Port of Gladstone
Gatcombe and Golding Cutting
Channel Duplication Project

Environmental Impact Statement

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16

Aboriginal cultural heritage

Contents

16 Aboriginal cultural heritage

16.1 Chapter purpose

This chapter provides a description of the existing Aboriginal cultural heritage values that may be potentially affected by the Project. This chapter also provides an assessment of the potential impacts of Project activities on sites of Aboriginal cultural heritage values, and defines appropriate measures for management and protection.

16.2 Methodology overview

A review of the Commonwealth and State legislation relating to Aboriginal cultural heritage was conducted to identify the framework for the protection and management of Aboriginal cultural heritage that may be impacted by Project activities.

ARCHAEO Cultural Heritage Services (ARCHAEO) was nominated by the PCCC native title claimant group and was commissioned by GPC to assist the PCCC in undertaking both an Aboriginal cultural heritage survey (archaeological) and an anthropological assessment of the areas that have the potential to be impacted by Project activities, in particular the WBE reclamation area.

The field investigations involved representatives of the PCCC and GPC.

A detailed methodology for the survey and assessment is provided in Section 16.4 and the risk based impact assessment methodology is provided in Section 16.9.

16.3 Legislation

The Commonwealth and State legislation outlined in this section provides a framework for the protection and management of Aboriginal cultural heritage that may be affected by the Project activities.

16.3.1 Commonwealth legislation

16.3.1.1 Native Title Act 1993

Overview

The NT Act provides the legal principles for the recognition of native title and the integration of this form of property right into the existing land title system. The Act provides for the validation of past Commonwealth acts and makes the same provision for the States and Territories. The Act also establishes the processes involved in having native title recognised and the role and responsibilities of the different bodies involved in this process.

The NT Act adopts the common law definition of ‘native title’ and establishes the National Native Title Tribunal (NNTT) which governs how native title is dealt with across Australia.

Whilst native title has been extinguished over freehold land under the NT Act, native title interests and rights may exist over land that is, or has been, subject to pastoral leases or other types of leases as well as USL. The NT Act contains a statutory process to allow the parties to reach agreement and for state and territory governments to grant interest over that land to native title claimants.

Relevance to Project

The PCCC represents the Traditional Owners and relevant Native Title Claim Group for the Gladstone area, which includes the Port of Gladstone. An ILUA under Section 24 of the Act is currently in place between GPC, the PCCC and the State of Queensland, NNTT Number QI2014/026, titled: Gladstone, Rockhampton and Bundaberg Ports Project ILUA (refer Figure 16.1).

Further to this ILUA, the Protocol was entered into by the ILUA parties on 23 March 2014 to ensure the protection and management of all Aboriginal cultural heritage in the ILUA Area in relation to all port-related operations (proposed or undertaken).

The cultural heritage investigation and reporting for the Project EIS have been undertaken in accordance with the Protocol. Project activities will be undertaken in accordance with the Protocol and ILUA.

16.3.1.2 Aboriginal and Torres Strait Islander Heritage Protection Act 1984

Overview

The purpose of the ATSIHP Act is to ensure the 'preservation and protection of areas and objects in Australia and in Australian waters that are of particular significance to Aboriginals in accordance with Aboriginal tradition'.

The ATSIHP Act holds provisions for an Aboriginal person or group to submit an application to the Minister seeking a declaration to protect an area of object of particular Aboriginal significance from specific threats of injury or desecration.

Relevance to Project

There are no existing protected areas under the ATSIHP Act within the Project direct impact areas or potential indirect impact areas.

16.3.2 State legislation

16.3.2.1 Aboriginal Cultural Heritage Act 2003

Overview

The ACH Act binds all persons, including the State, to provide recognition, protection and conservation of Aboriginal cultural heritage. Section 23 of the ACH Act states that *'a person who carries out an activity must take all reasonable and practical measures to ensure the activity does not harm Aboriginal cultural heritage'* (the 'cultural heritage duty of care'). The ACH Act is administered by the DATSIP.

The ACH Act also establishes the Cultural Heritage Register and Cultural Heritage Database to collect and register information about sites, items, places and values.

Notwithstanding this, the cultural heritage duty of care assists in ensuring that Aboriginal heritage is protected for registered sites as well as non-registered sites, and in doing so, requires the development and approval of a CHMP if:

- A lease, licence, permit, approval or other authority is required for a project, issued under another Act, and that Act requires an environmental assessment or EIS for the project
- Under the Planning Act, a development application is required to be made for a project and the chief executive of the ACH Act is a concurrence agency.

Furthermore, the ACH Act holds provisions for registered ILUAs as an alternative to a CHMP in complying with the cultural heritage duty of care guidelines.

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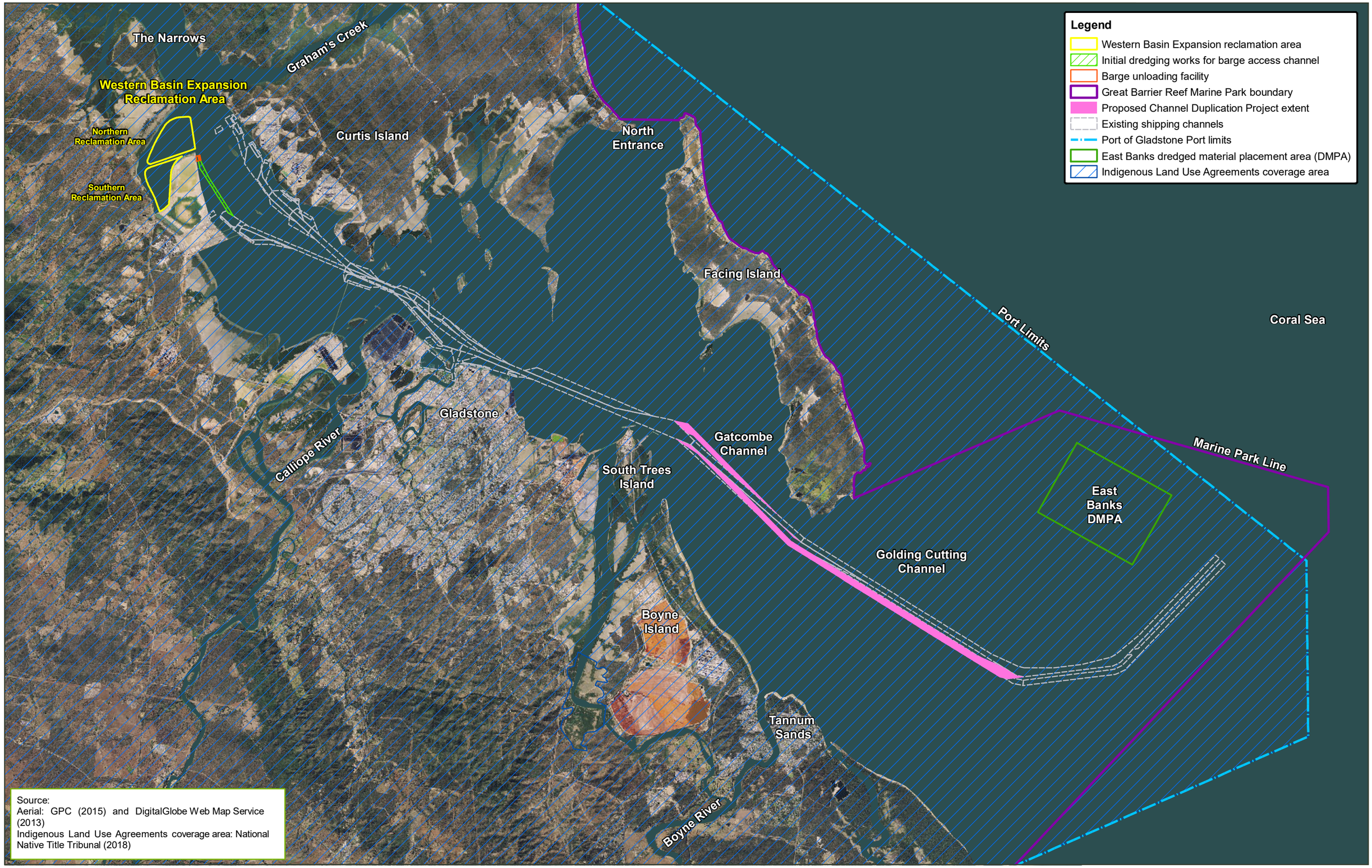

Source:
Aerial: GPC (2015) and DigitalGlobe Web Map Service (2013)
Indigenous Land Use Agreements coverage area: National Native Title Tribunal (2018)

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Figure 16.1: Indigenous Land Use Agreements under the *Native Title Act 1993*

Relevance to Project

As stated in Section 16.3.1.1, the PCCC represent the Traditional Owners and relevant Native Title Claim Group for the Gladstone area, which includes the Port of Gladstone. An ILUA under Section 24 of the Act is currently in place between GPC, the PCCC and the State of Queensland, removing the requirement for a CHMP.

Further to this ILUA, the Protocol was entered into by the ILUA parties on 23 March 2014 to ensure the protection and management of all Aboriginal cultural heritage in the ILUA Area in relation to all port-related operations (proposed or undertaken). The Protocol is included as Appendix M.

The cultural heritage investigation and reporting for the Project EIS have been undertaken in accordance with the Protocol. Project activities will be undertaken in accordance with the Protocol.

A desktop search of the Cultural Heritage Register and Cultural Heritage Database have been undertaken as part of the Project EIS.

16.3.3 Traditional fisheries

16.3.3.1 Overview

TUMRA are developed by Traditional Owner groups in partnership with the Commonwealth and Queensland Governments, and describe how Traditional Owners intend to manage their take of natural marine resources (including protected species), their role in compliance and their role in monitoring the condition of plants and animals, and human activities within the GBRMP (GBRMPA 2018).

The agreements formed by the Traditional Owners are accredited by the GBRMPA and Department of National Parks Sport and Racing (DNPSR). Each agreement operates for a set time after which it is renegotiated (GBRMPA 2018).

The TUMRA implementation plan may describe ways to educate the public about traditional connections to sea country areas, and ways to educate other members of a Traditional Owner group about the conditions of the agreement (GBRMPA 2018).

16.3.3.2 Relevance to Project

The PCCC TUMRA is the fifth and largest agreement of its kind and covers an area of 26,386km^2 extending from Burrum Heads, south of Bundaberg, north to the mouth of the Fitzroy River and includes Curtis Island (refer Figure 16.2). Accredited in August 2011, the PCCC TUMRA agreement represents the Gooreng Gooreng, Gurang, Bailai and Tarebilang Bunda Traditional Owners (DNPSR 2014).

16.4 Survey and assessment methodology

16.4.1 General description

ARCHAEO was nominated by the PCCC to assist the group in undertaking an Indigenous/Aboriginal cultural heritage survey and archaeological assessment of the terrestrial and intertidal components of the Project direct and potential indirect impact areas.

In addition, the PCCC and ARCHAEO also conducted an anthropological assessment of the Project impact areas with a specific focus on marine areas to ascertain the potential impacts on both tangible and intangible cultural heritage within the Project direct and potential indirect impact areas.

Figure 16.3 shows the extent of the survey, including the proposed WBE and Port Central Expansion reclamation area options and the marine areas examined.

