GLADSTONE – FITZROY

PIPELINE PROJECT

Environmental Impact Statement

Supplementary Report

Gladstone Area Water Board

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1. Introduction

1.1 Project Background

Gladstone Area Water Board (GAWB) is planning for the future water needs of the Gladstone region by preparing plans to secure water within a suitable time frame if and when additional water supply is required.

After careful consideration and assessment of the options available as part of the Central Queensland Regional Water Supply Strategy (CQRWSS) and GAWB's Strategic Water Planning process, a pipeline to transfer water from the Fitzroy River to Gladstone was identified as the preferred option.

Key project components will include:

- An underground pipeline approximately 115 km long from Laurel Bank near Rockhampton to a connection with GAWB's existing infrastructure near Yarwun just north of Gladstone
- An intake and pump station on the Fitzroy River at Laurel Bank
- A water treatment plant (WTP), reservoir and pump station at Alton Downs
- A booster pump station and reservoir at Raglan
- A reservoir at Aldoga.

GAWB is carrying out preparations for the project to ensure that as soon as increased demand, or low dam levels triggers the need, the pipeline can be constructed within two years.

The locality map for the project is provided in Figure 1.

1.2 The Environmental Impact Statement

In 2007, the project was declared a "significant project" requiring an Environmental Impact Statement (EIS) under the *Queensland State Development and Public Works Organisation Act 1971 (Qld)* (SDPWO Act). The project was also declared a 'controlled action' under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for potential impacts on matters of National Environmental Significance (NES). The controlling provision under the EPBC Act was identified as: *Listed Threatened Species and Communities*.

The Australian Government accredited the EIS process to be conducted under the SDPWO Act under the bilateral agreement between the Australian and Queensland Governments. The project will ultimately require approval from the Australian Government's Minister for the Environment, Water, Heritage and the Arts (DEWHA) under Part 9 of the EPBC Act before it can proceed.

The EIS was prepared in accordance with the requirements of the Terms of Reference (ToR) for the project. The ToR were prepared by the Department of Infrastructure and Planning (DIP) under Part 4 of the SDPWO Act. The ToR were finalised in October 2007, following the required 30-day public comment period and with input from DEWHA in relation to matters of NES.

The EIS was prepared over an intensive twelve-month period and approved for public release on 22 October 2008 by DIP.

In accordance with Class 2 of Schedule 1 of the bilateral agreement, the Coordinator-General requested GAWB to prepare a Supplementary Report to address specific matters raised during the public comment period of the EIS and supplied to GAWB the submissions relating to the project that were lodged with DIP.

1.3 Purpose of a Supplementary Report

This Supplementary Report has been prepared in response to the submissions received from stakeholders (including individual landowners, regional councils, state government departments and DEWHA) regarding the Gladstone-Fitzroy Pipeline Project EIS. The submissions (excluding private submissions) are provided in Appendix A to this report.

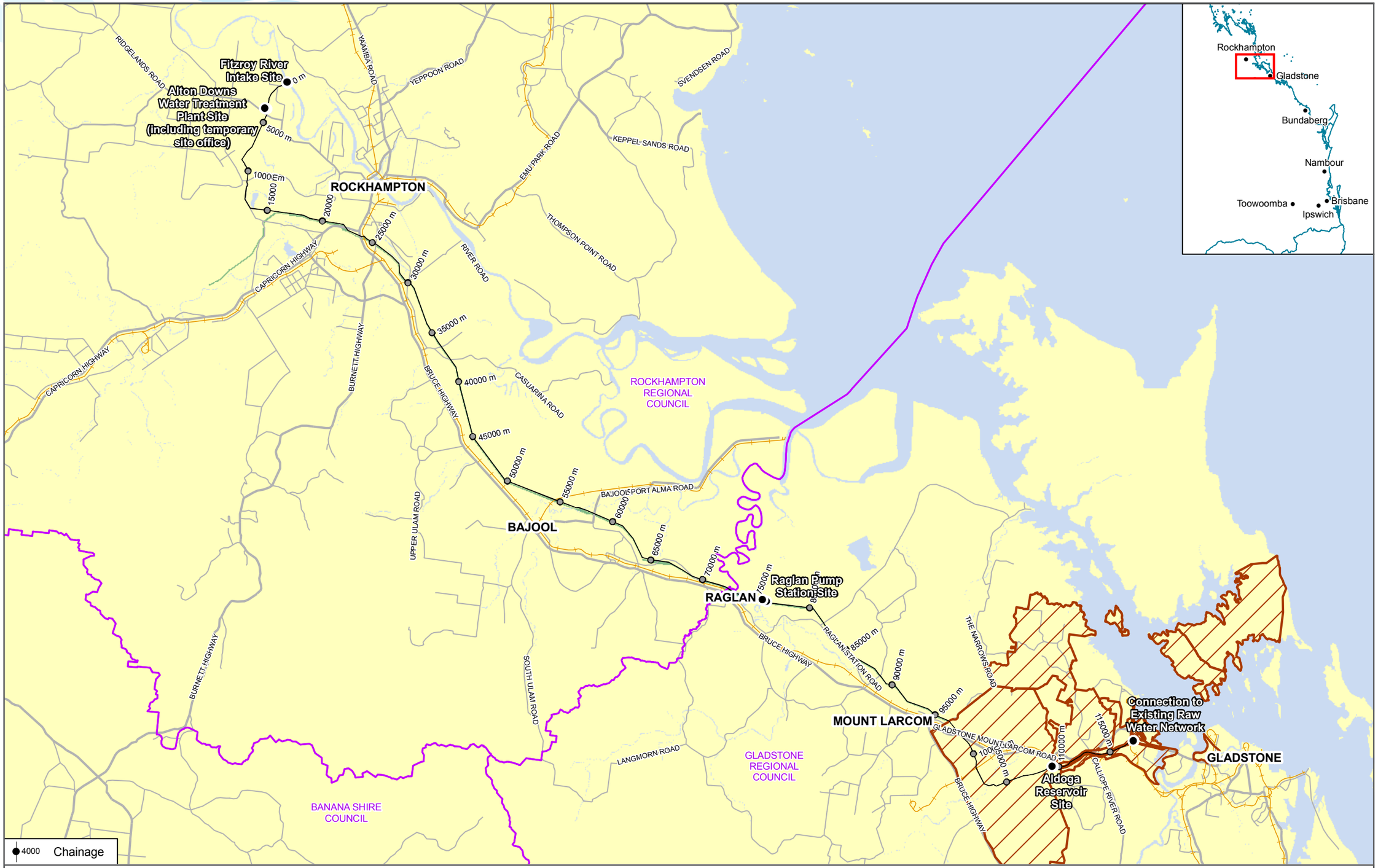
The main purpose of the Supplementary Report is to formally address and respond to issues raised in submissions about the EIS. In addressing the issues raised in submissions, the Supplementary Report provides:

- Clarification of data and discussion of impacts in the EIS
- Additional information for consideration by the Coordinator-General
- A considered response to the issues raised in the submissions.

The Supplementary Report also gives GAWB an opportunity to provide clarification about the project and any further details or changes made to the project, in response to the issues raised in submissions since the release of the EIS. Any changes to legislation that have occurred since the release of the EIS are also addressed in this report in Section 5.

The Supplementary Report will be provided to the Coordinator-General for consideration in preparing his report, which will evaluate the EIS. The Coordinator-General's Report will then be sent to DEWHA for consideration as part of DEWHA's final assessment of the project.

Information within this report is current up to the time of publishing (June 2009).



Gladstone - Fitzroy Pipeline EIS
Supplementary Report

Figure 1- Locality Map (overview)

Sheet 1 of 1

Project Infrastructure
The Right of Way
Railway Line
Principal Road
Secondary Road
Minor Road
LGA Boundary
SGICSDA
GSDA

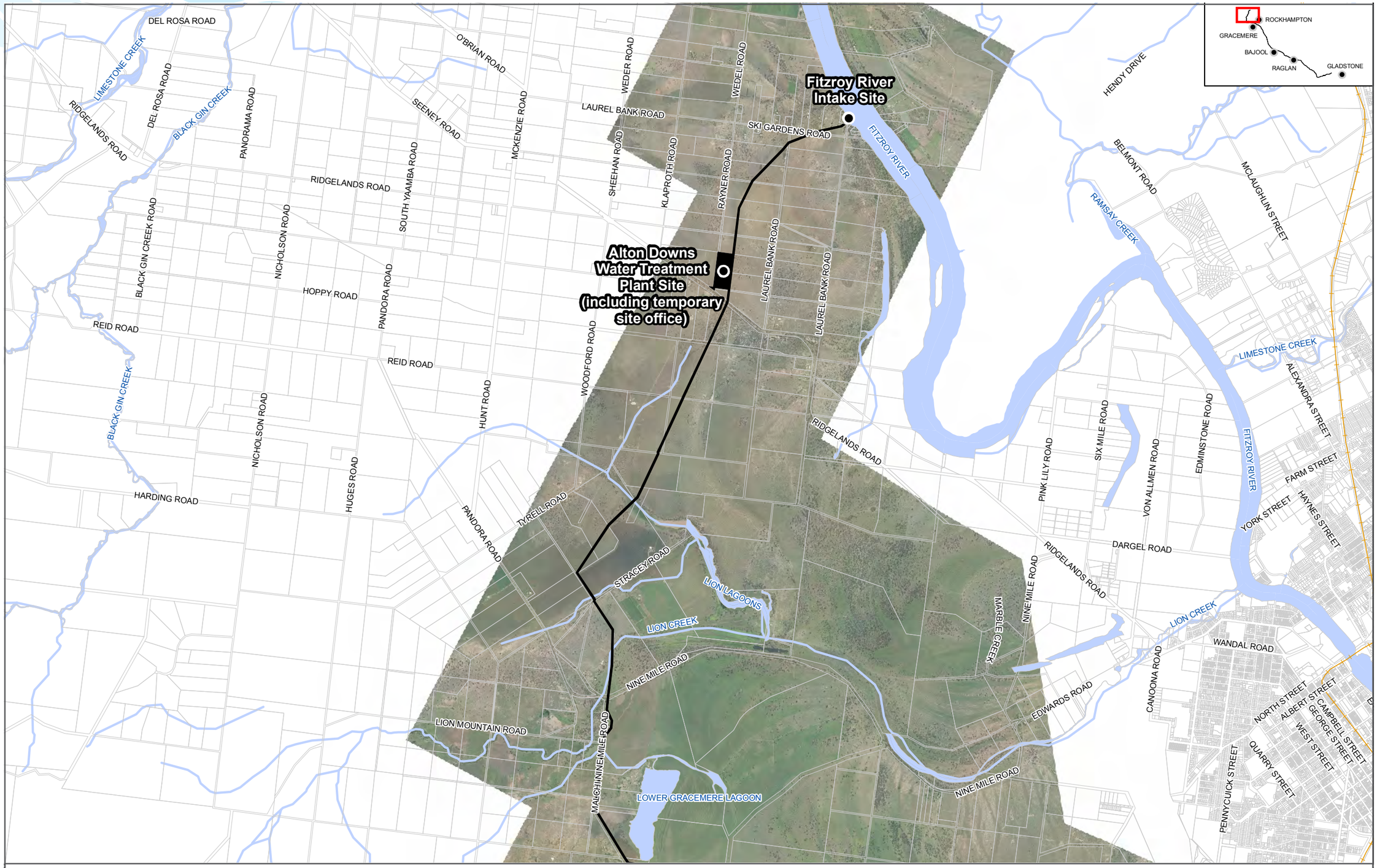
0 6 12 18 24 km

1:300,000 at A3

N

Gladstone Area Water Board

ARUP



Gladstone - Fitzroy Pipeline EIS
Supplementary Report

Figure 1 - Locality Map (mapset)

Sheet 1 of 8

The Right of Way
Project Infrastructure
Railway Line
Waterways
Cadastre
LGA Boundary
SGICSDA
GSDA

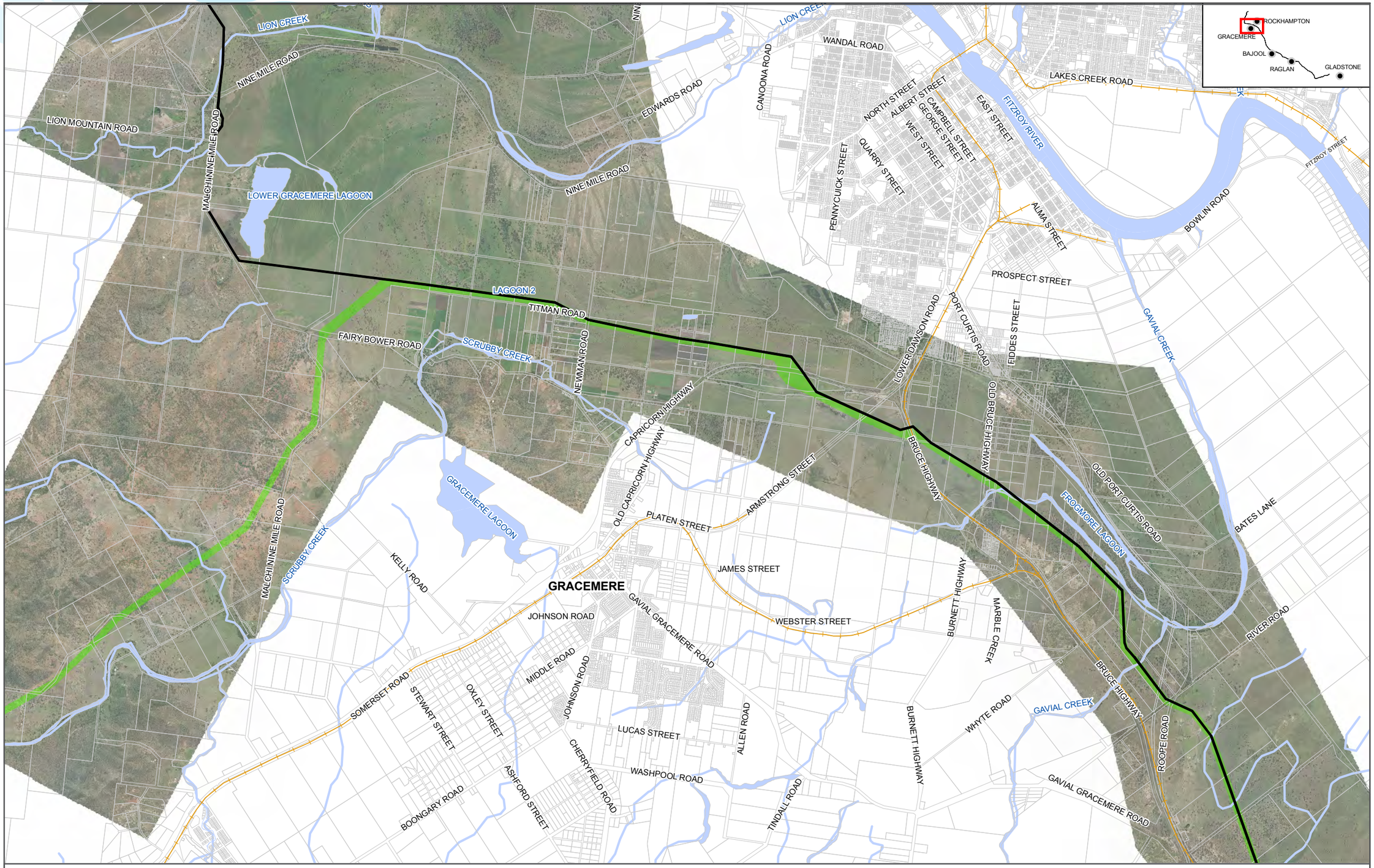
0 1 2 3 4 km

1:50,000 at A3

N

Gladstone Area Water Board

ARUP



Gladstone - Fitzroy Pipeline EIS
Supplementary Report

Figure 1 - Locality Map (mapset)

Sheet 2 of 8

The Right of Way
Project Infrastructure
Railway Line
Waterways
Cadastre
LGA Boundary
SGICSDA
GSDA

0 1 2 3 4 km

1:50,000 at A3

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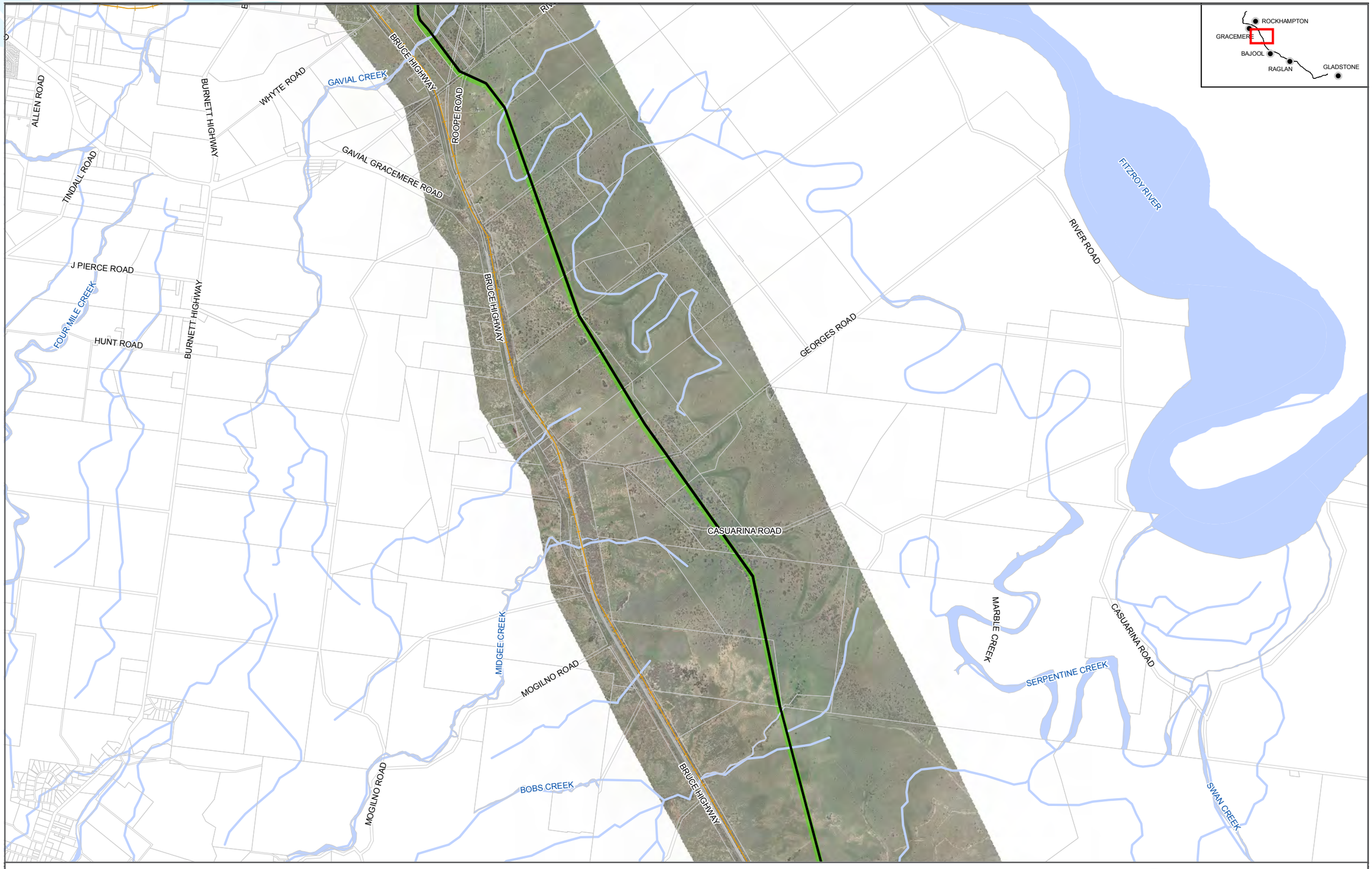
Gladstone Area Water Board

ARUP



Gladstone - Fitzroy Pipeline EIS
Supplementary Report

Figure 1 - Locality Map (mapset)

Sheet 3 of 8

The Right of Way
Project Infrastructure
Railway Line
Waterways
Cadastre
LGA Boundary
SGICSDA
GSDA

0 1 2 3 4 km

1:50,000 at A3

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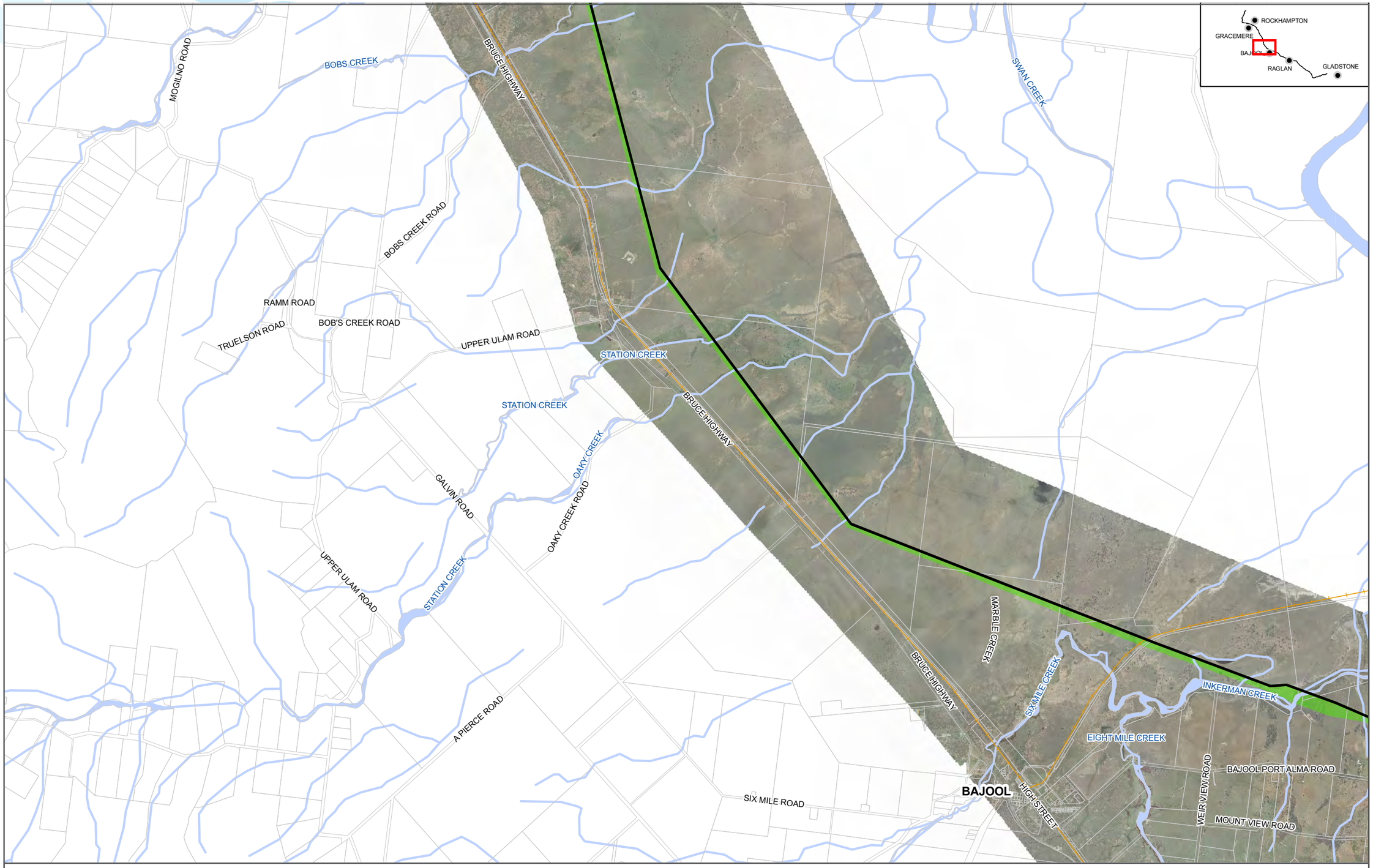
Gladstone Area Water Board

ARUP



Gladstone - Fitzroy Pipeline EIS
Supplementary Report

Figure 1 - Locality Map (mapset)

Sheet 4 of 8

The Right of Way
Project Infrastructure
Railway Line
Waterways
Cadastre
LGA Boundary
SGICSDA
GSDA

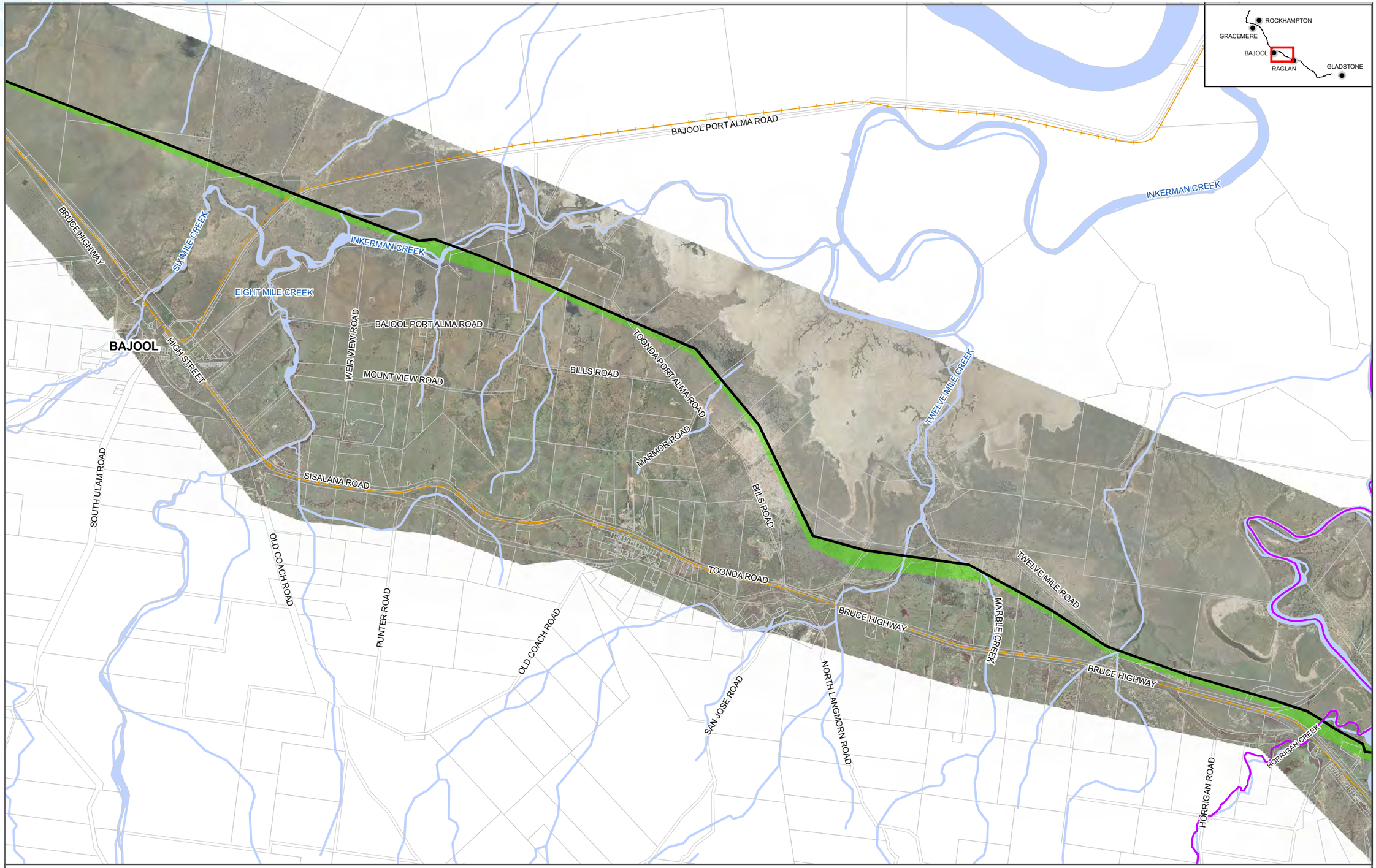
0 1 2 3 4 km

1:50,000 at A3

N

Gladstone Area Water Board

ARUP



Gladstone - Fitzroy Pipeline EIS
Supplementary Report

Figure 1 - Locality Map (mapset)

Sheet 5 of 8

The Right of Way
Project Infrastructure
Railway Line
Waterways
Cadastre
LGA Boundary
SGICSDA
GSDA

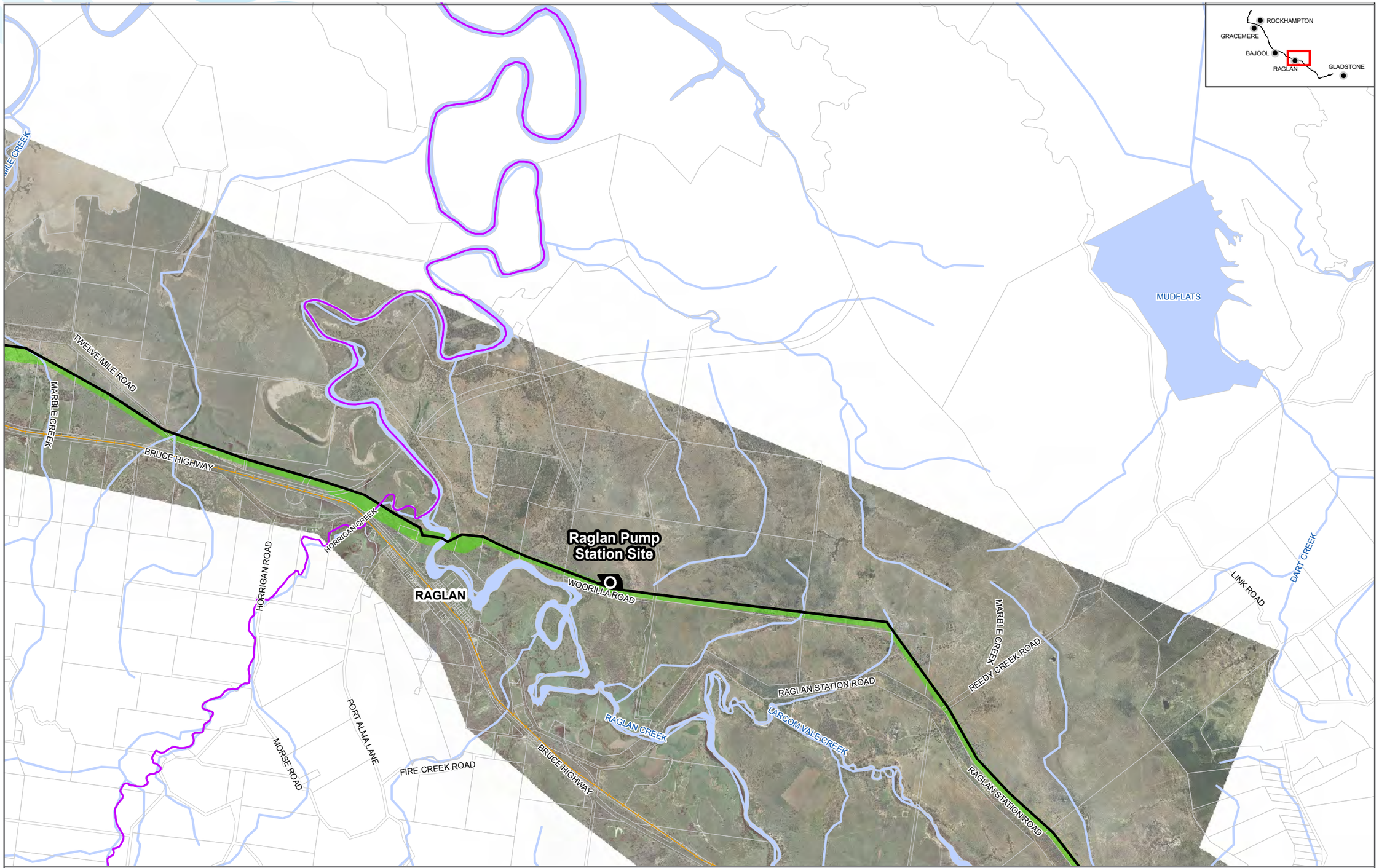
0 1 2 3 4 km

1:50,000 at A3

N

Gladstone Area Water Board

ARUP



Gladstone - Fitzroy Pipeline EIS
Supplementary Report

Figure 1 - Locality Map (mapset)

Sheet 6 of 8

The Right of Way
Project Infrastructure
Railway Line
Waterways
Cadastre
LGA Boundary
SGICSDA
GSDA

0 1 2 3 4 km

1:50,000 at A3

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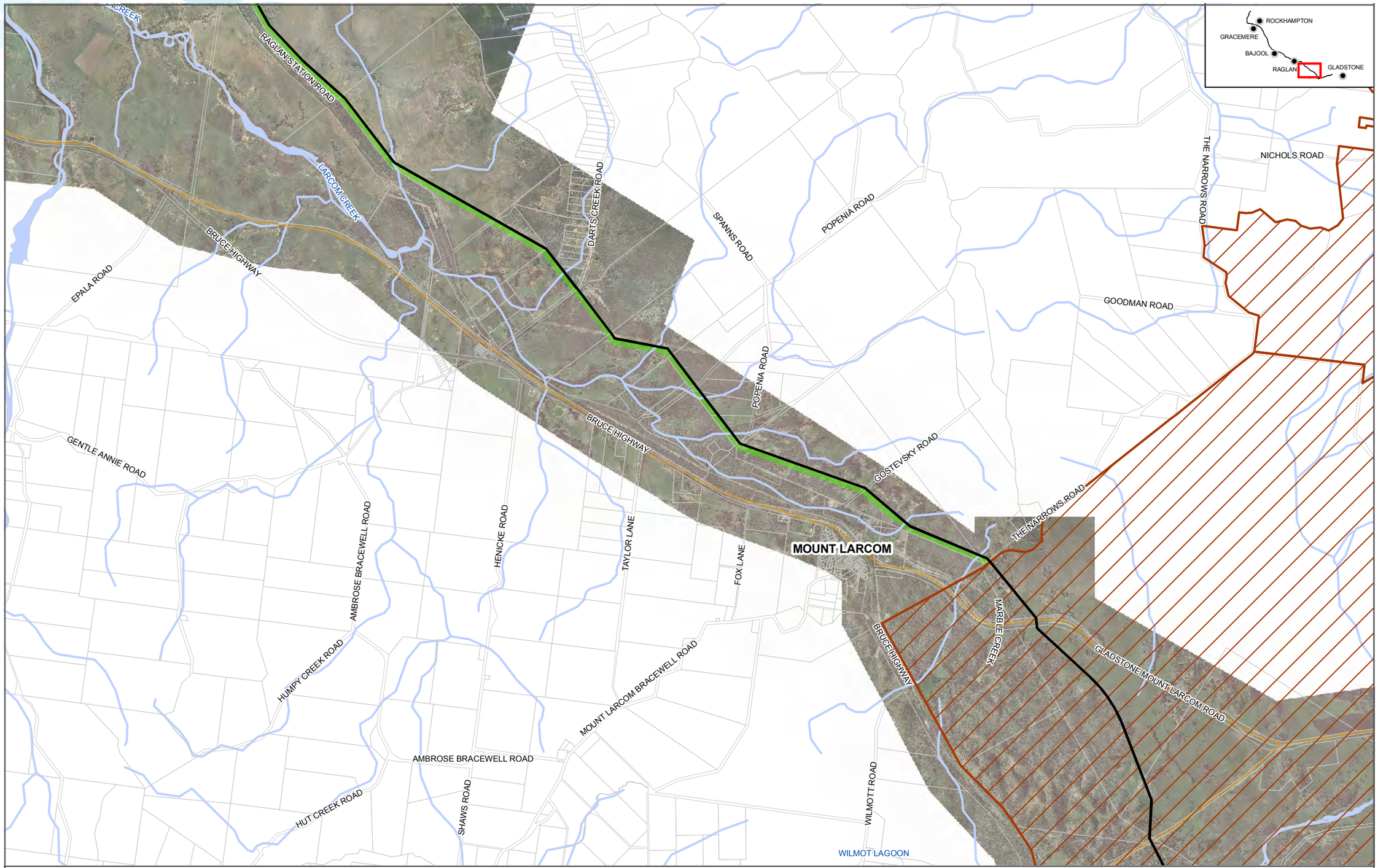
Gladstone Area Water Board

ARUP



Gladstone - Fitzroy Pipeline EIS
Supplementary Report

Figure 1 - Locality Map (mapset)

Sheet 7 of 8

The Right of Way
Project Infrastructure
Railway Line
Waterways
Cadastre
LGA Boundary
SGICSDA
GSDA

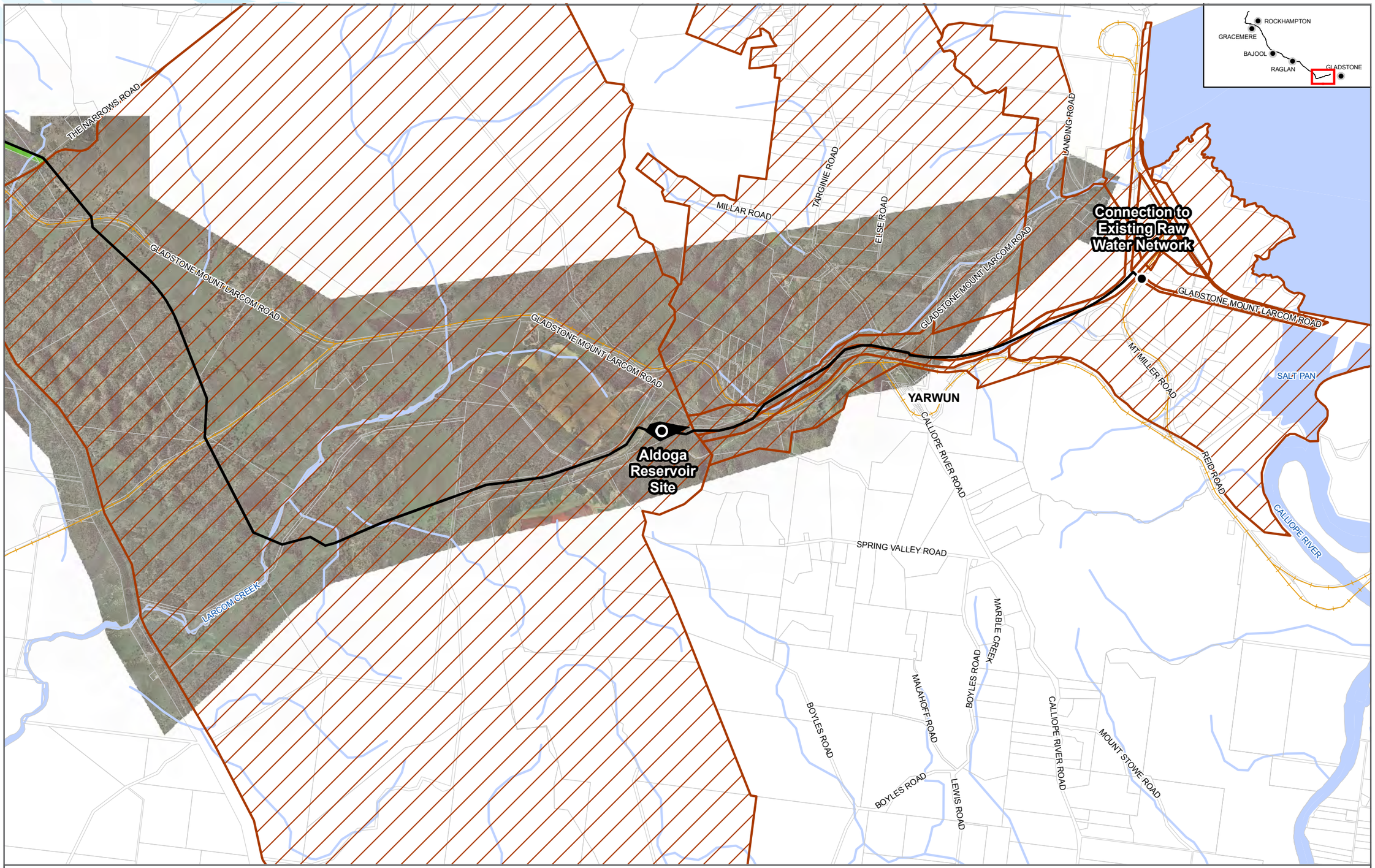
0 1 2 3 4 km

1:50,000 at A3

N

Gladstone Area Water Board

ARUP



Gladstone - Fitzroy Pipeline EIS
Supplementary Report

Figure 1 - Locality Map (mapset)

Sheet 8 of 8

The Right of Way
Project Infrastructure
Railway Line
Waterways
Cadastre
LGA Boundary
SGICSDA
GSDA

0 1 2 3 4 km

1:50,000 at A3

N

Gladstone Area Water Board

ARUP

1.4 Consultation and Public Notification

The project was announced in April 2007, setting in place an extensive Public Engagement Program (PEP). A variety of communication activities and tools were used to seek broad community input, with issues and opportunities identified through stakeholder engagement being applied to inform the technical studies. The details of the PEP are included in the Public Engagement Report, Appendix B of the EIS.

