

GLADSTONE – FITZROY
PIPELINE PROJECT
Environmental Impact Statement

Cultural Heritage



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.



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14. Cultural Heritage

14.1 Introduction

This chapter presents a description of the process for identification and management of Aboriginal cultural heritage and the results of historical cultural heritage surveys and impact assessment of the area associated with the Gladstone – Fitzroy Pipeline Project (the project).

14.1.1 Aboriginal Cultural Heritage

Because the project requires an Environmental Impact Statement (EIS), Section 87 of the *Aboriginal Cultural Heritage Act 2003* (the ACH Act) states that the development of a Cultural Heritage Management Plan (CHMP) is the process through which management of Aboriginal cultural heritage will occur. This chapter provides a description of the development of the CHMP.

14.1.2 Historic Cultural Heritage

The purpose of the historical (non-indigenous) cultural heritage study is to determine the level of cultural heritage significance of the project area, determine what impacts the projects will have on the cultural heritage of the project area, and then to recommend appropriate management of these heritage values.

14.2 Methodology

14.2.1 Aboriginal Cultural Heritage

From the perspective of management and protection of Aboriginal cultural heritage, the process of developing a CHMP was divided into two stages. The first of these was associated with an initial geotechnical ground investigation program undertaken to inform the design process. As potential to harm Aboriginal cultural heritage existed during the geotechnical ground investigation program, consultation was conducted with the relevant Aboriginal Parties.

The ACH Act states that if a project area is within the external boundaries of a registered native title claim, then the native title party for that area is the Aboriginal Party with whom consultation occurs. In the case of the project, almost the entire proposed corridor is within the boundaries of two registered native title claims, namely the Darumbal People and the Port Curtis Coral Coast (PCCC) applications. Each of these claimant groups was consulted.

In the case of the Darumbal People, agreement was reached between the Aboriginal Parties and GAWB that a Terms of Reference would be developed for monitoring of the geotechnical ground investigation program within the Darumbal native title claim area. As avoidance of cultural heritage was the first principle of this Terms of Reference, monitors had the ability to change the position of, or request abandonment, of each geotechnical site. Once executed by the parties, the Terms of Reference became an agreement under section 23(3)(a)(iii) of the ACH Act, resulting in GAWB meeting its cultural heritage duty of care during the geotechnical ground investigation program.

In the case of the PCCC native title claim group, initial discussions about developing a section 23(3)(a)(iii) agreement were commenced. After the second meeting of the Aboriginal Parties, a Federal Court decision ruled that a change of applicants for the claim would occur on 29 June 2007, effecting an immediate change of the Aboriginal Parties. This necessitated re-commencing consultation with the new Aboriginal Parties, resulting in the execution of an agreement that provided appropriate management of cultural heritage during the geotechnical program.

The areas (two lots) of unclaimed land have had geotechnical work completed for them. For these areas, both PCCC and Darumbal (the claimants of the adjacent land) were present and undertook cultural heritage surveys for the land.

A CHMP will be undertaken for the project prior to construction. This will involve notification of the Aboriginal Parties pursuant to section 91 of the ACH Act, followed by endorsement of those Aboriginal Parties who respond to the notification. Public notification will also be required for the small area of land through which the corridor passes that is not within the boundaries of a registered native title claim. Once Aboriginal Parties are endorsed by GAWB, an agreement will be reached on the best way to develop the CHMP. Once the agreement has been executed by all parties, it will be registered by the Chief Executive of the Department of Natural Resources and Water (DNRW). Intentions are that the agreement will contain all directions and processes required to achieve compliance with the project's cultural heritage duty of care.

The CHMP agreement will be completed before construction commences. It is anticipated that cultural heritage surveys will be undertaken by Darumbal and PCCC representatives, resulting in comprehensive cultural heritage reports. Recommendations made by these reports about appropriate management of Aboriginal cultural heritage will be guided by the contents of the CHMP agreement. Once the agreement has been executed by all parties, it will be registered by the Chief Executive of the Department of Natural Resources and Water. It is intended that the agreement will contain all directions and processes required to achieve compliance with the project's cultural heritage duty of care.

14.2.2 Historic Cultural Heritage

Historic heritage research was undertaken with the assistance of an extensive library and database held by ARCHAEO (cultural heritage consultants) and public library facilities (John Oxley, University of Queensland, Central Queensland University and Queensland University Fryer Libraries). Library and archival research is intended to provide an historical overview of the broad areas under consideration.

Online searches of National, State and Local heritage registers were carried out to identify places and sites of cultural heritage significance that may be impacted by the proposed development plans.

The field survey methodology adopted for this study included a pedestrian and vehicle inspection along the project corridor and adjacent areas targeting landmark areas within public access points and on properties where access was granted, for example property boundaries, power line easements, creek lines and escarpments. It is estimated that approximately 70 percent of the entire project area was surveyed. All survey data was recorded in field notebooks and locations of any items or places of historical cultural heritage significance were captured via a hand held global positioning system (GPS) receiver, accurate to $\pm 4\text{m}$. Areas of interest were photographed. For this particular study, a purposive sampling strategy was employed. Contextual research, including the analysis of detailed aerial photography and consultation with local council staff and land owners enabled a systematic survey of areas known to be of historical interest and significance whilst remaining inside the survey timeframes.

The field survey results were analysed within the context of historical research, consultation and relevant legislative frameworks that assist in determining heritage significance, to confirm the nature of the cultural heritage significance within the study area and the potential impacts of the project in relation to the study area. Specific management recommendations were provided for the protection of potential areas of cultural heritage significance.

In accordance with Part 7(s55) of the *Queensland Heritage Act 1992*, a cultural heritage technical report was provided under permit to the Cultural Heritage Unit of the Environmental Protection Agency. The technical report has not been included as an appendix to the EIS but can be provided upon request.

14.3 Outcomes

14.3.1 Field Survey Results – Aboriginal Cultural Heritage

The field surveys will be undertaken by Darumbal and PCCC representatives as part of the CHMP process. At the time of writing the EIS this process is yet to be finalised.

14.3.2 Field Survey Results – Historic Cultural Heritage

The location data for all material found is listed in Table 14.1 and mapped in Figure 14.1 and Figure 14.2. Historical sites of cultural heritage significance are identified by the prefix HAS (Historical Archaeological Site). Locations of objects and/or places of historical interest are identified by the prefix HI (Historical Interest). HAS 2 and HAS 3 are the only items within the 30 m right-of-way (ROW) with the other sites being in surrounding lands.

Table 14.1 Location data for items/places located during the survey

Site ID	GPS coordinates ¹		Comments
	Eastings	Northings	
HAS 1	270921	7379111	Survey Tree 1
HAS 2	247556	7406052	Woolwash – Frogmore Pipeline
HAS 3	270248	7378885	Stone Culvert and Twelve Mile Road
HAS 4	296383	7365212	Survey Tree 2
HI 1	235815	7418564	House 1
HI 2	239553	7409343	House 2
HI 3	239553	7409343	Lagoon
HI 4	270916	7379689	Bird and Fish Nature Reserve
HI 5	271311	7378935	Dump on Marble Gully
HI 6	264856	7383095	Steel Dump
HI 7	296415	7365338	Windmill
HI 8	290109	7369106	House 3
HI 9	258533	7383054	Explosives sheds/polytunnel

1. Geodetic datum = WGS84. Position format = UTM/UPS grid. Grid Zone = 56K

14.3.3 Determining Aboriginal Cultural Heritage Significance

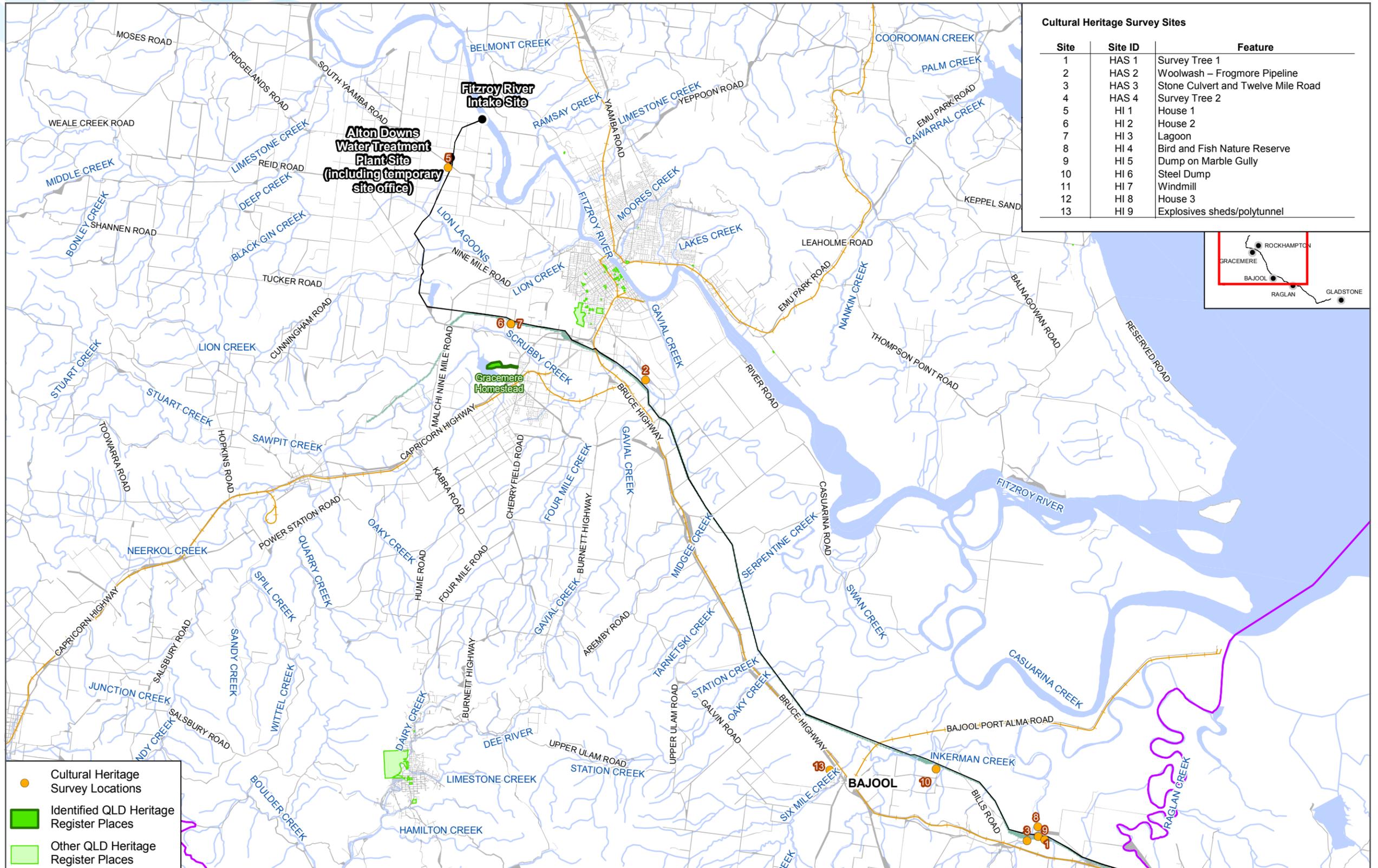
The ACH Act guides the way in which the significance of Aboriginal cultural heritage is assessed. It states that Aboriginal cultural heritage is a significant Aboriginal area or object, or “evidence, of archaeological or historic significance, of Aboriginal occupation of an area of Queensland” (Section 8). A significant Aboriginal area or object is an area or object “of particular significance to Aboriginal people because of either or both Aboriginal tradition, or the history, including contemporary history, of any Aboriginal party for the area” (Sections 9-10). Section 12(5) states that “for identifying a significant Aboriginal area, regard may be had to authoritative anthropological, biogeographical, historical and archaeological information”.

