Port of Gladstone
Gatcombe and Golding Cutting Channel Duplication Project

Environmental Impact Statement

Gladstone Ports Corporation
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17

Non-Aboriginal cultural heritage

Contents

17 Non-Aboriginal cultural heritage

17.1 Chapter purpose

This chapter identifies non-Aboriginal heritage values, potential impacts to identified values and proposes mitigation measures for potential impacts from Project activities.

17.2 Methodology

Desktop assessment of the non-Aboriginal cultural heritage of the Gladstone region has been undertaken by an appropriately qualified environmental planning practitioner, including a review of previous studies, literature and reports relating to the local heritage, searches of relevant heritage databases and a review of historical aerial photography and maps.

Searches of National, State and local heritage registers were conducted to identify places and sites of international and national importance within the vicinity of the Project (within 5km). The registers searched in January 2018 included:

- World Heritage List
- National Heritage List
- Commonwealth Heritage List
- Queensland Heritage Register
- The (former) Register of the National Estate
- Australian Heritage Database
- National Trust of Australia
- GRC Local Heritage Register
- Australian National Shipwrecks Database.

The risk based impact assessment methodology is provided in Section 17.8.

17.3 Legislation context

The Commonwealth and State legislation outlined in this section provides the framework for the protection and management of the historical heritage that is relevant to the Project.

17.3.1 Commonwealth legislation

17.3.1.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act provides a legal framework for the protection and management of MNES, including flora, fauna, wetlands and heritage. The MNES in relation to flora, fauna and wetlands and Aboriginal cultural heritage relevant to the Project and the requirements under the EPBC Act are discussed in further detail in Chapter 9 (nature conservation) and Chapter 16 (Aboriginal cultural heritage).

The EPBC Act established the National Heritage List for natural, historic and Aboriginal places of outstanding heritage value, and the Commonwealth Heritage List, for natural, historic and Indigenous places on Commonwealth land and waters or under control of the Australian Government.

Places listed on either the World Heritage, National Heritage and/or the Commonwealth Heritage Lists are MNES and as such, are protected under the EPBC Act. Any action that is likely to have an impact on a world heritage property, national heritage place and/or a Commonwealth heritage place is referred to the Minister and an environmental assessment is conducted.

The EPBC Act requires consultation with government departments, proponents, landholders and the community be undertaken at various stages of the referral and assessment process. Further details regarding the consultation undertaken during the EIS process are provided in Chapter 18 (social impact assessment) and Appendix N1.

17.3.1.2 Australian Heritage Council Act 2003

The Australian Heritage Council was established under the *Australian Heritage Council Act 2003* (Cth) as the principal advisory group for the Minister on heritage matters. The Australian Heritage Council performs a number of functions, including making assessments under the EPBC Act relating to national heritage places and/or Commonwealth heritage places.

The National Heritage List, Commonwealth Heritage List and former Register for the National Estate are administered by the Australian Heritage Council.

The Australian Heritage Council advises the Minister on conserving and protecting places included (or being considered for inclusion) in the National Heritage List or Commonwealth Heritage List and nominates places for inclusion in the National Heritage List or Commonwealth Heritage List.

The Australian Heritage Council advises the Minister on the Commonwealth's responsibilities for historic shipwrecks as well as other matters relating to heritage.

17.3.1.3 Historic Shipwrecks Act 1976

The *Historic Shipwrecks Act 1976* (Cth) provides for the protection of historic wrecks and associated relics that are over 75 years old and in Australian waters, extending from below LAT to the edge of the continental shelf, which can range from 3 to 300 nautical miles offshore.

The Minister can also make a declaration to protect any historically significant wrecks or relics that are less than 75 years old.

The objective of the *Historic Shipwrecks Act 1976* is to ensure that historic shipwrecks are protected and maintained for recreational, scientific and educational purposes. It controls actions which may result in damage, interference, removal or destruction of a historic shipwreck or any associated relics.

The Australian National Shipwrecks Database, a register of all known shipwrecks in Australian waters, was established and is maintained under the *Historic Shipwrecks Act 1976*.

Australia wide, there are currently 15 historic shipwrecks located within protection (no-entry) zones. A shipwreck protection zone may cover an area up to a radius of 800m around a shipwreck site and prohibits all entry unless a permit is obtained.

In Queensland, DES is the delegate under the *Historic Shipwrecks Act 1976* on behalf of the Commonwealth Government through the Heritage Act (refer Section 17.3.2.1).

17.3.1.4 Protection of Movable Cultural Heritage Act 1986

The *Protection of Movable Cultural Heritage Act 1986* (Cth) was passed after the UNESCO Convention on the Means of Prohibiting the Illicit Import, Export and Transfer of Ownership of Cultural Property and was ratified by Australia in 1970.

The *Protection of Movable Cultural Heritage Act 1986* protects Australia's movable cultural heritage and supports the protection of movable cultural heritage from foreign countries.

The *Protection of Movable Cultural Heritage Regulations 1987* (Cth) establishes the National Cultural Heritage Control List, which lists cultural heritage objects that are protected under the *Protection of Movable Cultural Heritage Act 1986*. Objects listed under the National Cultural Heritage Control List are protected under two categories:

- Class A – objects that may not be exported from Australia
- Class B – objects that require permission to be exported from Australia.

Class A objects include Victoria Cross medals awarded to Australian service personnel, pieces of the suit of metal armour worn by Ned Kelly at the siege of Glenrowan in Victoria in 1880 and various Aboriginal and Torres Strait Island objects.

