

GLADSTONE–FITZROY **PIPELINE PROJECT** Environmental Impact Statement

Introduction



Gladstone Area
Water Board



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This information has been prepared by, or on behalf of, the Gladstone Area Water Board (GAWB) regarding the Gladstone-Fitzroy Pipeline project. Care has been taken to ensure that the information is accurate and up to date at the time of publishing.



**Gladstone Area
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1. Introduction

1.1 Environmental Impact Statement

This Environmental Impact Statement (EIS) has been prepared for the Gladstone-Fitzroy Pipeline project (the project). The proponent for the project is the Gladstone Area Water Board (GAWB). In 2007 the project was declared a significant project requiring an EIS under the Queensland *State Development and Public Works Organisation Act 1971* (SDPWO Act). The project was also declared a 'controlled action' under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for potential impacts on matters of national environmental significance. The controlling provision under the EPBC Act is listed *Threatened Species and Communities* (Sections 18 and 18A). For an assessment specifically dealing with the project's relevant matters of National Environmental Significance (Threatened Species and Ecological Communities) under the EPBC 1999 see Section 6.1 of Chapter 6, Terrestrial Flora (in summary) and Appendix G (in full).

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

The EIS has been prepared in accordance with the requirements of the Terms of Reference (ToR) for the project. The ToR was prepared by the Department of Infrastructure and Planning (DIP) under Part 4 of the Queensland SDPWO Act. The ToR was finalised in October 2007 following the required 30 day public comment period and with input from the Australian Government in relation to matters of national environmental significance. A copy of the ToR and checklist against the contents of the EIS can be found in Appendix A.

The following points outline the objectives of the EIS:

- To enable the Coordinator-General to assess the impacts of the project, in accordance with the provisions of Part 4 of the SDPWO Act
- To satisfy the requirements of the Department of Environment, Water, Heritage and the Arts (DEWHA) with respect to the species protected under the EPBC Act, specifically the Yellow Chat but including the other species listed in the ToR
- To address the requirements of other relevant local and state legislation and policy
- To identify opportunities for GAWB to enhance the social and environmental outcomes resulting from the project
- To educate and inform the public about the EIS process and the environmental values in the project area.

The EIS has been prepared in parallel with the design phase of the project, enabling environmental considerations to be included in the design (e.g. creek crossing methods) and also enabling the design aspects to be considered in the assessment of impacts.

Information available up to and including 31 May 2008 has been used in the EIS. Some additional information made available after this date has also been included in the EIS if this information assisted in better describing project related impacts. The final decision on the preferred site for the Alton Downs Water Treatment Plant (WTP) was also made after this date. The most up to date information about this site and associated changes to the pipeline route due to the site of the WTP have been included in the impact assessment.

The EIS will be open for public comment for a period of 30 business days, and comments may be forwarded to DIP by any interested person or organisation. Submissions need to include name, address and signature of the party (ies) making the submission, and include the grounds of the submission and the facts and circumstances relied on in support of the grounds.

Submissions should be addressed to the Coordinator-General and sent via:

Post

The Project Manager
Gladstone-Fitzroy Pipeline Project
Department of Infrastructure and Planning
PO Box 15009
City East
QLD 4002

Email

GFP@infrastructure.qld.gov.au

Written submissions must arrive by close of business on:
Monday 15 December, 2008.

For the submission to be accepted as a properly made submission, it should be received by the above date, state the submitters' names and addresses, be signed by all persons making the submission, and state the ground of the submission and the facts and circumstances relied upon in support of the grounds. Submissions on the EIS will be collated by DIP and if necessary addressed by the proponent in a supplementary report to the satisfaction of the Coordinator-General. The Coordinator-General will provide a copy of his Evaluation Report to the Australian Minister for the Environment. The Minister will assess the EIS and the project in respect of national environmental significance matters and make a decision under the EPBC Act. If the action is approved by the Minister, the approval will be valid for a period of four years. Other local and state approvals are also required before the project can proceed. These are outlined in section 1.9.

This introductory chapter of the EIS provides an outline of the project including the proponent (Section 1.2), an outline of the project (Section 1.3), project rationale (Section 1.4) and State Development Areas (Section 1.5), and the alternatives considered (Section 1.6). Also provided is an outline of the Environmental Impact Assessment methodology (Section 1.7), the Public Engagement Program (Section 1.8) and the other approvals required (Section 1.9).

Table 1.1 outlines the structure of the EIS. This structure is largely based on the structure of the ToR and each chapter addresses the requirements of the ToR for that discipline.

Table 1.1 Structure of the EIS

Chapter	EIS Section
	Executive Summary
Part A: Background and Project Description	
1	Introduction
1.1	Environmental Impact Statement
1.2	Project Proponent
1.3	Project Outline
1.4	Project Rationale
1.5	State Development Areas
1.6	Alternatives
1.7	The Environmental Impact Assessment Process
1.8	Public Engagement Program
1.9	Project Approvals
1.10	References
2	Description of the Project
2.1	Location
2.2	Description of the Pipeline Construction and Operation
2.3	Associated Infrastructure Requirements
2.4	Waste Management

Chapter	EIS Section
Part B: Environmental Values and Management of Impacts	
3	Climate
4	Land Use and Infrastructure
5	Soils and Contaminated Land
6	Terrestrial Flora
7	Terrestrial Fauna
8	Aquatic Flora and Fauna
9	Water Resources and Water Quality
10	Air Environment
11	Waste
12	Noise and Vibration
13	Transport and Access Arrangements
14	Cultural Heritage
15	Social and Economic Environment
16	Hazard and Risk
17	Landscape and Visual Assessment
18	Summary of Impacts
19	Sustainability Assessment
20	Environmental Management Plan
Appendix A	Terms of Reference Checklist
Appendix B	Public Engagement Report
Appendix C	Development Approvals
Appendix D	Property Line List
Appendix E	Specialist Studies
Appendix E1	Soils and Contaminated Land
Appendix E2	Terrestrial Flora
Appendix E3	Terrestrial Fauna
Appendix E4	Aquatic Flora and Fauna
Appendix E5	Noise and Vibration
Appendix F	List of Proponent Commitments
Appendix G	Potential Impacts on Matters of NES
Appendix H	Study Team

1.2 Project Proponent

Pursuant to Section 1084 of the *Water Act 2000* (*Water Act*), GAWB is a Category 1 Water Authority from 1 July 2000. GAWB is also a registered Service Provider under the *Water Act* and operates as a commercialised statutory authority with the function of carrying out water activities. GAWB is responsible to the Minister for Natural Resources and Water through a Board of Directors (the Board).

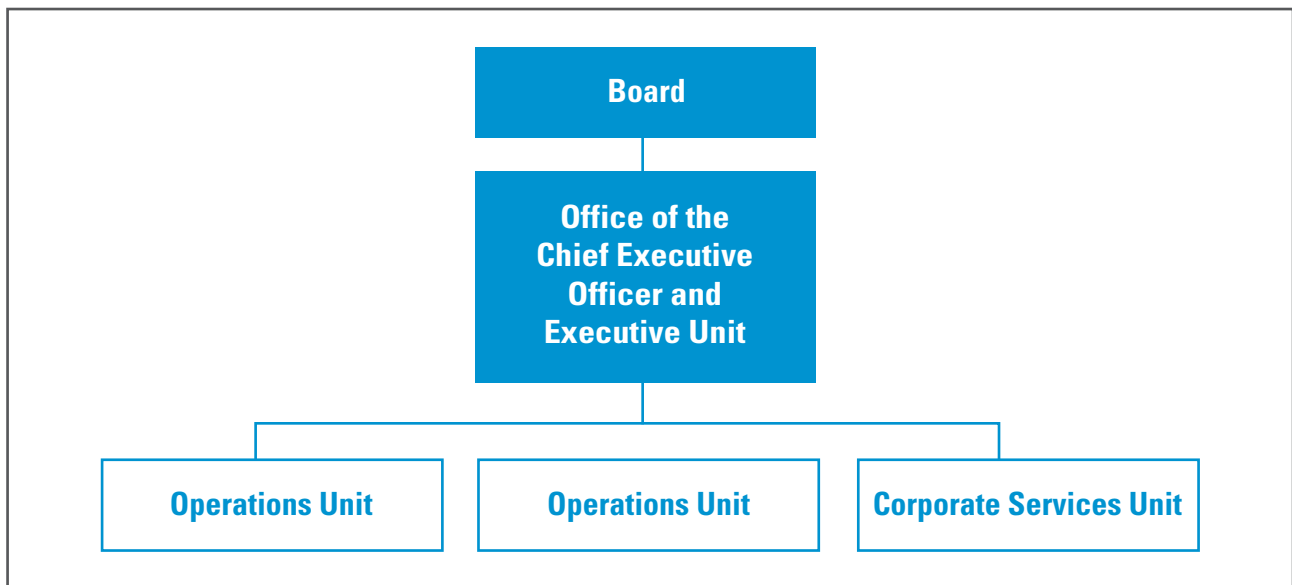
GAWB owns and operates Awoonga Dam on the Boyne River along with a network of delivery pipelines, water treatment plants and other bulk water distribution infrastructure in the Gladstone Regional Council area (formerly Gladstone City Council, Miriam Vale Shire Council and Calliope Shire Council) in Central Queensland.

GAWB holds an allocation of 78,000 ML per annum from the Boyne River by virtue of a Resource Operations Licence issued pursuant to the Boyne River Basin Water Resource Plan 2000 (Boyne River Basin). Until the Awoonga Dam is first filled to its full capacity (40 m at time of publication), GAWB's licence limits the amount of water which GAWB may take to a notional yield of about 70,000 ML per annum calculated by reference to the highest level filled to date (36.94 m at time of publication).

The main function of GAWB is to carry out the water activities determined by the Board in accordance with the requirements of the *Water Act*. These activities include but are not limited to water supply and demand management planning, responding to customer needs, development of the treated and untreated water delivery system, water quality management and regulatory management and compliance. As a government-owned monopoly business the Queensland Competition Authority (QCA) has a regulatory role in relation to GAWB's pricing and investment in new infrastructure.

The internal structure and organisation of GAWB supports a focus on service provision and the delivery of balanced water and commercial outcomes. The Board currently comprises six Directors and a Chairperson. Board appointments, including the Chairperson, are made by the Governor in Council. The Board is responsible for GAWB's overall corporate governance including strategic direction, management objectives and monitoring performance. Under the Board is the office of the Chief Executive Officer, under which are the Operations Unit, Commercial Unit and Corporate Services Unit. Positions in these units are held by personnel suitably qualified to carry out the required functions of the organisation. See Figure 1.1 GAWB Organisational Chart.

Figure 1.1 GAWB Organisational Chart
(Source: Gladstone Area Water Board, 2008)



GAWB provides both treated and untreated water to municipal and industrial customers, including large industrial operations in the Gladstone area and in the Callide Valley. Supplies to industrial customers accounted for approximately 80 percent of the total demand from Awoonga dam in 2007-08, with supplies to municipal customers accounting for approximately 20 percent.

GAWB owns and operates:

- Awoonga Dam on the Boyne River in the Gladstone Regional Council area
- Delivery pipelines for the delivery of untreated water to treatment plants and industrial customers and for delivery of treated water to the Gladstone Regional Council water reticulation systems and other industrial users
- Water treatment plants in the Gladstone Regional Council Area
- Untreated water pumping station at Awoonga and treated water pumping stations at Benaraby, Calliope, Glen Eden, Boat Creek, Gladstone Water Treatment Plant (High Lift and Low Lift) and Yarwun Water Treatment Plant
- Untreated water reservoirs at Gladstone (Fitzsimmons Street) and Toolooa, and treated water reservoirs at Boyne Island, East End, Golegumma, Mt Miller and South Gladstone
- The Lake Awoonga Recreation Area adjacent to Awoonga Dam and Boyndale Bush Camp on the western shores of the Boyne River
- Fish hatchery in Gladstone City.

GAWB operates under a Performance Plan prepared pursuant to the *Water Act*. The 2007-2008 Performance Plan describes GAWB's vision to be an excellent water business and its mission to ensure that the long and short-term needs of current and future customers are met in ways that are environmentally, socially and commercially sustainable. In carrying out its function GAWB has identified the following four key business goals which define excellence for GAWB as a water business:

- Meeting water needs – to understand, facilitate and satisfy the water requirements of current and future customers
- Commercial results – to ensure GAWB's satisfactory return on investment and build the value of the business
- Corporate citizenship – to be regarded as a responsible corporate citizen
- Capability – to ensure the organisation has the ability to carry out its mission.

Each of these goals is supported by a number of key objectives and second level objectives, measures and targets. To achieve these goals, GAWB has an integrated Quality and Environmental Management System which has been certified to AS/NZS ISO 9001:2000 (*Quality Management Systems – Requirements*) and AS/NZS ISO 14001:2004 (*Environmental management systems - Requirements with guidance for use*) respectively. GAWB

also has a Safety Management System certified to AS/NZS 4801:2001 (*Occupational health and safety management systems - Specification with guidance for use*). GAWB's management system objectives are defined in its Corporate Environment and Quality Policy (see figure 1.2) which has been adopted to support the Total Management Plan (TMP).


The TMP is the management framework which encompasses all the key aspects to meet the legislative and regulatory requirements and aspects related to the supply of water to GAWB's customers.

The Performance Plan has identified as a key objective a commitment to contribute to long-term environmental sustainability through the application of best practice in natural resource management and infrastructure development. As a performance measure for the 2007-2008 reporting year, GAWB has adopted compliance with environmental legislation and applicable standards and for the 2007-2008 year to date, has achieved a record of no breach notices with respect to its environmental obligations.

In accordance with GAWB's Environmental Management System, regular audits are carried out to ensure a commitment to continuous improvement through the implementation of corrective and preventative actions to achieve its key objective of environmental responsibility.

1.3 Project Outline

GAWB is planning for the future water needs of the Gladstone region by preparing plans to secure water within a suitable timeframe if and when additional water supply is required. As part of this forward planning, GAWB has prepared an Environmental Impact Statement (EIS) for the Gladstone-Fitzroy Pipeline project. The project involves the construction and operation of a pipeline to be built if an allocation of water from the Fitzroy River is made available to GAWB by a separate process under the *Water Act* (See Section 1.4.6 for more detail). GAWB is carrying out preparations for the project to ensure that the pipeline can be constructed within two years as soon as increased demand or low dam levels triggers the need.



As an additional source of water for GAWB, the project will be capable of extracting up to 30,000 ML of water each year (to a maximum of 100 ML per day) from the Fitzroy River at Laurel Bank. Project works include:

- An underground pipeline approximately 115 km long from Laurel Bank near Rockhampton to Yarwun just north of Gladstone, constructed within a 30 m wide corridor
- An intake and pump station on the Fitzroy River at Laurel Bank
- A water treatment plant, reservoir and pump station at Alton Downs
- A booster pump station and reservoir at Raglan
- Reservoir at Aldoga.

The pipeline route from Laurel Bank will traverse mainly freehold land and will be within the Stanwell-Gladstone Infrastructure Corridor (SGIC) for most of its length, before entering the Gladstone State Development Area (GSDA) where it will terminate at existing water infrastructure near Yarwun. Further information about the SGIC and GSDA are provided in Section 1.5

The Alton Downs WTP is required because the Fitzroy River water quality is significantly different from Awoonga water quality and would not be accepted by GAWB's customers in its raw state. In particular the turbidity of Fitzroy River water is highly variable, on average around 100 times higher than water drawn from Awoonga Dam. Treating the water will significantly reduce the need for pipeline cleaning and enable water of a similar quality to Awoonga Dam water to be supplied directly to customers through the existing Gladstone raw water supply network. Customers may receive water from either source, or a mixture of both, the proportion of water from each source will vary depending mainly on the location of the customer's connection into the Gladstone network, as well as fluctuations in network demands and day to day operational requirements. Treated river water will mix with water supplied from Awoonga Dam within the raw water network, however the design ensures that it is not possible for Fitzroy River water to enter Awoonga Dam.

The pipeline alignment and proposed sites for the associated infrastructure are shown in Figure 1.3 and a detailed description is provided in Chapter 2, Project Description.

1.4 Project Rationale

The following sections provide information on the planning and need for the project, including water supply planning, water demands, drought and water pricing.

1.4.1 Water Supply Planning

Awoonga Dam was commissioned in 1985 immediately downstream of the old weir which is now submerged in Lake Awoonga. GAWB completed the raising of Awoonga Dam to 40 m Australian Height Datum (AHD) in June 2002, resulting in a storage capacity of 770,000 ML. Until the raised dam first overtops, GAWB's water entitlement is 70,000 ML per annum. GAWB's water allocation will increase by approximately 2,500 ML per annum for every metre increase in the maximum water level recorded up to the current 40 m AHD spillway height.

GAWB's water allocation is based on achieving 100% monthly reliability (the Water Allocation Security Objective as set out in the *Boyne River Basin Plan, 2000*). At this level of reliability (known as Historic No Failure Yield (HNFY)) the yield of the dam for the period for which records exist, that dam would not have reached its dead storage level (i.e. run dry).

Whilst 100 percent monthly reliability has traditionally been a benchmark for determining available water supplies to metropolitan and industrial users, it is an assessment of how a dam would behave based on the historical inflows. It does not provide certainty about how a dam will behave in the future.

In 2003, in response to a trend of declining rainfall and increasing demand for water, GAWB initiated a Strategic Water Planning Project. The report produced in November 2004 ('Securing the Gladstone Region's Future: Water, Final Report of GAWB's Strategic Planning Project'), was a collaborative effort between GAWB, government, industry and the community, became known as the Strategic Water Plan (SWP).

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'). Further discussion of the alternatives considered in the SWP is provided in Section 1.6.1.1.

The Gladstone-Fitzroy Pipeline is the major vehicle for the present delivery of the contingent supply strategy (CSS) of water supply from the lower Fitzroy River. 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), either due to increased demand or drought scenarios.

The Central Queensland Regional Water Supply Strategy (CQRWSS) was developed in a process that was initiated in 2003 by the then Department of Natural Resources and Mines (now Department of Natural Resources and Water (DNRW)) in response to the prolonged drought in Central Queensland, from

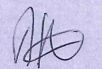
Corporate Environment and Quality Policy

The Gladstone Area Water Board's key objective for environment and quality is to contribute to long term environmental sustainability through the application of best practice in natural resource management and infrastructure development.

In fulfilling our obligations as a category 1 Water Authority and registered service provider under the *Water Act 2000*, we will:

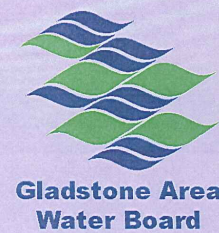
- **Comply** with applicable laws, regulations, statutory obligations and other requirements to which the organisation subscribes;
- Implement and maintain a program of *continual improvement* to ensure the efficiency and effectiveness of our systems;
- *Periodically review and revise policies, procedures, objectives and targets* to ensure relevance is maintained;
- *Communicate our policies and procedures* to all employees, key stakeholders, sub-contractors, consultants and suppliers, where appropriate, to ensure they are aware and understand their obligations in relation to our operations;
- *Maintain Environmental (ISO14001:2004), Quality (ISO9001:2000) and Risk Management Systems and Procedures* appropriate to the nature and scale of our operations and regularly monitor performance.

We will not be satisfied until our product is safe and our commitment to reducing pollutants and protecting the natural environment are unmatched.