Effectively, this approach to the assessment of significance meets the principles of the ACH Act, namely that “the recognition, protection and conservation of Aboriginal cultural heritage should be based on respect for Aboriginal knowledge, culture and traditional practices”, and that “Aboriginal people should be recognised as the primary guardians, keepers and knowledge holders of Aboriginal cultural heritage” (Section 5(a) and (b)).

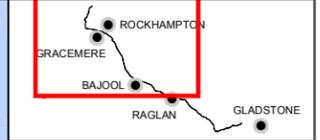
14.3.4 Determining Historic Cultural Heritage Significance

Cultural heritage significance relates to people’s perspective of place and sense of value, within the context of history, environment, aesthetics and social organisation.

The Burra Charter (Marquis-Kyle and Walker 1999) guides cultural heritage management in Australia. First adopted in 1979 by Australia International Council on Monuments and Sites (ICOMOS), the charter was initially designed for the conservation and management of historic heritage. However, after the addition of further guidelines that defined cultural significance and conservation policy, use of the charter was extended to Indigenous studies.



Site	Site ID	Feature
1	HAS 1	Survey Tree 1
2	HAS 2	Woolwash – Frogmore Pipeline
3	HAS 3	Stone Culvert and Twelve Mile Road
4	HAS 4	Survey Tree 2
5	HI 1	House 1
6	HI 2	House 2
7	HI 3	Lagoon
8	HI 4	Bird and Fish Nature Reserve
9	HI 5	Dump on Marble Gully
10	HI 6	Steel Dump
11	HI 7	Windmill
12	HI 8	House 3
13	HI 9	Explosives sheds/polytunnel



Gladstone - Fitzroy Pipeline Project

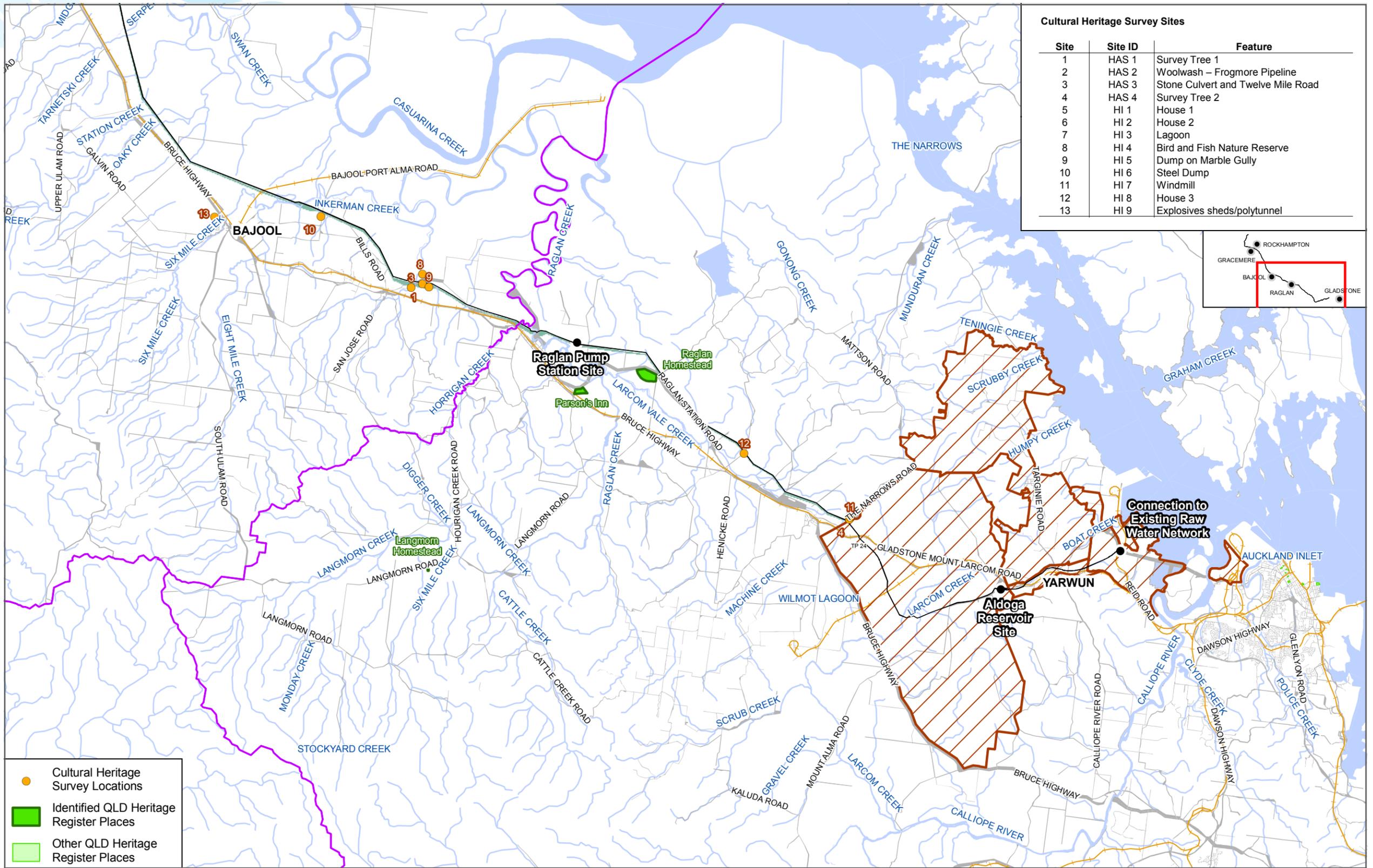
Figure 14.1 - Items and Places of Significance and/or Interest - Fitzroy to Bajool

Sheet 1 of 1

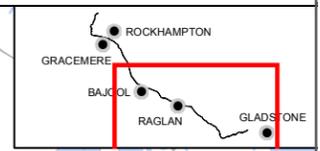
- Cultural Heritage Survey Locations
- Identified QLD Heritage Register Places
- Other QLD Heritage Register Places
- The Right of Way
- Road Reserve
- Waterways
- Railway Line
- SGIC
- Project Infrastructure
- Waterways
- LGA Boundary
- GSDA

Scale: 0 5 10 15 km
1:200,000 at A3

While every care is taken to ensure the accuracy of this data, the Gladstone Area Water Board (GAWB) makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which might be incurred as a result of the plan being inaccurate or incomplete in any way and for any reason. It should also be noted that final survey of the pipeline alignment and SGIC boundary are yet to occur and may result in changes to the alignments depicted here.



Site	Site ID	Feature
1	HAS 1	Survey Tree 1
2	HAS 2	Woolwash – Frogmore Pipeline
3	HAS 3	Stone Culvert and Twelve Mile Road
4	HAS 4	Survey Tree 2
5	HI 1	House 1
6	HI 2	House 2
7	HI 3	Lagoon
8	HI 4	Bird and Fish Nature Reserve
9	HI 5	Dump on Marble Gully
10	HI 6	Steel Dump
11	HI 7	Windmill
12	HI 8	House 3
13	HI 9	Explosives sheds/polytunnel



- Cultural Heritage Survey Locations
- Identified QLD Heritage Register Places
- Other QLD Heritage Register Places

Gladstone - Fitzroy Pipeline Project

Figure 14.2 - Items and Places of Significance and/or Interest - Bajool to Gladstone

Sheet 1 of 1

● Project Infrastructure	— The Right of Way	— Road Reserve	— SGIC
— Railway Line	— Waterways	— LGA Boundary	▭ GSDA

1:200,000 at A3

While every care is taken to ensure the accuracy of this data, the Gladstone Area Water Board (GAWB) makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which might be incurred as a result of the plan being inaccurate or incomplete in any way and for any reason. It should also be noted that final survey of the pipeline alignment and SGIC boundary are yet to occur and may result in changes to the alignments depicted here.