Objects categorised as Class B under the National Cultural Heritage Control List include categories such as archaeology, natural science, fossils and meteorites, applied science or technology, heritage machinery, fine and decorative art, documentary heritage, numismatics (coins), philately (stamps), historical significance, sporting trophies/memorabilia export controls and Australian Aboriginal and Torres Strait Islander heritage.

17.3.2 State legislation

17.3.2.1 Queensland Heritage Act 1992

The Heritage Act establishes a framework for the protection and conservation of Queensland heritage and local heritage places, the discovery and protection of archaeological artefacts and underwater cultural heritage artefacts.

The Heritage Act also establishes the Queensland Heritage Council, an independent statutory authority responsible for the management of the Queensland Heritage Register, the principal mechanism through which the Heritage Act operates. Heritage places listed on the register include buildings, structures, cemeteries, archaeological sites, gardens, urban precincts and natural and landscape features.

Under the Heritage Act, an archaeological artefact is any artefact that is evidence of an aspect of Queensland's history, whether it is located in, on or below the surface of land, but which does not include an artefact protected under the ACH Act or *Torres Strait Islander Cultural Heritage Act 2003* (Qld). Furthermore, the Act defines an underwater cultural heritage artefact to include any historic aircraft wreck, historic shipwreck and/or historic underwater article that is located in Queensland waters and for which has been in the waters for at least 75 years.

Under Section 89 of the Heritage Act, it is a requirement to report the discovery of an underwater cultural heritage artefact to the chief executive. Under Sections 90 and 91 of the Heritage Act, it is an offence to interfere (i.e. damage, destroy, disturb, expose or move) with an underwater cultural heritage artefact without written approval from the chief executive or unless a reasonable excuse is provided.

17.3.3 Gladstone Regional Council Planning Scheme

Under the provisions of the *Queensland Heritage Act 1992*, local governments manage and maintain a local heritage register, or have a heritage overlay in their planning scheme. GRC adopted a Local Heritage Register in July 2013, and the register has been included in the Gladstone Regional Council Planning Scheme, which commenced on 12 October 2015. The Local Heritage Register describes State and locally significant heritage places within the Gladstone region, including places considered to have Aboriginal cultural heritage value.

The Cultural Heritage Features Overlay Code within the GRC Planning Scheme provides protection for the places listed in the Local Heritage Register by restricting development on a Local Heritage Place, on land adjoining a Local Heritage Place and on land of special cultural significance to Aboriginal and Torres Strait Islander people.

17.4 Historical context

17.4.1 Early European settlement

The non-Aboriginal history of the Gladstone region dates back to the early 19th Century upon Matthew Flinders' discovery of Port Curtis. Matthew Flinders named Port Curtis in 1802 in honour of Admiral Sir Roger Curtis, while charting parts of the Australian coast in the 'Investigator' and accompanied by the 'Lady Nelson' (Meston 1895). Previously, Lieutenant James Cook sailed past Port Curtis at night during his exploration along the east coast of Australia in the 1770s and missed the entrance to the port, mistaking Curtis Island as part of the mainland (ARCHAEO 2009).

John Oxley explored Port Curtis and the surrounding countryside in 1823 during his search for a suitable site for a new convict settlement. However, the impressions he gave of the region were not favourable and upon his recommendation, the first settlement was established at Moreton Bay:

> "*I respectfully submit it as my opinion that Port Curtis and its vicinity do not afford such a site… In short, it did not appear to me that the country, taking it in an extended sense, could either afford subsistence, or supply the means of profitable labour for a large establishment.*" (Hogan 1898)

However, in 1845, William Ewart Gladstone decided to establish a new colony in North Australia. Gladstone specified criteria for the new colony, which included security for shipping and ease of access from the sea, access to the interior of the country, abundance of good water, absence of any marshy ground (as it was considered to breed disease), supply of building materials and productive soil.

To discover a suitable locality for the new North Australia colony, Sir Charles Fitzroy, the Governor of New South Wales, directed Colonel Barney and Captain Perry to survey the locality by sea and by land, respectively. Colonel Barney advised that Port Curtis was unsuitable for establishing a new colony as the land was poor, the water was bad and the mangrove thickets unhealthy (Meston 1895). However, Governor Fitzroy, ignoring this advice, dispatched the first vessel to Port Curtis, 'Lord Auckland' with officials, settlers and supplies.

On entering Port Curtis in January 1947, 'Lord Auckland' struck a sand bar and passengers had to land on a beach at the southern point of Facing Island (now known as Settlement Point). The Colony of North Australia was proclaimed by Colonel Barney two days later and the first Legislative Assembly and Council were held on the beach (GRC 2013). The colonists remained on Facing Island for seven weeks before being collected by the remainder of the expedition and removed to the mainland.

Five months later, Earl Grey, Gladstone's successor as the Secretary of State for the Colonies, ordered the new colony to be abandoned and the colonists to return to Sydney. He considered the new colony of North Australia had become an 'impolitic and needless measure' (Hogan 1898).

Despite the abandonment of the colony, bands of pioneers from the south travelled overland, driving their flocks and herds to the unoccupied pastoral Port Curtis region (Hogan 1898). These pioneers spread throughout the district, which continued to grow and develop into an area scattered with sheep and cattle stations, and an accessible port to which the squatters sent wool, tallow, hides, etc.

