Port of Gladstone
Gatcombe and Golding Cutting
Channel Duplication Project

Environmental Impact Statement

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18

Social impact assessment

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18 Social impact assessment

18.1 Chapter purpose

The purpose of this chapter is to identify and assess the potential social impacts that may arise as a result of the Project activities.

The study area for the social impact assessment (SIA), comprises the Gladstone LGA as it is most likely to experience the majority of the social impacts that may result from the Project.

In undertaking this SIA, regard has been given to the existing social environment and the likely degree of change (positive or negative impact) in the SIA study area during the construction and maintenance phases of the Project. Elements of the SIA include:

- Describing the existing social environment of the Gladstone LGA to profile existing conditions, characteristics and trends (refer Section 18.5)
- Identifying community values to confirm the key social elements against which to assess potential Project impacts (refer Section 18.6)
- Describing the Project workforce profile and labour supply (refer Section 18.7)
- Identifying potential social impacts associated with Project activities, including nature, magnitude and significance of impacts (refer Section 18.8)
- Identifying appropriate measures to manage or mitigate potential impacts on the social environment and maximise potential benefits (refer Section 18.9)
- Undertaking a risk assessment of the potential impacts (refer Section 18.10).

18.2 Methodology

18.2.1 Key steps in the assessment process

The key steps in the SIA process include:

- Defining the study area for the SIA
- Scoping the range of issues relevant to the social environment of the study area
- Describing the existing social environment of the study area to provide a baseline from which the potential impacts of the Project can be assessed
- Identifying and assessing the potential social impacts of the Project's construction and maintenance phases
- Identifying measures to manage or mitigate potential impacts on the social environment and maximise potential Project benefits.

Further detail on each of these steps is provided in the sections below.

18.2.2 Assumptions and limitations

The following assumptions and limitations apply to the Project SIA:

- Where available, demographic and population data presented reflects data from the 2016 Census of Population and Housing (census)

- Recent research studies on the availability of accommodation in resource communities are not publicly available and therefore existing published studies on the availability of accommodation have been used, where relevant
- GPC has consulted with commercial and recreational fishers, and data collected from those activities has been reported in the SIA. However, the data does not include specific data sets related to commercial and recreational catch. It can be assumed that the data collected from the Port Curtis region and secondary data at a State-wide scale represents a holistic interpretation of commercial and recreational fishing in the Gladstone region. Therefore, the assessment of the social impacts on commercial and recreational fishers is based on the outcomes of the consultation and existing published data.
- This assessment has been informed by consultation carried out to date in relation to the Project. Information from the consultation has underpinned the identification of community values and issues of concern (refer Appendix N2)
- The information used to understand Traditional Owners values is drawn from consultation carried out for the Aboriginal cultural heritage assessment for the EIS. This is summarised in Chapter 16 (Aboriginal cultural heritage).

18.2.3 Study area

An SIA study area for the Project has been selected based on the location of the Project and the potential for the Project's construction and/or maintenance activities to affect nearby communities and businesses. It therefore consists of an SIA study area related to the wider social community and project specific study areas with respect to localised effects.

The SIA study area is defined in the sections below.

18.2.3.1 Social impact assessment study area

The study area used for this SIA is shown in Figure 18.1. The SIA study area comprises the Gladstone LGA which covers a land area of approximately 10,000km^2 and includes urban and rural areas. The main settlements include City of Gladstone, Mount Larcom, Boyne Island, Calliope, Benaraby, Turkey Beach, Agnes Water, Lowmead and Miriam Vale. The Gladstone LGA is the area which is most likely to experience the majority of the social impacts that may result from the Project.

For comparative purposes within the baseline, Gladstone LGA data is compared with the State of Queensland or Australia-wide data, where appropriate.

18.2.3.2 Project specific study areas

Within the SIA study area, Project specific study areas are referred where specific geographic reference is required. Project specific study areas are shown in Figure 18.2 and are described as follows.

- **Reclamation areas**

  The existing WB and proposed WBE reclamation areas are located to the north of Fisherman's Landing and adjacent to the Targinnie State Forest. The reclamation areas traverse two State Suburb Code (SSC) areas; namely the Yarwun SSC and Targinnie SSC. The nearest community is located approximately 4km from the WBE reclamation area. Relevant demographic data for Port of Gladstone has been presented where applicable.

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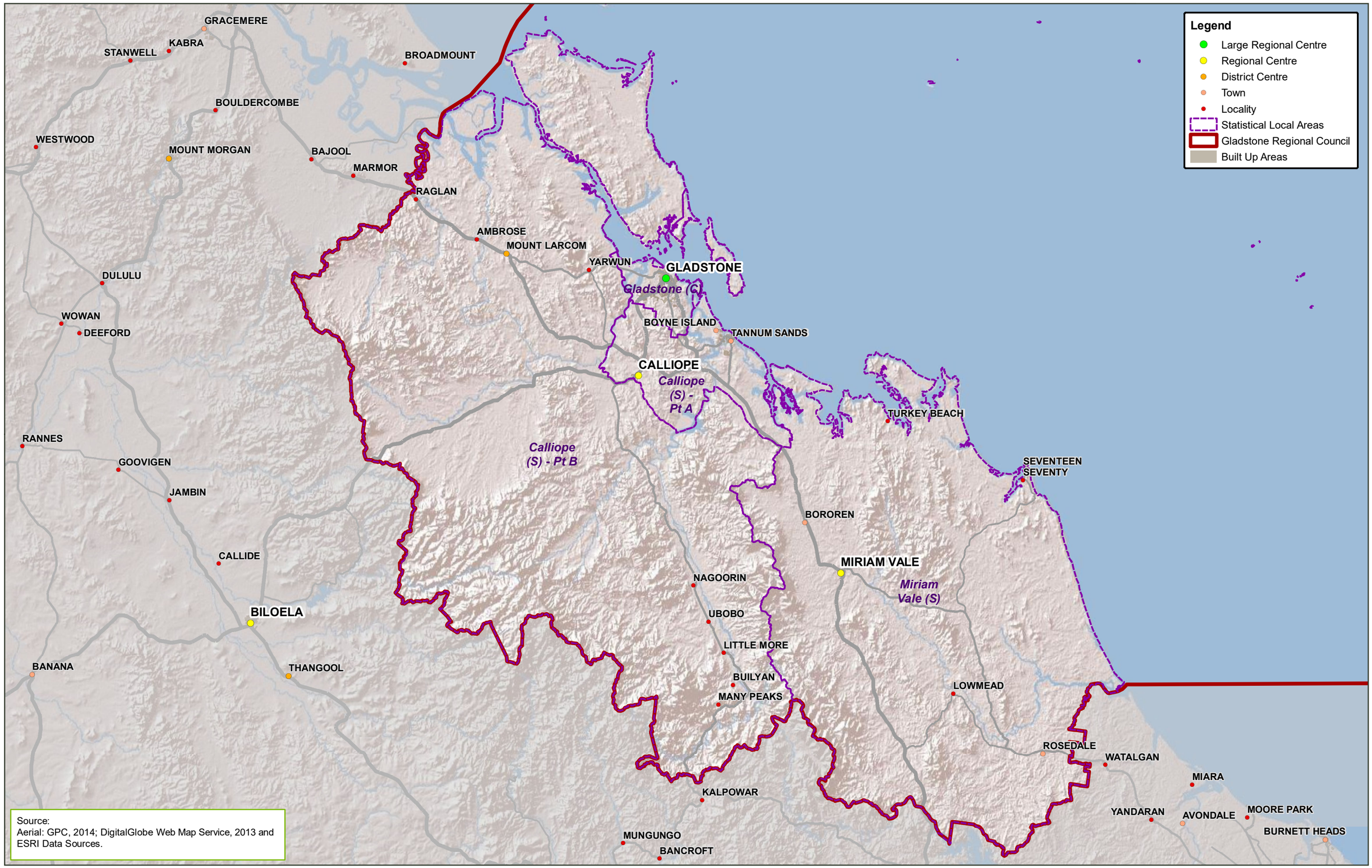

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Figure 18.1: Gladstone Local Government Area - SIA study area

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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
Gladstone
Calliope River
South Trees Island
Gatcombe Channel
Gatcombe Head
Golding Cutting Channel
Marine Park Line
East Banks DMPA
Boyne Island
Tannum Sands
Boyne River

Legend

- Western Basin Expansion reclamation area
- Great Barrier Reef Marine Park boundary
- Initial dredging works for barge access channel
- Barge unloading facility
- Proposed Channel Duplication Project extent
- Existing shipping channels
- Port of Gladstone Port limits
- East Banks dredged material placement area (DMPA)
- Yarwun/Targinnie general quarry location

Transport Route

- Quarry to Western Basin Expansion reclamation area (Private road)
- Quarry to Western Basin Expansion reclamation area (Public road)

GRC Planning Scheme

- Community Facilities
- Environmental Management
- Low Density Residential
- Low-medium Density Residential
- Medium Density Residential
- Township

Source:
Aerial: GPC (2015) and DigitalGlobe Web Map Service (2013)
GRC Planning Scheme: GRC (2016)

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Date: 30/01/2019 Version: 2 Job No: 237374
Coordinate system: GDA_1994_MGA_Zone_56

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Figure 18.2: Project footprint relative to nearby settlements

- **Rock haulage route**
- Rock for the WBE reclamation area bund wall and part of the BUF wall will most likely be sourced from the Targinnie/Yarwun area. Material haulage between the quarry and the WBE reclamation area will be transported via the public road network (e.g. Guerassimoff Road/Landing Road) (refer Figure 18.2). Baseline data, impact assessment and mitigation measures for this area is presented for selected sensitive receptors along Landing Road, where applicable.
- **Port of Gladstone**

  Dredging works in Port of Gladstone consist of the channel duplication area to be dredged and the barge access channel. The nearest communities to the Project's dredging activities are:

  – **Gatcombe Head**

    A small settlement located on the southern tip of Facing Island near Facing Island Reef, located approximately 1km east of the duplicated Gatcombe Channel. This is the closest settlement to the Project activities and is represented in the Gladstone Harbour SSC within the 2016 census data. As such, demographic data for the Gladstone Harbour SSC has been presented where applicable.

  – **Boyne Island and Tannum Sands**

    Two large waterfront settlements on the mainland, located approximately 4.8km to the west of the duplicated Gatcombe Channel. It is not deemed necessary to present SSC level demographic data for these settlements as the social impact is predicted to be low. The Gladstone LGA census data will be used to gain a broad understanding of these communities, and others, located in the Gladstone LGA.

There are no other human settlements located near the proposed dredging works. However, as with the reclamation areas, other sensitive receptors are of interest, including Traditional Owners and other Aboriginal and Torres Strait Islander peoples, fishers, tourists, tourism operators and recreation users. Relevant baseline data for these receptors is presented where relevant within the SIA.

The boundaries of the 2016 Census data areas used in the SIA are shown in Figure 18.3.

18.2.4 Scoping of issues

This step involved a desktop based exercise scoping the range of potential social impacts and opportunities for the communities in the SIA study area. This was informed by the:

- Coordinator-General's environmental assessment requirements
- Social effects assessments undertaken previously for similar projects elsewhere
- Discussions with the EIS Project team and relevant officers within the Office of the Coordinator-General
- Consultation undertaken for the Project, including during the preparation of the Project EIS
- Professional experience and judgement.

18.2.5 Baseline assessment

The description of the existing social environment provides a baseline of the key social characteristics and conditions of the SIA study area from which potential impacts of the Project can be assessed. The description of the existing environment includes both qualitative and quantitative analysis. The Project baseline was established having regard to the following:

- Review of existing State and local government strategies relevant to the social environment of the SIA study area

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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
Port Limits
Coral Sea
Gladstone
Calliope River
Gatcombe Channel
South Trees Island
Marine Park Line
East Banks DMPA
Golding Cutting Channel
Boyne Island
Tannum Sands
Boyne River

Legend

- Western Basin Expansion reclamation area
- Great Barrier Reef Marine Park boundary
- Initial dredging works for barge access channel
- Barge unloading facility
- Proposed Channel Duplication Project extent
- Existing shipping channels
- Port of Gladstone Port limits
- East Banks dredged material placement area (DMPA)

Australia Bureau of Statistics (ABS) community profile census data areas

- Queensland
- Gladstone LGA
- Gladstone Harbour SSC

Source:
Aerial: GPC (2015) and DigitalGlobe Web Map Service (2013)
Australia Bureau of Statistics (ABS) community profile census data areas (2016)

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Figure 18.3: 2016 Census data areas

- Analysis of key population and demographic indicators, based on the review of data from the 2016 Australian Bureau of Statistics (ABS) community profile census data for Queensland (3), Gladstone LGA (LGA33360), Gladstone Harbour (SSC31145) and other Commonwealth, State and local government agencies
- Analysis of the local and regional economy indicators, including employment and income, workforce profile and labour supply, housing costs and dwelling characteristics
- Review of existing social infrastructure in the SIA study area, including services and facilities that support quality of life and well-being and the community's means of access to these
- Identification of tourist and recreational uses in the SIA study area
- Analysis of existing transport and access, including the local and regional road network, bus transport, and walking and cycling facilities
- Identification of existing community values, relating to factors such as the natural environment, local character and amenity, community health and safety, and local access and connectivity. The identification of community values was informed by existing local and state government social policies, outcomes of community consultation, literature reviews and data analysis and observation of conditions in the SIA study area.