The charter defines conservation as ‘the processes of looking after a place so as to retain its cultural significance’ (Article 1.4). A place is considered significant if it possesses aesthetic, historic, scientific or social value for past, present or future generations (Article 1.2). The definition given for each of these values is as follows (Articles 2.2 to 2.5):

- **Aesthetic value.** This includes aspects of sensory perception for which criteria can and should be stated. Such criteria may include consideration of the form, scale, colour, texture and material of the fabric; the smells and sounds associated with the place and its use
- **Historic value.** Encompasses the history of aesthetics, science and society and therefore to a large extent underlies all of the terms set out in this section. A place may have historic value because it has influenced, or has been influenced by an historic figure, event, phase or activity. It may also have historic value as the site of an important event. For any given place the significance will be greater where evidence of the association or event survives in situ, or where the settings are substantially intact, than where it has been changed or evidence does not survive. However, some events or associations may be so important that the place retains significance regardless of subsequent treatment
- **Scientific research value.** This will depend on the importance of the data involved, on its rarity, quality or representativeness, and on the degree to which the place may contribute further substantial information
- **Social value.** Social value embraces the qualities for which a place has become a focus of spiritual, political, national or other cultural sentiment to a majority or minority group.

Article 26 of *The Burra Charter* notes that other categories of cultural significance may become apparent during the course of assessment of particular sites, places or precincts. A range of cultural significance values may apply.

Every place has a history, aesthetic value or a social meaning to some member of a community. Most places therefore meet some of the criteria prescribed above. It is, however, neither possible nor desirable to conserve every place. Some measures must be applied to these broad criteria in order to determine the degree of significance. The degree to which a place is significant will determine the appropriate forms of conservation management for that place.

Assessing cultural heritage significance against set criteria is a widely recognised method of achieving consistent, rational and unbiased assessments. Various authorities and bodies involved in heritage conservation adopt assessment criteria including the Australian Heritage Council, the National Trust, Australia ICOMOS, the Queensland Environmental Protection Agency and the Queensland Heritage Council.

The cultural heritage significance of the study area was evaluated using recognised benchmarks such as *The Burra Charter* and *Queensland Heritage Act 1992*. These findings are summarised in Table 14.2 below.

Table 14.2 The nature of the cultural heritage significance of the study area

Value	Rating	Justification
Aesthetic	Low	Surviving today as what has remained a relatively rural setting, the study area presents a level of aesthetic qualities related to natural and historic nature of the site (relevant to the local community).
Historic	Low-moderate	Representing historical activities including pastoral, mining and agricultural pursuits commonplace to the area since settlement.
Scientific	Low	Elements survive as remnants of the historic nature of the study areas, especially the pastoral and agricultural pursuits, which collectively have potential to contribute to an understanding of the local area's history.
Social	Low-moderate	Properties in the study area have a connection with the families who have lived and worked on them. Several families who live on properties within the study area have continuously lived on the land since it was first settled.

14.4 Assumptions and Limitations

14.4.1 Aboriginal Cultural Heritage

No assumptions or limitations were placed on the monitoring program undertaken during geotechnical investigations. Avoidance of Aboriginal cultural heritage was the first principle of management, with the intention that if Aboriginal cultural heritage was present, geotechnical testing could be shifted, or if necessary, could be abandoned, so that protection to that heritage could be prioritised. At this stage, no assumptions or limitations are being considered as relevant to the development of the CHMP.

14.4.2 Historic Cultural Heritage

14.4.2.1 Ground Integrity (GI)

An assessment of ground integrity (GI) provides an indicator of whether or not the land surface within a landscape under study has been modified or not, and if so, the degree of disturbance encountered. Landscape modification may influence the context (and therefore integrity) of areas of historical cultural heritage interest. Levels of GI were determined using a percentage range between 0–100 per cent where 0 per cent indicates all GI is gone, and 100 per cent represents excellent preservation of the original context. Therefore:

- Zero: 0 per cent
- Poor: 1–25 per cent
- Moderate: 26–50 per cent
- Fair: 51–75 per cent
- Good: 76–85 per cent
- Excellent: 86–100 per cent.

Much of the study area demonstrated poor GI, exhibiting clear evidence of long term clearing associated with the pastoral and agricultural history of the area. This was particularly noticeable in the general lack of mature vegetation and the predominance of cleared and grazed paddocks, regrowth scrub and sparse woodland. Notable areas of higher integrity included remnant corridors of woodland (predominantly *Eucalypt* and *Melaleuca*) along the banks of creek lines and road reserves.

14.4.2.2 Ground Surface Visibility (GSV)

Assessments of ground surface visibility (GSV) provide an indication of how much of the ground surface can actually be seen. GSV is most commonly inhibited by vegetation but other inhibitors may include concrete, gravel and bitumen, and these mask the visibility of potential places of significance. Levels of GSV were determined using a percentage scale in that 0% represents zero visibility and 100% represents maximum visibility (bare ground). Therefore:

- Zero: 0 per cent
- Poor: 1–25 per cent
- Moderate: 26–50 per cent
- Fair: 51–75 per cent
- Good: 76–85 per cent
- Excellent: 86–100 per cent.

The better the visibility, the more potential there is for locating historical/archaeological material.

Much of the study area demonstrated poor to moderate GSV. A clear view of the ground surface within the majority of cleared paddocks was obscured by dense short grasses, weeds and scrub. Dense scrub and woodland along creek lines also hindered visibility. Areas of higher GSV occurred where erosion was prevalent and along vehicle tracks and cattle pads.

14.4.2.3 Property Access

Land access became a constraint throughout the course of this survey, and consequently certain areas along the pipeline route were not surveyed. As a result no cultural heritage assessment could be carried out for those areas.

14.4.2.4 Potential Sites and Places of Cultural Heritage Significance

There is some potential for further sites and places of heritage significance to exist within the study area. The field survey was conducted in an attempt to capture a suitable cross section of sites and places which are currently unknown within the project corridor. Reflecting on the historical background of the region, potential sites and places may include elements associated with (but not limited to):

- Pastoral activities
- Agricultural and industrial pursuits
- Early settlement
- Subdivision of the land (including blazed trees and early fences)
- Rail and road infrastructure.

14.5 Relevant Legislation and Policy

Knowledge of cultural heritage legislation is essential when assessing sites, places or items of cultural heritage significance. The following section discusses National, State and Local Government Legislation relevant to Cultural Heritage.

14.5.1 National Legislation

At the national level, the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) is the key national heritage legislation and is administered by the Commonwealth Department of the Environment, Water, Heritage and the Arts. In addition, the following legislation is relevant to heritage:

The *Australian Heritage Council Act 2003* (Cth) (AHC Act) provides for the establishment of the Australian Heritage Council, which is the principal advisory group to the Australian Government on heritage issues.

The *AHC Act* also provides for registration of places considered of national significance on the National and Commonwealth Heritage Registers and the Register of the National Estate (RNE) or the Australian Heritage Places Inventory (AHPi).

14.5.2 State Legislation

The paramount legislation in Queensland with regard to Aboriginal cultural heritage is the ACH Act, which states that a person who carries out an activity must take all reasonable and practicable measures to ensure the activity does not harm Aboriginal cultural heritage (the “cultural heritage duty of care”) (Section 23[1]). The ACH Act states that it is an offence for a person to harm, remove or possess cultural heritage if the person “knows or ought reasonably to know that the object is Aboriginal cultural heritage” (s26). The ACH Act also states:

Without limiting the matters that may be considered by a court required to decide whether a person has complied with the cultural heritage duty of care in carrying out an activity, the court may consider the following:

- (a) The nature of the activity, and the likelihood of causing harm to Aboriginal cultural heritage
- (b) The nature of the Aboriginal cultural heritage likely to be harmed by the activity
- (c) The extent to which the person consulted with Aboriginal parties about the carrying out of the activity, and the results of the consultation
- (d) Whether the person carried out a study or survey, of any type, of the area affected by the activity to find out the location and extent of Aboriginal cultural heritage, and the extent of the study or survey
- (e) Whether the person searched the database and register for information about the area affected by the activity
- (f) The extent to which the person has complied with cultural heritage duty of care guidelines (Section 23(2)).

In the case where cultural heritage issues exist, a proponent can move ahead with a mitigation program on the following basis:

A person who carries out an activity is taken to have complied with the cultural heritage duty of care if the person is acting:

- i. Under the authority of another provision of this Act; or
- ii. Under an approved cultural heritage management plan; or
- iii. Under a native title agreement or another agreement with an Aboriginal party, unless Aboriginal cultural heritage is expressly excluded from being subject to the agreement; or

- iv. In compliance with cultural heritage duty of care guidelines (Section 23(4) (a), p. 20).

Historical cultural heritage matters are covered in the *Queensland Heritage Act 1992* (Qld) and subsequent amendments (which include the *Queensland Heritage and Other Legislation Amendment Act 2003* (Qld)). This legislation provides for a listing of places within a Heritage Register. Protection is offered to places that have been entered on the Queensland Heritage Register according to a set of criteria.

The Queensland Heritage Act 1992 (Qld) and subsequent amendments do not apply to:

- (a) A place that is of cultural significance solely through its association with Aboriginal tradition or Island custom; or
- (b) A place situated on Aboriginal or Torres Strait Islander land unless the place is of cultural heritage significance because of its association with Aboriginal tradition or Islander custom and with European or other culture, in which case this Act applies to the place if the trustees of the land consent. (Section 61) (Please note: the Act is now being used sufficiently broadly that old mission sites are being heritage registered).

14.5.3 Local Government Legislation

14.5.3.1 Former Fitzroy Shire

Cultural Heritage is discussed briefly in the Fitzroy Shire Local Planning Scheme. It is understood that a local heritage study has been completed and a local heritage register is currently under construction. Consultation with Council officers revealed one site of local heritage significance located within the Shire Gracemere Homestead. This site is also listed on the Register of the National Estate and the Queensland Heritage Register.

14.5.3.2 Former Calliope Shire

The protection, maintenance and enhancement of cultural heritage are discussed in the Calliope Town Planning Scheme, however a heritage register does not currently exist. Consultation with Council has revealed three sites of local heritage significance located within the former Shire and these sites are also listed on the QLD Heritage Register. Langmorn Homestead, Parson’s Inn and Raglan Homestead.