In 1854, Captain Maurice O'Connell was sent to Port Curtis as a Government Resident to officially form a new and free settlement. The official government residence was established at Barney Point and the area was reserved for a public quay, Customs House and public offices.

17.4.2 Discovery of gold

The first Queensland goldfield was discovered in June 1858 at Canoona on the Fitzroy River. The discoveries attracted a significant number of potential settlers away from Gladstone to the Rockhampton area and Gladstone became 'practically uninhabited' (Hogan 1898).

A subsequent discovery of gold along the Calliope River in 1861 helped bolster the development of Gladstone and several hundred people lived in Gladstone by 1870 (ARCHAEO 2009).

Although the goldfields were not a great success, a number of gold miners eventually settled in the region.

17.4.3 Early harbour development

Officials were optimistic about Gladstone supporting a major settlement given the naturally deep water harbour (ARCHAEO 2009).

Trade in Port Curtis began in Auckland Creek in 1859 with horses and cattle the first exports. However, Port Curtis did not have a wharf and the stock was lifted to deck from the beach by a rope system pivoted at the ship's yard arm.

Three wharves were eventually constructed at Auckland Creek in the 1860s. Commercial Wharf, a makeshift wharf, was initially constructed in Auckland Creek. A second wharf was constructed in 1862, driven by high charges and poor facilities at the existing wharf. Government Wharf, later known as Cattle Wharf then O'Connell Wharf, was constructed in 1863 and was operated by the Municipal Council.

Between 1882 and 1885, a deep water jetty was constructed at Auckland Point to accommodate the largest vessel classes in operation. The jetty was operated by the Customs Department and was intended to be used for the export of cargo for the Hervey Bay district.

The Narrows is one of only five narrow tidal passages in Australia which separate large continental islands with mainland Australia. It consists of salt flats, salt marsh, mangroves and channels (Cth 2014c). A deepening of The Narrows was undertaken in January 1890 to allow small coastal vessels to traverse between Rockhampton and Gladstone at high tide. The excavation work proved difficult due to the extremely hard and obstinate nature of material, and only 12,007 cubic yards of material was removed during the 16-month program. At low tide, it was possible to cross The Narrows at various places, such as Ramsay Crossing which was established by John Ramsay to move cattle and horses from the mainland to Curtis Island. It is apparent that this crossing is still used today (GRC 2013). It is also considered an important indicator of past geological processes. Currently The Narrows is being filled with sediment originating from the Fitzroy River (Cth 2014c).

Lighthouses were installed at Cape Capricorn in 1874 and at Gatcombe Head in 1876. Buoys and beacons were installed in Port Curtis in 1893 to allow night approach to Gladstone from either the north or south channels.

The Gladstone Harbour Board was established in 1914 and included two Government appointments and five elected members from the Town of Gladstone, Calliope Shire and Miriam Vale Shire.

While the approach channels in Port Curtis were deep, the entrance to Auckland Inlet, where the wharves were constructed, was shallow and required constant maintenance dredging. In response, the Gladstone Harbour Board constructed a retaining wall from Auckland Point to Barney Point and used the dredged material to reclaim over 100ha of land behind the wharves (GPC 2009). The berthage and approach to the Parsons Point meatworks wharf was deepened in 1937 and provided the bulk of the dredged material for reclamation.

In addition, the Gladstone Harbour Board obtained funds in 1938 to construct landings at South End on Curtis Island and at Gatcombe Head on Facing Island.

The horse feeding yards were removed from Auckland Point in 1938 and the rail access to the jetty at Auckland Point was converted to a balloon loop to reduce shunting.

A concrete extension of the Auckland Point Jetty was completed in 1956 to support increased exports, including coal loading facilities for the export of Callide coal.

17.4.4 Industrial development

17.4.4.1 Industry in the early 20th Century

The Gladstone Meatworks of Queensland became a registered entity in 1894 and construction of the meatworks at Parsons Point, including the jetty, was completed in 1896. The meatworks provided increased markets for the prominent cattle industry in Central Queensland, particularly given the new refrigeration technology (ARCHAEO 2009). Regional employment and the Gladstone economy fluctuated with cattle sale prices. The Swift Australian Co (Pty), an American owned business in the meat and meat exporting trade, took over the Gladstone Meatworks in 1934, and doubled its capacity and the number of people it employed and instigated large-scale development in the region, including a new canning facility. Following the decline in the cattle industry and costs required to upgrade the facility to a required standard, the meatworks closed in late 1963.

Given dairy cattle had become an important pastoral industry in the region, a dairy processing works and butter factory were also established in Gladstone, adjacent to the existing railway, in the mid-1890s. The Port Curtis Co-operative Dairy Association Ltd was formed in 1904 and took over operation of the Gladstone Butter Factory. By the 1920s, it became one of the largest co-operative dairy companies in Queensland. Operation of the dairy processing works and butter factory continued until its closure in 1980 (EHP 2015).

The British Imperial Oil Company (now known as Shell) was granted approval in 1928 by the Gladstone Harbour Board for the use of a site to be reclaimed at Auckland Point for storage of petroleum products. In addition, coal exports from Gladstone began in the early 1900s and an electric crane was installed on the jetty in 1925 to increase lifting capacity. A total of 58,992 tonnes of coal was exported from Port Curtis in the 12 months ending June 1930 (GPC 2009). Other exports from Port Curtis in the 1920s included wool and sugar.

The commencement of World War II prevented a number of planned developments from occurring in Port Curtis due to the predicted decline in coastal shipping. Gladstone and Port Curtis, however, sheltered tens of thousands of allied troops and hundreds of US Navy vessels during World War II (GPC 2012b).