18.2.6 Identification and assessment of social impacts and opportunities

Having regard to the scoping exercise and baseline assessment, potential benefits and impacts on the social environment of the SIA study area were identified and evaluated. This included an assessment of direct and indirect impacts associated with the Project's construction and maintenance phases, including:

- Changes to local and regional population and demography
- Impacts on community cohesion
- Impacts on community values, such as those relating to the natural environment, local character and amenity, community health and safety, and local access and connectivity
- Impacts on local amenity
- Potential impacts on social infrastructure, including both direct and indirect impacts on housing, services and facilities
- Potential impacts on the local labour force demographics
- Potential impacts and opportunities for tourist and recreational access and use of recreational areas, including the Port.

18.2.7 Identification of mitigation measures and opportunities for enhancement

Identification and development of mitigation options for potential negative impacts has been guided using the mitigation hierarchy shown in Figure 18.4. The development of mitigation options for the SIA has also been developed using:

- Primary data collected from potentially impacted people and other stakeholder groups through stakeholder engagement
- Research and recommendations from other similar projects and case studies
- Findings and mitigation measures from other discipline areas of the EIS (e.g. noise and vibration, water quality)
- Professional judgement and experience.

18.2.8 Risk assessment

The assessment of potential social impacts and opportunities was informed by a risk assessment approach which results in a HRG of both initial (pre-mitigation) and residual (post-mitigation) impacts. The risk assessment approach applied quantitative and qualitative scales to define the likelihood of the potential impact's occurrence and the consequence of the potential impact should it occur.

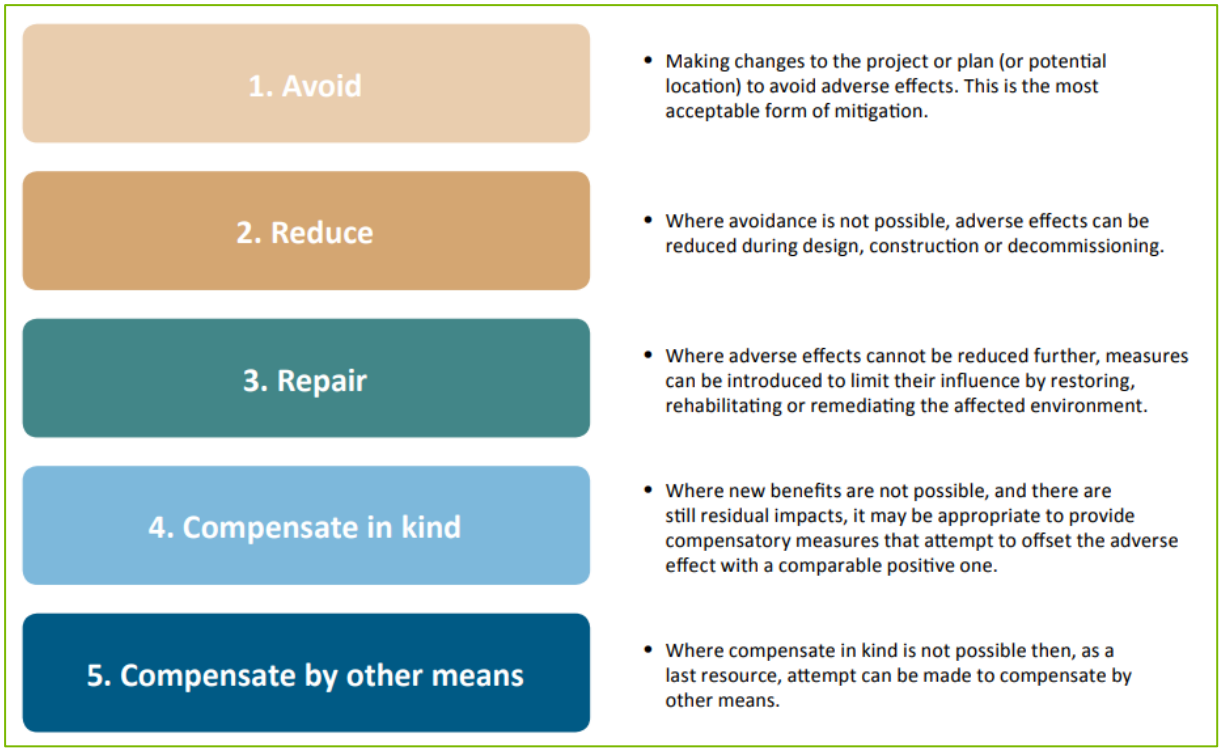

Figure 18.4 Social impact mitigation hierarchy for potential negative impacts

Source: IAIA (2015)

18.3 Community and stakeholder engagement

Stakeholder and community and engagement formed an integral part of Project's EIS preparation. The Engagement Report (refer Appendix N2) provides an overview of stakeholder and community consultation undertaken for the Project, along with the key issues raised.

This SIA has been informed by the outcomes of this engagement process, including the identification of community values and potential benefits and impacts of the Project.

In addition, engagement with key stakeholders was undertaken to clarify specific Project issues and identify appropriate strategies for impact mitigation and management. This included consultation with relevant State Government agencies and local government in the SIA study area.

Primary data activities were led by GPC's Stakeholder Relations team with support from the EIS Project team. GPC's engagement was guided by the Stakeholder Engagement and Communication Strategy which is confirmed in the Engagement Report.

A significant source of data for this SIA was the SRG. Engagement was also undertaken through stakeholder briefings, focus groups and one-on-one meetings with community members and key stakeholders, including recreational and commercial fishers, Aboriginal representatives, State and local government representatives and local businesses. The Engagement Report confirms the Project stakeholders and the associated type and method of engagement.

Section 18.6 provides a summary of the community values and issues raised about the Project that were identified during the EIS Project engagement phase.

18.4 Legislative and policy context

This section outlines the Commonwealth and State legislation and regional and local policies that apply to the SIA and the management of social issues relating to the Project.

18.4.1 Commonwealth

18.4.1.1 Environment Protection and Biodiversity Conservation Act 1999

Both the EPBC Act and the GBRMP Act highlight the importance of social input to the development of plans and projects. MNES and the requirements under the EPBC Act are discussed in detail in Chapter 9 (nature conservation). The EPBC Act recognises the role played by Aboriginal and Torres Strait Islander peoples in the conservation and sustainable use of Australia's natural environment and Indigenous heritage. Aboriginal and Torres Strait Islander heritage in relation to the Project is discussed in detail in Chapter 16 (Aboriginal cultural heritage).

Reef 2050 is summarised in Section 1.9.3 and provides an overarching framework for the protection and management of the Great Barrier Reef until 2050. It takes into consideration Aboriginal and Torres Strait Islander and community engagement, water quality improvement initiatives and decision-making guidelines. Consideration towards community consultation and engagement has been highlighted as a key priority to help address threats and provide recommendations for potential improvements (Queensland Government 2015a).

18.4.2 State

Relevant Queensland legislation, guidelines and policies for the management of social impacts are described in the sections below.

18.4.2.1 Regional Planning Interests Act 2014

The RPI Act identifies and protects areas of Queensland that are of regional interest. The RPI Act seeks to manage the impact and support co-existence of resource activities and other regulated activities in the areas of regional interest. Areas of regional interest mapped in the Central Queensland region include priority agricultural areas and priority living areas. Priority living areas in the Gladstone region are in Gladstone, Benaraby/Boyne Island/Tannum Sands, Calliope, Miriam Vale, Agnes Water/Seventeen Seventy and Mount Larcom. There are no priority agricultural areas located within the Gladstone region (Queensland Government 2017b).

18.4.2.2 Planning Act 2016

The Planning Act is the legislative framework for Queensland's planning, development and building system and governs planning at local, regional and state levels. The purpose of the Act is to achieve ecological sustainability including the maintenance of the cultural, economic, physical and social wellbeing of people and communities. It requires all local governments to have a planning scheme in place to manage and regulate development, and provides the common assessment framework being the development assessment system (Queensland Government 2016a).

The Project is located within the GRC LGA and the LGA plan relevant to the SIA is the *Gladstone Regional Council Community Plan*, *2011*. The applicable planning scheme is the *Our Place Our Plan Gladstone Regional Council Planning Scheme*.

18.4.2.3 Advancing Tourism Plan 2016-20

The *Advancing Tourism Plan 2016-20* is a Queensland Government initiative that aims to increase tourism and attract more people to the state. It highlights Queensland's competitive advantages including product diversity, natural assets and resources, a safe clean environment and its proximity to Asia. In the Plan, the Great Barrier Reef had been identified as a natural asset that can support the State's ecotourism initiatives, and its nature-based tourism products and experiences. Areas for growth in the tourism sector have identified Aboriginal and Torres Strait Islander and cultural experiences as a selling point for future tourism activities in Queensland (Queensland Government 2016b).

18.4.2.4 Strong and Sustainable Resource Communities Act 2017

The *Strong and Sustainable Resource Communities Act, 2017* commenced on 30 March 2018. The purpose of the Act is to ensure regional Queensland communities within the vicinity of large resource projects benefit from the operation of those projects, and to improve the social performance of large-scale projects in the State in general. For large-scale resource projects, the Act and guideline apply as a statutory requirement and for non-resource projects the guideline applies generally. The Project is a non-resource project and as such the SIA guidelines will not be a statutory requirement, however it can be assumed that it will apply as a guideline to the Project, in addition to the Project EIS ToR.

18.4.2.5 Other State legislation

There are a number of plans and programs with the State which seek to support and further education and training. These include:

- Great skills, real opportunities action plan 2013, including:
  - Industry Partnerships Strategy
  - Higher Level Skills program
- 2017-18 Annual VET Investment Plan
- Government Building and Construction Training Policy 2014.

18.4.3 Regional and local

18.4.3.1 Central Queensland Regional Plan 2013

The CQRP has a strong focus on resolving land use competition between the agricultural and the resource sectors, and driving economic development. The Plan seeks to protect strategic areas of priority agricultural land use from potentially incompatible resource activities and maximise opportunities for co-existence of resources and agricultural land use. The Plan also provides for the growth of towns in the regions through the establishment of Priority Living Areas. The Priority Living Areas allow resource activities to locate within these areas where it meets communities' expectations as determined by the relevant local government. Benaraby/Boyne Island/Tannum Sands, and Gladstone/Calliope are Priority Living Areas.

The region's population is expected to grow by a rate of 2.1% per annum (projected until 2031) and this reflects the expected increase in economic activity associated with the Port of Gladstone and mining in the Bowen Basin. Gladstone plays a key role in the region as a transport and processing hub. The urban centres of Tannum Sands, Boyne Island and Calliope provide alternative residential options that support the workforce demands generated by industry in and around Gladstone (DSDIP 2013).

18.4.3.2 Gladstone Region Community Plan 2011

The vision of the *Gladstone Region Community Plan* is for the Gladstone region to be recognised, nationally and internationally, as the 'region of choice' for achieving the best integration of community wellbeing, environmental protection, industry and commerce. The community will be renowned for balance, as a friendly and vibrant place in which to work and live. The main themes of the Community Plan are:

- Economy: ensuring attractiveness of the region to business and workers
- Society: valuing the region's cultural vibrancy and ensuring broader engagement and social inclusion in planning for social infrastructure
- Environment: improving environmental management in the region
- Governance: enabling regional community input into planning.

The goals and strategies within the plan relating to the Project are outlined in Table 18.1.