14.5.3.3 Former Rockhampton City

Cultural Heritage is discussed in the Rockhampton City Plan and a Heritage Place Register has been established. At this stage no places of local heritage significance have been included on the Heritage Place Register.



14.6 Baseline

14.6.1 Biogeographical Background

The project corridor is located on the Central Queensland coastline between the lower Fitzroy River at Alton Downs (approximately 10 km west of Rockhampton) and Gladstone. The greater part of the project corridor forms part of the Marlborough Plains Province within the Brigalow Belt bioregion (as described by Sattler and Williams (1999)). This province is generally typified by a sub-tropical to tropical climate and vegetation in the area is largely made up of *Eucalyptus* and *Melaleuca* woodland. Extensive saline coastal littoral communities are also common.

Topographically, the area is dominated by the Fitzroy River, and Gogango and Raglan Creeks in the north and the Calliope and Boyne Rivers in the south. Low and flat land areas of swamps and marsh are common along the coastline while the western part of the region is generally hilly, but with most peaks below 1000 feet (Kelly & Queensland Department of Primary Industries 1970, pp.1-2). The geology of the area is complex and includes Devonian, Carboniferous, Permian and Cretaceous sediments, Permian volcanics and a range of igneous rocks (Sattler and Williams 1999, pp.11/7). Land use throughout the years has been dominated by long term pastoral and agricultural activities.

14.6.2 Aboriginal Background

Aboriginal people have inhabited the Gladstone area for thousands of years. Recent archaeological work at Cania Gorge south west of the study area has demonstrated an Aboriginal presence from Pleistocene times that can be dated to almost 20,000 years ago (Lilley *et al.* 1998). Archaeological work at Awoonga Dam in the Boyne Valley (ARCHAEO 2000) has suggested that humans used the long corridor of the Boyne Valley as a means to traverse the steep Great Dividing Range and move between the coastal region and the inland sites such as Cania Gorge. Roth (1898) in fact noted this human movement still continued into historical times.

One of the earliest European observations of traditional life in the Gladstone area occurred in August 1802. Matthew Flinders, during his exploration of Port Curtis, recorded a meeting with a number of Aborigines on the western side of Curtis Island who, in a gesture of defiance, threw stones at his party. He noted seven bark canoes lying on the shore; near them were hung parts of a turtle, and scoop nets (Flinders 1814, pp.15-16). During a visit to the Port Curtis area by John Oxley in November 1823, Oxley observed no Aboriginal people and believed that the area was deserted at that time of year (McDonald 1988, pp.10). This seasonal movement accords with what is emerging from the archaeological record.

Flinders (1814) explored The Narrows, and noted that there were traces of its inhabitants everywhere they landed. Fish and oysters were plentiful, Flinders observed, and fresh water was available in pools. A portrait of a man in a gunyah made from square bark sheets over a timber frame was made by William Westall, Flinders' artist (Gorman 2002). Roth (1898) recorded that local people used tortoise shell fish hooks and triangular hand nets.

During the establishment of the Colony of North Queensland in 1847 at Barney Point, Colonel George Barney and his party were digging a well (McDonald 1988a, pp.10) when they were attacked by a large group of Aborigines using slings to cast stones at the workers. The use of slings is not recorded elsewhere in accounts of Aboriginal material culture, and was apparently sufficiently unusual for Barney to reassure the Colonial secretary that it was true (McDonald 1988a, pp.11).

Richard Mitchell, son of the noted Surveyor General Sir Thomas Mitchell, during a sojourn at Gladstone of several weeks in 1855, noted material culture items such as boomerangs, spears, nulla nullas, waddies (club) and shields. Even by that early contact time, hoop iron from barrels had replaced stone as spear points, demonstrating the ability of rapid technological change when needed. Mitchell's diary notes that between two or three hundred Aborigines were camped at Barney Point, and had already adopted the use of European food and tobacco (MacDonald 1988a).

The fringe camp at Barney Point close to European settlement continued to practice ceremonial and traditional living well after the impact of disease, local massacres and dispossession by the Native Police. Huepeden (Gorman 2002) who was born in the Gladstone area after 1873 described how Aboriginal people would go to Barney Point Beach in the mullet season.

Of significance to this study is the historic Mt Larcom Station, settled by William Young in 1857. The remains of the historic station homestead, now consisting only of a bougainvillea, hand made bricks and scraps of iron, is located near the Bruce Highway. The homestead is significant from an Aboriginal perspective for the two massacres of its European occupants that led to wholesale retaliations against the local Aboriginal people. At Christmas 1857, Young, believing he was safe from attack, dismissed his Native Police protection and rode to the Bells at Annandale. On Boxing Day, an Aboriginal employee of Young's, named Burnett, brought news of the killing of five station workers, including one woman by about 50 Aborigines armed with spears and nullas. The bodies were buried by Young and John Murray of the Native Police close to the homestead. Murray pursued the group north to the Fitzroy River and shot 14 of them. In 1858 a second attack took place and three white employees were speared at a lambing station eight kilometres from the homestead. All the bodies were probably buried close to the former murdered victims (MacDonald 2001).

The impact of European settlement had a major impact on Aboriginal traditional life. Waterholes were used for stock, forests were cleared, and in many cases, Aboriginal people were shot on sight (McDonald 2001). Police Creek at Gladstone was the site of a Native Police camp located near to the large waterhole in the present day golf links. An Aboriginal attack on the camp around 1854 led to the deaths of several of the attackers.

Raglan Creek roughly marked the boundary between the Darumbal and the Port Curtis Corral Coast people. Mount Larcom and White Rock are both significant dreaming sites for Aboriginal people in the Gladstone region, the former visible from most parts of the study area. The Calliope River is an important and ever-present feature in the landscape, and its major food resources formed an important element in the cultural landscape. To the north of Gladstone, nearer to the study area, further middens are located on the mainland in The Narrows between Curtis Island and the coast. These large middens demonstrate the importance of marine resources to the Gladstone Aboriginal people (ARCHAEO 2005a).

Sites may have had both a visual and unseen significance. Symbols would direct people passing by that a place was off-limits, because of totemic, mythological or arcane reasons. It might have associations with increase rituals, for the replenishment of plant and animal life as food, or with various spirits, considered powerful either good or evil, (or both), that dwelt in the area. Because ceremonies had such importance and intensity for traditional Aboriginal people, whereby the very connection to the land was reforged, there are places that contain special significance that can be felt, even today, yet contain no identifiable archaeology to confirm its existence.

Large social gatherings were a feature of Aboriginal life in central and southeast Queensland. It seems that groups met for ceremony, trade and social intercourse within the Gladstone area, possibly around Auckland/Police Creek, where there were large lagoons able to sustain numbers of people. It is likely that the area formed a catchment point for groups from the Targinie, Mount Larcom, Tannum, Boyne and Miriam Vale areas.

Aboriginal people used stone tools as part of their daily tool kit, along with bone, wood, cordage and bark. Due to natural processes of decomposition, particularly termites, in many cases it is only lithic (stone) artefacts that have survived to testify to the presence of a site. Stone tools were made from nodules of suitable stone - such as quartzite, silcrete, chert, tuff, rhyolite, selected basalts, silicified wood, chalcedony and silicified sandstone and mudstone. The nodules were cleaved into workable sizes and then cores prepared by carefully striking off cortex and uneven areas to produce a platform core from which numerous flakes and blades could be obtained.

14.6.3 Historical Background

The following discussion presents a summary of the historical background to the areas of Alton Downs, Gracemere, Rocklands, Gavial, Midgee, Archer, Bajool, Raglan, Mount Larcom, Epala, Ambrose and Yarwun, located within the vicinity of the project corridor. It is not intended to be an exhaustive historical treatment of these parts of the present study area. It is based on a period of library and archival research in relevant documents and secondary sources, and is intended to provide an historical overview of the broad areas under consideration.

Online searches of the National and Commonwealth Heritage Lists, Register of the National Estate and the Queensland Heritage Register were conducted to identify places and sites of cultural heritage significance that may be impacted upon by the project. The Register of National Estate and the Queensland Heritage Register identify four sites that fall within the project study area. These sites are listed below in Table 14.3.

Table 14.3 Register of National Estate and Queensland Heritage Register listings in the vicinity of the project corridor

Location	Register of the National Estate	Old Heritage Register
Former Fitzroy Shire		
Gracemere Homestead Gracemere Road, Gracemere	✓	✓
Former Calliope Shire		
Langmorn Homestead Langmorn Road, Raglan		✓
Parson's Inn Raglan Station Road, Raglan		✓
Raglan Homestead Raglan Station Road, Raglan		✓

14.6.3.1 Fitzroy to Bajool

Alton Downs

The district of Alton Downs is located approximately 15 km north of Gracemere and 13 km north west of Rockhampton. These rolling downs were selected as the location for Rockhampton's Agricultural Reserve in response to the Land Act of 1860. The Act contained clauses that encouraged agricultural settlement within a five mile radius of towns that had a population of 500 or greater (McDonald 1995). William Orr was the first applicant for an allotment and successfully established a well-run progressive farming venture (McDonald 1995, pp.58). Among other early arrivals to the district include the Struber Brothers, Stephen and Franz, who first settled at the Nine Mile in 1872. This property had been sub-divided and sold numerous times over the years however according to (Johansen 2003, pp.119), a descendent of the family recently purchased the old homestead and a few acres of the original lease. The agricultural reserves produced a variety of crops in the early days, including potatoes and sugar (McDonald 1997, pp.340). Later, however, some farmers turned to dairying and coupled with agriculture constituted the main industry of the area (Johansen 2003, pp.119). The increases in primary production eventually lead to the increase of services in the local towns. By the late 1960s, dairying was beginning to fall off as a result of expenses involved in bulk milk deliveries and the loss of the British butter market, and farmers began growing grain and cattle farming (Johansen 2003).