Development within the Gladstone region slowly increased following the war. The Gladstone Harbour Board gave Caltex a two year option over 1.6ha from 1945 to develop a bulk depot for fuel, oil and kerosene (GPC 2012b). In 1949, the Independent Oil Industries Ltd was given another option to develop a bulk depot and in 1950, Thiess Bros secured a contract for the Caltex reclamation, the second oil company to develop a bulk terminal in Gladstone. The Caltex Oil Terminal was completed in December 1952 (GPC 2012b).

A number of other reclamation projects for fuel depots and grain facilities were carried out using material from Auckland Hill and other quarries around Gladstone (GPC 2009). Grain began to be exported through Port Curtis in the early 1950s following the establishment of land for suitable grain storage facilities (GPC 2012b).

In 1956, Thiess Bros in conjunction with the Gladstone Harbour Board cleared a section of vegetation for an airstrip at Clinton. The first commercial flight was made in July 1956. The Department of Civil Aviation acquired the site, which became the Gladstone Airport and was officially opened in April 1957 (GPC 2012b).

17.4.4.2 Callide Coal

Queensland's first open-cut coal mine was located at Callide, approximately 100km west of Gladstone, and was operated by Thiess Bros. As the exporter of Callide coal, the Gladstone Harbour Board developed a coal loading plant at Auckland Point and in 1954 Gladstone became the first bulk loading coal export port in Queensland (GPC 2012b). The coal loading plant contained an underground pit with a conveyor, a stockpile area and a shiploader, and became known as the Auckland Point Coal Terminal.

In the late 1950s, representatives from the Japanese company Mitsui and Co. initiated commercial arrangements with Thiess to supply hard coking coal for the Japanese steel mills. The coalfields at Moura had extensive deposits of hard coking coal ideal for this purpose and Mitsui and Co. and Thiess partnered with Peabody Coal Company to develop the Moura resource. The first shipment of Moura coal (11,875 tonnes) was exported from Gladstone in August 1961 (GPC 2013). The increasing volumes of coal soon outstripped the capacity of the Auckland Point Coal Terminal and a new facility at Barney Point was constructed – the Barney Point Coal Terminal – which had a loading capacity of 2,000 tonnes per hour. The Barney Point Coal Terminal was connected to the Moura coal reserves by the Moura to Gladstone railway, which was opened in 1963.

17.4.4.3 Queensland Alumina Limited

Construction of the Queensland Alumina Limited (QAL) refinery plant commenced at Parsons Point, the location of the former meatworks, in September 1964. The Gladstone Harbour Board constructed the causeway and bridge, named the William Baker Shaw Bridge, which connected South Trees Island with Parsons Point.

Two years after construction commenced, the need for an expansion was identified to increase delivery to 900,000 tonnes annually (GPC 2013). In December 1966, the first shipment of bauxite and caustic soda arrived. In June 1967, the first shipment of alumina was exported from South Trees Wharf bound for the United States.

In November 1973, following completion of three expansions of the plant, the output capacity of the plant reached 2.4 million tonnes annually.

In 1975, Comalco Ltd announced plans to construct an aluminium smelter at Boyne Island given the adjacent alumina refinery and access to the natural deep water harbour. The first shipment from Boyne Smelters Limited was exported in April 1982 with 16,451 tonnes of petroleum coke exported from the Boyne Wharf (GPC 2013).

17.4.4.4 RG Tanna Coal Terminal

In the 1970s, the demand for steel increased in Japan with new markets emerging in South Korea, Taiwan and Europe and subsequently, the demand for Queensland's high quality coking coal increased. It was determined that an additional bulk coal loading and berthing facility was required in Port Curtis. Following reclamation of the Clinton Estate, the site was selected for the new coal facility. Approval of the Clinton Coal Facility was received in 1976 when BHP Co Ltd advised that long term contracts with Japanese steel mills had been secured.

The first stage was completed in 1980 with an inaugural shipment of coal in April 1980 of 26,196 tonnes. By 1994, capacity of the coal facility had increased three-fold, enabling coal producers to respond to growing demand.

In 1991, the Gladstone Port Authority ceased loading coal at Auckland Point to reduce coal dust impacts on the nearby Gladstone community and as such, the Barney Point Coal Terminal and the Clinton Coal Facility became the sole exporters of coal in the Gladstone Harbour.

The Clinton Coal Facility was renamed the RG Tanna Coal Terminal in 1994 in recognition of Mr Reg Tanna, former General Manager of the Gladstone Harbour Board.

17.4.4.5 Yarwun Industrial Estate

Fisherman's Landing was established in 1981 with the construction of a single-berth wharf for the Queensland Cement Ltd clinker plant. In the early 1990s, Orica (formerly ICI) and Ticor established ammonia nitrate plants in the Yarwun Industrial Estate with harbour access via Fisherman's Landing and Auckland Point.

Reclamation works were undertaken at Fisherman's Landing in the late 1990s to develop additional berths for Comalco's Alumina Refinery (now Rio Tinto Yarwun Alumina Refinery).

17.4.4.6 Harbour expansion

An industrial boom occurred in Gladstone in the 1980s with the completion of the Clinton Coal Facility, Comalco's Boyne Aluminium Smelter, and the Queensland Cement and Lime Clinker Plant at Fisherman's Landing, and upgrades to the Gladstone Power Station. Additional wharf facilities were constructed at Clinton, Boyne Island and Fisherman's Landing to service these new and expanded industries.