Table 18.1 Gladstone Region Community Plan – Goals and strategies

Goal topic	Strategy
Economy goal topic 1: Growth and diversity of the economic base	1.1: Continue to facilitate large scale industrial development projects and maximise economic potential of the Gladstone State Development Area and Port assets
Economy goal topic 6: Labour market, small business capabilities and workforce skills	6.1: Establish operational framework and secure resources to respond to the region's significant workforce and labour market challenges 6.2: Facilitate local industry skill development and supply chain opportunities 6.3: Facilitate training and develop infrastructure to expand local construction workforce
Society goal topic 3: Housing	3.1: Managing development so that housing is affordable and there is a diversity of housing stock
Society goal topic 4: Education, employment and training	4.3: Enhancing the utilisation and effectiveness of TAFE and expanding vocational education 4.4: Enhancing the facilities and industry and community participation with Central Queensland University and other universities
Society goal topic 5: Valuing history, culture and creativity	5.5: Protecting and interpreting community heritage, sites and buildings
Society goal topic 6: Social cohesion and inclusion	6.2: Develop mechanisms for all sectors of the community to have input into planning and decision-making so that their particular needs can be fully considered
Environment goal topic 1: Protecting and enhancing the environment	1.4: Better understand impacts on marine resources and protect crucial marine ecosystems
Environment goal topic 2: Environmental education and awareness	2.1: Provide environmental education and awareness to support sustainable behaviours
Environment goal topic 3: Environmental monitoring	3.1: Establish independent best practice emissions monitoring and reporting systems
Governance goal topic 1: Community engagement	1.1: Implement appropriate engagement activities and interactions to genuinely engage all sectors in community planning process and topical issues important to the region.

Source: GRC (2011)

18.4.3.3 Gladstone Region Economic Development Strategy 2015

The *Gladstone Region Economic Development Strategy* aims to build prosperity and sustainable growth in the Gladstone region by promoting investment and employment growth opportunities in the region, while ensuring that local attributes are protected, nurtured and capitalised upon for the benefit of the Gladstone community. The Strategy promotes the following items which are of relevance to the Project:

- The Gladstone region will continue to grow and diversify its economic base, building on its industrial strength, its established manufacturing and world class port infrastructure to become Australia's premier 21st century industrial region
- The Gladstone region's economic development will be characterised by the continual development of local business and industry from within the region, and across all communities, providing a diversity of sustainable employment and career opportunities for the region's residents
- The Gladstone region's economic development efforts will continue to recognise and observe the values of the region; strong leadership and governance, environmental sustainability, people safety, cultural diversity, community wellbeing, social inclusion and opportunity for all.

One of the key initiatives of the strategy is improve community capacity and engagement, identify local assets and engage with individual communities and business to help expand the local market and enhance skillsets. Within the Project context, it will be important to implement an appropriate stakeholder engagement program and generate as many local employment opportunities as possible from Project activities.

18.4.3.4 Social Infrastructure Strategic Plan for the Gladstone Region

The *Social Infrastructure Strategic Plan for the Gladstone Region* outlines the region's current and future social infrastructure needs and provides information to government and industry on future investments in the Gladstone region. From the Plan, the *Draft Gladstone Region Social Infrastructure – Voluntary Industry Contributions Framework* was developed for the provision of social infrastructure in Gladstone (GRC 2012).

The Gladstone Foundation manages resource project proponents' voluntary financial contributions that are directed towards the provision of social infrastructure in the Gladstone region. The framework guides industry investment in social infrastructure, ensuring voluntary industry contributions are directed to areas of need within the community. The framework process is continually reviewed to help identify further opportunities for industry investment and partnerships in the building of future community facilities and services (GRC 2012). An inventory of social infrastructure in the Gladstone region is outlined in Section 18.5.7.

18.4.3.5 Gladstone Region Destination Tourism Plan 2014

The *Gladstone Region Destination Tourism Plan* (DTP) provides the overarching strategy for tourism and related events until 2020. The DTP recognises that tourism plays an essential role in the future economic development, employment and growth of Gladstone. Emphasis is placed on the need for a 'whole-of-destination approach' to increase overnight visitor numbers to the area.

The plan identifies key catalyst projects for growth, these include:

- Firmly establish the Gladstone region as part of the southern Great Barrier Reef as a destination for easy enjoyment of reef, beach, bush and adventure experiences
- Reinvigorate the Gladstone region's fishing product
- Establish a drive strategy which builds the case for better signage, road upgrades, development of touring routes in the southern Great Barrier Reef and maps in the Gladstone region
- Establish the Gladstone region as a key strategic port for Queensland for the Cruise Industry

- Embrace a strategic approach to marketing of the Gladstone region to maximise investment (GRC 2016).

Importantly, the region's fishing product is identified as a key catalyst project, highlighting the importance of addressing potential impacts to commercial fishing in the SIA.

18.5 Description of the existing social environment

This section provides an overview of the existing social environment of the SIA study area. This provides a baseline against which the Project's social impacts can be assessed. It provides a description of the regional socio-economic context, key characteristics of the SIA study area's population and economy, local business and industry, and social infrastructure.

18.5.1 Population demographics

This section summarises the existing demographic profile of the SIA study area, and compares these figures with those of the State of Queensland.

18.5.1.1 Total population

The recorded resident population from the 2016 Census for Gladstone Harbour SCC was 29 people, while the Gladstone LGA had a resident population of 63,288 people. The population growth rate in Gladstone over the last 15 years was 2.2% per annum, which is comparable to Queensland's annual average population growth rate of 2.1% (ABS 2016a; 2016d) (refer Table 18.2).

Table 18.2 Resident population and population growth rates for the study area (2001 to 2016)

Year (end 30 June)	Gladstone Harbour SSC	Gladstone LGA	Queensland
2001	-	45,479	3,571,469
2006	-	52,051	4,007,992
2011	-	59,461	4,476,778
2016	29	63,288	4,848,877
Average annual growth rate 2001 to 2016 (%)	-	2.2	2.1

Source: ABS (2016a; 2016d), Queensland Government Statisticians Office (QGSO) (2016b)

Population growth projections for the Gladstone LGA (refer Table 18.3) show an average growth of 2.4% per annum, resulting in a population estimate of 106,302 by 2036 (medium growth scenario). This represents a total growth of 43,014 individuals, from the 2016 Census population. The relatively high projected population growth rate of Gladstone is attributed mainly to the expected growth in the resource sector in the coming years.

Table 18.3 Population projections (medium) (2016 to 2041)

Location	2016	2021	2026	2031	2036	2041	Total growth (%)	Average annual growth rate (%)
Gladstone LGA	63,288	63,938	66,800	70,273	72,935	75,327	19.0	0.7
Queensland	4,848,877	5,261,567	5,722,780	6.206,566	6,686,604	7,161,661	47.7	1.6

Source: QGSO (2018)

There were 1,038 registered births and 263 registered deaths in Gladstone in 2015. Table 18.4 outlines further information on births and deaths confirming a natural population increase for the Gladstone LGA which is in line with the Queensland's trend.

Table 18.4 Registered births and deaths, Gladstone local government area and Queensland (2016)

Location	Births		Deaths		Natural increase
	Number	Crude birth rate	Number	Crude death rate	
Gladstone LGA	955	15.1	265	4.2	690
Queensland	61,841	12.7	29,690	6.1	32,151

Source: QGSO (2018)

18.5.1.2 Age structure

In June 2016, the median age of persons in Gladstone Harbour SSC was 69 years[1], in the Gladstone LGA 35 years (refer Figure 18.5) and in Queensland it was slightly older at 37 years. Of note here is the significantly older population that resides in Gatcombe Head compared with the Gladstone LGA (ABS 2016a; 2016b; 2016c).

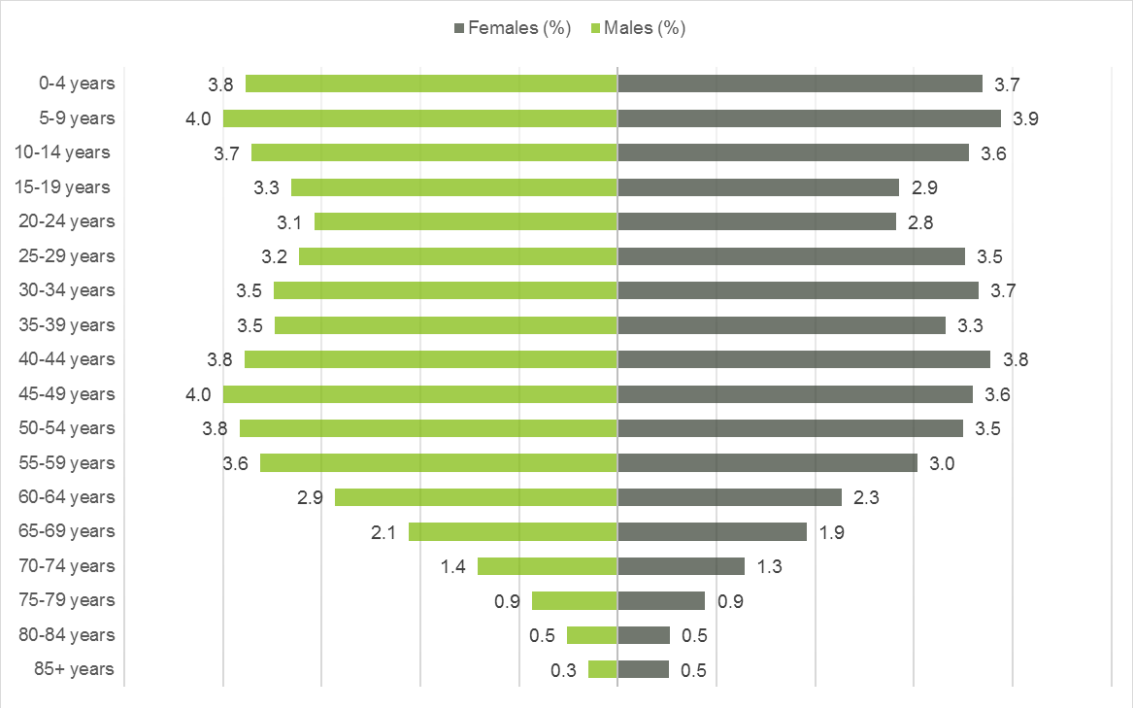

Figure 18.5 Age structure by gender in the Gladstone local government area

Source: ABS (2016b; 2016c)

Figure 18.5 shows that the male population in the Gladstone LGA predominantly falls into the 45-49 years and 5-9 years age categories, each representing 4.0% of the total population which is not dissimilar to the situation within Queensland. Female population distribution in the Gladstone LGA follows a similar trend with 3.8% within the 40-44 years age category and 3.9% within the 5-9 years category. This differs to the state level however, where the female population is more evenly distributed across the age brackets with the age brackets of 45-49 years, 40-44 years, 30-34 years and 25-29 years all containing 3.5% of the total population (ABS 2016a; 2016b).

[1] Gladstone Harbour SSC has a small population of only 29 people. This data size, combined with the small adjustments that are made by ABS statisticians to the census data to protect the confidentiality of data, makes the plotting of this data into an age histogram unworkable. Therefore, an age histogram is not presented for Gladstone Harbour SSC.

18.5.1.3 Cultural diversity

For the purposes of this SIA, cultural diversity within the SIA study area is represented by:

- Persons who identify as Aboriginal and/or Torres Strait Islander
- Country of birth
- Languages other than English spoken in the home.

In June 2016, there were 2,503 people within the Gladstone LGA who identified as Aboriginal and/or Torres Strait Islander (4.1% of the Gladstone LGA population) of which 51.3% were male and 48.7% female. When compared with Queensland, these figures indicate that Gladstone has a proportionally higher Aboriginal and/or Torres Strait Islander male population than the state average.

The median age of Aboriginal and/or Torres Strait Islander persons is similar for the Gladstone LGA (20 years) and Queensland (22 years), indicating a younger population profile than for Queensland. Summary data for the Aboriginal and Torres Strait Islander population is presented in Table 18.5.

Table 18.5 Selected indicators for Aboriginal and Torres Strait Islander people in the Gladstone local government area (2016)

Selected indicator	Gladstone LGA	Queensland
Total population	2,503 (4.1%)	186,482 (4.0%)
Male population	1,239 (49.6%)	92,176 (49.4%)
Female population	1,261 (50.4%)	94,31 (50.6%)
Median age of persons	20	22
Median total household income ($/week)	1,331	1,222
Median mortgage repayment ($/month)	2,000	1,733
Median rent ($/week)	240	270
Average household size	3.1	3.3

Source: ABS (2016b; 2016d)

Within Gladstone LGA 14.5% of people were born overseas, which is lower than the state value of 21.6%. The most common countries of birth were New Zealand (3.8%), England (2.4%), Philippines (1.4%), South Africa (1.2%) and India (0.8%). Households where a non-English speaking language was spoken at home was reported as 1,784 (7.5%) which is lower than for Queensland where 13.5% of households are non-English speaking. The most common languages other than English spoken in the home in the area are Tagalog (0.7%), Afrikaans (0.6%), Filipino (0.3%), Mandarin (0.3%) and Hindi (0.2%) (ABS 2016a; 2016b; 2016c).