The consultation process has included communities located in and around the project area, elected federal, state and local government representatives and government agency officers, industry sectors, traditional owners, special interest groups and organisations in close proximity to the project area, public utilities and media.

Specific communication activities to facilitate effective two-way communication included public displays during the EIS public comment period and ongoing engagement with landholders and government representatives. In addition, project updates have been provided to stakeholders through letterbox delivery, through placement of advertisements in local newspapers, at community locations and mailed to a database of stakeholders.

Stakeholders were encouraged to make comment via written submissions, a toll-free telephone number, the project email address, fax or mailing address at any time.

The public notification period for the EIS was from the 1 November 2008 to 15 December 2008 and was aimed at facilitating opportunities for the public, agencies and key stakeholders to review and provide feedback on the EIS.

A public notice was placed in newspapers circulating in the local area, the state and nationally, stating:

- Where a copy of the EIS was available for inspection (including details of the community information sessions) or could be obtained for a stated reasonable cost
- That written submissions may be made to the Coordinator-General about the EIS
- The submission period during which a submission could be made
- The address for public submissions.

2. Submission Response Methodology and Report Structure

Twenty-seven formal written submissions were received by the Coordinator-General. This included comments received from DEWHA under the terms of the bilateral agreement between the State of Queensland and the Australian Government. All submissions, except those from private landholders, are provided in Appendix A to this report. The names of private landholders have not been included in this report and have been replaced with the Submitter Numbers. Private landholders who have provided a submission to the EIS will be informed of their Submission Number.

Each submission was reviewed to identify the issues raised about the EIS. Each issue was allocated an individual identification number comprised of the submission number and the issue number within that submission. This is summarised in Section 3, Table 1, which includes reference to the section of this report where the response to each issue is provided.

An analysis and response to each issue raised is provided in Section 4.

Changes to legislation that have occurred since the release of the EIS and the implications for the project are provided in Section 5. In particular, the EIS Chapter 12, Noise and Vibration has been reviewed for changes in environmental protection legislation, which, amongst other things, addresses gradual increase in cumulative background noise that can occur with the successive introduction of new 'noise generating' industries to an area and imposes additional requirements for protecting the amenity of existing property owners. The relevant changes to the noise chapter are included in Section 5 of this report.

Since the release of the EIS, GAWB has continued design work on the project and this has enabled further information to be included in this Supplementary Report for particular issues such as the accommodation arrangements, noise and truck movements, creek crossing methodologies and residue and stormwater management at the Alton Downs WTP. GAWB has also further progressed consultation with landowners to acquire an easement in the Alton Downs area. This has resulted in minor changes to the Alton Downs alignment as described in Section 4.20 and 6.5. Changes to the design or alignment since the release of the EIS and subsequent amendments are provided in Section 6.

Where submissions identified errors or omissions of a minor or typographical nature these are corrected in Section 7 of this report (errata).

There are also a number of appendices to this report, to provide additional or revised information to what was provided in the EIS. This includes a revised list of Proponent Commitments (Appendix F in the EIS, now Appendix B of this Supplementary Report), which has been updated to include any new commitments in the Supplementary Report. The EIS Chapter 20, Planning Environmental Management Plan, has also been revised in full for concerns with terminology as raised by the Environmental Protection Agency (EPA). The EPA requested the removal of certain qualifiers such as 'wherever possible' and 'reasonably practical' to clarify performance standards of contractors and others responsible for implementing the plan.

Since the release of the EIS, GAWB has met with DIP and DEWHA and has consulted with the EPA and other agencies to particularly address issues as follows:

- Impacts to the Yellow Chat from changes to surface and groundwater flows
- Estimates of residue at the Alton Downs WTP and the processes for management of residue and stormwater at the plant and for disposal of the residue
- Various matters within the Stanwell-Gladstone Infrastructure Corridor State Development Area (SGICSDA) including Native Title, vegetation clearing, construction timing and access.

3. Summary of the Submissions

Table 1 provides a summary of each written submission received, with its corresponding issue number, and identifies the section of the Supplementary Report where the response to the submission is provided.

Please note that as of 26 March 2009 there have been a number of changes to Queensland Government departments. The department changes relevant to this report are:

- The Department of Housing ceases to exist and is now part of the Department of Communities
- The Department of Emergency Services ceases to exist and is now part of the Department of Community Safety
- The Department of Mines and Energy, Department of Primary Industries and Fisheries (DPIF) and the Department of Tourism, Regional Development and Industry cease to exist and are now part of the Department of Employment, Economic Development and Innovation (DEEDI).
- The Department of Natural Resources and Water (NRW) and the Environmental Protection Agency (EPA) cease to exist and are now part of the Department of Environment and Resource Management (DERM).
- Queensland Transport (QT) and the Department of Main Roads (DMR) cease to exist and are now part of the Department of Transport and Main Roads (DTMR).

Where the above departments are referred to in this report, the old name has been used if referring to the submission received from the relevant department. However, where future consultation is proposed with one of the above departments, the new name has been used.

Table 1 Summary of Submissions

No.	Submitter	Issue No.	Key Issue	Summary of Submission	Response (Section of the Supplementary Report)
State Government - Advisory Agencies					
1	The Department of Housing	1.1	Workforce Accommodation	The Department of Housing's primary interest in the project relates to the potential cumulative adverse impacts on housing affordability and social amenity in the project region. The submission recommends that mitigation and management strategies be provided to address the considerable housing stress in Gladstone and surrounding regions.	4.1
2	The Department of Infrastructure and Planning (DIP) - Planning Group, Central Region Division	2.1	Cultural Heritage Matters in the Construction EMP	DIP Planning Group, Central Region Division requests that management strategies be included in the Construction Environmental Management Plan (Construction EMP) to protect sites and places of significant cultural heritage found during the construction stage of the project.	4.2.1
		2.2	Consistency with State Planning Policies	The Department confirms that the following State Planning Policies (SPPs) are relevant to the project and that detailed advice can be obtained from NRW: • SPP 1/92: Development and the conservation of agricultural land • SPP 2/02: Planning and managing development involving Acid Sulfate Soils (ASS) • SPP 1/03: Mitigating the adverse impacts of flood, bushfire and landslide • SPP 2/07 Protection of extractive resources.	4.2.2
		2.3	Consistency with Coastal Management Plans	The submission notes that the development is generally consistent with the outcomes stated in the State Coastal Management Plan and Curtis Coast Regional Coastal Management Plan (as identified in the EIS). Development conditions need to be obtained for all operational works under the *Water Act 2000, Vegetation Management Act 1999, Coastal Protection and Management Act 1995 and the Fisheries Act 1994.*	4.2.3
3	The Department of Natural Resources and Water (NRW)	3.1	Acid Sulfate Soils (ASS)	NRW requests that the ASS Investigation Report and Management Plan be provided to NRW for review. The submission also notes that some terminology used in the EIS relating to ASS is incorrect.	4.3.1 and 7.10 to 7.13
		3.2	Development Approval List	NRW notes that the taking of water for a project with a foreseeable reasonable conclusion date requires a water permit under the *Water Act 2000.* The submission requests that a requirement to obtain a Water Permit be added to Table 1 of Appendix C of the EIS.	4.3.2 and Appendix C
		3.3	Wet Commissioning Approvals	NRW notes that in relation to wet commissioning, a Riverine Protection Permit would be required for any excavation, filling or destruction of vegetation within a watercourse, lake or a spring, as a result of any erosion structures required for the discharge. In addition, if water from commissioning is collected in private storages this would need to be in accordance with the overland flow provisions of the Calliope and Fitzroy Water Resource Plans (WRPs).	4.3.3

No.	Submitter	Issue No.	Key Issue	Summary of Submission	Response (Section of the Supplementary Report)
		3.4	Vegetation Clearing	NRW requests further information on vegetation clearing for the project in relation to the Regional Vegetation Management Codes. The submission notes that the Gladstone State Development Area (GSDA) is considered an 'urban area' as it is shown on the planning scheme for the area as existing for 'urban purposes'. Therefore vegetation clearing in the GSDA does not require a permit unless it includes clearing of Engangered regional ecosystems (REs) However, NRW notes that the Stanwell Gladstone Infrastructure Corridor State Development Area (SGICSDA) is not considered an 'urban area'. Where the project does not meet the definition of an urban purpose in an 'urban area', the proponent will require a Vegetation Clearing Permit (Operational Works) and may be required to provide vegetation offsets.	4.3.4
4	The Department of Mines and Energy (DME)	4.1	Impact on Mining Lease Tenures	DME notes in their submission that Section 10 of the *Mineral Resources Act 1989* (MR Act) has been misinterpreted in Section 4.6.1.4 of the EIS and that the holders of any mining lease along the route will need to be consulted regarding planned construction and operational activities.	4.4.1
		4.2	Impact on Mining Lease Tenures	The submission requests that the current status of the Cement Australia (Queensland) mining lease near Yarwun be checked with the Regional Mining Registrar, Central Region (Rockhampton).	4.4.1
		4.3	Gas Pipeline Crossings	DME notes in their submission that the project alignment crosses existing gas pipelines or granted easements under the *Petroleum and Gas (Production and Safety) Act 2004*. The submission mentions the Alinta gas pipeline near Yarwun and the proposed coal seam gas pipelines in the same area, which may be constructed before the project commences.	4.4.2
		4.4	Gas Pipeline Crossings	DME notes that access routes and other surface activities associated with the project during construction and operation may overlay existing gas pipelines. Section 808 of the *Petroleum and Gas (Production and Safety) Act 2004* stipulates that the surface level of land must not be changed without the consent of the (petroleum and gas) pipeline licence holder. In places where the pipeline construction is close to existing pipelines, DME notes that pipeline licence holders should be consulted.	4.4.3
5	Queensland Transport (QT)	5.1	Proposed Rail Projects	It is noted by QT that there is no reference to a number of proposed rail projects in Chapter 2 of the EIS, Project Description: • The Moura Link - Aldoga Rail Project and the Wiggins Island Rail Project. QT advises that it will be necessary for the proponent to talk directly to Queensland Rail (QR) Network Pty Ltd on interface issues as approvals and designs progress. • QT advises that the pipeline also traverses the area under investigation for the Fitzroy River Coal Terminal in the Rocklands area south of Rockhampton and that the proponent will need to talk directly to QR Network Pty Ltd to ensure interface issues are addressed. • QT advises that interface issues will also need to be addressed in relation to the proposed Xstrata rail spur and balloon in the Bajool/ Raglan area.	4.5.1

No.	Submitter	Issue No.	Key Issue	Summary of Submission	Response (Section of the Supplementary Report)
		5.2	Mapping	QT suggests that Figures 4.6 and 4.12 in Chapter 4 of the EIS, Land Use and Infrastructure include the proposed Moura Link - Aldoga Rail Project.	4.5.2 and Figure 2 and 3
		5.3	Approvals under Section 255 of the *Transport Infrastructure Act 1994*	QT requests the following paragraph be inserted at the end of Section 13.4 in Chapter 13 of the EIS, Transport and Access Arrangements: *"QR will assess the impact of the Gladstone-Fitzroy Pipeline Project in relation to any interference with a railway. This assessment is conducted under Section 255 of the Transport Infrastructure Act 1994 (TI Act). QR's Section 255 approval should be sought by the applicant prior to construction commencement."*	4.5.3
		5.4	Text Amendments	QT requests the following text amendments to Chapter 13 of the EIS, Transport and Access Arrangements: 1. Section 13.5.1.2: *"Other rail lines in the project area are:* • *The Central Line (Rockhampton to Longreach) which also provides an important freight line, especially for the transportation of coal to shipping terminals in Gladstone; and* • *The Port Alma Branch Line (Bajool to Central Queensland Salt Works)"* 2. *"The title of Table 13.4 should be changed to "Number of services on the Central Line". The subheadings of Northbound and Southbound may be better described as westbound and eastbound."* 3. *"An additional table should be provided for the number of train services operating on the Port Alma Branch Line."* 4. Recommended amendments of Paragraph 1 of Section 13.6.1.2 of the EIS are shown as follows: *"Other rail lines in the project area include:* • *The East End Mine Branch Line; and* • *The Fisherman's Landing Branch Line."* 5. *"The subheadings of Table 13.9 Northbound and southbound may be better described as westbound and eastbound."* 6. In Section 13.6.1.2, *"an additional table should be provided for the number of train services operating on the Fisherman's Landing Branch Line."* 7. The first sentence of paragraph 2 of Section 13.7.1.4 should be amended to state *"In the Fitzroy to Bajool section the pipeline crosses two rail lines (the North Coast Line and the Port Alma Branch Line)."* 8. *"Table 13.15 should contain a row for the Port Alma Branch Line as to which method of construction is proposed."* 9. *"Figure 13.9 should be enhanced to include QR's proposed Moura Link – Aldoga Rail Project infrastructure."* 10. The Department brings attention to Issue Number 5.1 above with respect to any amendments which may be required in Section 13.8 of the EIS.	4.5.4

No.	Submitter	Issue No.	Key Issue	Summary of Submission	Response (Section of the Supplementary Report)
				11. In Section 13.8.1.4, the first sentence of paragraph two should be amended to state *"In the Bajool to Gladstone section, the pipeline will cross rail lines in four instances i.e. the North Coast Line twice, the East End Branch Line once and the Fisherman's Landing Branch Line once."* 12. *"Table 13.25 should contain a row for the Fisherman's Landing Branch Line as to which method of construction is proposed."*	
6	The Department of Main Roads (DMR)	6.1	Access to State Controlled Roads	The submission requests that detailed drawings and traffic management plans are provided to DMR prior to construction commencement where access is required to State Controlled Roads (SCRs).	4.6.1
		6.2	Road Crossings	The submission requests that detailed drawings and traffic management plans are provided to DMR prior to construction commencement for pipeline road crossings.	4.6.2
		6.3	Approvals	DMR also advises that any works in a SCR corridor will need to be approved by DMR under Section 33, 50 and 62 of the TI Act as applicable.	4.6.3
7	The Queensland Treasury	7.1	No Comment	The Queensland Treasury advises that they have no comment on the EIS.	4.7
8	The Department of Primary Industries and Fisheries (DPIF)	8.1	Creek Crossing Methods	DPIF recommend that at a minimum, microtunnelling or thrust boring are used as the crossing method for Inkerman, Twelve Mile, Horrigan, Raglan and Larcom Creeks.	4.8.1
		8.2	Impact on Riparian Fringes and Tidal Lands	DPIF recommend that site evaluation of the entry and exit points for microtunnelling or thrust boring include considerations to ensure no impacts to riparian fringes or tidal lands associated with any waterway crossings.	4.8.2
		8.3	Coffer Dam used for Construction of the Intake in the Fitzroy River	DPIF has concerns with regard to fish and crustraceans becoming trapped within the sheet pile coffer dam to be used during construction of the intake and how this will be managed.	4.8.3
		8.4	Water Withdrawal	DPIF has concerns that drawing water from the Fitzroy River could reduce the efficiency of the Fitzroy Barrage Fishway, affecting the migration of catadromous and anadromous fish species between fresh water and estuarine/marine environments at low flow periods.	4.8.4
		8.5	Error	DPIF notes that the *"Fisheries Regulation 2005"* should be the *"Fisheries Regulation 2008"*.	7.1
		8.6	*The Fisheries Act 1994*	DPIF notes that the *Fisheries Act 1994* does not list fish species of conservation value but those species requiring special management through bag, size limits and fishing closure. Additionally, the *Fisheries Act 1994* manages fish passage and connectivity through the regulation of waterway barriers and fishway passage.	7.2
9	The Department of Communities (Brisbane)	9.1	No Comment	The Department of Communities (Brisbane) advises they have no comments on the EIS process for the project.	4.9

No.	Submitter	Issue No.	Key Issue	Summary of Submission	Response (Section of the Supplementary Report)
10	The Department of Communities (Rockhampton)	10.1	Construction Period	The Department of Communities (Rockhampton) recognises the need for the project and states that *"…this project will be temporary in nature in so far as the construction period will be for approximately 12 months"* (this timeframe is incorrect and has been clarified in the response to the submission).	4.10.1
		10.2	Indigenous Employment Opportunities	The Department recognises that the negative consequences of the recent industrial growth in Central Queensland will be visited more intensely upon those groups least able to cope with the impact. The Department requests that the EIS more adequately address the requirement of the ToR with respect to strategies for local residents including members of Indigenous Communities to identify skills required for the project and initiate appropriate recruitment and training programs.	4.10.2
11	The Department of Infrastructure and Planning (DIP) - State Development Areas	11.1	Error	DIP advises that *"the GSDA was amended in March 2007, not April 2007."* DIP also advises that *"Section states the GSDA is 21,000 ha, this is incorrect; it is now 28,000 ha"*.	4.11.1 and 7.3 and 7.4
		11.2	Error	DIP recognises that there are numerous references to the "Stanwell-Gladstone Infrastructure Corridor" and suggests that this should be the "Stanwell-Gladstone Infrastructure Corridor State Development Area".	4.11.2 and 7.5
		11.3	Error	DIP notes that in the third paragraph of Section 1.9.4.2 (of the EIS), there is reference to the GSDA Development Scheme; however they state that this is an old reference as the scheme was updated in July 2008. DIP adds that the pipeline now fits into the definition of "Infrastructure Facility". Also, within the above section, DIP suggests that the sub-heading should be the "Stanwell-Gladstone Infrastructure Corridor State Development Area." In addition, DIP notes that reference is made to the Draft Scheme and that the SGICSDA Development Scheme was approved in August 2008 and this should be reflected in the text.	4.11.3 and 7.6
		11.4	Error	DIP notes that when the pipeline enters the GSDA, it will be included within a number of corridors; however the EIS only refers to the Materials Transportation and Services Corridor (see the final paragraph of Section 2.1 of the EIS).	4.11.3
		11.5	Gladstone SDA and SGICSDA boundary	DIP suggests that the EIS include a map indicating the pipeline route with associated SGICSDA boundary and GSDA boundaries.	Figure 1 Locality Map and 4.11.4
		11.6	Gladstone Port and Rail Study corridors	DIP requests the proponent submit Geographic Information System (GIS) layers so that DIP can ensure the route is within the proposed corridor identified in the Gladstone Port and Rail Study.	4.11.5
		11.7	Access to Corridor in Operation	DIP requests further information regarding access to the pipeline to allow for maintenance activities and for general access during operation.	4.11.6

No.	Submitter	Issue No.	Key Issue	Summary of Submission	Response (Section of the Supplementary Report)
		11.8	Vegetation Clearing	DIP requests further information regarding the clearing of *Endangered* or *Of Concern* vegetation under the *Vegetation Management Act 1999* (VM Act). DIP also requests information regarding any urban exemptions to clearing permits that may apply (e.g. within the former Calliope Shire Planning Scheme Area) and where offsets will be required.	4.3.4
		11.9	Native Title	DIP requests an update on the status of Native Title issues for the project.	4.11.7
		11.10	Rail Crossings	DIP requests further information regarding the treatment of crossings of proposed future infrastructure, such as the Moura Link – Aldoga Rail Project.	4.5.1 and 4.11.8
		11.11	Accommodation	DIP requests further information regarding the possible locations of accommodation camps that may be required for construction workforces. The submission notes that workforce accommodation is not considered a desirable use within the GSDA.	4.11.9
12	The Department of Tourism, Regional Development and Industry	12.1	Consultation	The Department requests that the proponent liaise with Gladstone Area Promotion and Development Limited (GAPDL).	4.12
13	The Environmental Protection Agency (EPA), Central Coast Region	13.1	Wetlands and Waterways	EPA has concerns regarding the use of words "construction during June to September where reasonably practicable" within the EIS. The submission asserts that the statement is not consistent with the Development Scheme for the SGICSDA. The EPA notes that Policy 1 of the Development Scheme requires that *"the ecological values of wetlands are retained"* and construction avoided *"in wetlands wherever feasible and practical. If it is not feasible or practical to avoid construction in wetlands, construction shall occur between May and September"*. EPA requests that the misinterpretation of the Development Scheme be corrected with regard to construction in wetlands and in relation to Yellow Chat habitat. EPA also requests that qualifiers such as 'wherever possible' and 'reasonably practical' in the EIS be removed and the proponent confirm that it will comply with the Development Scheme.	4.13.1
		13.2	Map of the WTP	EPA requests a map showing the specific location of the proposed WTP in relation to nearby residents and surrounding roads and other infrastructure. The location and boundaries of the WTP should be specified as required in the ToR.	4.13.2

No.	Submitter	Issue No.	Key Issue	Summary of Submission	Response (Section of the Supplementary Report)

		13.3	Handling and Disposal of WTP Residue	EPA requests further information regarding the handling and disposal of WTP residue.
				The details requested include:
				• Volume of slurry containment:
				  • Evaporation loss
				  • Settling rate
				  • Decant water flow rate
				  • Design rainfall event
				  • Frequency and volume of uncontrolled discharge/overflow.
				• Integrity of residue slurry containment:
				  • Surface flow and flood immunity
				  • Soil type – permeability, dispersivity
				  • Groundwater depth, quality and use
				  • Proposed containment lining
				  • Effect of salinity/flocculants on permeability.
				• Management and monitoring of the proposed systems including the emergency residue stockpile area.
					4.13.3

		13.4	Dewatering building at the WTP	EPA requests further clarification regarding the residue dewatering building at the WTP and notes that the acceptability of proposed management cannot be determined in the absence of a clearly defined approach to residue management.	4.13.4
		13.5	Stormwater Discharge from the WTP	EPA requests further information on the measures proposed for the protection of water resource environmental values in relation to the management of stormwater discharge from the WTP. In addition, they suggest that the EIS should provide details of the location and impacts of the disposal arrangements for the WTP residue as required by the ToR.	4.13.3 and 4.13.5
		13.6	Historical Sites	EPA requests further information regarding the historical sites (HAS2 and HAS3 as described in Chapter 14 of the EIS, Cultural Heritage) to be impacted by construction of the project, and further examination of historical sources specific to these features. EPA also requests small scale mapping of these sites to identify their location relative to the local topography and cadastral boundaries. Any salvage recording of sites should be conducted to archival standards with reference to the EPA Guideline: 'Archival Recording of Heritage Listed Places'	4.13.6
		13.7	New Environmentally Relevant Activity (ERA) Regulation	EPA submission notes that the new *Environmental Protection Regulation 2008* should be considered in relation to the ERAs relevant to the project.	5.1
		13.8	Planning EMP	EPA acknowledges that the Planning EMP provides a sound basis for interpreting commitments of the proponent as set out in the EIS. However they request that performance criteria containing qualifiers such as 'wherever possible' and 'reasonably practical' be rewritten to clarify the performance standards expected during implementation of the plan.	4.13.8 and Appendix F

No.	Submitter	Issue No.	Key Issue	Summary of Submission	Response (Section of the Supplementary Report)
Local Government					
14	Rockhampton Regional Council (RRC)	14.1	Greenhouse Gas Emissions	RRC acknowledges that the EIS has essentially provided satisfactory responses to all the topic areas. The submission notes that the greenhouse gas emissions predicted for the construction and operation of the project (as identified in Chapter 10 of the EIS, Air Environment), whilst comparing favourably to global, state, local and sectoral emissions, still have some mitigation potential. RRC suggests possible mitigation strategies and questions whether opportunities to reduce the greenhouse gas emissions from the construction and operation stages of the project have been considered.	4.14.1
		14.2	Greenhouse Gas Emissions	RRC notes their support for GAWB's investigation into options to offset its corporate greenhouse gas emissions.	4.14.1
15	Gladstone Regional Council (GRC)	15.1	Traffic Management Plans	With reference to Chapter 13 of the EIS, Transport and Access Arrangements, GRC agrees that traffic management plans should be developed during the detailed design phase to address site-specific details for each element of the project. GRC requests that the Coordinator-General ensures there is a condition imposed requiring the proponent to have approved plans in place prior to works being undertaken.	4.17.3
		15.2	Proponent Obligations: Regulations	GRC notes that temporary site offices and temporary storage areas will be required during construction of the project. GRC requests that the Coordinator-General remind the proponent of the approval obligations with regard to any ERAs, food handling regulations and waste control regulations for the facilities, as well as any general set-up and decommissioning approvals that are necessary.	4.15.1
		15.3	Weed Management	GRC acknowledges in its submission that the EIS contains an assessment of, and management plan for, weed control (Chapters 6, Terrestrial Flora and 20, Planning EMP, of the EIS). GRC requests that the Coordinator-General attach a condition to approval of the EIS to require strict compliance with all relevant EMPs.	4.15.2
		15.4	Pipeline Cleaning and Testing	GRC requests that the Coordinator-General requires the proponent to provide appropriate management plans for the cleaning and testing of the pipeline once construction is complete, including consideration of water discharge to the environment.	4.15.2
		15.5	Proponent Obligations: Land/ tenure	GRC acknowledges that most impacts to land tenure/land use from the project relate to the construction phase. GRC notes agreement with the conclusions of Chapter 4 of the EIS, Land Use and Infrastructure, however requests the Coordinator-General to remind the proponent of the obligations to ensure all land/tenure use dealings are appropriately attended to and finalised.	4.15.3
		15.6	Workforce Accommodation	GRC raises concerns over the general issues involved in the housing of the project workforce and the potential impacts on the social infrastructure of the Council's area. With regard to housing, GRC notes their belief that all projects should provide for some legacy to be gained for the community as a form of compensation for social and housing stresses. GRC notes their willingness to discuss this aspect of the project directly with the proponent.	4.1.1

No.	Submitter	Issue No.	Key Issue	Summary of Submission	Response (Section of the Supplementary Report)
Organisations					
16	Powerlink	16.1	Crossings of Power Transmission Lines	With reference to Figure 1.3 of the EIS (Chapter 1, Introduction), Powerlink has identified in its submission several areas where the project will be in close proximity to existing or proposed powerlines.	4.16
		16.2	Crossings of Power Transmission Lines	Powerlink requests submission of detailed design plans for the identified crossings once they have become available for review.	4.16
		16.3	Crossings of Power Transmission Lines	Powerlink encloses with its submission a list of potential issues arising from location of pipelines in the vicinity of high voltage powerlines.	4.16
		16.4	Crossings of Power Transmission Lines	Powerlink refers GAWB to a number of documents to address electrical safety.	4.16
		16.5	Pipeline Co-use Guidelines	Powerlink encloses with its submission *Pipeline Co-use Guidelines* for reference.	4.16
17	The Capricorn Conservation Council (CCC)	17.1	Yellow Chat	CCC has concerns that breaching the aquifer by burying the pipeline underneath the creek bed could be detrimental to survival of the Yellow Chat in the area. CCC suggests that the pipeline could be elevated over the creek bed, reducing risk to the aquifer.	4.17.1
		17.2	Cumulative Effects	The submission notes that the cumulative effect of many pipelines needs to be considered in regard to the Yellow Chat. CCC suggests that it may be necessary to restrict pipelines to one narrow corridor and that the corridor should be minimised to reduce impacts on vegetation in the area.	4.17.2
		17.3	Water Treatment Plant	The submission outlines potential environmental risks associated with the Alton Downs WTP and requests further information on the disposal of residue from the WTP. CCC also has concerns regarding the risks to nearby residents due to noise and traffic flow from the use of 12 tip truck trips a day to transport the residue to the disposal facility. The submission also queries whether the chemicals used in the WTP (aluminium chlorohydrate, polyDADMac, polyeletrolyte, sodium hydroxide, sodium hypochlorite and ammonium sulphate) will enter the environment.	4.13.3 and 4.17.3
		17.4	Acid Sulfate Soils (ASS)	CCC has concerns regarding the leaching of ASS to Raglan Creek groundwater and to other areas along the pipeline route.	4.3.1
		17.5	Exposure of Topsoils	CCC notes the potential for dry conditions increases the risk of topsoil erosion and that due care should be taken to avoid this during the construction phase. The submission notes that replacement of topsoil is essential, the topsoil should be removed and stockpiled away from ASS and replaced to maximise revegetation.	4.17.4
		17.6	Sodic Subsoils	CCC requests more information regarding the management of sodic subsoils during construction.	4.17.5
		17.7	Hollow Trees	CCC requests that wherever possible, large trees, particularly those with hollows utilised by hollow nesting wildlife are to be left in place along the corridor.	4.17.6

No.	Submitter	Issue No.	Key Issue	Summary of Submission	Response (Section of the Supplementary Report)
		17.8	Yellow Chat	CCC requests that the potential effect on the Fitzroy River Delta population of the Yellow Chat be more closely examined. Particularly the area of Twelve Mile Creek and Pelican Creek to Horrigan Creek, where breeding events of this species are consistently recorded.	4.17.7
		17.9	Habitat Connectivity	CCC has concerns that the pipeline poses a significant risk to wildlife because the 30 m construction corridor represents a barrier to connectivity. CCC suggests that re-vegetation should include suitable vegetation to the surrounding area to increase the connectivity between sites either side of the corridor.	4.17.8
		17.10	Weeds	CCC has concerns that the introduction of weeds to these areas poses a significant risk to native vegetation and notes that mitigation of this risk should be a high priority for the proponent during the construction and maintenance phases of the project.	4.17.9
18	Jemena (formerly Alinta)	18.1	Gas Pipeline Crossings	Jemena requests that its pipeline be assured against damage from third parties during construction and operation.	4.18
		18.2	Gas Pipeline Crossings	Jemena requests that its pipeline and easement be kept clear for surveillance, pipeline inspection and testing, and emergency situations.	4.18
		18.3	Gas Pipeline Crossings	Jemena notes that plans for structures that are to be located in the immediate vicinity of its easement are to be submitted in writing to Jemena so that they can make comment. Jemena also requests that civil construction matters both in planning and post project delivery that are proposed within the Jemena easement be approved by Jemena in writing.	4.18
		18.4	Gas Pipeline Crossings	Jemena notes that as the proposed water pipeline will cross its gas pipelines, it requires that its pipelines are suitably protected to prevent any coating concerns and corrosions issues into the future.	4.18
		18.5	Gas Pipeline Crossings	For all crossings, Jemena requires a crossing agreement to be entered into by the owners of the pipeline, once the design and crossing details are finalised. Jemena also requires construction works and prior protection works to be agreed to before work will be allowed to proceed over its assets and easement.	4.18
19	Gladstone Ports Corporation (GPC)	19.1	Gladstone Material Transportation Corridor	GPC notes that the nominated route of the pipeline traverses the GSDA Materials Transportation and Services Corridor (MTSC), which is currently in the ownership of the GPC. To ensure the integrity of the MTSC is upheld, GAWB is required to liaise with GPC's Port Infrastructure Planning Manager during the detailed design stage, prior to construction. As part of the detailed design stage GPC wishes to certify the final siting of the pipeline within the MTSC, to make certain that there will be no interference to the future development of the corridor.	4.19.1
		19.2	Gladstone Material Transportation Corridor	GPC notes that recent realignment of the MTSC may affect the final configuration of the pipeline and the proponent should consult with DIP regarding this issue prior to the finalisation of the pipeline route.	4.19.2

No.	Submitter	Issue No.	Key Issue	Summary of Submission	Response (Section of the Supplementary Report)
Individuals					
20	Private Submitter 1	20.1	Pipeline Route on their Property	The submitter states that they wish to make a strong objection to the latest proposed change for the pipeline alignment, which now affects their property. They also state that they do not understand why the direction of the pipeline was amended when in May 2008 they were informed by GAWB that their property would not be affected.	4.20
		20.2	Pipeline Re-alignment	The submitter questions whether the pipeline alignment has been re-routed due to objections from their neighbours, who have lodged complaints about the pipeline passing through their property due to improvements to their land.	4.20
		20.3	Property impacts	The submitter has concerns that the pipeline will cause numerous problems to their property and Quarter Horse Stud including decreased usable acreage, the need for hand feeding of livestock whilst construction occurs and the possibility of harm to livestock during maintenance of the pipeline.	4.20
21	Private Submitter 2	21.1	Truck Movements During Construction	The submitter raises objections to the noise impacts from the movement of trucks along Laurel Bank Road and Ski Gardens Road during construction.	4.21.1
		21.2	Truck Movements During Operations	The submitter has concerns about the inconsistency and escalation of data given to residents regarding the number of trucks per day for transport of waste from the WTP.	4.21.2
		21.3	Dust and Air Pollution	The submitter has concerns about dust and air pollution from the use of Ski Gardens Road in its current ungraded form.	4.21.3
		21.4	Road Upgrading	The submitter has concerns that Ski Gardens Road is narrow and in wet weather will be unable to handle heavy vehicular traffic. The submission notes that widening of the road will pose problems for numerous landholders who have underground water pipelines the full length and on both sides of Ski Gardens Road, Laurel Bank Road and through to Mackenzie Road.	4.21.4
		21.5	Road Upgrading	The submitter has concerns that the single strip of bitumen along Laurel Bank Road from Rockhampton Ridgelands Road is not of a standard to support the increase in traffic during construction as the shoulders and verges are rutted.	4.21.4
		21.6	Road Safety	The submitter has concerns regarding road safety issues relevant to construction traffic, including line of sight, school buses and horse riders.	4.21.5
		21.7	Laurel Bank Storage Locations	The submission queries the location of the storage areas and construction camps at Laurel Bank.	4.21.6
		21.8	Rehabilitation	The submitter has concerns that there is no solid commitment to the total rehabilitation of the area after construction work. The submission queries the use of the terms "as far as practicable" and "as much as possible" on Pages 15 and 21 of the EIS Summary of Major Findings.	4.21.7

No.	Submitter	Issue No.	Key Issue	Summary of Submission	Response (Section of the Supplementary Report)
		21.9	WTP Residue	The submitter notes that an appropriate residue disposal strategy is yet to be decided and raises this as a major concern to them. The submitter questions whether the community will be given the opportunity to comment on the method of residue disposal. The submission also states that there will need to be continual monitoring after construction and raises concerns regarding the toxicity of the residue from the WTP.	4.13.3
		21.10	Waste Soil Management	The submitter has concerns regarding the dumping of the overburden and soil removed from the construction site for the Fitzroy River intake and WTP.	4.21.8
		21.11	Water Allocations	The submitter has concerns about the impact of the project on irrigator water allocations and the cost of water. The submitter also has concerns over the sustainability of the Fitzroy River with the proposed piping of water for this project in addition to its current pressures.	4.21.9
		21.12	Funding of Weirs	The submitter asserts that Rookwood and Eden Bann weir funding should have priority over the Gladstone-Fitzroy Pipeline Project.	4.21.10
		21.13	Desalination	The submitter queries the other alternatives to the pipeline such as the viability of desalination.	4.21.11
22	Private Submitter 3	22.1	Pipeline Route on their Property	The submitter raises objections to the pipeline alignment through their property. The submitter was previously advised that the pipeline alignment did not affect their land and has since been advised that it will.	4.20
		22.2	Pipeline Route on their Property	The submitter raises concerns relating to: • The cost of changing the route • Existing infrastructure easements on their property • Limitation of future uses of their property • Impacts to grazing on their land • The choice to impact well-grassed paddocks in preference to Leucaena crop.	4.20
23	Private Submitter 4	23.1	Area Required for the WTP	The submitter asserts that the footprint of the proposed WTP is larger than necessary for the reasonable operation of the WTP for the following reasons: • The WTP has been designed for duplication of the screening facility, clarifier and sludge balance tanks • There is insufficient need demonstrated for the provision of land being set aside for the potential sand filter • The adoption of further methods of residue management such as solar drying are not canvassed in the EIS and cannot be justified. • The design of the WTP provides for a loop road for the removal of residue which has increased the footprint. The submitter proposes that the use of the ring road around the plant would reduce the footprint of the WTP • The distance between the WTP structures has been set with a clear distance of at least 10 m, which the submitter asserts is greater than necessary	4.22.1

