operation** – Instal a control system to shut down the pipeline in event of a rupture. – Implement an OEMP to manage leakages from the pipeline, pipeline degradation and maintenance activities.
Groundwater	Potential for groundwater bores to be present in the pipeline ROW.	– Construction trenching activities interacting with aquifers. – Disturbance of ASS resulting in soil acidification with through leaching to groundwater and subsequent groundwater acidification. – Pipeline rupture or degradation (e.g. corrosion) affecting groundwater level and quality.	– Pipeline rupture or degradation (e.g. corrosion) affecting groundwater level and quality.	**Design** – Identify and confirm that groundwater bores are not impacted by the pipeline. – Consider design options that would reduce the construction footprint, the need for cut and fill near waterbodies during construction and construction impacts to groundwater systems (e.g. by placing underground pipe along clay areas). **Construction** – Implement a measure to manage groundwater impacts for any dewatering during construction. – Ensure no impacts groundwater resources from water draw for construction water. – Review ancillary work areas to avoid direct impact to groundwater bores.

Values	Potential Impacts – Design	Potential Impacts – Construction	Potential Impacts – Operation	Proposed Mitigation Measures
		– Vegetation clearance resulting in increased groundwater recharge.		**Operation** – Implement an OEMP to manage leakages from the pipeline, pipeline degradation, possible groundwater contamination.
Aquatic Ecology	The pipeline traverses a number of waterways for the purpose of waterway barrier works. There is potential for fish passage and habitat to be impacted if design of crossings is not appropriate. The pipeline traverses riverine wetland areas, there is potential for wetland values to be negatively affected.	– Impacts to fish passage and habitat as a result of the pipeline construction and access tracks. – Impacts to wetland biodiversity as a result of earthworks.	– Degradation or impact to waterway crossings impacting fish passage or habitat.	**Design** – Design to consider all mapped waterways: • Trenchless methods to be designed for larger waterways, at a minimum Larcom Creek. • Trenched pipeline crossings to be at a depth so that scour during waterway flows does not occur. It is preferred that scour protection is not permanently established along the waterway beds or banks where disturbance has occurred. • Currently no score protection is proposed; however, if scour protection in the waterway bed is required, the crossing may be assessable development requiring operational works approval. If required, obtain approvals and comply with conditions. • Reestablishment of waterway profiles (bed and bank) to be allowed for in design. – Identify priority wetland areas where impact is to be minimised (such as reduced ROW width). **Construction** – Implement CEMP. – Implement SAPs. – Temporary works in waterways are to meet the DAF Accepted development requirements. – Progressively rehabilitate waterway bed and banks to natural conditions. – If required, wildlife handlers (e.g. licensed fauna spotter catchers) will be called to site to attend to fauna issues such as fish entrapment. – Time in-stream works in a manner that minimises impacts to aquatic fauna, for example undertaking in-stream construction works in the dry season and avoiding spring and summer months, where possible. – Design, construct and remove ancillary work areas (access tracks) to meet DAF Accepted development requirements. – Watercourse crossings / disturbed areas are to be revegetated with trees, shrub and grasses endemic to the area, sufficient to re-establish a riparian environment and protect bed and

Values	Potential Impacts – Design	Potential Impacts – Construction	Potential Impacts – Operation	Proposed Mitigation Measures
				banks from erosion as per the Riverine protection permit exemption requirements WSS/2013/726 Version 2.01 (former Department of Natural Resources, Mines and Energy, 2019). **Operation** – Implement an OEMP to manage leakages from the pipeline and pipeline degradation.
Terrestrial Ecology – Vegetation	– Fragmentation, loss of native vegetation and loss of threatened flora habitat caused by clearing based on design. – Note: no protected flora species have been identified within the FGP GSDA alignment.	– Loss of native vegetation and threatened flora species caused by clearing – Additional fragmentation of vegetation communities due to the FGP GSDA alignment or ancillary clearing (such as access tracks). – Introduction and spread of weeds to the project by construction vehicles and machinery.	– Introduction and spread of weeds to the project by operational vehicles and machinery during routine inspections and maintenance works.	**Design** – Minimise clearing of large, connected areas of native vegetation, where possible. – Implement the requirements of the Exemption Notification for clearing within a high risk areas for protected plans. **Construction** – Implement CEMP. – Implement SAPs. – Locate works areas in previously cleared areas wherever possible. – Identify and delineate the approved area of disturbance to minimise the risk of impact upon flora. – Minimise vegetation clearing, where practical. – Implement staged clearing protocols and completion of revegetation / rehabilitation works as soon as areas are no longer required, this is particularly important near and within waterways and wetlands. – Constrain clearing widths / areas to the minimum necessary to allow construction of infrastructure and fulfil environmental management requirements. – Implement biosecurity management measures such as vehicle wash-downs and inspections, hygiene certification for materials to be used during construction, and active weed control within the work area. – Clearly communicate mitigation measures to contractors to ensure awareness, including installing temporary signage to inform personnel of protected species that may be present. – MBJV will develop and implement Rehabilitation Plans that consider soil type and existing local ground layer vegetation characteristics (i.e. native or improved pastures). – Subject to approval of the Rehabilitation Plans, cleared native vegetation will be mulched and spread with topsoil at revegetation areas (including temporary access tracks that are