18.5.1.4 Non-resident population

The use of fly-in/fly-out (FIFO) and drive-in/drive-out (DIDO) practices to support construction of major resource projects has been common practice in Gladstone. As such, the non-resident worker population of Gladstone in the past has been notable. The non-resident population peaked in 2014 at 6,600 persons. By June 2015 the figure was 5,430 persons and in June 2016 it was estimated to be 1,580 persons (QGSO 2016c).

Most of these workers serviced resource-related industries such as LNG production, coal handling, rail transport, power generation and aluminium smelting. The notable drop in non-resident population that occurred by 2016 was largely attributed to the completion of construction of the Curtis Island LNG projects.

Table 18.6 outlines three workforce projection scenarios for Gladstone's' non-resident population by 2022. Total demand for services is better understood by combining population projections for on-roster FIFO/DIDO workers and the resident population expressed as the full-time equivalent (FTE) population. Based on Series B projections, the FTE population of the LGA would increase to 78,884 persons by 2021 and of this, the non-resident worker population would comprise 0.5% (QGSO 2016c).

Table 18.6 Projected non-resident workers on-shift at 30 June (Gladstone local government area 2015 to 2022)

Projection series	Number of non-resident workers on-shift at 30 June							
	Estimated	Projected						
	2015	2016	2017	2018	2019	2020	2021	2022
Series A	5,430	1,580	430	400	430	400	400	400
Series B	5,430	1,580	430	400	430	400	400	460
Series C	5,430	1,580	430	410	1,220	1,010	760	540
Resident population of Gladstone LGA	-	63,288	-	-	-	-	78,484	-
FTE population	-	64,868	-	-	-	-	78,884	-
Proportion of population (%)	-	2.5	-	-	-	-	0.5	-

Table notes:

Series A: accounts for workforces of existing operations.
Series B: accounts for workforces allocated for under existing EIS approvals but are yet to reach final investment decision.
Series C: accounts for workforces allocated for under projects that have lodged an EIS but are yet to proceed to final approval.

Source: QGSO (2016a)

18.5.2 Housing and accommodation

18.5.2.1 Dwelling typology

The range of private dwelling types available within the SIA study area as at June 2016 is presented in Table 18.7. Within the Gladstone Harbour SSC, 31% of dwellings are categorised as separate houses and 69% of dwellings are unoccupied. Due to their island location, most of these unoccupied dwellings are presumed to be holiday houses.

Within the Gladstone LGA, 71% of dwellings were separate houses, followed by unoccupied private dwellings (19.2%), flats (5.1%), and semi-detached dwellings (3.7%). Of note is the high level of unoccupied private dwellings within the SIA study area compared to Queensland as a whole with 10.6% (ABS 2016a; 2016b; 2016c).

Table 18.7 Total number of private dwelling structures within the study area (2016)

Housing and accommodation type	Gladstone Harbour SSC	Gladstone LGA	Aboriginal and/or Torres Strait Islander peoples	Queensland
Separate house	11	18,624	970	1,269,653
Semi-detached, row or terrace house, townhouse	0	989	59	174,984
Flat, unit or apartment	0	1,340	87	186,778
Other dwelling	0	357	11	16,815
Dwelling structure not stated	0	69	3	8,602
Total occupied private dwellings	11	21,378	-	1,656,831
Unoccupied private dwellings	25	5,087	-	195,570
Total private dwellings	**37**	**26,463**	**1,130**	**1,852,407**

Source: ABS (2016a; 2016b; 2016c, 2016e; 2016f)

18.5.2.2 Household composition

The majority (55%) of households in Gladstone Harbour SSC are occupied by couple families without children while lone person households account for 27% The Gladstone LGA and Queensland state show a different pattern of household structure. In the Gladstone LGA, 31% of households are a family couple with children, 26% are a family couple without children and 20% are lone person households. Queensland as a whole shows comparable trends with 29% of households being a family couple with children, 26% being a couple family without children and 22% being lone person households (ABS 2016a; 2016b; 2016c) (refer Table 18.8)

Table 18.8 Household family composition in the study area (2016)

Household composition	Gladstone Harbour SSC	Gladstone LGA	Queensland
Couple family without children	6 (55%)	6,211 (26%)	463,903 (26%)
Couple family with children	0 (0%)	7,306 (31%)	513,723 (29%)
One parent family	0 (0%)	2,179 (9%)	192,335 (11%)
Other family	0 (0%)	178 (1%)	19,896 (1%)
Lone person household	3 (27%)	4,836 (20%)	389,076 (22%)
Group household	0 (0%)	662 (3%)	77,898 (4%)
Other household	0 (0%)	2,526 (11%)	134,910 (8%)
Total	**11 (100%)**	**23,905 (100%)**	**1,791,739 (100%)**

Table note:

Percentage calculations do not add up to 100% due to a) the very small population in Gladstone Harbour SSC coupled with b) small adjustments made by ABS statisticians to the census data to protect the confidentiality of data.

Source: ABS (2016a; 2016b; 2016c)

18.5.2.3 Tenure type

The breakdown of tenure types for occupied private dwellings in the SIA study area is illustrated in Table 18.9, and includes information for the Aboriginal and/or Torres Strait Islander population in the Gladstone LGA. All occupied private dwellings within the Gladstone Harbour SSC are owned outright with no other tenure type recorded. Dwellings owned with a mortgage accounts for 38% of homes within Gladstone LGA while a further 25% are rented with only 24% owned outright. These trends are broadly comparable to the Queensland figures which show that 34% of dwellings are owned with a mortgage, 34% are rented and 28% are owned outright (ABS 2016a; 2016b; 2016c).

Table 18.9 Housing tenure type for occupied private dwellings (2016)

Tenure	Gladstone Harbour SSC	Gladstone LGA	Aboriginal and/or Torres Strait Islander peoples	Queensland
Owned outright	11 (100%)	5,180 (24%)	98 (9%)	471,407 (28%)
Owned with a mortgage	0	8,137 (38%)	356 (31%)	558,439 (34%)
Rented	0	7,497 (35%)	644 (57%)	566,478 (34%)
Other	0	103 (0%)	4 (0%)	15,566 (1%)
Tenure type not stated	0	461 (2%)	30 (3%)	44,944 (3%)
Total	**11 (100%)**	**21,378 (100%)**	**1,133 (100%)**	**1,656,831 (100%)**

Source: ABS (2016a; 2016b; 2016c, 2016e; 2016f)

18.5.2.4 Residential sale prices

The median residential property sale prices and volumes for a selected number of suburbs in Gladstone from 8 January 2017 to 8 January 2018 is outlined in Table 18.10. Tannum Sands had the most expensive real-estate throughout 2017 with the median prices of houses and units being $370,000 and $202,500, respectively. Of the selected suburbs, Gladstone Harbour featured the cheapest real-estate with the median house sale price being $125,000 and the median unit sale price being $32,500. The highest sale volume (83 dwellings) was noted for Tannum Sands compared to the other selected suburbs throughout 2017. This was followed by Calliope (60 sales), Barney Point (24 sales), Gladstone Harbour (four sales) and Boyne Island (one sale) (CoreLogic 2018a; 2018b; 2018c; 2018d; 2018e).

Table 18.10 Median property sale prices and volumes for selected suburbs in the Gladstone local government area (2017-2018)

Dwelling type	Median sale price ($) (8 January 2017 to 8 January 2018)				
	Tannum Sands	Boyne Island	Gladstone Harbour	Calliope	Barney Point
House	370,000	160,000	125,000	240,000	140,000
Unit	202,500	-	32,500	195,000	90,000
Vacant land	740,000	-	-	256,000	48,000
	Total number of sales				
All dwelling types	83	1	4	60	24

Source: CoreLogic (2018a; 2018; 2018b; 2018c; 2018d; 2018e)

18.5.2.5 Residential rental prices

Median weekly rental prices for Gladstone from 2016 to 2018 are shown in Table 18.11. For all accommodation types, the median rental cost in March 2017 was notably less than the cost in March 2016. These trends are supported by another report from the Residential Tenancies Authority (RTA) (2017) which showed that rental prices in Gladstone dropped by 18.8% for two-bedroom units and 14.3% for three-bedroom houses during the 2017 financial year. Additionally, Kusher (2017) reported that Gladstone featured the lowest median rental prices in Australia – six out of the top ten suburbs in Australia for low median rental prices for units are located in Gladstone. The decline in the property rental market was primarily linked to the exodus of workers involved in the construction of Gladstone's LNG plants, coupled with a general decline in the resources boom across the region. The data for the March quarter 2018 indicates a degree of positive movement through the latter quarters of 2017 suggesting that rental prices may be stabilising after the regional downturn.

Table 18.11 Median weekly rental prices in Gladstone (2016 to 2018)

Accommodation type	Median weekly rent in Gladstone ($)		
	March quarter 2016	March quarter 2017	March quarter 2018
1 bedroom flat	170	125	145
2 bedroom flat	190	145	150
3+ bedroom flat	240	180	200
2 bedroom house	200	155	178
3 bedroom house	250	180	200
4+ bedroom house	299	240	260
2 bedroom townhouse	175	150	150
3+ bedroom townhouse	250	180	200

Source: RTA (2018)

The median rental price for three selected accommodation types (a two bedroom flat, three-bedroom house and a three-bedroom townhouse) for the Gladstone LGA in comparison with other coastal LGAs in north Queensland and Brisbane, is shown in Table 18.12. Similar to the trends outlined above, in March 2017 Gladstone had the lowest median rental prices compared with all of the other North Queensland major centres, and Brisbane and this was still the case in March 2018.

Table 18.12 Weekly rent for different dwelling types in March 2018

Local government area	Median weekly rent ($)		
	2 bedroom flat	3 bedroom house	3 bedroom townhouse
Gladstone	150	200	200
Cairns	310	380	393
Mackay	230	320	320
Rockhampton	210	275	330
Townsville	250	300	300
Brisbane	420	440	420

Source: RTA (2018)

18.5.2.6 Non-resident worker accommodation

During the construction phase of large resource projects in the past, many non-resident workers in Gladstone have typically been housed in worker accommodation villages (WAVs) which generally consist of demountable dwellings arranged in a village, with common messing, laundry and recreational facilities. There were four WAVs operating in June 2016 with a total bed capacity of 5,480. Of these, 3,790 beds were located within two WAVs on Curtis Island and two WAVs on the mainland provided 1,690 beds (QGSO 2016a).

A total of 1,540 workers were on shift and staying in WAVs and other accommodation on Curtis Island, Gladstone City and the Gladstone LGA as of June 2016. This data shows that 1,095 workers were accommodated in WAVs on Curtis Island, a further 375 workers in WAVs within the Gladstone LGA and the remaining 70 in other accommodation (hotels/motels and caravan parks) in the city (QGSO 2016a). The geographical distribution of non-resident workers within the region (2011 to 2016) is shown in Figure 18.6.

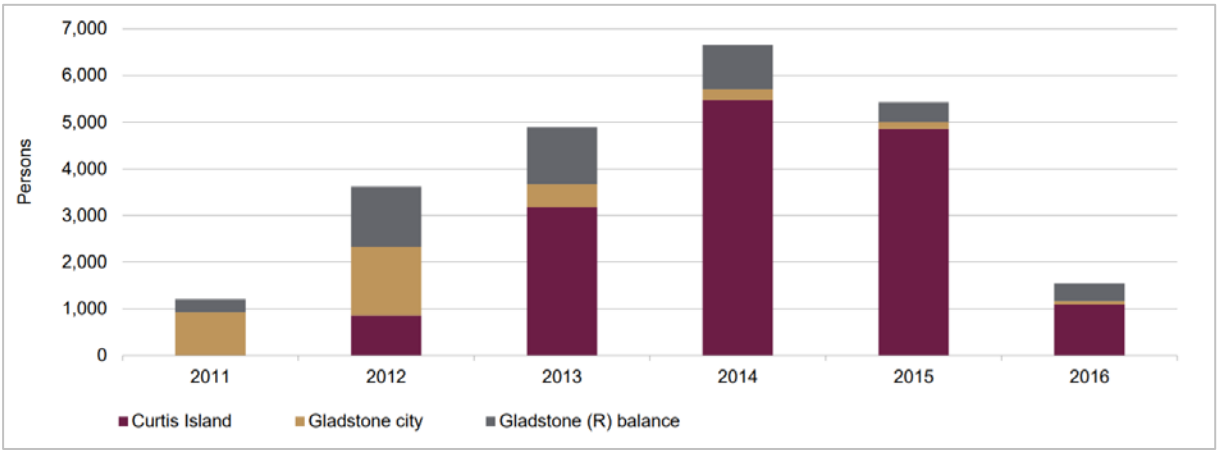

Figure 18.6 Geographical distribution of non-resident workers within the Gladstone local government area (2011 to 2016)

Source: QGSO (2016a)

WAV bed capacity was 8,065 in June 2014, 7,815 in June 2015 and 5,480 in June 2016. This decline is mainly due to the decommissioning of temporary WAV facilities on Curtis Island associated with the gradual completion of the LNG plants (QGSO 2016a) and the associated reduction in construction workers. The WAV bed capacity trend from 2011 to 2016 for different locations in the Gladstone LGA is shown in Figure 18.7.