The Gladstone Harbour Board commenced a harbour deepening project to accommodate cape sized vessels in 1981. Approximately 18Mm^3 of material was dredged with two-thirds of the dredged material placed at the new East Banks DMPA and the remaining third used to continue reclamation between Auckland Point and Barney Point and the Clinton Estate, west of Auckland Point.

Further deepening and widening of the inner and outer harbour channels was undertaken in 1986 to accommodate larger deeper draft sized vessels.

The Gladstone Marina was opened in 1988 and included a service jetty and 100 pens for small craft (GPC 2014). The marina continued to expand and by 1994 there were 200 pens for small craft, a ferry jetty and terminal, and a wharf for fishermen (GPC 2014). The bridge connecting Gladstone City to the marina was built in 1991.

17.5 Existing environment

17.5.1 Desktop searches

The Project impact areas include the areas to be dredged, the BUF, WB and WBE reclamation areas, and changes to navigational aids.

A variety of desktop searches of heritage lists were conducted for sites/places of historic heritage importance within a 5km radius of the Project impact areas. Six places are located within 5km of the Project impact areas and one place (i.e. the Great Barrier Reef Region) are located directly within the Project impact areas (refer Table 17.1). The location of these heritage places is illustrated in Figure 17.1

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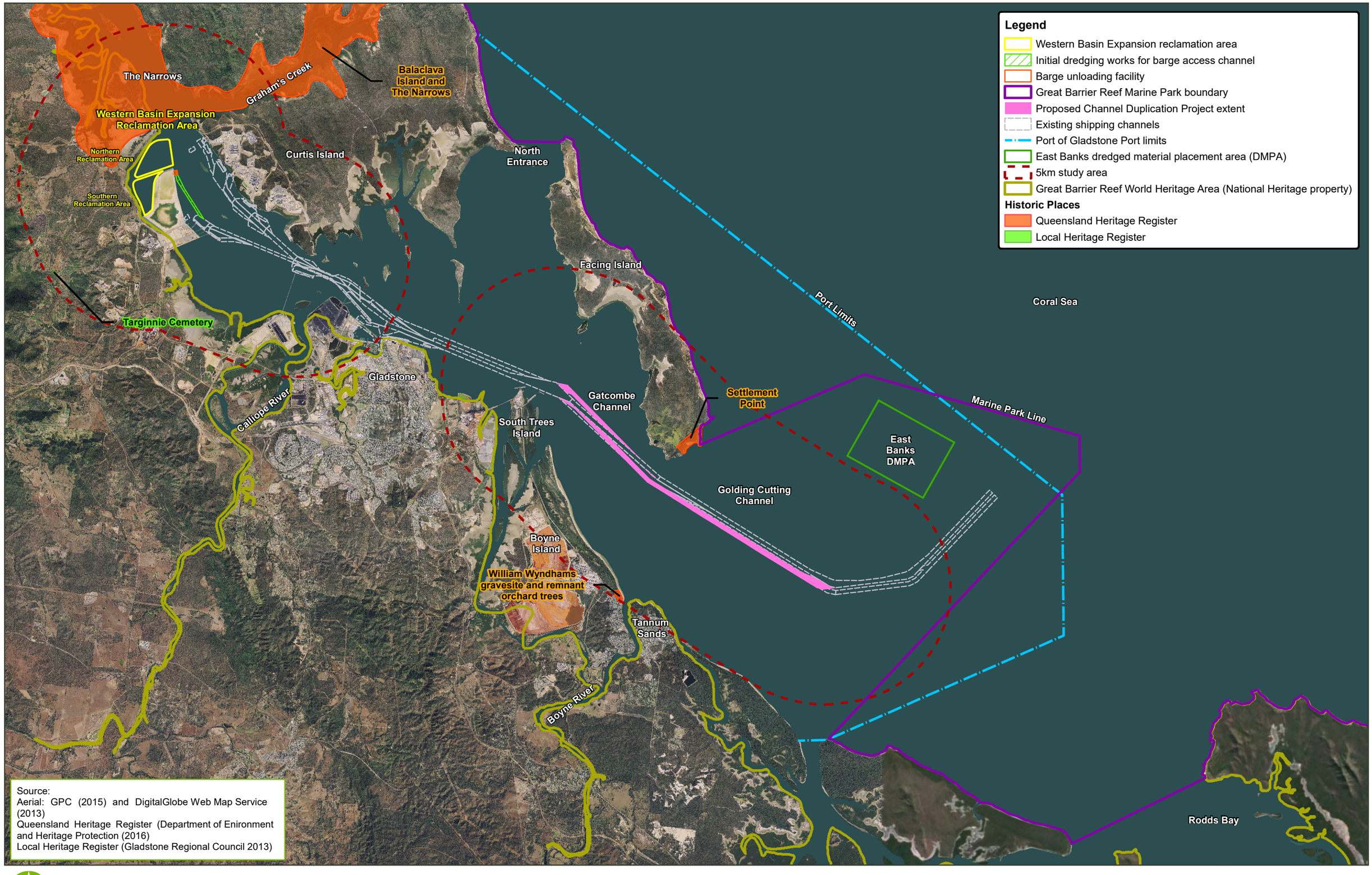

Source:
Aerial: GPC (2015) and DigitalGlobe Web Map Service (2013)
Queensland Heritage Register (Department of Enironment and Heritage Protection (2016)
Local Heritage Register (Gladstone Regional Council 2013)