CHIEF EXECUTIVE
Gladstone Area Water Board

Rev 5 Rev Date 11/10/07

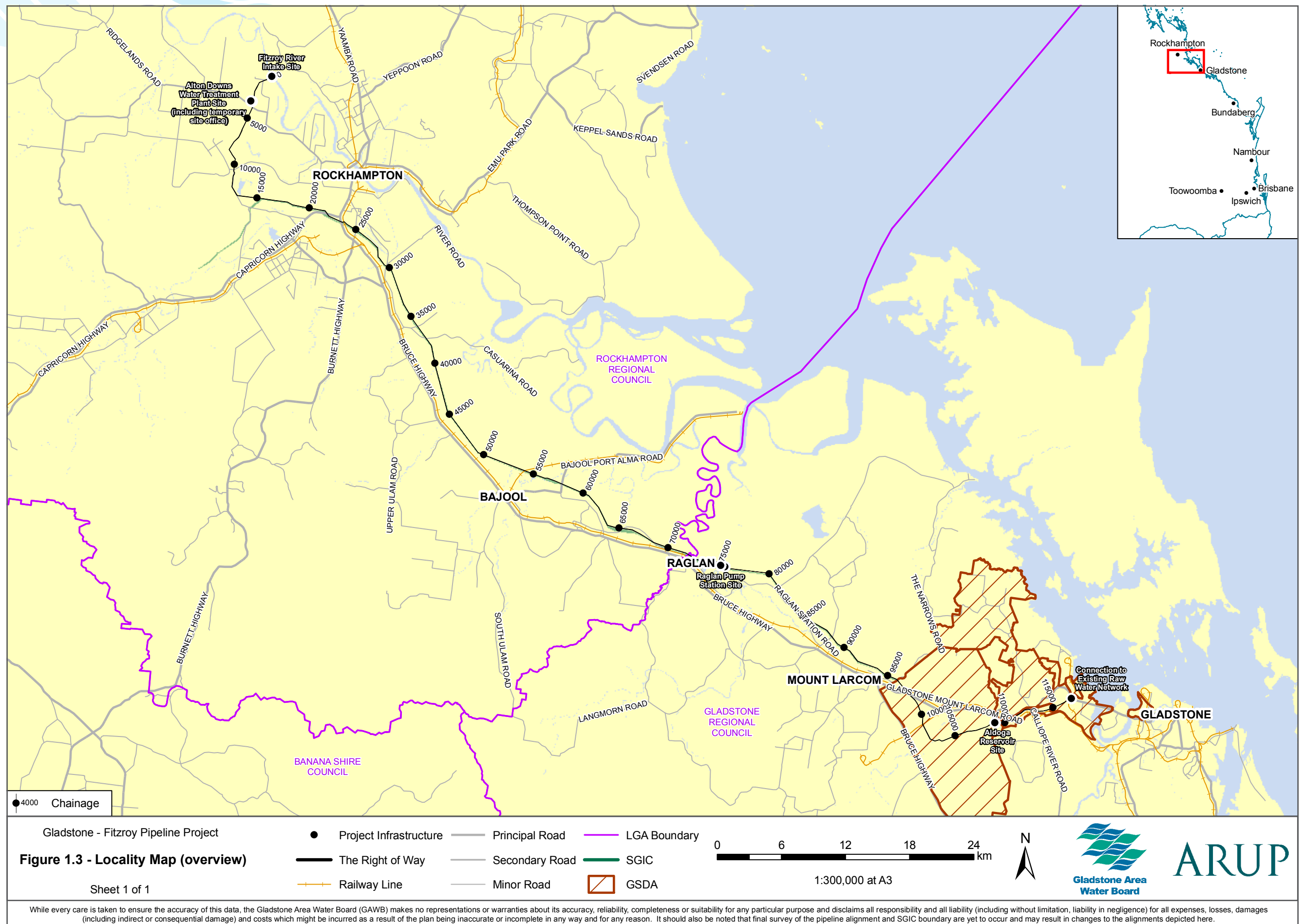


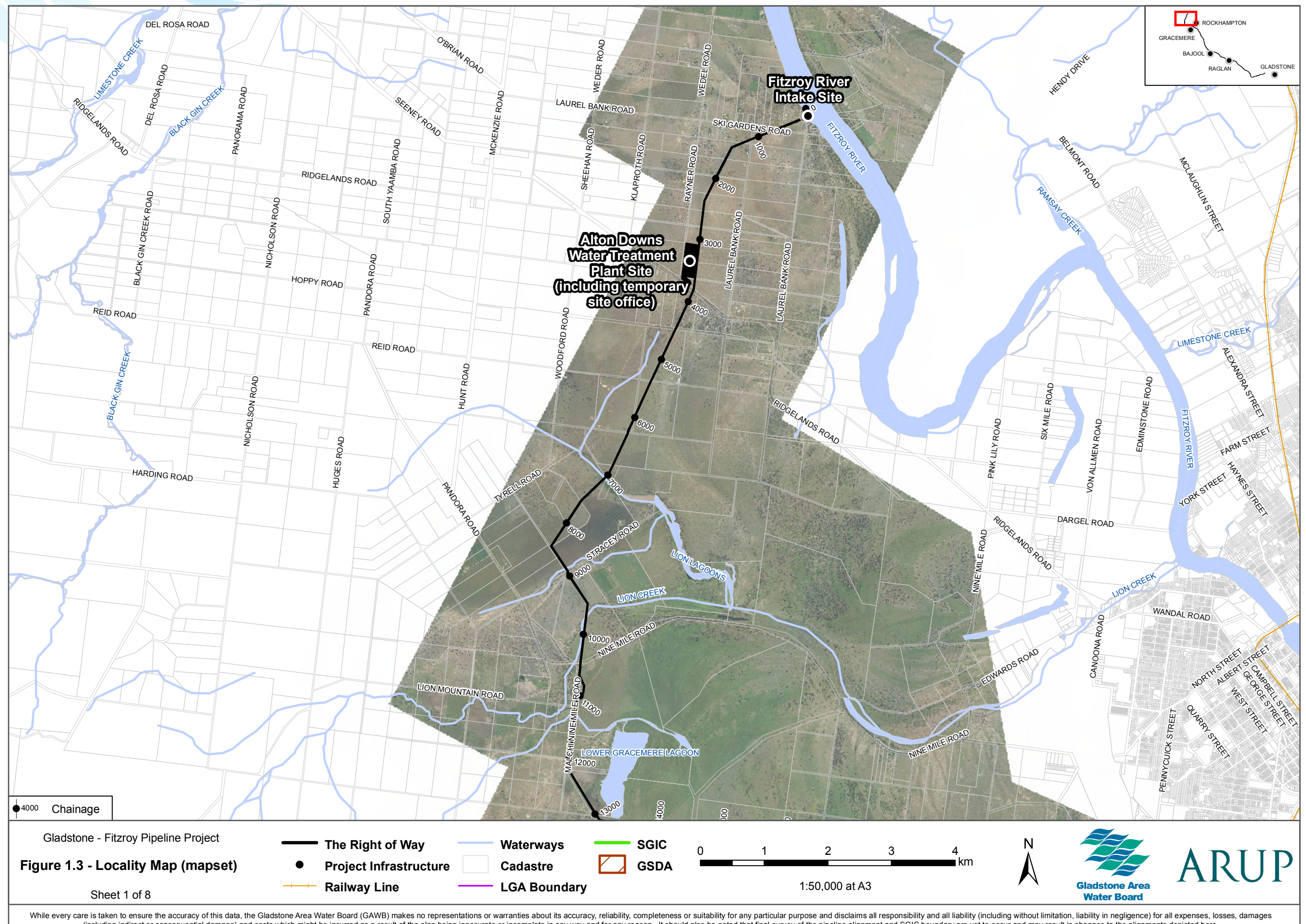
Gladstone - Fitzroy Pipeline Project
**Figure 1.2 - Corporate Environmental
and Quality Policy**

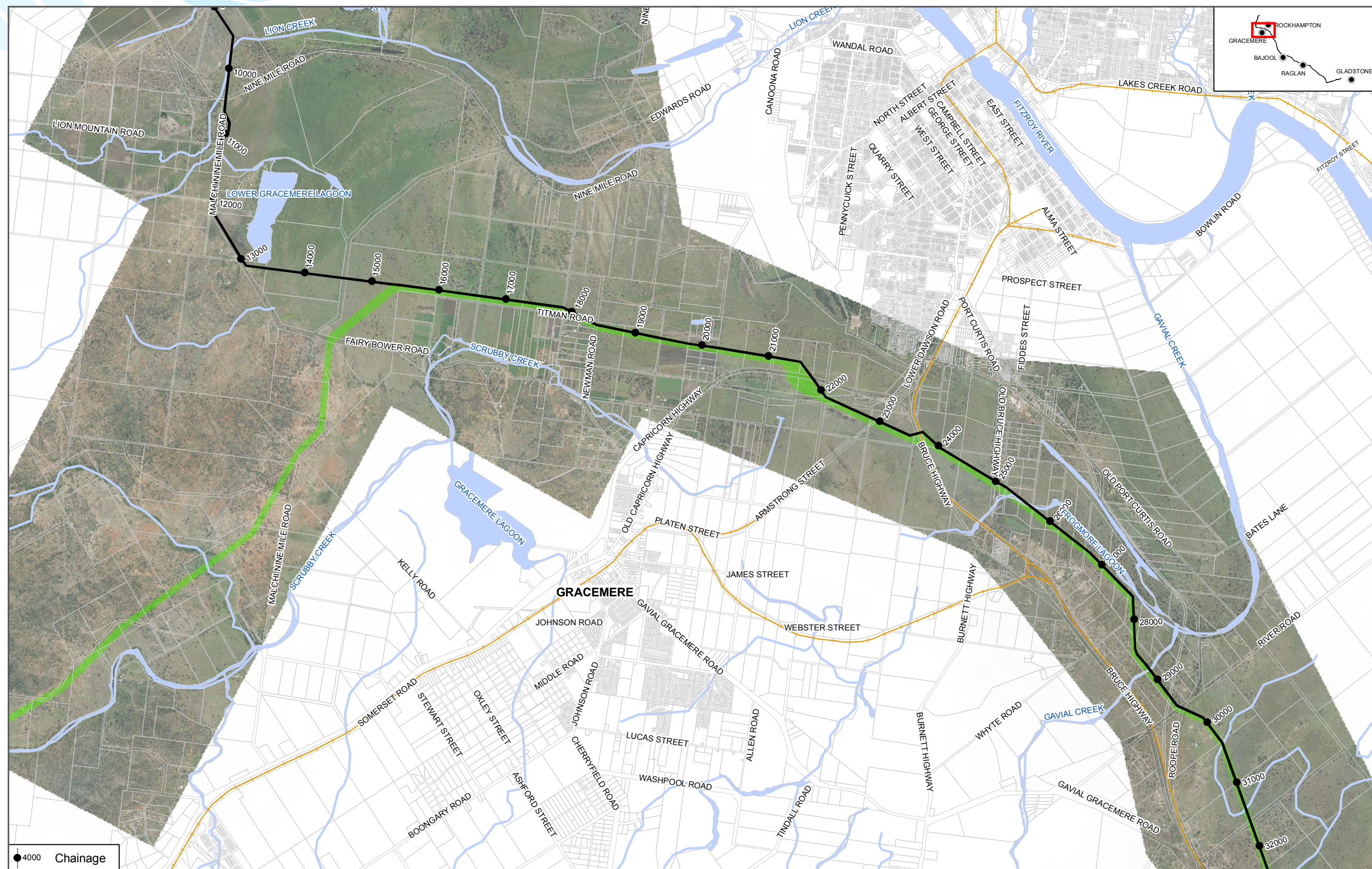
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Gladstone - Fitzroy Pipeline Project

Figure 1.3 - Locality Map (mapset)

Sheet 2 of 8

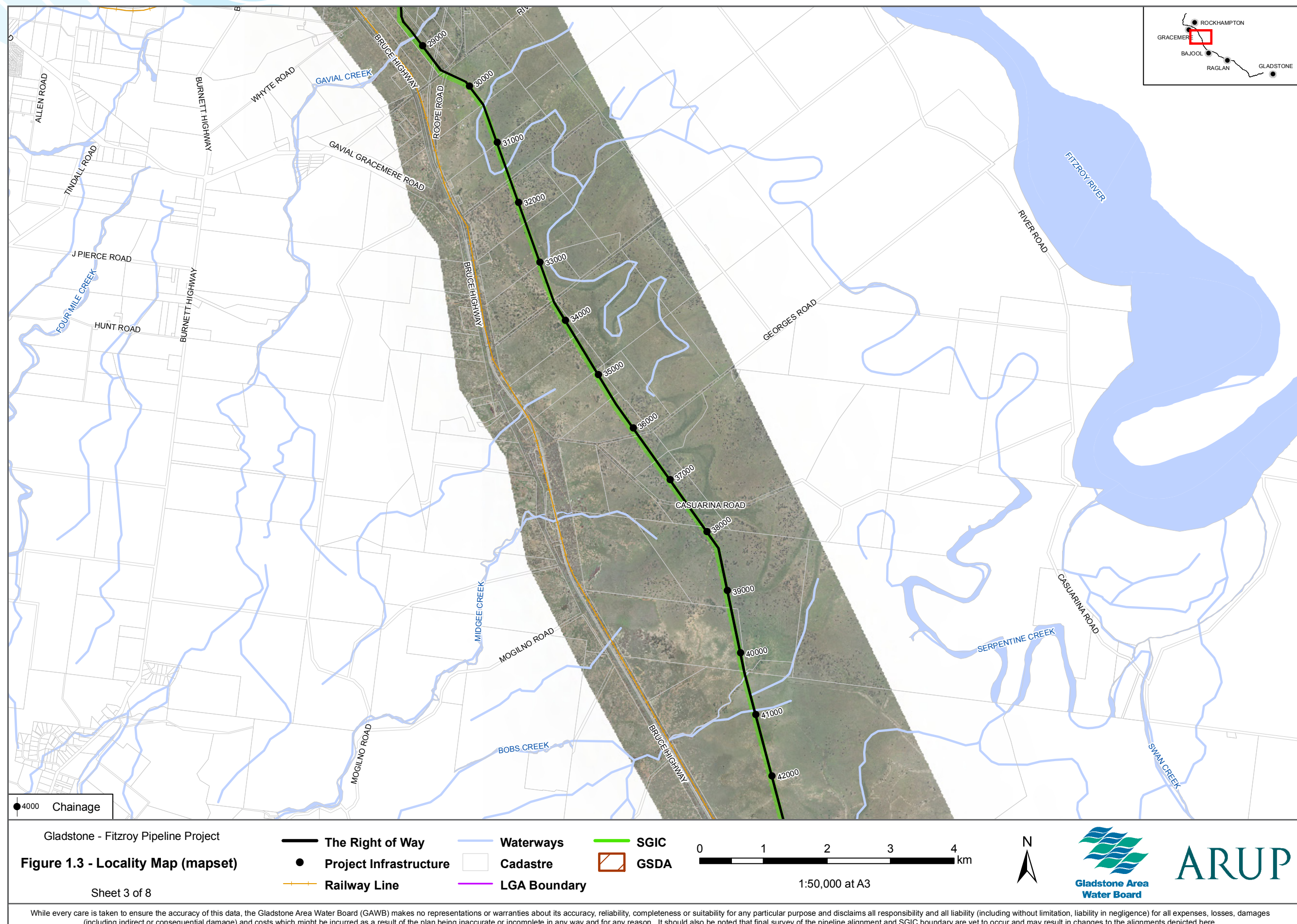
 The Right of Way	 Waterways	 SGIC
 Project Infrastructure	 Cadastre	 GSDA
 Railway Line	 LGA Boundary	

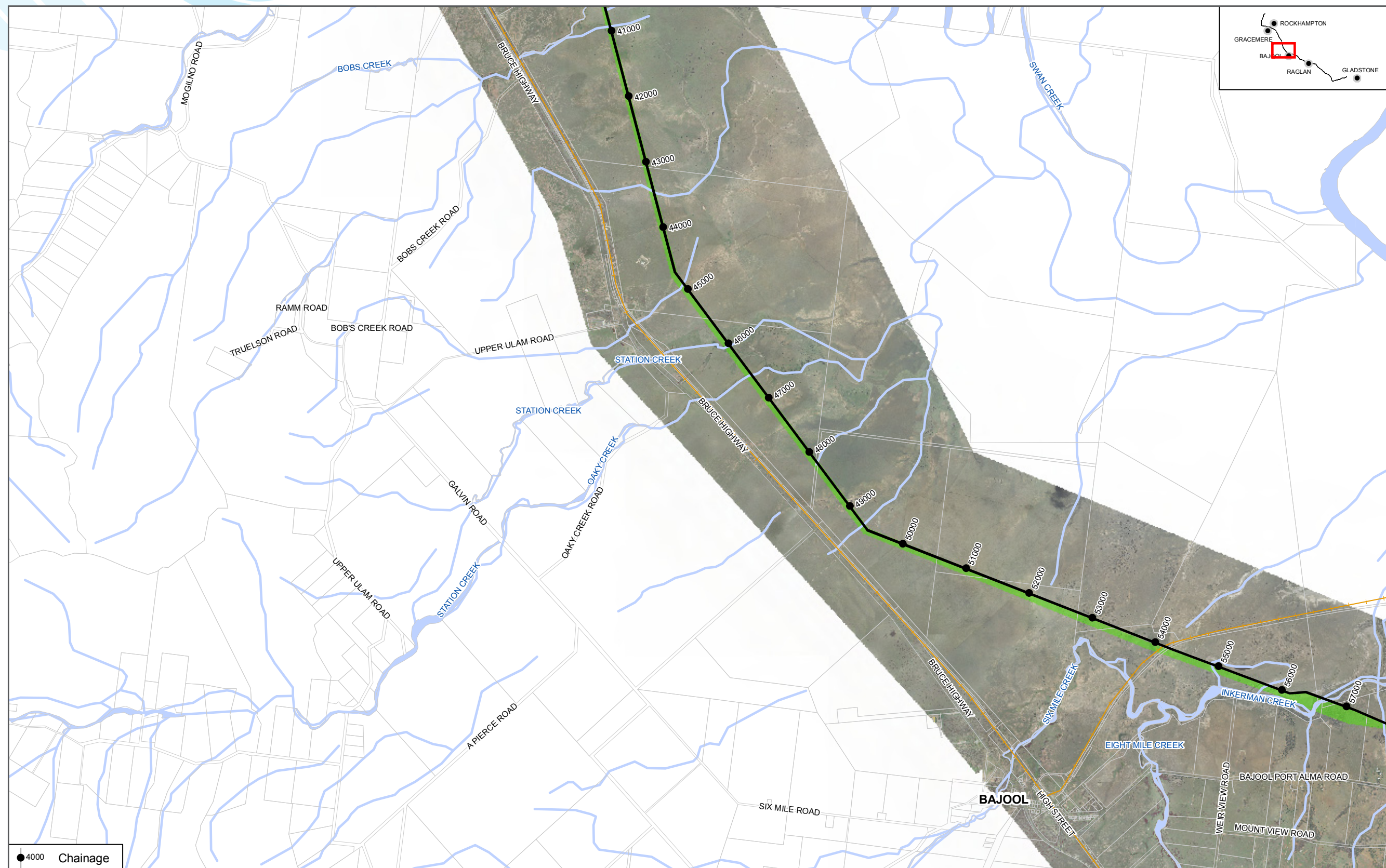
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Gladstone - Fitzroy Pipeline Project

Figure 1.3 - Locality Map (mapset)

Sheet 4 of 8

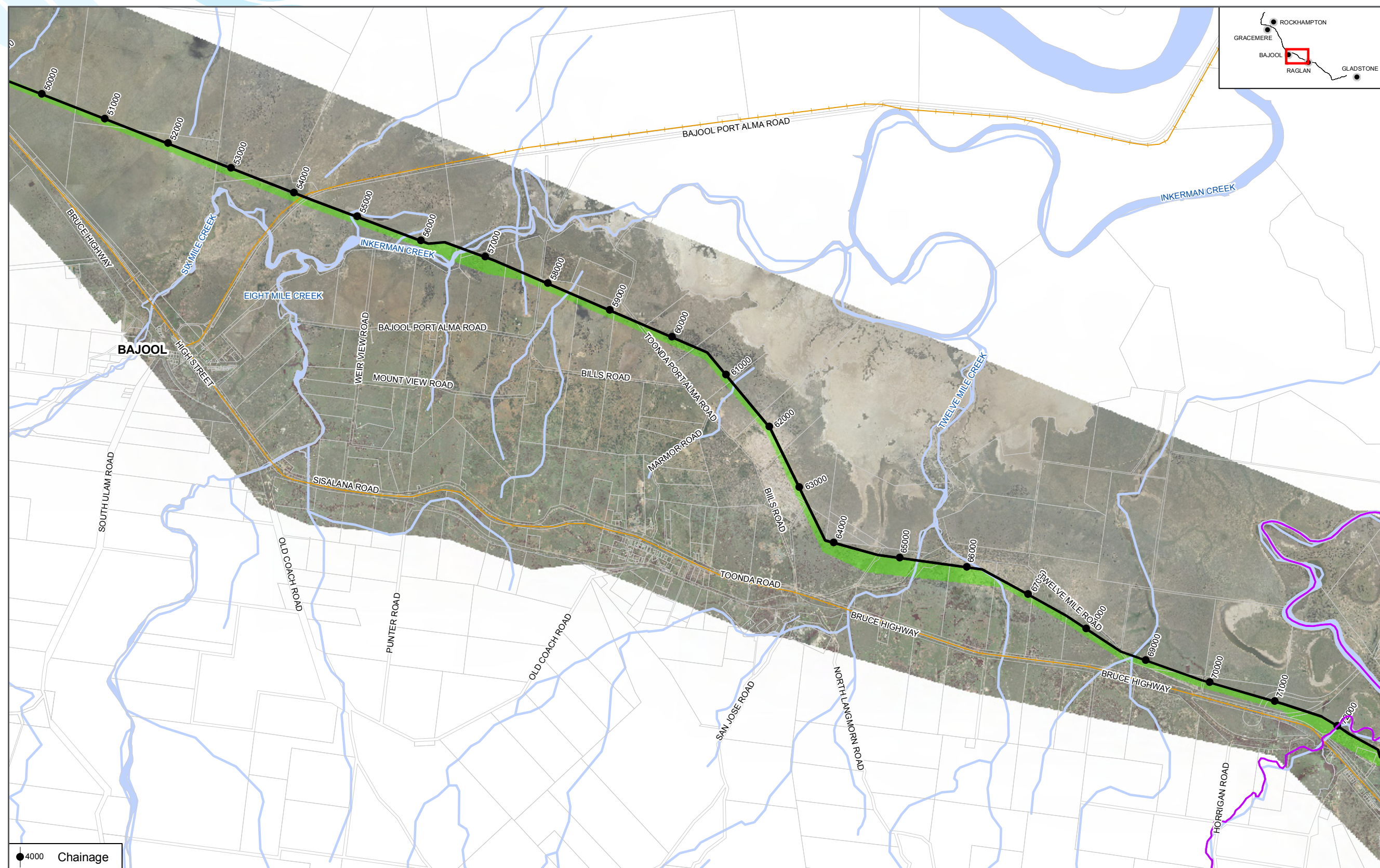
— The Right of Way	— Waterways	— SGIC
● Project Infrastructure	 Cadastre	 GSDA
— Railway Line	— LGA Boundary	

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Gladstone - Fitzroy Pipeline Project

Figure 1.3 - Locality Map (mapset)

Sheet 5 of 8

— The Right of Way	— Waterways	— SGIC
● Project Infrastructure	 Cadastre	 GSDA
— Railway Line	— LGA Boundary	