The Alton Down's rail line between Rockhampton and Ridgeland opened in 1916 and this rail link overcame many problems caused by the notoriously bad roads for the settlers (Johansen 2003, pp.121). Ridgeland and Alton Downs were the main centres on this railway however Ridgeland was the only one to develop a commercial centre. The rail line provided better access to and from Rockhampton for the settlers, good transport for dairy produce and enabled a more efficient mail delivery service to the district. With road improvements and better road transport, the rail line was no longer a feasible option and was subsequently closed in 1955 (Johansen 2003).

Like many towns around Australia, the community of Alton Downs honours the fallen and all those who served their country during wartime conflicts. A memorial was erected at Alton Downs in 1923 in remembrance of the Anzacs of World War 1 (Johansen 2003, pp.139). The cenotaph was originally erected at the Alton Downs School and was later relocated to the site of the Alton Downs Hall (Johansen 2003, pp.139).

Gracemere

Gracemere is located approximately 10 km west of Rockhampton. The area takes its name from the first pastoral lease taken up in the area by the Archer Brothers near the Farris, later Gracemere lagoon in 1855 (McDonald & Rockhampton Council 1995, pp.19). At its peak Gracemere was a consolidated

run of 348 square miles (901 km²) that was slowly resumed and leased in smaller holdings to encourage closer settlement as a result of Queensland government legislation (Gracemere State School 1871-1971 Centenary Souvenir 1971, pp.11).

As more land was made available, the area's "undulating plains with low hills on granitic and volcanic rocks" attracted many small farmers to the Gracemere area (McClurg 1999, pp.1). This settlement growth led to the establishment of the small town of Gracemere. While as late as 1999 the area retained its dominant rural character, encroaching urban sprawl from Rockhampton was placing pressure on this traditional land use (McClurg 1999, pp.1).

The area around contemporary Gracemere was first discovered by Ludwig Leichhardt and Thomas Mitchell during their explorations in the area between 1844 and 1846 (McDonald & Rockhampton Council 1995, pp.17). Leichhardt informed his friends the Archer Brothers about the newly discovered region and this inspired Charles and William Archer to journey to the district where they charted the Fitzroy River and noted the rich agricultural prospects of the region (Archer ND).

Throughout the second half of the nineteenth century the region west of Rockhampton was essentially an agricultural district. However, this was punctuated by a brief burst of mining activity that assisted the area's population growth. Gracemere's growth was closely linked to the urbanisation and economic development of Rockhampton.

Because of the land degradation caused by grazing sheep, many of the smaller farms turned to beef and dairy cattle during the late 19th century. However, dairy cattle proved to be unsustainable due to the lack of reliable transport infrastructure and limited local demand for butter and cream. With the first successful shipment of refrigerated beef from Argentina to Great Britain in 1880 a new export market developed for the Fitzroy region (Hermann 2002, pp.229).

While pastoral production remained central to the area around Gracemere during the first part of the twentieth century, a number of other primary industries also developed. Correspondingly, the Fitzroy Shire continued to grow, as did the town of Gracemere. Throughout this period Rockhampton remained the regional hub for central Queensland and much of Gracemere's development was linked to the city's services and infrastructure (Queensland Coke and Energy Pty Ltd 2006, pp.12-4).

Following the cessation of World War II in the Pacific in 1945 the area around Gracemere began to experience a number of changes. Initially these developments were linked to the area's rural production. However, from the 1970s onwards industrial and residential growth in the region had begun to impact on the town of Gracemere and its surrounds. These changes have affected the structure and importance of the town of Gracemere and its hinterland.

Beef cattle undeniably became the most important pastoral activity in the area after World War II. However, this industry received a substantial boost from efforts to breed cattle that were suited to the local conditions around Gracemere and the Fitzroy Shire (McDonald 1988b, pp.198). Additionally the demand for refrigerated milk runs forced many small dairy farmers out of that industry due to the high capital expenditure requirements allowing more land to be converted to beef cattle (Johansen 2003, pp.41). By 1959 Imperial Chemical Industries Ltd (ICI) had stockpiled over 8,000 t of locally produced salt from their Bajool works to be used in the curing of beef processed in the area (Bajool State School 1988, pp.118).

Residential growth has continued in Gracemere. The expenditure of over \$2.5 million on the shire's roads in 1994–95 aided both rural industry and residents who commuted to Rockhampton for work ("Service and Feedback – Shire's Key to Success" 1994). Although the population of the Fitzroy Shire had declined by 2001 to 9,554, Gracemere could boast 4,500 residents, making it the most important town in the region (Queensland Coke and Energy Pty Ltd 2006, pp.12-14).

Rocklands, Gavial, Midgee, and Archer

Little mention of the settlements of Rocklands, Gavial, Midgee, and Archer is made in the historical record. The sites of these modern day locales were first settled either as a part of the Archer brothers' original Gracemere run in 1858, or later as the brothers began to occupy more leasehold land in the region (McDonald & Rockhampton Council 1995, pp.19). At one time the Archers' property holdings stretched as far south as modern day Raglan, and included the land where these current locales are found.

Throughout its use by European settlers much of the Gracemere to Gavial area has been typified by rural land use and amenity (McClurg 1999, pp.1). During the early years of their tenure, the Archer Brothers grazed sheep on their properties; however, around 1896, they established the first sizable dairy farm in the Fitzroy region at their Matchem Farm near Gracemere (Johansen 2003, pp.35).

The construction of the Gladstone to Rockhampton Rail line (later known as the North Coast line) brought some small industry to the region. Archer, Gavial, Rocklands and Midgee were all established as sidings on the line and encourage local industry.

While there is little evidence of the settlement in the area, records of two local schools do remain – Midgee State School and Archer Provisional School, which closed in the 1940s and 1922 respectively.

Rail and road links continued to remain vital to the region as the twentieth century continued. On 7 January 1985 tenders for the construction of an electrical substation at Rocklands were invited by Queensland Rail. The total cost of works was estimated at \$493, 926 (Queensland State Archives Item ID 1027672 - Main

Line Electrification -Civil Works Substations at Rocklands - T.S.C. Raglan Contract CE.B514). In 2002 the former Rockhampton City Council's decision to keep the road bridge over the Port Curtis Road opened was lauded by residents of Midgee ("Old Midgee Bridge to stay open" 2002). These road and rail links provide means of communication and for products to be sent to market, which is vital for a rural settlement. However, in recent years the proximity of the area around Gavial and its transport links has seen urban sprawl from Rockhampton encroach upon the areas previously rural amenity (McClurg 1999, pp.1).

14.6.3.2 Bajool to Gladstone

Bajool

The area around the town of Bajool was first occupied by the Archer Brothers when they took up additional runs south of their Gracemere property in 1874. Originally the area was known as Ulam. A permanent settlement in the vicinity of contemporary Bajool was founded six miles (9.7 km) from the Gracemere homestead and was known for some years simply as Six Mile. This settlement was later renamed Bajool, reportedly meaning "deep water hole" in the local Aboriginal language (Bajool State School 1988, pp.12-18). Other reports claim that Bajool can be translated from the Aboriginal language as "stop here" (Bajool State School 1988, pp.81).

While its hinterland contains much fertile farmland, the area between Bajool and Port Alma consists mainly of bare saltpan and mangrove mudflat (Ross 2007, pp.2). The area has relied mainly on primary economic production, initially farming and some mining, but later on the production of solar evaporated salt. Additionally, a railway line to Port Alma has provided employment for Bajool residents at the port and helped the town's urban development.

Despite being a sparse agricultural settlement, the small town of Bajool developed a range of services to cater for the population of the surrounding hinterland.

During the first decades of the twentieth century the area around Bajool continued to rely on agricultural industry supplemented by some other primary production. While the provision of improved transport links greatly assisted the town and region's development, the lack of coordination of these services was detrimental. Nonetheless, the town continued to provide a focal point for communal services and activities.

Acknowledging the under-development of Port Alma, the former Rockhampton City Council borrowed £500,000 in 1958 to fund the loading facilities redevelopment (Westacott 1970, pp.26). To assist the port's stevedoring activities and re-development a new road was built from Bajool to Port Alma and opened on 12 April 1960 (Hermann 2002, pp.242). The road link was meant to improve transport for goods and labour to the port. Port Alma's upgraded facilities also gave a boost to other activities in the



Bajool region. Noting the high concentration of bare saltpan and mangrove mudflat and its accompanying briny salt water, Central Queensland Salt Industries began pumping the salt laden water into ponds for solar evaporation as early as April 1957 (Gracemere State School 1871-1971 Centenary Souvenir 1971, pp.68).

Capitalising on Bajool's proximity to transport links and the mineral rich fields of Central Queensland, Du Pont opened an explosive manufacturing plant near Bajool in 1974. By 1979 this plant was employing more than 70 people from the area (Bajool State School 1988, pp.129).

Throughout this period the town of Bajool continued to supply an increasing number of communal services in conjunction with the rising population brought by these successful industries. Both the School of Arts building (1951) and the local hotel (1960) after they were destroyed by a cyclone and fire respectively were rebuilt pointing to the demand for such services during the 1950s and 60s. Both were still on their original sites and being used into the 1980s (Bajool State School 1988, pp.110). Increasing enrolments at the Bajool State School necessitated \$45,000 worth of extensions to the school's buildings in 1975 and the construction of new sports oval in 1974 (Bajool State School 1988, pp.37). Today the school continues to service the small local community. Despite these developments in 1992 Bajool was "a charming small town with interesting characteristics" (Price 1992).

Raglan

The Raglan district covers an area of approximately 647 km² from Port Alma south towards Gladstone and west towards Mount Alma and the Dee Ranges. Raglan Creek was named by H.J. Stanley in 1864 after Lord Raglan a veteran of the Crimean War and the first pastoral run in the area shared this name (Raglan State School 1979, pp.7). A town was first surveyed on this run in 1867 and it also took the name Raglan. (Calliope (Old: Shire) Council 1979, pp.148) Historically the area has been typified by rural land use and this trend continues as the former Calliope Shire Council's report for 2005/06 noted there were only 25 applications for residential development in the area in the previous four years (former Calliope Shire Council 2006, pp.18).