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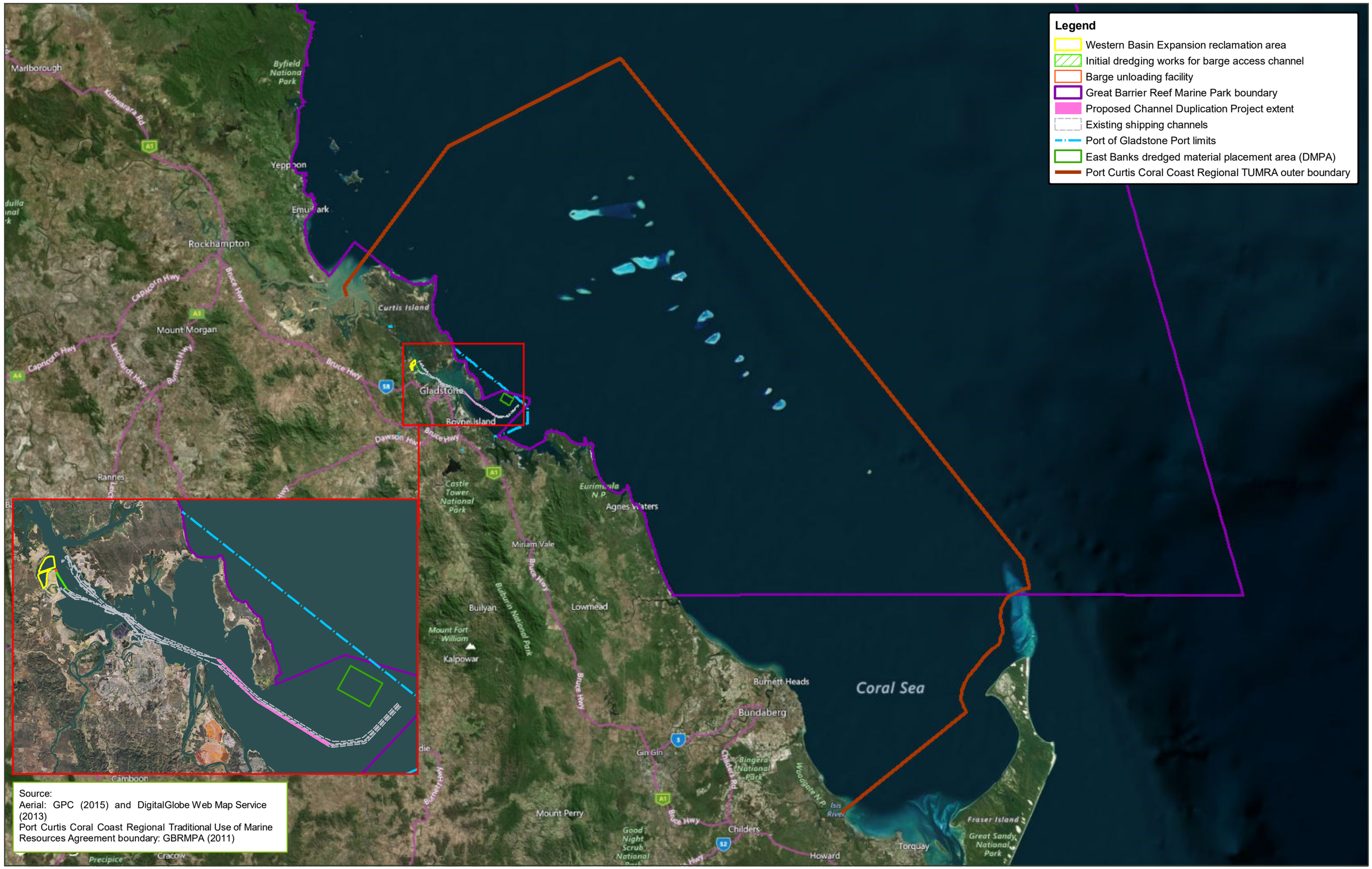

Source:
Aerial: GPC (2015) and DigitalGlobe Web Map Service (2013)
Port Curtis Coral Coast Regional Traditional Use of Marine Resources Agreement boundary: GBRMPA (2011)

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Figure 16.2: Port Curtis Coral Coast Regional Traditional Use of Marine Resources Agreement

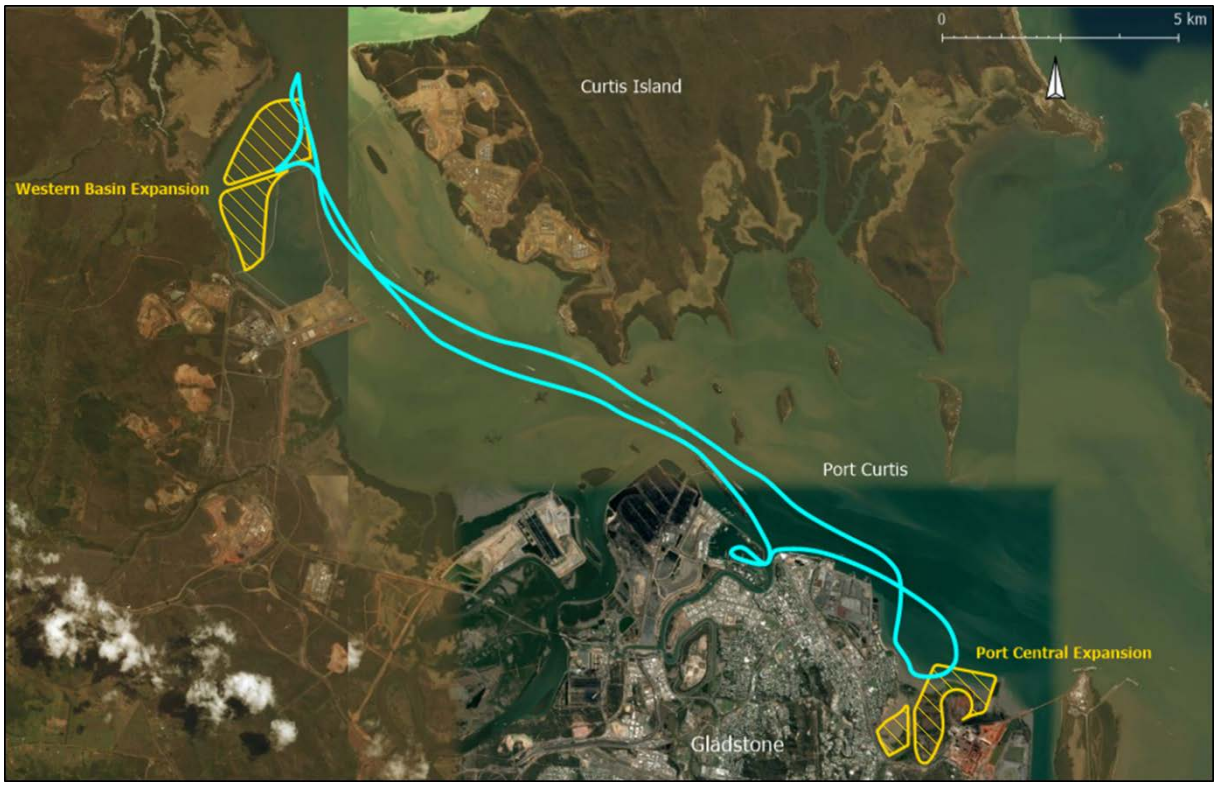

Figure 16.3 **Western Basin Expansion and Port Central Expansion reclamation areas and the wider marine area examined during the survey**

Both the proposed Port Central Expansion and WBE reclamation areas were included in the survey and assessment, however the WBE reclamation area option was later identified during the EIS process as the preferred new reclamation area for the Project (refer Section 1.6). Accordingly, the survey and assessment discussed in this chapter will focus on the WBE reclamation area as the preferred option for detailed assessment.

The anthropological assessment was undertaken for the marine areas to assist the PCCC to make an informed decision on their preference for the reclamation area (i.e. which reclamation area is likely to result in the more significant Aboriginal cultural heritage impact).

The anthropological assessment for the marine areas was divided into two components:

1. An initial assessment undertaken by boat on the 24 November 2015 to investigate the two proposed reclamation area options. The team involved in this assessment included four PCCC representatives (Richard Johnson, Michael Eggmolesse, Symeon Marou and Shane Blackman), two GPC representatives (Anil Bhakta and Grahame Condon (skipper)) and the anthropologist (Nicholas Roberts from ARCHAEO).
2. A second stage assessment on the 25 November and 26 November 2015, and involved a series of interviews and further visits with PCCC representatives to terrestrial areas as well locations identified during the initial assessment by boat to evaluate further the cultural significance and values of the Project impact areas. The team involved in this second element of the assessment included seven PCCC representatives who are considered by the PCCC to be elders/knowledge holders of the areas under assessment and one technical advisor (anthropologist).

The anthropological assessment for the marine areas was undertaken to:

- Determine the presence of any intangible Aboriginal cultural heritage that may be affected by Project activities and the association that identified intangible heritage has with recorded tangible and natural cultural heritage sites that may be affected by Project activities
- Establish the significance of these values and assess the potential impact on the values by Project activities

- Identify management measures that can be implemented to minimise and mitigate any potential impacts.

The scope of both the archaeological and anthropological investigations recognise that the cultural heritage record is both fragile and non-renewable, and any major disturbance of the environment poses a threat to this valuable cultural resource.

16.4.2 Marine area cultural heritage survey fieldwork and anthropological assessment

16.4.2.1 Scientific methodology

Anthropologists use various forms of assessment to carry out cultural heritage surveys and impact assessments. These surveys and assessments occur in a series of clearly defined steps, including interviewing, participant observation, surveying, site evaluation, recording, impact assessment, and the development and agreement of management recommendations. Briefly, the general methodology applied to each of the individual cultural heritage survey programs across the Project impact areas is described below:

- The assessment was divided into two components:
  - An initial assessment by boat to investigate two reclamation area options identified by GPC
  - A series of interviews and further visits to terrestrial areas with PCCC representatives.
- The Project impact areas assessed were:
  - The Port Central Expansion reclamation area
  - The WBE reclamation area
  - Areas that have the potential to be impacted by Project activities which includes the Port of Gladstone and the associated coastline and hinterland
- During fieldwork, PCCC representatives were encouraged to provide oral information to identify culturally important locations, any culturally sensitive areas and to voice any concerns they may have felt during the fieldwork at these areas
- Sampling strategies were developed prior to conducting the surveys based on either a purposive approach (where specific areas are targeted based on predictive models); or probabilistic approach where decisions are made to survey without any prior knowledge or predictive model of what heritage resources might exist in the area to be surveyed
- Data gathered during the assessment was evaluated using a qualitative research methodology
- Data recorded during interviews and participant observation was recorded in a field diary and subsequently transferred to Microsoft Excel for analysis
- Data was coded and a thematic keyword analysis involving a method known as ‘frequency of mention’ theming was employed to evaluate the data
- All cultural values and culturally significant places, events, and artefacts are manifestations of Aboriginal cultural heritage and are, therefore, of cultural significance and as such all intangible information and tangible finds were recorded.

16.4.2.2 Definitions

For the purposes of this chapter and the marine area survey fieldwork and anthropological assessment, the definitions in Table 16.1 apply to tangible cultural heritage, while the definitions in Table 16.2 apply to intangible cultural heritage.

Table 16.1 Tangible cultural heritage definitions for the marine area survey and anthropological assessment

Term	Definition
Site	Refers to all physical traces of Aboriginal occupation, including isolated artefacts
Isolate	Refers to a find-spot of a single artefact separated by more than 30m from other artefacts and/or associated archaeological features
Artefact scatter	Refers to a group of two or more artefacts (especially stone tools) located on the ground surface, with a distance of no greater than 30m between each and occurring within an arbitrary linear distance nominated by the archaeologist subject to factors such as artefact type, environment, visibility, integrity and previously recorded site characteristics occurring within the larger study area
Culturally modified trees	Commonly called scarred or carved trees, were assessed according to a detailed list of selection criteria developed by ARCHAEO that allow for some degree of scientific rigour to be applied to the identification process

Table 16.2 Intangible cultural heritage definitions for the marine area survey and anthropological assessment

Term	Definition
Aesthetic value	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.
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

Areas of identified intangible or tangible cultural significance, and other areas of interest to the assessment were photographed using a digital camera with 12.1 mega-pixels, and locations were recorded using a hand-held GPS accurate to approximately 4m, and all field data was recorded in a field notebook.

16.5 Description of environmental values – contextual background

16.5.1 Native Title

The PCCC represent the Traditional Owners and relevant Native Title Claim group for the Gladstone area (QC2001/029). The claimant covers an area of approximately 4,206km^2 of land and waters between Bundaberg and Gladstone. The Traditional Owners of the PCCC are the Bailai, Gurang, Gooreng Gooreng and Taribelang Bunda People. The Bailai, Gurang, Gooreng Gooreng and Taribelang Bunda People have been granted Native Title Claimant rights through Native Title Determination (QCD2017/010) on 28 November 2017.

The Aboriginal cultural heritage notification process, requires notification only in certain instances under the provisions of the ACH Act. Prior to undertaking any ground disturbance activities within the Project area, proponents who are not already required to undertake notification under the provisions of the ACH Act, an ILUA registered under the NT Act, or an agreement with an Aboriginal Party made in accordance with the NT Act and other agreement under the ACH Act will be required to notify the relevant Aboriginal party prior to the works being undertaken.

Figure 16.4 illustrates the Native Title claim accepted for registration (PCCC QC2001/029).

16.5.2 Biogeographical background

In order to assist in the contextualisation of the Project impact areas, a desktop investigation has been undertaken that incorporates the provision of a general biogeographical background combined with a summary of ethnographic observations and previous academic research and consultancy work undertaken in the general proximity of the Project impact areas.

Sattler and Williams (1999) has been utilised as the basis for the descriptions of geomorphological and biogeographical context, in conjunction with the REDD database (Queensland Herbarium 2014), and the Queensland Government vegetation management Google earth layer. Using the environmental framework set out in Sattler and Williams (1999), landscapes are described in terms of 'bioregions' based on the dominant geological features found within a region. These bioregions are subdivided into regional ecosystems that display characteristic patterns of landforms and associated vegetation.