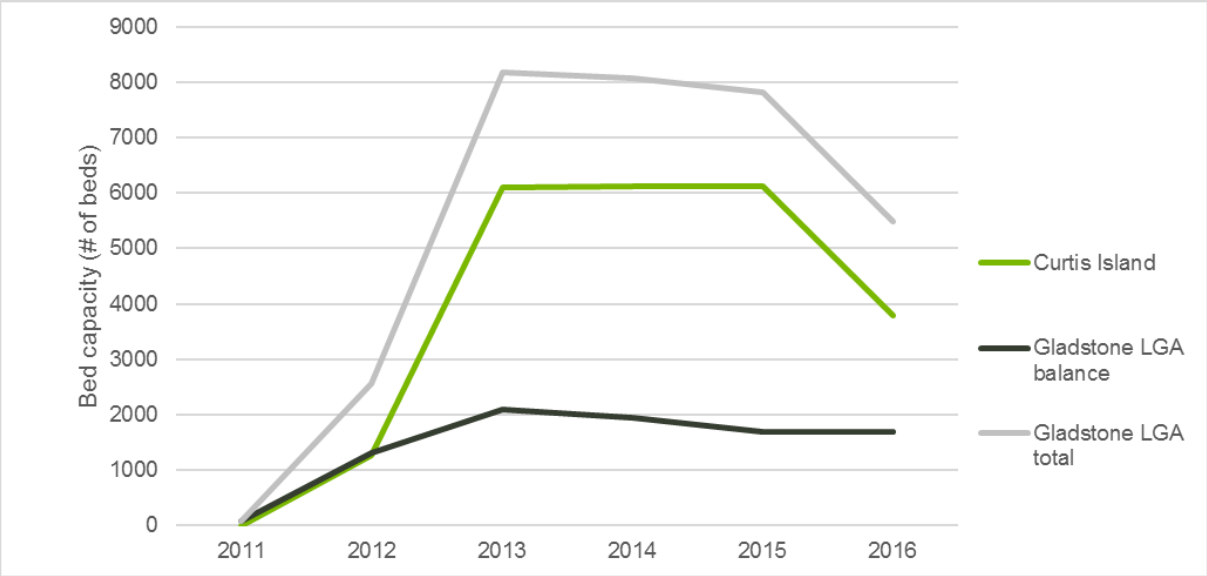

Figure 18.7 Worker accommodation village bed capacity in Gladstone (2011 to 2016)

Source: QGSO (2016a)

In June 2016 in the Gladstone LGA, 61% of hotel/motel rooms were vacant and available compared with 57% in June 2015 and 39% in June 2014. The June 2016 vacancy rates were comparable to vacancy rates in Gladstone city (61%) and Gladstone LGA balance (62%) during the same time period (refer Table 18.13) (QGSO 2016a). There are no hotel/motels on Curtis Island.

Table 18.13 Vacant and available hotel/motel rooms in Gladstone (June 2016)

Location	Available number of rooms				Vacant and available hotel/motel rooms (%)		
	Occupied by non-resident workers	Vacant and available	Balance	Total hotel/ motel rooms	2014	2015	2016
Gladstone city	70	495	245	810	39	57	61
Gladstone LGA balance	0	40	25	60	39	65	62
Gladstone LGA total	**70**	**530**	**270**	**870**	**39**	**57**	**61**

Table note:

Vacant and available refers to hotel/motel rooms that were not occupied by non-resident workers on-shift or other guests, and were vacant and available on the night of the survey.

Source: QGSO (2016a)

18.5.3 Employment, income and occupations

18.5.3.1 Labour force and income

Table 18.14 outlines the labour force and income characteristics for the SIA study area in June 2016. The median weekly household income for the Gladstone LGA was $1,586, which is higher than the Queensland state average of $1,402. Median weekly income data was not available for Gladstone Harbour SSC. The labour force participation rate is highest for the Gladstone LGA (63.8%), followed by Queensland (61moto SSC (17.4%). At June 2016, the unemployment rate was 11.1% in Gladstone and 7.6% in Queensland (ABS 2016a; 2016b; 2016c).

In June 2016, the labour force participation rate for the Aboriginal and/or Torres Strait Islander population in the Gladstone LGA was 62.4% and for Queensland it was 54.7%. The Aboriginal and Torres Strait Islander unemployment rate for the Gladstone LGA was 24.8% and for Queensland it was 20.1% (ABS 2016e; 2016f). Income statistics for the Aboriginal and/or Torres Strait Islander population is outlined in Section 18.5.1.3.

Table 18.14 Labour force and income characteristics for the study area (2016)

Location	Median weekly income ($)			Labour force participation rate (%)[2]	Unemployment rate (as of June 2016) (%)[3]
	Personal	Family	Household		
Gladstone Harbour SSC	-	-	-[1]	17.4	0
Gladstone LGA (%)	678	1,918	1,586	63.8	11.1
Queensland (%)	660	1,661	1,402	61	7.6

Table notes:

1 Income data was not available for Gladstone Harbour SSC within the census data for 2016.
2 The number of persons in the labour force expressed as a percentage of persons aged 15 years and over.
3 The number of unemployed persons expressed as a percentage of the total labour force.

Source: ABS (2016a; 2016b; 2016c)

18.5.3.2 Occupation

Table 18.15 outlines the occupation of the working population of the SIA study area. The primary occupations in the Gladstone LGA include technicians and trade workers (21.4%), professionals (13.6%), labourers (12.9%), machinery operators and drivers (12.4%) and clerical and administrative workers (10.8%) which is not dissimilar to the occupation breakdown at State level. The only reported occupation for the Gladstone Harbour SSC are labourers (75%). The highest specialisation ratio was 1.80 for machinery operators and drivers, followed by a ratio of 1.50 for technicians and trade workers. Compared to Australia, the Gladstone LGA has a higher proportion of technicians and trade workers (13.5% and 21.4%, respectively) and a lower proportion of professionals (22.2% and 13.6%, respectively) (ABS 2016a; 2016b; 2016c).

Table 18.15 Occupations of the working population within the study area (2016)

Occupations	Gladstone Harbour SSC	Gladstone LGA	Queensland	Specialisation ratio	Australia
Managers	-	2,580 (9.5%)	258,509 (12.1%)	0.79	1,390,047 (13%)
Professionals	-	3,681 (13.6%)	423,917 (19.8%)	0.69	2,370,966 (22.2%)
Technicians and trades workers	-	5,789 (21.4%)	305,441 (14.3%)	1.50	1,447,414 (13.5%)
Community and personal service workers	-	2,481 (9.2%)	241,956 (11.3%)	0.81	1,157,003 (10.8%)
Clerical and administrative workers	-	2,918 (10.8%)	291,317 (13.6%)	0.79	1,449,681 (13.6%)
Sales workers	-	2,293 (8.5%)	207,795 (9.7%)	0.87	1,000,955 (9.4%)
Machinery operators and drivers	-	3,366 (12.4%)	147,636 (6.9%)	1.80	670,106 (6.3%)
Labourers	3 (75%)	3,498 (12.9%)	225,268 (10.5%)	1.23	1,011,520 (9.5%)
Not stated	-	1,135 (4.2%)	34,599 (1.6%)	-	-
Working population	**3**	**27,074**	**2,136,455**	**-**	**-**

Source: ABS (2016a; 2016b; 2016c)

Occupational data for the employed Aboriginal and/or Torres Strait Islander population (15 years and over) is available by industry sector (refer Table 18.16). In both the Gladstone LGA and Queensland, the majority of employed Aboriginal and/or Torres Strait Islander peoples are employed by the private sector, followed by Government and then self-employed occupations (ABS 2016e; 2016f).

Table 18.16 Aboriginal and/or Torres Strait Islander persons employed by industry sector (2016)

Industry sector	Gladstone LGA	Queensland
Government (%)	108 (14%)	10,580 (20%)
Private (%)	619 (83%)	40,952 (77%)
Self-employed (%)	19 (3%)	1,539 (3%)
Total	**746 (100%)**	**1,539 (100%)**

Source: ABS (2016e; 2016f)

18.5.3.3 Socio-Economic Indexes for Areas

Socio-Economic Indexes for Areas (SEIFA) is a summary measure of the social and economic wellbeing of a region. It offers an alternative and more sophisticated method of analysing social advantage/disadvantage compared with solely assessing income earned. Aspects considered in this index include income, education level, unemployment rates and labour force skills. Importantly, the resulting indexes are not attributed to individuals living within a locality rather the overall trends of the population in a locality. Two SEIFA indexes - Index of Relative Socio-Economic Advantage and Disadvantage and Index of Economic Resources - are presented for the Gladstone LGA in Table 18.17.

SEIFA results are most appropriately and simply interpreted by viewing the decile ranking (a score out of 10), whereby a low decile ranking indicates greater socio-economic disadvantage (1 being the most disadvantaged) a high decile ranking indicates greater socio-economic advantage (10 being the most advantaged). Regarding the Index of Relative Socio-Economic Advantage and Disadvantage, Gladstone's decile is 6 for Australia wide and 7 for Queensland, indicating a slightly advantaged social and economic ranking. Similarly, for the Index of Economic Resources, Gladstone's decile is 7 within Australia and 9 within Queensland, again indicating a medium to strong socio-economic ranking (ABS 2016g).

Table 18.17 Socio-Economic Indexes for Areas indexes for the Gladstone local government area (2016)

SEIFA index	Ranking within Australia			Ranking within Queensland		
	Rank	Decile	Percentile	Rank	Decile	Percentile
Index of Relative Socio-Economic Advantage and Disadvantage[1]	290	6	54	54	7	69
Index of Economic Resources[2]	333	7	61	64	9	82

Table notes:

1 Continuum of advantage to disadvantage based on variables including income, educational attainment and unemployment.
2 Reflects financial indicators such as income and expenditure reflecting wages, and variables such as dwelling size that may reflect wealth.

Source: ABS (2016g)

18.5.4 Economy and industry

The main industries of employment in the Gladstone LGA are manufacturing (13.6%), construction (11.0%) and retail trade (9.6%) (refer Table 18.18). This is not reflective of the situation within Queensland where the main industries of employment are health care and social assistance (13.0%), retail trade (9.9%), construction (9%) and education and training (9%). The highest specialisation ratio was 2.58 in electricity, gas, water and waste services, followed by 2.26 in manufacturing. This highlights again how dominant trade and manufacturing services are in the Gladstone LGA compared to Queensland. Data for the Gladstone Harbour SSC was not available (ABS 2016a; 2016b; 2016c). The tourism and fishing industries are of relevance to the Project and information on these industries is outlined in Sections 18.5.4.1 and 18.5.4.2.

Table 18.18 Industries of employment for Gladstone LGA and Queensland (2016)

Industry	Gladstone LGA	Queensland	Specialisation ratio
Agriculture, forestry and fishing	509 (1.9%)	60,608 (2.8%)	0.66
Mining	986 (3.6%)	49,997 (2.3%)	1.56
Manufacturing	3,682 (13.6%)	128,787 (6.0%)	2.26
Electricity, gas, water and waste	782 (2.9%)	23,883 (1.1%)	2.58
Construction	2,991 (11.0%)	191,338 (9.0%)	1.23
Wholesale trade	533 (2.0%)	56,370 (2.6%)	0.75
Retail trade	2,586 (9.6%)	211,778 (9.9%)	0.96
Accommodation and food services	1,832 (6.8%)	156,670 (7.3%)	0.92
Transport, postal and warehousing	2,205 (8.1%)	108,083 (5.1%)	1.61
Information media and telecommunications	110 (0.4%)	25,265 (1.2%)	0.34
Financial and insurance services	254 (0.9%)	54,286 (2.5%)	0.37
Rental, hiring and real estate services	473 (1.7%)	42,500 (2.0%)	0.88
Professional, scientific and technical services	1,575 (5.8%)	133,652 (6.3%)	0.93
Administrative and support services	838 (3.1%)	75,336 (3.5%)	0.88
Public administration and safety	1,201 (4.4%)	140,164 (6.6%)	0.68
Education and training	2,146 (7.9%)	192,143 (9.0%)	0.88
Health care and social assistance	2,079 (7.7%)	276,945 (13.0%)	0.59
Arts and recreation services	183 (0.7%)	33,667 (1.6%)	0.43
Other services	974 (3.6%)	83,470 (3.9%)	0.92
Inadequately described/not stated	1,135 (4.2%)	91,505 (4.3%)	-
Total	**27,074**	**2,136,455**	**1.0**

Table note:

ABS census data sources do not provide industry breakdown data for this total figure.