Archival records show that the 'Raglan' pastoral run was first applied for in 1855 at the same time as Mount Larcom and Riverstone Run on the Boyne River, but it was not taken up at the time (Calliope Shire Council 1979, pp.27). Like most of the surrounding district, sheep farming was the initial pastoral activity carried out at Raglan.

Following the separation of the colony of Queensland from New South Wales in 1859, the area around Raglan experienced an influx of gold prospectors from the Canoona fields to the north who later turned their attentions to farming. This influenced the economic and urban development of the area and led to the creation of the town of Raglan.

While this process did encourage closer settlement, it was not until the advent of gold prospecting began on the Raglan and Langmorn runs in 1867 that the population increased. Raglan was roughly thirty six miles (58 km) south of Rockhampton and did not attract a large number of miners (Bird 1904, pp.216). When it became clear that the site did not contain payable seams, some miners went north to the Rockhampton fields but many gave up their claims and turned instead to farming.

The combination of new residents and continuing resumption and sub-division of farming land saw the town of Raglan develop into a social, community, and administrative centre. During the 1870s Edwin Parsons built the town's first hotel on the stock route between Gladstone and Rockhampton (Raglan State School 1979, pp.14).

Although the Raglan district remained a productive agricultural basin, its development during the late nineteenth century was severely hampered by the lack of reliable transport links with Rockhampton and Gladstone's Port Curtis. The rail line was completed on 23 December 1903 with a siding at Raglan. Throughout the post World War II years, Raglan has remained the hub of the surrounding community.

During the war, the Bruce Highway between Gladstone and Rockhampton was upgraded to bitumen surfaces and new improved bridges were built over the Raglan and Horrigan. This road was moved to new alignment in 1966 and higher bridges over the creeks in the area were built to ensure more reliable movement of goods and services (Raglan State School 1979, pp.101).

While a decline in dairy farming was occurring, other forms of employment became available. ICI, Australia's salt works on the Raglan Creek, provided some employment for residents in the area, as did the upgraded Port Alma facility (Raglan State School 1979, pp.26). Other industries such as fishing and crabbing provided income to the area. However, this industry in particular was over exploited and by 1976 it had all but ceased as a viable commercial enterprise (Raglan State School 1979, pp.20).

Throughout these years, the Raglan State School continued to service the local community until 1996. Despite the loss of the school, a number of community organisations continue to function in the Raglan area.

Mount Larcom

Located approximately 70 km south of Rockhampton and 35 km north of Gladstone at the intersection of the Bruce Highway and Port Curtis Way, the town of Mt Larcom takes its name from the prominent volcanic peak to the east that overlooks the Boyne Valley. Like many of the small locales in the present study area, Mount Larcom has served as a service town for the agricultural hinterland.

The first European to pass through the area near the contemporary locale of Mount Larcom was the explorer Ludwig Leichhardt during his explorations in the region in between 1844 and 1846. Leichhardt was soon followed by his friends the Archer brothers.

Dairying was the primary agricultural activity on runs around present day Mount Larcom during the 1870s, however some small scale crops were grown to support the station's residents. In 1902 Andrew Harper Stirrat and his wife Mary Ethel Louise Farmer moved to Mount Larcom station and there Stirrat erected a new homestead that he named Euroa (Laver 2004, pp.92).

The most important development for the area around the contemporary town of Mount Larcom occurred with the completion of the North Coast railway line between Gladstone and Rockhampton in 1903 (Bird 1904, pp.348). A combination of improved services, increased migration and government incentives encouraged increased settlement in the area around Mount Larcom following the completion of the North Coast line. The clearing of soft wood around Mount Larcom, Ambrose, Yarwun and Targinnie from 1909 intensified agricultural activity and encouraged population growth in the area from around 1912 (McDonald 2001, pp.18).

With the continuing growth in the area's population and urban settlement near the railway siding a town reserve was proclaimed in 1915 (Laver 2004, pp.89). The town's importance and size was augmented by the inclusion of land around Mount Larcom in the soldier settlement scheme following the end of World War I (Kelly & Queensland. Department of Primary Industries 1973, pp.1-3). Although this scheme failed, it did bring new settlers into the area, especially around the Boyne Valley.

Although Mount Larcom remained the most important town in the region in the years following the cessation of the Second World War, gradually its population and social infrastructure began to decline. After a twenty year hiatus, the Mount Larcom and District Agricultural Show was re-inaugurated in 1953 (Holborow 1999, pp.10).

During the early 1970s the town remained surrounded by agricultural settlements with dairying, beef cattle, and fodder and grain crops being complimented by the timber industry ("Why it was named Mount Larcom" 1971). However, continuing rationalisation of the dairy industry and increasing demands for capital intensive investment in other farming sectors resulted in a decline in the number of farms in the area.

Although Mount Larcom was connected to the Boyne River water system in 1983 – bringing much needed infrastructure – during the late 1980s and mid 1990s building approvals for the town were well below other locales in the former Calliope Shire pointing to the town's declining population (former Calliope Shire Council 1995, pp.7). By 1995 the town's population had fallen considerably and this meant it was not "the busy place" it had

been during the 1950s (Lucke & Krakat 1995). The cause for much of this stagnation in the town was placed with the Hong Kong conglomerate Sam Chair's reluctance to sell or improve their extensive property holdings in the town (Positive Solutions 2000, pp.48).

While the town faced a number of challenges at the turn of the twenty-first century including a drift of population away from the town and other settlements in the shire receiving inordinate share of Council funding, the community remained "willing and able to play an active part in maintaining the character of the district and the services it enjoyed" (Positive Solutions 2000, pp.48). For example, the Mount Larcom and District Show is still the only one held in the former Calliope Shire and it is known as "The Friendly Show". Additionally, 2007 marked the 125th anniversary of the Mount Larcom State School. It is still a combined primary and secondary school that caters for 120 students from prep to year 10. Although the town's population by 2000 had dipped as low as 213 (Positive Solutions 2000, pp.38), in the last years it has begun to rise again so that the town can now boast approximately 350 residents.

Epala

The small locale of Epala came into being in the historical record after a siding was placed there following the completion of the North Coast Rail line in 1903. Like other sidings in the region, the one at Epala serviced the surrounding area as both a place where goods could be shipped to market and supplies for settlers could be obtained. This made the siding an important element in local European history.

Some local industry evolved because of the Epala siding. For example, an area for a fire wood cutting plant was granted at Epala on 11 March 1921 and extinguished 25 July 1925 (Queensland State Archives Item ID 993880 - lease Guano Fertiliser Co -Epala). However, the continuing decline in rural population and production in the area, allied to the availability of other forms of transport, led to the siding at Epala being officially closed on 2 September 1950 (Queensland State Archives Item ID 994531 - Siding 357 miles 30 Chains -North Coast Line - Level Crossing - Epala (Late Menzies)).

Ambrose

The town of Ambrose is located 65 km south of Rockhampton and 35 km west of Gladstone on the Bruce Highway. Local sources attribute the town's name to early resident and lime miner Henry Gilbert (Harry) Ambrose. Although the current site of the town of Ambrose was resumed from the Raglan Run in 1884, close settlement did not occur until the first decade of the twentieth century.



With the inauguration of the Kidston settlement scheme in 1909 the area experienced a rise in population. A number of small settlements evolved, including Ambrose, Machine Creek, Hut Creek and Langmorn. Each of these settlements had its own school.

Dairy farming was the primary agricultural activity and this was supported by a timber industry that grew out of the necessity of clearing the land to create productive farmland. Both of these industries were made viable by the proximity of the North Coast Rail line (Holborow 1989: 5). By 1910 the area was described as “suitable for the usual semitropical farm crops” (Holborow 1989, pp.94). The continued clearing of softwood around the area, aided by the establishment of a timber mill at Ambrose, led to an intensification of agricultural activities and a rush for prospective sugar cane land in 1912 (McDonald 2001, pp.18).

While dairy farming remained the most dominant agricultural activity in the years after the Second World War new, forms of cultivation began to support these activities. The cultivation of fruit crops including zucchini, paw paws, grapes, squash, tomatoes, jack fruit, passionfruit, avocados and persimmons, which began on a small scale during the 1920s, increased in scale during the 1950s and continues as an important part of rural production of the area (Holborow 1989, pp.80). During the 1950s, peanut cultivation boomed and continued into the 1970s when it became economically unviable (Holborow 1989, pp.78).

Throughout the 1950s and 60s a number of services and institutions were improved or introduced to the area around Ambrose. The closure of the Hut Creek State School in March 1945 was indicative of the population decline of some of the smaller settlements in the region. However, the small town of Machine Creek continued to support itself as evidenced by the establishment of an interdenominational Sunday school in April 1950 with 45 students.

As the century progressed the dairy industry went into decline. The area around Ambrose was not immune and this led to substantial population decline and the closure of a number of local schools including Langmorn State School and Machine Creek State School (Holborow 1989, pp.133/142).

The decline of these smaller settlements meant that Ambrose’s role as a hub for communal life solidified. Ambrose State School undertook a series of extensions to cater for the new students. The fall in the area’s overall population saw the Ambrose Post office replaced by a mailbag service in 1977 (Kingston 1988, pp.4). Nonetheless community organisations such as the QCWA remain active in Ambrose and the Ambrose State School continues to draw enrolments from outlying rural properties (ABC Capricornia 2007). Today the school has an enrolment of 53 students from prep to year seven.

Yarwun

Yarwun began as cattle station country (Loveday 1979, pp.131), however timber soon became an important source of local income. The early settlers in the Yarwun-Targinie district were teamsters engaged in hauling mill timber and props for the Mount Morgan Mines. Timber was also extensively cut for railway sleepers and some local sawmills were established, particularly at Yarwun (Loveday 1979, pp.131).