An understanding of both geology and flora habitats provides important information about the resources available to Aboriginal people in the present and in the immediate 'historical' past. Similarly, estimations of the availability of potential food and fibre resources available to Aboriginal groups offers another valuable clue in evaluating the most likely ways the Project impact areas were used. Extant vegetation, its structure and condition also provide indicators of the integrity of the ground surface. By looking at aspects like species structure, integrity of the bushland and presence/absence of certain plant and grass species susceptible to ploughing disturbance, it can be determined whether an environment has been modified and by what degree. This is important for developing an objective idea of what the environment and ecosystem would have been like before the impacts of European settlement.

Furthermore, the use of bioregions can be used to 'establish guidelines for obtaining informative archaeological survey results, and research and management objectives within the region' (Smith and Rowland 1991; see also Rowland, Border, and Smith 1994). In part, the rationale for using such regions was that:

> *'. . . if the natural environment of each area is reflected in the range of material remains that are left at archaeological sites it is a logical step to use the boundaries of these areas as 'management zones' or areas in which the archaeology may be assessed in a regional context, rather than on a State wide basis (Johnson and Rowland 1987:13).'*

Therefore, if land zones are stable, there is a higher likelihood for the survival of archaeological sites. Conversely there is lower likelihood for locating cultural heritage sites in unstable land zones. Furthermore, land zones and regional ecosystems can be used as a foundation for predicting a particular landscape's archaeological sensitivity or identifying possible biases in the recording of sites or sample sizes.

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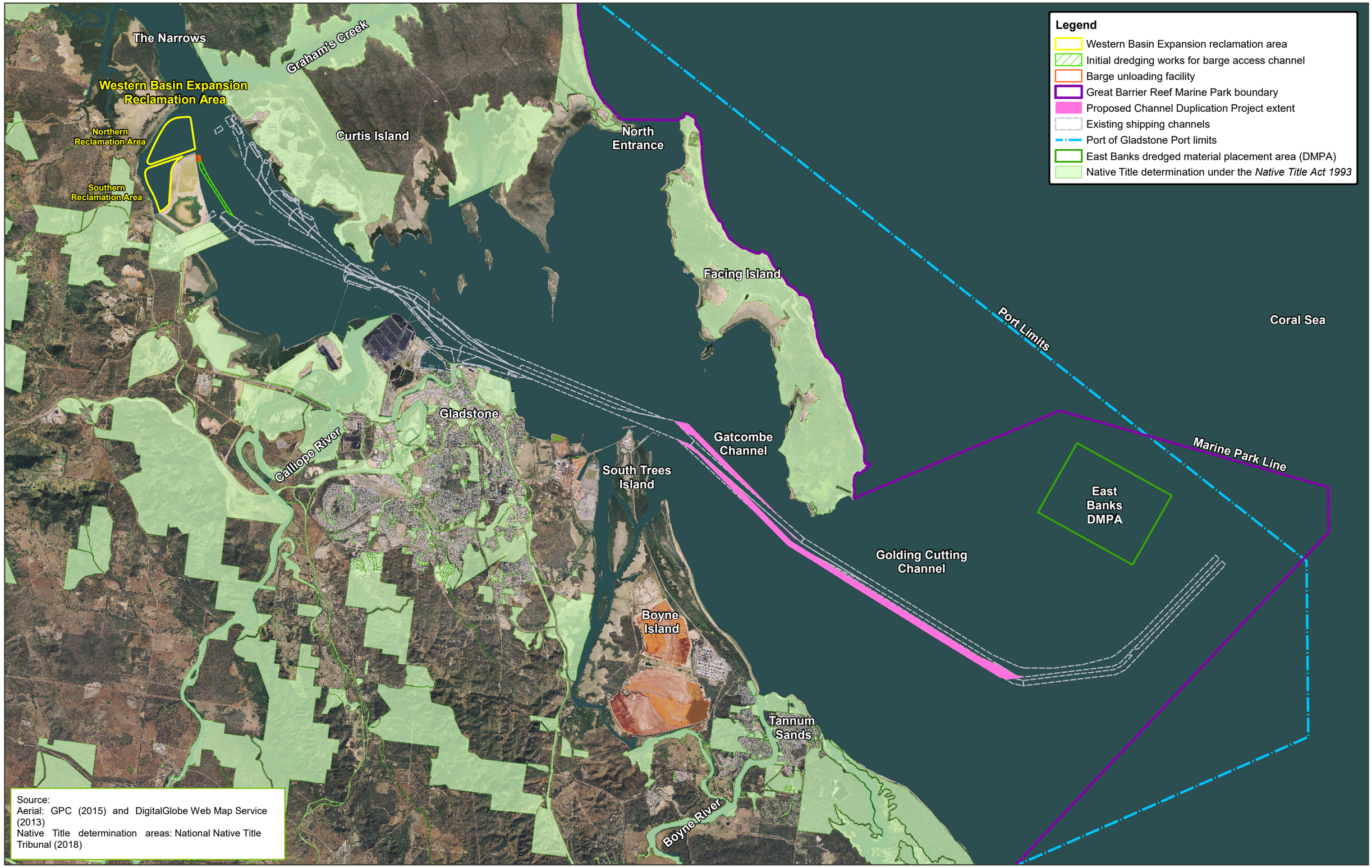

Source:
Aerial: GPC (2015) and DigitalGlobe Web Map Service (2013)
Native Title determination areas: National Native Title Tribunal (2018)

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Figure 16.4: Native Title determination under the *Native Title Act 1993*

According to Sattler and Williams (1999), the Project impact areas are located within the Burnett-Curtis Hills and Ranges province of the South East Queensland Bioregion. The main vegetation types that occur in this area includes Ironbark (*Eucalyptus crebra*) – Lemon-scented gum (*Eucalyptus citriodora*) woodlands, mixed eucalypt open forests and araucarian microphyll rainforests in sheltered valleys and riparian corridors. Generally, this province is characterised in the east by a geology dominated by granite hills. It also includes alluvial plains and piedmont fans dating from the Cainozoic (65.5 million years ago (Mya)), metamorphosed Mesozoic (251 to 65Mya), or even earlier, sediments and Quaternary (1.8Mya) estuarine and marine deposits. Although the granite hills and ridges may not have provided a wide range of (stone) raw materials for Aboriginal people to use, the metamorphosed sediments would have been a more varied and exploitable resource in areas where they were exposed. Similarly, the marine and estuarine areas would have provided a rich and varied source of resources.

In 1802, Matthew Flinders (Flinders 1814) made the observations below regarding the general environment.

> *'The country round Port Curtis is overspread with grass, and produces the eucalyptus and other trees common to this coast; yet the soil is either sandy or covered with loose stones, and generally incapable of cultivation. Much of the shores and the low islands are overspread with mangroves, of three different species; but that which sends down roots, or rather supporters from the branches, and interweaves so closely as to be almost impenetrable, was the most common.'*

16.5.3 Palaeo-environment

To understand the location, distribution and preservation of archaeological sites both temporally and spatially it is important to identify landscape changes through time. Today the coastline, while dramatically modified, is best described as being low energy. A number of factors primarily shape coastal landscapes, including erosion, fluctuations in sea levels and shoreline progradation. Despite no research on the palaeo-environment having been undertaken within the Project impact areas, it is possible to make some general observations based on investigations undertaken as part of the Gooreng Gooreng Cultural Heritage Project (Lilley and Ulm 1999; Ulm 2004; Lilley, Williams and Ulm 1997) and to the north around the Fitzroy River estuary (Brook et al. 2006).

While it is not possible to portray the exact location of palaeo-coastlines, they can be estimated using bathymetric contours. While the approach is problematic on 'sandy coastlines with broad, low gradient continental shelves owing to sediment accumulation on the seafloor' (Ulm 2006), it does allow comparisons to be made between the location of these and the modern shoreline. At the height of the last glacial maximum (circa (c.) 18,000 before present (BP)), the coastline would have been upwards of 100km to the east of its present location (refer Figure 16.5) and the land to the west of this coastline is likely to have formed, at least in part, a section of the low gradient floodplain. By 9,500 BP, sea levels around the mouth of the Fitzroy River were some 20m lower than the present day, 10m lower by c.8,000 and reaching current levels by around 5,000 BP (Brook et al. 2006). The Narrows, an estuarine passage between Curtis Island and the mainland is a 'former valley, drowned when the sea-level rose to its present level about 6,500 years ago' ('AHPI - Record' 2015). It is now being filled with sediment with the primary source being the Fitzroy River ('AHPI - Record' 2015).

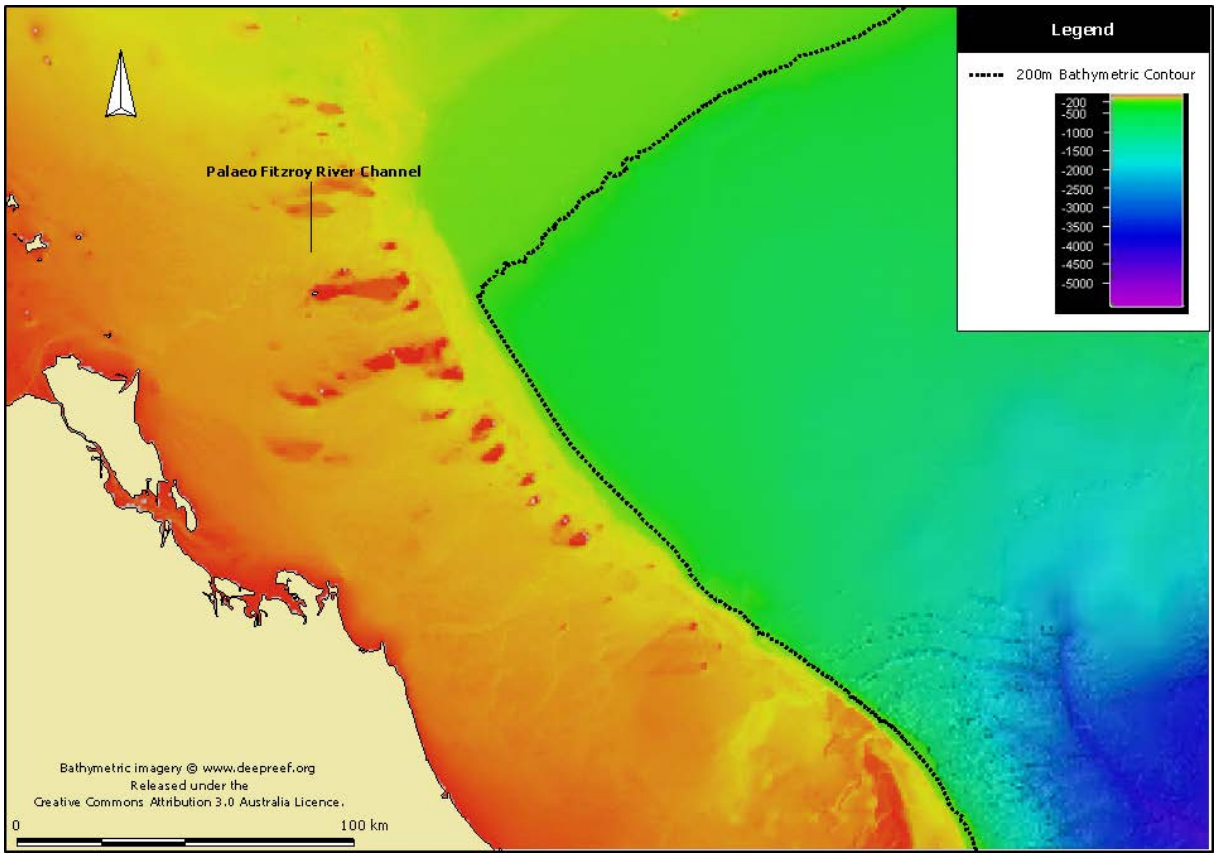

Figure 16.5 **Bathymetry of the Curtis Coast showing the 200m contour, the approximate location of the coastline c.18,000 before present**

Source: Ulm 2004

Periodic chenier formations (beach ridges parallel to the shoreline generally comprised of sands, gravels and shell fish remains emplaced during the waning phases of storms (Mason 1993) have also changed the landscape since the mid-Holocene. Data from the Gooreng Gooreng Project indicates the earliest of these finished developing between 3,300 BP and 3,100 BP with a later episode occurring between 2,400 BP and 2,100 BP. These dates generally agree with significant periods of chenier formation at Broad Sound to the north.