No.	Submitter	Issue No.	Key Issue	Summary of Submission	Response (Section of the Supplementary Report)
				• The WTP has been designed so that all buildings are detached and stand alone. The submitter proposes that the use of common walls would reduce the footprint • In the south-east corner of the WTP site there is no infrastructure shown on the layout plan. The submitter asserts that the footprint of the WTP could be truncated in the south-eastern corner without having any adverse impact on operational efficiency • The introduction of a straight alignment for the access road from Ridgeland Road to the WTP would substantially reduce the area required to be taken and would have no impact on operational efficiency of the WTP.	
		23.2	Location of the WTP at Alton Downs	The submitter asserts that the location of the WTP at a point close to the intake at the Fitzroy River is not necessary and the WTP could be located elsewhere to the south. The submission makes reference to the existing SunWater intake which transports water to Stanwell Power Station with no additional cleaning of the SunWater pipeline required.	4.22.2
		23.3	Width of Pipeline Trenching	The submitter has concerns that the width of the proposed excavation for the pipeline trenching is too wide and will have a severe residual impact on the land after construction. This includes subsidence and the associated issues of pasture re-establishment, and cattle and vehicle access over the trench.	4.22.3
		23.4	Impact on Grazing During Construction	The submitter has concerns that during construction the existence of an open trench will disrupt the management of cattle. The submission states that during construction, a system should be employed whereby the trench is backfilled in part to allow access of livestock to any areas otherwise severed by the open trench.	4.22.4
		23.5	Consultation	The submission states that there are numerous occasions when different, incorrect, or incomplete information has been made available, especially with regard to the size of the WTP site.	4.22.5
		23.6	General Statement of Impacts	The submitter disagrees with the assessment of impacts relating to land use and infrastructure in the EIS, and the general summary of impacts. The submission asserts that due to various impacts of the WTP on surrounding lands the impact should be assessed as Major Adverse.	4.22.6
		23.7	Residue Odour	The submitter has concerns about potential odours from WTP residue. The submitter requires certainty that odours will not escape from the WTP.	4.13.3
		23.8	Release of Water	The submitter has concerns about the release of contaminated stormwater or wastewater from the WTP and queries the design of the stormwater retention basin on site.	4.13.5
		23.9	Disposal of WTP Residue	The submitter has concerns that in the event that arrangement cannot be made for the residue from the WTP to be disposed of in accordance with local government regulations at a site other than the WTP, large volumes of the residue will be stored at the WTP. The submitter is concerned that contamination of surrounding land may occur in the event that residue escapes from the WTP. The submission also asserts that the area of land designated in the WTP for storage of residue is small and not sufficient to store large volumes of residue at any one time.	4.13.3

No.	Submitter	Issue No.	Key Issue	Summary of Submission	Response (Section of the Supplementary Report)
24	Private Submitter 5	24.1	Economic impacts	The submitter believes that the project will cause significant economic short-term and longer-term losses to them as landholders (business disruption and land devaluation). They also have concerns about social costs to landholders in terms of added stress, loss of time with consultation, research and correspondence preparation.	4.20
		24.2	Location of Pipeline on Property	The submitter has concerns about disruption to property and crops, irrigation improvements and damage to property.	4.20
		24.3	Relocation of Pipeline Easement	The submitter requests relocation of the easement 30-60 m west to avoid current developments on the property.	4.20
		24.4	Further Developments on Land	The submitter has concerns about future disruptions to their property if a second pipeline was required.	4.20
Federal Government					
25	The Department of Environment, Water, Heritage and the Arts (DEWHA)	25.1	Surface Water Impacts in Relation to the Yellow Chat	DEWHA identifies that one of the key threats to the Yellow Chat is changes to the hydrological regime. The Department believes that this threat has not been identified correctly in the EIS as the activities associated with pipeline construction and maintenance have the potential to interfere with surface water flow upon which productivity of the marine plain wetland system (Yellow Chat habitat) are dependant.	4.23.1
		25.2	Indirect Effects of Drilling and Microtunnelling on the Yellow Chat	The Department's submission asserts that specific information has not been given in relation to the type of creek crossing to be used at each individual creek. This information is required for those creeks where the Yellow Chat and/or its habitat have been identified (e.g. Inkerman, Twelve Mile, Raglan and Horrigan Creeks). The submission states that studies need to be undertaken to confirm that the drilling methods proposed will not damage the aquifers underlying these creeks, and that downstream flows into Yellow Chat habitat will not be diminished.	4.23.2
		25.3	Offsets for the Yellow Chat	The Department recommends that GAWB provide an appropriate offset as per the Yellow Chat Recovery Plan.	4.23.3
Late Submissions					
26	Private Submitter 6	26.1	Road Dust	The submitter has concerns that Ski Gardens Road is unsealed and is not suitable for heavy traffic. The submitter believes this will create dust issues (including allergies) and that the road will need to be sealed.	4.24.1
		26.2	Truck Turnaround point at the Fitzroy River Intake	The submitter questions the need for a truck turnaround area at the Fitzroy River intake.	4.24.2
		26.3	Fitzroy River Intake Pump Noise	The submitter raises concerns about the impact upon the environment of a large pump that would be devastating to the platypuses and other wildlife that live in the area.	4.24.3

No.	Submitter	Issue No.	Key Issue	Summary of Submission	Response (Section of the Supplementary Report)
		26.4	Fitzroy River Intake Pump Location	The submitter raises concerns about the location of the Fitzroy River intake pump for the following reasons: • The location of the flood plain in the area • The presence of existing pipes, access to which will be hindered • An existing pump which the submitter asserts will be affected by the intake • The visual impact of the intake and the impacts to future development of the area • Potential issues for the adjacent Ski Club.	4.24.4
		26.5	Property Impacts	The submitter has concerns about the impact of the project on their property value.	4.24.5
27	The Department of Emergency Services	27.1	Issues Within the Department's Jurisdiction	The Department of Emergency Services has reviewed the EIS and is satisfied that issues within this Department's jurisdiction are not adversely affected.	4.25
		27.2	Emergency Response	The Department requests that the regional offices of Queensland Fire and Rescue Service, Queensland Ambulance Service and Emergency Management Queensland be consulted prior to and during construction regarding the following issues: • Site access and egress • Construction staging • Road closures and traffic hazards • Storage and location of hazardous goods on site • Other concerns as identified.	4.25

4. Responses to the Submissions

The following sections provide the responses to the submissions. Responses are generally provided in the same order as in Table 1, except where the same issue was raised in more than one submission, in which case the responses have been combined.

4.1 The Department of Housing

4.1.1 Workforce Accommodation

The Department's interests in this project relate to potential cumulative adverse impacts on housing affordability and social amenity in the Gladstone-Fitzroy region and the application of appropriate mitigation measures for housing issues during construction of the project.

This section provides a summary of the housing mitigation measures proposed in the EIS, and provides an update on the plans for housing that have been developed since the release of the EIS.

It is acknowledged in the EIS that although the project requires a smaller workforce than some other planned projects for the region, the project will place additional pressures on the already tight housing and rental market in the project area. This assessment is based on the assumption that the housing and rental market will still be constrained at the time of project construction. However given that the construction timeframes for this project are currently unknown (being dependent on drought and demand triggers) the housing constraints in the area may be reduced by the time construction occurs. Additionally, the high demand for skilled labour in the region may have reduced. For this reason, GAWB is unable to prepare a coordinated Housing Management Plan at this point in time, and the mitigation measures provided in the EIS are still considered appropriate.

Mitigation measures proposed in the EIS include:

- Utilising local labour and sub contractors wherever possible
- Scheduling the works to avoid concurrent operations
- Securing rental properties to accommodate the workers for the duration of the construction phase of the project, particularly in Rockhampton. If there are still low vacancy rates at the time of construction, rentals will be sought as far in advance of construction as practicable so as not to add to the rental price inflation that can easily occur when 'out-bidding' for existing houses occurs
- In addition, or in isolation, short-term contractors may also be accommodated in motels or caravan parks within the project area. In such cases, pre-arrangements with these accommodation types would be undertaken to secure accommodation for the duration of the project. Given the low vacancy rates in these types of accommodation (at the time of EIS preparation), this would be actioned as far in advance of construction as practicable
- Construction camps may be utilised to accommodate staff if required.

Since the release of the EIS, the planning for worker accommodation for the project has been further developed and a 200-person housing camp is being considered for the Raglan area, if required. Whilst not yet confirmed, and dependant on the housing and employment conditions at the time of construction, this camp would reduce the pressure on existing housing in the project area. This camp would potentially house those pipeline personnel and Raglan Pump Station personnel who are not local residents.

Aldoga Reservoir construction personnel are expected to live in local accommodation in Gladstone whilst all Alton Downs WTP, intake and project office personnel will be accommodated locally in Rockhampton. It is also expected that a majority of the construction personnel for the Alton Downs WTP, intake and pipeline will be local residents, reducing the strain on the housing rental market. However there will be a requirement for some specialist personnel for the project to be sourced from outside the region.

Considering this information, GAWB does not believe that there will be considerable pressure arising from the project on the local accommodation situation.

Table 2 summarises the above information regarding accommodation arrangements and provides approximate numbers of personnel.

Table 2 Construction Crew Accommodation Arrangements

Construction Crew	Approximate Number of Personnel	Description of Accommodation
Fitzroy River intake and Pump Station	36	Local accommodation in Rockhampton, with a majority being local residents.
Alton Downs WTP	110	Local accommodation in Rockhampton, with a majority being local residents.
Northern Pipeline Team	145	It is expected that a majority of the 290 personnel will be local residents and therefore will not require accommodation at the construction camp. A maximum of 200 of the 290 personnel would be accommodated in the 200-person capacity construction camp at Raglan (if the camp is required).
Southern Pipeline Team	145	
Raglan Pump Station and Reservoir	56	A majority of the workers will be local residents, however a proportion may wish to stay at the camp due to travel distance.
Aldoga Reservoir	85	Local accommodation in Gladstone.
Project Office	32	Local accommodation in Rockhampton.

Gladstone Regional Council (GRC, Submission 15) notes a full assessment of the potential housing impacts of the project is difficult, acknowledging the uncertain construction commencement date and the project not requiring an overly large workforce when compared with other projects planned for the region. The Council has advised its strong belief 'that all projects should provide for some legacy to be gained for the community as a form of compensation for the social and housing stresses' and has expressed its willingness for discussions. GAWB has met with Council as part of its PEP and will continue a liaison program to address potential issues with social and housing stress in accordance with its Community Engagement Procedure described in Appendix F, Table 20.19 of this report.

4.1.2 Workforce Accommodation Approvals

The following provides an outline of the approvals that may be required if a construction camp is determined to be required for the construction period. The location under consideration for the camp is Raglan which is in the GRC Local Government Area (LGA). However a final site, if required, may be located in either the GRC or Rockhampton Regional Council (RRC) LGA and so the information provided below applies to both Councils.

A definition for 'workers accommodation' is included in the planning schemes for both the former Fitzroy and Calliope Shire LGAs (refer Part 2 of the *Fitzroy Shire Planning Scheme 2005* and Schedule 1 of the *Calliope Shire Planning Scheme 2007*). These former LGAs form part of the RRC and GRC LGAs.

A review of the tables of assessment for all zones within both planning schemes indicates that a new construction camp constitutes a material change of use for 'workers accommodation', that will be impact assessable in any zones in both the former Fitzroy and Calliope Shire areas. This will entail the submission of a development application to the relevant council for assessment against the planning scheme. The application may require referral to relevant agencies (depending upon its location) and will require public notification prior to the Council issuing a development permit for material change of use.

It is likely that building works approval will also be required for the construction camp and any onsite wastewater treatment and disposal system proposed for the camp will require approval for plumbing and drainage works.

DIP has noted that it does not consider a construction camp a desirable use within either the GSDA or the SGICSDA. Therefore, the location under consideration for the construction camp will not be within the boundaries of the declared State Development Areas, however the exact location of the construction camp will be confirmed when it is determined if one is required.

4.2 The Department of Infrastructure and Planning – Planning Group, Central Region Division

4.2.1 Cultural Heritage Management Strategies in the Construction EMP

The Department notes that management measures should be included in the Construction EMP for the management of significant cultural heritage finds during construction. The Planning EMP (see Appendix F of this report), states that the Cultural Heritage Management Plan (CHMP) will detail the measures to be taken in the event of an Aboriginal cultural heritage find during construction. These measures will also be included in the Construction EMP.

In the event of historic cultural heritage finds during construction, the Planning EMP states that works will cease in the area until the nature of the site can be assessed, recorded and or retrieved by a cultural heritage specialist and in consultation with DERM (formerly EPA or NRW). This and other management strategies will be further developed in the Construction EMP.

4.2.2 Consistency with State Planning Policies

The Department notes that a number of State Planning Policies (SPPs) are relevant to the project. These have been identified in the EIS and an assessment of the project against the relevant SPPs is documented in Section 1.9.4 of Chapter 1 of the EIS. This section also provides direction on where specific matters regulated under SPPs (e.g. Acid Sulfate Soils (ASS)) are addressed in particular sections of the EIS.

4.2.3 Consistency with the Coastal Management Plan

The Department has identified that the project is generally consistent with the outcomes of the State Coastal Management Plan and Curtis Coast Regional Coastal Management Plan. An assessment of the project against the relevant outcomes of the State Coastal Management Plan and the Curtis Coast Regional Coastal Management Plan is documented in Table 2 in Appendix C to the EIS.

It is noted by the Department that development conditions need to be obtained for all operational works under the *Water Act 2000, Vegetation Management Act 1999* (VM Act), *Coastal Protection and Management Act 1995* and the *Fisheries Act 1994*. Approvals required for the project under these acts are listed in Appendix C of this report and these approvals will be obtained prior to construction.

4.3 The Department of Natural Resources and Water (NRW)

4.3.1 Acid Sulfate Soil Investigation Report and Management Plan

NRW and the CCC (Submission 17) raise issues pertaining to the management of ASS. The Planning EMP (see Table 20.7 of Appendix F) states that an ASS investigation will be undertaken prior to construction in accordance with *SPP 2/02 Planning and Managing Development Involving Acid Sulfate Soils* and that site-specific ASS Management Plans will be developed as a result of the ASS investigation. This will include measures for the prevention and treatment of acid water runoff.

Mitigation measures for ASS are also included in Table 20.7 of the EIS (See Appendix F of this report).

The results of the investigation and the Management Plan will be sent to DERM (formerly NRW) prior to works commencing, as requested in the NRW submission.

NRW identified in its submission that incorrect terminology was used in Chapter 5, Soils and Contaminated Land, of the EIS in relation to ASS. A review has been undertaken of the *Acid Sulfate Soils Laboratory Methods Guidelines* (Ahern *et al.* 2004) and the corrected sections are included in the errata section of this Supplementary Report (Section 7.10 to 7.13).

4.3.2 Development Approvals

It is agreed that the approval shown in Table 3 below needs to be added to the Development Approval List.

A new Development Approvals List has been prepared and is included as Appendix C to this report. It should be noted that it is not intended that a large amount of water will be required during construction, but water may be required for dust control.

4.3.3 Wet Commissioning Approvals

NRW notes in its submission that any excavation, filling or destruction of vegetation within a watercourse, lake or a spring, as a result of any erosion structures required for the wet commissioning discharge, will require a Riverine Protection Permit.

Table 1 in Appendix C to the EIS (revised Table included in Appendix C of this report) includes a Riverine Protection Permit as a type of approval/permit/licence that will be required for the project.

In addition, should water used in the wet commissioning process be collected in private storage and require the taking of overland flow water, then approval may be required under the *Water Act 2000/Integrated Planning Act 1997* (IP Act). Works that allow taking overland flow water, other than self-assessable works (for taking overland flow water for stock or domestic purposes; for satisfying the requirements of an environmental authority or development permit for carrying out an environmentally relevant activity; or, for small storages not exceeding a capacity of 5 megalitres (ML) and used for any purpose other than ponded pasture or water spreading), are assessable development for the *Integrated Planning Act 1997*, Schedule 8, Part 1, Table 4, Item 3(c)(i).

Table 3 Water Act Approval

Regulating Legislation	Responsible Authority	Activity	Approval / Permit / Licence Type
Water Act 2000	Department of Environment and Resource Management (formerly NRW).	Taking of construction water from a watercourse, lake or spring, or groundwater within the RRC area.	Water Permit.

The Water Resource Plans for the Calliope and Fitzroy catchments provide the key provisions and requirements against which DERM (formerly NRW) will assess the application/s for approval of wet commissioning activities.

4.3.4 Vegetation Clearing

NRW has requested further information regarding the clearing of vegetation for the project. Information is provided below and in Appendix D of this report.

Clearing of vegetation mapped as remnant under the VM Act requires a Vegetation Clearing Permit from DERM (formerly NRW), unless exemptions apply. NRW's submission on the EIS identifies that there is insufficient information in the EIS to assess the impacts of vegetation clearing.

Vegetation Clearing Sites

There are 33 Vegetation Clearing Sites (VCSs) within the project corridor as shown in Appendix D of this report. The VCSs include:

- VCS 1 to 3: These sites are in the Alton Downs Easement, outside the State Development Areas
- VCS 4 to 13: These sites exist within the SGICSDA
- VCS 14 to 33: These sites exist within the GSDA.

There are currently four options being considered by GAWB for the management of the remnant regional ecosystems at these sites. In order of preference, these include:

1. GAWB to seek an amendment of the definition of 'specified activity' within the IP Act so the definition includes SDAs or water pipelines or both
2. DIP to prepare and attain the Vegetation Clearing Permits that are required under the VM Act for all land within the SGICSDA and GSDA;
3. GAWB to seek that the SGICSDA be treated as an 'urban area' under the IP Act, similarly to the treatment of the GSDA (see the submission from NRW in Appendix A). This therefore exempts the requirement for Vegetation Clearing Permits under the VM Act on Freehold and Indigenous Land within the SGICSDA as well as the GSDA
4. GAWB applies for Vegetation Clearing Permits for the entire project area (i.e. Alton Downs Easement, SGICSDA and GSDA) without the suggested amendment to the IP Act, and without the SGICSDA as an 'urban area' under the IP Act.

Each of these four options is further discussed in Appendix D of this report.

4.4 The Department of Mines and Energy

4.4.1 Impact on Mining Lease Tenures

The Department's submission notes the applicability of Section 403 of the *Mineral Resources Act 1989* to the project and that the holders of any mining lease along the route will need to be consulted regarding planned construction and operational activities. Further review of the proposed pipeline route in regard to the distribution of mining leases shown on the Integrated Resource and Tenures Map (IRTM) available at www.dme.qld.gov.au indicates that the proposed pipeline route may impact on the surface area of land under Mining Lease 7629, which was granted to Cement Australia (Queensland) Pty Limited on 27 September 1979 for a slurry pipeline. It is understood from the IRTM details that ML7629 was due to expire on 31 July 1997. However, discussions with Alyssa Munro, Regional Mining Registrar, Central Region (Rockhampton) on 19 January 2009 have identified that an application for renewal was lodged by Cement Australia prior to the expiry date and at this time is pending receipt of further information to enable determination.

Therefore, in accordance with the requirements of Section 403(1)(e), prior to undertaking any construction works for the project which may impact on the surface area of ML7629, it will be necessary for GAWB to obtain the consent of Cement Australia (Queensland) Pty Limited.

4.4.2 Gas Pipelines

It is identified in the submission that the proposed pipeline alignment crosses existing gas pipelines or granted easements under the *Petroleum and Gas (Production and Safety) Act 2004*. Section 808 of the Act stipulates that the surface level of land must not be changed without the consent of the (petroleum and gas) pipeline licence holder.

The project alignment will cross existing or proposed gas pipelines as shown in Table 4.

Table 4 Gas Pipeline Crossings

Petroleum Pipeline Licence No.	Licence Holder	Status	Date the Licence was Granted
PPL 30	Alinta DQP Pty Ltd	Granted	01/07/1996
PPL 56	AGL Pipelines Investments (Qld) Pty Limited	Application Pending	--
PPL 60 (Identified in the EIS as Queensland Gas Pipeline)	Envestra Limited	Granted	10/08/1999
PPL 121 (Identified in the EIS as Queensland Gas Pipeline)	Central Queensland Pipeline Pty Ltd	Granted	01/09/2008

Engineering design for construction of the project will provide a safe and technically sound construction methodology to cross these gas pipelines in agreement with the relevant pipeline licence holders to ensure that there are no long-term compatibility issues with the gas pipelines.

4.4.3 Gas Pipelines – Potential Impact of Access Roads

This issue relates to the necessity for GAWB to obtain the consent of a pipeline licence holder prior to undertaking any works that involve changes to the surface level of land that may overlay existing gas pipelines.

Table 1 in Appendix C of the EIS (revised Table included in Appendix C of this report) reflects the need for GAWB to obtain the approval of a pipeline licence holder for works within a gas pipeline easement, albeit that the table reflects the now repealed *Petroleum Act 1923* instead of the *Petroleum and Gas (Production and Safety) Act 2004*.

An updated Development Approvals List is provided in Appendix C to this report and includes the approval shown below in Table 5.

4.5 Queensland Transport

4.5.1 Proposed Rail Projects

QT's submission notes that the EIS does not refer to the proposed Moura Link – Aldoga Rail Project, the proposed Wiggins Island Rail Project or the area under investigation for the Fitzroy River Coal Terminal. The submission requests that potential interface issues between the pipeline and these proposed projects be discussed with Queensland Rail (QR) and that the potential for an Xstrata rail spur in the Bajool/Raglan area also be considered.

The design details of the Gladstone-Fitzroy Pipeline Project in relation to the crossings of QR infrastructure have been issued to QR and discussions are ongoing regarding proposed expansion of their network in the project area and how this may affect the project.

As design progresses, interface issues with QR infrastructure in the Aldoga/Yarwun area will be discussed with QR. Other rail projects that will be considered include the proposed Fitzroy River Coal Terminal and the Xstrata rail spur in the Bajool/ Raglan Area.

4.5.2 Mapping

QT requests that Figure 4.12 (Chapter 4, Land Use and Infrastructure) and Figure 13.9 (Chapter 13, Transport and Access Arrangements) be updated to include QR's proposed Moura Link – Aldoga Rail Project.

4.5.3 Approvals under Section 255 of the *Transport Infrastructure Act 1994*

It is noted in the EIS (Chapter 13, Transport and Access Arrangements, Section 13.4) that the *Transport Infrastructure Act 1994* (TI Act) is the relevant legislation in Queensland concerning the management of transport infrastructure including roads and railways. The EIS states that where temporary construction accesses and maintenance accesses from State-Controlled Roads (SCR) are required, approvals would need to be obtained under Sections 62 and 63 of the TI Act.

In addition to the above EIS text, QT has noted in their submission that where there are impacts to rail crossings, approvals would need to be obtained under Section 255 of the TI Act from QR prior to construction commencement. Thus GAWB will obtain the necessary approvals prior to construction.

Table 5 Pipeline License Approvals

Regulating Legislation	Responsible Authority	Activity	Approval / Permit / Licence Type
Petroleum and Gas (Production and Safety) Act 2004	Relevant pipeline licence holder.	Any activities that will result in a change to the existing surface level of land which overlies the gas pipeline.	Pipeline licence holder consent.

4.5.4 Text Amendments

The following text provides the amendments to Chapter 13 of the EIS, Traffic and Access Arrangements, as requested by QT. The EIS incorrectly identified the Central Line as the Blackwater Line, which although not crossed by the pipeline route is within the project area. The Port Alma Branch Line is currently disused and was not identified in the EIS. The Fisherman's Landing Branch line was also not referred to in the EIS so has been added to the text below.

Page 535, Section 13.5.1.2 of the EIS:

The project area contains the North Coast Railway Line. The North Coast Railway Line is the major rail corridor running north-south in the State and is of National and State significance. This line carries passenger services between Brisbane and Cairns as well as providing an important freight line, especially for the transportation of coal to shipping terminals in Gladstone. Other rail lines in the project area are:

- The Central Line (Rockhampton to Longreach), which provides an important freight line, especially for the transportation of coal to shipping terminals in Gladstone
- The Port Alma Branch Line (Bajool to Central Queensland Salt Works).

Summaries of the number of services using each of the railways for a week indicative of average usage are provided in Table 6 and Table 7 below (Tables 13.3 to 13.4 of the EIS). These tables show the daily number of freight and passenger rail services using the rail lines. It should be noted that the Port Alma Branch Line is currently not in use.

Table 6 (Table 13.3 from the EIS) Number of Services on the North Coast Line (at Rockhampton)

	Northbound	Southbound	Total
Monday	13	15	28
Tuesday	11	19	30
Wednesday	15	24	39
Thursday	21	20	41
Friday	19	23	42
Saturday	16	14	30
Sunday	15	15	30
Week Total	110	130	240
Average per Day	16	19	35

Table 7 (Table 13.4 from the EIS) Number of Services on the Central Line

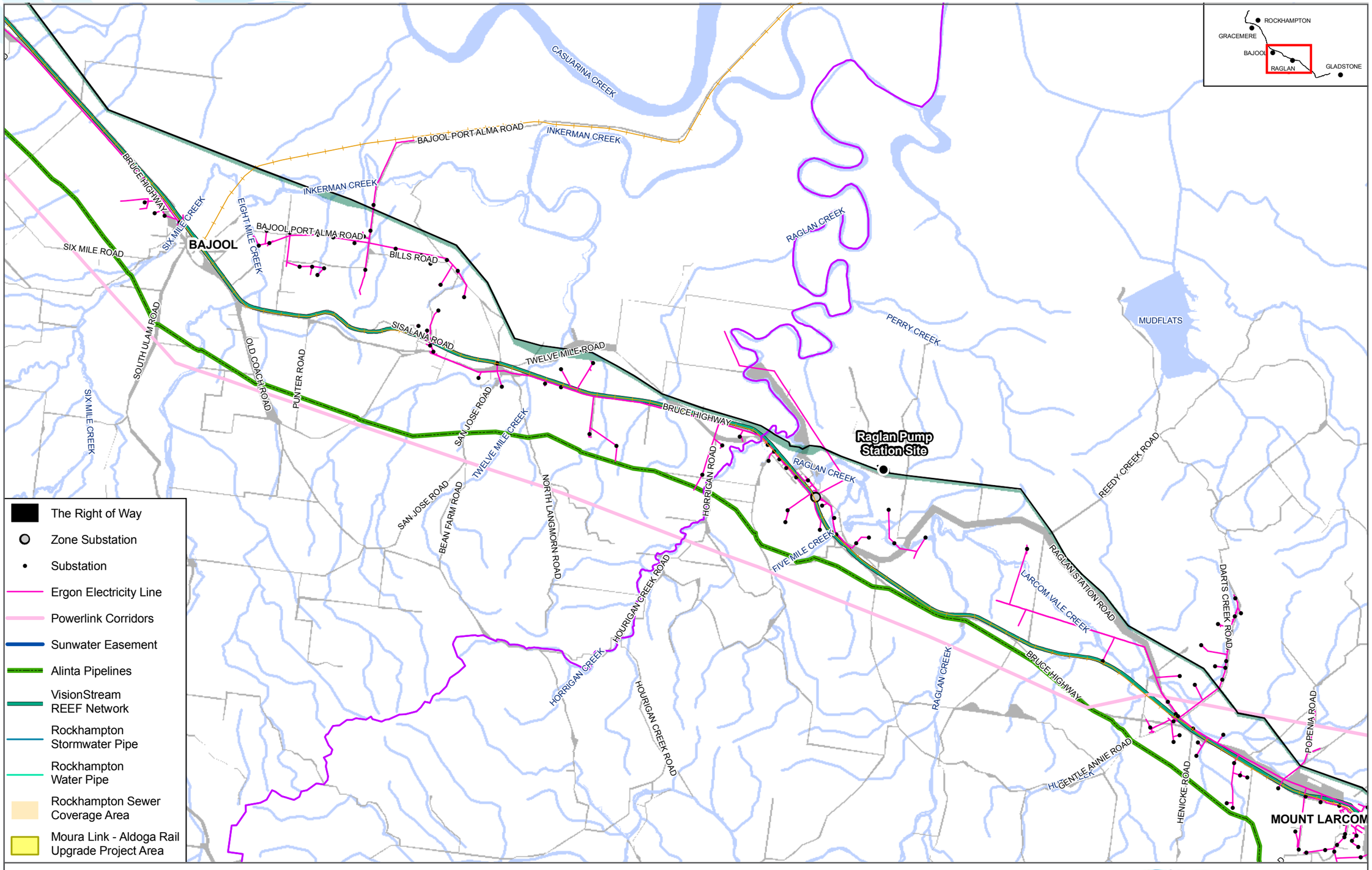
	Westbound	Eastbound	Total
Monday	26	31	57
Tuesday	28	27	55
Wednesday	32	30	62
Thursday	27	29	56
Friday	30	28	58
Saturday	29	26	55
Sunday	28	25	33
Week Total	200	196	396
Average per Day	29	28	57

Page 541, Section 13.6.1.2 of the EIS:

The project area contains the North Coast Railway Line. The North Coast Railway Line is the major rail corridor running north-south in the State and is of National and State significance. This line carries passenger services between Brisbane and Cairns as well as providing an important freight line, especially for the transportation of coal to shipping terminals in Gladstone. Other rail lines in the project area include:

- The East End Mine Branch Line
- The Fisherman's Landing Branch Line.

Summaries of the number of services using each railway for a week indicative of average usage are provided in Table 8, Table 9 and Table 10 (Tables 13.8 to Table 13.10 in the EIS). These tables show the daily number of freight and passenger rail services using the rail lines.



Gladstone - Fitzroy Pipeline EIS Supplementary Report

Figure 2 - Existing Infrastructure - Bajool to Gladstone

Sheet 1 of 2

The Right of Way | **Project Infrastructure** | **Railway Line** | **Road Reserve** | **Waterways** | **LGA Boundary** | **SGICSDA** | **GSDA**

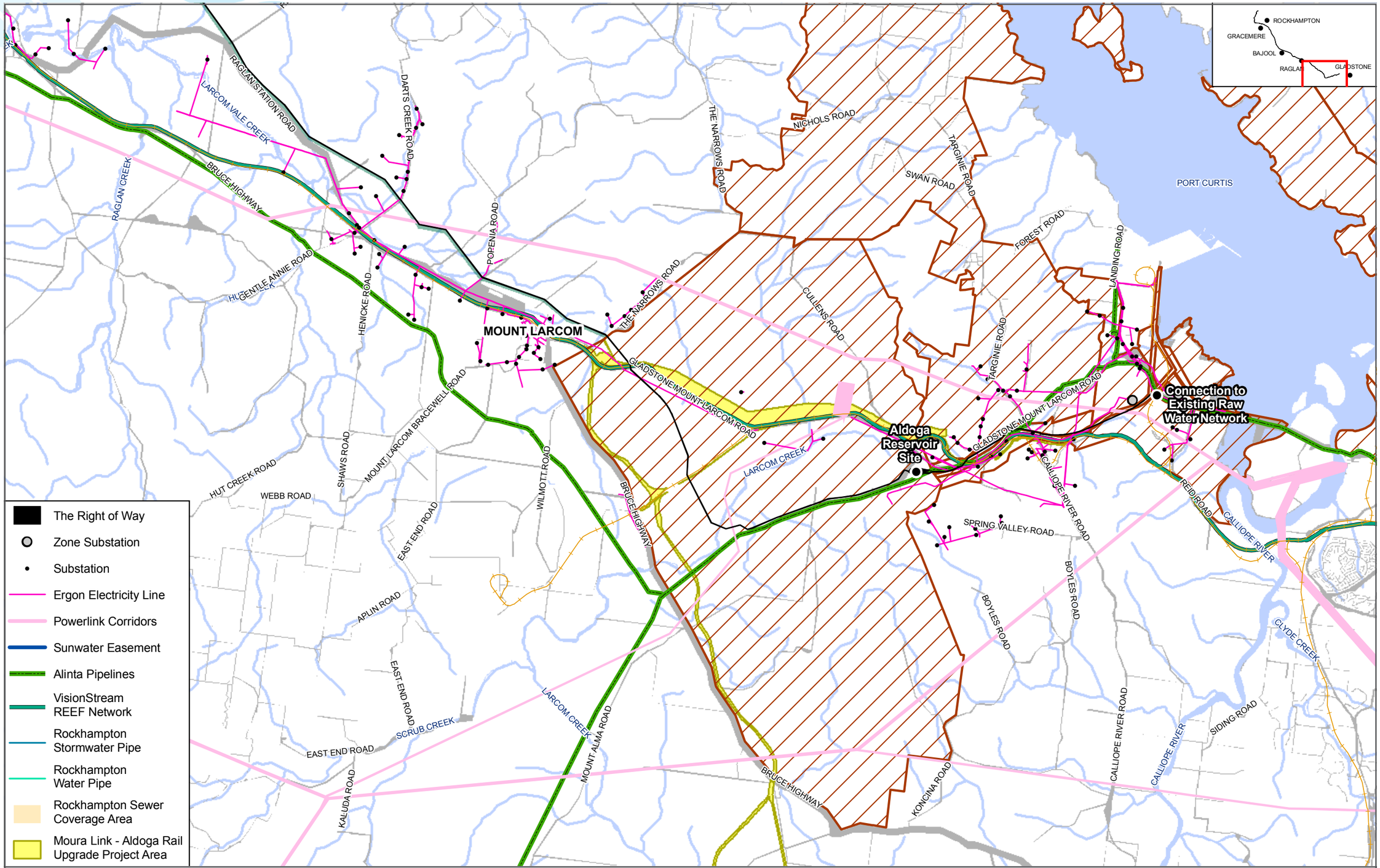
0 2 4 6 8 km

1:100,000 at A3

N

Gladstone Area Water Board

ARUP



Gladstone - Fitzroy Pipeline EIS
Supplementary Report

Figure 2 - Existing Infrastructure - Bajool to Gladstone

Sheet 2 of 2

The Right of Way | **Project Infrastructure** | **Railway Line** | **Road Reserve** | **Waterways** | **LGA Boundary** | **SGICSDA** | **GSDA**

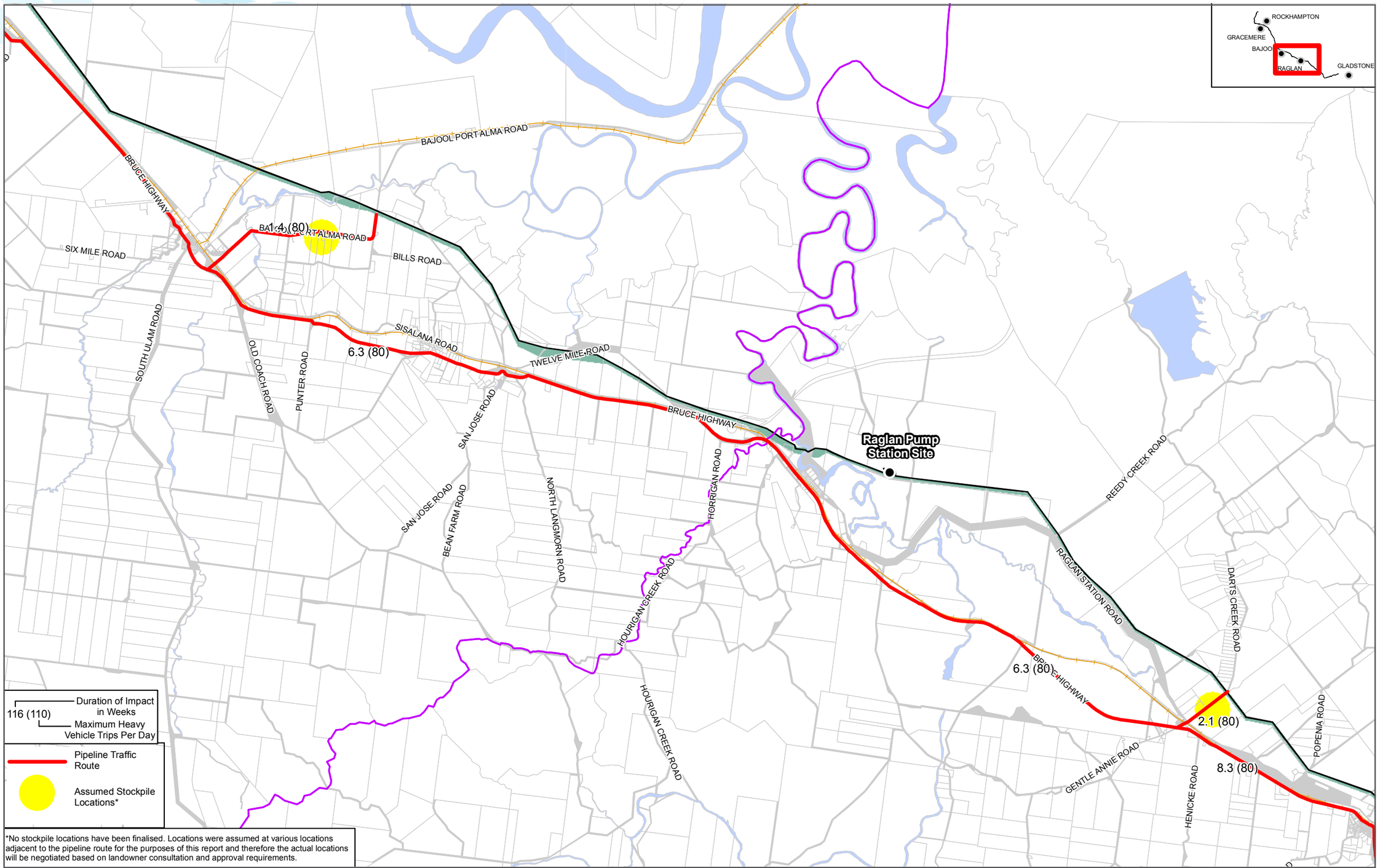
0 2 4 6 8 km

1:100,000 at A3

N

Gladstone Area Water Board

ARUP



Gladstone - Fitzroy Pipeline EIS
Supplementary Report

Figure 3 - Pipeline Delivery Traffic to Stockpiles - Bajool to Gladstone

Sheet 1 of 2

- The Right of Way
- Project Infrastructure
- Railway Line
- Waterways
- Cadastre
- Moura Link - Aldoga Rail Upgrade Project Area
- LGA Boundary
- SGICSDA
- GSDA