Values	Potential Impacts – Design	Potential Impacts – Construction	Potential Impacts – Operation	Proposed Mitigation Measures
				only longer used) as soon as reasonably practicably after the completion of construction works. – Reinstate and/or revegetate disturbed areas with local native flora species. **Operation** – Implement OEMP. – Implement biosecurity management. – Monitor the effectiveness of controls and establishing triggers for corrective action where potential impacts are observed. – Clearly communicate mitigation measures to contractors to ensure awareness to inform personnel of protected species that may be present.
Terrestrial Ecology – Fauna	– Loss or disturbance to threatened fauna habitat or breeding places caused by clearing based on design.	– Loss and fragmentation of habitat used by a range of fauna, including areas of MSES, essential habitat and wildlife habitat. – Fauna injury or death during the construction of the project. – The pipeline instatement is likely to be progressive and therefore sections of open trench will be unavoidable. This open trench has the potential to form a barrier to fauna movement and result in entrapment of ground dwelling fauna. – Noise and vibration will be generated by the project during construction works (i.e. through the use of machinery). Increases in noise and vibration may result in habitat	– Fauna injury or death during the operation of the project.	**Design** – Minimise impact to native fauna habitats by avoiding disturbance to wetland habitats and large connected areas of native vegetation, where possible. – Obtain relevant permits for interfering with animal breeding places. – Utilise findings from the ecology survey to inform design if appropriate (e.g. fauna fencing). **Construction** – Implement a CEMP. – Implement SAPs. – Minimise vegetation clearing, where practical. – Install fauna exclusion fencing around construction areas, particularly the sections of open trenching. – Complete a check of open trenches for entrapped fauna each day prior to works commencing. – Install temporary fencing around non-works areas with retained ecological values to prevent entry during construction. – Engage a fauna spotter-catcher to be present during vegetation and habitat clearing. – At the start of work hours and on a daily basis, construction personnel will inspect the entire open length of the trench for entrapped or injured wildlife. Engage a fauna spotter-catcher for inspections when stipulated by Management Plans. – Implement an ESCP.

Values	Potential Impacts – Design	Potential Impacts – Construction	Potential Impacts – Operation	Proposed Mitigation Measures
		becoming unsuitable for fauna.		– Implement biosecurity management measures such as vehicle wash-downs and inspections, hygiene certification for materials to be used during construction, and active weed control within the FGP GSDA alignment. – Clearly communicate mitigation measures to contractors to ensure awareness, including installing temporary signage to inform personnel of protected species that may be present. – Reinstate habitat (e.g. logs and fallen vegetation) after construction **Operation** – Implement an OEMP. – Monitor the effectiveness of controls and establishing triggers for corrective action where potential impacts are observed.
Air Quality	– Design may influence air quality (e.g. unformed roads resulting in ongoing dust).	– Exhaust emissions from site plant, equipment and vehicles. – Fugitive dust emissions from construction related activities including excavation, vegetation clearing and movement of vehicles.	– Only relatively small effects on local air quality are anticipated from the operational traffic associated with the project. As such, the effect of the operational project on local air quality is negligible and there is no need for operational-phase mitigation measures.	**Design** – Prevent dust emissions where possible, rather than applying dust suppression methods. – Identify appropriate water sources for dust suppression purposes (water used should not lead to soil contamination), or where water resources are scarce, dust stabilisers could be used. – No specific measures related to mitigating greenhouse gases have been provided due to the relatively low contribution of the project to these emissions during construction. **Construction** – Implement a CEMP. – Water the pipeline access routes during prolonged dry periods. – Implement regular cleaning of hard-surfaced entrance roads. – Ensure that dusty materials are transported, stored and handled appropriately. – Confine vehicles to designated routes that are constructed from an appropriate material to minimise dust, and restricting vehicle speeds on access roads and other unsurfaced areas. – Implement dust monitoring as part of management practices to monitor the success of dust control measures used.
Noise and Vibration	– Noise and vibration emissions have the potential to negatively impact adjacent sensitive receptors	Increased levels of construction-related noise and vibration, resulting in impacts to surrounding	– It is not expected that the FGP GSDA alignment will impact upon sensitive receptors during operation.	**Design** – Undertaking stakeholder consultation and community liaison strategies.