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Figure 17.1: Historic places within 5km of Project area

Table 17.1 Results from searches of the Commonwealth, State and local heritage lists

Place name	Heritage significance	Source	Place ID	Classification	Legal status	Project impact areas within heritage sites	Project impact areas within 5km of heritage sites
Balaclava Island and The Narrows, Curtis Island	The Narrows is historically significant as it is one of only five narrow tidal passages separating continental islands form the mainland. It is also an indicator for past geomorphological process which can been seen in the distinctive features of Balaclava Island. Section 17.4.3 includes further information.	RNE	18811	Natural	Registered 26 October 1999	No	Place is located < 5km from Project impact areas
Great Barrier Reef Region	Information on the World Heritage values of the Great Barrier Reef within Port Curtis is provided in Appendix I1	NHL	105709	Natural	Registered 21 May 2007	Yes	-
Great Barrier Reef Region		RNE	8320	Natural	Registered 14 May 1991	Yes	-
Great Barrier Reef Region		WHL	105060	Natural	Declared 1981	Yes	-
Settlement Point, Facing Island	Settlement Point is historically significant as it has the potential to provide information of the settlers short lived occupation of the area in 1847	LHR	-	-	Not inspected	No	Place is located < 5km from Project impact areas
Targinnie Cemetery	Targinnie cemetery is historically significant as it demonstrates the principal characteristics of a small, rural cemetery	LHR	-	-	Inspected 12 October 2011	No	Place located < 5km from Project impact areas
William Wyndhams gravesite and remnant orchard trees	William Wyndhams gravesite and remnant Tamarind trees provide a link to his work and interests in the anthropological observations of the languages and customs of the Aboriginal tribes found in Central Queensland and New South Wales	LHR	-	-	Inspected 11 October 2011	No	Place is located < 5km from Project impact areas
William Wyndhams gravesite and remnant orchard trees		QHR	601811	Landscape; archaeological	Registered 23 June 2000	No	Place is located < 5km from Project impact areas

Table notes:

LHR GRC Local Heritage Register
RNE Register of the National Estate (former)
NHL National Heritage List
WHL World Heritage List
QHR Queensland Heritage Register

A search of the Australian National Shipwrecks Database was conducted to identify known shipwrecks within the Port of Gladstone. A total of 47 shipwrecks were identified in the wider region with nine historic shipwrecks identified within 5km of the Project area (refer to Table 17.2). The location of these historic shipwrecks is illustrated in Figure 17.2.

Table 17.2 Results from the Australian National Shipwrecks Database within 5km of Project area

ID	Vessel name	Vessel type	Year wrecked	Shipwreck location	Potential for artefacts/remains
2285	Capricorn	Sailing vessel	1870	Location is estimated to be north of area to be dredged for duplication of shipping channels	Unknown. Location approximate based on historical reference to East Banks. No details provided on wreckage.
2545	George Thornton	Sailing vessel	1887	Location is estimated to be south of area to be dredged for duplication of shipping channels	Unknown. No details provided on wreckage.
2552	Glanworth	Twin screw steamer	1896	Settlement Point, Facing Island	Wreck remains at Settlement Point, Facing Island. Some potential for artefacts.
2782	Lord Auckland	Sailing vessel	1847	Located <5km northwest of area to be dredged for duplication of shipping channels	Unlikely. The vessel was salvaged, repaired and sailed back to Sydney.
2890	Moonta	Sailing vessel	1899	Location is estimated to be north of area to be dredged for duplication of shipping channels	Potential. Wreck broke up soon after running aground.
2903	Myee	Motor vessel	1915	Located <5km northwest of are to be dredged for duplication of shipping channels	Unknown. No details provided on wreckage.
3021	Prince Regent	Sailing vessel	1869	Location is north of South Trees Wharf and <5km from area to be dredged for duplication of shipping channels	Yes. Some frames of the wreck visible at low tide in 1967. South Trees Wharf built over the top of the wreck.
3106	Scottish Knight	Sailing vessel	1880	Location is estimated to be south of area to be dredged for duplication of shipping channels	Unlikely. Vessel salvaged and towed to the Gladstone cattle wharf.

Table note:

Results only include historic shipwrecks (> 75 years in the water)

Source: Commonwealth of Australia (2014b)

Only shipwrecks and associated relics that are over 75 years old or those that are declared to be historic by the Minister are protected under the *Historic Shipwrecks Act 1976*. As such, all shipwrecks outlined in Table 17.2 are protected under the *Historic Shipwrecks Act 1976*. Relics must not be removed from these shipwrecks and the physical fabric of the shipwreck must not be disturbed unless a permit is obtained through the DoEE.

Some historic shipwrecks have protected or no-go zones where the shipwreck is at particular risk of disturbance. There are no historic shipwrecks with protected or no-go zones within or in the vicinity of the Port of Gladstone.