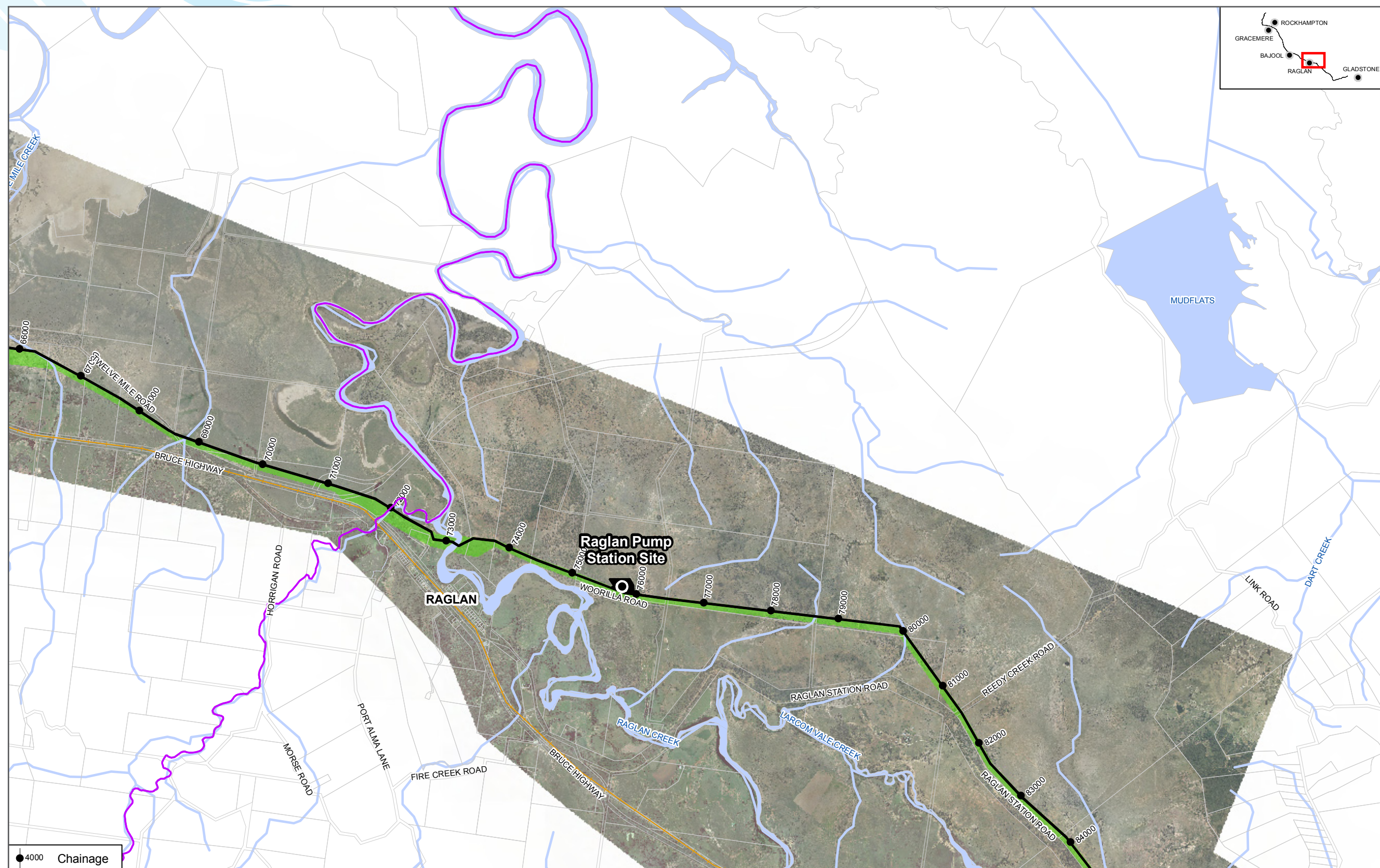
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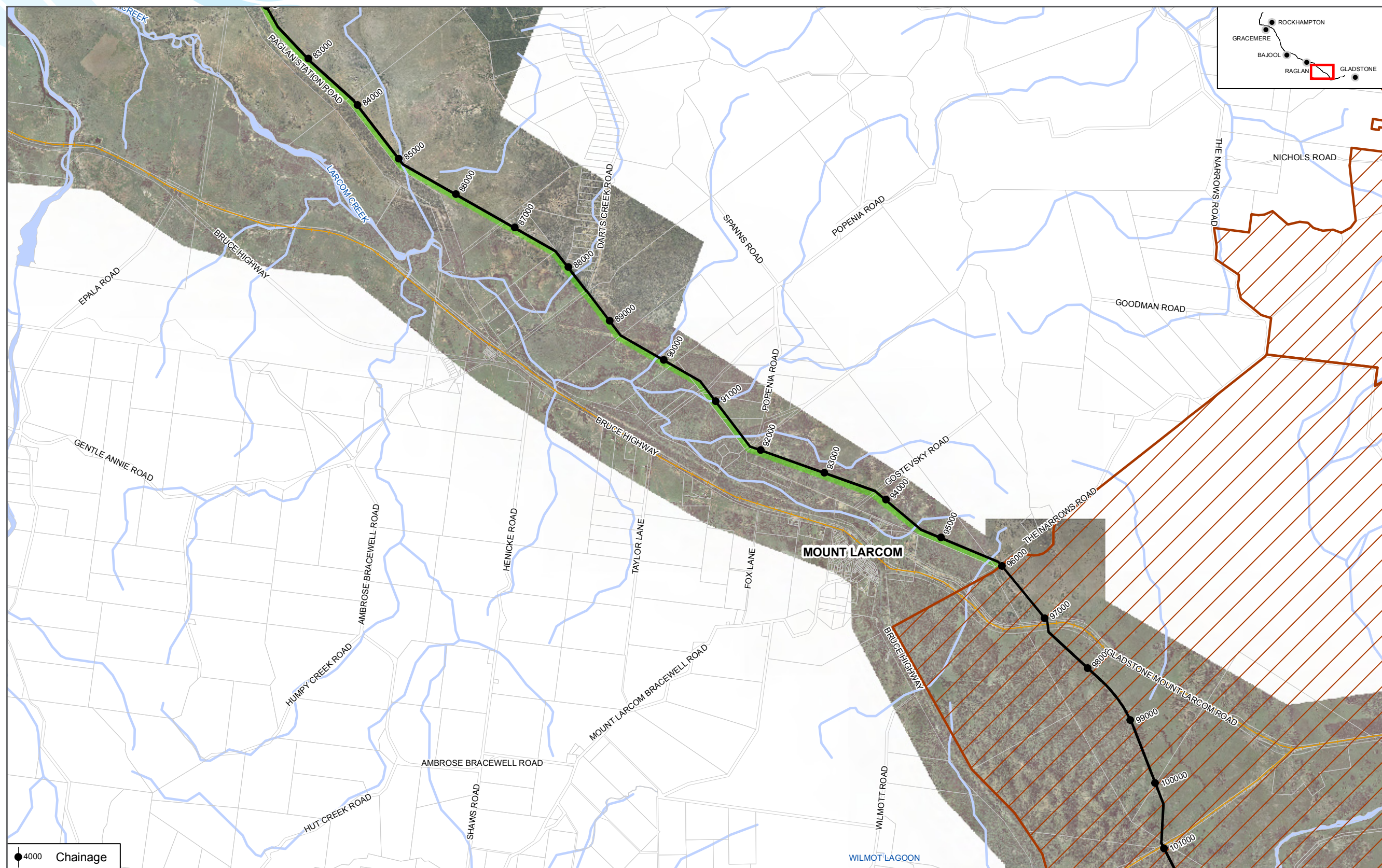


Gladstone - Fitzroy Pipeline Project

Figure 1.3 - Locality Map (mapset)

Sheet 6 of 8

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Gladstone - Fitzroy Pipeline Project

Figure 1.3 - Locality Map (mapset)

Sheet 7 of 8

— The Right of Way	— Waterways	— SGIC
● Project Infrastructure	 Cadastre	 GSDA
— Railway Line	— LGA Boundary	

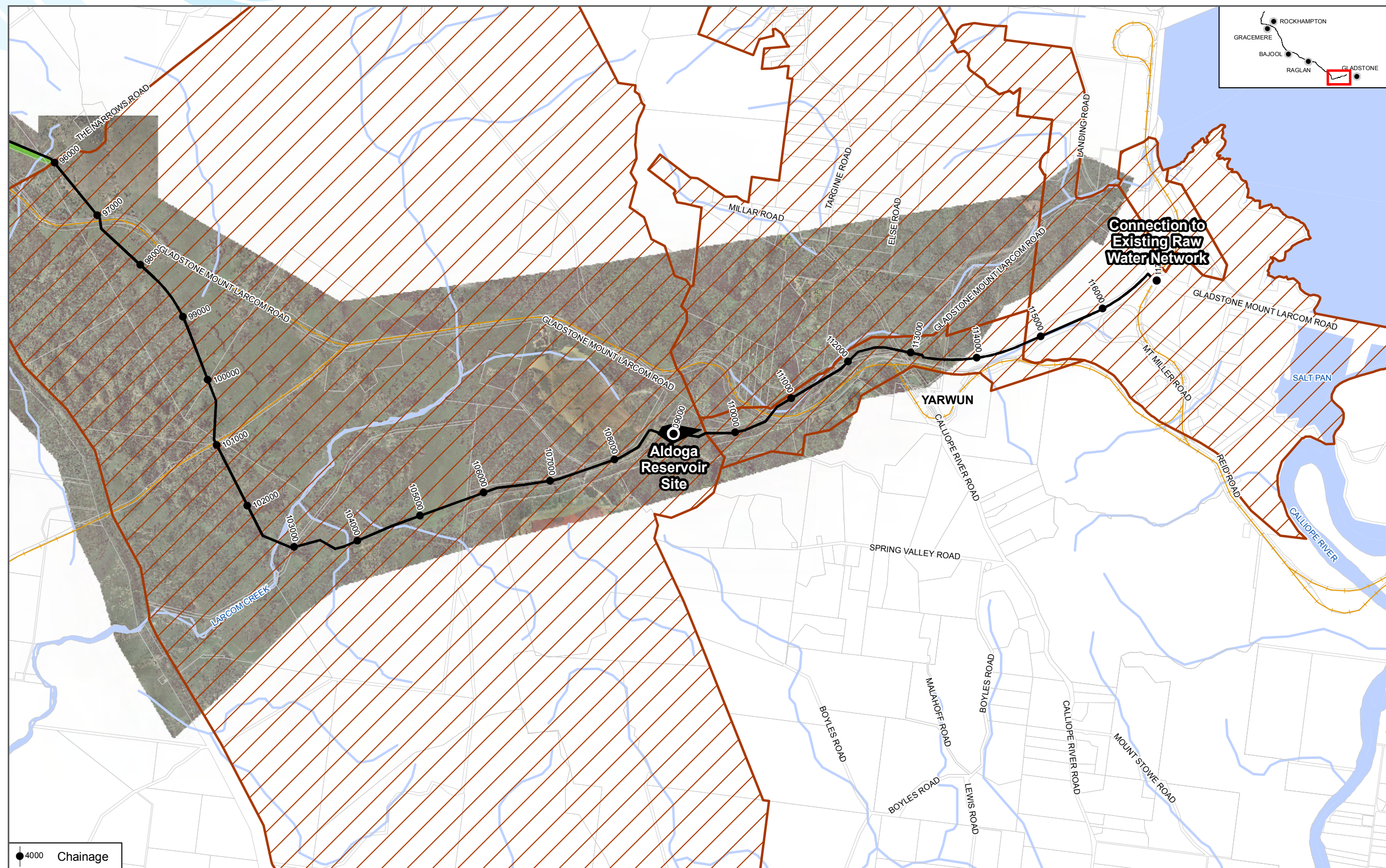
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Gladstone - Fitzroy Pipeline Project

Figure 1.3 - Locality Map (mapset)

Sheet 8 of 8

— The Right of Way	— Waterways	— SGIC
● Project Infrastructure	 Cadastre	 GSDA
— Railway Line	— LGA Boundary	

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which it was evident that a regional, whole-of-government approach was the most efficient way of meeting the region's water supply challenges. GAWB's SWP was considered by DNRW in the course of the development of this strategy.

The CQRWSS was publically released in December 2006. It recommends that the Fitzroy Basin Resources Operations Plan may be amended to include a reservation of up to 30,000 ML per annum of high reliability water from the unallocated water available from the Fitzroy River, identified in the *Fitzroy Basin Resources Operations Plan*, to GAWB to improve reliability for industrial customers in Gladstone. This allocation is contingent upon the construction of additional in-stream storage. The CQRWSS also specifically identifies the need for a pipeline to transport this water to Gladstone from the Fitzroy River.

GAWB's planning process is not static, and long-term options continue to be assessed based on different demand and supply scenarios. For example, GAWB is currently conducting preliminary investigations into a desalination plant in Gladstone.

1.4.2 Demand

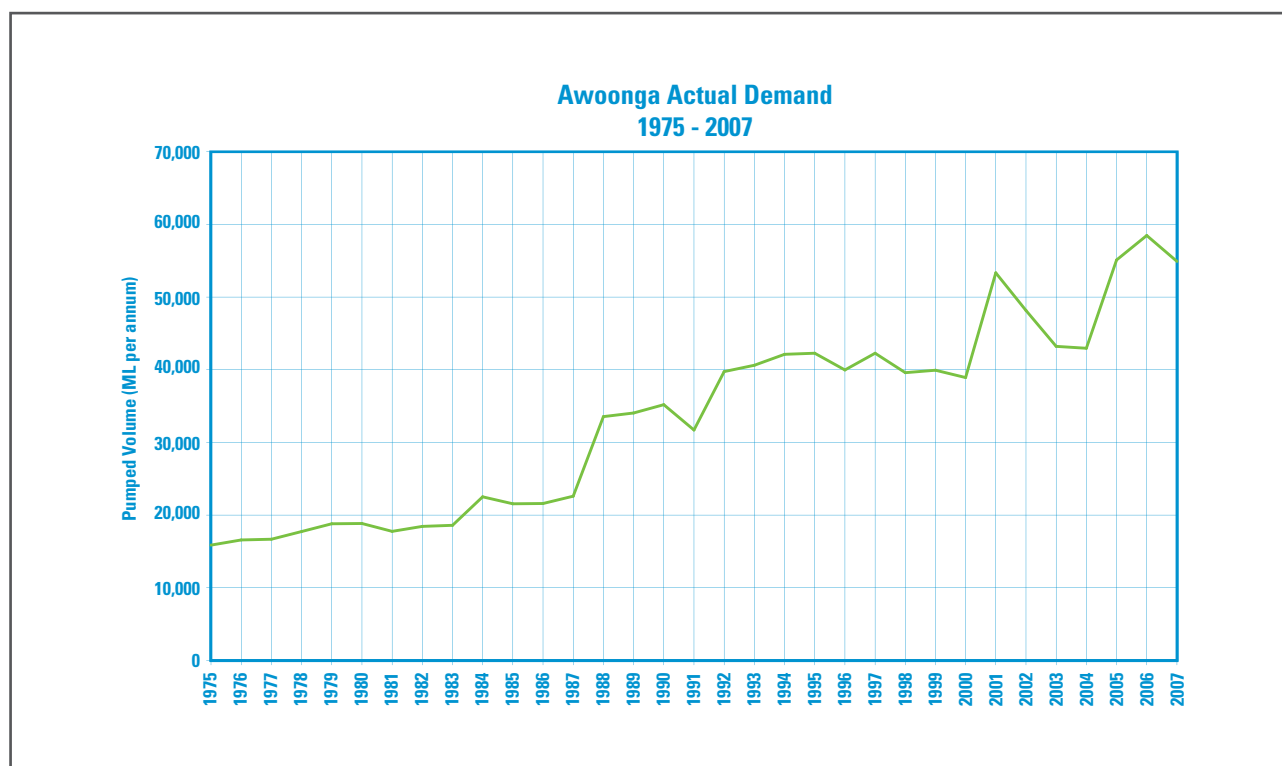
GAWB is currently contracted to supply some 55,000 ML per annum. Unlike most regions in Australia, at least 80 percent of this water is required to service major industry.

Both raw and treated water are supplied to industrial customers. Supplies to the Gladstone Regional Council accounted for approximately 20 percent of total demand to service residential and commercial customers.

Gladstone is a rapidly growing industrial centre of national significance due to the availability of a number of key resources and infrastructure including port, energy, rail and water. The region is promoted by the Queensland Government as an internationally competitive industrial hub. A number of major industrial developments (with major water requirements) are currently being considered by various proponents and it is therefore expected that growth in industrial demand will continue into the foreseeable future.

The composition of GAWB's customer base has meant that the growth in demand over time has occurred in large increments based on major new industrial water users commencing operations in the region. Figure 1.4 sets out historic water demand. This stepwise pattern of increase in demand is characteristic of significant industrial developments and is therefore expected to continue into the future.

Figure 1.4 Awoonga actual demand, 1975 – 2007
(Source: Gladstone Area Water Board, 2008)



Whilst many industrial developments may be under investigation at any time, there is little or no certainty of them proceeding until final decisions are made (e.g. financial close for major projects). Conversely, new developments may require certainty over their access to water and hence seek commitments from GAWB that require demand to be met at the required time. Undertaking relatively low cost preparatory works which significantly shorten the time for project implementation as per GAWB's contingent supply strategy is therefore a prudent response.

1.4.3 Drought

Although there is a large storage at Awoonga Dam, inflows into the dam (Figure 1.5) are irregular with GAWB's allocation relying upon major inflows that sustain supplies for a number of years – this is partly attributable to the relatively small size of the Boyne catchment.

Inflows for the three years 2004-2007 were 66 percent lower than the average of the worst 10-year historical sequence and set a new, worst three-year sequence of inflows in the historical record. The worst 10-year sequence on record was itself generated in the drought ending in 2003. The effect of both of these droughts on storage levels in Awoonga Dam is illustrated in Figure 1.6.

In February 2008 significant inflows (approximately 190,000 ML) were recorded into Awoonga Dam. This provided approximately two years of additional supply under worst on record conditions, at current levels of demand, and allowed GAWB to lift the Low Supply Alert that had been in place since July 2007.

Figure 1.5 Lake Awoonga (previously weir until 1985) Inflows, 1900 –May 2008
(Source: Gladstone Area Water Board, 2008)

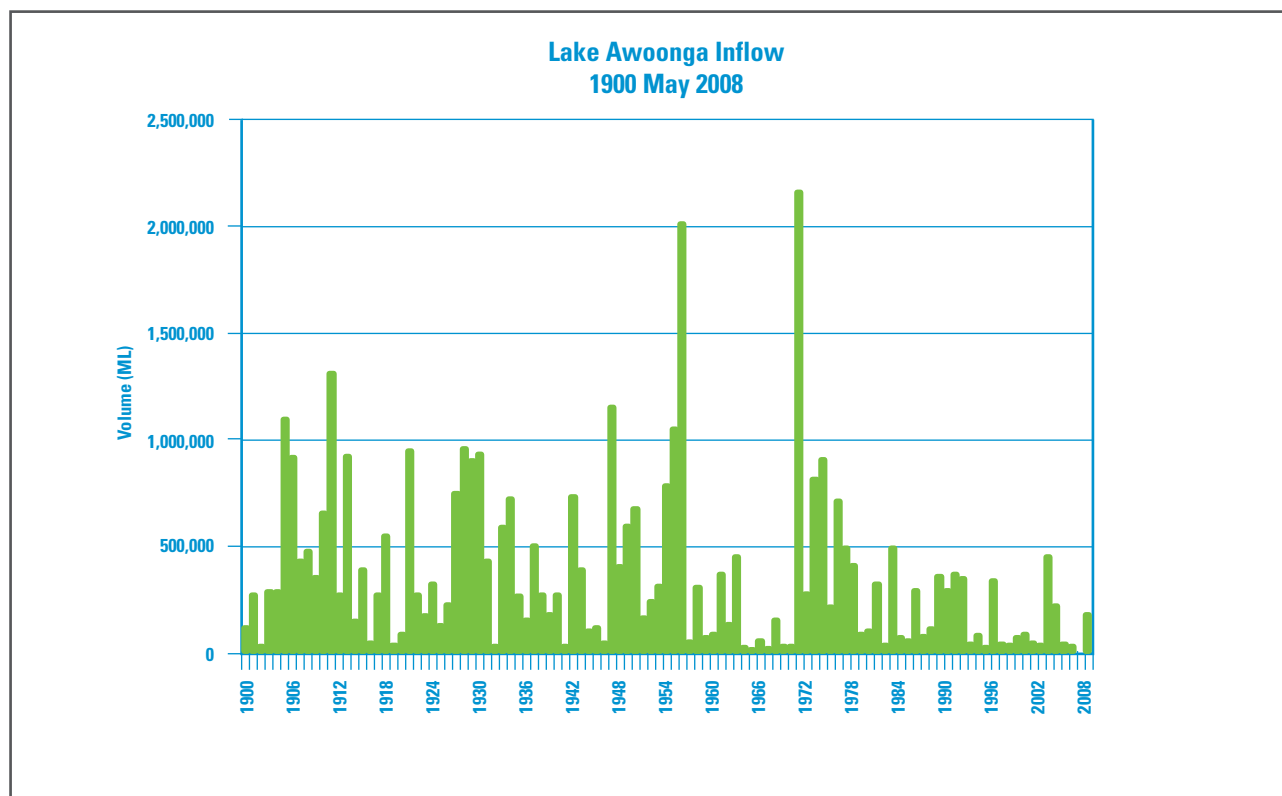
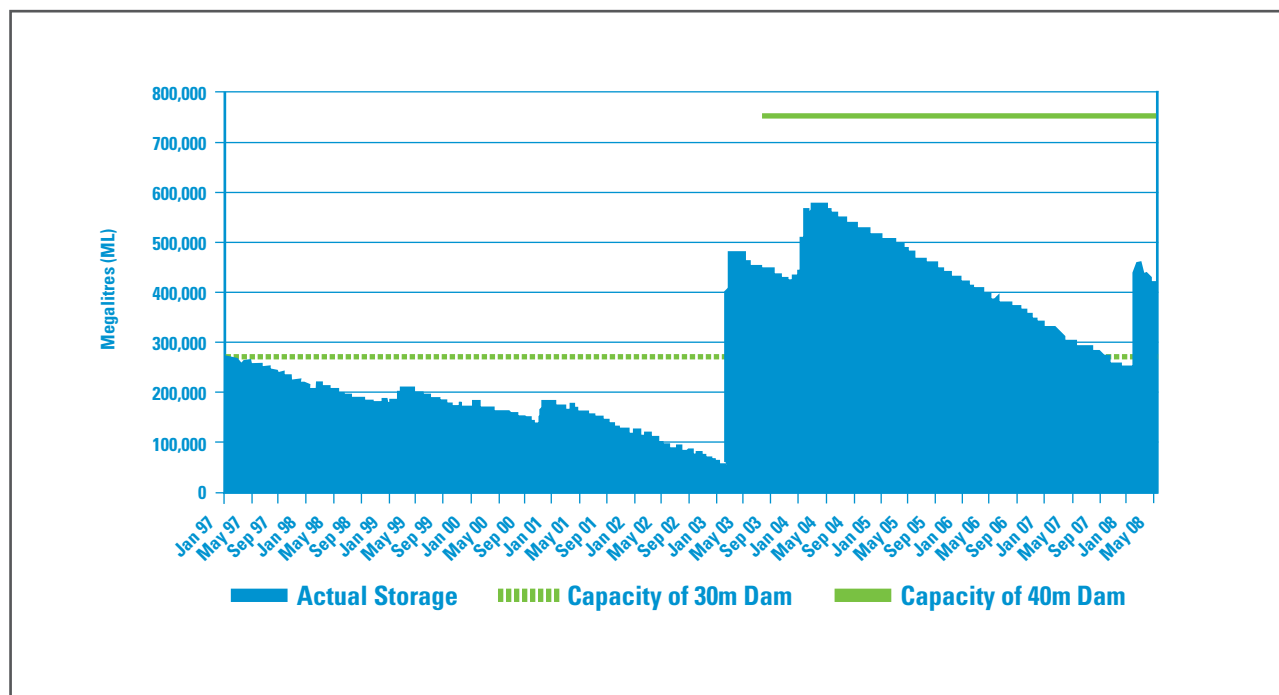


Figure 1.6 Lake Awoonga Storage Capacity, at End of Month January 1997 – May 2008
(Source: Gladstone Area Water Board, 2008)



1.4.4 Need for the project

Given the potential for sudden increases in demand over time, and uncertainty surrounding major industrial projects that are in the feasibility stage, it is not possible to accurately forecast future demand. Moreover, previous forecasts based largely on subjective assessments of the likelihood of projects proceeding, and the period and volumes of water they ultimately require, have not corresponded with actual demand.