Values	Potential Impacts – Design	Potential Impacts – Construction	Potential Impacts – Operation	Proposed Mitigation Measures
	(such as residents and other land users) and fauna habitat. Vibration may also result is structural impact to other infrastructure or buildings.	sensitive receptors as a result of: – Operation of diesel generators – Light vehicle construction traffic – Earthworks – Clearing and grubbing – Tunnelling / trenchless methods – Rock breaking – Blasting – Operation of plant and machinery – Materials delivery and waste removal.		– If required, design appropriate vibration control elements for adjacent infrastructure. **Construction** – Implement a CEMP that establishes work hours, work practices, community liaison requirements, mitigation measures, roles and responsibilities and construction noise complaint protocol. – Implement source noise control strategies, e.g. keep horns and reversing alarms to the minimum volume level possible, use non-tonal / broadband type reversing alarms and use stockpiled materials as “noise barriers” to shield sensitive receivers. – Construction activities to take place during Monday to Sunday from 6:30am to 6:30pm in consultation and agreement with landholders. Blasting will not occur on Sundays. – There may also be special circumstances, such as major crossings, commissioning or other critical works, where construction activities are required outside Monday to Sunday from 6:30am to 6:30pm. An assessment will be undertaken to ensure the activities will not impact landholders. Landholders will be consulted, and the activity conducted in accordance with any relevant regulatory notification requirements. – Develop and implement vibration management to include condition monitoring / assessment where relevant. **Operation** – Implement an OEMP.
Existing Infrastructure	– Potential for direct impact upon third party infrastructure. – Potential for indirect impacts on known and unknown infrastructure.	– Meeting onerous design criteria and construction methodologies as required by impacted utility providers. – Potential for direct impact on existing infrastructure (such as gas pipelines or communications network) as a result of construction negatively impacting the infrastructure entity and its customers.	– Future planned infrastructure corridors impacting on the footprint of the FGP GSDA alignment	**Design** – Undertake appropriate infrastructure identification activities. – Negotiate early with impacted third party infrastructure entities. – Obtain approval from third party construction entities to work within their infrastructure corridors (i.e. GRC road reserve). **Construction** – Identify all infrastructure onsite. – Stage works appropriately based on design. – Engage third party infrastructure entities during the construction phase to avoid conflicts for existing infrastructure. – Manage potential road impacts in consultation with GRC and TMR.