Based on the Gooreng Gooreng Project data, it appears that 'local estuary formation [was] related to the final stages of sea level rise' and that there have been episodes of mid-to-late Holocene (starting c.6,000 BP) dune-building towards the seaward margins as evidenced in the alignment of transgressive dune systems that parallel the modern shoreline. It is also apparent that sedimentation has resulted in a prograding coastline and that current erosion patterns are relatively recent and tend to be associated with exposed coastlines and estuary mouths (Ulm 2004).

Ulm also argued that the lack of archaeological deposits on the dune systems bordering the coastline is indicative that progradation was active until the recent past. For example, Lourandos (1997) stated that in southwestern Victoria "even though the southwestern coast is a prograded landscape, shell middens still follow the general chronological trend. Indeed, recent late Holocene middens are more endangered in this regard than older middens." In other words, as recent sites are closest to the modern shoreline they are more susceptible to erosion damage than older sites which are located on beach ridges and dune systems further inland. It is highly likely that the same pattern of site distribution may occur in Port Curtis and thus the cheniers may contain evidence pertinent to generating discussions regarding the locations of subsistence/settlement patterns through time. The potential also exists for cultural material to have been incorporated into a chenier during its formation or for cultural material to be buried under a chenier formation. Likewise, gaining an understanding of when cheniers formed can assist in discussions regarding Holocene climatic change (Mason 1993) and the potential impact these may have had on settlement/subsistence patterns.

In summary, the above discussion indicates that the coastal environments, including tidal wetlands comprising mangroves, salt marshes, cyanobacterial mats and salt flats along the more sheltered sections of the coast were most likely established between 4,000 BP and 5,000 BP. There is a high likelihood that the Port Curtis coastline evolved in much the same way at the same time.

16.5.4 Ethnographic observations

Evidence of Aboriginal occupation and contact with European travellers and explorers in the Gladstone and Port Curtis area have been documented since the early 19th century and some of the more pertinent observations made during the period of initial contact are provided below.

On August 4, 1802, Matthew Flinders sailed into what he subsequently named Port Curtis. Flinders made the following observations that clearly demonstrate the relationship between the people and the sea.

> *'The naturalist and his companions landed at the west side of the entrance, where some Indians had assembled to look at the ship; but they retired on the approach of our gentlemen, and afterwards taking the advantage of a hillock, began to throw stones at the party; nor would they desist until two or three musqets [sic.] were fired over their heads, when they disappeared. There were seven bark canoes lying on the shore, and near them hung upon a tree some parts of a turtle; and scoop nets . . . Traces of inhabitants were found upon all the shores where we landed, but the natives kept out of sight after the little skirmish on the first day of our arrival; they subsist partly on turtle ..."* (Flinders 1814)

In November 1823, John Uniacke, who accompanied John Oxley on his exploration of the Port Curtis area, noted that:

> *'In the course of our walk we did not see a single native, nor were there any marks of their having lately been there.'* (Uniacke n.d.).

However, John Uniacke does provide the following detailed description of a carved (scarred) tree:

> *'Near the river we found . . . a large tree, the bark of which had been stripped off about six feet in height all round, and the wood deeply engraven with a variety of . . . symbols, among which we could distinguish some resembling the print left on soft ground by the foot of the kangaroo, the emu, and other animals.'* (Uniacke n.d.).

In 1846, the British government created a new Australian colony named the Colony of North Australia. Port Curtis was selected as the site for the settlement. On 30 January 1847, the colony was proclaimed by Lieutenant Governor, Colonel George Barney, on Facing Island where the settlers camped for seven weeks after their ship became grounded on a shoal. Some three months later the colony was disbanded. However, in that period an attempt was made to establish a settlement and the seat of government of the colony on the mainland at the current site of Friend Park and Barney Point Beach. Five weeks after being established the settlement was disbanded and the settlers forced to return to Sydney.

During the establishment of the settlement at Barney Point, an armed guard was required to protect the labourers digging wells from attacks by the local Aboriginal people. It is reasonable to assume that the reason for the attack(s) is simply that the local Aboriginal people considered the camp an incursion that should be repelled. More recently, anthropological evidence clearly demonstrates that Barney Point was an important meeting place for local Aboriginal people, particularly for trade and to perform ceremonial activities (Ann Wallin & Associates 1999).

In November 1847, while visiting the abandoned settlement on Barney Point John MacGillivray, a naturalist on board H.M.S. Rattlesnake, noted that:

> *'During our stay at Port Curtis, we had no intercourse whatever with the natives, although anxious to establish friendly communication. With the aid of the spyglass, we could occasionally make out a few, chiefly women, collecting shellfish on the mudflats of the mainland, and their fires were daily seen in every direction'* (MacGillivray 1852).

In 1853, Governor Fitzroy announced that the Town of Gladstone would be established at Port Curtis and Maurice Charles O'Connell was appointed the Government Resident. Initially people settled around Barney Point despite the actual township having been surveyed closer to Auckland Creek.

However, by 1855 the vast majority had moved into the township proper. It is worth noting that during the survey, Native Police were present to provide 'protection' to the surveyors (Converge 2012).

Evidence for Barney Point continuing as an important meeting place and campsite for Aboriginal people into the mid-1850s is found in the records of Richard Blunt Mitchell, son of explorer Thomas Mitchell. Blunt Mitchell spent three weeks at the Governors Residency (located at the current site of Friend Park) in 1854 and used this time to record the activities being undertaken by Aboriginal people camped at the point. Mitchell described 'bark gunyahs', a 'corroboree' held each month when the new moon appeared and a 'war council … with the gathering of two or three hundred men from two tribes involved in the dispute' (McDonald 1988). The continuing use of Point Barney by Aboriginal people, despite the presence of the new settlers, clearly illustrates that it was (and remains) a significant area.

The friendly relations between Aboriginal people and the residents of the Government domain, contrasts with the frontier conflict that emerged inland (e.g. the Mount Larcombe 'massacre' and associated reprisals of December 1854).

16.5.5 Previous archaeological research and investigations

A large body of archaeological research and consultancy work has been undertaken in the wider Gladstone area, beginning in the late 1970s. This has resulted in an equally large collection of reports, theses and archaeological publications detailing this work. Overall, the results have revealed a rich and diverse archaeological record spanning some 20,000 years (i.e. from when the coastline was c.100km to the east through to the early 1900s).

ARCHAEO has recorded in excess of 1,400 individual locations of items and areas of cultural heritage within this wider region (refer Figure 16.6). This corpus provides a wealth of contextual background information that is relevant to understanding the potential archaeological record of the Project impact areas and the wider Port Curtis region. The discussion below is based on a summary of this body of work.

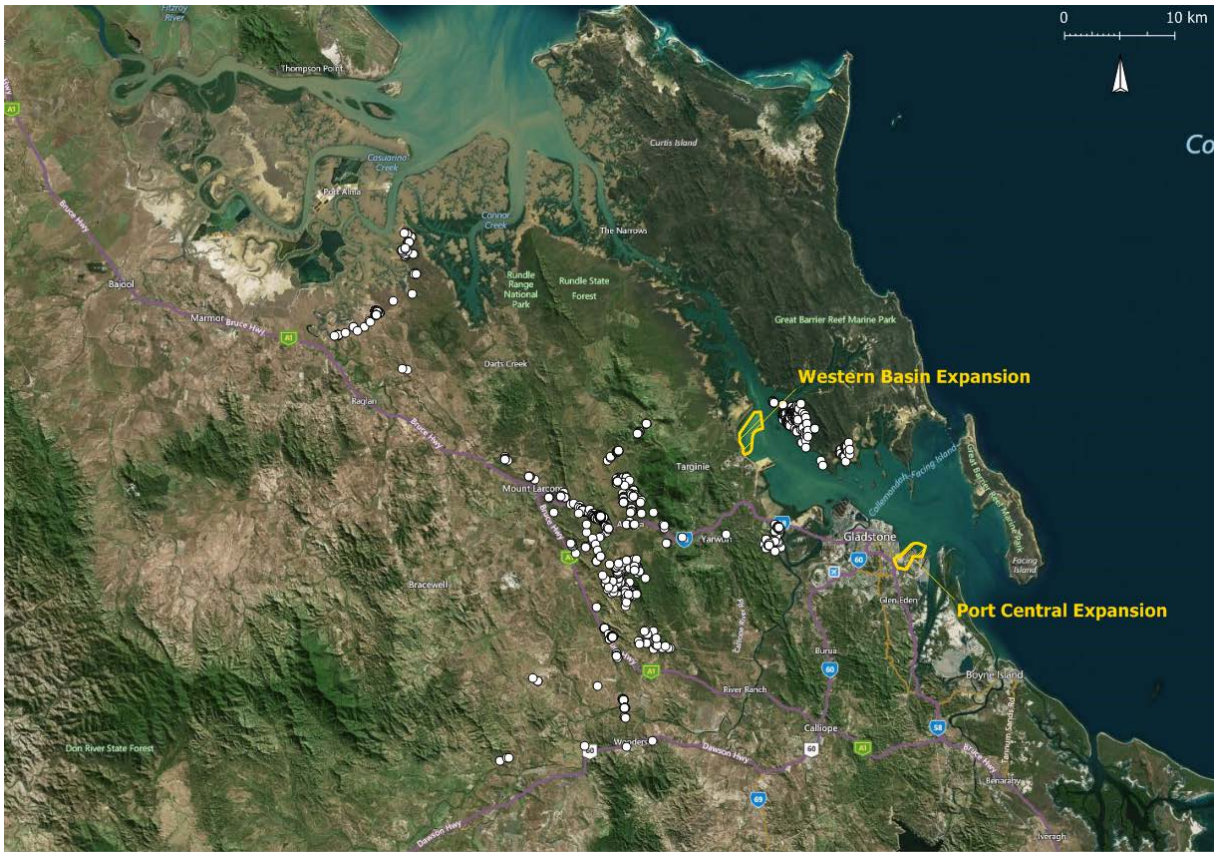

Figure 16.6 **Partial distribution of items of cultural heritage recorded by ARCHAEO in the Gladstone area**

The overview of Gladstone's coastal archaeology within this section is underpinned by the results obtained from the following primary data sources:

- The Gooreng Gooreng Cultural Heritage Project and Sean Ulm's subsequent PhD research
- A survey of the Curtis Coast undertaken by Christine Burke in 1993
- The large body of reports generated by consultants, including ARCHAEO on the mainland and those produced by ARCHAEO for work conducted on Curtis Island.

It is also important to note the below caveats regarding this overview and the sources:

- Burke explored a number of different environmental zones during her survey and her results are generally couched in terms of her entire study area
- Discussions concerning the timing of events and distribution of archaeological material from the Gooreng Gooreng project can be extrapolated to allow for discussions and conclusions regarding the study area's archaeological record despite the fact that they are not definitively linked to it. The same applies to Rowland's Keppel Group dates.
- Whilst results of the primary investigations undertaken by ARCHAEO on Curtis Island only focus on a small section of the Island's southwest corner it is possible to use them in a broader context regarding mainland low energy coastlines
- Despite excavations having been undertaken by ARCHAEO in the LNG Plant areas of Curtis Island, no radiocarbon dates have been obtained. Thus, as previously mentioned the timing of events is primarily based on dates obtained by the Gooreng Gooreng Project.

Prior to presenting an overview of the results of coastal cultural heritage surveys in the Gladstone region, it is important to have some understanding regarding the timing of settlement patterns and use of resources. The Gooreng Gooreng Project developed the following model of Aboriginal people's use of the south Curtis Coast and, pending further investigation, is considered appropriate to explain the timing of settlement patterns and use of resources in the Port Curtis area. As the only major research project to be undertaken on the Curtis Coast, it forms a basis for developing a broad understanding of the region's archaeological record, including the current study area. The results of excavations conducted as part of this project demonstrate that the south Curtis coastline was first occupied at roughly the same time sea levels stabilised following the last marine transgression some 4,000 to 5,000 years ago. At this time and up until c.1500 BP, occupation of the south Curtis Coast and more generally southeast coastal Queensland had been characterised as comprising small, highly mobile populations (e.g. see Ulm 2004, 338). This also suggests that people were following the encroaching coastline and had a "well-established suite of estuarine resources" (Ulm 2004; see also Barker 1989; 2004) when the marine transgression ended. In other words, the use of marine resources began well before the end of the marine transgression. During this period, stone artefacts tended to be manufactured on non-local raw materials.

Around 1,500 BP, the use of coastal resources, including local stone resources for artefact manufacture, appears to have increased in importance, eventually leading to permanent occupation and, as excavations have revealed, "rapid and widespread changes in site content, abundance of certain classes of cultural material in deposits and extent of sites" (Ulm 2004). The Gooreng Gooreng Project also demonstrated that, despite the devastating impact of European contact, traditional sites continued to be used into the 1920s with some European raw materials being integrated in more traditional activities such as flaking glass bottles. A black glass bottle base core has previously been identified by ARCHAEO representatives at Friend Park as well as a 'bottle neck scraper' near the WBE reclamation area. These results led to Ulm identifying three occupational phases:

- Phase I – pre-4000 BP to 1500 BP – highly mobile population with ephemeral use of coastal resources
- Phase II - 1500 BP to AD 1850s – permanent use of the coastal zone with a generally sedentary population
- Phase III - 1850s to date – use of some European raw materials to make artefacts indicating continued use of traditional camping places and "the persistence of traditional knowledge" (Ulm 2006).