A prudent water supplier should have in place plans to supply reasonably expected demand growth. In the context of GAWB's uncertain, yet stepwise, demand environment this involves either holding more spare capacity than would otherwise be required or having contingent supply plans in place to cope with large demand increments.

GAWB's allocation is determined by hydrologic assessment of sustainable yield from Awoonga Dam. GAWB is unable to commit to supply obligations that would result in exceeding its water allocation from Awoonga Dam. As described above, the Boyne River Basin Plan sets a benchmark performance for this allocation based on the HNFY of Awoonga Dam. The subsequent Boyne River Basin Resource Operations Plan (ROP) approved and implemented by DNRW determined GAWB's water entitlements accordingly. The ROP details operating rules for water infrastructure and other management rules that will be applied in the day-to-day management of water supplies, taking into account human needs and ecosystems.

This HNFY is dependent upon volumes that could be supplied to sustain the worst period of inflows into Awoonga Dam, taken over a historic sequence of storage inflows (the critical period). The HNFY will reduce upon the occurrence of a new critical period (that is a series of inflows that is worse than that previously believed to have occurred). This risk is asymmetric, that is, HNFY will never increase as a result of changes to inflow profile given the critical period is the determining parameter. Indeed, a number of downward revisions have already been made since the early 1990s.

Based on the HNFY, the allocations available from Awoonga Dam may be reduced if a new critical period occurs as in 1993-2003 when yield was reassessed down from 87,900 ML to 78,000 ML. This matter will be considered when the *Boyne River Basin Water Resources Plan* is reviewed by DNRW in 2011.

Furthermore, GAWB can only access the entirety of its second tranche entitlement of some 15,000 ML once Awoonga Dam fills to 40 m, the maximum level of the dam. To date the dam has only reached a level that has triggered 7,000 ML of this 15,000 ML to become available. That is, GAWB's total water allocation is now 70,000 ML.



In summary, supply variability (and uncertainty) presents itself to GAWB in the following ways:

- Through potential reduction of the HNFY as new critical periods occur
- Through provisions of the ROP, which limits GAWB's ability to supply the additional 8,000 ML of water from the 40 m raising until such time as Awoonga Dam fills to requisite levels. Given the maximum storage level since the raising, GAWB has an allocation available of only 70,000 ML of the total 78,000 ML potentially available.

The CQRWSS (DNRW 2006), after considering the demand-supply issues for Gladstone, concluded that:

'...It is expected that the majority of the area's additional urban and industrial demands in the longer term will be met from the Lower-Mackenzie-Fitzroy River system via a pump station pipeline system linking the Fitzroy Barrage storage to the Gladstone Area Water Board's reticulation system. The possible timing of these developments would be a matter for the board to consider...'

Importantly, the CQRWSS expressly provides for the Fitzroy ROP to reserve up to 30,000 ML per annum of water from the Lower Fitzroy for urban and industrial purposes for GAWB. The Fitzroy Water Resource Planning process to be conducted DNRW will undertake an environmental assessment prior to making a water allocation under the Queensland *Water Act*, which would then be incorporated into the Fitzroy Basin Water Resource Plan and ROP.

Given all of the above, there are three key platforms supporting the need for GAWB to undertake detailed augmentation planning and investigations for the project, including the need to secure environmental approvals:

- As a drought response and contingency measure
- In order to meet the likely sudden increments in demand associated with new industrial developments in the Gladstone region
- To respond to lower expectations of the performance of Awoonga Dam in supplying required water allocations, which has impacts both in terms of drought and demand responses.

1.4.5 Benefits and Costs of the Project

The economic costs and benefits of the project are outlined in Chapter 15, Social and Economic Environment. The project will have a direct economic benefit to the regional economy, with beneficial flow-on impacts on the State and national economies. The project will also generate jobs in the local region, with further jobs attributable to the project created at a State and national level.

A summary of benefits and impacts is also provided in Chapter 18, Summary of Impacts and Cumulative Effects.

In summary, the key benefits of the project include:

- Provision of efficient infrastructure to enable water supply, from the Fitzroy River to Gladstone industries contributing to the economic growth of the region
- Direct economic contribution of the project to the local, state and national economies during construction and operation.

Flow on benefits include:

- Provision of employment opportunities in the Rockhampton and Gladstone regions
- Possible future provision for bulk water supply to local authorities along the pipeline route.

Social impacts including community disruption, related land use changes, employment, skills development and any workforce accommodation issues are outlined in Chapter 15, Social and Economic Environment, and in Chapter 4, Land Use and Infrastructure.

The impact of the project on water pricing is described in Section 1.4.7.

1.4.6 Access to Fitzroy River Water

The Queensland Government's Statewide 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 and which includes this project.

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 the raising the Eden Bann weir, on the lower Fitzroy River, which will then be used to select a preferred option or options for the development of a final business case. The business case will outline the case for building either or both weirs. Depending on whether the project(s) go ahead will determine the level of monetary commitment to the project(s). The weirs were identified in the CQRWSS as being required to meet future

demands for water in the region and to Gladstone, and the allocation of water, if made, would likely be sourced from the development of the weirs.

The Government has directed Rockhampton Regional Council, GAWB and SunWater to form the Lower Fitzroy Water Joint Venture. At the time of writing, the joint venture had not yet been formed.

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 project. Whilst the project is linked to the proposed weirs, the assessment of environmental impacts for the weirs is outside the scope of the ToR for this project.

1.4.7 Water pricing

GAWB's prices are determined in accordance with pricing principles that are based on recommendations of the QCA and accepted by the QCA Ministers (the Premier and Treasurer). The principles comply with the National Water Initiative (NWI) that was agreed by the Commonwealth and all State governments. The NWI emphasises the importance of cost reflective pricing.

These principles involve GAWB in its prices recovering the cost of operations from all customers, on the basis of their water requirements. As a result when GAWB constructs major assets, this has an upward effect on prices. On the other hand, greater utilisation of assets resulting from increased demand has a downward effect on prices. Water prices tend to increase when a new water source is accessed because, when communities are established, generally the cheapest source of water is used. New water sources are therefore usually more expensive than existing sources.

In accordance with QCA recommendations GAWB does not differentiate between existing and new customers in pricing, even when the introduction of new customers requires GAWB to access an additional water source. This is for a number of reasons, including fairness. It is also recognised that differential pricing would discourage growth within the region. In Gladstone all customers, both new and old, have prices calculated in accordance with the same principles.

GAWB's pricing principles require it to act efficiently in delivering its services. This means that when GAWB augments supply capacity (such as the Gladstone-Fitzroy Pipeline) it must be capable of demonstrating that the augmentation represents the most cost effective option in the circumstances as the cost of the pipeline will be integrated into GAWB's charges to customers.

In 2007, the QCA was requested by its Minister to review GAWB's contingent supply strategy in respect of preparatory work necessary to enable GAWB to construct the Gladstone-Fitzroy Pipeline within a construction timeframe of two years and up to six months pre-construction from a trigger event.

The QCA investigation comprises three parts:

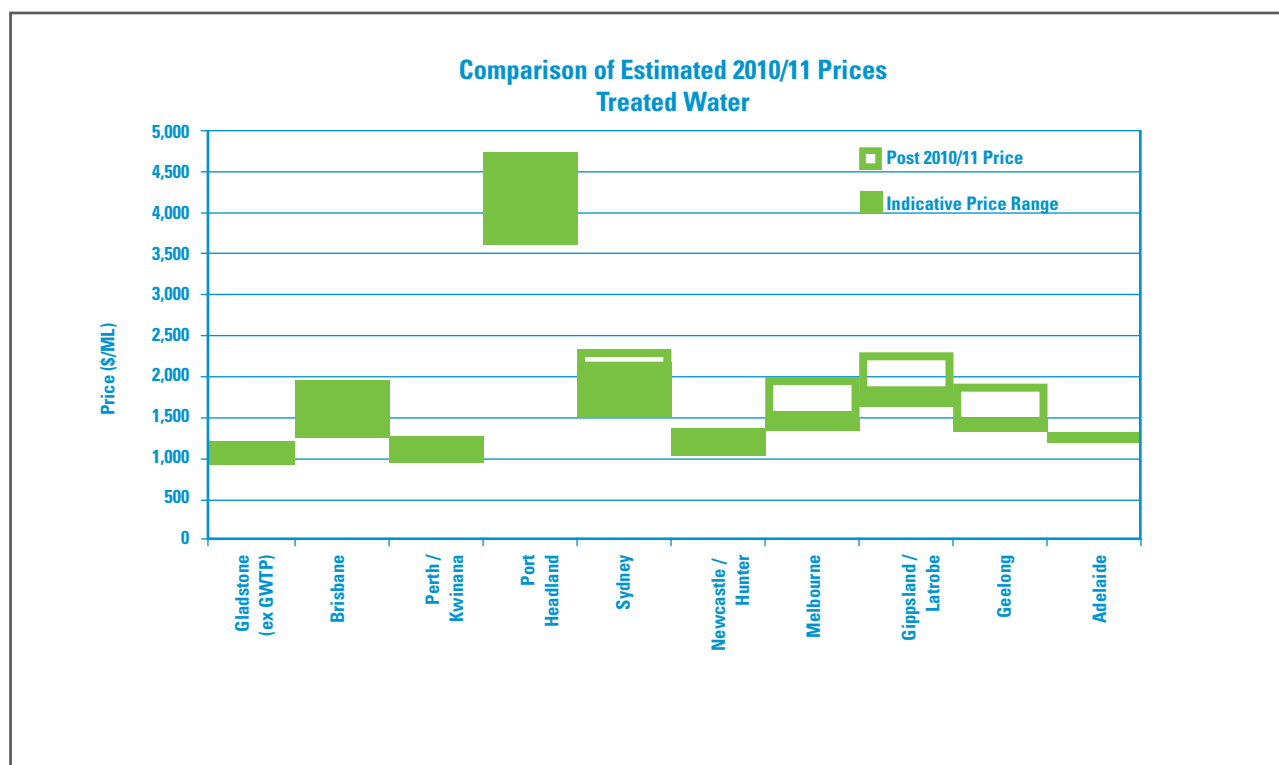
- (a) Recovery of preparatory expenditure, including the prudence of the pipeline as the appropriate contingent source strategy, and the impact of the level and timing of costs on future prices
- (b) Criteria for triggering implementation of the strategy in the event of drought or unexpected demand
- (c) Pricing changes once augmentation is completed.

The QCA released a final report on part (a) of the investigation in December 2007.

A report commissioned by GAWB (Wedgewood White Ltd, 2008) analysed the estimated price of water in different circumstances, including the use of desalination instead of obtaining water from the Fitzroy River via the Gladstone-Fitzroy Pipeline. In all circumstances analysed, the pipeline results in the lowest price to GAWB's customers.

Further, a comparison to water prices around Australia was prepared. Figure 1.7 shows GAWB's indicative 2010/11 treated water price at the Gladstone Water Treatment Plant (assuming a supply from the Fitzroy River is adopted as the appropriate next augmentation and is constructed by 2010/11) in the context of expected 2010/11 treated water prices in other jurisdictions. Where significant real price rises post 2010/11 have been signalled in a jurisdiction, these are indicated by hollow boxes in the chart.

Figure 1.7 Comparison of Treated Water Prices Around Australia
(Source: Wedgewood White Ltd, 2008)



1.4.8 Timing

Construction for the project will only commence once all approvals have been obtained, when the water allocation is made and when one or both pre-defined triggers for demand and drought are met. Pursuant to the terms of Part (b) of the Referral Notice issued by the QCA Ministers in February 2007, the QCA is charged with considering a submission from GAWB on appropriate construction triggers for the project. At the date of the release of this document, this investigation is not finalised although a draft report was released by the QCA in July 2008 for comment by stakeholders.

GAWB is currently undertaking preparatory works, including this EIS, as part of the contingent supply strategy. Approximate timing of the main project phases are shown in Table 1.2.

Table 1.2 Approximate Project Timing

Project Phase	Timing
Strategic planning	2004-06
Project definition and scoping	2006
Preparatory works	2007-2009
Construction	When triggered (by demand or drought)

1.5 State Development Areas

The pipeline route from Laurel Bank will traverse mainly freehold land in an acquired easement up to the SGIC, in which the pipeline will be located for most of its length, before entering the Gladstone State Development Area (GSDA) where it will terminate at existing water infrastructure. The SGIC and the GSDA are State Development Areas (SDA) under Section 77 of the *State Development and Public Works Organisation Act 1971*. A SDA does not change the ownership of the land within the declared area. However, the Queensland Government, through the Coordinator-General, may acquire land and/or easements (by agreement or compulsorily) within a SDA for purposes which can include the establishment of industry, essential services or infrastructure corridors. The following sections outline the processes undertaken by the Queensland Government in identifying and planning for the SGIC and GSDA.

The SGIC and GSDA are shown in Figure 1.3.

1.5.1 The Stanwell - Gladstone Infrastructure Corridor

In June 2006 the Department of State Development (now the Department of Infrastructure and Planning (DIP)) commissioned a corridor investigation to define the multi-user infrastructure corridor between Stanwell Energy Park and the GSDA

(RLMS 2006a), to accommodate future underground pipeline infrastructure. The study area was up to 45 km wide and was defined based on DIP's objectives for the corridor.

The scope of the investigation included:

- Identification of potential users of the corridor and their needs
- Development of corridor selection objectives
- Identification of constraints in the study area based on existing data
- Identification and assessment of corridor options using criteria
- Identification of further studies required.

The constraints in the study area were classified as topographical constraints, construction constraints (such as wetlands and flood susceptible areas), community and land use constraints, ecological constraints and existing infrastructure or mining leases. Based on these constraints four potential corridor options were selected in the study area. These options were assessed using selection criteria and a preferred option was identified with the following characteristics:

- Maximum potential to consolidate compatible infrastructure originating from all directions
- Minimal terrain constraints
- Minimal disturbance to and from existing third party infrastructure
- Ability of the corridor to connect to Rockhampton, Stanwell Energy Park and the GSDA
- Utilisation of land with limited land use potential.

The preferred option was released for public comment in November 2006. Submissions received on this option from the public and landowners were then used to make variations to the preferred option. Flora and fauna, cultural heritage and engineering reviews were undertaken for these variations and a final SGIC was declared by DIP in May 2008.

The location of the pipeline within the SGIC has been determined by DIP based on the order in which the SGIC projects are likely to proceed. As the first pipeline to be located within the SGIC the Gladstone-Fitzroy Pipeline is to occupy the eastern edge of the corridor. Future projects would be located progressively westwards in the corridor, allowing construction for each project to proceed without impact to existing pipelines. This arrangement provides for more efficient infrastructure planning however it does to some extent limit the scope for changes to the project alignment in the SGIC due to engineering, environmental or social reasons.

The consistency of the project with the SGIC development scheme is outlined in Section 1.9.4.2.

1.5.2 The Gladstone State Development Area (GSDA)

The GSDA was declared a SDA in December 1993, following an extensive review of land in the Gladstone region suitable for future large-scale industrial development. At this time the GSDA comprised approximately 6,800 ha of land at Aldoga, northwest of Gladstone. This land was considered broadly suitable for large-scale industrial development on the basis that it conformed to acceptable engineering, environment and social criteria, as identified in the Gladstone Industrial Land Use Study commissioned by the Coordinator-General (now DIP).

In 1997 the GSDA was extended to include the existing Yarwun Industrial Estate and a materials transportation and services corridor linking the Aldoga and Yarwun areas to Fisherman's Landing and the proposed Wiggins Island wharves.

4,600 ha of State-owned land adjacent to the Aldoga and Yarwun areas were added to the GSDA in December 2001 and 7,355 ha of land at Targinie were included in December 2002. 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. The GSDA now comprises approximately 21,000 ha and is managed under a dedicated development scheme (Department of Infrastructure 2007). The consistency of the project with the development scheme is described in Section 1.9.4.2.

In 2007 DIP commissioned a study to determine the alignment of the Gladstone-Fitzroy Pipeline and other pipelines within the GSDA. Alignments in this area are constrained by topography and existing infrastructure. The study identified a route for the pipeline in the Materials Transportation and Services Corridor.

1.6 Project and Location Alternatives

The ToR require that feasible alternatives should be discussed in sufficient detail to enable an understanding of reasons for preferring certain options and courses of action and rejecting others, specifically:

"Reasons for selecting preferred options should be delineated in terms of technical, commercial, social and natural environment aspects."

The alternatives considered in this section include project alternatives and location alternatives for the pipeline route and infrastructure sites.

1.6.1 Project Alternatives

The project alternatives considered in this section are based on the options identified by GAWB as part of the SWP and subsequent work.

Since the release of the SWP, GAWB has undertaken further evaluation of these options. This work has sought to expand upon the conclusions contained in the SWP. GAWB's submission (dated March 2007) to the QCA concerning part (a) of the QCA's investigation developed this evaluation, including analysis of water pricing released in December 2007 which serves as evidence of GAWB's continuing evaluation of desalination as an option.

GAWB has also developed a framework for customers to present alternatives to augmentation, such as reducing demand and/or investing in water saving measures, as a means to potentially defer or avoid source augmentation.

1.6.1.1 Options considered by SWP

In 2003 work commenced on the SWP to determine the sufficiency, utilisation and risk of the region's current water supply and to identify and evaluate alternative water supply and demand management options. A project advisory committee was formed for the SWP, involving representatives of GAWB's customers and other key stakeholders. The SWP made use of previous studies where possible and also commissioned new studies to update existing information.

The evaluation of options in the SWP made use of threshold criteria and weighted evaluation criteria which were determined with input from stakeholders. These criteria were used to assess the viable options (not including water efficiency options).

The threshold criteria comprised:

- Quantity of additional water the option will provide (or the quantity of the existing water it will replace) each year
- The time required for the water to become available (including approval, detailed design for construction and construction time for all projects, and estimated filling times for dam based projects).

The evaluation criteria and weightings are shown in Table 1.3.

Table 1.3 Evaluation Criteria and Weightings Used in the SWP

Criteria	Weighting
Reliability	35
Water Quality	20
Environmental Impacts	10
Social Impacts	10
Selling price	25

The Selling Price criteria related to the cost of the various options and the resulting cost to customers.

Those options which did not meet the threshold criteria were not considered beyond the desktop analysis stage. Options which provided similar benefits to others but at a considerably higher environmental, social or economic cost were also not considered any further.

In 2004, the completed SWP concluded that the pipeline option, supplied from the Lower Fitzroy River, was preferred, and noted the need for ongoing work in relation to water efficiency measures, and particularly exploring opportunities to reduce demand in partnership with customers.

These evaluation criteria were subsequently revised in GAWB's submission to the QCA in March 2007, to incorporate a specific threshold requirement for the timeframe for delivering the contingent supply source:

"With relatively limited expenditure upon preparatory works, the project must be capable of delivery with certainty of supply within two years"

GAWB QCA submission March 2007.

The pipeline remained the preferred option, although GAWB noted at the time that environmental approval for the project needed to have been already obtained in order to achieve this timeframe.

1.6.1.2 No Action

As identified in Section 1.4, the need to construct the project will arise from increased water demands resulting from new industrial developments in the region or to sustain supplies in the event of severe and prolonged drought. If the project were not to proceed potential outcomes include:

- Major interruptions to existing industry in the Gladstone region in the event of drought with substantial commercial, social and economic consequences
- Reduced security and reliability of supply for GAWB's industrial customers

- Insufficient water supply security for industry would be a limiting factor in the ongoing industrial growth in the Gladstone region
- Longer-term benefits to the Queensland economy from a secure water supply in the Gladstone region would be lost
- Short-term environmental and social impacts arising from construction would not occur however these are to be mitigated where possible through the measures detailed in the Environmental Management Plan for the project (see Chapter 20, Planning Environmental Management Plan).