Values	Potential Impacts – Design	Potential Impacts – Construction	Potential Impacts – Operation	Proposed Mitigation Measures
		– Potential for the FGP GSDA alignment to affect maintenance access or schedules for existing infrastructure.		– Implement procedures to remove dirt, where possible, and other materials from roads that may have been deposited from haulage or other road use. – Construction plant and equipment must not be allowed to park on or within the pavement or shoulders of any existing trafficked roadway without approval from the relevant authority. – Implement required construction methodologies from utility providers during the construction phase. **Operation** – Register the infrastructure with development authorities to minimise risk f accidental damage in the future.
Non-indigenous heritage	– There are no non-indigenous heritage values within 1 km of the FGP GSDA alignment. However, undocumented non-indigenous heritage sites may be impacted.	– There are no non-indigenous heritage values within 1 km of the FGP GSDA alignment. However, undocumented non-indigenous heritage sites may be impacted.	– There are no non-indigenous heritage values within 1 km of the FGP GSDA alignment. However, undocumented non-indigenous heritage sites may be impacted.	**Construction** – Develop and implement an incidental find procedure for archaeological heritage that includes reporting to DES and ceasing work in the area for 20 business days, unless approval is granted to continue work prior.
Aboriginal Heritage	– Aboriginal Cultural Heritage sites may be encountered along the pipeline and be directly impacted. The surveyed areas in the Approved CHMP have identified two sites that may be impacted.	– The project has the potential to impact Aboriginal cultural heritage during the construction phase through both indirect and direct changes to cultural value.	During operation, impacts to Aboriginal cultural heritage sites and values are not anticipated (e.g. maintenance works do not involve further land disturbance).	**Design** – All Aboriginal cultural heritage sites identified will be mapped on design drawings and in construction plans. – Cultural heritage surveys will be conducted over the full project footprint. **Construction** – Implement the Approved CHMP and any required site-specific procedures as per the *Aboriginal Cultural Heritage Act 2003*. – The environmental induction will include a basic level of training for all personnel with regard to their obligations under the Approved CHMP and the measures to be taken in the event of an historic or Aboriginal cultural heritage find. – Relevant First Nations groups will deliver site specific inductions. – Consult with relevant stakeholders to reduce disturbance to identified Aboriginal sites. – The Approved CHMP establishes a procedure for unexpected cultural heritage finds and discovery of human remains in the unlikely event that suspected human remains are uncovered.

Values	Potential Impacts – Design	Potential Impacts – Construction	Potential Impacts – Operation	Proposed Mitigation Measures
				Operation – Implement an OEMP.
Community Values	– Earthworks have the potential to impact visual amenity.	– Impacts upon the road network and general visual amenity (such as site tidiness) during the construction phase.	– Impacts upon general visual amenity (such as site tidiness) during the operation phase.	**Design** – Due to generally the low sensitivity of visual amenity impact (as identified in the EIS (Chapter 15, Arup, 2008) refer to Appendix C) no specific design measures are proposed. **Construction** – Implement a CEMP. – Implement a traffic management plan. – Landscape and rehabilitate disturbed areas as soon as possible. – Use locally endemic vegetation species in rehabilitation that are known to be well adapted to the area and soils. – Minimise vegetation clearing, where practical. – Restrict lighting of compounds and worksites to low impact lighting and minimise lighting spill. – Locate storage facilities away from residential areas. – Store materials and machinery neatly during the works, and where possible behind solid hoardings. – Maintain access roads to works areas as free of dust and mud as far as reasonably practicable. – Maintain a high level of housekeeping at all times. – Remove all construction materials to a suitable location upon completion of construction. **Operation** – Implement an OEMP.

8. Conclusion

This Planning Report has been prepared in accordance with the provisions of the GSDA Development Scheme, and the proposed SDA application requirements for an MCU for ‘utility installation’ and operational works for the clearing native vegetation along the FGP GSDA alignment in accordance with the SDPWO Act.

A full assessment has been made against the strategic vision and overall objectives of the GSDA Development Scheme, including the preferred development intents of the relevant precincts and the SDA wide assessment criteria. The conclusion of this assessment is that the underground water pipeline achieves compliance with the relevant strategic vision, objectives and intents of the GSDA Development Scheme.

The FGP GSDA alignment is considered to be appropriate development for the area based on the following:

– The Project directly supports the industrial land uses within the GSDA through the provision of a secure water supply.
– The Project accords with the relevant objectives of the GSDA Development Scheme and the preferred development intent of the relevant precinct.
– The Project is appropriate and has been sited to ensure minimal disruption to existing (and future proposed) services and the amenity of the area.
– The Project has been situated to ensure minimal impacts upon the environment and local biodiversity.

Having regard to the justification provided in Section 2.5 of this report under the Public Consultation Policy State development areas (State of Queensland, Coordinator-General, 2021), additional public consultation for the purposes of this SDA application (MCU and Operational Works) is not considered required in this instance.

It is recommended that the Coordinator-General supports this SDA application (MCU and Operational Works) to meet the growing need to provide a reliable supply of water for the current customers and future demand in Gladstone.

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