Source: ABS (2016a; 2016b; 2016c)

18.5.4.1 Commercial and recreational fishing industries

Small boat registrations

The number of small boat registrations is often used as an indicator of the size of recreational fishing activities in an area. Figure 18.8 shows the trends in vessel registration (up to 8m, no sails) in Gladstone from 2006 to 2014. Between 2006 and 2014 the number of boat registrations rose from 5,396 to 7,342 representing a 36.1% increase during that time. Between 2013 and 2014 boat registrations increased by 1.9% (Sawynok et al. 2014). This increasing trend in registration is indicative of the increasing popularity of recreational fishing in the LGA. In 2014, the number of boat registrations in Gladstone LGA was 111.5 per 1,000 people. Queensland boat registration in 2014 was 237,722 (MSQ 2018), which equates to 50 boats per 1,000 people. The Gladstone LGA boat registration rate is more than double that for Queensland.

Figure 18.8 **Number of registered motorboats (up to 8m, no sails) in the Gladstone local government area (2006 to 2014)**

There are number of commercial and recreational fishing facilities in the Gladstone LGA, including the Gladstone Marina, the Marine fish hatchery and the Gladstone fish markets. In addition, 16 boat ramps under GRC and TMR ownership operate within the area (refer Appendix N1). It is also recognised there are a number of non formal boat ramps which have not been listed. Figure 18.18 identifies the mapped fishing facilities and boat ramps within the Port.

Recorded and documented fishing areas

The reported and documented catch rates of species within the Port of Gladstone and the associated intertidal and upstream environments have been consolidated within a database created by Infofish Australia (2018). For the purpose of the Project EIS, fish catch data was obtained for the period between 2014 and 2018.

The data identifies that of the 32 fish species recorded, 18 were predominantly confined to being caught within the coastal bays, inlets and waterways. These species include Sand whiting, Banana prawns, Mangrove jack, Threadfin salmon, Coastal whiting and Flattail mullet. The remaining 14 species were recorded to be caught throughout the greater Port of Gladstone area and included fish species such as Yellowfin bream, Pikey bream, Barramundi, Gold-spotted rock cod and Dusky flathead (refer Appendix L (Figures L1 to L32) and Appendix I1 (Ecology Technical Report)).

The data obtained from Infofish Australia (2018) shows only two species, Gold-spotted rock cod and Barred javelin, being caught in proximity to the proposed channel duplication area to be dredged. Other fish species were recorded in the bays on the southwestern side of Facing Island.

The Infofish Australia (2018) data has been spatially summarised into general habitat types utilised by the fish species caught and recorded, including:

- Soft benthic habitat species (refer Figure 18.9)
- Intertidal/estuary habitat species (refer Figure 18.10)
- Reef associated habitat species (refer Figure 18.11)
- Sandy habitat species (refer Figure 18.12).

The data indicates that fish species utilising soft benthic habitats, intertidal/estuary habitat and reef associated habitat were primarily caught, identified and recorded in those areas to the north of the channel duplication area to be dredged and in the Port estuaries and bays to the east.

There was no clear differentiation observed between habitats utilised by certain species and their distribution within the Port of Gladstone area and surrounding waterways. Sandy habitat species were mostly confined to those sandy areas associated with bays and inlets, and not the larger expanses of open water associated with the Port.

Further details on the commercial and recreational fishing industry are provided in Chapter 9 (Section 9.12.2.5) and Appendix I1 (Sections 9.3.5 to 9.3.7).

18.5.4.2 Tourism

The Gladstone LGA is commonly referred to as the gateway to the southern Great Barrier Reef, which attracts snorkelers, divers, fishers and other nature based recreational tourists. Gladstone Harbour is used for a range of water-based tourism activities including harbour tours, fishing, boating and as an access route for visitation to Facing, Curtis and Heron Islands. More recently, in 2016 P&O Cruises launched their new Southern Great Barrier Reef Discovery Cruises at the Port of Gladstone (GPC 2013). The main tourism operators within Gladstone Harbour are listed in Table 18.19. The main supporting business industries are provided in Section 19.5.5. Key tourism metrics for the Gladstone region are shown in Table 18.20, and the number of people employed in tourism within Gladstone is shown in Table 18.21.

Table 18.19 Marine based tour operators within Gladstone

Tour company	Location	Type of tourism or business
MV Mikat Cruises	30 Pine Avenue, Gladstone	Deep sea fishing charter
Gladstone Fly and Sport Fishing	16 Crest Avenue, Boyne Island	Recreational fishing
Lake Awoonga Boating and leisure hire	865 Awoonga Dam Road, Benaraby	Boating hire and water recreation
Rob Benn Holdings Gladstone	Beckinsale Street, Gladstone Central	Offshore fishing charters
Curtis Island Ferry Service	215 Alf O'Rourke Drive, Callemondah (Gladstone Marina)	Harbour tours and island drop off service
Heron Island Boat Transfer Terminal, including Compleat Angler Gladstone	613 Bryan Jordan Drive, Gladstone	Transfers to Heron Island
P&O Cruises	Auckland Point Terminal at Auckland Inlet	Cruise
Gladstone visitor information centre	72 Bryan Jordan Drive	Provides travel information for the Gladstone region

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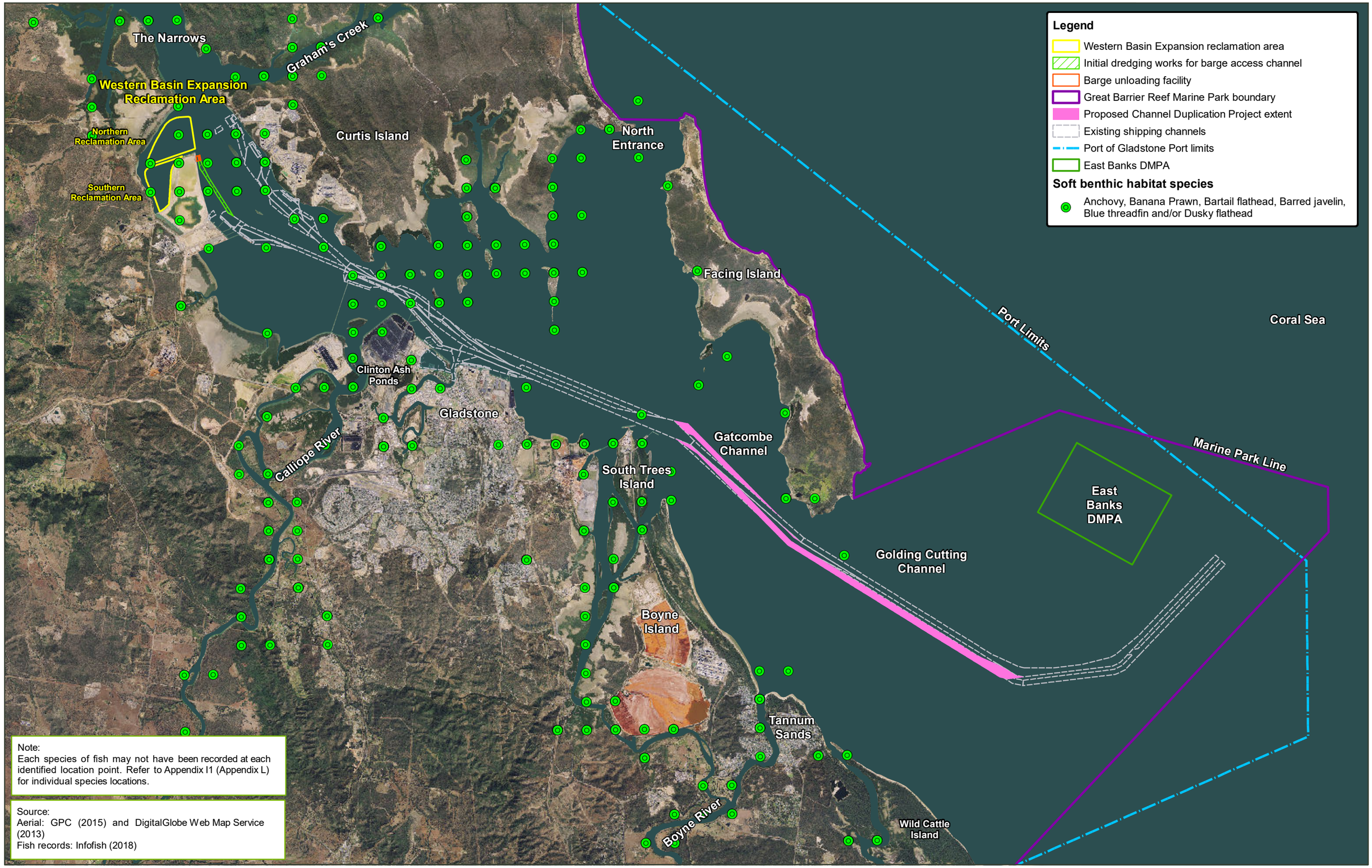

Note:
Each species of fish may not have been recorded at each identified location point. Refer to Appendix I1 (Appendix L) for individual species locations.

Source:
Aerial: GPC (2015) and DigitalGlobe Web Map Service (2013)
Fish records: Infofish (2018)

Map by: RB
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Coordinate system: GDA_1994_MGA_Zone_56

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Figure 18.9: Recorded fish species for soft benthic habitat species

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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
Port Limits
Coral Sea
Clinton Ash Ponds
Gladstone
Calliope River
Gatcombe Channel
South Trees Island
Marine Park Line
East Banks DMPA
Golding Cutting Channel
Boyne Island
Tannum Sands
Boyne River
Wild Cattle Island

Legend

- 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 DMPA

Intertidal/estuary species

Barramundi, Bony bream, Common ponyfish, Common silverbiddy, Common toadfish, Crescent grunter, Estuary glassfish, Flat tail mullet, Mangrove jack, Pikey bream, Sea mullet, Southern herring, Stripped scat, Tarwhine, Threadfin silver biddy, Toadfish and/or Yellowfin bream

Note:
Each species of fish may not have been recorded at each identified location point. Refer to Appendix I1 (Appendix L) for individual species locations.

Source:
Aerial: GPC (2015) and DigitalGlobe Web Map Service (2013)
Fish records: Infofish (2018)

Map by: RB
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Date: 13/02/2019 Version: 1 Job No: 237374
Coordinate system: GDA_1994_MGA_Zone_56

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Figure 18.10: Recorded fish species for Intertidal/estuary species