0 2 4 6 8 km

1:100,000 at A3

N

Gladstone Area Water Board

ARUP

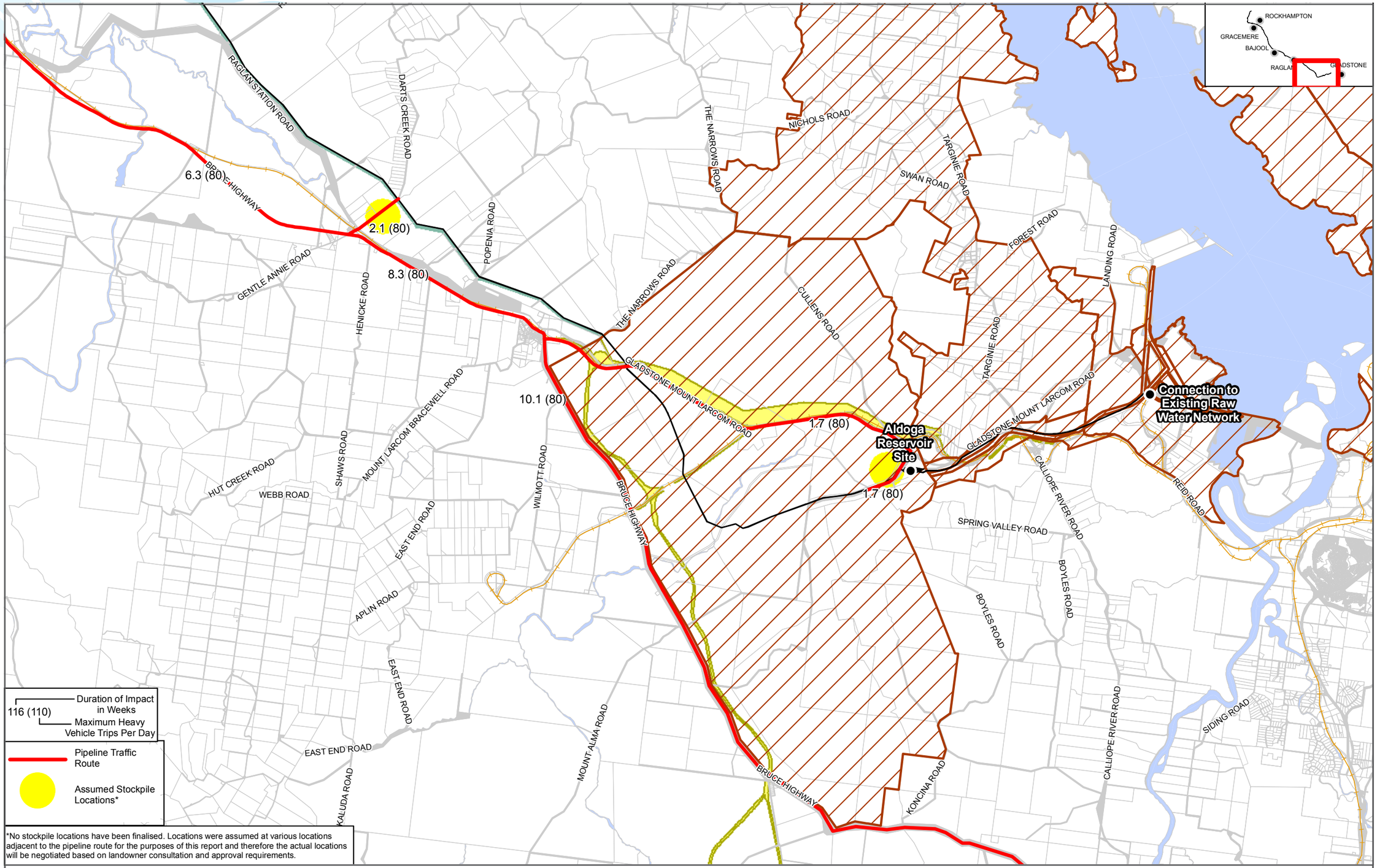


Table 8 (Table 13.8 from the EIS) Number of Services on the North Coast Line (at Bajool)

	Northbound	Southbound	Total
Monday	38	38	76
Tuesday	31	33	64
Wednesday	39	39	81
Thursday	43	39	82
Friday	43	39	82
Saturday	33	36	69
Sunday	35	28	63
Week Total	262	255	517
Average per Day	38	37	75

Table 9 (Table 13.9 from the EIS) Number of Services on the East End Mine Branch Line

	Westbound	Eastbound	Total
Monday	6	7	13
Tuesday	6	7	13
Wednesday	6	7	13
Thursday	6	7	13
Friday	6	7	13
Saturday	6	7	13
Sunday	6	7	13
Week Total	42	49	13
Average per Day	6	7	13

Table 10 (Table 13.10 from the EIS) Number of Services on the Fisherman's Landing Branch Line

	Northbound	Southbound	Total
Monday	6	6	12
Tuesday	8	7	15
Wednesday	7	7	14
Thursday	6	6	12
Friday	8	8	16
Saturday	8	7	15
Sunday	7	7	14
Week Total	50	48	98
Average per Day	7	7	14

Page 555 Section 13.7.1.4

In the Fitzroy to Bajool section the pipeline crosses two rail lines (the North Coast Line and the Port Alma Branch Line).

Table 11 is an amendment to Table 13.15 of the EIS:

Table 11 (Table 13.15 of the EIS) Pipeline Crossing of Road and Rail Corridors - Fitzroy to Bajool

Road/rail name	Location	Authority	Method of construction
Port Alma Branch Line	2.9 km north of the North Coast Line	QR	Thrust Bore

Page 570, Section 13.8.1.4 of the EIS:

In the Bajool to Gladstone section the pipeline will cross rail lines in four instances; i.e. the North Coast Line twice, the East End Branch Line once and the Fisherman's Landing Branch Line once.

Table 12 is an amendment to Table 13.25 of the EIS:

Table 12 Pipeline Crossing of Road and Rail Corridors - Bajool to Gladstone

Road/rail name	Location	Authority	Method of construction
Fisherman's Landing Branch Line	Just south of Gladstone Mt Larcom Road	QR	Thrust Bore

4.6 The Department of Main Roads

4.6.1 Access to State Controlled Roads

DMR has requested that where access is required into State Controlled Roads (SCRs), detailed drawings and Traffic Management Plans are provided to DTMR (formally DMR) for approval. This request is consistent with the EIS, which states that Traffic Management Plans will be developed prior to construction and provided to the relevant authorities for approval.

4.6.2 Road Crossings

DMR has requested Traffic Management Plans for all road crossings. Pipeline road crossing drawings have been issued to DMR for information and as described above, once detailed Traffic Management Plans are developed, these will also be provided to DTMR (formerly DMR).

4.6.3 Approvals

It is noted that approval is required under Sections 33, 50, 62 of the TI Act for works in a SCR corridor. This has been identified in Appendix C of the EIS (now Appendix C of this report) and will be obtained prior to the commencement of works.

4.7 The Queensland Treasury

It is noted that the Queensland Treasury had no comments on the EIS.

4.8 The Department of Primary Industries and Fisheries (DPIF)

4.8.1 Creek Crossing Methods

DPIF recommends in its submission microtunnelling or thrust boring for the crossing of Inkerman Creek, Twelve Mile Creek, Horrigan Creek, Raglan Creek and Larcom Creek.

Environmental assessment undertaken during the EIS identified that there are varying environmental values at each of the creeks in the study area. Of the creeks mentioned above Inkerman, Horrigan and Raglan Creeks will be crossed by microtunnelling (in addition to Gavial and Bob's Creeks as mentioned in Section 6.2 of this report) as these creeks have been identified as having significant ecological values including one or more of the following:

- Significant riparian vegetation (e.g. mangroves)
- Stream bed and banks generally in good condition
- High in-stream microhabitat diversity.

Of the creeks listed in the submission, trenched crossings are proposed at Twelve Mile and Larcom Creeks due to the small size of these waterways, limited riparian vegetation and the potential for mitigation measures to successfully manage the impacts arising during construction.

Trenching of these crossings would make use of coffer dams to keep the construction area dry. The use of coffer dams would require a Waterways Barrier Permit from DEEDI (formerly DPIF) under the *Fisheries Act 1994*. This permit has been identified in Appendix C of this report.

Discussions with DPIF have indicated that trenching works must not impact on fish passage and that the in-stream habitats must be restored on completion of the works. Creek crossings are not expected to take more than a week to complete so the period of impact to fish passage (if any) will be short term. The detailed mitigation measures to comply with the requirements of the Waterways Barrier Permit will be determined when the application is made to DEEDI (formerly DPIF) prior to construction, and may include:

- Special Area Plans will be developed and implemented for all waterway crossings
- Following completion of construction, all imported fill from the earth bund coffer dam will be removed from the creek and the creek profile returned to pre-works conditions
- Pre and post-works surveys of the creek and vertical soil profiles will be undertaken to ensure the creek profile is restored.

These and other measures included in the EIS for creek crossings are included in Table 13. This table also provides a summary of the creek characteristics and impacts of trenching at Larcom and Twelve Mile Creeks.

Table 13 Creek Crossing Characteristics for Twelve Mile and Larcom Creeks

	Twelve Mile Creek **Microtunnelling Cost:** $1.078 million **Trenching Cost:** $68,000	**Larcom Creek** **Microtunnelling Cost:** $1.101 million **Trenching Cost:** $75,000
Creek Characteristics **(as described in the EIS)**	• Permanent pool • Adjacent to known Yellow Chat habitat • Clay Low compaction. 100% unconsolidated fine sediment • Aquatic macrophytes present during field survey • Twelve Mile Creek is heavily disturbed by cattle and presently has limited habitat diversity, however has relatively low turbidity • Potential habitat for several fish species of conservation significance, none of which are protected under legislation • Both banks were slightly eroding due to the lack of riparian vegetation and ongoing bank erosion due to stock usage of the creek • Sparse and highly fragmented riparian vegetation. Mostly cleared and not remnant. Consists mainly of scattered Blue Gum (Eucalyptus tereticornis) and River Oak (Casuarina cunninghamiana).	• Permanent pool • Sand/gravel and mud substrate • Moderate compaction. Wide diversity of sediment sizes, little overlapping, some packing but can be dislodged with moderate ease • Macrophyte species present • Generally low background turbidity compared to other creeks in the study area, wide diversity of microhabitats • Aquatic macroinvertebrate fauna at one site on Larcom Creek was found to be relatively depauperate (11 families) and numerically dominated by shrimps from the family Atyidae • Marginal, temporary habitat (during flows) for several fish species of conservation significance (except during floods), none of which are protected under legislation • During non-flood periods, particularly during drought, small size likely to limit fisheries values of these lagoons • Riparian vegetation ranges from narrow and semi-continuous to patchy and very sparse • Canopy cover on both banks was less than five percent. Banks were highly unstable, a consequence of the lack of vegetation and ongoing stock and human usage. The site was surrounded by cleared pasture.
Potential Impacts of Trenching	• The construction and removal of coffer dams at these locations is likely to mobilise bed sediments, resulting in the generation of turbid waters • Bed and bank disturbance • Riparian vegetation disturbance at Larcom Creek • Coffer dam will result in temporary obstruction of the creek.	
Mitigation Measures	• Special Area Plans will be developed and implemented for all waterway crossings • Construction at Twelve Mile Creek will only occur between May and September to avoid the Yellow Chat breeding period (in accordance with the SGICSDA development scheme) • Riparian vegetation disturbance will be reduced by narrowing the width of construction at creek crossings • Rehabilitation of creeks will occur after completion of the crossing ensuring that no imported fill material from the coffer dam remains in the creek • Pre and post-works surveys of the creek and vertical soil profiles will be undertaken to ensure the creek profile is restored • Erosion and sediment control measures will be implemented at creek crossings • Construction EMP will include measures for managing fuel and chemical handling, storage, distribution and spill response during construction • Ponded water at the construction sites will be disposed of appropriately • A Groundwater Management Plan will be prepared.	

4.8.2 Impact on Riparian Fringes and Tidal Lands from Microtunnelling

DPIF recommend in its submission that an evaluation occur for the location of the entry and exit points used for microtunnelling to ensure that there are no impacts to tidal lands or riparian fringes associated with waterway crossings.

There are two tidal creeks in the project area which are Inkerman and Raglan Creeks. For both of these creeks, microtunnelling has been selected as the preferred crossing method to reduce the impact to tidal lands and to significant riparian vegetation (such as mangroves). Horrigan Creek, Bob's Creek and Gavial Creek will also be crossed by microtunnelling to avoid riparian vegetation and remnant vegetation. Mitigation measures will be in place to minimise any potential impacts to tidal lands or riparian vegetation from this method and will include:

- Placement of microtunnelling pits outside of the riparian vegetation zone
- Erosion and sediment control during construction
- Preparation of an ASS Management Plan for construction
- Minimisation of clearing width through adjacent vegetation.

4.8.3 Fauna Entrapment in Coffer Dam

DPIF has concerns regarding fish and crustaceans becoming trapped in the coffer dam during construction of the Fitzroy River intake. The following describes the construction method for the coffer dam and the measures to reduce the impact to aquatic fauna.

The coffer dam will be constructed from the bank on one side of the dam. The crane will drive the piles, install the bracing and then fill with appropriate material. The crane will then travel along the built dam building more sections until the entire dam is constructed. Effectively the dam remains "open" until the final sheet pile is placed on the third side so any fauna will be able to leave the dam until this point.

Once the coffer dam is completed the remaining water will be pumped back into the Fitzroy River. Water levels will be lowered slowly to enable any fauna trapped in the coffer dam to be removed by qualified wildlife handlers and placed back in the river. The pump will have appropriate screening to prevent fauna injuries during the pumping process.

4.8.4 The Impacts upon Catadromous and Anadromous Fish

Whilst the project is linked to the proposed weirs, the assessment of impacts for the weirs and the associated allocation of 30 gigalitres (GL) of water is outside the scope of the ToR for the Gladstone-Fitzroy Pipeline Project. However, these issues will be included in the assessment of the weirs, to be undertaken as a separate project. Thus, the impact upon the Fitzroy River system (e.g. catadromous and anadromous fish at the Fitzroy Barrage) along with other issues associated with water allocation will be addressed in the assessment of the weirs. The planning background for the weir projects is described below.

The Queensland Government's State-wide Water Policy aims to lay the foundations for economic growth in regional Queensland by, amongst other things, guaranteeing water to industry in Gladstone. Policy and program implementation are expressed through the Program of Works – State-wide Water Grid – Regional Water Infrastructure Projects (Program of Works) which became effective in December 2007. The Program of Works includes the Gladstone-Fitzroy Pipeline Project.

Also in the Program of Works, the Queensland Government has committed funds towards the development of a preliminary business case for the construction of Rookwood weir and raising the Eden Bann weir on the lower Fitzroy River.

The weirs were identified in the CQRWSS as being required to meet future demands for water in the region including Gladstone, and the allocation of water to the Gladstone-Fitzroy Pipeline Project, if made, would likely be sourced from the development of the weirs.

The raising of Eden Bann weir or the construction of Rookwood weir are both able to provide sufficient high security yield to provide water for the Gladstone-Fitzroy Pipeline Project.

Currently, environmental and engineering investigations are being carried out for the weirs project. More information will be available as the studies progress.

4.9 The Department of Communities (Brisbane)

It is noted that the Department of Communities (Brisbane) did not have any comments on the EIS.

4.10 The Department of Communities (Rockhampton)

4.10.1 Length of Construction

In the submission from the Department of Communities (Rockhampton), the Department recognises that the project "will be temporary in nature in so far as the construction period will be for approximately 12 months".

This should be clarified to avoid any misunderstanding. The EIS had originally stated that:

"GAWB is currently undertaking preparatory works such as preliminary design and environmental approvals to ensure it attains the ability to construct the pipeline within two years of a construction trigger (plus up to six months pre-construction works)" (page 10).

This information is still current at the time of writing.

4.10.2 Indigenous Employment Opportunities

The Department's submission recommends that training and employment opportunities are investigated for young local Indigenous peoples. As mentioned in the EIS (page 618), the *Indigenous Employment Policy for Queensland Government Building and Civil Construction Projects* only applies in certain Indigenous communities and does not apply to the project. In spite of this, GAWB seeks to take a proactive approach to engage local individuals, groups and organisations to better facilitate employment of Indigenous peoples.

GAWB's internal human resources policies will be applied to the project. These policies will also apply to the construction contractor. The relevant policies include GAWB's:

- Anti-discrimination Policy, which secures the rights of employees to work in an environment free of intimidation and discrimination
- Equal Opportunity Employment Policy, which applies during selection and recruitment.

During the recruitment process for both the construction and operation phases of the project, GAWB and all contractors will advertise available positions via recruiting agencies and other media (e.g. newspapers), whilst also providing job information directly to Aboriginal community groups and organisations.

4.11 Department of Infrastructure and Planning – State Development Areas

4.11.1 Amendments to the GSDA

The Department's submission notes that the GSDA was amended in March 2007 not April 2007 as stated in the EIS. The amended text has been included in Section 7.3, Errata of this Supplementary Report.

It is also noted in the submission that three new areas were added to the GSDA in July 2008 and therefore it now comprises 28,000 ha not 21,000 ha as stated in the EIS. This has been corrected in Section 7.4, Errata of this Supplementary Report.

4.11.2 Error – SGICSDA

It is noted in the submission that the EIS refers to the Stanwell-Gladstone Infrastructure Corridor and not the Stanwell-Gladstone Infrastructure Corridor State Development Area. Instances in the EIS where this occurred have been corrected in Section 7.5 of this Supplementary Report.

4.11.3 Error – GSDA Development Scheme

The Department's submission regarding the GSDA and SGICSDA notes that the GSDA Development Scheme was updated in July 2008 and the SGICSDA Development Scheme was finalised in August 2008. The following text is intended as a replacement for Section 1.9.4.2 of the EIS to address the changes to these documents:

State Development Areas

As described in Section 1.4.9 of the EIS, over part of its route, the project area is situated within two SDAs declared under the SDPWO Act. These are the GSDA and the SGICSDA.

Within these SDAs, the Coordinator-General is responsible for regulating the use of the land in accordance with a 'Development Scheme' approved under Section 80 of the SDPWO Act. Under an approved Development Scheme, the Coordinator-General takes on the responsibility of 'assessment manager', in consultation with other relevant agencies.

The use of land under an approved Development Scheme must be approved by the Coordinator-General in accordance with Section 84(4) of the SDPWO Act. The individual Development Scheme identifies the process for making an application, consulting other agencies and issuance of the approval as well as land use designations for the area.

The project will require approvals under the Development Schemes of the two SDAs in which the pipeline will be located. Consistency of the project with the Development Schemes for each of these SDAs is outlined below.

Gladstone State Development Area

The GSDA Development Scheme sets out the objectives and guidelines for future land use in the area as well as establishing procedures for assessment of applications. The Development Scheme applies for development applications that would otherwise require a material change of use permit under the IP Act.

The project is located within the Aldoga Precinct, the Materials Transportation and Services Corridor (MTSC), the Corridor Buffer Area Precinct and the Yarwun Precinct. The Aldoga Reservoir is specifically located in the Aldoga Precinct.

Under the Development Scheme adopted in July 2008, the pipeline and reservoir fit within the ambit of the definition of "infrastructure facility" and "materials transport infrastructure". Under the schedules to the Development Scheme, "infrastructure facility" or "materials transport infrastructure" are uses that are highly likely to meet the purpose of the Aldoga Precinct, the Yarwun Precincts and the MTSC. In addition, "infrastructure facility" or "materials transport infrastructure" may meet the purpose of the Corridor Buffer Area Precinct.

On this basis, the project is considered to be consistent with the intent of the GSDA Development Scheme.

Stanwell-Gladstone Infrastructure Corridor State Development Area

The SGICSDA Development Scheme sets out the objectives and guidelines for future land use in the area as well as establishing procedures for assessment of applications. The Development Scheme applies for development applications that would otherwise require a material change of use permit under the IP Act.

Under the Development Scheme, the pipeline and associated infrastructure fit within the definition of "materials transportation and services infrastructure". Under Schedule 1 of the Development Scheme, "materials transportation and services infrastructure" is considered to be a use that is highly likely to meet the purpose of the SGICSDA on the proviso that the development meets the outcomes specified in Policy 1 - Outcomes for the Stanwell-Gladstone Infrastructure Corridor State Development Area.

Upon review, the proposed siting and preliminary design for the project will be able to achieve the outcomes reflected in Policy 1. On this basis, the Gladstone-Fitzroy Pipeline Project is considered to be consistent with the intent of the SGICSDA Development Scheme.

4.11.4 GSDA and SGICSDA Boundaries

Figure 1 Locality Map includes a detailed mapset showing the location of the SGICSDA and the GSDA.

4.11.5 Gladstone Port and Rail Study

Geographic Information System (GIS) data of the pipeline route has been submitted to DIP for checking against the proposed corridor identified in the Gladstone Port and Rail Study.

4.11.6 Access to the Corridor in Operation

Access to the pipeline corridor will occur via public roads or access tracks constructed from public roads to the corridor. GAWB will manage access tracks to the Alton Downs Easement whilst access to the SGICSDA and GSDA will be determined and managed by DIP. It is the intention that access to the SGICSDA and GSDA will be for the use of all the SDA infrastructure corridor users. These access tracks would typically cross private land and negotiations with landowners will occur before any routes can be finalised. The majority of potential access tracks currently exist.

It is expected that access along the pipeline route will typically be within the pipeline corridor via an unformed track. It is understood this is consistent with DIP's proposed approach in the GSDA and SGICSDA. GAWB requires access ways that are accessible at all times to certain infrastructure such as check valves and isolation valves. In these cases all weather access tracks will be constructed. Isolation valves are typically to be installed every 5 km and are to be installed at the inlet and outlets of all pump stations and storage reservoirs. Check valves are located near reservoirs and at the pump stations, additionally one check valve is to be installed before the high point of the pipeline between Raglan and Aldoga (approximately 15 km from Aldoga).

4.11.7 The Native Title Process

In addition to the information provided on page 116 of the EIS, further detail is provided on the Native Title process on pages 124 and 129 of the EIS and is summarised below. Discussions between GAWB and DIP are ongoing, however it is likely that where Native Title has not been extinguished along the length of the corridor (the pipeline passes through largely freehold tenure and it is likely that Native Title has been extinguished on some or all parcels of land) the construction of the pipeline is likely to address Native Title under Section 24KA of the *Native Title Act 1993* (NT Act).

Section 24KA applies to certain types of infrastructure, including water pipelines (as well as other water supply and reticulation

facilities), which are operated for the public. The pipeline meets the necessary criteria required under this section of the NT Act. Any interested Native Title parties will be given the opportunity to comment on the pipeline and how it might impact Native Title interest. The non-extinguishment principle applies and any right that Native Title holders may have to compensation for the effect of the project on their Native Title rights, is preserved under Section 24KA.

In the case of the intake location, it has been assumed that Native Title rights may still exist within the boundaries of the Fitzroy River. Native Title will be addressed at this site pursuant to Section 24HA of the NT Act. This section of the NT Act provides a mechanism for the authorisation of acts in relation to the 'management and regulation of water and air space'. It provides that interested Native Title parties will have the opportunity to comment on the proposed activity. Also, under Section 24HA the 'non extinguishment principle' applies. That is the grant of any permit authorising the intake pump does not extinguish Native Title rights but any inconsistent Native Title rights are suspended to the extent of inconsistency. Any right that Native Title holders may have to compensation for the effect of the project on their Native Title rights is preserved under Section 24HA. Native Title at the proposed Alton Downs WTP site has been extinguished through past land tenure grants.

Native Title at the proposed Raglan Pump Station and Reservoir site has been extinguished through past land tenure grants. Native Title rights with respect to the road access to the site are also extinguished through past land tenure grants on the majority of lots. Where this is not the case the road may be constructed under Section 24KA – Public Infrastructure of the NT Act. Native Title at the proposed Aldoga Reservoir site has been extinguished through past land tenure grants.

Further review of historical records and tenure information for the pipeline route north of the SGICSDA has been undertaken since the EIS was released for public comment. This has confirmed that Native Title has been extinguished over all lots and roads in the proposed pipeline corridor north of the SGICSDA except for one lot. Native Title may well have been extinguished over this lot but there is currently insufficient evidence to confirm this. Further research is being undertaken to determine the status of Native Title on this lot so that the appropriate Native Title process can be identified.

4.11.8 Infrastructure Crossings

The submission states that the EIS should consider the method of crossing for proposed future infrastructure such as the Moura Link - Aldoga Rail Project.

As mentioned in Section 4.5.1, interface issues with future QR infrastructure will be addressed in discussions with QR as design of the project progresses.

4.11.9 Temporary Accommodation

The submission requests information on the location of proposed temporary accommodation for the construction phase. As described in Section 4.1.1 of this Supplementary Report, a final Housing Management Plan has not been developed for the project as the construction date is not yet confirmed. It is noted that a construction camp is not a desirable use within the GSDA. Whilst dependant on the employment and housing conditions at the time construction of the project commences, the area under consideration for a construction camp is Raglan, outside of the GSDA.

4.12 The Department of Tourism, Regional Development and Industry

The collection of data was a vital component of assessing the economic and accommodation impact of the project, particularly in obtaining information such as the expected employment and expenditure associated with the construction and maintenance phases of the pipeline project. An analysis of this information allowed the confirmation of the economic benefits that are likely to flow into the local communities and beyond.

Stakeholders such as the Local Councils, Gladstone Economic and Industry Development Board (GEIDB) and real estate agents were consulted via telephone to ensure important local contextual information was incorporated into the analysis.

Whilst the contacting of stakeholders during the economic assessment did not include Gladstone Area Promotion and Development Limited (GAPDL), the EIS was available for comment during the six week public display period in December 2008, giving GAPDL an opportunity to comment on the findings of the economics study. GAPDL will be included in the project stakeholder groups and will be informed of progress of the project.

4.13 The Environmental Protection Agency

4.13.1 Consistency with the SGICSDA Development Scheme

The submission has identified that the wording of the EIS in relation to construction in wetlands and adjacent to Yellow Chat habitat does not comply with the probable solutions identified in the Development Scheme for the SGICSDA. The relevant Development Scheme outcomes and probable solutions are shown in Table 14.

Table 14 Relevant Outcomes and Probable Solutions from the SGICSDA Development Scheme

Outcome	Probable solution
Potential and known Yellow Chat habitats are retained.	Construction adjacent to Yellow Chat breeding areas occurs between May and September.
The ecological values of wetlands are retained.	Avoid construction in wetlands wherever feasible and practical. If it is not feasible or practical to avoid construction in wetlands, construction shall occur between May and September.

The particular locations where the above outcomes are applicable within the SGICSDA have been determined through discussion with the EPA and with reference to existing mapping and publications. This is described below for Yellow Chat breeding areas and wetlands.

Yellow Chat Breeding Areas

The terms 'adjacent' and 'breeding areas' are not defined in the SGICSDA Development Scheme; however advice from the EPA has indicated that a cautious approach is required as the location of nesting sites is variable and relatively poorly defined. For this reason the EPA has suggested that the portion of the pipeline footprint that is within 1 km of RE 11.1.2 (this RE corresponds to the habitat type where the species has been observed to nest) should only be constructed between May and September. In practical terms this corresponds to an 18 km stretch of pipeline between the Port Alma Railway and Horrigan Creek, as shown in Figure 4. This includes the following creek crossings:

- Inkerman Creek
- Twelve Mile Creek
- Horrigan Creek.

Wetlands

Wetlands in the project area have been identified based on the findings of the EIS and with reference to the *Regional Vegetation Management Code: Brigalow Belt and New England Tableland Regions* (Natural Resources and Water 2006). This document provides a definition of wetlands, which is:

"The area of land that supports plants or is associated with plants that are adapted to and dependent on living in wet conditions for at least part of their life cycle, and that is—

a) a regional ecosystem listed in Table 11[1]; or

b) the area on the ground represented as a swamp, lake, marsh, waterhole, wetland, billabong, pool, spring or like, on the most recent—

i) 1:100 000 Geoscience Australia topographic map of the area; or

ii) 1:250 000 Geoscience Australia topographic map, in areas where there is no 1:100 000 Geoscience Australia topographic map available; or

c) listed as an 'active' spring in the Queensland Springs Database"

Wetland mapping from the EPA (Queensland Wetland Map Version 1.3) has also been referred to for the purpose of defining wetlands that will be traversed by the pipeline route.

Wetlands within the project corridor and SGICSDA where construction will only occur between May and September are shown in Figure 4 and in Table 15.

Table 15 Wetlands in the SGICSDA

Wetlands	Comment
Lagoon 2	This lagoon is mapped as RE 11.3.27
Gavial Creek and associated wetlands (Frogmore Lagoon)	Frogmore Lagoon and Gavial Creek are mapped as RE 11.3.27

Construction Timing

The updated EIS text in relation to this issue is included in Section 7.14 to 7.17 of this Supplementary Report. In addition the EPA's submission suggested that qualifiers such as "where practicable" or "where possible" should be removed from the Planning EMP. The revised EMP has removed all except two of these qualifiers from the implementation section of the EMP tables. It was deemed appropriate to retain the qualifiers for the two that were not changed (within Table 20.20). The revised EMP is included in Appendix F of this Supplementary Report.

As a result of these changes, a commitment has been made that construction will only occur between May and September where the corridor within the SGICSDA crosses a wetland (as defined above) or is adjacent to potential Yellow Chat breeding habitat.

In addition to the two wetlands identified in Table 15 within the SGICSDA, it is noted that the Alton Downs pipeline route traverses other wetland areas that form part of the Yeppen Floodplain. The Alton Downs pipeline route was selected to avoid, as far as possible, the impacts to the wetlands of the Yeppen Floodplain. However the route traverses small areas

[1] Regional Ecosystems Listed in Table 11 of the *Regional Vegetation Management Code: Brigalow Belt and New England Tableland regions* (Natural Resources and Water 2006) include: 11.2.4, 11.3.22, 11.3.27, 11.5.17, 11.10.14, 12.3.5, 13.3.6

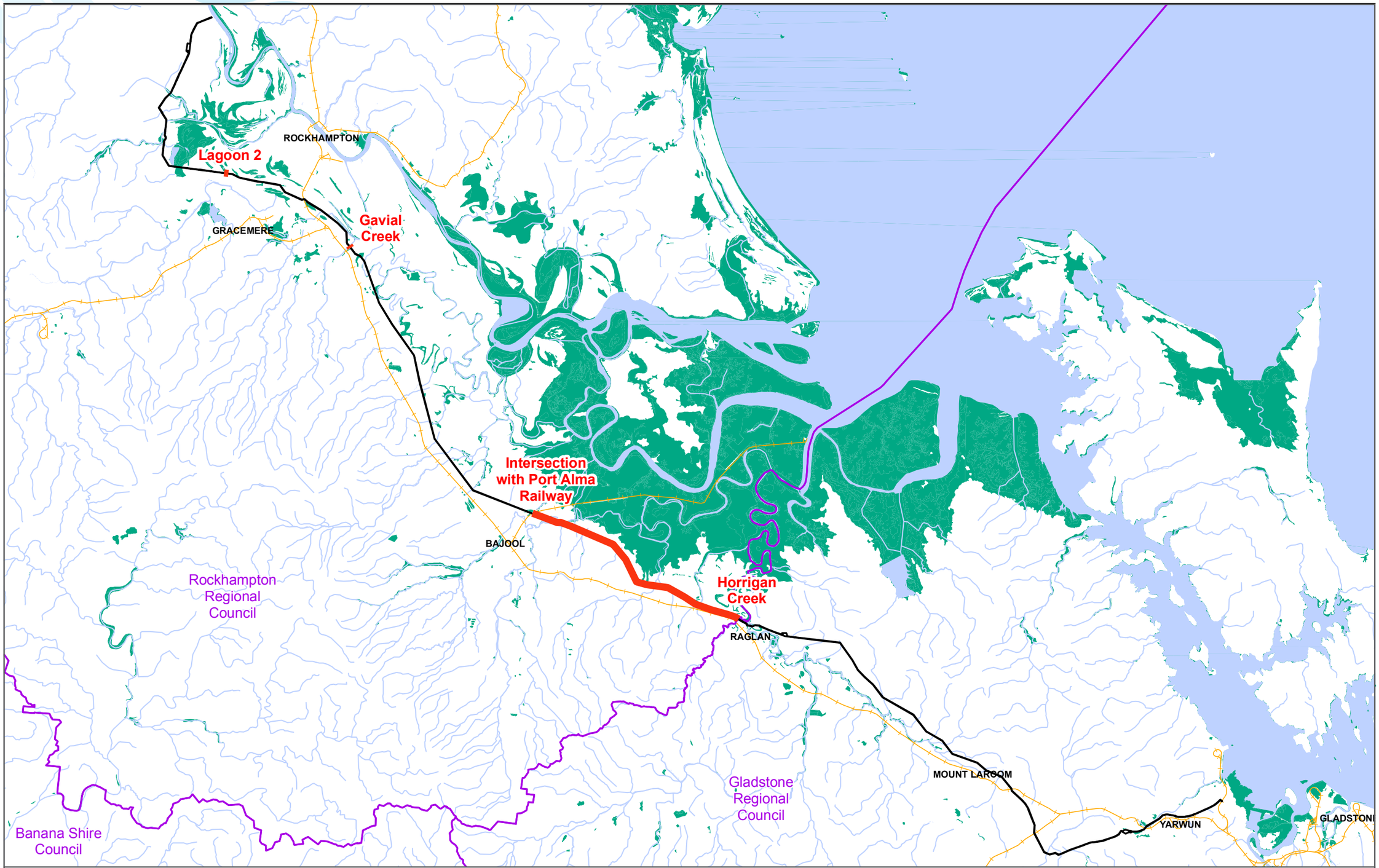


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Figure 4 - Construction May to September

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The Right of Way
LGA Boundary
Waterway
Railway Line
EPA Wetland (version 1.3)
Construction to occur between May and September

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on the edge of this floodplain that are mapped as wetland, as shown in Figure 4. Whilst these areas are not covered by the requirements of the SGICSDA Development Scheme, construction will occur in dry periods unless there is no feasible and practical alternative, to minimise the potential impacts to these areas.

4.13.2 Location and Boundaries of the Alton Downs WTP and Pump Station

As requested by the EPA, Figure 5 has been developed to provide more information on the location of the proposed Alton Downs WTP in the context of surrounding roads, residences and other infrastructure.

The potential impacts to surrounding land that may arise from construction and operation of the Alton Downs WTP are described in the following chapters of the EIS:

- Chapter 4, Land Use and Infrastructure
- Chapter 12, Noise and Vibration
- Chapter 13, Transport and Access Arrangements.

In addition, Sections 4.13.3 and 4.13.5 provide more description than was in the EIS regarding residue handling and disposal and stormwater management at the Alton Downs WTP site.

4.13.3 Residue Handling and Disposal

The following sections provide further information regarding residue handling and disposal as requested in submissions from the EPA, Capricorn Conservation Council (CCC) and Private Submitters 2 and 4. The EPA has specifically requested details of the volumes and integrity of residue slurry containment and of GAWB's management processes.

This section should be read in conjunction with Section 4.13.5 of this report describing the stormwater arrangements at the site.

Whilst not all details requested in the EPA submission regarding residue handling are known at this stage of the project, this will be further defined as the project design progresses. This will enable the information to be included in the Environmentally Relevant Activity (ERA) application for the Alton Downs WTP (ERA 64 – Water Treatment). A Residue Management Plan will also be developed to detail the management measures to be put in place during operation.

Overview of Residue Management at the WTP

At the Alton Downs WTP, the water treatment process removes suspended solids from the water using chemicals, which on dispersion form an aluminium hydroxide flocculent. At the end of the process, this produces a residue that consists of the aluminium hydroxide and other solids removed from the raw water, such as sediment and potentially algae.

The residue is dewatered using centrifuges and will be operated to achieve a consistency of 25 percent solids. (Note that this material is of a consistency that is suitable for the methods of transport and handling proposed). The residue will then be conveyed to enclosed hoppers (silos) for short-term storage, ready for transport off site.

Drainage from the site is transferred to a General Purpose Pump Station for recirculation to the head of the plant. A stormwater retention basin (SRB) and residue trap basin (RTB) are included in the design to prevent overflow of stormwater or residue to the surrounding environment.

The design of the plant is based on a residue storage capacity of 400 tonnes, with an emergency residue stockpile area of 2,000 tonnes.

Alum residues have been shown to be non toxic and of negligible risk to stock and water resources; this position being adopted by regulators including the former EPA (now the Department of Environment and Natural Resources).

The plant will be operated to prevent anaerobic conditions developing in the water treatment process, minimising the potential for odour to be generated.

As described in the Planning EMP (Appendix F), measures will be in place to manage the storage, handling and transport of the Alton Downs WTP residue and to address any potential odour issues.