Gold had been discovered in the Targinie/Yarwun district as early as 1880, when a 36 kg gold nugget was discovered on the Golden Fleece deposit in Sneaker’s Gully, on the west of the Mt Larcom Range (SPP 1995, pp.2). After 1900, discoveries of gold were made on the eastern side of the Mount Larcom Range. The Archer’s reefs were mined between the turn of the century and World War II, and other local mines were also situated in the vicinity (SPP 1995, pp.2). Remnants of the local mining industry have been located on private land near Yarwun (Loveday 1979, pp.139).

Cotton was grown as early as 1865 in the area and tentative moves were made to establish this crop more securely between 1915 and 1923 with the establishment of the Callide Cotton Research Station. However, any attempts at cotton crops were devastated by drought, pests, falling prices and government restrictions (McDonald 1988a, pp.295).

During the 1950s papaws became the main fruit crop, reaching a peak between the late 1950s and early 1960s (Loveday 1979, pp.134). By 1960 up to 30,000 cases of papaws a year were distributed from Yarwun. In more recent years, local agriculture has diversified somewhat. The production of peanuts boomed in the area for several years, but this is now restricted to one or two farms. Grain growing and pig raising are the main sideline farming activities, although some cotton is grown as well as fodder crops.

14.6.4 Previous Archaeological Assessment (Aboriginal and Historical)

Archaeological surveys previously conducted in the Gladstone area include those of Hill (1978, 1981), Alfredson (1989, 1991, 1992), Barker (1993), Lilley (1980, 1994), Ann Wallin and Associates (now ARCHAEO Cultural Heritage Services) (1995a, 1995b, 1997, 1998a, 1998b, 1999), and ARCHAEO (2000, 2005a, 2005b, 2006 and 2007). Most surveys have occurred as specific cultural heritage assessment projects for major industrial proposals, including the Rundle and Stuart oil shale project, Aldoga development area, Materials Transport and Services Corridor, the Queensland Cement plant at Fishermans Landing, the Orica gas pipeline, the Comalco refinery and the Awoonga Dam raising.

Ann Wallin & Associates (1997) investigated the Fishermans Landing area. A midden site with associated stone artefacts was located on Bashford's sand ridge, between the Queensland Cement Limited plant and the railway line and Fishermans Road. Other stone tools, including a microlithic backed blade in green chert - a type that suggests some antiquity for the Gladstone area - were located in the sand ridge during an excavation of the proposed Orica gas pipeline within the Aldoga Service Corridor. Three other sites, including an extensive artefact scatter with a quartz backed blade, were located along Boat Creek (Ann Wallin and Associates 1998a).

ARCHAEO Cultural Heritage Services undertook a major study prior to the raising of the Awoonga Dam (ARCHAEO 2000) which is more than 50 km from the project area. A total of more than 333 sites, including dreaming sites, good and bad places, rockshelters, stone arrangements, bora rings/ceremonial sites, burials, massacre sites, open camp sites, artefact scatters, water holes, food resources, scarred trees, quarries and ochre sources were documented.

ARCHAEO (2005a) has undertaken an extensive study since 1999 of the Stuart Oil Shale Project in the Targinie area which is more than 4 km from the project area, and located reported burials, artefact scatters, stone axes, scarred trees, rockshelters, quarries and a potential stone arrangement.

Ulm (2002) has presented a chronological model for the Curtis Coast based on radiocarbon dating and excavations from open sites rather than rock shelters. His study is based on the present coast and it is important to note that earlier Pleistocene sites may have been present prior to inundation by higher sea levels. These dates are based on known sites:

Phase 1: 4000bp – 1500bp

- Initial occupation of region
- Use of high quality siliceous stone, including that obtained from outside local area
- Tools curated for maximum use life
- Ephemeral coastal occupation by inland groups using highly mobile strategies over the broad region and major river systems like the Boyne River.

Phase II: 1500bp- AD1830s

- Almost exclusive use of local raw materials
- Increase in number of sites occupied
- Increase in intensity of site usage
- Extremely large low density sites on estuary margins
- Expedient tool use
- Manufacture of edge-ground axes on local raw material
- Shell fishing becomes widespread; change in species utilised.

Phase III: AD 1850s to AD 1920s

- Post-contact mobility systems.

Of particular importance to the project was the work undertaken by ARCHAEO (2005b) for the Enertrade Corridor which highlighted the Dry Creek area, more than 4 km from the project area, as a source of high quality chert cobbles that have been extensively utilised as a resource for making stone artefacts. Until this source was located, the only identified stone sources in the Calliope/Yarwun/Targinie area was the large silcrete quarry site at Phillipies Landing (ARCHAEO 2005a). Chert cobbles were first identified in Lot 5120 24 DS 279 near Dry Creek and are possibly eroding out of a lode in the Mt Larcom Range. There are brown and black cherts lower down the creek, but green is the most common. It is ideal for flaking to make stone tools, with a clean cleavage and creating a sharp, hard edge. From field observations it appears that cobbles were being either assayed in the creek bed or brought up onto the banks.

Cultural heritage surveying for the proposed Gladstone Pacific Nickel Refinery (ARCHAEO 2007) in the Aldoga area demonstrated that Dry Creek is not the only source of green chert cobbles, and in fact the resource is available in a spatially wider district than previously believed.

14.7 Assessment of Impacts

14.7.1 Aboriginal Cultural Heritage

The Indigenous assessment of impacts will be carried out within the proposed CHMP, which, at the time of writing, is in progress.

14.7.2 Historic Cultural Heritage

There are two facets to the assessment of cultural heritage significance of impacts. The first is the need to assess the level of cultural heritage significance of each Historical Archaeological Site. The second is the degree to which the project impacts the cultural heritage. The field survey has identified two sites of low to moderate levels of cultural heritage significance within the project corridor. Review of the proposed project area indicates that these sites are likely to be directly impacted during construction of the project. The degree to which the project impacts on these sites is dealt with by the application of significance criteria. Table 14.4 describes the significance criteria to be applied in this assessment.

14.7.2.1 Fitzroy to Gladstone

Within the pipeline corridor between the Fitzroy and Gladstone there are two Historical Archaeological Sites (HAS 2 and HAS 3) that are likely to be directly impacted by the project. These are the Woolwash – Frogmore Pipeline (Figure 14.3 and Table 14.5) and Stone culvert and Twelve Mile Road (Figure 14.4, Figure 14.5 and Table 14.6).

Table 14.4 Significance criteria for the assessment of impacts (Arup 2007)

Significance	Criteria
Major adverse	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. Mitigation measures are unlikely to remove such effects.
High adverse	These effects are more often associated with sites and features of state importance and high archaeological significance. Mitigation measures and detailed design for construction are unlikely to remove all of the effects upon the affected communities or interests.
Moderate adverse	These effects are more often associated with sites of regional importance and moderate-high archaeological significance. Mitigation measures and detailed design for construction may ameliorate/enhance some of the consequences upon affected communities or interests. Some residual effects may still arise.
Minor adverse	These effects are relevant to sites of low archaeological significance. Nevertheless, these effects are of relevance to the subsequent detailed design for construction for the project and consideration of mitigation or compensation measures.
Negligible	No effects, or those which are beneath levels of perception, within normal bounds of variation within the margin of forecasting error.

Table 14.5 HAS 2 Woolwash – Frogmore Pipeline Site details

Site Name	HAS 2 – Woolwash – Frogmore Pipeline
Location	Running between Woolwash and Frogmore Lagoons, both connected to Gavial Creek, located on the Fitzroy River flood plain 6 km south of Rockhampton within the Fitzroy to Bajool section of the pipeline.
Environmental context	Woolwash lagoon, a once permanent water source, measures 2.5 km long. Where the iron pipe and wooden bridge remnants are situated, the lagoon bed is covered with dead weeds and vines. Woolwash and Frogmore lagoons form part of a network of lagoons that connects to the River when floodwater backs up Gavial Creek. Around Woolwash lagoon the riparian vegetation has been partly removed and a Landcare project has replanted trees along a riparian section of the lagoon. Frogmore Lagoon was inaccessible due to access and weather conditions on both visits (undated aerial photographs show it to contain water).
GI	50%
GSV	50%
Site description	An eroded cast iron pipe emerging out of the north bank of Woolwash lagoon and extending across the lagoon for approx 30 m. The pipe is partially supported by a wooden bridge structure extending approximately 50 m across the lagoon. The pipe and bridge have eroded and collapsed over time leaving two tiers of wooden struts across the lagoon, apparently consisting of railway sleepers. Occasional lengths of pipe are lying 'in situ' at the base of the collapsed bridge, although most have been removed; some lie abandoned also on the south bank between Woolwash and Frogmore Lagoons. Aerial photographs show the pipeline as earthworks between the two lagoons, and extending from the north bank of Frogmore on an identical style bridge, although the preservation appears poorer than in Woolwash lagoon. These pipes remain as evidence of a water pipeline which supplied steam locomotives with water from Gavial Creek nearby.
Previous impacts	Flooding and drought. Condition: poor.
Additional comments	The true nature and extent of the pipeline is unknown and requires further research however there is a likelihood that the pipeline runs underground through the project corridor southwest of Frogmore Lagoon. The pipeline was used to pump non-saline water to the railway during the early 20 th century and as such this site is representative of technological and industrial development within the region.