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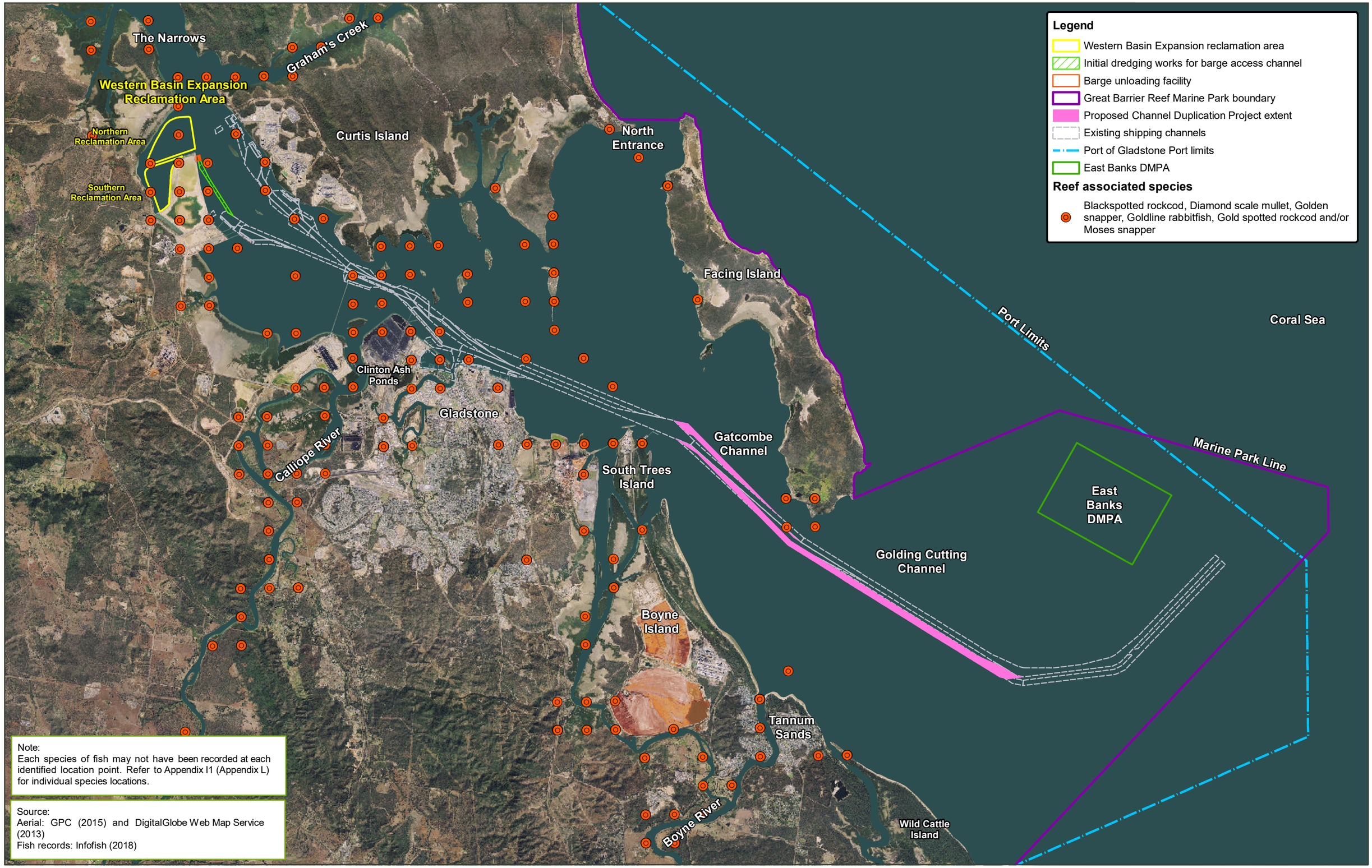

Note:
Each species of fish may not have been recorded at each identified location point. Refer to Appendix I1 (Appendix L) for individual species locations.

Source:
Aerial: GPC (2015) and DigitalGlobe Web Map Service (2013)
Fish records: Infofish (2018)

Map by: RB
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Coordinate system: GDA_1994_MGA_Zone_56

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Figure 18.11: Recorded fish species for reef associated species

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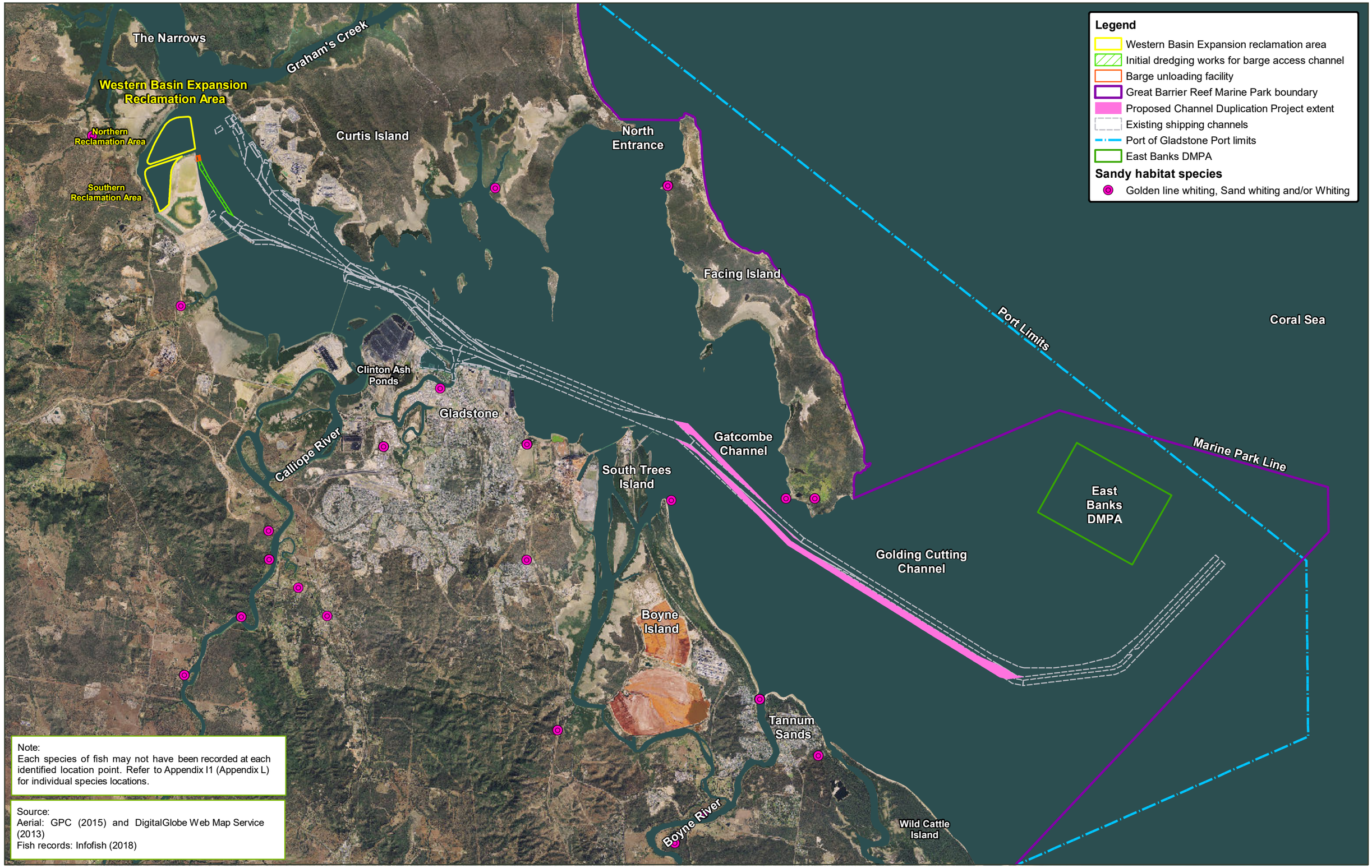

Note:
Each species of fish may not have been recorded at each identified location point. Refer to Appendix I1 (Appendix L) for individual species locations.

Source:
Aerial: GPC (2015) and DigitalGlobe Web Map Service (2013)
Fish records: Infofish (2018)

Map by: RB
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Coordinate system: GDA_1994_MGA_Zone_56

Gatcombe and Golding Cutting Channel Duplication Project

Figure 18.12: Recorded fish species for sandy habitat species

Table 18.20 Key tourism metrics for the Gladstone local government area (2017)

Tourism metric	International	Domestic overnight	Domestic day	Total
Visitors ('000)	54	469	427	950
Nights ('000)	681	1,905	-	2,586
Average stay (nights)	13	4	-	5
Spend ($m)	26	241	40	308
Average spend per trip ($)	490	514	94	324
Average spend per night ($)	39	127	-	103
Average spend (commercial accommodation) per night ($)	61	192	-	153

Source: TRA (2017)

Table 18.21 Employment within tourism businesses within the Gladstone local government area (2016)

Employment level	Number of people employed
Non-employing	174
1-4 employees	147
5-19 employees	147
20 or more employees	29
Total	**501**

Source: TRA (2017)

Trends for the numbers of visitors (domestic and international) from 2009 to 2017 are presented in Figure 18.13 and Figure 18.14. For domestic tourism, there has been a steady increase in visitors to the southern Great Barrier Reef. International tourist visitations to the area has fluctuated over time, however, there has been a notable rise in the past two years. Trends for the average visitor stay length (intrastate, interstate and international) from 2009 to 2017 is presented in Figure 18.15. Intrastate length of stay has remained steady overtime however, interstate and international has fluctuated overtime, with both showing a slight decline from 2016.

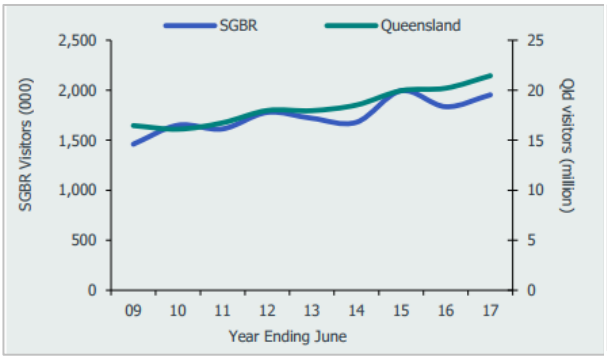

Figure 18.13 Number of domestic visitors to the southern Great Barrier Reef compared with Queensland (2009 to 2017)

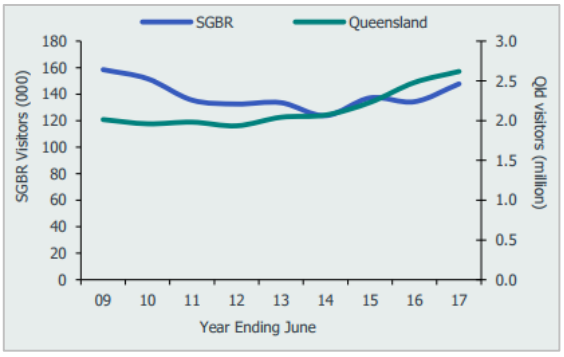

Figure 18.14 Number of international visitors to the southern Great Barrier Reef compared with Queensland (2009 to 2017)

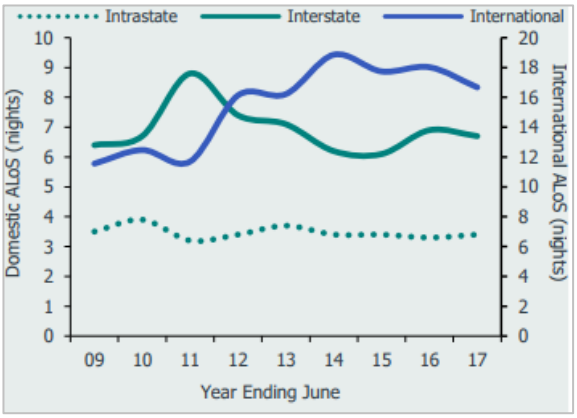

Figure 18.15 **Average length of stay for visitors (2009 to 2017)**

Source: Tourism and Events Queensland (2017)

18.5.5 Education and training

18.5.5.1 Level of highest educational attainment

In June 2016, the most common educational attainment held in the Gladstone LGA included certificate level III (22%), Year 10 (15.9%) and Year 12 (14.5%). In Queensland, the most common educational attainment held are Bachelor degree level and above (18.3%), Year 12 (16.5%) and certificate level III (15.2%) (ABS 2016b; 2016c) (refer Table 18.22). No data was available for the Gladstone Harbour SSC.

Table 18.22 **Level of highest educational attainment in the Gladstone local government area (15 years +) (2016)**

Non-school qualification	Gladstone LGA	Queensland
Bachelor degree level and above	5,333 (11%)	693,412 (18.3%)
Advanced Diploma and Diploma Level	3,147 (6.6%)	330,619 (8.7%)
Certificate level IV	1,597 (3.3%)	111,975 (3.0%)
Certificate level III	10,481 (22.0%)	576,295 (15.2%)
Year 12	6,901 (14.5%)	625,959 (16.5%)
Year 11	2,469 (5.2%)	163,394 (4.3%)
Year 10	7,597 (15.9%)	488,554 (12.9%)
Certificate level II	46 (0.1%)	2,602 (0.1%)
Certificate level I	6 (0%)	418 (0.0%)
Year 9 or below	3,670 (7.7%)	275,376 (7.3%)
No educational attainment	100 (0.2%)	15,700 (0.4%
Not stated	5,249 (11.0%)	409,227 (10.8%)
Total	**46,596**	**3,693,531**

Source: ABS (2016d)

18.5.5.2 School aged population

As of June 2016, the total number of students attending all primary and secondary schools (State and non-State) in the Gladstone LGA was 10,311 students of which 6,065 were in primary school and 4,246 high school students. An updated figure (January 2018) indicates that 10,913 students were enrolled in State schools across the Gladstone LGA (DET 2018). In June 2016, 30.3% of the total population in the Gladstone LGA were attending a form of educational institution and of this population 32.5% were attending primary school, 22.8% were attending secondary school and 11.8% were attending a tertiary or technical institution (ABS 2016d).