Residue Constituents

Private Submitter 2 raises concerns regarding the toxicity of the residue from the Alton Downs WTP.

The most abundant metal likely to be present in the residue is aluminium in the form of alum. This is used as a flocculant and is expected to reach 6,120 milligrams per litre (mg/L) in the residue. There are no EPA guidelines currently that dictate acceptable levels of aluminium, however consultation with the EPA (now DERM) confirmed that alum residue from water treatment plants such as the Alton Downs WTP is non-toxic.

Soil fertility may be marginally compromised as sulphates react and bind to the alum. Ferric chloride is also used as a coagulant, but the low dosing rates will mean once again a negligible toxicity risk. There are no Queensland Guidelines regarding the toxicity of WTP residue however guidelines from the South Australian EPA have been referred to for this issue. The metal limits from this guideline are shown in Table 16. It is evident

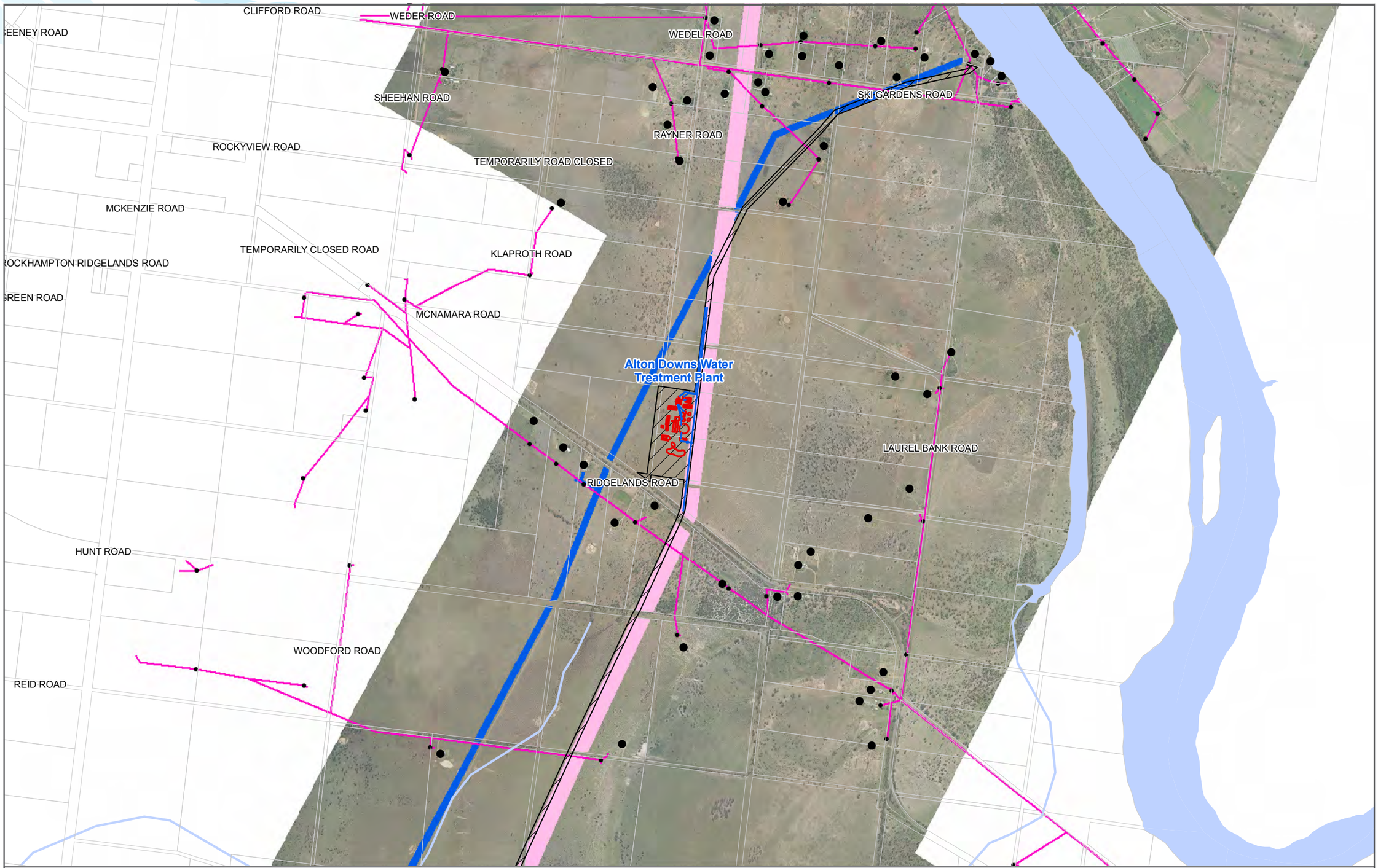

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Figure 5 - Alton Downs Water Treatment Plant Context

Sheet 1 of 1

Cadastre
The Right of Way
Waterways
Railway Line
Zone Substation
Substation
Ergon Electricity Line
Powerlink Corridors
Sunwater Easement
Alinta Pipelines
VisionStream REEF Network
Rockhampton Stormwater Pipe
Rockhampton Water Pipe
Houses within Proximity to the Alignment

0 0.25 0.5 0.75 1 1.25 1.5 Km

1:20,000 at A3

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that the residue from the Alton Downs WTP will be below these limits and is therefore not considered to be toxic. The following sections describe how residue will be handled and disposed of to prevent residue entering the surrounding environment.

Table 16 Comparison Between Estimated Residue Constituents and the Limits Outlined by the South Australian EPA

Constituent	Estimated Alton Downs WTP residue constituents (mg/kg)*	South Australian EPA guidelines (mg/kg)**
Arsenic	1.22	20
Cadmium	0.07	11
Copper	7.83	750
Nickel	23.80	145
Lead	1.57	300
Mercury	0.02	9
Zinc	13.04	1,400

* Estimated Alton Downs WTP residue constituents sourced from Gladstone-Fitzroy Pipeline Project Environmental Impact Statement, Chapter 11, Waste

** South Australian EPA guidelines sourced from 'Use of Water Treatment Solids (WTS)' May 2007

The Residue Handling Process

The following information describes in more detail than the EIS, the residue handling processes at the Alton Downs WTP site as well as residue disposal.

Residue Conveyors

Dewatered residue will be transferred by conveyors from the centrifuges to residue hoppers for transport off site. There would be two hoppers, each of 200 tonnes capacity. This will allow storage of residue for three days at an average production rate of 133 tonnes per day. These bins will discharge directly into road transport truck and trailer units for removal of the residue from site.

The conveying system may also discharge to an emergency residue stockpile area which is intended for use as additional storage during extended periods where transport from site is limited (see the section on the emergency residue stockpile area below). The stockpile would subsequently be cleared by a front-end loader, and loaded into road transport vehicles.

The residue conveying system is a system common to all centrifuges and has been designed to be capable of processing the maximum output of the installed centrifuge capacity (i.e. 41 tonnes per hour). This is substantially larger than plant design requirements and represents an inherent redundancy in the design and allows additional operator flexibility.

During normal working hours (manned operation), the residue is fed to one or both of the two storage hoppers. In an emergency (i.e. both out-feed conveyors fail to run but the centrifuges remain operating), diverter gates allow the residue to fall direct to the floor of the Residue Dewatering Building, from where it would be cleared to the adjacent emergency residue stockpile area.

Emergency Residue Stockpile Area

The emergency residue stockpile area has been sized to accommodate up to 2,000 tonnes of dewatered residue delivered by the emergency conveying system. An angle of repose of 45 degrees has been assumed for the residue piles produced by the discharge of residue from the overhead conveyor. An access strip of about 2 m width has been allowed between the toe of the residue heap and the edge of the concrete slab. The design parameters for residue management are included in Table 17.

In addition to this, the following measures will be in place at the site to prevent impacts to surrounding land from the storage of the residue:

- Checks of the storage areas and emergency stockpile areas will occur, especially after heavy rainfall events to ensure that the residue does not enter the environment
- The entire residue area, including the emergency residue stockpile area, will be bunded and runoff will be directed to a sediment basin to prevent the residue produced from running offsite.

Residue Trap Basin

Given that the emergency residue stockpile is exposed to the weather, a heavy rainfall event has the potential to wash residue into the drainage system. For this reason the drainage from the emergency residue stockpile site and from the trench drain adjacent to the Residue Dewatering Building is taken directly, by gravity, to the RTB. This basin has a capacity of approximately 600 m^3 and can be drained and residue periodically removed, preventing residue from entering the surrounding environment. Drainage from the roadway underneath the residue hoppers (truck loading area) is also drained directly to the RTB. This allows operators to hose down any spillages underneath the hoppers. The RTB is lined with reinforced concrete up to 500 mm above top water level.

General Purpose Pump Station

The General Purpose Pump Station (GPPS) accepts drainage from numerous areas of the plant. It has a capacity of 10 litres per second (L/s) which is adequate for normal operations of the plant in dry weather, returning these flows to the head of the plant. When dewatering is required of any process unit or during rainfall events when roof water and pavement runoff flows into the GPPS, the level in the station's wet well rises to the overflow level.

Inflows in excess of 10 L/s then flow, via an overflow pipe, into the adjacent RTB. Once this overflow occurs (and subsequently ceases), the plant operator is required to manually open the valve on the low level return line to drain the RTB contents back into the GPPS for subsequent pumping to the head of the plant. Re-closing of the return valve prevents unnecessary or premature delivery of flows to the residue trap basin.

Under high intensity rainfall events a separate overflow system prevents the GPPS/RTB system from experiencing high water levels that would threaten to back up flows into the clarifier pump gallery. An overflow outlet diverts high stormwater flows to the reservoir overflow pipeline which discharges into the Stormwater Retention Basin (SRB). The SRB has a storage capacity of approximately 6,000 m^3. The overflow outlet includes a normally open valve which must be manually closed prior to dewatering of any process chamber, to prevent potentially contaminated water from entering the SRB.

Table 17 Dewatered Residue Management Design Parameters

Parameter	Average Conditions		Maximum Conditions	
	Units	Value	Units	Value
Residue conveyors				
Residue production (average, installed peak)	tonnes/hour	16.6	tonnes/hour	41
Residue hopper				
Storage time (average, peak)	day	3	day	1
Solids production (average, peak)	tonnes/day	133	tonnes/day	400
Residue density	tonnes/m^3	1.18	tonnes/m^3	1.18
Residue concentration	% dry solids	25	% dry solids	25
Volume storage required	m^3	157	m^3	339
Emergency residue stockpile area				
Storage time (peak)			days	5
Solids production (average, peak)			tonnes/day	400
Residue density			tonnes/m^3	1.18
Residue concentration			% dry solids	25
Tonnes storage required			tonnes	2,000
Volume storage required			m^3	1,695
Angle of repose			degrees	45
Area available			m^2	1,500
Height of stockpile required			m	6

Residue Disposal

GAWB has identified two options for the disposal of residue from the Alton Downs WTP (as described in Chapter 2, Project Description, Section 2.2.3.1 of the EIS):

1) Supply to a local contractor

2) Disposal at a RRC landfill facility at Yeppoon.

GAWB has assessed Option 2 as the preferred option, noting the following advantages:

- It is available from the commencement of the plant operation
- It is able to meet the ultimate plant requirements
- It is a long-term, sustainable solution
- It is a low technology option.

The residue will be disposed of in accordance with local and state government requirements (See Section 5.1.1 of this report for more information on requirements under the *Environmental Protection Regulation 2008 [Qld]*).

Before the operation of the Alton Downs WTP commences, GAWB will finalise arrangements for residue handling and disposal in consultation with the RRC and relevant agencies.

Noise from truck movements associated with the transport of the residue is addressed in Section 4.17.3 of this report.

Residue Odour

Private Submitter 4 has raised concerns about the potential for odour to be generated during the operation of the Alton Downs WTP.

The assessment of potential odour impacts in the EIS was based on the following:

Knowledge of the WTP processes and Residue Constituents

Whilst there is a risk that odours may develop as a result of anaerobic conditions during the water treatment process, the Alton Downs WTP has been designed to reduce this risk and to provide appropriate management measures.

The residue extracted from the water consists of naturally occurring silt and algae from the Fitzroy River and is therefore unlikely to generate significant odours that could be detected offsite. Only if anaerobic conditions are permitted to develop in the water treatment processes is there the potential for perceptible odours to be generated. Further, even if anaerobic conditions do develop, contrary to the design and intended operation of the Alton Downs WTP, the odour must be released (which will only occur where the odour is moved or otherwise disturbed), it must fail to be contained or controlled, and it must travel toward sensitive receptors without being diluted beyond perceptible levels. The chance of this occurring is very low.

Knowledge of the WTP design

The following features of the WTP design have been included to prevent odour:

- Chemicals used at the plant will be fully contained and when added to the treatment process, are in such small quantities that they are not expected to be odorous to surrounding landholders
- When the water is screened at the screening facility (to remove larger items from the water), enclosed chutes will carry the screenings between the conveyor discharge and the screenings bin
- The screenings bin will be of an appropriate size to receive the quantity of screening material and will have odour control covers
- The screenings bins will be emptied on a demand basis such that odours do not develop. This is likely to be twice a week during normal operation
- Residue storage at the site will be in enclosed silos from where it will be directly transferred to trucks for removal offsite
- Residue storage in the emergency residue stockpile area will only occur in case of emergency and the residue will not remain on the site for long periods.

Known conditions at the site such as wind direction

- The prevailing direction of strong winds in the Rockhampton area is easterly and the nearest residences to the west of the Alton Downs WTP are more than 500 m away. Odour impacts are therefore likely to be minimal in the unlikely event they would occur as odours disperse over distance.

The distance of the site from sensitive receptors

- The closest sensitive receptor (residential) is approximately 175 m from the boundary of the Alton Downs WTP, providing some distance over which any odours from the WTP would dissipate.

Whilst GAWB cannot provide a guarantee of no odour impacts from the Alton Downs WTP, the above factors have enabled an assessment of odour impacts as unlikely, and in the event that odour develops during any of the WTP processes, regular checks will identify the source of the odour and additional measures will be implemented to manage the impact.

4.13.4 Residue Dewatering

The EPA submission asserts that the presence of a residue dewatering building in Figure 2.7 of the EIS is not consistent with the WTP processes described elsewhere in the EIS. However dewatering of the residue is part of the intended water treatment processes and is referred to elsewhere in the EIS. The intention is to dewater the residue using centrifuges and then transfer it to hoppers to be transported off-site. The storage area onsite is for emergency situations only and allows for five days storage in total at maximum production.

The descriptions of the WTP processes in the EIS are included below for reference:

Chapter 2, Project Description, Page 75: Residue from the sedimentation process will be transferred to a thickener where either natural or mechanical thickening may be used and polymer may be added. Residue will then be transferred to a centrifuge for dewatering to 30 percent* solids, then will be taken to hoppers (silos) for storage, ready for transport off site.

Chapter 11, Waste, Page 499: The WTP will produce an average of 118* tonnes per day of wet residue at a consistency of 30 percent* dry solids and 70 percent water (i.e. residue solids percentage of 30 percent). The residue solids percentage (mass of dry solids divided by total mass of wet residue x 100) may also vary due to the type of residue produced, the coagulant added, the ability of the residue to be dewatered and the type of residue dewatering equipment used.

* Estimates of average residue production at the WTP have been revised to an average of 133 tonnes per day since the release of the EIS, based on a consistency of 25 percent dry solids rather than 30 percent. This is described in Section 6.6 of this Supplementary Report.

4.13.5 Stormwater Management from the Alton Downs WTP

The EPA submission on the EIS requests further information on the stormwater management arrangements for the Alton Downs WTP. The information provided below is additional to what was presented in the EIS and describes the proposed arrangements for stormwater management at the site.

The following have been considered in the development of the above stormwater strategy for the site:

- The retention of stormwater is a flood mitigation activity
- The SRB ensures that stormwater runoff from the developed site will not be more than it is in its pre-developed state
- Treatment and transmission of the stormwater from the Alton Downs WTP site is a more energy efficient means to deliver water to Gladstone than withdrawing the equivalent quantity from the Fitzroy River at Laurel Bank.

An alternative discharge of the pumped water from the SRB to the natural ground south of the Alton Downs WTP can be provided to maintain normal runoff conditions if required by DERM (formerly NRW).

Drainage paths and culverts

Imported fill will be placed within the Alton Downs WTP site and shaped to provide finished surface ground slopes of at least 1 in 200, to facilitate overland flow. Exceptions are the areas where the existing surface will remain undisturbed (to reduce costs of imported fill) but local drainage out of these "basins" will be provided to prevent ponding.

The cross-road culverts at the site have been designed for a 100 year Annual Recurrence Interval (Q100) with head losses minimised so as to reduce backwater within the site.

Reinforced concrete box culverts with an internal height of 300 mm have been adopted to minimise the height of and quantity of filling required for the site roads. Siltation and blockage of the culverts is not expected to occur as the site is relatively flat and not expected to generate the velocities required to transport silt and other debris.

The site is drained by a system of grassed swales with a minimum longitudinal grade of 0.5 percent (1 in 200) which will promote runoff but minimise the transport of silt to the culverts. A minimum cross fall of 1.0 percent (1 in 100) has been adopted for drainage of adjoining finished surfaces to the grassed swales.

All internal culverts within the Alton Downs WTP have been designed for a Q100 rainfall event. These culverts direct stormwater runoff from the roadways and grassed areas to the SRB either directly or via the open drainage channels to the east and west of the plant.

The drainage channels running along the east and west boundaries can direct flows from up to a 20 year Annual Recurrence Interval (Q20) rainfall event (on the WTP site only) to the SRB. Any flows in excess of this will spill out of the channels away from the Alton Downs WTP.

Roof Water

The roof water from the buildings/structures onsite will be diverted either to the GPPS via the main drain line, directly to the RTB or diverted by overland and culvert flow to the SRB. Some of the roof water from the Alton Downs Reservoir is to be directed, via an aerial pipe, to the Fire Water Tanks to supplement their supply. All roof water, whether contained or overflowing will eventually be captured in the onsite basins and will not leave the site.

Stormwater Retention Basin

The SRB collects all stormwater runoff from the Alton Downs WTP site. It has a capacity of approximately 6,000 m^3 (6 ML) up to its outlet weir level of Relative Level (RL) 13.0. The SRB has been sized, together with its two dewatering pumps, to manage all runoff from a 72 hour Q20 rainfall event without any overflow. The southern bank of the SRB comprises the outlet weir which has been elongated (about 180 m) to evenly spread the overflow across the natural ground on the lower side of the plant.

A submersible pump station comprising duty/duty assist pumps each of 50 L/s capacity drains the SRB by delivering its contents to the screening facility for treatment and subsequent transmission in the system. It is noted that a return rate of 50 L/s per pump would return all rainfall runoff from the Alton Downs WTP site from a 50 mm per day rainfall event, and leave the SRB empty.

This system ensures that the runoff from the Alton Downs WTP site, for all rainfall events, is less than that experienced prior to the construction of the plant.

It is recognised that the return of this water to the screening facility (for subsequent transmission in the pipeline) would require approval from DERM (formerly NRW) under Section 28A Division 4 of the *Water Resource (Fitzroy Basin) Plan 1999*. This approval is noted in the list of Development Approvals in Appendix C of this report, to be obtained prior to operation of the Alton Downs WTP.

4.13.6 Survey of Historical Sites

The EPA submission requests further information regarding the location and nature of the historical cultural heritage sites described in the EIS (Chapter 14, Cultural Heritage) and that salvage recording of the historic heritage sites to be impacted should be completed to archival standards.

As stated in the Planning EMP (Appendix F, Table 20.18) and confirmed with the DERM (formerly the EPA), a survey of the Woolwash – Frogmore Pipeline will be undertaken no less than three months prior to construction in that area to determine the nature and extent of subsurface archaeological material within the project corridor. This will allow time for further investigation if required before construction.

For both the Woolwash – Frogmore Pipeline and Twelve Mile Road, a basic level of photographic recording, which captures the nature of the item and its context within the cultural environment and within the project area, will be undertaken prior to works commencing in the area. The information from the survey and heritage recording will be provided to DERM in the form of a cultural heritage technical report.

The document referred to in the EPA submission *'Guideline - Archival Recording of Heritage Listed places'* is currently in draft form and due to be finalised in 2009. The project will not impact any Heritage Listed places; however the guideline will be referred to for guidance during salvage recording of the sites named above.

Small scale mapping of the Woolwash – Frogmore Pipeline and Twelve Mile Road, with the cultural heritage features shown relative to local topography and cadastral boundaries, has been provided in Figure 6 as requested in the EPA submission.

4.13.7 Environmental Protection Regulation 2008

Table 1 Development Approvals in Appendix C of the EIS has been revised to include the new *Environmental Protection Regulation 2008*. This table is included in Appendix C of this report. The implications of this new legislation are described in Section 5.1.

4.13.8 Terminology in the Planning EMP

The EPA's submission suggested that qualifiers such as "where practicable" or "where possible" should be removed from the Planning EMP. The revised EMP has removed all except two of these qualifiers from the implementation section of the EMP tables. It was deemed appropriate to retain the qualifiers for the two that were not changed (within Table 20.20). The revised EMP is included in Appendix F of this report

4.14 Rockhampton Regional Council

4.14.1 Greenhouse Gas Emissions

RRC has raised the question as to whether opportunities to reduce the greenhouse gas emissions from the construction and operation stages of the project and the likelihood of their implementation have been considered.

In terms of the construction phase emissions, opportunities exist to reduce these emissions through the following:

Minimise Wastage Onsite

While some level of waste will be inevitable, efforts will be made to accurately specify the quantity of materials supplied, minimise the transportation of waste and ensure that waste is appropriately separated and recycled. These efforts are summarised in the Waste Management Plan in the Planning EMP (see Section 20.3.8 of Appendix F of this report).

Investigate the Use of Lower Embodied Carbon and Energy Materials

In evaluating the embodied carbon and energy of materials, the required transportation, production process and input materials would be taken into account.

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Figure 6 - Small Scale Mapping of Historical Cultural Heritage Sites

Sheet 1 of 2

The Right of Way
Project Infrastructure
Railway Line
Road Reserve
Waterways
LGA Boundary
SGICSDA
GSDA
Cadastre

0 0.25 0.5 0.75 km

1:10,000 at A3

N

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Figure 6 - Small Scale Mapping of Historical Cultural Heritage Sites

Sheet 1 of 2

The Right of Way
Project Infrastructure
Railway Line
Road Reserve
Waterways
LGA Boundary
SGICSDA
GSDA
Cadastre

0 0.25 0.5 0.75 km

1:10,000 at A3

N

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Generally, the use of recycled materials such as steel can significantly reduce the overall embodied carbon and energy of construction. Furthermore, by using locally sourced materials, transportation related emissions can be minimised. Where appropriate, recycled and locally sourced materials will be used as long as they satisfy any required specifications and if their adoption would result in an overall reduction in construction phase emissions.

Minimise Vegetation Clearing

The Flora and Fauna sections of the EIS (Chapters 6, 7, 8 and the Planning EMP in Appendix F of this report) outline the measures to be taken to minimise vegetation clearing during construction of the project. It should be noted that the potential to sequester carbon dioxide emissions and generate carbon offsets through the vegetation of GAWB-owned land is currently being investigated by GAWB.

As identified in the EIS (Chapter 10, Air Environment, Page 483) GAWB is currently investigating options to offset its corporate greenhouse gas emissions (or carbon footprint). Options under consideration include the purchase of offsets, the use of GAWB land for carbon sequestration or the use of alternative (i.e. non-carbon) fuel sources (e.g. solar and wind) in its operations. As the Gladstone-Fitzroy Pipeline Project will form part of GAWB's operations once constructed, corporate mitigation opportunities are also applicable as mitigation for the project.

4.15 Gladstone Regional Council

4.15.1 Approval Obligations

GRC has requested that the Coordinator-General reminds GAWB of the approval obligations with regard to any ERAs, food handling regulations, and waste control regulations for the temporary site facilities, as well as any general set-up and decommissioning approvals that are necessary.

GAWB and the contractor are aware of their obligations under various legislation including ERAs, food handling regulations, and waste control regulations for the facilities as well as any general set up and decommissioning approvals that are necessary. These approvals will be obtained as required. Approvals required for the project are outlined in Table 1 of Appendix C.

4.15.2 Environmental Management Plans

In regard to weed management and also pipeline cleaning, testing and maintenance, GRC requests that the Coordinator-General attach conditions to any approvals of the EIS to require strict compliance with all relevant EMPs.

In addition to the commitments provided in the Planning EMP (Appendix F of this report), the contractor will develop a Construction EMP to further develop the environmental mitigation strategies for the construction period and this will be complied with during the works. An Operational EMP will also be prepared prior to the start of operations. Amongst other issues, these will deal with the control of weeds, pipeline commissioning and pipeline maintenance.

4.15.3 Land Use and Tenure Dealings

GRC requests that the Coordinator-General remind GAWB of its obligations to ensure all land tenure/land use dealings are appropriately attended to and finalised.

Land use and tenure matters are being discussed with landowners and DIP and will be finalised prior to construction.

4.16 Powerlink

Powerlink has indicated in its submission the places where the pipeline is crossed by electricity transmission lines. Detailed design plans of the crossing points have been requested by Powerlink and will be provided by GAWB as part of the stakeholder consultation process. Powerlink crossings are shown in Figure 7 of this report.

It is noted that Powerlink has identified a range of potential issues for consideration by GAWB regarding the interaction of pipelines and high voltage lines. These issues are already under consideration and will be agreed with Powerlink prior to the finalisation of design. Safety advice provided by Powerlink will also be considered in the design and construction and GAWB and the construction contractor will comply with the pipeline co-use guidelines provided by Powerlink. GAWB or the construction contractor will discuss with all stakeholders their conditions and requirements to ensure safety and integrity of their infrastructure as well as the safety of the project's personnel. The relevant strategies and procedures will then be implemented through the induction process and Job Safety Analysis systems used before construction occurs.

4.17 Capricorn Conservation Council

4.17.1 Impacts to Aquifers from Creek Crossings

CCC notes that breaching the aquifer by burying the pipeline underneath the creek bed could be detrimental to survival of the Yellow Chat in the area. CCC also suggests that the pipeline could be buried over the creek bed, reducing the risk to the aquifer.

The potential impact of the project to the hydrological regime (including surface water and aquifers) is discussed in the response to the EIS comments from DEWHA (see Section 4.23).

In addition, Section 4.13.1 discusses the timing of construction that has been adopted in areas of wetlands, and also in areas within and adjacent to Yellow Chat breeding habitat.

Creek crossings and the associated crossing methods are outlined in Table 24 of this report.

4.17.2 Cumulative Effects of Many Pipelines

CCC notes that the cumulative effect of many pipelines needs to be considered in regards to the Yellow Chat. CCC states that it may be necessary to restrict pipelines to one narrow corridor and, alternatively, an elevated pipeline over the creek bed would reduce the risk. In addition, they state the corridor width should also be minimised to reduce impacts on vegetation in the area.

It is acknowledged in the EIS (Chapter 6, Terrestrial Flora, Section 6.9 and Chapter 7, Terrestrial Fauna, Section 7.9) that cumulative effects are likely to occur as a result of other pipeline projects occurring in the project area.

The purpose of the SGICSDA is to reduce the potential cumulative effects of multiple projects in the region by lessening the disruption caused by investigation and construction on individual landowners, surrounding communities and the environment that would otherwise occur if access to multiple pipeline routes was sought on a project by project basis. The positioning of this project within the SGICSDA for the majority of its length is therefore considered to be a positive outcome for reducing the environmental impacts associated with many individual pipeline routes.

A mitigation measure included in the EIS (Planning EMP, see Appendix F) is that the corridor width will be reduced in sensitive areas such as Raglan Creek to minimise potential construction impacts.

4.17.3 Impacts from Residue Transport, Disposal and Use of Chemicals

Transport Management

CCC states that the traffic generated to dispose of the Alton Downs WTP residue poses a risk to nearby residents due to noise and traffic flow. In addition GRC has requested that the Coordinator-General ensure that an approved Traffic Management Plan be in place before construction begins.

Before project construction and operation, Construction and Operation Traffic Management Plans for the relevant areas will be developed and submitted to the relevant authorities for approval. These plans will also take into consideration the relevant local issues of the public (e.g. management of noise and traffic risks). Traffic management during construction will be carried out by specialist sub-contractors.

In addition, a study was undertaken on Rockhampton Ridgelands Road (the road used for Alton Downs WTP access) to determine the impact upon road safety and traffic flow during operations. This was part of a detailed transport study undertaken as part of the EIS (see Chapter 13 of the EIS, Transport and Access Arrangements), which considered the traffic generation from operation and construction of the project and the impact to local, regional and state roads. In accordance with DMR's requirements, the extent of impact caused by the project on the SCR Network has been determined by calculating the percentage traffic increase caused by the project. It is generally accepted that impacts within five percent are considered acceptable and do not require further consideration. The assessment identified that 12* trips per day on Rockhampton Ridgelands Road during operation of the Alton Downs WTP represents less than a one percent increase on the existing traffic loads and is therefore considered to be a negligible impact. Negligible is defined in the significance criteria for the chapter as "No apparent delays or no reduction of average vehicle speeds. No decrease in safety to road users".

* Estimates of truck trips from the WTP during operation have been revised to 14 since the release of the EIS. This is described in Section 6.6 of this Supplementary Report. The impact to state controlled roads is still assessed as negligible.

Release of Wet-Commissioning Water

CCC has concerns about the release of chemicals associated with water treatment such as sodium hypochlorite and ammonium sulphate into the surrounding environment. Chapter 11 of the EIS, Transport and Access Arrangements (Section 11.6.4.6 and 11.6.4.7) outlines that sodium hypochlorite will not be released into the environment during operational pipeline disinfection and scour maintenance. However, in the case of an overflow, a small amount of chlorine will be released (see Chapter 11, Transport and Access Arrangements, Section 11.6.4.8 of the EIS). This will result in a Negligible to Minor Adverse impact depending on where the water is released.

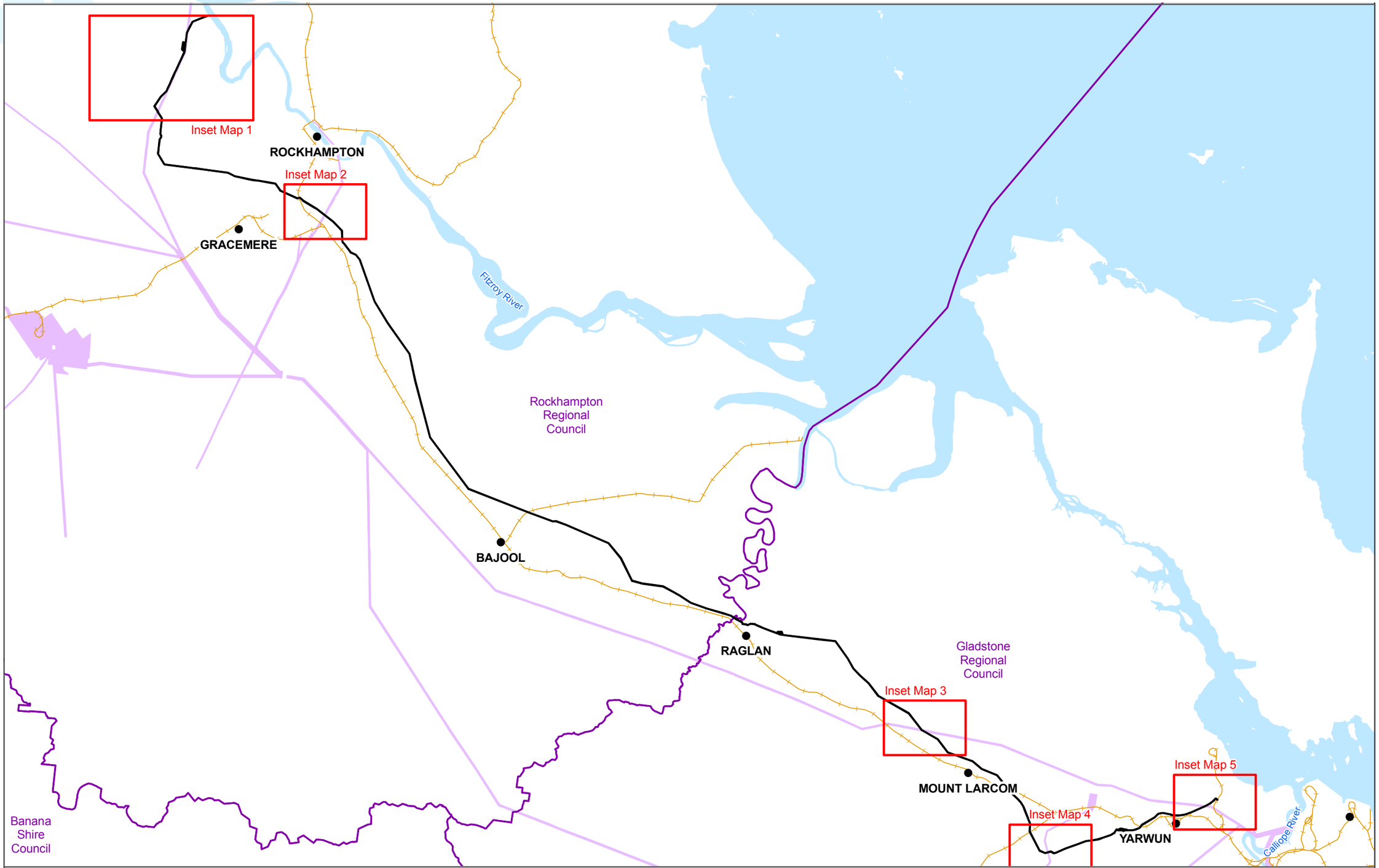

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Figure 7 - Powerlink Crossings Context map

The Right of Way
Railway Line
LGA Boundary
Powerlink Corridors

0 5 10 15 20 km

1:250,000 at A3

N

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Figure 7 - Powerlink Crossings - Inset Map 1

The Right of Way
Railway Line
Waterways
LGA Boundary
Cadastre
Powerlink Easement

0 0.5 1 1.5 2 km

1:30,000 at A3

N

Gladstone Area Water Board

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Figure 7 - Powerlink Crossings - Inset Map 2

The Right of Way
Railway Line
Waterways
LGA Boundary
Cadastre
Powerlink Easement

0 0.25 0.5 0.75 1 km

1:15,000 at A3

N

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Figure 7 - Powerlink Crossings - Inset Map 3

The Right of Way
Railway Line
Waterways
LGA Boundary
Cadastre
Powerlink Easement

0 0.25 0.5 0.75 1 km

1:15,000 at A3

N

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Gladstone - Fitzroy Pipeline EIS
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Figure 7 - Powerlink Crossings - Inset Map 4

The Right of Way
Railway Line
Waterways
LGA Boundary
Cadastre
Powerlink Easement

0 0.25 0.5 0.75 1 km

1:15,000 at A3

N

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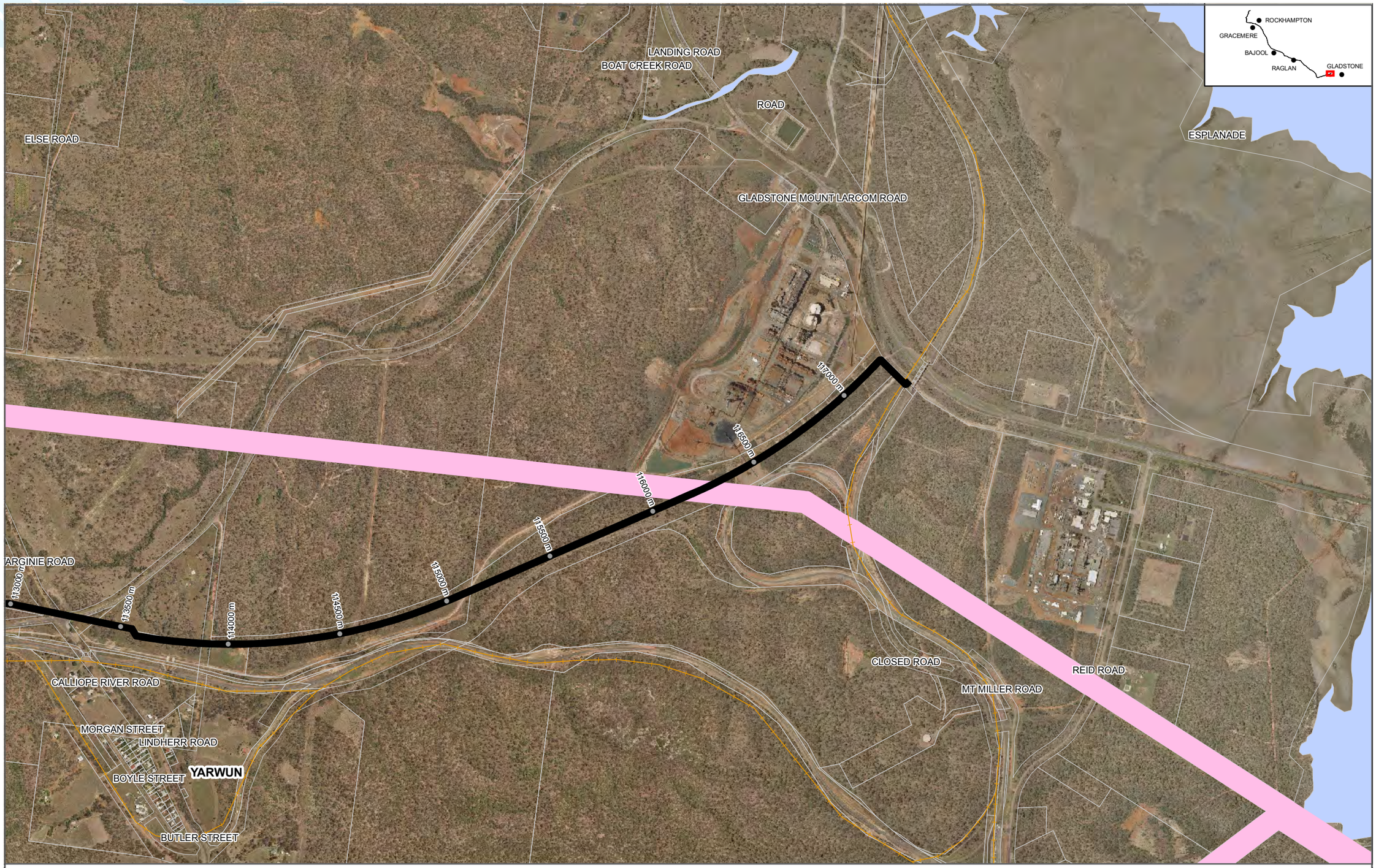

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Figure 7 - Powerlink Crossings - Inset Map 5

The Right of Way
Railway Line
Waterways
LGA Boundary
Cadastre
Powerlink Easement

0 0.25 0.5 0.75 1 km

1:15,000 at A3

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Chapter 11 of the EIS, Transport and Access Arrangements, Section 11.6.3.2, also states that water, which most likely will be chlorinated, will be released from the scour outlets during pipeline wet commissioning:

> *Prior to wet commissioning approximately 15 ML to 20 ML of hydrotesting water will be discharged via the scour outlets onto land and into waterways. Each disposal location will have suitable erosion control measures (e.g. the rate of flushing will be controlled as to not create erosion) and the discharge water will be quality tested and oxygenated over aeration beds to increase dissolved oxygen levels, if required.*
>
> *Residual chlorine[2] may persist up to the flushing point; hence, at the time of flushing, manual chlorine residual testing will take place to ensure the levels of chlorine are not in breach of regulatory requirements. If necessary, the flush discharge will be dechlorinated before discharge.*
>
> *In discharging waste water from pigging and hydrotesting, the aim will be to meet regulatory requirements and protect the ecological values of the surrounding waterways.*

Usual practice for dechlorination is through physical aeration across the surface of the ground and riffle areas near the pipeline discharge scours.