Cania Gorge, southwest of Gladstone, represents the earliest archaeological site yet discovered in the region and has demonstrated an Aboriginal presence well into the Pleistocene that can be dated to almost 20,000 years BP (Lilley et al. 1998). Located south of Port Curtis, the Boyne Valley has been identified as a central place within the landscape through fieldwork by ARCHAEO (2000) and Gorman (2002). It is highly feasible that the Boyne Valley was used as a means of traversing the steep Great Dividing Range and allowing movement between inland sites such as Cania Gorge and the coastal region. It has been observed that this movement continued into historical times (Roth 1898).

ARCHAEO (2005b) located a large, lustrous and fine-grained greenish chert ('Greenstone' as it is locally known) source in the Mt Larcom Range on Dry Creek south of Raglan. The archaeological evidence recorded at this site indicates that Aboriginal people were accessing river cobbles in the creek bed, assaying them by removing a flake from one end, and then either discarding the cobble or reducing it to a prepared core. Thousands of cores, flakes and debitage were located at, and in close proximity to, this site. As discussed below, artefacts made of this raw material have been recorded at numerous places throughout the Gladstone region and their location may have implications for the relative dating of sites in relation to Ulm's (2004) first and second phases.

Having set the chronological and resource use scene, it is now possible to discuss the results of some of the more pertinent cultural heritage surveys undertaken in the Gladstone region. The earliest coastal survey appears to be that of Ringland's 1978 survey of Facing Island (cited in Ulm 2006), which located "seven extensive shell middens". Further north Rowland's archaeological investigations in the Keppel Group indicate initial occupation began some 4000 BP. However, dates obtained from excavations on South Keppel Island indicate that while initial occupation began around 1000 years ago, the most intensive period began c. 700 years ago (Rowland 1981; 1982; 1985). Rowland (1987) also undertook a cursory survey of the coastline between Bundaberg and Turkey Beach and in part the results indicated that estuarine environments were prime areas for site (primarily shell midden) location.

During the early 1990s, Burke (1993) embarked on a systematic survey of the Curtis Coast region between Raglan Creek and Agnes Waters. The survey extended up to 1km inland from the mainland's coastline and aimed at sampling all environmental zones identified for the coastline, the near shore and offshore islands (Burke 1993). A major problem faced by the survey was site visibility. Burke (1993) stated that in a number of areas visibility was < 10%. Based on her results, Burke made a number of statements concerning the low energy shoreline's archaeological record in terms of site types and their locations with a particular focus on shell middens and stone artefact scatters as these were the most common site types located.

According to Burke (1993), the primary low energy shorelines site types on the mainland were shell middens usually located on gravel-less, sandy beaches as scatters, or linear, mounded or deflated deposits. Of the middens recorded, the greatest percentage were on low energy coastline salt plains (Burke 1993). Species present did vary however; cockle followed by oyster predominated with considerably smaller quantities of mud whelk and scallop. Deposit depths generally varied from 5-10cm to 40cm and on rare occasions attained 70cm (Burke 1993).

Stone artefacts were identified in approximately 86% of the sites recorded and included flakes, flaked pieces, retouched flakes often in the form of scrapers, and cores. These were made on a variety of raw materials, including chert and silcrete (Burke 1993). Interestingly, Burke (1993) notes that 'raw material types were generally material from the local area'. While stone artefacts were found in conjunction with middens on low energy coastlines, the majority were located on mudflats or residual soils (Burke 1993). Burke also recorded a small tan/brown silcrete quarry (stone resource area) on the western coastline of Curtis Island at Ramsey Crossing. According to Burke (1993), artefact numbers at this source were low. Other site types included scarred trees, one of which was located on Facing Island and a stone fish trap on Rodds Peninsula.

Burke concluded that different areas of the coastline were being utilised in different ways (1993) and thus, provided some indications of subsistence settlement patterns in the region. She argued that shell middens represented either dinner time or home base camps as described by Meehan (1982), whereby sites with the highest density of shells were viewed as home base camps and tended to occur on the high energy coastlines while the remainder which comprised sparse shell scatters were seen to be dinner time camps (Burke 1993).

Burke (1993) also postulated that the distribution of stone artefacts across various landscapes reflect different activity centres or food processing areas. She argued that artefacts located on the mudflats of low energy estuarine coastlines may indicate these places being used for tool manufacture and/or maintenance. It was suggested that the mudflats may have been the location for wood working or hunting activities as well as areas for food gathering and the processing of shellfish (Burke 1993).

Additional investigation along and adjacent to the coastline revealed numerous sites relating to Aboriginal use of the low energy coastlines. Surveys conducted for the Stuart Shale Oil Project located sites containing artefacts on muddy gravels near the mouth of a drainage channel along with fragments of oyster shell viewed as representing a disturbed midden (Alfredson 1989). These findings suggested that the relatively sparse archaeological record tended to indicate that the well-watered country behind the coastal ranges was the main population focus rather than the coastline (Alfredson 1989).

Additional surveys for the Stuart Shale Oil Project undertaken by ARCHAEO (2005a) between 1998 and 2004 resulted in the identification of 86 Aboriginal sites, including isolated stone artefacts, stone artefact scatters, quarries, shell middens, rock shelters, stone axes and axe blanks, scarred trees, ochre sites, a stone arrangement and a large silcrete quarry containing hundreds of cores, flakes and debitage. Another find of interest was a 'native' well, apparently carefully hollowed out and covered with a stone slab. Overall, the results of the ARCHAEO surveys tended to disprove Alfredson's theory and suggested exactly that the coast was a population focal point.

Similar results have been obtained on, or near the coastline for other Projects. For example, despite low ground surface visibility, surveys associated with the Wiggins Island Coal Terminal (WICT) resulted in the identification of 21 items/places of cultural heritage interest, including isolates, low density concentrations of stone artefacts and places of cultural significance (ARCHAEO 2007; 2008). Similarly, a cultural heritage survey for the proposed Nickel Refinery and Residual Storage Facility as part of Gladstone Pacific Nickel Project resulted in 95 sites of Aboriginal cultural heritage being recorded, including 31 isolates and 64 low density stone artefact scatters. Artefact types included backed artefacts, retouched flakes, cores, flakes, an edge-ground axe and debitage. A natural fish trap was also later reported within the Refinery Site along the intertidal flats in association with a tidal stream channel fed by the Calliope River anabranch.

In 2009, cultural heritage investigations in the intertidal zone and adjacent coastline running between Fisherman's Landing and Friend Point identified 23 individual areas and objects of Aboriginal cultural heritage significance. These sites included low density artefact scatters and isolates. Notably one artefact was a retouched glass artefact (refer Photograph 16.1). Also identified were three disturbed low-density shell scatters comprised primarily of rock oyster shell. All artefacts found during this survey were located along the eroded periphery of the tidal and foreshore zones, with many apparently in secondary positions. Likewise, a smaller proportion of artefacts, along with the three small shell scatters, were located either on eroded portions of the adjacent foreshore or along areas of higher visibility associated with historic disturbance. Except for a single axe blank, the stone artefacts all appeared to have been manufactured from materials that are all readily available from local sources contained within a 10km radius of the study area, including silcrete, chert, mudstone and quartz (ARCHAEO 2009b).

Photograph 16.1Flaked black glass bottle base core located on the shore below Friend Point

Source: ARCHAEO (2012)

In 2011-2012, ARCHAEO (2012b) surveyed the proposed location for the Fitzroy Terminal Project adjacent to Raglan Creek resulting in the recording of 30 sites comprising both low density artefact scatters and isolates generally located on mudflats. Along with numerous flakes, a 'greenstone' tula adze slug and an edge ground axe were also identified. The report concluded that the artefacts located on the mudflats were in a position of secondary deposition due to erosion along the transition from mainland to mudflats. In other words, as the erosion zone moves inland, any artefacts located on or below the surface are redeposited on the mudflats.

ARCHAEO has also undertaken a number of surveys in the southwestern corner of Curtis Island where the LNG plants are located (2009a; 2010a; 2010b; 2011; 2012a). During these investigations, numerous isolated stone artefacts and low-density artefact scatters that included a notable proportion of cores, and retouched artefacts ranging from large core tools through to a thumb nail scraper were recorded. Other significant finds included an imported axe blank, a small, edge ground hatchet and imported river cobbles exhibiting use wear consistent with use in both food processing (e.g. pounders) and tool manufacturing (e.g. anvil and hammer stones). Stone artefacts were manufactured on a wide range of raw materials, some local (e.g. quartz, silcrete and siltstone) while others were likely imported from non-local sources (e.g. green chert).

Prominent among the artefacts recorded was a single piece of purple glass bottle base recorded as exhibiting evidence of deliberate flaking, providing important evidence of traditional use of the area carrying over into the historic period. The shell midden incorporating historic artefacts excavated on the APLNG site also appears to represent ongoing traditional use into the historic period.

Most artefacts recorded during the LNG plant surveys were located along the eroded mudflat/coastal lowland transition areas, within 100m of the mudflats. It was considered possible that in areas of higher artefact concentration, including the mudflat/coastal lowland transition areas, relatively intact subsurface archaeological deposits, including shell middens and artefact scatters may have survived under the marine couch flats fringing the mudflats. Large portions of the mudflats represent eroded remnants of the adjacent coastal flats and this erosion occurred relatively recently (probably due to the dieback of the marine couch because of historical pastoral practices), resulting in the artefacts being left exposed on the underlying clay/mud surface. The recent nature of this erosion was supported by the presence of rows of old fence posts situated on neighbouring sections of the mudflats. These show clear evidence of erosion of between 10cm and 30cm that can only have occurred in recent times (i.e. within the last 80 to 100 years). It was considered likely that considerable amounts of artefactual material remain undetected within the salt couch and coastal flats bordering the mudflats.

The surveys for the LNG Plants also identified diffuse shell midden deposits along the coastal fringes and neighbouring coastal flats. This shell material, predominately Rock Oyster, interspersed with occasional examples of Mangrove Whelk, were occasionally associated with low numbers of stone artefacts. In at least one case, the potential for subsurface material was also noted. Such finds are consistent with several low density, diffuse deposits of primarily oyster shell that have been identified in various coastal mainland locations around Gladstone defined as being disturbed midden material. This is also consistent with Brayshaw's (1990) description of shell middens located north of Gladstone along the central north coast of Queensland (i.e. midden deposits in open areas tend to be small, shallow, superficial and poorly defined). Oyster appears to be the predominant species followed by cockle with other taxa occurring at much lower levels in all middens located to date along the central and north Queensland coast. Certainly, the middens observed by ARCHAEO, Ulm and Burke in the Gladstone region exhibit similar characteristics.

16.5.6 Cultural heritage register and database search results

A desktop search of the DATSIP Aboriginal Cultural Heritage Register and Database has previously been undertaken for the Gladstone area. An extensive list of sites (n = 180) have been recorded and registered on this database for the Gladstone area. None of these sites are located within the Project impact areas. Most of the sites are artefact scatters or shell middens, but scarred trees, quarries, hearths, contact sites, a stone arrangement, a burial, landscape features and a cultural site are also recorded. These sites are shown in Figure 16.7.