1.6.1.3 Demand Management Options

As part of its SWP, GAWB explored options to better utilise available water resources as an alternative to source augmentation. The options considered included a review of water trading, pricing and contract conditions as well as other methods to increase water use efficiency. Historically contracts have not allowed for the trading of customers' entitlements and have required the customer to either use a set amount of their contractual water entitlement or pay the full price for that water. This provides little incentive for customers to effectively manage their water usage. GAWB has recently changed its pricing principles and practices to, amongst other things, encourage efficient water use by its customers. This includes provision for tradability of contracted water reservations, 'return' of reserved water quantities no longer required and two-part tariffs to account for the water reserved under the contract as well as the actual volume consumed.

These changes provide strong incentives to customers to control their overall water costs and therefore actively manage their water usage.

Some customers have also made major investments to reduce water demands from Awoonga Dam – a recent example is the investment in reducing water losses from the transportation of water from the dam to the Callide Valley power stations by replacing open channels and streams with an extension to the pipeline, saving an estimated 3,000 ML per annum.

GAWB's demand management measures include applying restrictions to demand under drought conditions. The restrictions applied in response to the 2002/03 drought have led to substantial long-term improvements in water use efficiency, and GAWB's industrial customers now advise that they have little capacity to further abate demand without substantial impacts on their production.

GAWB's current Drought Management Plan (DMP) provides for 10 percent restrictions to contracted volumes, once drought conditions commence. GAWB has also held discussions with customers about individual arrangements to curtail demand in times of drought as a measure to defer or avoid augmentation.

In its recent submission to the QCA (December 2007, GAWB recognised that some customers may also have options to invest in onsite measures to reduce demand and either reduce or defer augmentation. These options include conversion of power stations to dry cooling which was previously assessed as part of the SWP. Other options include investment in treatment and technologies, enabling seawater to be used as a substitute for freshwater. GAWB has acknowledged that it does not control these measures as they involve customers' assets.

Nonetheless, GAWB has proposed that customers be given the opportunity to present any proposals for alternative measures to reduce demand, including on-site treatments, prior to triggering construction of the pipeline. This provides an opportunity for GAWB and its customers to generate and evaluate opportunities to reduce demand as the trigger for augmentation approaches. One potential outcome from this process is the deferral of construction of the project. This does not remove the need for GAWB to secure a supply augmentation option, but rather it affects the timing of its deployment.


The Gladstone Regional Council is responsible for implementing demand management and alternative water supply measures for residents. These include the potential use of stormwater detention and ponding basins to capture stormwater that would flow to sea via stormwater drains. This water can be used to supply non-potable industry and a range of other uses. This option would not aid significantly in meeting the strategic water needs of the region however GAWB intends to work with the Council to further explore the potential of this water source. Council has also implemented recycling strategies that have largely utilised this resource.

Sustainable Urban Design provides numerous measures with the potential to reduce the amount of water used by Councils in the irrigation of public spaces.

It can be seen that efforts have been made by GAWB and local councils in recent years to increase water efficiency and GAWB is continuing to seek ways to work closely with Council to explore further opportunities for the efficient use of the region's freshwater resources.

1.6.1.4 Reducing Water Losses

GAWB maintains a System Leakage Management Plan, in which water losses throughout the raw and treated water systems owned by GAWB are estimated, mainly on the basis of metered supply and consumption, and leakage reduction strategies and measures are identified for implementation under a leakage reduction program. Work under the Plan is reported annually in the combined Strategic Asset Management and Customer Service Standard Annual Report as required under the *Water Act 2000*



In the last two years, the rate of leakage is estimated at approximately 5%. Even with this low loss figure GAWB has a System Leakage Management Plan that is aimed to reduce this figure lower. However, even if this loss was reduced to 3%, based on a 30,000 ML usage, the savings would be only 600 ML per annum. Savings of that level, though meaningful, would be insufficient to affect the need for the project.

1.6.1.5 Supply Alternatives

Water recycling

Recycled effluent from Gladstone Regional Council is almost fully committed to industrial users or for parkland irrigation and road construction. As such this is not considered a viable option as a supply alternative for GAWB.

Dam Construction

As part of the SWP, GAWB considered several new surface-water options to augment the water supply in the region including a range of new and raised dams and weirs at various locations.

The following four surface water options were considered as potential new water sources for the Gladstone region:

- Further raising of the Awoonga Dam (to 45 m AHD)
- New dam at the Castle Hope site on the Calliope River
- New weir (above Lowmead) on Baffle Creek (56.6 km)
- New or raised weir or barrage on the Fitzroy River, at or above the existing Fitzroy Barrage or Eden Bann weir sites.

Other options considered, but not found to be viable (at the desktop analysis stage), included:

- New dam on Diglum Creek
- New dam or weir at the Devil's Elbow site on the Calliope River
- New weir on Baffle Creek (55 km)
- New dam on Raglan Creek (AMTD 65.7 km)
- New dam on Raglan Creek (AMTD 63.0 km)
- New dam on the Dawson River (the proposed Nathan Dam) to provide additional water downstream at Moura weir
- New or raised weir elsewhere on the Dawson River.

Based on weightings of 35 percent for reliability and 25 percent for price (as per Table 1.3) the construction of a 20,000 ML per annum to 30,000 ML per annum pipeline from the Fitzroy River (supported by new weir infrastructure) was assessed as the best option to meet GAWB's future capacity requirements.

The SWP identified that the weir on Baffle Creek and the Castle Hope Dam options were not viable to meet GAWB's future capacity requirements.

Desalination

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. Whilst not yet completed, these investigations have confirmed earlier conclusions that desalination would be a higher cost option to the pipeline. The high energy costs for desalination also exposes this option to changes to electricity costs over time. Nonetheless, 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 sources for most planning scenarios.

Groundwater

With the exception of the Callide Valley Groundwater Area and the Braeside borefield, groundwater use in the region is generally limited to supplying a number of smaller towns and for stock and domestic purposes. The Braeside borefield supplies water to mines in the Isaac–Connors sub-region. The Callide Valley Groundwater Area provides water for irrigation, urban and industrial purposes. Groundwater in the Callide Valley is not being replenished as quickly as it is being used. Groundwater entitlements in the Callide Valley Water Supply Scheme are known to substantially exceed the system's sustainable yield. Consequently access to this water is limited. Use in recent years has declined to about 11,500 ML per annum (CQRWSS 2006). Groundwater was not considered as a supply option in the SWP.

1.6.2 Location Alternatives

The location of the SGIC and the alignment of the Gladstone–Fitzroy Pipeline within the GSDA have been determined by DIP through corridor investigation studies as summarised in Section 1.4 Project Rationale. Consultation with landowners has also occurred as part of the process of assessing the route and site selection for infrastructure. This section considers the pipeline and infrastructure location alternatives which are not determined by DIP and provides a description of the options to demonstrate the factors considered in the selection of the preferred option.

Location alternatives discussed below include:

- The Fitzroy River intake location (including the pump station)
- The WTP site (including associated pumps and reservoirs)
- The Alton Downs easement alignment
- The Raglan Pump Station and Reservoir site
- The Aldoga Reservoir site.

The selection of the Fitzroy River intake location, the WTP site and the northern pipeline route from the WTP to the SGIC are interlinked. It is preferable for the WTP site to be located in close proximity to the intake point to reduce the length of pipe that carries untreated water. The northern pipeline route ultimately needs to connect to the SGIC alignment and the most direct route is preferable as pipeline cost is generally proportional to length.

The site selection for these elements of the project was undertaken strategically, starting with regional investigations and then refining to identify a preferred site:

- 1) Regional Scale investigations
- 2) Local Scale investigations
- 3) Property Scale investigations
- 4) Landowner negotiation.

The selection of the Raglan Pump Station and Reservoir site and Aldoga Reservoir site are not affected by the selection of the above project elements however a number of factors have been considered during selection of these sites as described below in Sections 1.6.2.5 and 1.6.2.6.

1.6.2.1 Regional Scale Investigations

In 2006 GAWB commissioned a corridor investigation study to identify possible locations for the intake point, WTP and northern pipeline route to connect with the SGIC (RLMS 2006b). This study considered three broad study areas with intake sites in the region of Eden Bann weir, the proposed Rookwood weir and upstream of the Fitzroy Barrage. After comparison against a range of criteria, the stretch of river upstream of the Fitzroy Barrage was identified as the preferred option for the intake location. The Eden Bann and Rookwood intake sites would require significantly longer pipeline length to connect to the SGIC, traverse undulating terrain and affect a higher number of landholders so were not considered further.

The previous corridor investigation (RLMS 2006b) also compared several possible WTP sites and selected a preferred WTP site in Gracemere corresponding to the study's preferred intake site approximately 10 km upstream of the Fitzroy Barrage between Laurel Bank and Pink Lily. The WTP site was subsequently identified as unsuitable due to the slope of the land and area of land available. However other WTP sites in the Gracemere area were later considered (Section 1.6.2.2).

The sites considered in the Regional Scale investigation are shown in Figure 1.8.

1.6.2.2 Local Scale Investigations

Further site selection for the Intake and WTP was undertaken in 2007 as part of the EIS process. This work built on the RLMS study in 2006 and therefore considered intake site options in the region upstream of the Fitzroy Barrage.

Screening criteria were defined for the site selection of the WTP, based on engineering and other requirements:

- The slope of the site should be predominantly less than 10 percent
- The site and access to the site should be flood-free
- The minimum site area is at least 8 ha
- The narrowest dimension must be no less than 100 m
- The site should not be in an area of environmental significance.

The following four areas (shown in Figure 1.9) were identified for the WTP using the above criteria:

- The Glenmore WTP
- The area around Gracemere (two sites were considered – one at Kenrol and one at Scrubby Creek)
- The Pink Lily area west of Rockhampton
- The Laurel Bank/Alton Downs area (near the existing SunWater pump station).

The possible intake locations that correspond to these sites are shown in Table 1.4

Table 1.4 WTP and Intake Sites Considered

WTP areas considered	Corresponding intake site options
Glenmore WTP	Glenmore WTP
Gracemere area	Pink Lily or Laurel Bank or a site between Pink Lily and Laurel Bank
Pink Lily	Pink Lily
Laurel Bank/Alton Downs	Laurel Bank

A closer investigation of the above possible WTP sites was undertaken including a site visit in mid 2007 and a more detailed desktop study. The desktop study included consideration of the advantages and disadvantages of the sites, which are summarised in Table 1.5 and informed a quantitative assessment of the risks using weighted criteria.

The disadvantages and risks associated with the Glenmore WTP and Pink Lily options were assessed as more significant than the other options and these sites were therefore not considered further.

Table 1.5 Advantages and Disadvantages of WTP Sites

Site	Summary of Advantages	Summary of Disadvantages and Risks
Glenmore Water Treatment Plant	<p>Opportunity to negotiate an agreement with Fitzroy River Water that would be mutually beneficial.</p> <p>The site is above mapped flood levels.</p>	<p>The pipeline would have to cross the Fitzroy River, with associated costs and risks and would involve a significant additional pipeline length.</p> <p>The connecting pipeline would have to be installed either within or around built up areas.</p> <p>There would be numerous subsurface services to relocate and/or avoid during construction.</p>
Kenrol site	<p>The site is above mapped flood levels.</p> <p>Existing land is undeveloped and of a suitable slope.</p> <p>Situated adjacent to the SGIC.</p>	<p>Far from existing High Voltage power supply.</p> <p>Length of pipe between the intake and the WTP would be greater than some options.</p>
Scrubby Creek site	<p>The site is above mapped flood levels.</p> <p>Close to power lines.</p> <p>Land has a suitable slope.</p> <p>Accessible in all weather conditions (bitumen road).</p> <p>The pipeline from the intake would be able to reach the site by using existing easements.</p>	<p>The supply pipeline would have to go past the SGIC and hence would require the pipeline to double back on itself for a short section (approximately 2 km).</p> <p>Risk of flooding from Scrubby Creek. The risk is likely to be small and could be mitigated using levees.</p> <p>Some of this area is irrigated pasture and thus would have greater value than grazing land.</p>
Pink Lily site	<p>The site is above mapped flood levels.</p>	<p>Access to the site would be difficult if the area is flooded.</p> <p>The pipeline would have to follow a south-westerly route initially to avoid the airport and other built up areas.</p> <p>The pipeline would have to be installed in wetland.</p>
Laurel Bank/Alton Downs in proximity to the existing SunWater Pump Station	<p>The site is above mapped flood levels.</p> <p>Close to an existing intake site.</p> <p>Would require a shorter length of pipe between the intake and the WTP site.</p> <p>The pipeline can be aligned parallel with existing easements and roads most of the way to the SGIC.</p> <p>Good access.</p>	<p>Slightly further from Gladstone than some other sites considered.</p>

The Kenrol, Scrubby Creek and Laurel Bank/Alton Downs options were found to have similar risk-based scores and therefore further investigation was required to differentiate between the sites. An investigation into augmenting power supplies to each site revealed that it would require significantly more time and cost to supply power to either Kenrol or Scrubby Creek than to Laurel Bank/Alton Downs. The Laurel Bank/Alton Downs area was therefore selected for further detailed WTP site investigations.

1.6.2.3 Property Scale Investigation

Once Laurel Bank/Alton Downs was identified as the preferred area, a lot scale investigation for the WTP site was undertaken using a refined list of screening criteria:

- The site must be above the mapped flood line
- The site must be at least 8 ha in area and preferably within one cadastral boundary
- The site should not be built over or under major infrastructure or services such as pipelines or powerlines
- There should not be any existing residential buildings on the lot.

The area considered was generally 2 to 4 km from the proposed intake location (adjacent to the existing SunWater intake).

Preliminary site identification was undertaken using the screening criteria above, which identified a preferred site and an alternative site owned by the same landowner. These sites were used as the basis for initial landowner consultation in mid to late 2007.

At this time, an initial pipeline alignment between the intake, the preferred WTP site and the SGIC (known as the Alton Downs alignment) was also identified and some preliminary consultation was undertaken with landowners. The initial Alton Downs alignment was selected with consideration to constructability, property impacts, the length of the route and environmental considerations (such as wetlands and remnant vegetation). The alignment was also located adjacent to existing Powerlink and SunWater easements where possible to prevent additional severance impacts to landowners (Figure 1.10).

In 2008 the WTP site analysis was updated (Arup 2008) using more detailed and accurate data such as contour mapping and higher quality imagery and initial results from field investigations. The analysis was expanded to include 19 potentially suitable sites. In addition to the screening criteria listed above, siting criteria were developed to determine the relative merits of individual lots as WTP sites. Issues considered included:

- Proximity to the proposed intake site - reduces the length of pipe required to carry untreated water which would have to be regularly cleaned for the life of the project
- The slope of the land
- Proximity to available power supply
- Geological conditions at the site
- Flood-free access to the site
- Distance to residential buildings
- Environmentally sensitive sites.

The criteria were used to inform the assessment of relative costs of the 19 sites and the preferred site identified was the same as that identified previously on the basis of the preliminary investigation. Further to this assessment, GAWB commissioned additional evaluation of the 19 sites or combinations of the sites (RLMS 2008) to include more consideration of the potential impacts on the local community and applied four criteria:

- Site conditions including slope, ground conditions, size and shape
- Residential impacts
- Vehicle movement impacts
- Timeframe of availability of the site using four weighted criteria
- Distance to the nearest dwelling.

The evaluation of these criteria resulted in eight sites being shortlisted for further consideration including a more detailed comparison of costs.

1.6.2.4 Landowner Consultation

Based on this analysis and the outcome of the previous studies, further discussions were held with a number of landowners in the area where land was under consideration for a WTP. In addition the proposed WTP site was the subject of a public meeting held on 26 June 2008. The preferred WTP site was selected on the basis of this process.

This WTP site is located approximately 3 km from the proposed intake site and, the closest dwelling is located approximately 175 m from the site. The proposed WTP would be accessed from Ridgeland Road. The selection of the WTP site and further consultation with affected landowners resulted in changes to the Alton Downs alignment, which is shown in Figure 1.10.

1.6.2.5 Raglan Pump Station and Reservoir Site

Due to the distance and terrain over which the water must be pumped between the WTP and the Yarwun connection, a re-lift pump station is required along the route. Hydraulic analysis identified that the vicinity of Raglan would be optimal for the placement of a re-lift pump station. Following a desktop review of environmental and engineering factors, three possible sites for the Raglan Pump Station and Reservoir site were identified (Figure 1.11) and further assessed against environmental, social and engineering criteria to select a preferred site. All three options considered are outside the SGIC on freehold land.

The criteria used in the selection of the site included:

- The site should be above flood levels
- The slope of the land should be predominantly less than 8 percent
- The site should not affect environmentally sensitive sites, including Yellow Chat habitat around Raglan Creek and remnant vegetation communities
- Ease of road access to the site
- Distance to the nearest dwelling.

Using these criteria the furthest south of the three options was selected as the preferred site.

1.6.2.6 Aldoga Reservoir Site

The Aldoga Reservoir site is within the GSDA (see Figure 1.3) and is currently a vacant area of land owned by the State (administered by DIP). This site had previously been identified by GAWB as a suitable site for water infrastructure. Siting within the GSDA is constrained by a number of present and planned infrastructure elements and the reservoir is also required to be elevated and in close proximity to the pipeline alignment. As such the site is the only suitable site in the GSDA and a detailed comparison against other sites was not undertaken.

1.7 The Environmental Impact Assessment Process

1.7.1 Assessment Method

A wide range of baseline data on the environment has been utilised for the purposes of the assessment including:

- Documentary information from a wide range of sources, including historical and contemporary records
- Data collected from recent surveys and sampling along the pipeline alignment, at project infrastructure sites and the surrounding areas including noise levels, ecological features, landscape character, acid sulfate soils
- Maps and aerial photographs of historical and contemporary features
- Data obtained from statutory and non-statutory bodies such as local government councils, Environmental Protection Agency (EPA), DNRW, Department of Environment, DEWHA, Department of Main Roads (DMR), local interest groups.

Details of this information are included in each of the respective specialist chapters of this EIS, as required to describe the aspects of the environment likely to be significantly affected by the development.

The methodology for the assessment in this EIS has been developed to specifically address the requirements of the ToR. The individual methodologies for each assessment undertaken as part of the Draft EIS vary for each discipline area and are set out in detail in each of the chapters.

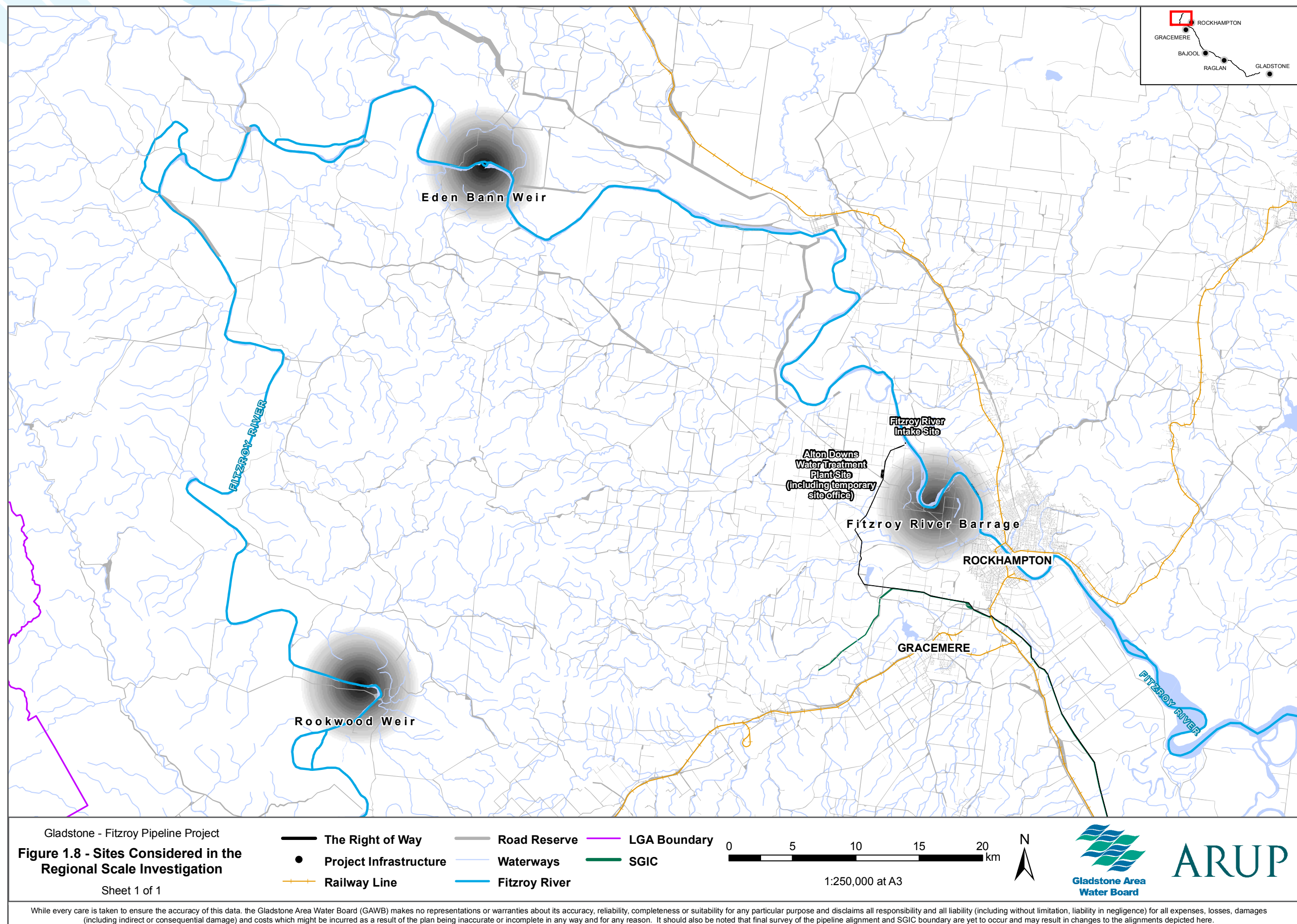
The majority of Chapters 3 to 17 follow a similar general format:

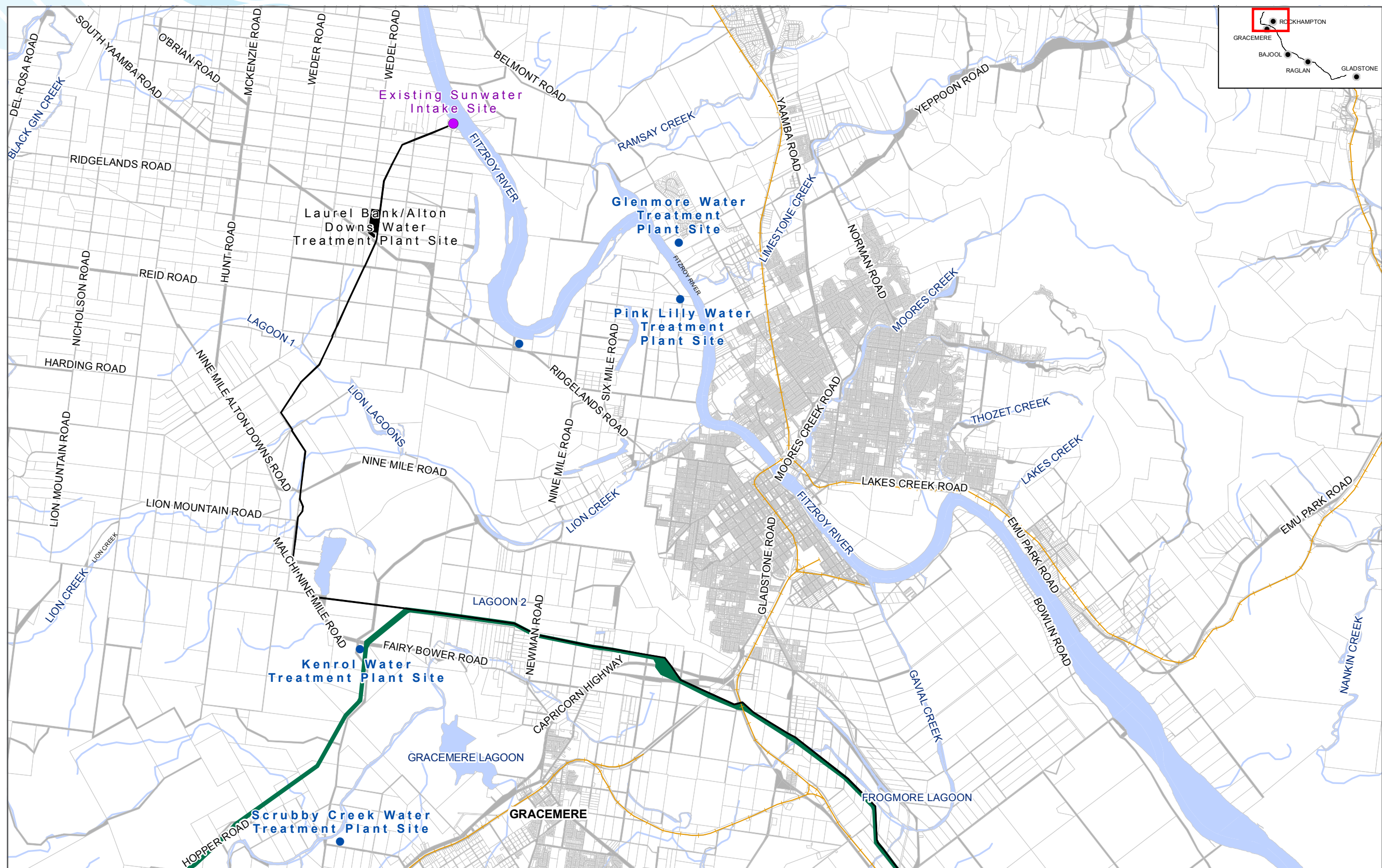
- Introduction
- Methodology
- Assumptions and limitations
- Relevant legislation and policy
- Baseline
 - Fitzroy to Bajool
 - Bajool to Gladstone
- Assessment of impacts
 - Fitzroy to Bajool
 - Bajool to Gladstone
- Mitigation
- Assessment of residual effects
- Summary and conclusions
- Assessment summary matrix
- References.

As can be seen from the structure above, where practical the project area has been divided into two sections for the purposes of reporting – Fitzroy to Bajool and Bajool to Gladstone. The chapters of the EIS are stand-alone technical reports, where applicable technical appendices for supplementary information relating to chapters are referred to in the chapter.

Throughout the site selection and functional design process, attention has been paid to the minimisation of adverse effects on the environment during construction and operation of the project.

A planning Environmental Management Plan (EMP) covering proposed mitigation, monitoring and management measures for the construction, operation and maintenance phases of the project is included in Chapter 20, Planning Environmental Management Plan. This draft EMP forms the basis for the detailed EMPs that will be prepared for construction and operation. The Planning EMP forms the precursor to the Construction EMP, which will be developed by the construction contractor prior to commencing construction, and to the Operations EMP which will be developed by the Gladstone Area Water Board (GAWB – the proponent) at the start of the operational phase of the project. Thus the Planning EMP contains actions relevant to both the construction and operational phases of the project. Environmental management measures related to commissioning of the project are included under construction, where relevant.





Gladstone - Fitzroy Pipeline Project
**Figure 1.9 - Sites Considered
 in the Local Scale Investigations**

Sheet 1 of 1

- | | | |
|------------------|--------------|--------------------------------|
| The Right of Way | Road Reserve | Existing Sunwater Intake Point |
| Railway Line | Waterways | Potential WTP Sites |
| Cadastre | SGIC | |

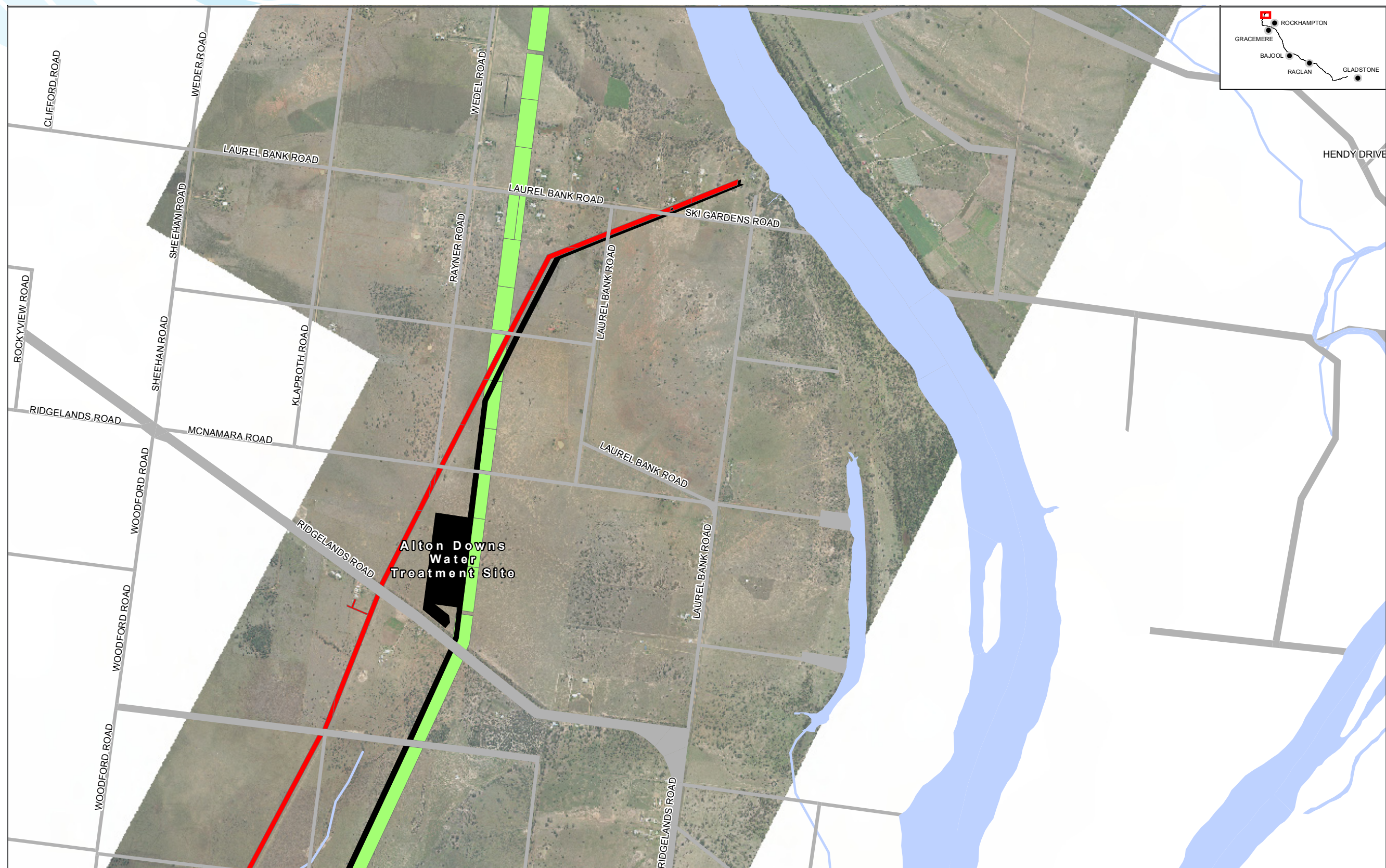
0 40 80 120 160 200 km

1:80,000 at A3



ARUP

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Gladstone - Fitzroy Pipeline Project

Figure 1.10 - WTP Site and Pipeline Alignment at Laurel Bank/Alton Downs

Sheet 1 of 1

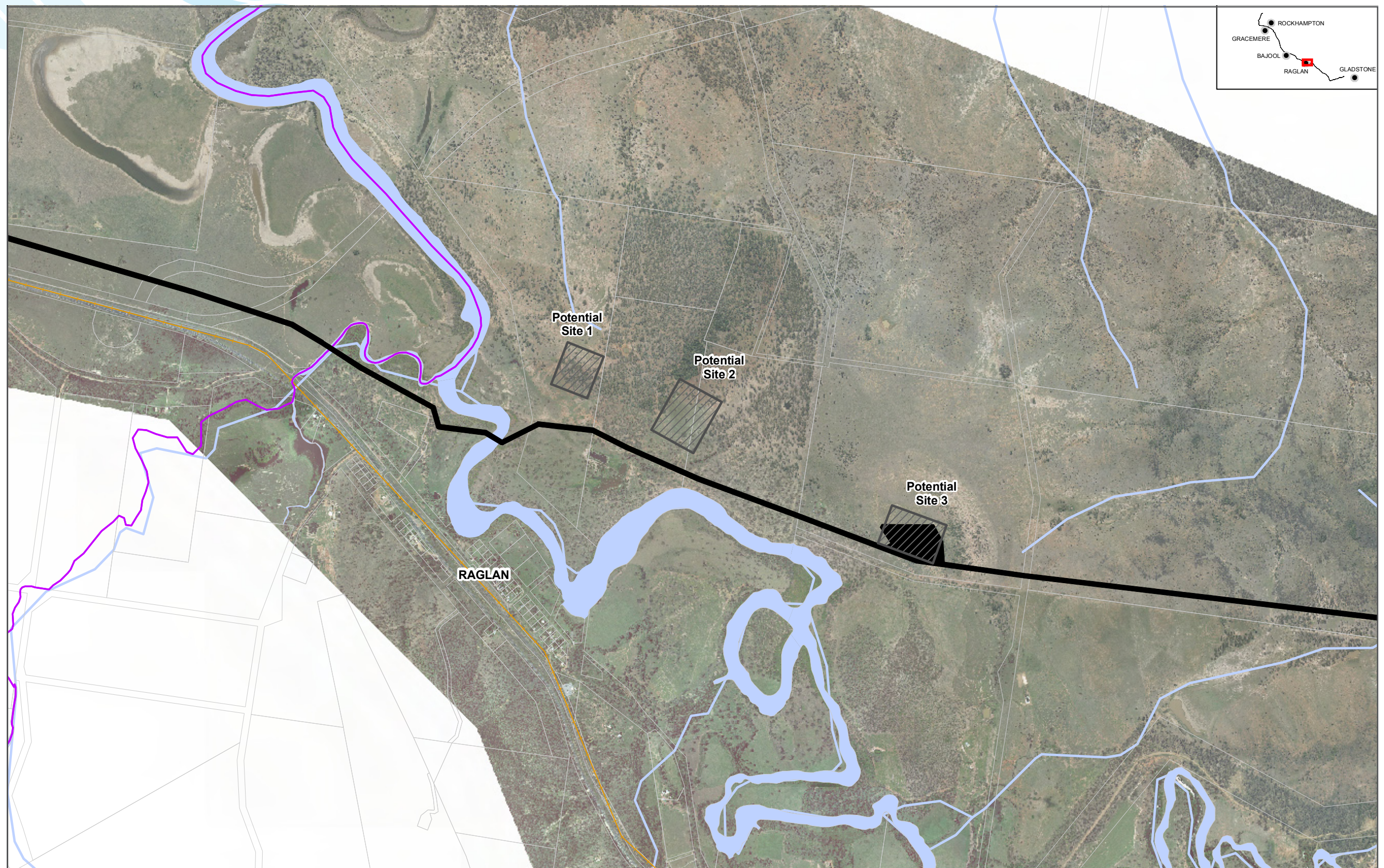
— The Right of Way	— Road Reserve	— Powerlink Corridors
— Railway Line	 Cadastre	— Sunwater
— Waterways		— Easement

0 0.5 1 1.5 km

1:20,000 at A3

N

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Gladstone - Fitzroy Pipeline Project

Figure 1.11 - Raglan Pump Station and Reservoir Sites Considered

Sheet 1 of 1

The Right of Way	Waterways	Potential Sites
Railway Line	LGA Boundary	
Cadastre	SGIC	

0 0.5 1 1.5 2 km

1:20,000 at A3

N

ARUP

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The assessment of environmental impacts is based on the elements and processes of the project as described in Chapter 2, Project Description. Due to the nature of the impacts, the geographical extent of the assessment will vary depending on the aspect being assessed. Certain environmental impacts will be largely confined within the project area. Other impacts will extend beyond the site such as air quality, socio-economic impacts and noise. The geographical scope of the assessments is outlined in each chapter of the EIS. Any specific assumptions and limitations are also provided in each chapter.

1.7.1.1 Approach to Assessing Impacts

The approach to assessing impacts in the EIS has involved a description of the impacts followed by a description of existing or proposed mitigation measures and then criteria have been used to assess the significance of the residual impact. The generic criteria are shown below in Table 1.6 and have been made specific to each topic area for which they have been used.

Table 1.6 Arup's Generic Significance Criteria

Significance	Criteria
Major Adverse	Only adverse effects are assigned this level of importance as they represent key factors in the decision-making process. These effects are generally, but not exclusively, associated with sites and features of national importance. A change in a national or State scale site or feature may also enter this category. Typically mitigation measures are unlikely to remove such effects.
High Adverse	These effects are likely to be important considerations at a State scale but, if adverse, are potential concerns to the project, depending upon the relative importance attached to the issue during the decision-making process. Mitigation measures and detailed design for construction are unlikely to remove all of the effects on the affected communities or interests. Effects can be beneficial as well as adverse.
Moderate Adverse	These effects, if adverse, while important at a regional scale , are not likely to be key decision-making issues. Nevertheless, the cumulative effects of such issues may lead to an increase in the overall effects on a particular area or particular resource. They represent issues where effects will be experienced but mitigation measures and detailed design for construction may ameliorate/enhance some of the consequences upon affected communities or interests. Some residual effects will still arise. Effects can be beneficial as well as adverse.
Minor Adverse	These effects may be raised as local issues , but are unlikely to be of importance in the decision-making process. Nevertheless, they are of relevance in enhancing the subsequent design of the project and consideration of mitigation or compensation measures. Effects can be beneficial as well as adverse.
Negligible	No effects or those which are beneath levels of perception, within normal bounds of variation within the margin of forecasting error.
Beneficial	The effects of a project can also be beneficial – using the same scale minor, moderate and major.

NB Major is only applied to adverse effects.

Criteria have been developed for the following discipline areas in the EIS:

- Climate
- Land use and infrastructure
- Geology and soils
- Terrestrial flora
- Terrestrial fauna
- Aquatic flora and fauna
- Water resources and water quality
- Air environment
- Waste
- Noise and vibration
- Transport and access
- Cultural heritage
- Social and economic impacts
- Landscape and visual.

Other descriptors used to describe impacts in this EIS include:

- Temporary, short, medium, long-term, permanent (defined in Table 1.7)
- Direct and indirect
- Cumulative and interactive.

Table 1.7 Duration of Environmental Effects

Relative duration of environmental effects applied for the project	
Temporary	Up to 1 year
Short-term	From 1 to 7 years
Medium-term	From 7 to 20 years
Long-term	From 20 to 50 years
Permanent/Irreversible	Period in excess of 50 years

The application of these descriptors and criteria for the assessments are specific to each individual topic and are explained accordingly in the specialist chapters.

In order of preference, identified impacts have been:

- 1) Avoided if possible through appropriate location of the pipeline and associated infrastructure
- 2) 'Designed-out' where practicable, thereby minimising significant impacts to environmental values
- 3) Mitigated through the implementation of environmental management plans that will measure and minimise any impacts to the greatest practicable extent.

1.7.1.2 Cumulative and Interactive Effects

Consideration is also made within each of these chapters of the cumulative and interactive effects of the proposed development.

Cumulative Effects – Those Occurring Between Projects

If projects are considered individually, the environmental effects may appear non-offensive, however the combination of effects from the proposed development and from other permitted developments (existing, not yet constructed or currently under construction), acting together may generate elevated levels of impact. This combination of effects is regarded as the cumulative effect. These may occur over a certain time period and geographical distance (Kingsley, 1997). Some examples of these kinds of effects include:

- Regional-based discharges to the water environment
- Regional air quality effects from developments
- Traffic generated from developments, affecting the surrounding developments and the road network.

Adjacent projects being developed within a similar timeframe to this project that may be relevant in the consideration of cumulative effects are considered in Chapter 15, Social and Economic Environment, and include:

- Other pipelines proposed within the SGIC or GSDA, including the Gladstone Pacific Nickel slurry pipeline
- Industrial development in the GSDA.

Interactive Effects – Those Occurring Within Projects

Interactive effects arise where effects from one environmental element bring about changes in another environmental element. Associated impacts do not occur as a direct result of the project but are often produced away from or as a result of a complex pathway. These are sometimes referred to as second or third level impacts (Hyder, 1999). Examples would include:

- Impacts on the aquatic environment as a result of habitat loss on land
- Impacts on water quality as a result of potentially mobilising contaminants or acid sulfate soils (ASS) during construction of the pipeline.

Where appropriate an assessment of cumulative and interactive effects has been incorporated into specific chapters of the EIS.

1.7.1.3 Assessment Summary

At the end of each chapter there is a table which provides a summary of the residual impacts remaining after mitigation has been assessed. An example summary table is shown in Table 1.8.

Table 1.8 Assessment Summary Example Table

EIS Area: Feature/ description	Current Value + Substitutable Y:N	Description of Impact		
		Description in words	Mitigation inherent in design/ standard practice amelioration	Residual Impact using Significance Criteria
This field shows the topic title and a note of the feature being impacted on.	This field notes the value of the feature and a comment on whether it is substitutable or not.	This field presents a description of the impact in words.	This field notes the mitigation measures already implemented through detailed design for construction, or those which will be implemented during construction or operation, to minimise the impact.	This field presents the significance rating of the impact including the impact descriptors outlined above.
Key Significance Criteria: Major, High, Moderate, Minor, Negligible; +ve = positive impacts; -ve = negative impacts; D = direct; I = indirect; C = cumulative; P = permanent; T = temporary; ST = short-term; MT = medium-term; LT = long-term.				

1.8 Public Engagement Program

The public engagement program for the project was designed to inform and educate the community about the project, while providing opportunities for the community to participate in and comment on the EIS process.

1.8.1 Objectives

The project's public engagement program identified the following objectives:

- To inform and educate the community about the project
- To provide opportunities for the community to participate in and comment on the project's EIS
- To develop relationships and communicate directly with stakeholders to assist with negotiations related to acquiring the pipeline easement and/or land for related infrastructure.

1.8.2 Methodology

To meet the public engagement program objectives, the umbrella approach to public engagement was to:

- Keep all information as simple as possible without compromising its integrity
- Develop engagement materials and activities to suit specific stakeholder groups in relevant situations
- Select communication formats suitable to a wide range of people and groups in relevant situations
- Make information available in a timely manner
- Provide adequate channels for community feedback
- Ensure feedback from the community flows through to the EIS team for consideration in preparing reports and developing management and mitigation strategies.

1.8.3 Identified Stakeholders

The stakeholder identification process was a critical first step in developing the public engagement program. This process identified individuals, groups and organisations from the community that would be interested in the project. The public engagement program was designed to reach these stakeholders.

Stakeholders have been identified in terms of:

1. Proximity to the proposed pipeline route
 - Landowners within the SGIC
 - Landowners within the GSDA
 - Landowners outside the SGIC and GSDA (in the Alton Downs area)
 - Landowners within 500 m of the proposed pipeline route.
2. Interest in particular issues associated with the proposed pipeline including:
 - Environmental concerns
 - Regional supply of water
 - Cost of water supply in the region
 - Political issues
 - Confusion with other water infrastructure projects
 - Water quality.