In addition, measures are included in the Planning EMP (see Appendix F, Table 20.15 of this report) for the management of this water.

Residue Management

CCC also has concerns regarding the release of chemicals associated with water treatment (e.g. aluminium chlorohydrate, polyDADMac, polyeletrolyte and sodium hydroxide). See Section 4.13.3 of this report for a discussion of how the Alton Downs WTP residue will be managed and disposed of to prevent the release of these chemicals to the environment.

4.17.4 Exposure of Topsoil

CCC notes that the potential for dry conditions increases the risk of topsoil erosion and due care should be taken to avoid this during the construction phase. CCC also notes that topsoil replacement is essential for re-vegetation.

The Planning EMP (Appendix F, Table 20.5) describes the measures that will be taken to mitigate erosion in the 30 m wide construction corridor. This includes:

- All necessary sediment and erosion control devices to be in place prior to the commencement of works at a site
- During grading and trenching in the right-of-way (ROW), topsoil and subsoil will be stockpiled separately and topsoil later reused for restoration of the ROW
- Backfill will be compacted to reduce the risk of surface erosion and trench subsidence and revegetated areas should be watered to promote reinstatement of grass cover during 'dry spells'
- Erosion and sediment control devices are to be maintained at any sites where there is exposed soil (i.e. after construction is completed and before rehabilitation measures are established and deemed to be effective).

These measures and others will be included in the Construction EMP, as well as the Operations EMP (where applicable) to manage topsoil erosion and revegetation.

4.17.5 Sodic Subsoils

CCC requests further information on the management of sodic subsoils.

The EIS has identified that dispersive soils exist along the majority of the project corridor (see Chapter 5 of the EIS, Soils and Contaminated Land). Dispersive soils are structurally unstable and disperse in water into basic particles (i.e. sand, silt and clay). Dispersive soils tend to be highly erodible when in contact with water and present problems during earth works. Dispersion is an indicator of sodic soils as it occurs when excessive sodium is present. When water is present, the sodium attaches to the soil and forces fine clay particles apart.

In addition to the general erosion and sediment control measures included in Table 20.5 of the EIS, specific measures for the management of dispersive or sodic soils are also provided in the table. These include:

- Construction team to be made aware that the majority of the project route has dispersive soils prone to erosion
- Where necessary a light application of agricultural lime will be applied to the surface of topsoils re-used following embedment of the pipeline to limit dispersion potential until grass cover can be reinstated. However, should potentially dispersive soils be retained for re-use on site, treatment with the addition of lime or gypsum at a rate of 2.5 kg/m^3 is common. Topsoil of local origin used near waterways will be treated promptly if it is left exposed.

4.17.6 Felling of Hollow Trees

CCC suggests that, wherever possible, large trees, particularly those with hollows utilised by hollow nesting wildlife are to be left in place along the corridor.

The Planning EMP (see Appendix F) states that mature hollow-bearing trees are to be retained and protected unless their removal is required to allow works to occur or to allow safe operation of plant and equipment. Where this cannot be

[2] The sum of free chlorine plus combined chlorine. See ANZECC 2000 Water Quality Guidelines pp 8.3-162.

achieved, hollow limbs and/or trunks should be left on the ground adjacent to the ROW (or relocated to within areas of remnant vegetation) to provide habitat for ground-dwelling fauna. This is consistent with the recommendation provided in the submission. It is also stated in the Planning EMP that specific trees to be protected during construction will be clearly flagged to prevent accidental removal.

4.17.7 Impacts to the Yellow Chat

CCC suggests that the potential effect on the Fitzroy River Delta population of the Yellow Chat should be more closely examined. CCC also states that this detailed study should particularly concentrate on the area of Twelve Mile Creek and Pelican to Horrigan Creeks, where breeding events of this species are consistently recorded.

In addition to the mitigation measures described in the EIS regarding vegetation clearing and impacts to the Yellow Chat, the SGICSDA Development Scheme requires that construction in areas adjacent to Yellow Chat breeding areas only occurs between May and September (outside Yellow Chat breeding season). Refer to Section 4.13.1 of this report for information on this issue.

GAWB has also committed to funding Yellow Chat research through the Central Queensland University aimed specifically at the Twelve Mile Creek area. This is outlined in Section 4.23.3 of this report.

4.17.8 Revegetation

CCC suggests that revegetation should include vegetation suitable to the area surrounding the ROW to increase the connectivity between sites either side of the corridor.

The EIS identified areas of vegetation within the project corridor that are protected under the VM Act (further information included in Appendix D of this report). Under the VM Act, connectivity is dealt with through the process of obtaining Vegetation Clearing Permits; the applicable Regional Vegetation Management Codes include performance requirements to maintain connectivity to remnant vegetation. The project is required to meet these codes in order to obtain any Vegetation Clearing Permits.

In addition, the VM Act has an associated *Policy for Vegetation Management Offsets*, administered by DERM. The offsets policy allows some areas of remnant vegetation to be cleared for relevant purposes, providing an ecologically equivalent area can be obtained and protected indefinitely elsewhere as per the policy. As part of the approval process for the removal of remnant vegetation, offset areas will be considered that meet the required criteria. These offset areas will be outside the corridor and, where possible, will contribute to the connectivity between sites either side of the corridor.

Furthermore, rehabilitation of cleared areas with groundcover flora species will occur after construction. This will be based on soil type and existing local ground layer vegetation characteristics (i.e. native flora species or improved pastures). Despite this, large trees will be prevented from re-colonising directly above the pipeline to prevent root damage to the pipe and also to prevent impediments to operational access. However, where these two issues are not a concern, other areas in the ROW may be rehabilitated with large trees along with shallow rooted groundcover species (grasses and sedges for example).

In addition, the following measures for revegetation are included in the Planning EMP (Appendix F) to ensure appropriate species are used:

- A reseeding plan based on soil type and existing local ground layer vegetation characteristics (i.e. native or improved pastures) along the alignment will be implemented
- Where the option exists, local provenance native plant seed will be used in preference to seed from other parts of Central Queensland for rehabilitation within any areas of remnant or remnant regrowth vegetation that supports a ground cover of native grasses
- Native trees and shrubs removed from areas of RE will be recorded and replaced in accordance with the requirements of the vegetation clearing permit (for example, recorded using a tally system and then replaced on a one-for-one basis using locally available species appropriate to the RE).

4.17.9 Weeds

CCC states that mitigation of the risk of weed spread should be a high priority for the proponent during the construction phase and during maintenance of the pipeline.

GAWB recognises the importance of weed control along the pipeline corridor and has demonstrated a commitment to weed control during the preliminary investigative works for the project that were undertaken in 2007 and 2008. GAWB's commitment will be further demonstrated with the preparation of Weed Management Plans (WMP), which will be developed as part of both Construction and Operations EMPs.

Examples of the mitigation measures to be included in the WMPs (as well as other management measures for weed control) are provided in Table 20.11 of the Planning EMP (see Appendix F) and include:

- Consultation with environmental officers from GRC and RRC areas
- Mapping of existing weed infestations
- The management of different weed species will be prioritised
- Landowner requirements for specific properties

- Strategies for preventing weed spread (e.g. the project has allowed for vehicle wash down facilities to be installed at several key locations to stop the spread of weeds, particularly Parthenium)
- Weed removal strategies
- Weed monitoring protocols
- Follow-up weed management methods and protocols.

4.18 Jemena (formerly Alinta)

Jemena has advised that the Queensland Gas Pipeline and the Rockhampton Branch Line were until recently part of Alinta and are now under the ownership of Singapore Power, requesting that all correspondence be addressed to its subsidiary Jemena East.

Comments 18.1-18.5 in Table 1 relate to Jemena's requirements for construction in the vicinity of their pipelines. Jemena notes issues concerning third party damage, safety, access and development in close proximity to their pipelines, for GAWB's consideration.

As required by Jemena, GAWB will enter into a Crossing Agreement once the design is completed and before construction works commence. The agreement will address the following issues:

- Pipeline crossings
- Access for road crossings of the gas pipelines
- Safety and integrity of Jemena's pipeline
- Keeping Jemena's pipeline easement clear for access
- Approval of structures adjacent to Jemena pipelines.

In relation to stress and corrosion of Jemena's gas pipelines at crossings, a cathodic protection study was performed during the initial design phase but further work will occur in the detailed design phase and will be discussed with Jemena as for the above issues.

4.19 Gladstone Ports Corporation

4.19.1 GAWB Liaison with the Gladstone Ports Corporation

During the design phase and prior to construction, GAWB will liaise with the Gladstone Ports Corporation (GPC) planning team to confirm final positioning of the pipeline within the MTSC.

4.19.2 GAWB Liaison with the Department of Infrastructure and Planning

During the design phase and prior to construction, GAWB will consult with DIP to confirm final positioning of the pipeline in regard to recent realignment of the MTSC.

4.20 Private Submitters 1, 3 and 5

Private Submitters have raised issues about the proposed route alignment in the Stracey Road/Tyrell Road area at Alton Downs. GAWB has assessed, at different stages of the project, six different route options in this area, the options varying in length from 14.41 to 15.21 km. Details of the route options are shown in Figure 8 of this report and are summarised below in Table 18.

Table 18 Route Option Details

Route Option	Description	Length
A	East side of Powerlink (Direct)	14.41 km
B	East side of Powerlink (Deviation)	14.95 km
C	West side of Powerlink easement (Direct)	14.79 km
D	West side of Powerlink easement (Deviation) – This is the EIS proposed route	15.16 km
E	East side of SunWater Route (would follow the SunWater easement from WTP)	15.26 km
F	West side of Powerlink easement (Deviation in south-west)	15.03 km

4.20.1 Route Option Chronology

From June 2007 through to the release of the EIS for public comment in early November 2008, GAWB developed and implemented an extensive program of landholder consultation, meeting with all landowners in the Alton Downs area directly affected by its preferred route.

In June 2007, GAWB initially identified the most direct route, **Option A** as its preferred route. GAWB commenced consulting with landowners, seeking comment and keeping them up to date with route options being considered. During the period of consultation, GAWB has also written to adjoining landowners, attempting to keep them informed of the investigations and activities that were taking place in the area.

GAWB notes Private Submitters 1 and 3 are concerned that the preferred route is contrary to original advice. GAWB acknowledges writing to Alton Downs landowners in May 2008 as part of its PEP (described in Section 1.4 of this report), enclosing a Project Update brochure and, for landowners not directly affected by the proposed pipeline alignment, confirming previous advice that their land was outside the study area.

In early July 2008, GAWB relocated its preferred site for the Alton Downs WTP to a site on Rockhampton Ridgelands Road area that is to the west side of the Powerlink easement. This triggered a reconsideration of the pipeline alignment to the west side of the Powerlink easement. GAWB promptly commenced contacting landowners affected by the new alignment to seek their views before making a decision about the route.

In October 2008, GAWB completed its assessments and selected **Option D** as its preferred route.

4.20.2 Selection of a Preferred Route

In broad terms the most direct route between the Fitzroy River intake pump station and the SGICSDA is constrained by a large low lying area that forms part of the Fitzroy River floodplain. The proposed route crosses the western edge of Lion Lagoon but skirts this low-lying area to its west, impacting on properties in the Stracey Road/Tyrell Road area.

GAWB considered two options for alignment on the west side of the Powerlink easement: the first following the western side of the Powerlink easement; and the second following the east side of the SunWater easement. GAWB selected the first option as its preferred alignment, being more direct and providing a simpler exit point from the Alton Downs WTP. GAWB identified that **Option C** was the most direct route.

4.20.3 Avoiding Irrigated Crops

Since June 2007, when GAWB commenced consulting with landowners, GAWB has been investigating options for avoiding land with irrigated crops as much as possible, mainly due to the impact on irrigation operations and the longer remediation time that may be required. The SGICSDA route had attempted to avoid land with irrigated crops and GAWB considered that a consistent approach in the Alton Downs area was appropriate. GAWB notes that **Option B** was identified early in the project to deviate around irrigated crops.

GAWB formed the view that the location of the pipeline adjoining the Powerlink easement through the irrigated crop on Lot 3 RP843225 should be avoided if an acceptable alternative to **Option C** could be found. GAWB assessed the construction and operation of the pipeline in this location would cause significant disturbance to the irrigation operations on Lot 3 RP843225, which involves around 600 m runs of irrigation line, leucaena crop and fencing generally orientated north-east to south-west. GAWB noted leucaena is a long-term plant that regenerates after harvest and the re-establishment of the crop would require isolation of the affected area until regeneration is complete.

GAWB formed the view that an acceptable alternative was available and selected **Option D**, noting the following:

- Grazing land was assessed as likely to more quickly recover from the trenching associated with constructing a pipeline than a leucaena crop field as pasture grasses will mature faster than revegetation of leucaena
- Impacts upon grazing land will be mitigated through rehabilitation of the pipeline easement to ensure that the area is promptly revegetated with grasses (as per Chapter 4, Land Use and Infrastructure, Section 4.7.1 of the EIS and the EMP – See Appendix F, Table 20.4). This will enable grazing activities to continue as soon as possible following construction
- The newly affected properties are similar in size and character to other rural properties along the corridor and the impacts are expected to be similar
- There are additional construction costs to build an additional 375 m of pipeline. However the compensation cost is likely to be less than for a direct route as the impact on the irrigated crop is reduced.

GAWB recognises Private Submitter 1's concern with leucaena as a noxious plant and notes leucaena is identified as a significant weed within the project area (Refer EIS Chapter 6, Terrestrial Flora, Section 6.6.7 and Chapter 20, Planning Environmental Management Plan, Table 20.11). Reference is made to the state government *"Policy to Reduce the Weed Threat of Leucaena"*, November 2004 which was endorsed by the DPIF (now DEEDI), the Department of Natural Resources and Mines (now DERM) and the EPA. The Policy states "Leucaena is recognised as valuable forage when managed properly, but it constitutes a threat to the natural environment if not contained in those areas in which it has been planted, or controlled in those areas it has invaded". As described in the EIS, leucaena is not a declared species under the *Land Protection (Pests and Stock Route Management) Act 2002*; however, the RRC has declared leucaena as a noxious plant and places responsibility on landowners to control the plant on individual properties. GAWB notes the above Policy reference to the *"Code of Practice for the Sustainable Use of Leucaena Based Pasture in Queensland 2008"* that has been developed and promoted by the Leucaena Network providing a farmer-initiated framework for the management and containment of leucaena. Reference is also made to the website for the EPA (www.epa.qld.gov.au), which notes that species such as *leucaena leucocephla* have benefits and are best managed through a combination of local declaration and a code of practice, providing its endorsement to the current regulatory regime.

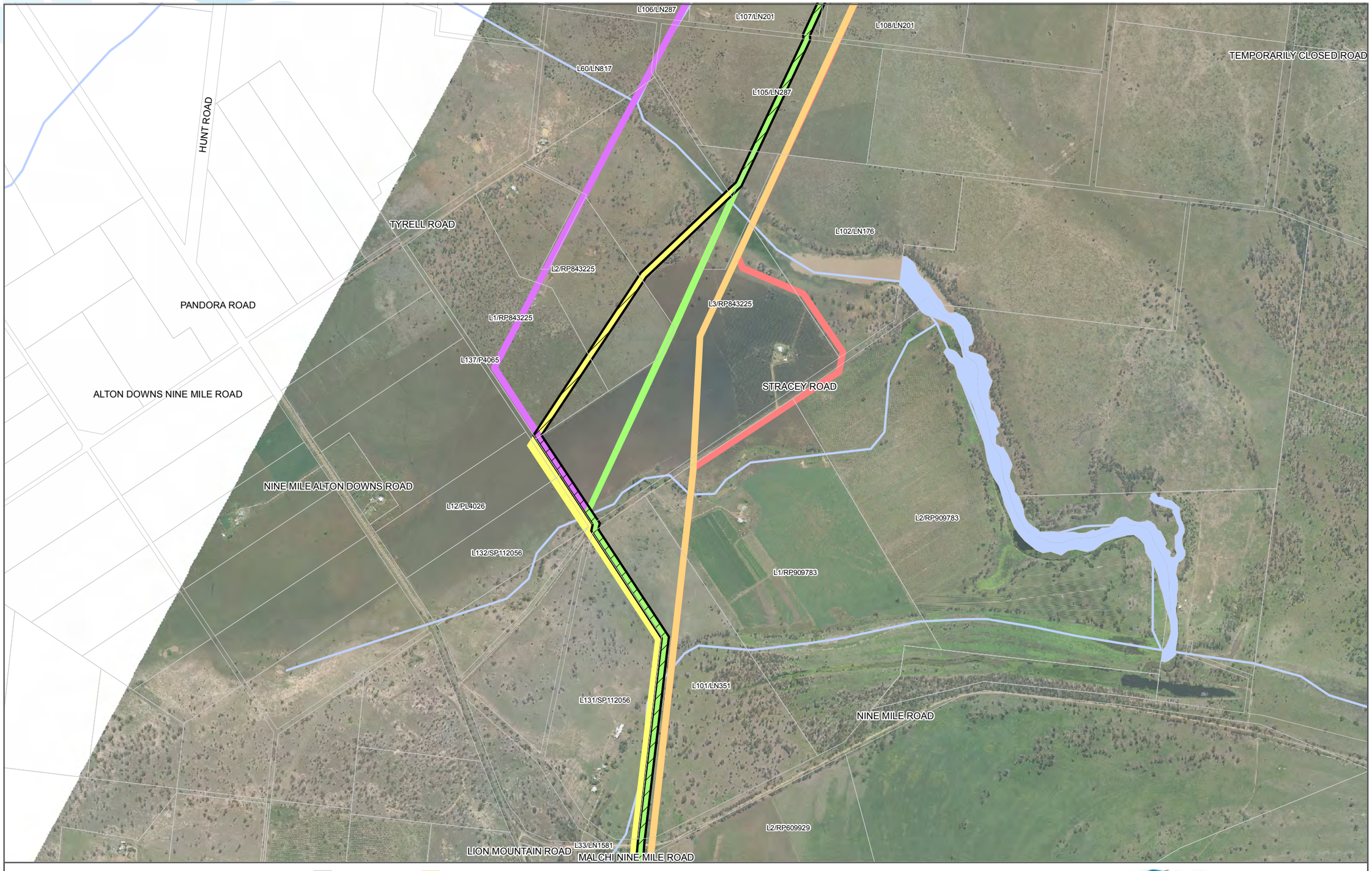

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Figure 8 - Alton Downs Alignment Options

Cadastre
Waterways
Railway Line
Option A
Option B
Option C
The Right of Way (option D)
Option E
Option F

Note the alignments shown on this figure are indicative only

0 0.25 0.5 0.75 1 Km

1:20,000 at A3

N

Gladstone Area Water Board

ARUP

4.20.4 Location of Route to South West of Lot 3 RP843225

GAWB considered **Option F**, realigning the route in the south-west of Lot 3 RP843225 to the west onto the unformed road (subject to it being closed). As the road is 20 m wide and does not extend the full length of this Lot's south-western boundary, **Option F** would still partially affect Lot 3 RP843225 and/or various neighbouring allotments, including Lot 137 P4065, Lot 12 PL4026, Lot 132 SP112056 and Lot 131 SP112056. GAWB advised the landowner, Private Submitter 5, it was willing to assess an option that closed the road and partially affected Lot 3 RP843225 if the landowner was prepared to seek closure of the road and its amalgamation with Lot 3 RP843225.

GAWB does not support the relocation of the pipeline further west affecting Lot 137 P4065, Lot 12 PL4026 and Lot 132 SP112056. The proposed pipeline alignment runs along the south-west boundary of Lot 3 RP843225 and the impact on the leucaena crop in this area of Lot 3 RP843225 is considered manageable through a process of compensation for loss of production and productivity and for costs of remediation and rehabilitation. GAWB does not consider there is sufficient adverse affect to justify realigning the pipeline route further west.

GAWB also notes an Aboriginal cultural heritage site (scar tree) within the Powerlink easement on Lot 131 SP112056 may be located on this potential route.

4.20.5 Assessment of the SunWater Route

As stated above, an alignment following the western side of the Powerlink easement is preferred to an alignment adjoining the SunWater easement. GAWB identified **Option E**, an alignment following the SunWater easement alignment would require not only consultation with eight new landowners (compared to three for the west side of the Powerlink easement) but also additional investigation of the physical and environmental constraints of the route. GAWB concluded that the route alignment would not offer appreciable benefits that justified assessing this route and that it was not practical to deviate the pipeline from the Powerlink easement to the SunWater easement.

4.20.6 Separation of SunWater and GAWB Easement

Private Submitter 1 has expressed concerns that the two non-aligned pipelines on the landowner's property will curtail the ability to create infrastructure and carry out activities and will potentially reduce subdivision potential.

The proposed easement for the pipeline route describes GAWB's powers and use of the easement, the obligations of both GAWB and the landowner and the limitations on the activities that may be undertaken by the landowner. GAWB acknowledges that the easement, amongst other things, limits the construction of buildings, retaining walls, sheds or other structures on the easement, except where GAWB has given its prior approval. The purpose of this limitation is to avoid damage, obstruction or interference with the pipeline on the land. Both the easement and the associated Land Use and Communication Protocol require GAWB to act reasonably in assessing any request. It is GAWB's intent that the landowner is able to use the easement for normal rural activities provided those activities do not damage, obstruct or interfere with GAWB's pipeline or other assets. Generally, irrigation pipes, farm tracks, electricity lines and similar infrastructure will be permitted to cross the easement, but notes that the erection of buildings, fencing across the easement that would restrict access along the easement and the location of bores on the easement are unlikely to be supported.

The land in the Stracey Road/Tyrell Road area is in the Alton Downs (Precinct 2) Zone of the Fitzroy Planning Scheme which limits further subdivision. There is nearby land zoned Precinct 1 (Priority Area A) which allows a minimum 8 ha subdivision. GAWB has noted that Private Submitter 3's property is approximately 40 ha in area and considers that a minimum subdivision area of 8 ha provides significant opportunity and sufficient flexibility for the siting of buildings and associated infrastructure, notwithstanding the presence of the two underground pipeline easements.

4.20.7 Operational Concerns for Quarter Horse Stud

GAWB will address Private Submitter 1's concerns about loss of usable land and the need to hand feed animals through the land compensation and construction phase of the project. At the time of construction, GAWB will compensate for any loss of feed and, in consultation with the landowner, make appropriate arrangements for the horses to ensure separation from the construction area.

GAWB will ensure operations and contractor personnel are appropriately trained for completing works on the easement, giving due regard to the landowners' requirements and particular concerns for their quarter horse stud. In addition, GAWB will maintain a landholder liaison program to ensure that individual landholder concerns and issues are fully understood and attended to promptly.

Further measures proposed to reduce the impacts to land uses during construction are included in the Land Use and Infrastructure Control Plan in the Planning EMP (See Appendix F of this report, Table 20.4).

4.20.8 Acquisition and Easement Terms

GAWB notes Private Submitter 5 has raised issues in relation to the terms of the easement and compensation arrangements. GAWB advises these concerns are being dealt with during the negotiations on the acquisition of easements.

GAWB confirms its commitment to a cooperative and consultative relationship with landowners to ensure minimal disruption and disturbance to landowners' activities as far as reasonably possible.

4.21 Private Submitter 2

4.21.1 Noise from Truck Movements During Construction

Private Submitter 2 has concerns about truck noise in the vicinity of Laurel Bank Road and Ski Gardens Road during construction.

As described in the EIS (Chapter 12, Noise and Vibration), both attended and unattended noise measurements were taken at Laurel Bank to ascertain the baseline background noise conditions. As per Table 12.10 and 12.11 of Chapter 12 of the EIS, the measured noise levels are relatively low and the background noise can be described as typical for a rural setting. During measurement, there was some distant farm activity related noise, a water pump that was audible and some noise from the existing SunWater intake.

It is estimated that up to a maximum of 16 heavy vehicles per day will use Laurel Bank Road and Ski Gardens Road to deliver construction materials to the intake for a period of 35 weeks. These construction materials are to comprise of steelwork for the coffer dam, formwork and reinforcing steel.

In addition (as per Chapter 13 of the EIS, Transport and Access Arrangements, Table 13.14), during construction of the pipeline, in the area around these two roads, it is estimated that over a 3.8 week construction period, an additional maximum of 40 loads (80 heavy vehicle movements) of pipe materials will traverse these roads. On an average day, 15 loads are expected to be delivered via these roads.

Noise nuisance and specifically "building noise" is addressed generally in Section 440R of the *Environmental Protection Act 1994* (EP Act) as follows:

A person must not carry out building work on a building site in a way that makes an audible noise –

a. *On a business day or Saturday before 6:30 am or after 6:30 pm; or*

a. *On any other day, at any time.*

No specific noise criteria apply to building works that occur outside the hours detailed in the EP Act (i.e. standard daytime hours). Within these hours, no audible noise emission is to occur.

Noise impacts will be mitigated based on the legislation and guidelines above. It states in the Planning EMP (see Appendix F) that:

- Construction activities must be managed to prevent audible noise at the nearest noise sensitive receiver (i.e. residence):
  - on a business day or Saturday before 6.30 am or after 6.30 pm; or
  - on any other day, at any time.
- Monitoring of noise will be undertaken for construction activities that are expected to generate significant noise and/or vibration (e.g. blasting and work outside regulated work hours)
- Residents will be kept informed about when they may be affected by works, and the duration of the works
- The 1800 number for the project will remain active throughout the construction phase so that residents always have an immediate point of contact when they have questions or concerns.

As mentioned in Section 4.17.3 of this report, before construction and also before the project becomes operational, Construction and Operation Traffic Management Plans for the relevant areas will be developed and submitted to the relevant authorities for approval. These plans will also take into consideration the relevant local issues of the public (e.g. management of noise and traffic risks). Individual property owners will be consulted and informed of arrangements of the Traffic Management Plans. In addition, traffic management will be carried out by specialist sub-contractors.

4.21.2 Escalation of Truck Trips Required for the Removal of WTP Residue

Concerns have also been raised by Private Submitter 2 regarding the inconsistency and escalation of data given to residents on the number of trucks per day required for transport of residue from the Alton Downs WTP.

Truck movements to remove the residue from the Alton Downs WTP changed from an estimated three to 12 truck movements per day during the public engagement period and since the release of the EIS have been revised to 14 (as described in Section 6.6 of this report).

The comprehensive PEP aimed to provide information to the community and other stakeholders to participate and comment on the project. This was occurring throughout the preliminary design of the project and as the design was refined, updated information was disseminated to the relevant stakeholders.

Further to this, if aspects of the project need to be changed in the future, relevant stakeholders will be informed and consulted.

Please refer to Section 4.17.3 of this report for a discussion of the traffic and safety issues associated with the transportation of residue from the Alton Downs WTP.

4.21.3 Dust from Road

Private Submitter 2 has concerns about dust and air pollution from the use of Ski Gardens Road in its current ungraded form.

During construction, Ski Gardens Road will be used as an access road for the construction of the intake and pump station and also the pipeline. Chapter 13 of the EIS, Transport and Access Arrangements, Sections 13.7.1 and 13.7.2, describe the use of Ski Gardens Road during the construction and operational phases of the project.

Ski Gardens Road is not proposed to be upgraded as it is of a standard (e.g. width) that is suitable for the predicted use of the road during construction and operations. For the management of dust and mud issues during construction, the Planning EMP (see Appendix F) has provided a detailed management approach. The following mitigation measures cover both dust generated by traffic and also dust generated by other works such as pipeline trench excavation:

- Access tracks will be dampened where necessary and particularly in windy conditions to reduce the generation of dust from construction traffic
- Hard-surfaced roads used for access to construction sites will be cleaned to remove dust, mud or other debris that could generate a dust nuisance
- Where wind speeds are excessive (approximately 10 m/s) and work is undertaken within 100 m of sensitive receptors, dust mitigation measures will be put in place to prevent dust nuisance.
- Directly affected landowners will be informed of potential dust generation prior to the commencement of activities likely to generate dust
- Dusty materials will be stored, handled and transported appropriately
- Hoarding and gates may be used to prevent dust breakout where appropriate
- Trench spoil and top soil will not be stockpiled to heights greater than 3 m, stockpiles will not be in close proximity to watercourses and long-term stockpiles will be dampened or vegetated to reduce dust generation
- Exposed ground surfaces will be revegetated promptly following construction activity
- If dust suppression methods fail to adequately prevent or suppress nuisance dust resulting in unacceptable impacts, construction activities will be suspended until conditions generating dust have subsided
- There will be routine daily visual observance by all construction and operations personnel to monitor dust generation and implement additional controls as required
- Environmental site checks undertaken by the construction contractor's environmental officer during construction will include monitoring of dust control measures' implementation and effectiveness and identification of non-conformances.

In addition to this, the 1800 number for the project will remain active throughout the construction phase so that residents always have an immediate point of contact when they have questions or concerns. As outlined in Section 4.21.5, Traffic Management Plans will be developed prior to construction to address any safety or other issues that have been identified through the EIS and from landowner submissions.

During operations and as per Chapter 13 of the EIS, Transport and Access Arrangements, Section 13.7.2.3, it is expected that a low level of operational traffic will use Ski Gardens Road for access to the intake. This is expected to consist of approximately one to two vehicles per week and one maintenance truck per month. In addition, occasional access by an articulated truck (up to 19 m) may be required for maintenance purposes. Access to the pipeline around Ski Gardens Road may also be required for pipeline maintenance purposes, however, this is expected to be a very low level of traffic (as per Chapter 13 of the EIS, Transport and Access Arrangements, Section 13.7.1.3). It is not expected that operational maintenance for the intake and surrounding pipeline will result in dust impacting landholders along Ski Gardens Road, however, if such issues arise, management measures will be put in place.

4.21.4 Road Upgrading

Private Submitter 2 suggests that Ski Gardens Road is narrow and in wet weather will be unable to handle heavy vehicular traffic. Hence, the submitter asserts that the road will need upgrading to bitumen. Also, the submitter suggests that widening of the road will pose problems for numerous landholders who have underground water pipelines the full length and on both sides of Ski Gardens Road, Laurel Bank Road and right through to Mackenzie Road.

In addition to this, the submitter states that the single strip of bitumen road along Laurel Bank Road from Rockhampton Ridgelands Road is of no standard to support such an increase in traffic as the shoulders and verges are rutted. They state that the road would need widening and drainage pipes to cope with the overflow of water in wet weather.

Ski Gardens Road is not proposed to be upgraded as it is of a standard (e.g. width) that is suitable for the predicted use of the road during construction and operation. Issues relating to construction traffic will be managed through the implementation of Traffic Management Plans described below in Section 4.21.5.

It has been identified (see Chapter 13 of the EIS, Transport and Access Arrangements, Section 13.10.1) that the first 2.3 km section of Laurel Bank Road is proposed to be widened to a similar standard as the remaining wider section that connects to Ski Gardens Road. This would allow opposing vehicles to pass each other without having to pull over onto the gravel shoulder. The potential impact of widening the road over existing underground water pipes will be discussed with the relevant landholders so that the impacts to this existing infrastructure can be avoided or minimised.

4.21.5 Road Safety Issues During Construction

The submitter raises various road safety issues regarding line of sight, school bus occupants and horse riders.

Traffic Management Plans for the relevant areas will be developed and submitted to the relevant authorities for approval prior to the commencement of works (as stated in the Planning EMP, Appendix F, Table 20.17). The Traffic Management Plans will include details of the design for access to the project area and the requirements for signage and traffic control including speed limits along school bus routes where required. In developing the Traffic Management Plans, the construction contractor will be required to consult with the relevant authorities and with landholders who will be impacted by construction. Traffic management will then be performed by specialist sub-contracting companies.

4.21.6 Laurel Bank Construction Camp and Pipeline Storage Areas

The submitter queries the location of the pipeline storage areas and construction camps at Laurel Bank.

No storage or construction camp locations have been finalised, however, pipeline storage locations were assumed at various locations adjacent to the pipeline route for the purposes of the EIS (Chapter 13, Transport and Access Arrangements, Section 13.7.1.2). These were used to assess the traffic impacts that may arise from delivery to these areas. As shown in the EIS, in the Alton Downs area, it is likely that there will be a storage area in proximity to the intake and also near the Alton Downs WTP. The actual locations will be negotiated closer to construction based on landowner consultation and approval requirements.

An update on the accommodation requirements for the project, including consideration of a construction camp, is provided in Section 4.1.1 of this report.

4.21.7 Rehabilitation of the Project Area

The submitter has concerns that there are no solid commitments to the total rehabilitation of the area after construction work. They note that the EIS states that this will only be done "as far as practicable" (page 15), and "as much as possible" (page 21).

A majority of the qualifiers such as "where practicable" or "where possible" have been removed from the Planning EMP (see Appendix F of this report). This Planning EMP forms the precursor to the Construction EMP, so the measures therein will be implemented before, during and following construction.

Page 15 and Page 21 of the EIS Summary of Major Findings states:

> "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." (page 15); and
>
> "Restoration of land use post construction as much as possible through a program of rehabilitation." (page 21).

In this context, "as far as practicable" or "as much as possible" refers to the fact that in some cases, it is not possible to return the site to pre-construction conditions. For example, trees will be permanently removed from the ROW for safe operation of the pipeline and associated infrastructure. However GAWB is committed to rehabilitation of the site following construction, and although it may take time for mitigation measures such as revegetation (as allowed by the requirements of the ROW) to mature and take effect, these measures will be implemented.

More information on revegetation is contained in Section 4.17.8.

4.21.8 Soil Waste

The submitter has concerns with the dumping of the overburden and soil removed from the construction site.

The Planning EMP (See Appendix F) provides objectives and actions for the management of both reusable and excess soil.

The Erosion and Sedimentation Plan as well as the Construction EMP will also provide objectives and actions for the management of both reusable and excess soil. The Contractor will prepare these two plans prior to construction.

4.21.9 Water Allocations

The submitter has concerns about the impact on irrigator water allocations, and cost of water. The submitter also has concerns over the sustainability of the Fitzroy River with the proposed piping of water for this project in addition to its current pressures.

Section 4.8.4 of this report describes the relationship of the

weir projects to this project. The weirs were identified in the CQRWSS as being required to meet future demands for water in the region and to Gladstone. The allocation of water for this project, if made, would likely be sourced from the development of the weirs. Whilst the project is linked to the proposed weirs, the assessment of impacts for the weirs is outside the scope of this project's EIS and Supplementary Report and will be assessed as part of the EIS for the weir projects.

4.21.10 Funding for Weirs

The submitter asserts that Rookwood and Eden Bann weir funding should have priority over the Gladstone-Fitzroy Pipeline Project.

Section 4.8.4 of this report describes the relationship of the weir projects to this project.

4.21.11 Desalination

The submitter queries the other alternatives to the pipeline such as the viability of desalination.

In terms of water supply alternatives to the project, such as desalinisation, the EIS (see Chapter 1, Introduction, Section 1.6.1) describes alternatives that have been considered by GAWB in the 2003 Strategic Water Plan (SWP). Section 1.6.1 of the EIS also describes GAWB's further evaluation of alternatives.

The SWP considered various options, including seawater desalination, further raising of Awoonga Dam, other new weirs and dams and demand management measures, and concluded that the preferred supplementary source of supply was the Lower Fitzroy River (part of the 'contingent supply strategy'). Thermal distillation and membrane technologies were considered as the two main seawater desalination options in the SWP.

GAWB has commenced further investigation into the cost and feasibility of a desalination plant as a water supply source, updating prior work in the SWP and conducting a more detailed assessment. GAWB will continue to assess and evaluate desalination as one of a suite of supply augmentation options with the pipeline remaining the central component and the preferred contingent supply source for most planning scenarios at this point in time.

4.22 Private Submitter 4

4.22.1 Area Required for the Alton Downs WTP

The submitter asserts that the footprint of the proposed WTP is larger than necessary for the reasonable operation of the WTP.

The design of the Alton Downs WTP aimed to find a solution that was cost effective, would provide operational flexibility, facilitate future expansion (within the site) and ensure the required service life is met. A range of considerations were taken into account in the design process. This included consideration of the characteristics of the site (e.g. topography and size), geotechnical investigations, orientation of the facilities with respect to the pipeline, design flows required, water quality of the Fitzroy River, design requirements and future expansion. The following points outline the response to specific queries within the submission.