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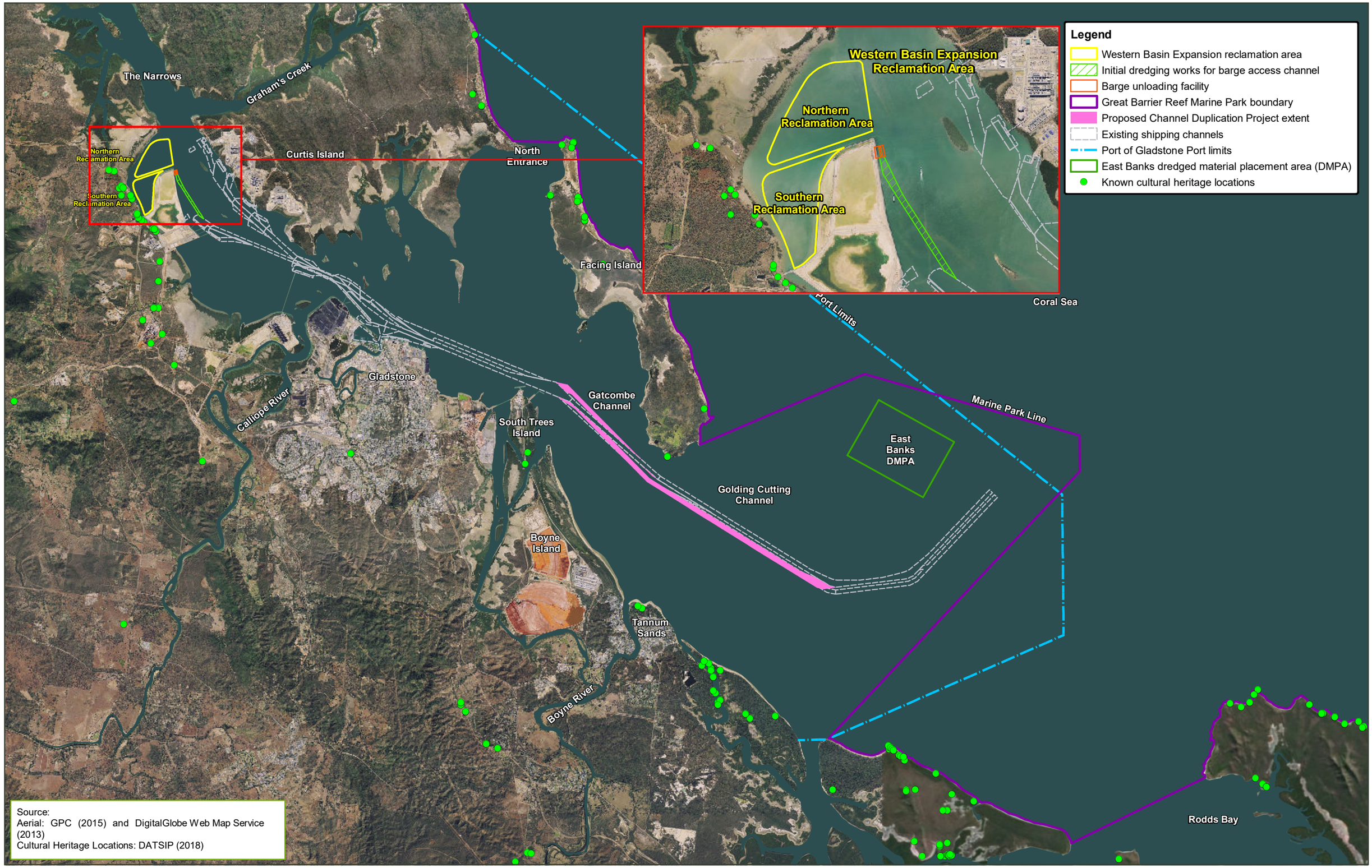

Source:
Aerial: GPC (2015) and DigitalGlobe Web Map Service (2013)
Cultural Heritage Locations: DATSIP (2018)

Map by: RB
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0 1,900 3,800 Metres

Date: 17/12/2018 Version: 3 Job No: 237374
Coordinate system: GDA_1994_MGA_Zone_56

Gatcombe and Golding Cutting Channel Duplication Project

Figure 16.7: Distribution for cultural heritage sites registered with the Department of Aboriginal and Torres Strait Islander Partnerships

16.5.7 Contextual background discussion and conclusions

Using dates obtained from the Gooreng Gooreng Project (Ulm 2004; 2006) and the Keppel Islands (Rowland 1981; 1982; 1985), it is likely that occupation of the Gladstone coastal strip, including Port Curtis, began during the terminal phases of the last marine transgression some 5,000 years ago. Following Ulm's research, it can be concluded that initial use of the area was ephemeral at this time and that coastal resources formed only one part of a highly mobile settlement strategy. Subsequently, and as concluded by both Ulm and Rowland, it would be expected that occupation of the coastal zone became more permanent c.1,000 to 1,500 years ago with an increased reliance on locally available resources. At the same time however, consideration must be given to the possibility that there may be rockshelters in the area, including on Curtis Island (Burke 1993), that may have evidence of earlier, terminal Pleistocene/early Holocene use. Precedents for this include a rock shelter on Hook Island in the Whitsunday group, some 400km to the north, that has occupation dating back to at least c. 9000 BP (Barker 1989; 1996; 2004) and 20,000 BP date obtained from Cania Gorge.

Based on descriptions of raw material supplied by both ARCHAEO and Burke (i.e. the presence of both locally available and non-local raw material such as the green chert), it could be concluded that Ulm's Phase I and Phase II are represented in artefacts made on these. Thus, those artefacts made on non-local material such as the green chert could be considered to represent the c.4000 BP to 1500 BP phase, while those made on local raw materials are consistent with Phase II (i.e. 1500 BP to 1850 AD). The presence on Curtis Island of an edge ground hatchet, an axe blank and river cobbles exhibiting use possibly related to food processing, almost certainly date to within the last 1500 years.

The presence of glass artefacts at several locations, including Curtis Island and Barney Point, are consistent with Ulm's finding on the south Curtis Coast (Ulm 2006) and are almost certainly associated with Ulm's third phase (i.e. using European raw materials to make artefacts). It is also interesting to speculate if other material left over from the abandoned settlement at Barney Point may have also been utilised as a resource for the manufacture of tools and other artefacts (Converge 2012).

Shell middens/scatters have been recorded throughout the Gladstone region. Burke (1993) noted that the majority of midden material was located on low energy coastline mudflats/salt plains and these tended to be dominated by mud ark (cockle) followed by oyster. This dominance of mud ark is not supported by either Ulm's or ARCHAEO's findings. Ulm (2004) noted that at a regional level, rock oyster comprises over 70% of the regional assemblage with mud ark comprising approximately 15%. However, he also indicated that there appears to be a decrease in the representation of mud ark through time and suggested that this may be related to changes in local resource availability linked to mangrove expansion (2004). Likewise, ARCHAEO's surveys on Curtis Island and elsewhere on the Gladstone mainland also indicated that rock oyster was the dominant species identified in shell middens. It is not known if the differences identified in species dominance between Burke and ARCHAEO/Ulm is related to sampling strategy, environmental factors or circumstances not yet understood.

While fish bone, turtle and dugong remains were recovered during excavations of shell middens by Ulm on the south Curtis Coast, the presence of such in other Curtis Coast middens has largely been unrecorded. While this lack contrasts markedly with Ulm's findings and ethnographic observations it is important to realise that such material and especially fish bone, is usually only discovered during the laboratory analysis of recovered materials. Moreover, the rapid nature of the surveys would tend to minimise the potential for identifying such remains.

ARCHAEO's work relating to the Stuart Shale Oil Project has identified the Targinnie area, particularly the littoral environment (extending inland approximately 1km from the high water mark) and associated waterways such as Kerosene, Mosquito and Humpy Creeks, as representing a rich archaeological and cultural landscape that centres on utilising the littoral and marine resources of the coastal region. While it is predicted that the richness of these finds will continue to be reflected further up the coastline adjacent to The Narrows, an examination of these areas was outside the scope of the EIS (likewise, little formal study has been conducted in these areas). Ultimately, it is predicted that this area is likely to contain a much more complex and substantial record than that indicated by previous work in the area (e.g. the Stuart Shale Oil Project) and that such a complexity of artefacts and site types are indicative of a considerable variety of activities that would have occurred within traditional times and, to some extent have continued into current times (e.g. continued utilisation of abundant and easily accessible marine and terrestrial resources). Furthermore, the archaeological record throughout other parts of Queensland have repeatedly shown that areas rich in resources often support other, more complex cultural practices such as gatherings and ceremony (McNiven 1991).

In summary, the archaeological record of the Curtis Coast is both rich and diverse in the range of materials, artefacts, and site types that have been recorded to date. Furthermore, the results of both research and consultancy investigations indicate that that Aboriginal people were not using the entire coastline for occupation, but rather were selective about where they were based and that these choices were likely related to the availability of suites of resources access to which appears to have changed through time. Furthermore, people appear to have been specifically targeting shallow estuarine environments, a practice that was established a considerable time prior to the end of the marine transgression (Ulm 2004; 2006).

16.5.8 Aboriginal cultural significance

Archaeologists place a high priority on levels of existing site preservation as a means of determining scientific integrity, and therefore the value of the contextual data found within a site or surrounding a cultural object. Any loss of scientific integrity however does not, reduce the cultural significance of a place and/or item to Aboriginal people. The presence of bush food species, trees of great age, or a landscape feature, for example, may provide indicators of cultural importance for Aboriginal people that are not borne out in the archaeological record.

Considerable consultation with the PCCC has occurred over the recent past because of the large number of proposed projects occurring within the Gladstone region, within Port Curtis, the GSDA and on Curtis Island. The following have been highlighted as being of cultural significance to PCCC people over their traditional lands:

- PCCC representatives have noted the cultural importance of all 'country', but in particular, PCCC representatives have highlighted on numerous occasions the high cultural significance of the coastal fringe and the adjacent Narrows/Port Curtis area inclusive of the Passage, Curtis, Facing and Kangaroo Islands
- The importance of the coastal fringes, intertidal zones and waterways as a source of marine foods such as crustaceans, fish and shellfish and the fact that they are still regularly utilised by PCCC people has been continuously emphasised
- All artefactual material has consistently been identified by PCCC representatives as being of high cultural significance and as representing direct physical evidence of the visitation and utilisation of the area by Aboriginal people in traditional times
- The obligations of 'caring for country' and concerns regarding the scale of destruction associated with proposed projects within Port Curtis have been frequently raised. PCCC representatives have stressed the importance of maintaining a coastal buffer zone in order to preserve coastal sites and to minimise impacts on the environment, including mangrove communities and on the marine environment itself. This would also preserve an access corridor to enable PCCC people to continue to access, care for and use the foreshore environment and its natural resources.

- Consultation has consistently underscored the fact that several culturally important areas are located in close proximity to survey area. These areas include a large number and variety of known archaeological sites, including shell middens, stone artefact scatters, and other resource areas, in conjunction with several areas of high cultural significance of a non-archaeological nature.

16.5.9 Predictive model

Based on the summary of archaeological research and consultancy work undertaken in the Gladstone region, the following predictions can be made regarding site types expected to be encountered in the area investigated:

- Occupation sites/campsites, particularly in proximity to fresh, permanent or semi-permanent water sources, including potential post-contact elements
- Stone artefacts, as isolates and in scatters, particularly on the eroding/deflating coastal margin/mudflat zone
- Shell scatters and middens with and without associated stone artefacts
- Fish traps constructed from stone on the exposed mudflats.

On occasion, such sites may consist of, or include, subsurface deposits in areas where deposition may have occurred.

16.6 Description of environmental values – Project marine areas and anthropological field survey findings

16.6.1 Marine assessment

The Project marine assessment involved the inspection of the marine components of the Port Central Expansion reclamation area and WBE reclamation area options (refer Figure 16.3). The inspection team was able to navigate almost the full length of the Port of Gladstone during the assessment due to the high tide. The boat stopped at each location to give PCCC representatives time to discuss the significance and value of each location. Landward assessment was conducted for the Port Central Expansion reclamation area option.

As a result of this marine assessment the below points were raised regarding the investigation:

- PCCC representatives identify Port Curtis as being resource rich and incorporating long term, inter-generational use for economic (trade and exchange), subsistence, and medical resources, along with cultural activities. PCCC representatives described the connection between the marine precinct and the greater cultural landscape as an ongoing relationship encapsulated by Dreamtime stories and story places that narrates the cultural significance and knowledge of the natural landscape, waterways, plants/animals, and ongoing use and care for land and waters by contemporary PCCC people.
- Near the Port Central Expansion reclamation area, Back Beach and Piggery Creek were identified as good locations for gathering prawns, shellfish and oysters in the past. Additionally, this area has historical significance to PCCC people as a location for employment (at the Meatworks) and for childhood recreation activities, including swimming and fishing. Barney (front) Beach identified as having significance as a pre-contact ceremonial place with ongoing use that includes annual National Aborigines and Islanders Day Observance Committee (NAIDOC) Day celebrations.