Identified stakeholder groups have been allocated a level of involvement based on the following categories:

- **Level 1:** Groups and individuals that have a direct relationship with GAWB, such as wholesale customers and Government representatives and their officers
- **Level 2:** Groups and individuals who will have an indirect relationship with GAWB, such as domestic customers via local Councils, people from the region who are not supplied by GAWB and individuals and groups using recreational facilities at Lake Awoonga
- **Level 3:** Groups and individuals who will have a general interest in GAWB and its activities.

Table 1.9 outlines stakeholders identified for the Gladstone-Fitzroy Pipeline project.

Table 1.9 Gladstone-Fitzroy Pipeline Project Stakeholders

Stakeholder Type	Involvement level
Australian Government	
Elected representatives in the region Kirsten Livermore (ALP) (Capricornia) Chris Trevor (ALP) (Flynn) Department of Environment Water Heritage and the Arts (DEWHA)	Level 1
State Government	
Elected representatives in the region Liz Cunningham (IND) (Gladstone) Jim Pearce (ALP) (Fitzroy)	Level 1
Department of Natural Resources and Water	Level 1
Queensland Treasury	Level 1
Department of Infrastructure and Planning	Level 1
Other relevant State Government Departments	Level 2
Local Government	
Elected representatives in the region	Level 1
Local Government Rockhampton Regional Council (incorporating the former Fitzroy Shire Council, Livingstone Shire Council, Mount Morgan Shire Council and Rockhampton City Council) Gladstone Regional Council (incorporating the former Calliope Shire Council, Miriam Vale Shire Council and Gladstone City Council)	Level 1

Stakeholder Type	Involvement level
Community	
Aboriginal cultural heritage groups in the project area (Darumbal people and Port Curtis Coral Coast people)	Level 1
Landowners in the Alton Downs area who are directly affected by the pipeline	Level 1
Landowners in the Alton Downs area who are in close proximity to the pipeline (but not directly affected)	Level 2
Community groups who use the Fitzroy River for their activities, i.e. ski club, rowing clubs, angling clubs	Level 1
Landowners within the SGIC	Level 1
Landowners in close proximity to the SGIC	Level 2
Landowners within the GSDA	Level 1
Lessees within the GSDA	Level 1
People living/working in the Gladstone region	Level 3
People living/working in surrounding areas, i.e. Rockhampton region	Level 3
Business	
GAWB industrial customers	Level 1
Potential/new industrial customers	Level 1
Organisations in the GAWB supply chain	Level 2
Industry groups	Level 2
Media	
Print	Level 1
Radio	
Television	

1.8.4 Engagement Tools

A number of engagement tools and activities were used in the public engagement program to provide opportunities for GAWB and the EIS team to inform the public, build relationships with landowners and to provide the community with an opportunity to participate in and comment on the EIS process. Their use within the public engagement program is described in Table 1.10. These tools are described in this section. See Appendix B –Public Engagement Report, for copies of consultation materials and a report of stakeholder contact.

1.8.4.1 Landowner meetings

Meetings with landowners directly affected by the Gladstone-Fitzroy Pipeline allowed the project team to engage with landowners to ensure they were aware of and understood the project and any implications it may have for them. Meetings were conducted by GAWB and its representatives.

1.8.4.2 Free call 1800 information line

A free call 1800 information line was included in the public engagement program as an enquiry and feedback source for the community for the duration of the project. The information line number has been published widely and continues to be staffed by members of the public engagement team during normal working hours. Where questions of a technical nature arose that could not be answered immediately, details of the query were taken and a response provided as soon as possible. All calls to the information line are logged in the project database.

1.8.4.3 Enquiry email

A project-specific enquiry email address was included in the public engagement program to facilitate community enquiries. It has been advertised widely in engagement materials as a key contact point for the community. Enquiries sent via email are answered in a timely manner and details of email contact are logged in the project database.

1.8.4.4 Community newsletters/letters/flyers/brochures

Letters, community newsletters, flyers and brochures were included in the public engagement program and have been distributed via appropriate means to reach relevant stakeholders. Relevant materials (i.e. newsletters and fact sheets) were produced both in hard copy and uploaded to the project website.

1.8.4.5 Project Website

A dedicated Gladstone-Fitzroy Pipeline project website (<http://gladstone-fitzroypipeline.com.au>) was set up for the project. The website contains specific information related to the EIS process, a suite of communication materials such as fact sheets and newsletters, links to relevant sites and media releases related to the project. A registration form is also accessible on the website for visitors to register to receive updates via email.

1.8.4.6 Project Database

A project database was set up to record all contact with stakeholders for the duration of the project. This is a valuable tool for GAWB in tracking emerging issues and understanding the history of contact with stakeholders.

1.8.4.7 Print Advertising

Print advertising was used in the public engagement program as a means of communicating with the community regarding relevant aspects of the project, including key milestones during the EIS process.

1.8.4.8 Media Activity

Throughout the public engagement program for the EIS process the media is utilised to disseminate project-related information to the community.

1.8.4.9 Fact Sheets

Fact sheets were used in the public engagement program to inform and educate the community about aspects of the project and the EIS process. These are available in hard copy or can be downloaded from the project website.

1.8.4.10 Contact Cards

Contact cards were developed to provide community members with the free call 1800 phone number, email address, postal address and website for the project. These cards were provided to affected landowners and other stakeholders at the commencement of the public engagement program and made available to all interested parties throughout the program.

1.8.4.11 Information Sessions

Information sessions were included in the public engagement program to provide a forum where community members can learn, ask questions and provide feedback about the project. These will be held during the public comment period for the EIS.

1.8.4.12 Public Displays

Public displays were included in the public engagement program for the EIS process to provide information to community members about the EIS findings. Displays will be held in accessible community locations, such as community halls and libraries during the public comment period for the EIS.

1.8.5 Summary of consultation activities for the project

Consultation activities for the project have been broken into a number of phases. This section outlines the activities undertaken within each phase, the timing and the communication tools used. Below is a description of the communication aims of each phase:

Phase One

Initial consultation activities were aimed at introducing the project to stakeholders in the Gladstone and Rockhampton regions and notifying landowners who were potentially directly affected by the project. A number of communication tools were used to achieve this.

Phase Two

Consultation activities undertaken in this phase focused on communicating with landowners to facilitate technical investigations for the EIS, informing landowners and other stakeholders of the availability of the draft and final ToR for the project's EIS and advising stakeholders of the progress of the project and its EIS.

Phase Three

A number of consultation activities are planned to inform stakeholders in the Gladstone and Rockhampton regions about the release of the project's EIS and their opportunity to comment on it.

These activities will commence once the EIS is released to the community for public comment.

Communication tools used in each phase of the public engagement program are detailed in Table 1.10.

Table 1.10 Engagement Tools Used in the Public Engagement Program

Phase	Action	Timing	Engagement tools used
One	Provide initial advice of the project to landowners and the community	March 07 – August 07	<p>A media release was sent to local media outlets (The Gladstone Observer, The Morning Bulletin, local radio stations) as well as The Courier Mail resulting in five media stories about the commencement of the project.</p> <p>Advertisements were placed in the Gladstone Observer and the Morning Bulletin advising of the commencement of the project, contact details for the project team and the availability of more information about the project. The CQRWSS website address was also provided in the advertisement.</p> <p>The project website was launched in conjunction with media activity. The website provides information about the project as well as other regional water supply initiatives such as the CQRWSS and GAWB's own SWP. The website's address was included in the media release and advertisements.</p> <p>A free call information line, enquiry email address and reply paid postal address were established for the project and these details were included in the media release and the advertisements.</p> <p>A Project Overview newsletter was prepared and uploaded to the project website and sent directly to relevant stakeholders.</p> <p>A project database was established to capture all contact with stakeholders in relation to the project.</p> <p>GAWB sent landowner letters to all potentially affected landowners notifying them of the commencement of the project and GAWB's intention to contact them to discuss the project.</p> <p>Details of the free call information line, enquiry email address and reply paid postal address were included in the letter to landowners.</p> <p>Landowners in the Alton Downs area – Initial advice of the project sent by GAWB, accompanied by the Project Overview newsletter.</p> <p>Landowners in the SGIC – A letter was sent by DIP advising of GAWB's intention to contact them regarding the project. GAWB then sent a letter to SGIC landowners introducing the project, accompanied by the Project Overview</p> <p>GAWB contacted potentially affected landowners by telephone and set up face-to-face meetings to discuss the project. At these meetings GAWB gained written consent from as many landowners as possible to facilitate technical investigations for the EIS.</p>

Phase	Action	Timing	Engagement tools used
Two	Draft ToR released for comment by DIP. Communication activity to support the release	August 2007 – April 2008	<p>A media release was distributed to relevant media outlets by DIP advising the release of the Draft ToR for the project's EIS and the community's opportunity to comment of the ToR.</p> <p>An advertisement was placed by DIP in relevant publications advising the release of the draft ToR for the project's EIS and the community's opportunity to comment of the ToR.</p>
	Project launch to coincide with release of finalised ToR to the community		<p>A Project Update newsletter was produced (Dec 07) and sent to:</p> <p>Potentially affected landowners (Alton Downs area, SGIC and GSDA).</p> <p>Landowners within 500 m of the proposed pipeline corridor.</p> <p>Other stakeholders registered on the project database.</p> <p>An advertisement was placed in the Gladstone Observer and the Morning Bulletin to advise the release of the new Project Update newsletter.</p> <p>The project website was updated periodically during this phase with new information about the project as it became available.</p>
	Communication with landowners regarding access to property to conduct EIS technical investigations		<p>A number of letters were sent to landowners advising GAWB's timeline for undertaking various technical investigations for the project's EIS. Landowners were then contacted via telephone to ensure they were satisfied with the schedule and works proposed.</p> <p>Face-to-face landowner meetings were scheduled with landowners where required to discuss the technical investigations.</p>
	Engagement with stakeholders during the preparation of the Draft EIS		<p>The project email address and free call information line were operational during this phase to answer any questions and provide information to stakeholders.</p> <p>A new Project Update newsletter was distributed to landowners and other project stakeholders (May 2008) to provide an update on the project.</p> <p>An advertisement was placed in the Gladstone Observer and the Morning Bulletin to advise the release of the new Project Update newsletter.</p> <p>A number of fact sheets were developed and distributed to relevant stakeholders and uploaded to the project website providing information about the technical investigations for the project's EIS.</p> <p>A community briefing was held (28 June 2008) for members of the Alton Downs community potentially affected by the WTP planned for the area.</p>
Three (Planned activities)	Release of the Draft EIS to the community for comment – associated engagement activities	April 2008 – end 2008	<p>Media releases.</p> <p>Advertising.</p> <p>Project Update newsletter providing an update on the EIS, where community members can view the document, how they can make a comment.</p> <p>Information sessions where stakeholders can come and ask questions about the EIS, staffed by members of the project team, held in various locations in the project area.</p> <p>Fact sheets.</p> <p>Display of the EIS in relevant locations.</p> <p>Letters to potentially affected landowners, landowners within 500 m of the corridor and other stakeholders registered on the project database advising the release of the EIS and their opportunity to comment.</p> <p>Updates to the project website.</p> <p>Face-to-face meetings with affected landowners.</p> <p>Continued operation of the project email and free call information line.</p>

1.9 Project Approvals

1.9.1 Relevant Legislation and Policy Requirements

In addition to the EIS approval process under the SDPWO Act and the EPBC Act, the project will require approvals under other Queensland legislation prior to construction and operations commencing. Details of the other legislation and policies controlling and influencing the approvals process relevant to the Gladstone-Fitzroy Pipeline project are provided in this section. Full details of all approvals required prior to development of the project are included in Appendix C.

1.9.2 Integrated Planning Act 1997 (IPA)

1.9.2.1 Overview

The Integrated Planning Act (IPA) forms the foundation of Queensland's planning and development legislation, by setting a framework to integrate planning and development assessment so that development and its effects are managed in a way that is ecologically sustainable. In accordance with section 1.2.1 of the Act, the purpose of the IPA is to achieve ecological sustainability by:

- (a) Coordinating and integrating planning at the local, regional and State levels
- (b) Managing the process by which development occurs (i.e. the Integrated Development Assessment System or IDAS)
- (c) Managing the effects of development on the environment (including managing the use of premises).

In Queensland, there are numerous "topic specific" Acts, which, amongst other things, regulate development by setting out minimum standards aimed at managing and protecting the environment (e.g. the *Water Act 2000*). The IPA and the IDAS provides these specific Acts with a common process for assessing development. Under section 1.3.2 of the IPA, development comprises making a material change of use, reconfiguring a lot and the carrying out of operational, building or plumbing and drainage work.


1.9.2.2 Community Infrastructure Designation (CID)

A Community Infrastructure Designation (CID) is a means of forward planning for the integration of land use and infrastructure, as it ensures that proposed infrastructure is considered by all relevant entities when making planning decisions about new development in the subject area. It also ensures that the proposed infrastructure can be protected from encroachment by incompatible new uses or works and adjacent development can be managed in regard to issues potentially affecting either party.

Development which constitutes 'community infrastructure' is listed under schedule 5 of the IPA, including category (p) *water cycle management infrastructure*, to which the Gladstone-Fitzroy Pipeline project relates. GAWB intends to request the Minister for Natural Resources and Water to designate land for community infrastructure for some or all of the Gladstone-Fitzroy Pipeline Project in accordance with the process under part 6, chapter 2 of the IPA. Prior to designating land for community infrastructure, the Minister must:

- (a) Be satisfied that the proposal performs one or more of the public benefit functions listed in section 2.6.2 of the IPA. In this regard, the Gladstone-Fitzroy Pipeline project will both satisfy budgetary commitments and the community's expectations for the efficient and timely supply of community infrastructure; and
- (b) Be satisfied, under Section 2.6.7(1), that for development the subject of a proposed designation, there has been adequate environmental assessment, including adequate public consultation, and also adequate account has been taken of the issues raised in the public consultation. Section 2.6.7(3) provides that adequate environmental assessment and public consultation has been carried out if one of five statutory processes has been completed. These processes include the EIS process under section 35 of the *SDPWO Act* (under which this EIS and the associated public consultation is being undertaken); and
- (c) Consider each relevant planning scheme and State Planning Policy. In this regard, there is provision for the Minister to give notice about the designation to each landowner and relevant local government if the environmental assessment and public consultation process undertaken has not provided for such notification. The notice gives those entities at least 15 business days to make a submission and the Minister must consider each properly made submission prior to making a decision.

An effect of the CID is that development subject of the designation is exempt from assessment under a planning scheme (in accordance with Schedule 9, Table 5, Item 5 of the IPA).



Development subject of the designation, whilst being exempted from assessment against relevant planning schemes, will still need to meet requirements stipulated in other State legislation, prior to development commencing.

1.9.3 Other Applicable Legislation

1.9.3.1 Overview

Whilst the Gladstone-Fitzroy Pipeline project will be exempt from assessment against a planning scheme, by virtue of the intended CID and Schedule 9, Schedule 8 of the IPA will still apply. In addition to the intention to obtain a CID for some or all of the project, various components of the project will trigger the need for additional approvals under Schedule 8. The implications of these Acts as well as additional legislation not linked to the IDAS under IPA are provided below.

1.9.3.2 Water Act 2000

The *Water Act* provides for the sustainable planning and management of the State's water resources. The Act is administered by DNRW and requires that most water-related development is assessed and approved under the IDAS.

The proposed intake structure within the Fitzroy River will require assessment against the objects of the *Water Act* and any applicable codes and the issue of a development permit prior to its construction. The applicable IDAS trigger is in Schedule 8, Part 1, Table 4, Item 3.

The written consent of a delegated officer of DNRW (resource manager's consent) must be provided before the application can be accepted as properly made. Before providing the resource manager's consent, the delegated officer will ensure that either the applicant has the appropriate entitlement or authority to take or interfere with the water under the *Water Act*, or the application can proceed in the absence of an entitlement or authority. GAWB may require a water entitlement or authority before their water-related development application can proceed.

Under Section 266 of the *Water Act*, works that involve the destruction of vegetation, excavation or placing fill within the bed and banks of a watercourse, lake or spring or any other water-related development require approval (i.e. a riverine protection permit). For the Gladstone-Fitzroy Pipeline project, works such as the installation of pipe or support structures within the defined extent of a watercourse will require a riverine protection permit.

1.9.3.3 Environmental Protection Act 1994

The *Environmental Protection Act 1994* (EP Act) places emphasis on managing Queensland's environment within the principles of ecologically sustainable development. The EP Act is administered by the Queensland Environmental Protection Agency (QEPA). Under the EP Act, approval is required for:

- (a) Activities that could cause actual or potential environmental harm via the generation of emissions or through carrying out the activity
- (b) Environmentally Relevant Activities (ERA)
- (c) Activities likely to cause land contamination (see notifiable activities recorded on the Environmental Management Register)
- (d) All other notifiable activities listed in Schedule 2 of the EP Act.

An ERA is an activity that has been identified as one that will, or has the potential to, release contaminants into the environment causing environmental nuisance or harm. If a development application involves an activity that is an ERA, the application must be assessed against the EP Act. The environmental impacts associated with the activities are primarily managed through licensing ERAs under the IPA and the EP Act. Schedule 1 of the *Environmental Protection Regulation 1998* lists and describes the activities that are ERAs.

Depending on the type of the ERA, the administering authority for a particular ERA could be the EPA, another State Department, or a Council. The designated administering authority for the activity carries out this assessment. The applicable IDAS trigger for ERAs is Schedule 8, Part 1, Table 2, Item 1.

It has been determined that approval for the following ERAs will likely be required for the Gladstone-Fitzroy Pipeline project:

- (a) ERA 16 – Water Treatment Plant (for the proposed water treatment plant at Alton Downs).

A number of other ERAs may also potentially be triggered during the construction stage, including ERA 7 - Chemical storage; ERA 11 - Crude oil or petroleum product storage; or, ERA 19 - Dredging. Approvals for these potential ERAs will be the responsibility of a construction contractor should it be necessary for such activities to occur on site.

1.9.3.4 Vegetation Management Act 1999

The *Vegetation Management Act 1999 (VM Act)* regulates the management of vegetation including establishing an assessment and approval process for assessable vegetation, which is defined as:

- (a) Remnant vegetation as mapped by EPA (Regional Ecosystems) regardless of land tenure
- (b) Non-remnant native vegetation on State land.

DNRW is the lead agency for implementation of this vegetation management framework and, in both its capacity as assessment manager and concurrence agency, is responsible for the assessment of development applications for clearing native vegetation.

The *VM Act* will potentially be triggered by any clearing of assessable vegetation associated with the construction of pump stations, WTP, pipeline and/or storage tanks. The applicable IDAS trigger is Schedule 8, Part 1, Table 4, Item 1.

Unless the application is packaged with other subsidiary approvals, the application will be made directly to DNRW in relation to each section of the pipeline that passes through remnant vegetation.

1.9.3.5 Coastal Protection and Management Act 1995

The *Coastal Protection and Management Act 1995* provides a comprehensive framework for the coordinated management of the coastal zone, primarily through the *State Coastal Management Plan – Queensland's Coastal Policy 2001* (State Coastal Management Plan) and regional coastal management plans.

Coastal management districts have been declared under the Coastal Protection and Management Act 1995 along the whole coast of Queensland and over tidal waters. In respect to the study area, the coastal management district has been defined under the Curtis Coast Regional Coastal Management Plan as extending along Raglan Creek to the Highest Astronomical Tide (HAT) mark (which is approximately at the point where a line extended in a northerly direction from the common boundary between Lots 4 and 9 on RP600945 intersects Raglan Creek). HAT is the highest level which can be predicted to occur under average meteorological conditions and any combination of astronomical conditions.

Under Schedule 8, Part 1, Table 4, Item 5(b) of the *IPA*, operational work that is carried out completely or partly within a coastal management district, is triggered as assessable development.

Otherwise, development of the Gladstone-Fitzroy Pipeline project that may trigger approval processes under the *Coastal Protection and Management Act 1995* in regard to:

- (a) Tidal works
- (b) Draining or allowing drainage or flow of water or other matter across State coastal land above high-water mark
- (c) Constructing or installing works in a watercourse and not assessable under the *Water Act*
- (d) Reclaiming land under tidal water.

1.9.3.6 Fisheries Act 1994

The purpose of this Act is to provide for the use, conservation and enhancement of the community's fisheries resources and fish habitats. Fisheries development approvals issued under the *Fisheries Act 1994 (Fisheries Act)* are administered through the IPA and the IDAS.


Whilst there are no aspects of the Gladstone-Fitzroy Pipeline project that will be located within a declared fish habitat area, the removal, destruction or damage to marine plants triggers the requirement for an operational works permit under Schedule 8, Part 1, Table 4, Item 8 of the IPA, unless the development is self assessable against the provisions of an applicable code for self assessable development prepared under the IPA and the *Fisheries Act*.

Marine plants are defined by the *Fisheries Act* as plants and any plant material located on or adjacent to tidal lands, such as mangroves, samphires, saltcouch and any other saltmarsh plants, seagrasses and algae. Any disturbance, removal or destruction of Marine plants will require approval from the Department of Primary Industries and Fisheries through the IDAS process.

In addition, if the construction or raising of temporary barriers within watercourses is required as part of the pipeline construction works, approval/s under the *Fisheries Act* may be required for a waterway barrier (refer Schedule 8, Part 1, Table 4, Item 6 of the IPA).

1.9.3.7 Aboriginal Cultural Heritage Act 2003

The *Aboriginal Cultural Heritage Act 2003 (Aboriginal Cultural Heritage Act)* provides the legislative framework for managing and protecting Aboriginal cultural heritage issues associated with any development project that involves disturbance of the landscape. Amongst other things, the *Aboriginal Cultural Heritage Act* provides for the development and approval of a Cultural Heritage Management Plan (CHMP) between a proponent and an Aboriginal party as to how a project is to be managed to avoid harm to Aboriginal cultural heritage.



A CHMP is required to be developed and approved under Part 7 of the *Aboriginal Cultural Heritage Act* where an EIS is required for a project under other legislation.