Duplication of Screening Facility, Clarifier, Residue Tanks

The submitter queries the need for duplication of some elements of the Alton Downs WTP. Allowing for duplication of the above elements of the plant is considered to be prudent for future flexibility of the plant. Without flexibility, future increases in water demands could potentially require major upgrading of the plant or acquisition of more land for an alternative WTP.

Potential Sand Filters

The submitter queries the need for space within the Alton Downs WTP site for sand filters. This enables future upgrades to improve water quality from the plant. This adds flexibility to the WTP plant for possible future water requirements, which would otherwise be significantly restricted.

Solar Drying Beds

The submitter queries whether solar drying beds are included in the design of the WTP. Solar drying beds are not part of the current design of the WTP and as such are not included in the EIS.

Loop Road

The submitter has queried the need for a road within the WTP site and suggests that the road around the site be used instead. The road layout at the Alton Downs WTP has been designed to facilitate truck movements within the site whilst minimising the land requirements. There were several design requirements:

- To prevent reversing of trucks being necessary in the delivery of chemicals or removal of residue (for safety, noise and efficiency reasons)
- Two truck bays have been provided in the design for residue removal, in parallel to avoid potential issues with breakdowns

- An internal loop is provided for residue removal to minimise safety concerns especially during peak residue handling periods
- The relatively tight circuit for residue truck movement minimises travel distances, noise durations and safety concerns while on site.

Distance Between Structures and Use of Detached Buildings.

The submitter asserts that the space allowed between structures on the Alton Downs WTP site is greater than necessary. Structures have been located with at least 10 m clear distance between them to allow concurrent construction of adjacent structures, provide adequate space for construction activities and reduce work safety risks. It also allows for alignment of the various interconnecting pipelines required for the plant. Common walls have been used where possible to minimise the area (and cost) required for the Alton Downs WTP.

South East Corner of the Site

The submitter has noted the absence of infrastructure in the south-east corner of the site and has requested that the corner be truncated from the footprint of the Alton Downs WTP. This was considered as a possibility in the design, however this was found to be unacceptable because:

- It would prevent the planting of the vegetation screen on the southern side of the plant which is planned to screen the plant from surrounding properties and Rockhampton Ridgelands Road
- It will compromise the smooth transition of storm water retention basin overflows to natural ground flowpaths, adding to the complexity and cost of management of storm water drainage.

Curved Access Road

The submitter proposes a straight alignment of the access to the Alton Downs WTP from Rockhampton Ridgelands Road. Further discussions have been held with the property owner regarding this issue. The proposed changes to the access are described in Section 6.7 and shown in Figure 11.

4.22.2 Location of the Alton Downs WTP

The submitter queries the need for the WTP to be located at Alton Downs.

The WTP site selection process is described in Chapter 1 of the EIS, Introduction, page 31. The selection of the Alton Downs site for the WTP followed an assessment and consultation process which considered a number of options at a regional, local and individual property scale. The assessment of WTP site options used a range of criteria and also considered the input from landowners during the property scale investigations. Siting the WTP in close proximity to the intake is only one of the criteria used to select the final Alton Downs site.

Other criteria used in the selection of the WTP site included but were not limited to:

- The site being above the Q100 flood level
- The size of the site
- The slope of the land
- Environmental considerations (e.g. the presence of REs or wetlands).

Siting the WTP in close proximity to the intake has the advantage that it significantly reduces operational costs by reducing the need for pipe cleaning. Whilst SunWater are able to transport untreated water to Stanwell Energy Park without treating the water, this requires pipe cleaning once or twice a year. Also the provision of power to the site was found to be far more cost effective due to existing power supply to the SunWater site. Siting the WTP further from the intake would be further from the power supply substation and would require longer power supply line, resulting in a significant cost increase.

4.22.3 Width of Pipeline Trenching

The submitter queries the width required for the pipeline trench and raises concerns about the effect to grazing land from subsidence.

The pipeline trench will be kept to the minimum width possible at all times to minimise cost and impacts to land. It was originally stated in the EIS that "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" (Chapter 2, Project Description, page 65). GAWB acknowledges that this statement was generalist in nature and therefore proved misleading.

GAWB is committed to minimising the width and depth of the pipeline trench whilst still having due regard to construction safety and workability. Since the release of the EIS, the design of the project has been refined, and now more detail is known regarding trench width requirements. Based on this recent work, GAWB now anticipates the pipeline trench will generally be 2 m deep and will vary from 1.7 to 8 m in width, but for the majority of the pipeline will be around 5 m in width.

The rehabilitation period after construction will commence immediately following the laying of each pipeline section reducing the timeframe of land use impacts. Rehabilitation will include backfilling and suitable measures to prevent subsidence (e.g. compaction). This will include monitoring and re-instatement of any subsidence along the ROW and other associated works. Landowners will be able to contact GAWB in the event that subsidence occurs on their land.

4.22.4 Impact on Grazing During Construction

The submitter has concerns regarding the potential disruptions to grazing and livestock movement during construction as a result of trenching.

As part of its PEP, GAWB has been meeting landowners and has given due consideration to landowners' comments during the design phase.

Measures proposed to reduce the impacts to land uses during construction are included in the Land Use and Infrastructure Control Plan in the Planning EMP (See Appendix F of this report, Table 20.4). During construction, various processes will be put in place to ensure the safety of livestock and to limit as far as possible the impact on landholders. These processes include leaving gaps for vehicle, stock and wildlife crossings in appropriate locations along the pipeline route, minimising the time the pipeline trench is left open and putting in place appropriate ramps so that cattle can be safely removed.

4.22.5 Consultation

The submitter raises concerns regarding inconsistencies in information provided during the consultation process.

As described in Section 1.4, GAWB implemented a PEP to provide information to the community and other stakeholders and to provide an opportunity for input and comment on the project. GAWB spoke with individual landowners affected directly by the project and sought as much as possible to obtain voluntary agreement to allow access to land for completing technical and other investigations.

GAWB commenced consultation with landowners in June 2007, at a time when the project was being developed, investigations were commencing and early design was being formulated. As design work progressed, the design was refined for the changes in project parameters and for the findings and evaluations completed for the technical and other investigations. Throughout this period and as the project developed, GAWB continued consultation with landowners, supplying updated and additional information to individual landowners and other relevant stakeholders. GAWB acknowledges that due to negotiations with the Private Submitter 4, the siting for the WTP changed and the design of the plant has had several revisions.

4.22.6 Landuse Impacts

The submitter disagrees with the assessment of landuse impacts as Negligible to Minor Adverse and would describe the impacts to their grazing operations as Major Adverse. The following information was included in the EIS and describes the basis for the assessment of land use impacts.

Significance Criteria were used in the EIS to assign a level of significance to environmental impacts. The EIS significance criteria have been applied at a regional level and as such apply to the study area as a whole. The impact to land use has been considered in conjunction with the impact to land tenure and residential and recreational areas.

In addition, GAWB has committed to a range of mitigation measures that are detailed in the EMP (Appendix F of this report) to reduce the potential impacts of construction and operation of the project on individual properties. This includes liaison with landholders throughout construction to inform them of plans and discuss their concerns. These measures are taken into consideration in the assessment of land use impacts in the EIS as Minor Adverse.

Based on the Significance Criteria that were developed for Chapter 4, Land Use and Infrastructure, of the EIS (see Table 4.1), Minor Adverse is defined as:

- Temporary disruption of land uses with minimal loss of productivity
- No severance of communities
- Temporary and short-term disruption to traffic on some roads during construction
- Almost all effects are removed through mitigation measures.

In addition, Moderate Adverse is defined as:

- Long-term closure of some roads during construction and long-term impediments to local or regional access
- Loss of productivity upon a large number of farms and agricultural holdings, however their operations remain viable
- Short-term severance of communities from services, facilities or severance of the community itself
- Some effects may remain following mitigation.

A review of the impacts on land use, land tenure, and residential and recreational areas and the proposed mitigation measures, supports the conclusion within the EIS that the impacts in the study area are considered Minor Adverse, and that the Moderate Adverse descriptor (or other more significant criteria) overstates the impacts.

Particular concerns raised in the submission include the impact to grazing activities from the WTP operation, traffic, residue odour and lighting.

The potential impacts to grazing activities in the vicinity of the Alton Downs WTP, such as traffic from the WTP and possible odours are described in Sections 4.21.1 and 4.13.3 respectively.

The potential noise impacts arising from the operation of the WTP are discussed in Chapter 12 of the EIS, Noise and Vibration. The chapter identifies that there is the potential for noise impacts from the operation of the Alton Downs WTP and that the WTP housing will be designed to attenuate noise levels. With consideration of mitigation measures, the noise impacts from the WTP were assessed as Minor Adverse.

Whilst the Alton Downs WTP will have security lighting at night, the design of this lighting will include careful consideration of the potential for increase in light pollution to surrounding properties. Landowners will be able to contact GAWB in the event that particular issues arise during operation of the WTP.

4.22.7 Release of Water

The submitter raises concerns regarding the release of stormwater or waste water from the Alton Downs WTP. The stormwater arrangements at the WTP are described in Section 4.13.5 of this report.

4.22.8 Disposal of WTP Residue

The submitter has concerns that large volumes of the residue will be stored at the Alton Downs WTP and that contamination of surrounding land may occur in the event that residue escapes from the WTP. The submission also asserts that the area of land designated in the Alton Downs WTP for storage of residue is small and not sufficient to store large volumes of residue at any one time. Information regarding the constituents of the residue and residue handling and disposal at the WTP can be found in Section 4.13.3.

4.23 The Department of the Environment, Water, Heritage and the Arts (DEWHA)

The following sections provide a response to DEWHA's submission on the potential impacts of the project on the Yellow Chat. The submission states that hydrological regime change is one of the key threats to the Yellow Chat and that the activities associated with pipeline construction and maintenance have the potential to interfere with surface water flows upon which the productivity of the marine plain wetland systems (Yellow Chat habitat) are dependant.

The submission also states that proposed direct drilling or microtunnelling has the potential to impact on aquifers underlying the creeks (in particular Inkerman, Twelve Mile, Raglan and Horrigan Creeks), causing potential damage and loss of pools, and reduction in downstream water flows to the brackish and saltmarsh habitats known to support the Yellow Chat.

This response builds on the assessment undertaken for the EIS (Chapter 7, Terrestrial Fauna) and includes new information where necessary.

The response also includes mitigation measures that will address the potential impacts of the construction of the project on the Yellow Chat and its habitat.

4.23.1 Surface Water Impacts in relation to the Yellow Chat

It is identified in the EIS that suitable Yellow Chat habitat occurs at several locations in the project area (Chapter 7, Terrestrial Fauna). The National Recovery Plan for the Yellow Chat (Houston and Melzer 2008) identifies hydrological regime change through flow reductions into catchments and construction of barriers in tidal areas as one of the key threats to the species. Examples provided in the Recovery Plan of the types of developments that might cause these impacts include dams or ponded pastures and construction of barriers such as levee banks. These types of developments are identified in the EIS (Chapter 7, Terrestrial Fauna, Section 7.5.1.2, page 261) as being threats to Yellow Chat habitat.

The project will not require the construction of dams or levee banks or other permanent obstructions to surface flow, however there are likely construction impacts which may temporarily alter surface flows in the project area. These activities will mainly be small scale as the pipeline construction will progress along the ROW and as each section of pipe is laid, revegetation and restoration of the surface profile will occur in that area. Temporary disruptions to surface flow may occur at trenched creek crossings due to the requirement for a coffer dam whilst construction occurs, however construction will occur at times of the year when flows are unlikely.

The construction activities that may have an impact to surface flows are described in Table 19 below with the proposed mitigation measures.

Table 19 Construction Surface Water Impacts and Mitigation Measures

Construction Activity	Impact to surface flows	Mitigation measures
Trenching	• Disruption of surface water flows (e.g. overland runoff) for short periods while trench is open • Mounding of the trench following construction (to prevent subsidence) may change drainage paths	• Dewatering of trench to natural drainage path will restore surface runoff flows • Backfilling of the trench will occur promptly following pipe laying. • Where the ROW exists on sloped land, "gutters" will direct runoff from the ROW, preventing excessive erosion. • Surface drainage conditions will be returned to preconstruction conditions.
Stockpiling of trench spoil	• Temporary stockpiling of spoil may alter surface drainage	• Stockpiles will be placed away from existing drainage lines and more than three metres from watercourses • Flow will be directed around stockpiles • Backfilling of the trench will occur promptly following pipe laying.
Microtunnel Pit Bunding	• Obstruction of surface flow due to bunding around microtunnel pits	• Microtunnel pits will be backfilled following construction and the ground surface will be returned to preconstruction conditions
Construction at Creek Crossings Adjacent to Yellow Chat Habitat	• Temporary obstruction to creek flow due to coffer dam during construction • Removal of vegetation • Increased turbidity	• Construction at Twelve Mile Creek (adjacent to Yellow Chat breeding areas) will only occur between May and September (outside Yellow Chat breeding season) • Permanent construction roads will not be built across creeks • Special Area Plans will be developed and implemented for all waterway crossings • Water from the coffer dam will be pumped downstream so that downstream flows are not reduced • Following completion of construction, all imported fill from the earth bund coffer dam will be removed from the creek and the creek profile returned to preconstruction conditions • Stream bed material will be replaced over the pipe trench following trenching and additional scour protection provided where necessary • Pre and post works surveys of the creek and vertical soil profiles will be undertaken to ensure the creek profile is restored • Each trenched crossing will be completed within one week • Creek water levels will be monitored during creek crossing construction to allow early identification of changed water levels that may affect Yellow Chat habitat • GAWB has committed to funding for further study of the Yellow Chat and this work may enable other mitigation measures to be included during construction if required. This is described below.

Creek crossings will take approximately one week per crossing and the width of disturbance for each crossing will be reduced to approximately 10 m. Due to the relatively short-term and localised nature of the surface water disruptions that may occur during the above activities and with the mitigation measures identified above, changes to hydrological regime are expected to have negligible impacts to the marine plain wetlands that form habitat for the Yellow Chat.

4.23.2 Groundwater Impacts in relation to the Yellow Chat

Creek Crossing Methods

Table 2.3, Page 70 of the EIS (Chapter 2, Project Description) described the major creeks in the study area, the proposed crossing method for each creek and the mitigation measures to be implemented (this information has been revised and is included in Table 24 of this report). This information is also provided in Table 20 for the creeks mentioned above. In addition to the ecological values listed, each of these creeks is adjacent to Yellow Chat habitat.

Table 20 Creek Crossing Methods

Creek	Characteristics	Ecological Values	Proposed Crossing method and reasoning	Key mitigation measures
Inkerman Creek	Macro-tidal Creek	• Mangrove-lined creek surrounded by extensive saltmarsh flats • Weed species present on adjacent land • Clay substrate	• Microtunnelling due to clay substrate, tidal drainage and presence of mangrove species • Trenching will be undertaken through adjacent vegetation, with an alternative route selected to follow an existing track and therefore reduce the impacts to this vegetation	• Place tunnelling pits outside of riparian vegetation zone • Vegetation clearing and bank/bed disturbance will be reduced by: – Undertaking works along existing tracks where available – Reducing the corridor width in sensitive areas – Appropriate management to contain disturbed sediments – Where environmental conditions exist for replanting to be feasible, replanting vegetation after construction completion.
Twelve Mile Creek	Permanent Pool	• Riparian vegetation sparse and highly fragmented • Bank erosion • Macrophytes present	• Open trenching • Environmental impacts during construction can be managed • Permanent pool but not flowing water • No significant riparian vegetation • Cost is significantly less for open trenching than other methods	• The detailed mitigation methods to comply with the requirements of the waterways barrier permit will be determined when application is made to DEEDI prior to construction • Vegetation clearing and bank/bed disturbance will be reduced by the methods outlined above • Creek profile will be restored following removal of the coffer dam
Horrigan Creek	Ephemeral Drainage	• High in-stream habitat diversity • No emergent or submergent vegetation • Dense eucalypt forest in riparian zone (and mangroves downstream of crossing site) • Weeds present on adjacent lands	• Microtunnelling due to aquatic ecology values, tidal drainage and presence of mangrove species.	• Place tunnelling pits outside of riparian vegetation zone
Raglan Creek	Macro-tidal Creek – drains completely during low tide. No freshwater input due to weir upstream	• Broad continuous mangrove fringe on banks • Stream bed and banks generally in good condition • Weed species present in surrounding lands	• Microtunnelling due to aquatic ecology values, tidal drainage and presence of mangrove species • Some mangroves will still be affected	• Place tunnelling pits outside of riparian vegetation zone • Ensure pipe depth is sufficient to prevent erosion

Further design undertaken since release of the EIS suggests that the depth of microtunnelling/trenching required for pipeline crossings at Inkerman Creek, Twelve Mile Creek, Horrigan Creek and Raglan Creek will vary between approximately 4 m and 13.5 m. The depth of the respective crossings is presented in Table 21.

Table 21 Approximate Maximum Depth of Creek Crossings.

Creek Crossing	Approximate Maximum Depth	Creek Crossing Method
Inkerman Creek	8 m	Microtunnelling
Twelve Mile Creek	4 m	Trenching
Horrigan Creek	13.5 m	Microtunnelling
Raglan Creek	9.5 m	Microtunnelling

Groundwater Conditions

General geological and hydrogeological conditions in the area of the crossings, as stated in the EIS suggest that:

- The depth to groundwater is in order of five metres to nine metres (Fitzroy to Bajool section) and 10 m to 20 m (Bajool to Gladstone section)
- The existing aquifers are isolated from the surface by eight metres to 10 m thick medium to high plasticity clays (Fitzroy to Raglan section)
- The groundwater quality varies, with slightly saline to saline water within Fitzroy River alluvium and brackish to highly saline water south from Raglan to Gladstone.

General Potential Impacts

Construction

Based on the above information, it is considered likely that construction of Inkerman, Horrigan and Raglan Creek crossings will have some impact on groundwater regime, as proposed microtunnelling activities would take place below the groundwater table and within water bearing aquifers. At Twelve Mile Creek however, it is not expected that the groundwater table will be impacted due to the approximate maximum depth of the trench. However, this will change if the creek is crossed using microtunnelling, in which case the impact on groundwater would be similar to that of the other microtunnelled creeks.

Due to the expected thickness and low permeability of the clay layer underlying the river bed it is considered unlikely that river seepage would occur into the construction works. However if dewatering during the construction is required to maintain dry working conditions, the expected impact on groundwater will most likely be limited to lowering of groundwater pressure and altering groundwater flow pattern in the immediate vicinity of the site during the construction activities.

Lowered groundwater pressure would only have a minor impact on existing groundwater regime in the area, considering that:

- Based on the data collected during excavation of test pits along the proposed pipeline, the existing aquifer is separated from the surface by a layer of low permeability clays. The presence of clays limits the potential for interaction between groundwater and surface water, and therefore locally decreased pressure within the aquifer should not impact on creek baseflow rates, pools and water flows to brackish and saltmarsh habitats.

It should be noted however that the information provided above is based on regional data and exact thickness of clays at the described crossings is unknown at this stage. All the test pits located in the vicinity of the crossings were dug up to 3 m depth and did not encounter the bottom of the clay layer.

Table 22 provides five different construction scenarios with the specific impacts that could occur and the proposed mitigation measures for each scenario. Further groundwater investigations will be undertaken prior to construction to identify the thickness of the clay layer overlying the aquifer at the location of the proposed crossings and to determine the groundwater level. This will enable mitigation measures to be tailored to the specific scenario. The groundwater investigations will also allow continued monitoring of groundwater quality and level during construction.

Due to the implementation of appropriate mitigation measures as described below, it is expected that there will be negligible impacts to Yellow Chat and its habitat as a result of the effects of construction activities to groundwater aquifers.

Post-construction

After construction of the microtunnelled creek crossings, it is expected that the local groundwater pressure will naturally restore to its previous condition and no impacts are expected upon pools and water flows to brackish and saltmarsh habitats.

If the pipeline is placed within the water bearing strata it will remain in contact with groundwater for the entire life of the project.

Due to the implementation of appropriate mitigation measures as described below, it is expected that there will be negligible impacts to the Yellow Chat and its habitat as a result of the post-construction effects to groundwater aquifers.

Mitigation Measures

Dewatering activity, if required during construction, will result in lowering local groundwater pressure and depending on groundwater quantity and quality, may require a special disposal strategy for extracted groundwater. Within the Planning EMP (see Appendix F, page 771), it is stated that:

> *"A Groundwater Management Plan will be prepared."*

If ASS are encountered, an ASS Management Plan will be developed for construction and post-construction phases.

In the case of ASS, during the construction:

> *"The pH of any water pooled onsite (groundwater seepage and after rainfall events), that requires to be discharged off site for any reason, will be monitored and treated with hydrated lime if necessary. Bags of hydrated lime will be kept onsite in a dry state for this purpose, but used sparingly (i.e. add no more than about 50 to 100 g of lime to ponded water and mix well, then carefully monitor the change in pH before adding more if required)."* (Appendix F)

To prevent corrosion of the mild steel concrete lined (MSCL) pipe and subsequent contamination of the groundwater/surface water, the pipe will have a fusion-bonded polyethylene coating

consistent with Australian Standard 4321: Fusion-bonded medium density polyethylene coating and lining for pipes and fittings.

The polyethylene coating however does not protect against induced or impressed current corrosion. To protect against this, the pipe will also have cathodic protection. Cathodic protection is the method of protecting metal pipes from corrosion in the presence of water and oxygen, ASS or stray currents. The pipeline is protected by connecting each pipe length with cables at 'electrode connections' on the pipe, connecting this to a low voltage power supply and sending a current down the pipeline which gives the metal characteristics which do not corrode. Cathodic protection is only required on ferrous pipes such as MSCL pipe.

Operational and Maintenance Control Systems will help prevent any leakages occurring (beyond volumes that may be associated with an initial rupture) and a Spill Prevention and Response Plan (in accordance with the APIA Code of Environmental Practice) will be developed prior to operations to minimise the risks and impacts of a leakage or pipeline rupture (see the revised Chapter 20 of the EIS, Planning EMP, included as Appendix F to this report).

Scenario Specific Mitigation Measures

Table 22 below describes the scenario specific impacts that may arise during construction and the proposed mitigation measures for each scenario. Figure 9 of this report shows scenarios T1, T2, M1, M2, M3. As described above, further groundwater investigations prior to construction will help to determine which scenario is relevant for each creek.

Table 22 Scenario Specific Impacts and Mitigation Measures

Method/Ground Conditions	Potential for impact	Mitigation strategies	Reference Scenario in Figure 9
Trenching within the clay layer	• Minimal as the clay layer acts as a barrier between the creek and the aquifer	• Cut-off walls along the pipeline alignment may be required to stop alluvium water seeping into the trench during construction • To maintain flow downstream, the extracted water may be pumped/conveyed downstream	T1
Trenching below the bottom of clay layer	• Dewatering required during construction may impact groundwater conditions but should be localised and limited to construction time only • If backfill does not restore the impermeable layer of clay, there is potential for creek/pool water seepage into groundwater which could result in draining of the creek/pool. Thus, vegetation on the banks of the creek/pool that support Yellow Chat populations may be affected.	• Proper backfilling and returning the excavation zone to the initial conditions by using the original material compacted to the initial density	T2
Microtunnelling within the clay layer	• Minimal as the clay layer acts as a barrier between the creek and the aquifer	• If microtunnelling is carried out within the clay layer, no impact is expected	M1
Microtunnelling below the bottom of clay layer	• Dewatering of reception pits which may be required during construction has a potential to impact local groundwater conditions. • The impact on the creek/pool (surface water) will depend on existing hydraulic connection between the surface water and the groundwater. At this stage, this information is unknown but will be determined prior to construction through groundwater investigations. • Despite this, the impact upon groundwater and surface water should be localised and limited to the construction time only.	• Install clay play plugs to prevent transfer of water along the trench • No long term effect as tunnelling will be localised and construction is short term	M2
Microtunnelling – general	• Positioning the reception pits within alluvium may create a potential for baseflow and surface water seepage into those pits during the construction phase.	• Installation of cut-off walls isolating alluvial (potentially higher permeability) deposits from being drained during construction, and careful backfilling of the pits upon completion • Moving pits further away from the alluvium	M3

4.23.3 Yellow Chat Offsets

The following possible offset options were raised by DEWHA for GAWB's consideration and investigation during the assessment process:

- Provision of financial contribution to Central Queensland University towards Yellow Chat research
- Undertake fencing at Twelve Mile Creek to exclude cattle from Yellow Chat breeding habitat
- Securing appropriate land at Inkerman or Twelve Mile Creeks for long term conservation.

GAWB has committed to the first of the above three options as the offset option for the project. DEWHA has also indicated their preference for this option.

Wayne Houston (Senior Research Officer, Centre for Environmental Management, Central Queensland University) has prepared a research proposal that will be funded by GAWB to the cost of approximately $50,000. The full proposal is provided in Appendix E.

The objectives of the study are to:

- Contribute to the ecological knowledge base of this species
- Evaluate the extent to which the Yellow Chat is dependent on inundation of its habitat for breeding
- Determine the ecological drivers of saltmarsh habitat use by Yellow Chats.

Research will take place at a range of sites in the Fitzroy Delta with a primary focus on Twelve Mile Creek and Cheetham.

4.24 Private Submitter 6

4.24.1 Dust

The submitter has concerns that Ski Gardens Road is unsealed and is not suitable for heavy traffic. The submitter believes this will create dust issues and the road should be sealed.

Refer to Section 4.21.3 of this report.

4.24.2 Truck Turn-around Point

The submitter questions the need for a truck turnaround area at the Fitzroy River intake.

The truck turn-around area at the intake is required to limit reversing of trucks, which has safety and noise implications. Discussions are ongoing with SunWater regarding the road layout at the site and this will be finalised as design progresses.

4.24.3 Noise and Vibration Impacts of the Pump Station on Aquatic Ecology

The submitter raises concerns about the environmental impacts of noise and vibration generated from the submerged intake pumps.

The intake and pump station will consist of a combined single structure located in the river bank, with a separate control building adjacent to the existing SunWater pump station and at the same level of 13.9 m Australian Height Datum (AHD). There will be three submersible centrifugal pumps, two operating as duty pumps and one on standby. The delivery pipe will be located within the approach embankment. The layout of the intake structure is shown in Figure 2.5 of the EIS.

The potential operation impacts to aquatic fauna in the Fitzroy River are outlined below:

Noise and Vibrations from Submersible Pumps

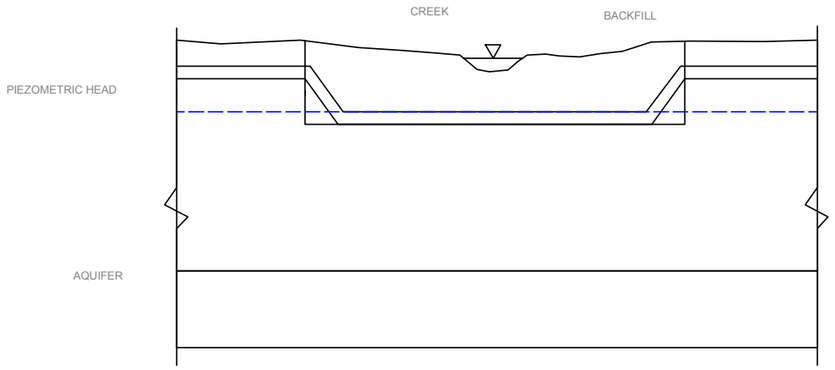
Submersible pumps located at the intake will emit some noise and vibrations to aquatic habitats in the immediate vicinity, throughout the life of the project. Conservative calculations (based on the 47decibels (dB) measurement in Table 12.12 of the EIS) show that the noise level underwater (referenced to 1 micro Pascal) is 54dB, which is likely to be near the background noise level underwater. As such, noise associated with the operation of the submersible pumps is unlikely to impact aquatic fauna.

Vibrations from the pumps may be more easily detected by some aquatic fauna and could potentially affect the behaviour (i.e. movement patterns) of some animals. Specifically, many larger aquatic fauna (e.g. fish) could avoid approaching the pumps, preferring to travel around them when transiting through, foraging or breeding in this area. These combined pump effects are expected to have a Negligible to Minor Adverse impact to aquatic fauna.

Regarding specific mention of platypus in the submission, waters in the vicinity of the submerged pumps do not represent a key habitat area for platypus. In the event platypus do frequent the pump area, noise from the pumps would not be expected to impact them due to:

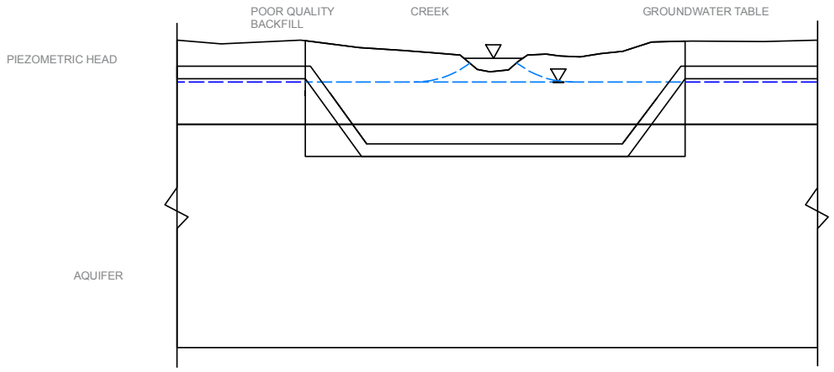
1. The low noise level
2. The fact that platypus close their ears underwater and do not rely on hearing for prey detection (Pettigrew et al. 1998).

Vibrations from the pumps may affect platypus behaviour (i.e. movement patterns) as per other aquatic fauna above. Together, potential pump effects to platypus would represent a Negligible to Minor Adverse impact.



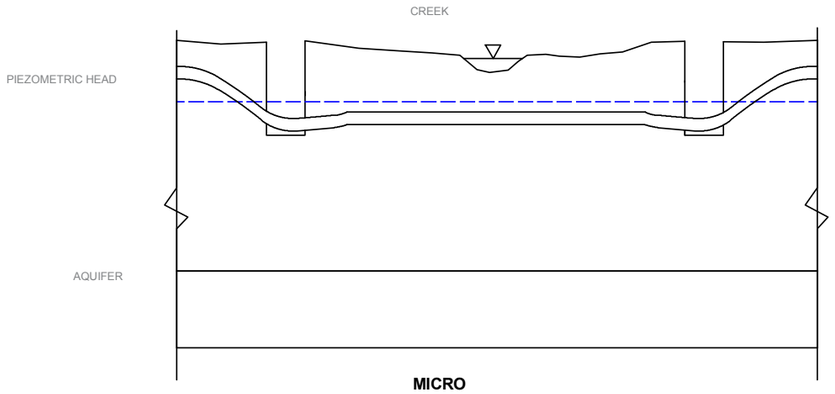
T1

NO IMPACT



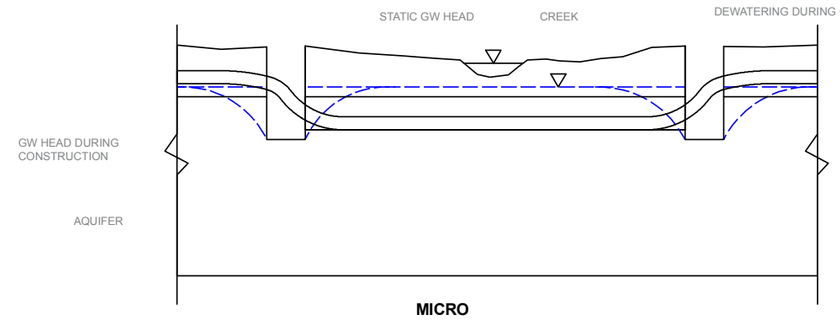
T2

POTENTIAL IMPACT



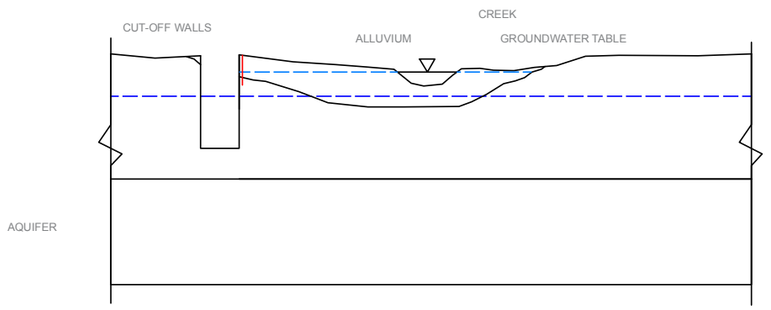
M1

MICRO TUNNELLING (DEEP CLAY)



M2

MICRO TUNNELLING (SHALLOW CLAY)



M3

MICRO TUNNELLING (GENERAL)

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Figure 9 - Creek Crossing Scenarios

Sheet 1 of 1

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Gladstone Area Water Board

ARUP

Mitigation

Pump operation is an unavoidable long-term component of the project. The potential impacts of pump operation to aquatic fauna are expected to be of Negligible to Minor significance, based on the current pump design and usage.

4.24.4 Pump Location

The submitter raises concerns regarding the location of the intake pump. These concerns relate to positioning of the intake in an area that floods, the impacts of the project upon the submitter's own pump and pipes, visual amenity impacts and also potential impacts to the Rockhampton Waterski and Power Boat Club.

The intake and pumps are located entirely on the SunWater property so will not require the relocation of pumps or disturbance to pipes on adjacent land. With regard to the flooded areas, the intake pumps are submersible so would not be affected in flood conditions.

The design has been undertaken with consideration of the visual impacts. Whilst the intake pump station will create a visual impact to the adjacent properties (assessed as a Minor Adverse impact in the landscape and visual assessment undertaken for the EIS, Chapter 17, Landscape and Visual Impact Assessment), this will be ameliorated through landscaping as per the Planning EMP (See Table 20.23 of the revised EMP in Appendix F).

Discussions regarding the intake and an appropriate clearance boundary will be held with the Rockhampton Waterski and Power Boat Club to minimise any issues that may arise from its operation.

4.24.5 Property Value

The submitter has concerns about the impact of the project on their property value.

Whilst the intake pump station will create a visual impact to the adjacent properties (assessed as a Minor Adverse impact in the landscape and visual assessment undertaken for the EIS, Chapter 17, Landscape and Visual Impact Assessment), this will be ameliorated through appropriate landscaping.

Fair compensation for loss of value will be paid to acquire the pipeline easement.

4.25 Department of Emergency Services

It is noted that the Department of Emergency Services is satisfied that issues within the Department's jurisdiction are not adversely affected by the project.

The role of the emergency services during construction and operation has been recognised in the risk assessment for the project. The safety of public, personnel and equipment requires a close relationship be established with all emergency service operators. The regional offices of Queensland Fire and Rescue Service, Queensland Ambulance Service and Emergency Management Queensland will be consulted prior to and during construction regarding the following issues:

- Site access and egress
- Construction staging
- Road closures and traffic hazards
- Storage and location of hazardous goods on-site
- Other concerns as identified.

Furthermore, GAWB is liaising with the Alton Downs Rural Fire Brigade and is developing protocols to allow access to water in the event of an emergency in the local community.

5 Recent Changes to Relevant Legislation

5.1 *Environmental Protection Regulation 2008 (Qld)*

On 1 January 2009, the *Environmental Protection Regulation 1998* (Qld) was superseded by the 2008 version. Subsequently some information in the EIS is now outdated and changes are summarised below.

5.1.1 Regulated Waste

The EIS previously stated that the residue from the Alton Downs WTP is not considered a regulated waste due to an EPA operational policy (page 500) (EPA, 2007). However, under the recently released *Environmental Protection Regulation 2008 (Qld)*, Schedule 7, clause 54 states that "sludge and residues from water treatment plants" are considered a limited regulated waste.

It is not considered a 'trackable waste' under Schedule 1 of the *Environmental Protection (Waste Management) Regulation 2000 (Qld)*.

As a result of this new legislation, the transport of the residue is considered an ERA (ERA 57) and requires approval from DERM. This is in addition to the ERA 64 approval that is required for water treatment (Previously ERA 16).

5.1.2 Environmentally Relevant Activities

The ERAs (as per the new *Environmental Protection Regulation 2008*) that are applicable to this project are included in Appendix C of this report.

5.2 Environmental Protection (Air) Policy 2008 (Qld)

This policy was also recently re-released as the *Environmental Protection (Air) Policy 2008*. As such, amendments to the EIS text are provided below to ensure consistency with the new version of the policy. The following text is additional to the EIS text on the policy (see the 'Environmental Protection (Air) Policy' subheading under Chapter 10, Section 10.4.2, page 470 of the EIS):

> The *Environmental Protection (Air) Policy 2008* also outlines various environmental values to be enhanced or protected. These include:
>
> - The qualities of the air environment that are conducive to protecting the health and biodiversity of ecosystems
> - The qualities of the air environment that are conducive to human health and wellbeing
> - The qualities of the air environment that are conducive to protecting the aesthetics of the environment, including the appearance of buildings, structures and other property
> - The qualities of the air environment that are conducive to protecting agricultural use of the environment.
>
> The policy also outlines a management hierarchy for air emissions, which is (in the order of preference):
>
> - Avoid - using technology that avoids air emissions
> - Recycle - re-using air emissions in another industrial process
> - Minimise - treating air emissions before disposal
> - Manage - locating a thing that releases air emissions in a suitable area to minimise the impact of the air emissions.

The Planning EMP's Performance Objectives for air quality have also been updated to reflect the policy (See Appendix F of this report, Table 20.13). In order of preference, the Performance Objective is now to avoid, minimise and/or manage the air quality impacts arising from the project during construction.