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The Narrows
Graham's Creek
Western Basin Expansion Reclamation Area
Northern Reclamation Area
Southern Reclamation Area
Curtis Island
North Entrance
Facing Island
Myee (2903)
Lord Auckland (2782)
Port Limits
Coral Sea
Prince Regent (3021)
Gladstone
Scottish Knight (3106) (a)
Gatcombe Channel
Marine Park Line
Calliope River
South Trees Island
Glanworth (2552)
Capricorn (2285)
Moonta (2890)
East Banks DMPA
Golding Cutting Channel
Boyne Island
Scottish Knight (3106) (b)
George Thornton (2545)
Tannum Sands
Boyne River
Rodds Bay

Legend

Protected Shipwreck (>75 years old)
- Not recovered
- Recovered
- Western Basin expansion reclamation area
- Initial dredging works for barge access channel
- Barge unloading facility
- Great Barrier Reef Marine Park boundary
- Proposed Channel Duplication Project Extent
- Existing Shipping Channels
- Port of Gladstone Port Limits
- East Banks dredged material placement area (DMPA)

(a) Initial shipwreck
(b) Final shipwreck

Source:
Aerial: GPC (2015) and DigitalGlobe Web Map Service (2013)

Disclaimer: Shipwreck locations are based on coordinates provided in the Australian National Shipwreck Database and adjusted based on general history (where relevant). Shipwreck locations are estimates only and are to be used with caution.

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Date: 17/12/2018 Version: 6 Job No: 237374

Coordinate system: GDA_1994_MGA_Zone_56

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Figure 17.2: Shipwrecks within 5km of Project impact areas

17.6 Potential impacts

17.6.1 Potential direct impacts

Based on the desktop and field assessment undertaken for the Project EIS, there are no listed sites/places of historic heritage importance within the Project direct impact areas. However due to the location of the Project activities being within the Port of Gladstone port limits, which are located within the listed Great Barrier Reef Region, the direct Project impacts identified in the EIS, have the potential to impact on this heavily industrialised area of the Great Barrier Reef Region.

The direct Project impacts from Project activities are identified in each chapter of the EIS together with mitigation measures and a risk assessment of each residual impact. An action is likely to have a significant impact on the World Heritage values of the GBRWHA if there is a real chance or possibility that it will cause:

- One or more of the World Heritage values to be lost
- One or more of the World Heritage values to be degraded or damaged
- One or more of the World Heritage values to be notably altered, modified, obscured or diminished.

Given that the UNESCO and National listings of the Great Barrier Reef Region relate to the size and diversity of the rich and complex ecosystems, the most relevant EIS chapter is Chapter 9 (nature conservation), which identifies the potential impacts and risk assessment of the World Heritage values of the Great Barrier Reef within Port Curtis.

17.6.2 Potential indirect impacts

A number of listed sites/places of historic heritage importance and recorded shipwreck sites identified during the desktop assessment are located outside the Project direct impact areas but are located within a 5km radius of the Project activities. Sites/places above high water and within the Gladstone and Targinnie areas are highly unlikely to be indirectly impacted by Project activities due to the separation distance between the heritage sites/places and the Project impact area.

Sites/places below high water and in particular, the recorded shipwreck sites within 5km of the Project direct impact areas, have the potential to be indirectly impacted by Project activities as a result of:

- Increase in noise and/or light emissions
- Damage to the physical fabric of the site/place
- Sediment deposition and scouring impacting the preservation of historic shipwrecks.

The potential impacts from sediment deposition into the receiving environment from dredging activities are provided in Chapter 8 (water quality).

As Project activities will be limited to the areas to be dredged, the BUF, WB and WBE reclamation areas, and the changes to navigational aids, indirect impacts on these places/sites are predicted to be negligible to minor.

17.7 Mitigation measures

The following mitigation measures will be implemented during the Project activities to minimise impacts on non-Aboriginal cultural heritage values:

- Known shipwreck locations to be avoided by Project activities
- Prior to dredging activities commencing, undertake a thorough survey (e.g. remote sensing survey using multi-beam or side beam scanning sonar with magnetometer) of the areas to be dredged and engage a suitably qualified and experienced maritime archaeologist to interpret the resultant data to identify any potential shipwrecks for further investigation and management

- Ensure that all employees are suitably trained to identify cultural heritage sites or objects and report the finds to the Contractor's Environmental Officer (CEnvO) and maintain a log of all employees who have undergone cultural heritage training
- Inform all employees of their obligations to notify the CEnvO of any cultural finds
- Develop an accidental cultural heritage discovery reporting process and form that includes a clear chain of custody in the report (e.g. details of the person/s who made the discovery, date of discovery, description of discovery, location of discovery, etc). The reporting process is to include roles and responsibility regarding the handling and reporting of cultural heritage discoveries.
- Engage an independent archaeologist for advice upon making a cultural heritage discovery
- Should an item or object of historical non-Aboriginal cultural heritage significance be found during Project activities the following measures will be adopted:
  - All work at the location of the potential find must cease and the CEnvO will be notified
  - The CEnvO will notify GPC's Environment Manager, who will undertake appropriate actions and provide management recommendations to the CEnvO
- GPC's Environment Manager will notify the DES of any relevant finds in accordance with Section 89 of the Heritage Act.

Mitigation measures to manage water quality and potential sediment deposition during dredging activities are provided in Chapter 8 (water quality).

17.8 Risk assessment

17.8.1 Methodology

To assess and appropriately manage the potential non-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 non-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 17.3.