On the basis that an EIS is required under the SDPWO Act for the Gladstone-Fitzroy Pipeline project, GAWB is required to prepare and seek approval for a CHMP in accordance with Section 87 of the *Aboriginal Cultural Heritage Act*. This matter is discussed further in Chapter 14, Cultural Heritage.

1.9.3.8 Nature Conservation Act 1992

The *Nature Conservation Act 1992 (NC Act)* provides that wildlife is to be managed in accordance with:

- (a) The management principles prescribed by this division for the class of the wildlife
- (b) The declared management intent for the wildlife
- (c) Any conservation plan for the wildlife.

Native flora and fauna species of conservation significance are listed as Endangered, Vulnerable, Rare, or Near-Threatened in the *Queensland Nature Conservation (Wildlife) Regulation 2006*.

All native plants in Queensland are deemed “protected plants” according to the NC Act. The Queensland Parks and Wildlife Service administers the Act. A clearing permit can only be granted if not prohibited within the plan and the taking of plants will not have significant impact on a viable population or community of wildlife.

In regard to the project, a clearing permit may be triggered by the ‘taking’ of plants or habitat for animals listed under the Act in association with the construction of the pipeline and associated infrastructure. The presence of significant plants or habitat within the study area is described in Chapter 6, Terrestrial Flora; Chapter 7, Terrestrial Fauna; and Chapter 8, Aquatic Flora and Fauna.

1.9.3.9 Transport Infrastructure Act 1994

For works involving state-controlled roads, approvals may also be required under the *Transport Infrastructure Act 1994 (Transport Infrastructure Act)*. Such approvals are obtained through the Department of Main Roads (DMR). Ancillary works and encroachment agreements, made in consultation with DMR are normally required for each location where works will occur within the road reserve of a State-controlled road. A blanket agreement may be sought with DMR to cover all such works.

Under Section 49 of the *Transport Infrastructure Act*, if impacts on State-controlled roads are expected as a result of construction activities, an assessment of the impact may be required prior to activities commencing.

The approval of Queensland Rail as the railway manager for the North Coast Line and the Bajool Port Alma Rail Line is required under the *Transport Infrastructure Act* if works are to be undertaken that will interfere with existing rail corridor land and infrastructure.

1.9.3.10 Summary of Legislation and Approvals Required

A summary of the approvals required under relevant Queensland legislation is provided in Table 1 in Appendix C- Development Approvals.

1.9.4 State Policy

1.9.4.1 State Planning Policies¹

The provisions of IPA enable the Queensland Government to prepare and adopt State Planning Policies (SPPs) to establish the government’s position in regard to planning and development matters of State significance. There are currently five SPPs that are relevant to the Gladstone-Fitzroy Pipeline project. These are discussed below.

State Planning Policy 1/92: Development and the Conservation of Agricultural Land

The protection of agricultural land from unplanned or inappropriate development is essential to maintain the future productivity and efficiency of rural industries. The Queensland Government considers that good quality agricultural land is a finite resource that must be protected and managed for the longer term. This SPP provides for the conservation of good quality agricultural land and sets out broad principles to protect this resource from inappropriate development.

The impact of the construction and operation of the pipeline in respect to good quality agricultural land is addressed in Chapter 5, Soils and Contamination.

State Planning Policy 2/02: Planning and Managing Development Involving Acid Sulfate Soils

SPP 2/02 focuses on managing the potential adverse impacts on the environment and human health when undertaking activities such as excavation or filling in locations where ASS are known or likely to occur.

¹ A State Planning Policy is a statutory instrument made by a Minister of the Queensland Government about a matter of State interest pursuant to the IPA Chapter 2, Part 4.

Section 2.2 of SPP 2/02 states that the policy applies to all land, soil and sediment at or below 5 m AHD where the natural ground level is less than 20 m AHD that is the subject of development involving any of the following activities:

- Excavating or otherwise removing 100 m³ or more of soil or sediment
- Filling of land involving 500 m³ or more of material with an average depth of 0.5 m or greater.

Potential and actual ASS is addressed further in Chapter 5, Soils and Contamination. In addition, a detailed ASS Management Plan will be prepared in accordance with the process and requirements specified in Appendix 4 of the SPP 2/02 prior to the commencement of construction.

State Planning Policy 1/03: Mitigating the Adverse Impacts of Flood, Bushfire and Landslide

SPP 1/03 relates to the consideration and mitigation of adverse impacts relating to flood, bushfire and landslide, events that are potentially relevant to this project. In the case of this project, the potentially relevant events are likely to be related to flooding, bushfire and landslide. Development affected by the SPP includes *community infrastructure* (such as water cycle management infrastructure) that provide services vital to the wellbeing of the community.

The former local government areas within which the pipeline and associated infrastructure will be located (i.e. Fitzroy Shire, Rockhampton City and Calliope Shire), have identified natural hazard management areas in the respective planning schemes in accordance with SPP 1/03.

The impact of natural hazards including flooding, landslide and bushfire are addressed in Chapter 16, Hazards and Risks.

State Planning Policy 2/07: Protection of Extractive Resources

The SPP sets out the State's interests concerning development on or in the vicinity of extractive resources of State significance (referred to as Key Resource Areas or KRAs).

KRAs throughout Queensland are identified by the SPP, including both extraction and processing areas (including future expansions of mines/quarries) and a separation area designed to buffer the extractive industries from surrounding land uses.

The intake structure in the Fitzroy River is located directly adjacent to the boundary of the separation area for the Pink Lily KRA (see Chapter 4, Land Use and Infrastructure). It is considered that the operation of the intake structure would not have any impact on the resource within the Pink Lily KRA, as the location of the infrastructure is outside the boundary of the separation area, which is beyond the boundary of the resource extraction and processing areas.

A stretch of the pipeline approximately 1.5 km long (see Chapter 4, Land Use and Infrastructure) crosses the defined separation area for the Yarwun KRA located next to Quarry Road in Calliope Shire, which is some 6 km from the end of the pipeline. Quarry Road to the west of the resource/processing area is identified as the transport route for the KRA. This is a sizeable resource that is one of only two operating quarries that supply a full range of crushed rock products to the Gladstone region, making it of "strategic significance" to Gladstone and surrounds. The proposed pipeline infrastructure that crosses the separation area consists only of the actual pipeline itself (and not booster or pump stations or any other associated buildings/infrastructure), so the impact upon this development in the separation area would be minimal.

State Coastal Management Plan and Curtis Coast Regional Coastal Management Plan

The State Coastal Management Plan – Queensland's Coastal Policy (EPA 2001) was prepared under the *Coastal Protection and Management Act 1995* and expresses the State's vision for the management of Queensland's coast and its environs. The State Coastal Management Plan is given the status of a SPP under the provisions of the *IPA*.

A regional coastal management plan under the *Coastal Protection and Management Act 1995* was also been released for the Curtis Coast regional coastal area in 2003. Together, the State and regional coastal plan nominate a series of management outcomes and policies identified in Table 2 of Appendix C that are relevant for the project. The table outlines how these policies relate to the various elements of the project and discuss how the matters dealt with in the policies have been addressed by the EIS.

Summary

Table 1.11 provides a summary of the relevance of each of the SPPs to the Gladstone-Fitzroy Pipeline project.

Table 1.11 Applicable State Planning Policies

SPP Number	Title	Relevance
SPP 1/92	Development and the Conservation of Agricultural Land	Construction of the pipeline using traditional trenching techniques may have short-term impacts on the use of some agricultural land within the project area. Above-ground facilities will generally be located away from areas of good quality agricultural land (GOAL)
SPP 2/02	Planning and Managing Development Involving Acid Sulfate Soils	With parts of the study area at or below 5 m AHD, there is potential for construction activities to expose material which results in the release of acidic leachate. Therefore, investigation of the presence of acid sulfate soils and identification of appropriate management regimes is required
SPP 1/03	Mitigating the Adverse Impacts of Flood, Bushfire and Landslide	The location and design of above-ground aspects of the project (e.g. WTP, pump stations and storages/reservoirs) will have to consider the effects of flooding, bushfire and landslide
SPP 1/07	Protection of Extractive Resources	The intake structure is located immediately upstream in the Fitzroy River from the Separation Area boundary of the Pink Lily KRA. A stretch of the proposed pipeline alignment crosses the Separation Area for the Yarwun KRA
State Coastal Management Plan and Curtis Coast Regional Coastal Management Plan	Under the <i>Coastal Protection and Management Act 1995</i> , the <i>State Coastal Management Plan</i> and the <i>Curtis Coast Regional Coastal Management Plan</i> have the status of SPPs for the purpose assessing and deciding development applications.	The project area is located within the coastal zone. Construction of works within the coastal management district and in tidal waters is subject to coastal management plans

1.9.4.2 State Development Areas (SDAs)

As described in Section 1.4.9, over part of its route, the project area is situated within two SDAs declared under the *State Development and Public Works Organisation Act 1971*. These are the Gladstone State Development Area and the Stanwell-Gladstone Infrastructure Corridor.

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 Gladstone-Fitzroy Pipeline project will require Material Change of Use approvals under the Development Schemes of the two SDAs in which the pipeline will be located.

Consistency of the Gladstone-Fitzroy Pipeline project with the Development Schemes for each of the 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 *Integrated Planning Act 1997*.

The project is located within the Aldoga Precinct, Yarwun Precinct and the Materials Transportation and Services Corridor Precinct. The Aldoga Reservoir is specifically located in the Aldoga Precinct.

Under the GSDA Development Scheme, the pipeline and reservoir fit within the ambit of the definition of "public utility". Under Schedule 1 of the Development Scheme, "public utility" is considered to be a use that is *highly likely to meet the purpose of the land use designation*. On this basis, the project is considered to be consistent with the intent of the GSDA Development Scheme.

Stanwell - Gladstone Infrastructure Corridor

The SGIC 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 will apply for development applications that would otherwise require a material change of use permit under the IPA.

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

From an initial review, it would appear that the project can achieve the seven outcomes expressed in Policy 1. On this basis, the Gladstone-Fitzroy Pipeline project is considered to be consistent with the intent of the draft SGIC Development Scheme.

1.9.5 Regional Policy

The Central Queensland Regional Growth Management Framework (CQRGMF) is the principal, long-term, integrated regional planning strategy to guide the management, growth and development of the Central Queensland region.

The CQRGMF recognises that Gladstone’s role in the future prosperity of the region (and Queensland) stems from the level of major industrial development and infrastructure that currently exists is imminent or is planned. The consistency of the project with the policy framework on which the CQRGMF is based is detailed in Table 3 of Appendix C- Development Approvals.

The project is consistent with the strategic planning and triple-bottom-line objectives of the CQRGMF in that the pipeline will provide economic and social drivers for the region through allowing for the establishment of large-scale industry in the region.

1.9.6 Local Government Planning Schemes

Prior to March 2008, the local governments traversed by the project were Rockhampton City, Fitzroy Shire and Calliope Shire. In March 2008, the local government reform process in Queensland resulted in the amalgamation of the various local government areas to form the Rockhampton Regional Council and Gladstone Regional Council. However at the time of writing this EIS, the planning schemes and local laws relevant to the former shires are still in place until they are updated to reflect the amalgamation. The planning schemes are described below, where relevant to the Gladstone-Fitzroy Pipeline project.

It is noted that should the Gladstone-Fitzroy Pipeline project be designated as community infrastructure by the Minister for Natural Resources and Water under the IPA, assessment against the various planning schemes will not be required.

1.9.6.1 Fitzroy Shire Planning Scheme

Under Part 2 of the Fitzroy Shire Planning Scheme, the project will fall partly within the ambit of the use definition “public facility – other” (for the WTP) and partly within the ambit of the use definition “public facility – operational”. These definitions are reproduced below:

“public facility – other” means the use of any premises for the purposes of any installation or undertaking for any infrastructure / purpose not otherwise defined; including but not limited to the following:

- (i) *A waste handling, treatment or disposal facility (except excavation or filling carried out at a premises where it was lawfully established prior to the commencement of this Planning Scheme, and in accordance with any conditions of development approval);*
- (ii) *sewerage treatment works;*
- (iii) *a gaol; reformatory or similar penal establishment;*
- (iv) *hospital, aged care facility or health care institution where accommodation for patients and/or carers is provided; or*
- (v) *Telecommunication facilities defined as Major Impact Facilities under the Commonwealth Telecommunications Act 1997 to the extent that they include:*
 - (a) *Towers or other structures of more than 5m above tree canopy height or above prevalent roof lines in a residential or other sensitive area or adjacent to an existing residence, residential zone or other sensitive area;*
 - (b) *Towers or other structure of more than 10m above tree canopy height or above prevalent roof lines; and*
 - (c) *Aerial cabling in a residential locality or adjacent to an existing residence or residential zone.*
- (vi) *The provision of infrastructure on premises for the conveying or providing of services to a development/ use located on another lot, including the infrastructure for water, gas or sewer pipelines, or other structures or towers used for the provision of electricity or telecommunications.*

“public facility – operational” means the use of any premises for the purposes of any installation or undertaking for a Local, State or Federal government or public sector entity infrastructure / purpose, including:

- (vii) the supply of water, hydraulic power, electricity or gas, or any development required for the purpose of that undertaking by way of:
 - (a) development of any description at or below the surface of the ground (not above);
 - (b) the installation of any plant inside a building or the installation or erection within the premises of a power station of any plant or other structures required in connection with the station;
 - (c) The Transmission Grid as defined in the Electricity Act 1994 (including the installation or erection of an electrical transmission line of sub stations, feeder pillars, pole transformers and kiosks or transformer housing);
 - (d) The Supply Network as defined in the Electricity Act 1994; and
 - (e) the placing of pipes above the surface of the ground for the supply of water, the installation in a water distribution system of booster stations and meter or switchgear houses.
- (viii) the provision of sewerage or drainage services, (but excluding a sewerage treatment works);
- (viii) a wharf, water transport or a river undertaking;
- (viii) The construction of, or a material change of use for, a new road as defined in the Transport Infrastructure Act 1994 by a public sector entity as defined in the Integrated Planning Act 1997;
- (viii) The use of premises for the purpose of constructing, maintaining and operating rail transport infrastructure as defined in the Transport Infrastructure Act 1994. To remove any doubt, "other rail infrastructure" that is excluded, for the purposes of this Planning Scheme includes freight yards/depots, rolling stock construction/maintenance workshops, employee car parks, parts of a railway station not associated with operating a railway (e.g. coffee shops, newsagencies, travel agencies, tourism offices, car parks etc), office buildings (excluding offices directly associated with the operations of a railway at the location of the offices) and the like;
- (viii) Those forms of telecommunication facilities which are made exempt under the Commonwealth Telecommunications Act 1997, and as described in the Commonwealth Telecommunications Act 1997, the Telecommunications (Low-Impact Facilities) Determination 1997, and the Telecommunications Code of Practice 1997, and to remove any doubt, for the purposes of this Planning Scheme those facilities defined as Low Impact, Minor Impact, Medium Impact facilities and Major Impact facilities that are not otherwise defined in Public Facility – Other;

- (viii) the provision of infrastructure on premises for the conveying or providing of services to a development/ use located on another lot, including the infrastructure for water, gas or sewer pipelines, or other structures or towers used for the provision of electricity or telecommunications; and

- (viii) a depot operated by, or for, the Council or other public entity.

The proposed WTP will be located on land which is included in the Alton Downs Zone (Precinct 2). Under the relevant assessment tables for this zone contained in Part 4 of the Fitzroy Shire Planning Scheme, a material change of use for "public facility – other" is impact assessable. Operational works (such as excavation and site works) as would occasion the construction of the pipeline are self-assessable in the Alton Downs Zone (Precinct 2) and the Rural Zone.

Regard must be given to these levels of assessment, however, GAWB is seeking a CID for this project and by virtue of Schedule 9, Table 5, Item 5 of the IPA, such development will be exempt from assessment against the Fitzroy Shire Planning Scheme.

1.9.6.2 Rockhampton City Plan

Under Chapter 3 of the Rockhampton City Plan, the project will fall within the ambit of the use definition "public facility":

Public Facility means the use of any premises for the purposes of any installation or undertaking for:

- (i) the supply of water, hydraulic power, electricity or gas but excluding power generation plants burning 100kg or more of fuel per hour; or
- (ii) the provision of sewerage or drainage services, including a sewerage treatment works; or
- (iii) the storage and/or treatment of garbage; or
- (iv) a gaol; reformatory or similar penal establishment; or
- (v) a wharf, water transport or a river undertaking;
- (vi) any Local, State or Federal government infrastructure / utility purpose not otherwise defined; or
- (vii) a depot operated by or for the Council or a public sector entity.

Section 3.3.1 of the Rockhampton City Plan identifies development that is exempt from assessment against the planning scheme. This includes:

Any other development for a public facility not specifically referred to above, except where it involves:

- (i) *The erection of new buildings or structures or the reconstruction or alteration of an existing building or structure that would materially affect the design or external appearance of the building or structure; or*
- (ii) *Any of the following:*
 - (a) *A waste handling, treatment or disposal facility (except excavation or filling carried out at a premises where it was lawfully established prior to the commencement of this Planning Scheme, and in accordance with any conditions of a development approval); or*
 - (b) *Sewerage treatment works; or*
 - (c) *Any form of penal establishment.*

Therefore, the section of the pipeline within former Rockhampton City area will be exempt from both assessment against and compliance with the Rockhampton City Plan.

1.9.6.3 Calliope Shire Planning Scheme

Under Schedule 1 (Dictionary) of the Calliope Shire Planning Scheme the project will fall within the ambit of the use definition “major infrastructure”:

Major Infrastructure means the use of premises for the purpose of the provision of facilities and services providing services such as electricity supply, gas, raw water, transport (air, rail, road and sea), rail terminals, pipelines and conveyors, and telecommunications which is likely to have a notable impact.

The majority of the proposed pipeline infrastructure within the Calliope Shire area will be developed within the SGIC and therefore the material change of use aspect is not subject to the planning scheme.

The pump station and reservoir at Raglan will be located outside of the SGIC. These elements of the Gladstone-Fitzroy Pipeline project would fall within the ambit of the use definition “minor infrastructure” under Schedule 1 of the Calliope Shire Planning Scheme:

Minor Infrastructure means the use of premises for the purpose of the provision of facilities and services providing services such as electricity supply, gas, raw water (emphasis added), transport (air, rail, road and sea), rail terminals, pipelines and conveyors, and telecommunications which is not included in the Major Infrastructure definition and is likely to have a minimal impact and where the impact is confined to adjoining premises.

A material change of use for “minor infrastructure” is exempt in all zones within the Calliope Rural Locality.

1.9.7 Local Government Laws

The project passes through the local government areas of Rockhampton Regional Council (formerly Rockhampton City Council, Fitzroy Shire Council, Livingstone Shire Council and Mount Morgan Shire Council) and Gladstone Regional Council (formerly Gladstone City Council, Calliope Shire Council and Miriam Vale Shire Council). These local governments have jurisdiction under the *Local Government Act 1993* to make and adopt local laws for the good rule and government of the local government area.

Through local laws, a local government can establish permit or licence regimes for activities they want to regulate, including undertaking blasting operations, the alteration of local roads, temporary road closures during construction and establishment of temporary housing and associated facilities. Approvals from each relevant Council under the applicable local law/s will be required prior to the commencement of such activities.

Table 1.12 summarises the requirements of the relevant local laws relating to the approval of works or associated aspects of the project (e.g. provision of temporary housing for construction workforce).

Table 1.12 Local Law Permit Requirements

Local Government	Local Law No. and Name	Permit Requirements
Rockhampton Regional Council (former Fitzroy Shire)	Local Law No 8 – Temporary Homes	s. 5- requirement to hold permit prior to establishing a temporary home.
	Local Law No 18 - Roads	s.18 – requirement to hold permit to change or interfere with the structure or materials of a local road.
Rockhampton Regional Council (former Rockhampton City)	Local Law No 7 – Roads	s.9 – requirement for approval from Council before a hole, opening or excavation is made in a road.
	Local Law No 26 – Temporary Homes	s. 5- requirement to hold permit prior to establishing a temporary home.
	Local Law No 28 – Extraordinary Traffic	s. 3 – requirement for permit to operate extraordinary traffic on local road/s.
	Local Law No 42 – Blasting Operations	s.5 – requirement that blasting operations (includes preparation of explosives for use and detonation of explosives) not be undertaken unless authorised by a permit.
Gladstone Regional Council (former Calliope Shire)	Local Law No 19 – Temporary Homes	s. 5- requirement to hold permit prior to establishing a temporary home.
	Local Law No 21 – Roads	s.14 – requirement to hold permit to change or interfere with the structure or materials of a local road.

1.10 References

Arup 2008 *Gladstone-Fitzroy Pipeline Project, Preferred Water Treatment Plant Siting Report*.

Gladstone Area Water Board, 2004, *Securing the Gladstone Region's Future: Water, Final Report of GAWB's Strategic Planning Project*, Report by the Gladstone Area Water Board.

Kingsley, L 1997, *A Guide to Environmental Assessments: Assessing Cumulative Effects*, National Parks Canada Natural Resources Branch, Quebec.

Queensland Department of Local Government and Planning, 2002, *The Central Queensland Regional Growth Management Framework*, Queensland Government Publication.

Queensland Department of Natural Resources and Planning 2006 *Central Queensland Regional Water Supply Strategy*

Queensland Environmental Protection Agency, 2001, *State Coastal Management Plan – Queensland's Coastal Policy*, Central Queensland Regional Planning Advisory Committee, Rockhampton.

Resource and Land Management Services (RLMS), 2006a, *Rockhampton to Gladstone Corridor, Infrastructure Corridor Investigation*, Report for the Department of State Development.

Resource and Land Management Services (RLMS), 2006b, *Fitzroy River Water Infrastructure Corridor Investigation Report*, Report for the Gladstone Area Water Board.

Resource and Land Management Services (RLMS), 2008, *Alton Downs Water Treatment Plant Site Options Evaluation*.

Wedgewood White Ltd, 2008, *Pricing Implications of a Second Water Source-Final Report*.