- The PCCC team commented how industrial growth in this area has noticeably impacted on both the natural environment and socio-cultural practices. At Back Beach and Piggery Creek, these impacts were emphasised by the group and included a reduction in the quantity and quality of the marine life especially oysters, prawns and shellfish, fewer rocks available for oyster habitats, and less mangroves. Similarly, the water at Barney (front) Beach is no longer considered clean enough for year-round swimming due to industry affecting the water quality.
- In the neighbourhood of the WB and WBE reclamation areas, the significance of Friendship Point/Kangaroo Island and Laird Point/Graham's Creek as representing the mouth to The Narrows was noted. The aesthetic, relatively untouched beauty of this area and The Narrows as a 'wilderness area' was clear among the investigative team. Team members spoke of their spiritual attachment to this location and to Curtis Island and the Island's identification as a resource base and use for ceremonies in the past. However, the group consider the recent expansion of the bund wall at Fisherman's Landing and construction of the three LNG Plants on Curtis Island have changed the value and the aesthetics of the channel. Moreover, team members stated that these changes have also affected them spiritually.
- Team members recognised Fisherman's Landing as a breeding location for crabs and the seagrass meadows north of Fisherman's Landing, in Graham's Creek and The Narrows as a habitat for turtles and dugongs. This was evidenced by the narration of decades spent utilising the aquatic resources in Port Curtis by members of the investigative team and that this intergenerational knowledge was passed between parents and children while using these locations for cultural activities.
- Discussions also revolved around the significance of the Passage Islands and the importance of managing impacts on these islands resulting from the dredging of LNG shipping channels and increased shipping traffic. The importance of preserving Graham's Creek, Kerosene Creek and The Narrows from further development were emphasised with an emphasis on the protection and preservation of Kangaroo Island and the adjacent mudflats and mangroves, the mainland and foreshore areas of Curtis Island.
- Importantly, members of the team wanted to maintain what they considered their 'right' to access the harbour for hunting and fishing, their connection to the sea and responsibility to their ancestors to look after 'country'. Discussion regarding the planned reclamation areas and visiting these locations, particularly the WBE reclamation area, caused considerable frustration and despondence amongst group members who view development impacts as outweighing the benefits to the environment and the PCCC people.
- The team believed that future development should not extend any further north than the current reclamation area north of Fisherman's Landing. The southern entrance to The Narrows, as marked by Friend Point and Laird Point, represents a clear physical boundary to any further development within Port Curtis. A buffer zone between the mangroves on the mainland and a new reclamation wall proposed to manage impacts was deemed a minimum requirement for future development at that location.

The team considered that the Port Central Expansion reclamation area would be the preferred dredged material placement location. This consideration is based in part on the significant impact industry has already had on this area and the potential for the area's redevelopment into open space.

16.6.2 Interviews with Port Curtis Coral Coast Elders and knowledge holders

Stage two of the marine assessment involved a series of interviews with several PCCC Elders and knowledge holders undertaken at the PCCC Gidarjil Office in Gladstone, and at the private residence of one PCCC representative. The aim of these interviews was to provide an opportunity to make further assessments of the cultural uses, significance and values of the areas under assessment and the perceived impacts of the Project. In many respects, the information obtained during these interviews reflects the beliefs, thoughts and views of those who took part in the boat assessment, including:

- The unanimous recognition and importance of the long term, inter-generational use of Port Curtis for obtaining resources (trade and exchange, and subsistence and medical use) and the undertaking of various cultural activities
- The importance of the rich and varied marine resources available at Piggery Creek, Back Beach and Barney (front) Beach prior to the arrival of heavy industries and the following their arrival the subsequent decline in the quality and quantity of these resources and loss of habitats
- The ongoing use of Barney (front) Beach for cultural activities
- The spiritual importance of The Narrows, Graham's Creek, Kangaroo and Curtis Islands, Laird Point and Graham's Creek and Bailai People's custodianship of Curtis Island
- Recognition of the natural boundary that forms the southern entry to The Narrows and the express consideration by PCCC interviewees that future development of the Port of Gladstone should not extend beyond the reclamation area north of Fisherman's Landing and the existing WB reclamation area
- Concern regarding the importance of maintaining Aboriginal people access to the Port of Gladstone and thus important resources along with the undertaking of cultural responsibilities.

In addition to the above, PCCC participants also made the following observations during the interviews:

- Overwhelmingly, those interviewed highlighted the importance the marine and associated terrestrial environment plays in passing on cultural knowledge. Bailai elders still actively educate the next generation in the "old ways" – teaching young Aboriginal people how to look after their environment; the mangroves, the waterways, the animals; how to make artefacts from local quarries; show children the fish traps in the area; and the location of scared sites.
- One Elder referred to Piggery Creek as having 'fed half of Gladstone'
- Historical associations with parents of contemporary PCCC people being employees of the Meatworks and use of the area for water based recreational activities
- Piggery Creek, including Parsons Point, is an area where people lived well before colonisation and continued to do so throughout the 20th century. PCCC members had previously found artefacts in the reclamation area behind Piggery Creek and believe this is evidence of ancestral occupation of the area (archaeological surveys of this area support the PCCC people's oral history of the occupation of this area prior to the arrival of Europeans).
- Barney (Front) Beach is significant to the Toolooa People given its use as a ceremonial place that predates European contact.
- The importance of seagrass meadows as breeding and feeding grounds for turtle, dugong and fish north of Fisherman's Landing, in Graham's Creek and The Narrows was highlighted and PCCC interviewees spoke at length of growing up in the mid-to-late 20th century hunting turtles and dugong and crabbing in these locations

- PCCC interviewees were adamant that they be involved in any discussions about reclamation and reviewing the toxicity of the material to be dredged prior to placement. Limiting potential impacts to cultural heritage and the marine environment from Project activities was a priority for those PCCC members interviewed.

Finally, those interviewed clearly stated that while preferring to have no more sea 'country' impacted by development, the Port Central Expansion reclamation area was a more suitable option for the placement of dredged material than the WBE reclamation area. As with the PCCC representatives who undertook the assessment by boat, the interviewed Elders and Applicants declared that the Port Central area had already sustained considerable impact from development and favourably viewed the potential to redevelop the area for use by the Gladstone community.

16.7 Potential impacts

16.7.1 Aboriginal cultural heritage significance

Anthropologists and archaeologists place a high priority on levels of existing site preservation as a means of determining scientific integrity and therefore, the value of the contextual data found within a site, or surrounding a cultural object. Any loss of scientific integrity does not reduce however, the cultural significance of a place and/or item. Equally, the presence of bush food species, trees of great age, or a bluff in a mountain range, for example, may provide indicators of cultural importance not borne out in the archaeological record.

PCCC representatives highlighted the fact that the Project impact areas must be viewed in the context of the larger, surrounding area and the other known sites, including quarries and stone sources, artefact scatters and resource areas, which hold high levels of cultural significance. Concern was specifically voiced by participating PCCC representatives in relation to the potential for the Project to impact both on recorded and unrecorded ecological locations and archaeological sites that may exist within the confines of the Project impact areas.

The importance of Port Curtis was highlighted by the PCCC members in relation to 'saltwater/freshwater' country connections. These connections are the basis for group and personal identity. Dreaming and Story Places and cultural knowledge and traditions are made tangible through ongoing use of country (salt/freshwater) and caring for country.

> *'Our connection is with the whole seaways here. It is not just an environmental concern it is a spiritual concern…anything that causes death to that cycle causes loss to our connection to the sea…once it is gone it is gone. You take that away you take our connection away.'*

Dreaming and Story Places were narrated by members of the group in association to natural landscape. Mt Larcom was considered especially significant to the PCCC people and Bailai People. The significance of Mt Larcom is explained by the story of the Kangaroo Rat Dreaming:

> *'Mt Larcom (Baeilee) is cut into the rock. Evidence that he was there was his manure that was left behind (and turned into shale oil). That the kangaroo rat left its droppings trail which made the shale oil deposits you see. The story runs between the three wharves, down to Fisherman's Landing adjacent to the water there. The story also runs down the Boyne Valley. The Gladstone area was part of travel routes up the Boyne Valley. Ochre there, used Curtis Island as a place of significance for ceremonies. This is backed up by the cultural heritage surveys we did for the pipelines (to Curtis Island).'*

The PCCC acknowledge they have a cultural responsibility to protect the natural ecology in Port Curtis and associated islands and waterways, and use specific animals ritually or ceremonially. Dugongs and turtles were acknowledged by members of the team to be culturally significant to the PCCC people. Using marine resources sustainably and socially was recognised as a cultural obligation for the group with responsibilities for country 'shared' and passed down from parents and ancestors before them:

> *'We don't have a right to exploit (resources) for personal use. It's there to utilise to live and support each other. Not to destroy it, but to maintain it. We have a responsibility to make sure our kids have the ability to know this and to pass this information to them. We have a responsibility, a cultural obligation to maintain what is there. (The harbour) is all a part of the broader country and we need to maintain that life that lives there.'*

For PCCC members being 'on country' is considered vital to maintaining a cultural association to the past and spiritual connection with ancestors. Being 'on country' also provided the ability to teach the next generation through giving cultural knowledge:

> *'My grandmother showed me the sites. She could not read or write but she knew how to talk. She taught me about the trees, the leaves, what was good what was not good (to eat).'*

The group also discussed how water has social, cultural, economic and spiritual importance to them and the healing properties that water and land are believed to hold:

> *'Water is sacred to us because it's where we get our tucker from. When it's polluted then what? It's like our supermarket. It's (also) like a healer to us. When my kids get a cold they would rather go for a swim than go to the doctor. Saltwater has healing properties.'*

Participating PCCC representatives unanimously identified all type of tangible cultural heritage - stone artefacts, stone arrangements; quarries, or shell middens - either passed down from family members or recorded during archaeological and cultural heritage surveys as being culturally significant as they represent physical evidence of and links to traditional times and to the old people who created and discarded them:

> *'Being on country for hunting and fishing and cultural heritage surveying gives us a good feeling. Like we're doing what our ancestors were doing. It's healing. We have kids from the city who come with us; you can see the relaxation and calmness in them (when they are out there).'*

The participating PCCC representatives also expressed the importance of economic development for themselves and their families, with a desire for the preservation, where ever possible, of what they see as increasingly limited areas of marine waters and the preservation of specific species of mangrove and seagrass so that animals that are culturally specific to the PCCC can replenish and the group can continue to maintain a connection to the waters and their ancestral past:

> *'Development has been good for the community with jobs and money for schools and roads. We need to look at the good side too. Aboriginal people have supported their families, bought homes and are happy (from the development in Gladstone) …But trying to maintain the cultural and spiritual connection is going to be part of any change that takes place (in Gladstone).'*

It is important to note that the fragile nature of identified cultural heritage and the associated environments encountered during the cultural heritage assessment suggests that these areas would be potentially impacted by Project activities, in relation to both identified cultural heritage significance and any as yet unidentified and unrecorded cultural heritage. In the majority of cases, without the implementation of mitigation measures the cultural heritage, both objects and places, identified during this survey may suffer direct impact from the Project. PCCC were concerned regarding the ongoing loss of access to foreshore and marine areas and the long term, cumulative impact on sea country and associated marine life.

16.8 Mitigation measures

The mitigation measures in this section will be implemented during the relevant Project activities.

16.8.1 Site avoidance and ongoing consultation

The participating PCCC representatives noted the significance of native vegetation, particularly foreshore mangroves and seagrass meadows, and expressed a general desire for the preservation, wherever possible, of this vegetation, particularly the increasingly limited areas of mangrove and seagrass noted in the Port of Gladstone and at the proposed WBE reclamation area.

PCCC representatives have further indicated that in all cases, the number one option for management of their cultural heritage should be avoidance and leaving all saltwater and freshwater country undisturbed. Therefore, avoidance of cultural heritage sites will be a primary consideration in finalising the design of the WBE reclamation area, inclusive of the location and nature of related activities and infrastructure. While the PCCC representatives acknowledge that site avoidance may not be a practical course of action at the WBE reclamation area, they have indicated that, where possible, Project activities should be designed to minimise the impact on recorded and potential cultural heritage sites and the natural environment more generally. Ultimately, wherever practicable, construction impacts will be minimised such that important cultural activities (e.g. fishing, knowledge transfer) can continue unabated within the Port Curtis area.

To assist in achieving these objectives, consultation will continue between GPC and the PCCC in order to ensure that cultural considerations are incorporated into the Project detailed design. Ongoing consultation regarding Project activities that involve disturbance, modification or cumulative impacts to either the land surface or the marine areas will enable appropriate levels of input and ensure that appropriate mitigation programs (inclusive of monitoring programs incorporating PCCC Sea Rangers) are subsequently developed and implemented.

The Protocol entered into by the ILUA parties in 2014 seeks to ensure that:

- All Port-related operations (proposed or undertaken) are conducted in a manner that is compliant with the ACH Act
- That harm to any Aboriginal cultural heritage with the ILUA Area is avoided or minimised
- That a relationship of cooperation between the parties is sustained.

16.8.2 Monitoring

Given the importance and cultural significance of the marine portions of the WBE reclamation area, GPC will utilise PCCC Sea Rangers to monitor the potential impacts of Project marine activities as part of implementing the Project EMP and Dredging EMP.