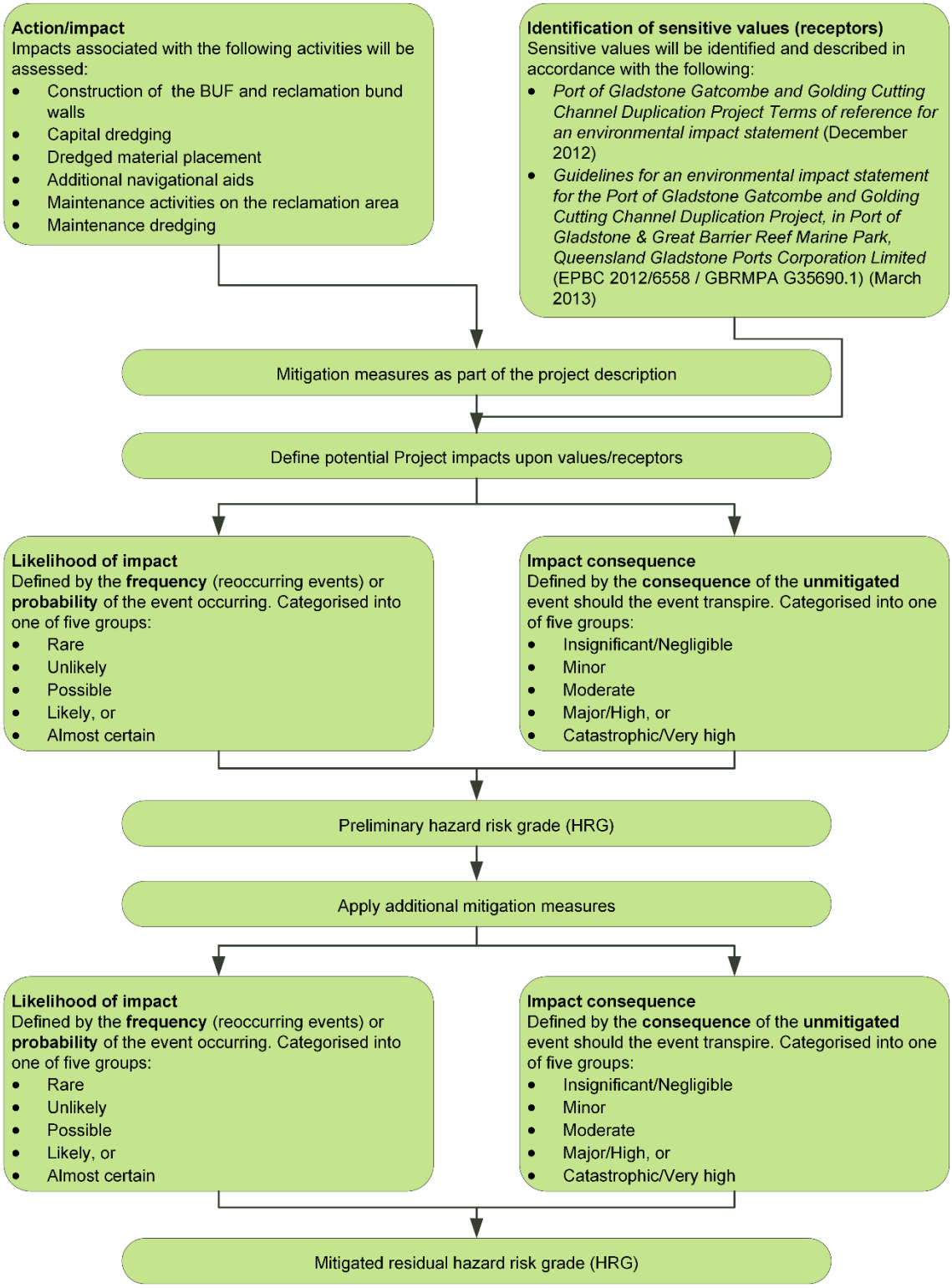

Figure 17.3 Risk assessment framework

Criteria used to rank the **likelihood** and **consequence** of potential impacts are provided in Table 17.3 and Table 17.4, respectively.

Table 17.3 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 17.4 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 17.5).

Table 17.5 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 17.5 are defined in Table 17.6

Table 17.6 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.

17.8.2 Summary of risk assessment.

The potential non-Aboriginal cultural heritage impacts risk assessment is summarised in Table 17.7.

The implementation of the mitigation measures (refer Section 17.7), will result in the residual non-Aboriginal cultural heritage risks from the Project activities being assessed as low to medium.

Table 17.7 Potential non-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 the environmental values of the Great Barrier Reef Region (refer Chapter 9 (nature conservation))	✓	✓	✓		✓	Likely	High	High	Unlikely	High	Medium
Indirect impacts on recorded shipwrecks and/or other places of heritage significance	✓	✓	✓		✓	Possible	Low	Medium	Unlikely	Low	Low

17.9 Summary

The majority of the Project activities are to be undertaken within the Port of Gladstone port limits and below high water, and therefore both direct and indirect impacts on the following listed places/sites is highly unlikely:

- Settlement Point
- Targinnie Cemetery
- William Wyndhams gravesites and remnant orchard trees.

The Project activities will take place within the Port of Gladstone which is located within the listed Great Barrier Reef Region. As a result, the direct Project impacts identified in the EIS, have the potential to impact on this heavily industrialised area of the Great Barrier Reef Region. Given that the UNESCO and National listings of the Great Barrier Reef Region relate to the size and diversity of the rich and complex ecosystems, the direct and indirect impacts on nature conservation are the most relevant to the impacts on this listed place/site (refer Chapter 9 (nature conservation)).

A number of recorded shipwreck sites are located within 5km of the Project direct impact areas and have the potential to be indirectly impacted due to noise emissions and possible indirect sediment deposition and/or physical damage from Project activities, however with the implemented mitigation measures, these indirect impacts are predicted to be negligible to minor.