Figure 14.3 Photographs of the pipeline in Woolwash Lagoon



Table 14.6 HAS 3 Stone Culvert and Twelve Mile Road

Site name	HAS 3 – Stone Culvert & Twelve Mile Road
Location	The location of this site is broad as it includes an historic road. Twelve Mile road is a well maintained graded dirt road located on the northern side of the Bruce Highway and was originally the road that linked Rockhampton and Gladstone. (This is evident from early survey maps dated 1906). The road will be traversed by the construction corridor. The road passes through the project corridor twice at approximately 2.5 km south of the town of Marmor and 1 km north of the Bruce Highway on Lots 29/DS37, 85/DS185, 1649/DT4024, 1543/DS588 and 36/DS47.
Environmental context	The road crosses several creek lines and the stone culvert is marked on a Survey Plan dating back to 1906. Throughout its length there is evidence of logging, although some mature trees have survived.
GI	25%
GSV	50%
Site description	This is the original Rockhampton to Gladstone Road and has been in use since at least 1904. The stone culvert is shown as “made crossing” on the survey plan and consists of several metamorphosed rocks constructing a dry stone wall that allows the Twelve Mile Creek to flow under the road surface.
Previous impacts	The road surface has been regraded and no mile markers were observed along its length. The south side of the culvert has been reconstructed using a concrete pipe.
Additional comments	The road corridor is shown on the 1964 Queensland 2 Mile Series as occupying a much larger corridor than its present incarnation and this matches the fence lines. This is an indicator that the road was intended to become a significant route between Rockhampton and Gladstone, and shows the early development of Queensland’s transport links. The road is within the pipeline corridor, and will potentially be impacted during construction of the pipeline. The stone culvert that forms part of this site is not located within the project corridor and therefore is not likely to be impacted. This site is representative of the settlement and development of the area around the turn of the century and as such retains cultural heritage values.



Figure 14.4 Photographs of the stone culvert (left) and its modern repairs (right)



Figure 14.5 Modern aerial photograph overlaid with 1906 Survey Map



14.7.2.2 Levels of Significance Accorded Individual Sites

In some cases, particularly those of historical heritage sites, the specification or relative contribution of each individual item or component within a site may be useful. Sites and places located during the field survey within the pipeline corridor will be evaluated accordingly using the criteria outlined in Table 14.7 and Table 14.8.

Table 14.7 Cultural Heritage Significance criteria for individual sites and places

Scientific Significance Rating	Justification	Status
Exceptional	Rare or outstanding element directly contributing to an item's local, State (or potentially National) significance.	Fulfils criteria for local, State or potentially National listing.
High	High degree of original fabric. Demonstrates a key element of the item's significance. Alterations do not detract from significance.	Fulfils criteria for local and State listing.
Moderate	Altered or modified elements. Elements with little heritage value, but which contribute to the overall significance of the item.	Fulfils criteria for local listing and may fulfil criteria for State listing.
Low	Alterations detract from significance or contain limited heritage value individually and within the site's broader context.	May fulfil criteria for local listing and does not fulfil criteria for State listing.
Intrusive	Damaging to the item's heritage significance.	Does not fulfil criteria for local or State listing.

Table 14.8 Significance for historic cultural heritage located with the pipeline corridor

Site ID	Description	Scientific Significance	Comments
HAS – 2	Woolwash – Frogmore Pipeline	Moderate	Rusting and partially collapsed pipeline and wooden bridges crossing two lagoons.
HAS – 3	Twelve Mile Road and Stone Culvert	Low-moderate	19th century stone culvert on old Rockhampton Gladstone road. Some modern repair.

As both HAS 2 and HAS 3 are sites that extend over a considerable area, only part of each site will be directly impacted by the project. The likely impact of the project on these sites is in the nature of sub-surface and surface disturbance such as vegetation clearance and open trenching associated with the pipeline's construction, and the development of associated infrastructure. Further research into the nature and extent of HAS 2 may alter the level of potential impact on this site.

14.8 Mitigation

This section provides specific recommendations to manage identified areas impacted by the project, along with general mitigation measures for potential impact on unknown sites within the study area.

14.8.1 Aboriginal Cultural Heritage

The mitigation measures will also be included as part of the CHMP process following fieldwork. The CHMP will be in place prior to construction.

14.8.2 Historic Cultural Heritage

From a heritage perspective, it is concluded that the study area contains, at best, moderate levels of local cultural heritage significance. Assuming the recommendations below are suitably implemented, this report finds the nature and level of impact by the project is manageable. In the pre-construction period, a management plan will be required to provide directions on the management of historical sites that have been found, this should include the following recommendations.

14.8.2.1 Recommendation One – Avoidance of Sites

The best form of cultural heritage management is avoidance of impact on sites and places of significance. It is, however, recognised that in the case of this project the pipeline is located within a constrained corridor and impact may not be always avoidable. It is recommended that the detailed design for construction for the project take into account each of the heritage sites and places discussed in this report, and, where reasonably possible, avoid impact to remove or contain residual impact. Where avoidance is not possible, refer to Recommendation four.

14.8.2.2 Recommendation Two – Recording of Sites HAS 2 and HAS 3

The Woolwash–Frogmore Pipeline (HAS 2) will potentially be directly impacted as a result of the project. Twelve Mile Road will be impacted as it is traversed by the project corridor.

It is recommended that a basic level of photographic recording is conducted which captures the nature of the item and its context within the cultural environment and within the study area prior to works commencing in the area.

14.8.2.3 Recommendation Three – Further Survey of HAS 2

Woolwash – Frogmore Pipeline (HAS 2) may potentially be impacted as a result of the project, as outlined above. Due to the potential for subsurface archaeological material to remain *in situ* in this area, it is recommended that a systematic assessment of this immediate area be conducted to determine the nature of the site and whether the site extends through the project corridor. A further assessment will also ensure that the type and extent of any surviving archaeological material is researched, investigated, recorded and mitigated (if required) using acceptable archaeological methods prior to any development or impact on or below ground in this area.

On the conclusion of this investigation, recommendations will be made in relation to suitable management of the site.

14.8.2.4 Recommendation Four – Cultural Heritage Management within the Construction Environmental Management Plan (EMP)

A variety of management strategies are required in order to mitigate impact and potential impact to cultural heritage values identified within this report, including strategies for managing unexpected cultural heritage material or sites found during the construction stage of the project.

These management strategies should be included in the Construction EMP for the entire project area to provide the project team with suitable information to protect sites and places of cultural heritage significance (completed prior to the construction phase of the project commencing). The cultural heritage discussion within the Construction EMP should also provide suitable strategies for the project corridor, including policies and procedures for management of archaeological finds uncovered during the project. Residual impact to sites and places within the vicinity of the project should also be considered.

Additionally, this study recommends that diligence should be practiced during works conducted within the study area, particularly during any clearing or construction phases associated with initial preparation of the project area. This diligence should include specifically instructing crews of their obligations to look for cultural heritage material and handing out educational

leaflets at Workplace Health and Safety meetings. These leaflets should inform the workers what archaeological material may look like, and give them clear instructions on what to do if they find anything.

14.8.2.5 Recommendation Five – Reassessment in the Event of a Variation to the Project Design

This study has assessed the impact of the project within the Stanwell - Gladstone Infrastructure Corridor (SGIC). Whilst unlikely, any variation to the project which places infrastructure outside the assessed corridor would require reassessment to determine the nature of the impact on sites and places of cultural heritage significance. Variation of the footprint would include:

- Variation to the location of the infrastructure corridor, particularly between Yarwun and Gladstone
- Location of project infrastructure outside the current SGIC.

14.9 Residual Impact

This assessment of residual impact is for historic heritage only, as the CHMP will address the possible impacts to indigenous cultural heritage.

Based on the results of the survey, what is known of the historic cultural heritage within the study area and the mitigation measures proposed, there would be a minor adverse impact by the project on historic cultural heritage. There is the potential for the disturbance of subsurface archaeological deposits where HAS 2 (Woolwash–Frogmore Pipeline) is located. HAS 2 currently runs in a NE – SW direction and sections of this pipe run underground. There is a likelihood that the pipe runs underground through the project corridor. It is here that some residual effects may occur if subsurface archaeological material is encountered.

The use of heavy machinery and vehicles on service roads outside of the SGIC may exacerbate current levels of erosion caused by environmental conditions. These levels of erosion may bring about residual effects for HAS 2 should this site extend through the corridor and for potential historic elements associated with Twelve Mile Road (HAS 3) should this road be used as a service road. Potential elements may include but are not limited to culverts and mile markers.

14.10 Cumulative and Interactive Impacts

There is a possibility that other pipeline projects to be implemented within the SGIC would create further surface and subsurface disturbance such as operational traffic along the ROW and service roads, vegetation clearance and trenching and therefore create further impacts to cultural heritage. Relating to this, a scar tree has been discovered by Powerlink and the Darumbul people during cultural heritage surveys for another project in the vicinity of the pipeline route in the Darumbul (northern) section of the project. This has been noted and mapped for avoidance in detailed design for construction, however as it falls outside the ROW for the Gladstone Fitzroy Pipeline, it is assumed that it will be managed in the CHMP between Powerlink and the Darumbul people.

14.11 Summary and Conclusions

From the perspective of Aboriginal cultural heritage, the development of a CHMP will provide protection and/or management of cultural heritage values for any objects or areas found during the cultural heritage survey and consultation with Elders nominated by Aboriginal Parties.

Table 14.9 provides a historic cultural heritage summary matrix of all material and/or places found to be of cultural heritage significance.

Table 14.9 Cultural Heritage Summary Matrix

EIS area: Cultural heritage Feature/ activity	Current value + substitutable Y:N	Description of impact		
		Description in words	Mitigation inherent in design/ standard practice mitigation	Residual impact using significance criteria
HAS 2 – Woolwash – Frogmore Pipeline	Local values Not Substitutable	Subsurface disturbance: Potential direct impact	Further research and recording of site	Minor , -ve, P, D
HAS 3 – Twelve Mile Road and Stone Culvert	Local Values Not substitutable	Potential direct impact on elements associated with Twelve Mile Road	Recording of site and implementation of mitigation within the CEMP	Minor , -ve, P, D
KEY: Significance Criteria: Major, High, Moderate, Minor, Negligible +ve – positive; -ve – negative impacts; D – direct; I – indirect; C – cumulative; P – permanent; T – temporary; ST – short-term; MT – medium-term; LT – long-term		Relative duration of environmental effects 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: Period in excess of 50 years		

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