5.3 Environmental Protection (Noise) Policy 2008 (Qld)

Prescribed noise objectives in Queensland are outlined in the *Environment Protection (Noise) Policy 2008* and these have been used in the assessment of the project's noise impacts. The relevant changes from the *Environment Protection (Noise) Policy 1997* to the 2008 version include a reduction in the outdoor daytime and evening acoustic quality noise objective. In regards to this, the policy prescribes an ambient level of $50dBL_{Aeq,\ adj\ 1\ hour}$ or less for most of Queensland's population living in residential areas. It can also be inferred from the policy that this level should be reduced to $45dBL_{Aeq,\ adj\ 1\ hour}$ during the night-time period. However, it is not the intention that in achieving the acoustic quality objective, any part of the existing acoustic environment be allowed to significantly deteriorate.

The times a person must not carry out building work that makes an audible noise have also changed with the recent amendments to the Policy, the Environmental Protection Regulation 2008 and the EP Act. Noise nuisance and specifically "building noise" is addressed generally in Section 440R of the EP Act as follows:

> *A person must not carry out building work on a building site in a way that makes an audible noise –*
>
> - *On a business day or Saturday before 6.30 a.m. or after 6.30 pm; or*
> - *On any other day, at any time.*

Before the recent amendments, these times were originally specified in Section 6W of the now superseded *Environmental Protection Regulation 1998*.

The changes to the regulations and policy are intended to address the gradual increase in cumulative background noise that can occur with the successive addition of new 'noise-generating' industries to an area. The regulatory limits aim to ensure that the background noise levels are not changed by the added activity and that amenity is protected.

5.3.1 Updated Text for Chapter 12 Noise and Vibration

Relevant changes in the *Environment Protection (Noise) Policy 2008* have been reflected in the updated text below from Chapter 12 of the EIS, Noise and Vibration.

Page 510, Section 12.3.1 of the EIS

The following paragraph replaces the first paragraph under the heading of Section 12.3.1 of the EIS:

> "Prescribed noise limits in Queensland are outlined in the *Environment Protection (Noise) Policy 2008*. This policy prescribes an outdoor daytime and evening acoustic quality objective of achieving an ambient level of 50dB$L_{Aeq, adj\ 1\ hour}$ or less for most of Queensland's population living in residential areas, it can also be inferred from the policy that this level should be reduced to 45dB$L_{Aeq, adj\ 1\ hour}$ during the night-time period. However, it is not the intention that in achieving the acoustic quality objective, any part of the existing acoustic environment be allowed to significantly deteriorate."

Page 512, Section 12.3.3 of the EIS

The following paragraph replaces all the text under Section 12.3.3 of the EIS:

> "*The Environment Protection (Noise) Policy 2008 (Qld)* has no specific noise limits for construction noise. Noise nuisance and specifically "building noise" is addressed generally in Section 440R of the EP Act as follows:
>
> *A person must not carry out building work on a building site in a way that makes an audible noise –*
>
> *a) On a business day or Saturday before 6.30 a.m. or after 6.30 p.m; or*
>
> *b) On any other day, at any time.*
>
> No specific noise criteria apply to building works that occur outside the hours detailed in the EP Act above (i.e. standard daytime hours). Within these hours, no audible noise emission is to occur.
>
> In addition, the relevant code of practice is the Code of Environmental Practice – Onshore Pipeline Industry Pipelines 2009, which is published by the Australian Pipeline Industry Association (APIA). This code of practice states that (pp. 59):
>
> > *Where construction is adjacent to residences, noisy construction activities shall be undertaken within standard construction hours, except when unavoidable for practical reasons or agreement is obtained from affected residents. Affected residents shall be advised when unavoidable out-of-hours work, resulting in noise nuisance, will occur.*
>
> However, the APIA Code recognises that the legislation takes precedence and therefore the EP Act requirements (as stated above) apply."

Page 522, Section 12.6.2.1 of the EIS

The following text is to be added as the first paragraph under the heading for Section 12.6.2.1 of the EIS:

> "Despite exemptions from operational noise limits under the EP Act, (Schedule 1, Part 1, Section 2[b][(i]), good practice, as recommended by the Ecoaccess: Planning for Noise Control Guideline 2004 (Ecoaccess PNCG), defines a suitable assessment methodology to reduce the risk of noise nuisance. As such, it has been applied to this assessment."

Page 522, Section 12.6.2 of the EIS

Table 24 below replaces Table 12.20 of the EIS:

Table 23 Planning Noise Levels

Location	Planning noise level $L_{eq, 1\ hour}$ (dB(A))		
	Time period		
	Day	Evening	Night
Laurel Bank	50*	37	41
Raglan	45	44	46

* Ecoaccess critieria exceed objectives of the Environmental Protection (Noise) Policy 2008, therefore EPP (Noise) Criteria have been used.

6. Changes to Design

The following addresses the inconsistencies identified during the review of the EIS and current project design as at May 2009. Where the text of the EIS requires amendment, these have been indicated in red font. GAWB notes it has completed further design since the release of the original EIS and is proposing to extend its microtunnelling program to include Gavial and Bobs Creeks. These changes have resulted from design progressing and are not in response to a submission.

6.1 Revision of Recommended Creek Crossing Methods for Major Creeks

Chapter 2 of the EIS, Project Description,Table 2.3 has been modified accordingly in Table 24 below:

Table 24 (Revised Table 2.3 from the EIS) Recommended Creek Crossing Methods for Major Creeks

Creek	Characteristics	Ecological Values	Proposed Crossing method and reasoning	Key Mitigation Measures
Lion Creek	Ephemeral Drainage	• Marginal, temporary habitat (during flows) for several fish species of conservation significance (except during floods), none of which are protected under legislation • Swampy area but with no significant vegetation • Mapped as Remnant Vegetation	• **Open trenching** if the construction is carried out in the dry. • Initial geotech info indicates presence of Basalt. • Environmental impacts during construction can be managed • Cost is significantly less for open trenching than other methods	• Vegetation Permits will be obtained prior to construction for the impacts to mapped remnant vegetation • Concrete encasement to protect the pipe • Disturbance to riparian vegetation will be avoided where possible • Appropriate management to contain disturbed sediments • Monitoring and controlling the encroachment of weeds in areas where vegetation has been removed • Replanting vegetation after construction completion, which would be particularly beneficial to the long-term stability of stream banks. • Restoration of creek profile following construction.
Gavial Creek	Semi-permanent pools	• Potential fish refugia during low and zero flow conditions • Marginal, temporary habitat (during flows) for several fish species of conservation significance (except during floods), none of which are protected under legislation • Large Blue Gum (Eucalyptus tereticornis) individuals were observed along the high banks of Gavial Creek. The site was heavily affected by grazing, with a high level of weed infestation.	• **Microtunnelling** • Remnant vegetation present at the creek crossing • Semi-permanent pools which were dry at the time of sampling	• Commence tunnelling outside of riparian vegetation zone • Minimise clearing width through adjacent vegetation

Creek	Characteristics	Ecological Values	Proposed Crossing method and reasoning	Key Mitigation Measures
Inkerman Creek	Macro-tidal creek	• Mangrove-lined creek surrounded by extensive saltmarsh flats • Weed species present on adjacent land • Clay substrate	• **Microtunnelling** due to clay substrate, tidal drainage and presence of mangrove species • Trenching will be undertaken through adjacent vegetation, with an alternative route selected to follow an existing track and therefore reduce the impacts to this vegetation	• Place tunnelling pits outside of riparian vegetation zone • Vegetation clearing and bank/bed disturbance will be reduced by: – Undertaking works along existing tracks where available – Reducing the corridor width in sensitive areas – Appropriate management to contain disturbed sediments – Where environmental conditions exist for replanting to be feasible, replanting vegetation after construction completion.
Twelve Mile Creek	Permanent pool	• Riparian vegetation sparse and highly fragmented • Bank erosion • Macrophytes present	• **Open trenching** • Environmental impacts during construction can be managed • Permanent pool but not flowing water • No significant riparian vegetation • Cost is significantly less for open trenching than other methods	• The detailed mitigation methods to comply with the requirements of the waterways barrier permit will be determined when application is made to DEEDI prior to construction • Vegetation clearing and bank/bed disturbance will be reduced by the methods outlined above • Creek profile will be restored following removal of the coffer dam
Marble Creek	Ephemeral Drainage	• Remnant softwood scrub in riparian zone in good condition with high species diversity	• **Open trenching** • Creek is ephemeral • Site inspection at the pipeline crossing point found that no significant vegetation would be affected by trenching, although significant vegetation occurs in adjacent areas.	• Site survey by a qualified botanist will occur prior to construction commencement. • Trenching will be confined to already-cleared or open areas wherever possible. • Sediment and erosion control measures will be implemented to prevent impacts downstream • Weed management measures will be undertaken • If Rare or Threatened sapling species are identified from samples taken on-site, these will be translocated. • Restoration of creek profile following construction.
Horrigan Creek	Ephemeral Drainage	• High in-stream microhabitat diversity • No emergent or submergent vegetation • Dense eucalypt forest in riparian zone (and mangroves downstream of crossing site) • Weeds present on adjacent lands	• **Microtunnelling** due to aquatic ecology values, tidal drainage and presence of mangrove species.	• Commence tunnelling outside of riparian vegetation zone

Creek	Characteristics	Ecological Values	Proposed Crossing method and reasoning	Key Mitigation Measures
Raglan Creek	Macro-tidal creek – drains completely during low tide. No freshwater input due to weir upstream	• Broad continuous mangrove fringe on banks • Stream bed and banks generally in good condition • Weed species present in surrounding lands	• **Microtunnelling** due to aquatic ecology values, tidal drainage and presence of mangrove species • Some mangroves will still be affected	• Commence tunnelling outside of riparian vegetation zone • Ensure pipe depth is sufficient to prevent erosion
Larcom Creek	Permanent Pool	• Semi-continuous riparian vegetation on one bank, sparse on the other • Degraded riparian zone, unstable banks • Large in-stream pool with high degree of micro-habitat diversity	• **Open Trenching** • No significant vegetation in the riparian zone • Environmental impacts during construction can be managed	• Only partial obstruction of the waterway will occur at one time • Clearing width will be reduced through adjacent vegetation • Sediment and erosion control measures will be implemented to prevent impacts downstream (if construction in the wet) • Weed management measures will be undertaken • Restoration of creek profile following construction.
Bob's Creek	Permanent Pool	• Weed species present • Native aquatic macrophyte habitat poor. • Steep banks	• **Microtunnelling** • Steep banks • May remain waterlogged in the dry season	• Commence tunnelling outside of riparian vegetation zone • Clearing width will be reduced through adjacent vegetation

6.2 Revision of Major Creek Crossings

Chapter 2 of the EIS, Project Description, Page 69, Line 26 has been added:

"Major creek crossings are those where the waterway has flowing or standing water or significant riparian vegetation which could be adversely impacted by open trenching. Major creeks traversed by the alignment are shown in Figure 1.3 (*of the EIS*) and include:

- Lion Creek
- Gavial Creek
- Inkerman Creek
- Twelve Mile Creek
- Marble Creek
- Horrigan Creek
- Raglan Creek
- Larcom Creek
- Bob's Creek".

6.3 Revision of Major Road Crossings

Chapter 2 of the EIS, Project Description, Page 68, Line 23-24 has been amended:

"There are five major road crossings along the alignment:

- Rockhampton Ridgelands Road – 17 m length to be crossed by thrust boring
- Capricorn Highway – 42 m length to be crossed by thrust boring
- Mt Larcom Road – 21 m length to be crossed by thrust boring
- Mt Larcom Gladstone Road – 36 m length to be crossed by thrust boring
- Mt Larcom Gladstone Road and Calliope River Targinie Road intersection – 142 m length to be crossed by thrust boring".

6.4 Revision of Pipeline Crossings of Road and Rail Corridors

Chapter 13 of the EIS, Transport and Access Arrangements, Page 556, Row 14, Column 4, Line 1 has been amended:

Table 25 (Table 13.15 from the EIS) Pipeline Crossing of Road and Rail Corridors – Fitzroy to Bajool

Road/rail name	Location	Authority	Method of construction
Laurel Bank Road	170 m south of Ski Gardens Road	RRC	Trenching
Ski Gardens Road	700 m east of Laurel Bank Road	RRC	Trenching
Rockhampton Ridgelands Road	1.4 km west of Laurel Bank Road	DMR	Thrust Bore
Nine Mile Road	Just east of Malchi Nine Mile Road	RRC	Trenching
Capricorn Highway	1.4 km west of the Bruce Highway	DMR	Thrust Bore
Service Road along Capricorn Highway	450 m west of the Bruce Highway	RRC	Trenching
Bruce Highway	500 m south of the Capricorn Highway	DMR	Thrust Bore
North Coast Railway	500 m south of the Capricorn Highway	QR	Thrust Bore
Old Bruce Highway	1.5 km south of Port Curtis Road	RRC	Trenching
Roope Road	1.5 km north of the Bruce Highway	RRC	Trenching
Georges Road	1.8 km west of the Bruce Highway	RRC	Trenching
Casuarina Road	2.9 km west of the Bruce Highway	RRC	Trenching
Bajool Port Alma Road	870 m north of Bills Road	DMR	Thrust Bore

In addition, Chapter 13, Page 570 Row 4, Column 4, Line 1 has been amended:

Table 26 (Table 13.25 from the EIS) Pipeline Crossing of Road and Rail Corridors – Bajool to Gladstone

Road/rail name	Location	Authority	Method of construction
Twelve Mile Road	2.3 km northeast of the Bruce Highway	RRC	Trenching
Reedy Creek Road	150 m east of Raglan Station Road	GRC	Trenching
Darts Creek Road	1.5 km northeast of Raglan Station Road	GRC	Thrust bore
Popenia Road	2.8 km northwest of The Narrows Road	GRC	Trenching
Gostevsky Road	1.3 km northwest of The Narrows Road	GRC	Trenching
The Narrows Road	2.1 km east of the Bruce Highway	GRC	Trenching
Gladstone Mt Larcom Road	2.5 km east of the Bruce Highway	DMR	Thrust Bore
North Coast Railway	2.5 km east of the Bruce Highway	QR	Thrust Bore
East End Branch Line	2.1 km west of Gladstone Mt Larcom Road	QR	Thrust Bore
Gladstone Mt Larcom Road	1.3 km east of Mylrea Road	DMR	Thrust Bore
North Coast Railway	1.3 km east of Mylrea Road	QR	Thrust Bore
Mylrea Road	3.7 km south of Gladstone Mt Larcom Road	GRC	Trenching
Gladstone Mt Larcom Road and Calliope River Road Intersection	Just east of Mylrea Road	DMR	Thrust Bore

6.5 Changes to the Pipeline Alignment

There have been four minor pipeline alignment modifications since the EIS was published.

The first two of these changes have occurred in the Alton Downs area because landowners (having received offers from GAWB to acquire an easement) have raised particular concerns about assets on their land that would be adversely affected by the proposed route. The changes are aimed at resolving these issues by realignment of the route rather than by compensation.

The first realignment is designed to avoid a dam and outbuilding on Lot 1 RP612576 and to avoid an orchard on Lot 74 PL641. This realignment has been deviated to the east and now affects three landowners (Lot 2 RP616059, Lot 1 RP612576 and Lot 74 PL641). The revised route is more direct than the original alignment.

The second realignment is proposed to adjust the location of the bend in the route to the west. The purpose of the realignment is to avoid a stand of trees on Lot 101 LN351. The change also improves the gully crossing point. The realignment means that Lot 131 SP112056 (which is owned by the same landowner as Lot 101LN351) is now affected by the corridor alignment.

The third deviation of the pipeline alignment has been proposed by DIP and is a result of a change to the alignment of the SGICSDA. This change occurs approximately 800m to the south-east of Darts Creek Road. The new alignment now borders the Powerlink Easement for approximately 800 metres before deviating south-east to rejoin the previous SGICSDA alignment (see Figure 10). The purpose of this realignment is to avoid a unique spring-fed dam that contains good quality aquatic habitat. The alignment now also avoids a property that was previously impacted and also reduces the environmental impact of the alignment through co-location of infrastructure.

The fourth change has been made to the alignment near the Fitzroy River intake as a result of discussions with SunWater.

Figure 10 shows these modifications in more detail.

The changes in the alignment affect Appendix D of the EIS, Property Line List. This Appendix has been revised and updated within this Supplementary Report as Appendix G.

6.6 Revised Estimates of Residue Production at the WTP

Estimates of average residue production at the Alton Downs WTP have been revised to an average of 133 tonnes per day since the release of the EIS, based on a consistency of 25 percent dry solids. The EIS reported an average residue production of approximately 118 tonnes per day based on a consistency of 30 percent dry solids. This change is due to the operational philosophy for the centrifuges at the Alton Downs WTP.

This increase in estimated average residue production represents an increase of one truck per day (therefore two trips) to transport the residue from the site. The total number of heavy vehicle trips per day during operation of the Alton Downs WTP would therefore be 14, not 12 as described in Chapter 13 of the EIS, Transport and Access Arrangements.

Table 13.21 of the EIS has been corrected below. The impact to SCRs is still less than one percent and therefore assessed as a negligible impact.

Table 27 (Table 13.21 in the EIS) Operational Traffic Impact on State Controlled Roads – Fitzroy to Bajool

Road Section	Existing Daily Vehicles	Operational Trips per Day	Percentage Impact
Rockhampton Ridgelands Road	1,700	14	<1%
Bruce Highway (George Street)	22,000	14	<1%
Capricorn Highway	15,750	6	<1%
Bruce Highway (south of Rockhampton)	8,250	Occasional	n/a
Bajool Port Alma Road	200	Occasional	n/a

6.7 Changed Access to the WTP

Further discussions have been held with the property owner of the Alton Downs WTP site regarding the access to the WTP from Rockhampton Ridgelands Road. Subject to obtaining necessary approvals, GAWB is seeking to acquire a strip of land adjacent to the Alton Downs WTP site for the access track. If such approvals are unable to be obtained, an alternate alignment has been proposed which will run parallel to the property boundaries so reducing the area of land required. The proposed change to the access is shown in Figure 11.

7. Errata

The following errors have been identified in the first printing of the Gladstone-Fitzroy Pipeline Project EIS. Where text has changed, these have been indicated in bold font.

7.1 Page 335, Line 30; Page 341, Line 20; Page 360, Line 3; Page 369, Column 2, last line; Page 375, Line 6; and Page 391, Line 33: change "Fisheries Regulation 1995 (Qld)" to "Fisheries Regulation 2008 (Qld)"

7.2 Page 341, Dot point 4: change *"Fisheries Act 1994 (Qld)* protects fisheries habitat, including Marine plants, and lists certain fish species of conservation significance" to *"Fisheries Act 1994 (Qld)* protects fisheries habitat, including Marine plants, and lists certain fish species **that require special management through bag size limits and fishing closure**."

7.3 Page 27, Column 2, Line 19: change "In April 2007, the GSDA was amended again by the inclusion of three areas to facilitate more effective management, planning and control over industrial and infrastructure development (both existing and proposed) within the SDA." to "In **March** 2007, the GSDA was amended again by the inclusion of three areas to facilitate more effective management, planning and control over industrial and infrastructure development (both existing and proposed) within the SDA."

7.4 In July 2008, three new areas were added to the GSDA, the Curtis Island Industrial Precinct and the Environmental Management Precinct. The GSDA now comprises approximately **28,000 ha**. Page 27, Column 2, Line 23 change "The GSDA now comprises approximately 28,000 ha and is managed under a dedicated development scheme (Department of Infrastructure 2007)."

7.5 Page 3, Line 26; Page 12, Line 17; Page 10, Line 13; Page 26, Heading 1.5.1; Page 52, Line 5 and 19; Page 53, Line 6; Page 62, Column 2, Line 7; Page 104, Line 15; Page 179, Line 3; Page 193, Line 31; Page 320, Line 31; Page 335, Column 2, Line 16; Page 455, Line 5; Page 484, Line 18; Page 525, Line12; Page 604, Line 7; Page 632, last line; Table 16.1; Page 714, Line 25; and Page 724, Line 44: change "Stanwell-Gladstone Infrastructure Corridor" to "Stanwell-Gladstone Infrastructure Corridor **State Development Area**"

7.6 The Stanwell-Gladstone Infrastructure Corridor State Development Area Development Scheme was approved in August 2008. Page 53, Line 3, 8 and 12: change "draft Development Scheme" to "**Development Scheme**"

7.7 Page 463, Line 12; Page 470, Line 36: change "Environmental Protection (Air) Policy 1997" to "**Environmental Protection (Air) Policy 2008**"

7.8 Page 470, Line 37: replace "*Environmental Protection (Air) Policy (EPP (Air))*" with "**Environmental Protection (Air) Policy 2008**".

7.9 Page 463, Footnote 2; Change "Environmental Protection (Air) Policy 1997, Environmental Protection Act 1994, Queensland Government, reprinted as in force on 5 May 2006" to "Environmental Protection (Air) Policy **1998**, Environmental Protection Act 1994, Queensland Government, reprinted as in force on **1 January 2009**".

7.10 Page 152, Line 13; "The latter test method was used on soils that contained obvious organic matter, which might contain sulfur of organic origin that could artificially 'inflate' the **Peroxide** Oxidisable Sulfur (SPOS) levels reported using the SPOCAS method."

7.11 Page 152, Line 17; "When determining the presence of ASS, sulfidic derived acidity had been historically determined in Queensland using the following equation:

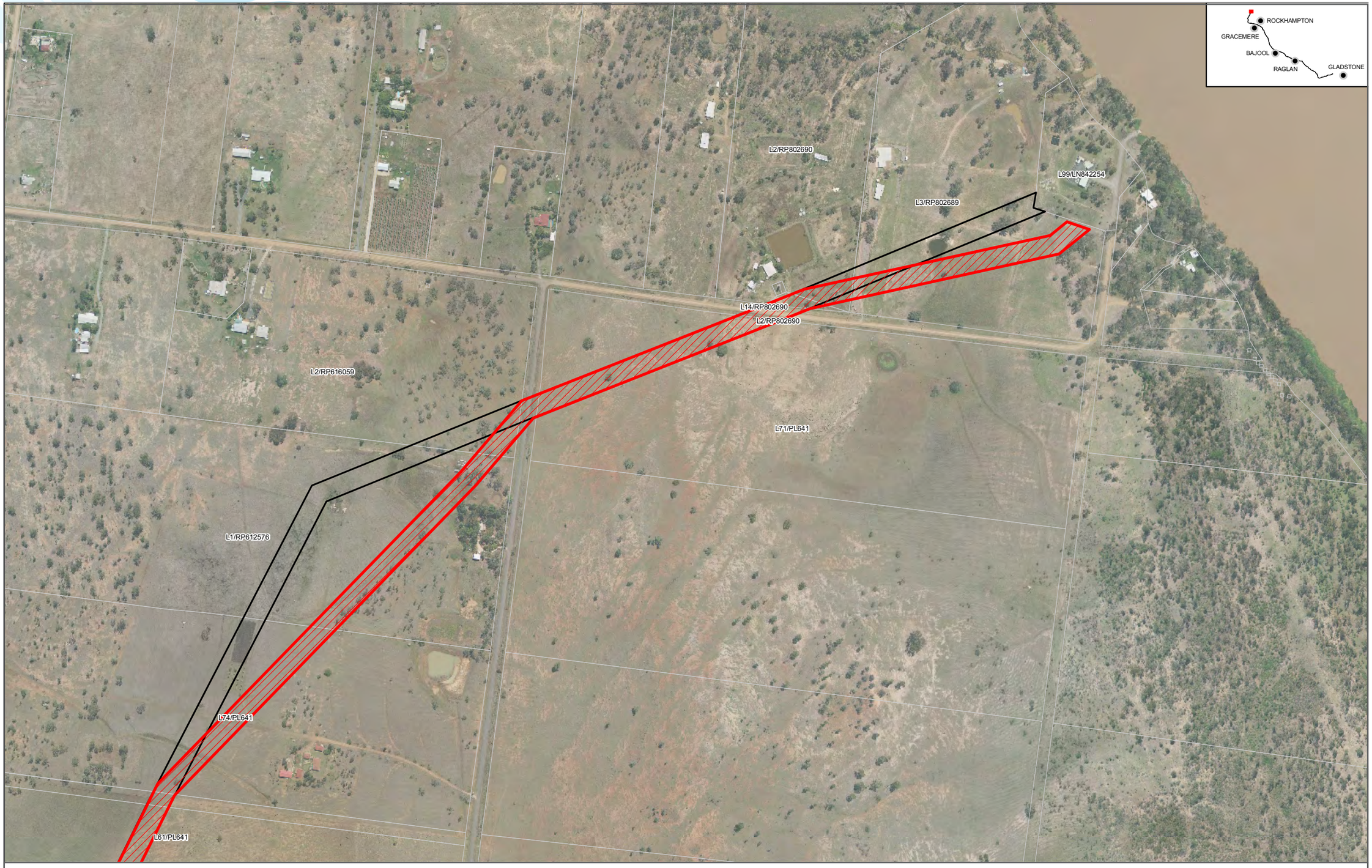
i. **Titratable peroxide** acidity (TPA) = **Titratable actual acidity**. (TAA) + **Titratable sulfidic acidity** (TSA)."

7.12 Page 171, Line 17; "The highest individual **Titratable actual acidity** (TAA) results was still relatively low, 94 moles of acid/tonne for a sample of dark grey clay from TP74 at 2.75m depth (see Table 5.7)."

7.13 Page 171, Line 21; "Results of **Peroxide** Oxidisable Sulfur (SPOS) tests, show the levels of oxidisable Sulfur (Sulfides) present to be generally low."

7.14 Page 94; "Mitigation measures that will be considered in the mitigation of the possible impacts from local climate and seasonal changes include the following. These and other measures are included in Chapter 20, Planning Environmental Management Plan.

- Taking into account seasonal conditions when scheduling work
- Construction at sensitive sites during dry periods wherever possible
- **Construction between May and September adjacent to Yellow Chat Breeding Areas and through wetlands in the SGICSDA"**



Gladstone - Fitzroy Pipeline EIS
Supplementary Report

Figure 10 - Pipeline Alignment Deviations

Sheet 1 of 3

Cadastre

The Right of Way
(existing EIS alignment)

The Right of Way
(changed alignment)

0 0.1 0.2 0.3 0.4 km

1:5,000 at A3

N

Gladstone Area Water Board

ARUP

Gladstone - Fitzroy Pipeline EIS
Supplementary Report

Figure 10 - Pipeline Alignment Deviations

Sheet 2 of 3

Cadastre

The Right of Way
(existing EIS alignment)

The Right of Way
(changed alignment)

0 0.1 0.2 0.3 0.4 km

1:5,000 at A3

N

Gladstone Area Water Board

ARUP

Gladstone - Fitzroy Pipeline EIS
Supplementary Report

Figure 10 - Pipeline Alignment Deviations

Sheet 3 of 3

Cadastre

The Right of Way
(existing EIS alignment)

The Right of Way
(changed alignment)

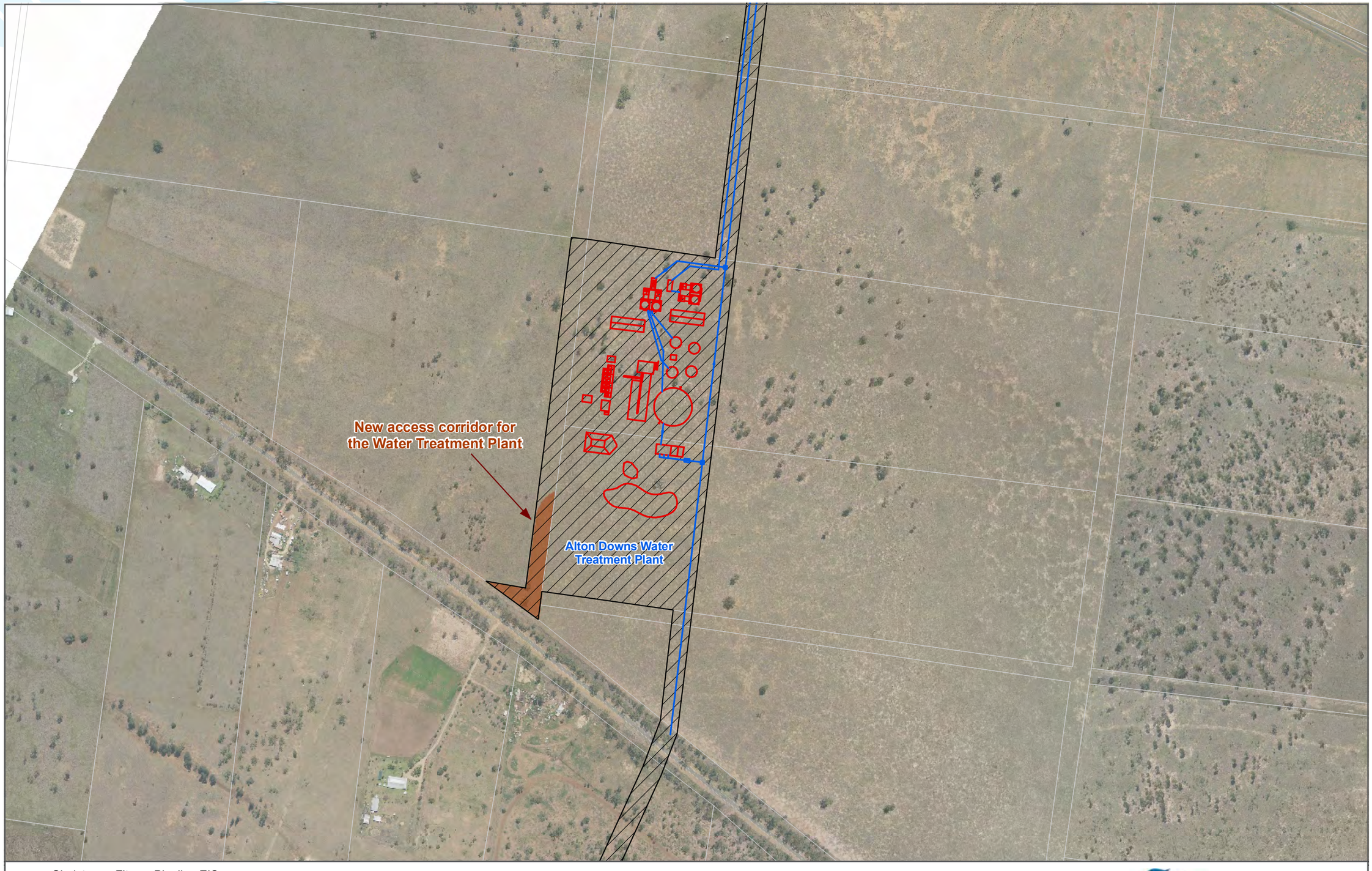
0 0.07 0.14 0.21 0.28 km

1:5,000 at A3

N

Gladstone Area Water Board

ARUP



Gladstone - Fitzroy Pipeline EIS
Supplementary Report

Figure 11 - Alton Downs Water Treatment Plant Access

Sheet 1 of 1

Cadastre
The Right of Way
Railway Line

0 50 100 150 200 250
Metres

1:20,000 at A3

N

Gladstone Area Water Board

ARUP

7.15 Page 315; "Construction in wetlands and waterways should be undertaken during the dry season (i.e. June to September) wherever possible" has been changed to **"Construction will be avoided in wetlands in the SGICSDA wherever feasible and practical. If it is not feasible and practicable to avoid construction in wetlands, construction in the SGICSDA adjacent to Yellow Chat Breeding Areas** [defined in Figure 4 of this Supplementary Report]**, and in wetlands will occur only between May and September. Construction in all wetlands and waterways other than those in the SGICSDA will be undertaken during the dry season (ie June to September) unless there is no feasible and practical alternative."**

7.16 Page 298; "Clearing of riparian vegetation should be kept to the minimum required to safely construct the pipeline and meet other environmental requirements (e.g. erosion control, spoil storage). Where possible, construction of waterway crossings should only take place during the dry season (June to September). **Construction will only occur between May and September adjacent to Yellow Chat Breeding Areas and through wetlands in the SGICSDA.**"

7.17 Page 753; "Any planned maintenance works requiring earthworks in wetlands or at creek crossings (Lion, Gavial, Inkerman, Twelve Mile, Marble, Horrigan, Raglan and Larcom Creeks) will be undertaken during dry periods where reasonably practicable" has been changed to: "**Maintenance works within the SGICSDA that are adjacent to Yellow Chat breeding areas,** [defined in Figure 4 of this Supplementary Report] **or within a wetland will occur only between May and Seoptember (this includes Gavial Creek and associated wetlands, Lagoon 2, Inkerman Creek, Twelve Mile Creek, Horrigan Creek). Any planned maintenance works requiring earthworks in wetlands or at creek crossings other than those in the SGICSDA will be undertaken during the dry season (June to September) unless there is no feasible and practical alternative.**"

7.18 Appendix E5 Noise and Vibration of the EIS was originally published with several blank pages throughout. a revised version of this Appendix has not been included within this Supplementary Report; however, the blank pages have been removed and the updated Appendix E5 is now available on the project website at http://gladstone-fitzroypipeline.com.au/.

7.19 Page 514, Column 2, Line 33; "**A review of the equipment associated with the operation of the project has identified potential sources of vibration where attenuation actions are to be considered e.g. flash mixers, centrifuges see Table 12.14.**"

7.20 Page 515, Table 5.7, Row 2; "Attended noise measurements were conducted at the Rockhampton Waterskiing and Powerboat Club located at the end of Ski Gardens Road, on the banks of the Fitzroy River. This location is on the flight path of aircraft entering/exiting Rockhampton airport – **planes regularly fly over the area during the day.**

7.21 Page 518, Table 5.8, Row 2; A noise logger was placed at 45 Ski Gardens Road, Laurel Bank. This residence is located near the SunWater operated water intake site, which only operates during night-time hours. This location is on the flight path of aeroplanes entering/exiting Rockhampton airport – **planes regularly fly over the area during the day**.

7.22 Page 522, Line 10; "Note that noise is cumulative, so if multiple pieces of equipment are being used simultaneously, the noise contribution of each piece must be taken into account. **Note that cumulative noise is calculated through logarithmic addition of all contributing sources.**"

7.23 Page 522, Column 2, Line 7; "Noise associated with the project which may be constant for periods of time include:

- Noise associated with the Fitzroy River intake pumps
- High-lift pumps in the water treatment plant at Alton Downs
- Booster pump operation at Raglan
- **Centrifuges**

7.24 Page 523, Table 12.22, Line 2; "Constant Noise Sources **at 1 metre.**"

7.25 Page 525, Column 2, Line 4 "Provided that the above mitigation strategies are implemented, it is expected that residual noise impacts to residents near the operational facilities will be minor adverse and will not exceed the noise limits. **Note that under the *Environmental Protection Regulation 2008*, water treatment is an Environmentally Relevant Activity (ERA 64). Operation of the WTP will therefore require an ERA licence. This licence is likely to specify the noise requirements for the WTP, require measurement of actual noise values after operation commences and corrective actions if non compliant.**"

8. References

Ahern CR, McElnea AE, Sullivan LA 2004, **Acid Sulfate Soils Laboratory Methods Guidelines**. Queensland Department of Natural Resources, Mines and Energy, Indooroopilly, Queensland, Australia.

ANZECC 2000, **Australian and New Zealand Guidelines for Fresh and Marine Water Quality, Volume 2, Aquatic Ecosystems Rationale and Background Information (Chapter 8)**, Australian and New Zealand Environment and Conservation Council and the Agriculture and Resource Management Council of Australia and New Zealand, Canberra.

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9. Glossary

AHD	Australian Height Datum
APIA	Australian Pipeline Industry Association
ASS	Acid Sulfate Soils
CCC	Capricorn Conservation Council
CHMP	Cultural Heritage Management Plan
CLR	Contaminated Land Register
CQRWSS	Central Queensland Regional Water Supply Strategy
dB	Decibels
DEEDI	Department of Employment, Economic Development and Innovation
DERM	Department of Environment and Resource Management
DEWHA	Department of the Environment, Water, Heritage and the Arts
DIP	Department of Infrastructure and Planning
DME	Department of Mines and Energy
DMR	Department of Main Roads
DPIF	Department of Primary Industries and Fisheries
DTMR	Department of Transport and Main Roads
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EMR	Environmental Management Register
EP Act	*Environmental Protection Act 1994*
EPA	Queensland Environmental Protection Agency
EPBC Act	Commonwealth *Environment Protection Biodiversity Conservation Act 1999*
ERA	Environmentally Relevant Activity
GAPDL	Gladstone Area Promotion and Development Limited
GAWB	Gladstone Area Water Board
GEIDB	Gladstone Economic and Industry Development Board
GIS	Geographic Information System
GPC	Gladstone Ports Corporation
GPPS	The General Purpose Pump Station
GSDA	Gladstone State Development Area
IP Act	*Integrated Planning Act 1997*
IRTM	Integrated Resource and Tenures Map
L/s	Litres per Second
m^3	Cubic metre
mm	Millimetre
MR Act	*Mineral Resources Act 1989*
MSCL	Mild Steel Concrete Lined
MTSC	Materials Transportation Corridor
NES	National Environmental Significance
NRW	Department of Natural Resources and Water
NT Act	*Native Title Act 1993*
PEP	Public Engagement Program
QR	Queensland Rail
QT	Queensland Transport
RE	Regional Ecosystem
RL	Relative Level
ROW	Right Of Way
RTB	Residue Trap Basin
SCR	State-Controlled Roads
SDA	State Development Area
SDPWO Act	*State Development and Public Works Organisation Act 1971*
SGICSDA	Stanwell Gladstone Infrastructure Corridor State Development Area
SPOS	Peroxide Oxidisable Sulfur
SPP	State Planning Policy
SRB	Stormwater Retention Basin
SWP	GAWB's Strategic Water Plan
TI Act	*Transport Infrastructure Act 1994*
ToR	Terms of Reference
VCS	Vegetation Clearing Site
VM Act	*Vegetation Management Act 1999*
WMP	Weed Management Plans
WRP	Water Resource Plan
WTP	Water Treatment Plant
WTS	Water Treatment Solids