16.8.3 Western Basin Expansion reclamation area

During the design and construction of the WBE reclamation area, the footprint will not impinge on the coastal fringe and the existing buffer between the shoreline and proposed development area will be maintained. However, if the WBE reclamation area does result in direct and/or indirect impacts on the natural foreshore, a terrestrial cultural heritage assessment will be undertaken. The assessment should place a particular emphasis on dunes/cheniers, mangrove stands, areas in proximity to creeks and ephemeral creek lines with associated riparian vegetation, lowland and piedmont areas adjacent to creeks, ephemeral creek lines, swamps and waterholes in conjunction with the development and implementation of an archaeological test pitting program.

Within the marine context, the initial seagrass meadows disturbance will be monitored by PCCC Sea Rangers as part of implementing the Project EMP and Dredging EMP.

16.8.4 New find measures and cultural heritage inductions

As there remains potential for further, as yet undocumented Aboriginal cultural material to be present (most likely stone artefacts) within the Project areas, GPC will implement the New Discoveries provision for incidental finds of Aboriginal cultural heritage found during Project activities provided in Section 10.2 of the Protocol.

Before works begin, GPC will use all reasonable endeavours to arrange for all persons (staff and/or contractors) who will be engaged in works and who are likely to have contact with Aboriginal cultural heritage to participate in a cultural heritage induction session. Among other things, these inductions will inform workers what archaeological material may look like and give them clear instructions on what to do if they find anything that could be cultural heritage. These inductions will be jointly presented by GPC, a suitably qualified cultural heritage practitioner and/or a representative(s) from the PCCC.

16.9 Risk assessment

16.9.1 Methodology

To assess and appropriately manage the potential Aboriginal cultural heritage risks to environmental values as a result of Project activities, a risk assessment process has been implemented (herein referred to as 'risk assessment'). The risk assessment methodology adopted is based on principles outlined in the:

- AS/NZS ISO 31000:2009 Risk management – Principles and guidelines
- HB 203:2012 Handbook: Managing environment-related risk.

The risk assessment identifies and assesses the potential Aboriginal cultural heritage impact risks to environmental values/receptors for both the establishment of the reclamation area, dredging activities, installing navigational aids and operational management of the reclamation area.

The purpose of this risk assessment is to identify potential impacts to environmental values/receptors, prioritise environmental management actions and mitigation measures, and to inform the Project decision making process.

The risk management framework incorporates the Australian/New Zealand Standard for Risk Management (AS/NZS 4360:2004) and contains quantitative scales to define the **likelihood** of the potential impact occurrence and the **consequence** of the potential impact should it occur.

An overview of the interaction between Project activities (drivers/stressors), sensitive values/receptors and the risk impact assessment process is provided in Figure 16.8.

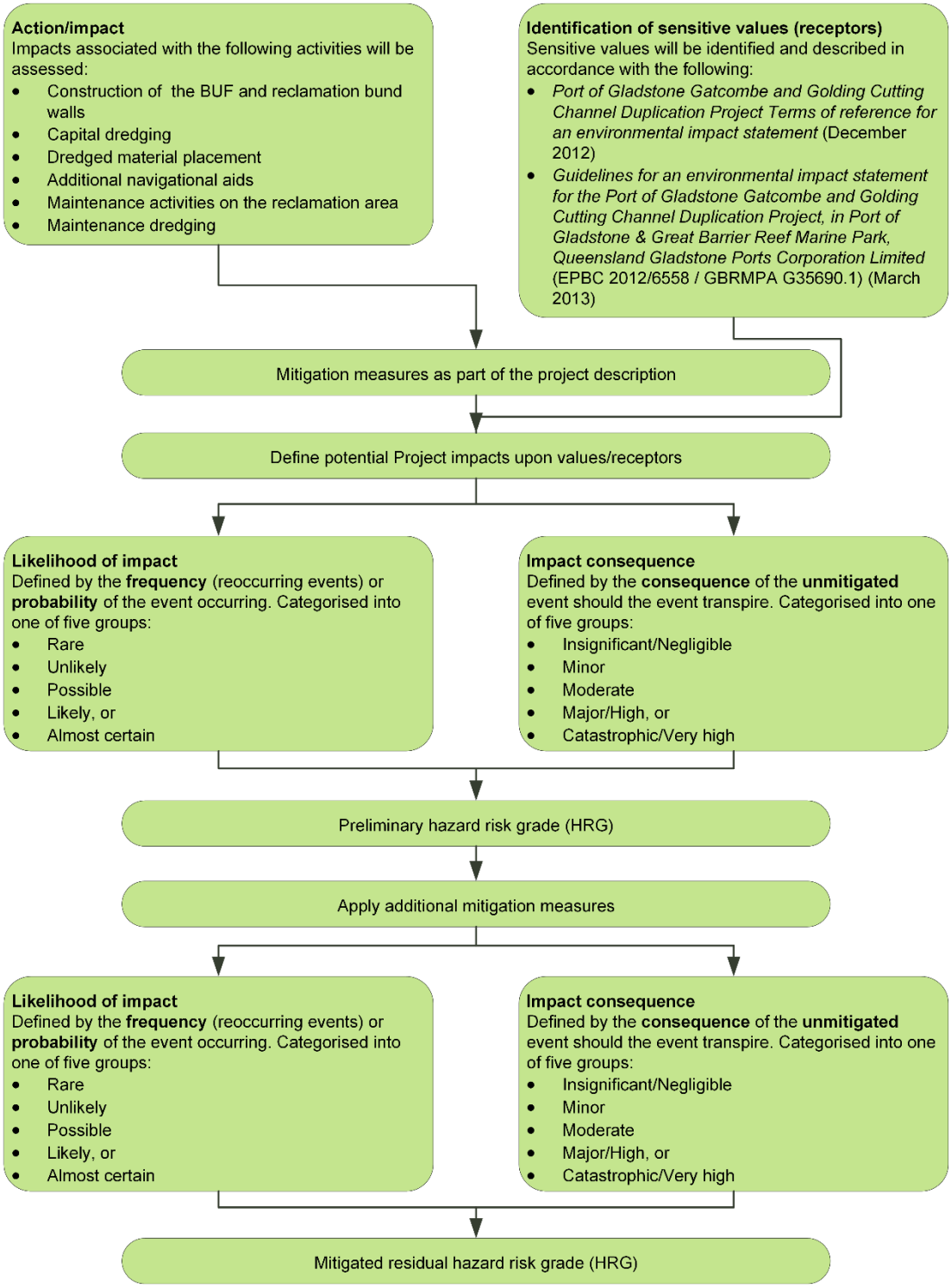

Figure 16.8 Risk assessment framework

Criteria used to rank the **likelihood** and **consequence** of potential impacts are provided in Table 16.3 and Table 16.4, respectively.

Table 16.3 Environmental (ecosystem), public perception and financial consequence category definitions (adapted from GBRMPA 2009)

Description	Definition/quantification[1]		
	Environmental*	**Public perception**	**Financial**
Negligible (Insignificant)	No impact or, if impact is present, then not to an extent that would draw concern from a reasonable person No impact on the overall condition of the ecosystem	No media attention	Financial losses up to $500,000
Low (Minor)	Impact is present but not to the extent that it would impair the overall condition of the ecosystem, sensitive population or community in the long term	Individual complaints	Financial loss from $500,001 to $5 million
Moderate	Impact is present at either a local or wider level Recovery periods of 5 to 10 years likely	Negative regional media attention and region group campaign	Financial loss from $6 million to $50 million
High (Major)	Impact is significant at either a local or wider level or to a sensitive population or community Recovery periods of 11 to 20 years are likely	Negative national media attention and national campaign	Financial loss from $51 million to $100 million
Very high (Catastrophic)	Impact is clearly affecting the nature of the ecosystem over a wide area **or** impact is catastrophic and possibly irreversible over a small area or to a sensitive population or community Recovery periods of greater than 21 years likely **or** condition of an affected part of the ecosystem irretrievably compromised	Negative and extensive national media attention and national campaigns	Financial loss in excess of $100 million

Table notes:

1 Quantification of impacts should use the impact with the greatest magnitude in order to determine the consequence category

* For Matters of National Environmental Significance (MNES) protected under the provisions of the EPBC Act the *Matters of National Environmental Significance – Significant Impact Guidelines 1.1 – Environmental Protection and Biodiversity Conservation Act 1999* (DoE 2013b) are to be used to determine the consequence category

Table 16.4 Likelihood category definitions (adapted from GBRMPA 2009)

Description	Frequency	Probability
Rare	Expected to occur once or more over a timeframe greater than 101 years	0-5% chance of occurring
Unlikely	Expected to occur once or more in the period of 11 to 100 years	6-30% chance of occurring
Possible	Expected to occur once or more in the period of 1 to 10 years	31-70% chance of occurring
Likely	Expected to occur once or many times in a year (e.g. 1 to 250 days per year)	71-95% chance of occurring
Almost certain	Expected to occur more or less continuously throughout a year (e.g. more than 250 days per year)	96-100% chance of occurring

Once the likelihood and the consequence has been defined, determination of the HRG of the potential hazard will be determined through the use of a five by five matrix (refer Table 16.5).

Table 16.5 Hazard risk assessment matrix (adapted from GBRMPA 2009)

Likelihood	Consequence rating				
	Negligible (insignificant)	Low (minor)	Moderate	High (major)	Very high (catastrophic)
Rare	Low	Low	Medium	Medium	Medium
Unlikely	Low	Low	Medium	Medium	High
Possible	Low	Medium	High	High	Extreme
Likely	Medium	Medium	High	High	Extreme
Almost certain	Medium	Medium	High	Extreme	Extreme

Table note:

Hazard risk categories identified in Table 16.5 and defined in Table 16.6

Table 16.6 Risk definitions and actions associated with hazard risk categories (adapted from GBRMPA 2009)

Hazard risk category	Hazard risk grade definition
Low	These risks should be recorded, monitored and controlled. Activities with unmitigated environmental risks that are graded above this level should be avoided.
Medium	Mitigation actions to reduce the likelihood and consequences to be identified and appropriate actions (if possible) to be identified and implemented.
High	If uncontrolled, a risk event at this level may have a significant residual adverse impact on MNES, MSES, GBRWHA and/or social/cultural heritage values. Mitigating actions need to be very reliable and should be approved and monitored in an ongoing manner.
Extreme	Activities with unmitigated risks at this level should be avoided. Nature and scale of the significant residual adverse impact is wide spread across a number of MNES and GBRWHA values.

16.9.2 Summary of risk assessment.

The potential Aboriginal cultural heritage impacts risk assessment is summarised in Table 16.7.

The implementation of the mitigation measures (refer Section 16.8 and Appendix M), will result in the residual Aboriginal cultural heritage risks from the Project activities being assessed as low to medium.

Table 16.7 Potential Aboriginal cultural heritage impacts and risk assessment ratings

Potential impact	Project phase					Preliminary HRG			Post mitigation HRG		
	Reclamation area and BUF establishment	Dredging	Navigational aids	Demobilisation	Maintenance	Likelihood	Consequence	HRG	Likelihood	Consequence	HRG
Direct and indirect impacts on recorded and potential cultural heritage sites and the natural environment generally	✓	✓	✓	✓		Likely	High	High	Unlikely	High	Medium
Direct and indirect construction impacts on cultural activities such as fishing and knowledge transfer within the Port Curtis area	✓	✓	✓	✓		Possible	Moderate	High	Possible	Low	Medium
Direct and indirect impacts on the coastline adjacent to the Fisherman's Landing and the existing WB reclamation area	✓					Possible	Moderate	High	Possible	Low	Medium
Potential loss of access to Port Curtis for cultural activities such as obtaining food	✓					Unlikely	Moderate	Medium	Unlikely	Low	Low

16.10 Summary

An assessment of potential direct and indirect impacts on Aboriginal cultural heritage was conducted on behalf of the PCCC native title claimant group. The assessment involved archaeological and anthropological surveys and included PCCC and GPC participants.

The PCCC participants expressed concerns regarding direct and indirect impacts on recorded and potential cultural heritage sites and the natural environment generally as well as potential impacts on cultural activities such as fishing and knowledge transfer within the Port Curtis area. Potential loss of access to Port Curtis for cultural activities such as obtaining food was also raised as a concern.

The PCCC participants expressed a preference for the dredged material placement to occur at Port Central Expansion, however it was acknowledged that should the WBE reclamation area be preferred, that the footprint not impinge on the coastal fringe and that the existing buffer between the shoreline and proposed development area be maintained.

Due to the majority of Project activities being within tidal waters, the potential for impact on known sites of cultural heritage significance is predicted to be low.

A range of mitigation measures are proposed to manage potential Aboriginal cultural heritage impacts, including monitoring, discovery and consultation measures under the existing Cultural Heritage Protocol established under the ILUA, to which GPC is a signatory.