18.5.6 Community wellbeing

Broadly, community wellbeing can be defined as the social, material and natural environments that surround individuals; the interdependencies and interactions of these environments result in a communities' wellbeing (ABS 2006). A selected set of social and health indicators is presented for the SIA. Information relating to the natural environment of Gladstone is documented in other chapters within the EIS.

18.5.6.1 Wellbeing indicators

Table 18.23 outlines selected wellbeing indicators for the Gladstone LGA compared to Australian averages. Median age at death for the total population, males and females in Gladstone is lower than the Australian average. Hospital admissions in Gladstone are 13.6% higher than the national average, as are emergency department presentations which are 58.8% higher than the national average. High or very high psychological distress is reported as being 1.6% lower than the national average, high blood pressure rates are 12.8% higher than the national average and the obesity rate is 23% higher than the national average (PHIDU 2017). These figures support the trend that Gladstone, along with many other rural and regional centres in Australia, have poorer health indicators than national averages.

Table 18.23 Selected wellbeing indicators for the Gladstone local government area compared to Australian averages (2017)

Wellbeing indicator	Gladstone LGA	Percent (%) difference from Australia average
Male median age at death 2010 to 2014	72	-7.7
Female median age at death 2010 to 2014	80	-4.8
Total median age at death 2010 to 2014	76	-6.2
Total hospital admissions 2014/15 (SR)*	114	13.6
Emergency department presentations 2012/13 (SR)	159	58.8
High or very high psychological distress (18 years +) 2014/15 (SR per 100 people)	11.5	-1.6
High blood pressure (18 years +) 2014/15 (SR per 100 people)	26.1	12.8
Obese persons (18 years +) 2014/15 (SR per 100 people)	34.4	23.0

Table note:

* A standardised ratio (SR) is a comparison to the Australian ratio that is assigned a value of 100. Ratios below 100 are proportionally less than the national rate, while ratios above 100 are proportionally higher than the national rate.

Source: PHIDU (2017)

The primary health care system in Gladstone is generally overburdened, due to a combination of significantly lower rates of medical practitioners and higher rates of patients accessing general practitioner services and emergency room presentations (compared with state and national levels). For example, Gladstone features significantly lower numbers of specialist practitioners compared to State and national rates – 15.7 specialists per 100,000 people compared with the national average of 120.3 specialists per 100,000 people (refer Figure 18.16).

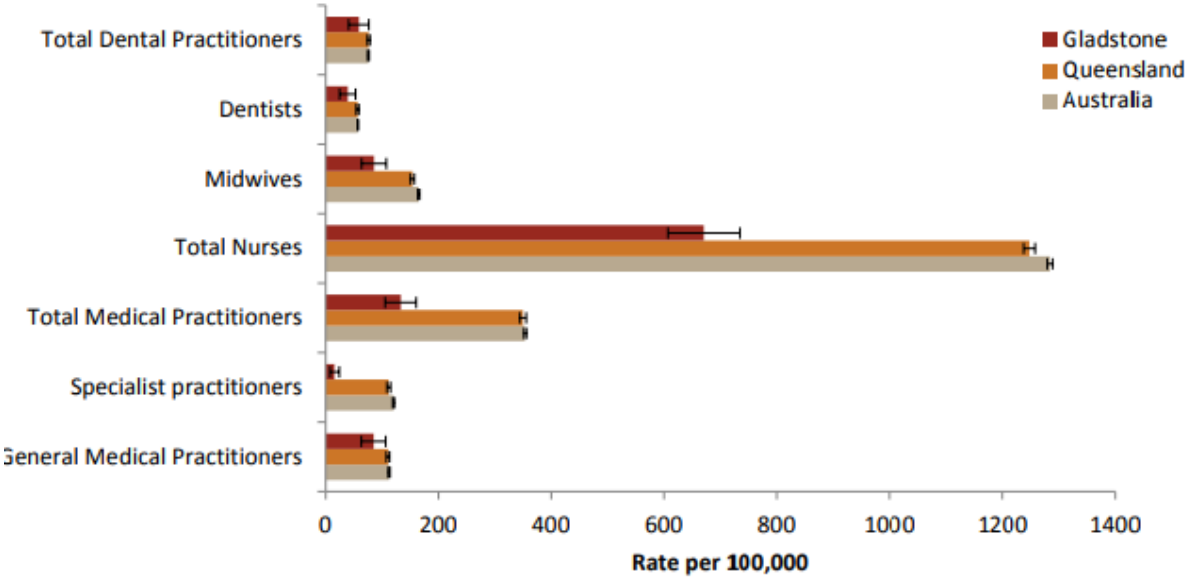

Figure 18.16 Number of practicing health professionals, per capita (2011)

Source: WMR (2015)

18.5.6.2 Crime and safety

Total crime rates (per 100,000 people) from 2001 to 2017 for Gladstone LGA are shown in Figure 18.17. Over that period, Gladstone had an average offence rate of 1,028 per 100,000 people, compared to Queensland which had an average offence rate of 850, indicating that Gladstone has a higher crime rate than the Queensland average. Gladstone has experienced significant peak periods of crime over the years notably in March 2003 (rate of 2,570) and July 2010 (rate of 2,439) and March 2017 (rate of 1,570), such peaks are not present in the Queensland wide data. PHIDU (2017) also reported that 50.8% of adults in Gladstone felt safe walking alone at night in a dark area after dark, which is 3% below the national average.

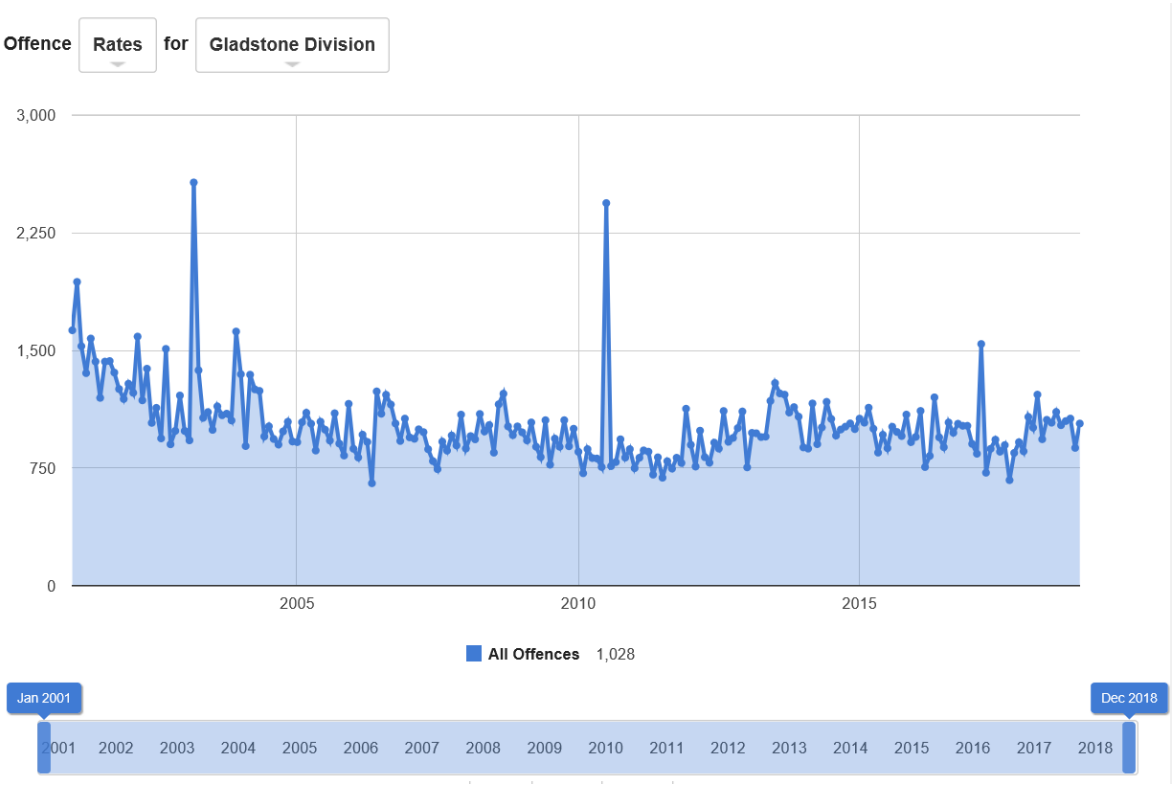

Figure 18.17 Rate (per 100,000 people) of total offences in Gladstone (2001 to 2018)

Source: QPS (2018)

18.5.7 Social infrastructure

Social infrastructure is defined by DILGP (2007) as:

> *Community facilities, services and networks which help individuals, families, groups and communities meet their social needs, maximise their potential for development, and enhance community wellbeing. They include:*
>
> – *universal facilities and services such as education, training, health, open space, recreation and sport, safety and emergency services, religious, arts and cultural facilities, and community meeting places*
>
> – *lifecycle-targeted facilities and services, such as those for children, young people and older people*
>
> – *targeted facilities and services for groups with special needs, such as families, people with a disability and Indigenous and culturally diverse people.*

Social infrastructure within the Gladstone LGA is outlined in the sections below and is mapped in Figure 18.18 with an inventory of facilities provided at Appendix N1.

18.5.7.1 Education and childcare facilities

The Gladstone LGA has one university facility, Central Queensland University Gladstone (CQU Gladstone), with two campus locations, Gladstone City and Gladstone Marina. CQU Gladstone offers over 300 education and training options and specialist training for the gas industry, instrumentation and business studies (CQ University 2014).

The Education Queensland and Industry Partnership (EQIP) Technical College Gladstone Region (ETCGR) is a campus of Gladstone State High School which offers high school students the opportunity to study for their high school certificate while concurrently starting an apprenticeship (EQIP 2016).

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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
Gladstone
Calliope River
Gatcombe Channel
South Trees Island
Golding Cutting Channel
East Banks DMPA
Boyne Island
Tannum Sands
Boyne River

Legend

- Western Basin Expansion reclamation area
- Great Barrier Reef Marine Park boundary
- Initial dredging works for barge access channel
- Barge unloading facility
- Proposed Channel Duplication Project extent
- Existing shipping channels
- Port of Gladstone Port limits
- East Banks dredged material placement area (DMPA)

Fishing facilities

- Gladstone Marina
- Gladstone fish markets
- The Gladstone Area Water Board fish hatchery Marine fish hatchery
- Boat ramps (refer Appendix N1 for boat ramp names)

GRC Planning Scheme

- Community Facilities

Community Infrastructure

- Royal Flying Doctors
- Police
- Hospital (Minor)
- Hospital (Major)
- Fire Station
- Ambulance
- TAFE
- Special School
- Primary School
- Junior Secondary School
- High School
- Phillip St Communities Precinct (Proposed)

Source:
Aerial: GPC (2015) and DigitalGlobe Web Map Service (2013)
GRC Planning Scheme: GRC (2016)
Boating facilities: TMR (2018)

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Gatcombe and Golding Cutting Channel Duplication Project

Figure 18.18: Social infrastructure in the SIA study area

There are 28 state schools and nine non-state schools in the Gladstone LGA providing primary and secondary education. There are 35 childcare centres, playgroups, kindergartens, early learning centres and out of school hours care facilities in Gladstone.

18.5.7.2 Health and welfare services

Gladstone Hospital is the main public hospital, offering 24-hour emergency services as well as other inpatient and outpatient services. A new emergency department, day surgery and women and children centre are being constructed at the Gladstone Hospital; this will double the capacity of the existing facility and help meet the growing health needs of the community (Queensland Health 2018). The main referring hospital is Rockhampton Hospital (110km away). One privately run hospital, the Mater Misericordiae Hospital is located within Gladstone. Thirty other medical services and facilities were identified in Gladstone LGA, including doctor and dental surgeries/practices.

A review of the Gladstone Community Services Directory (GRC 2017a) indicated that there are over 150 community welfare services in Gladstone LGA. The services are designed to cater for a range of community needs from aged care to employment assistance reflecting Gladstone city's role as a regional centre. The spiritual needs of the community are met by 29 places of worship.

18.5.7.3 Emergency services

As expected with a service centre of Gladstone's size, all emergency response services are found within the Gladstone LGA. Of note for the Project area activities, is the ambulance service and Gladstone State Emergency Service (SES) located on Boyne Island/Tannum Sands. A Volunteer Marine Rescue service also operates out of Gladstone Marina, which provides the search and rescue response service for the boating community under the direction of the Queensland Water Police.

18.5.7.4 Shopping, entertainment and recreation activities

Gladstone city is well catered for with respect to major retail and shopping facilities located within the Gladstone CBD, and three shopping centres (Stockland, Gladstone Central and Gladstone Square).

The Gladstone LGA contains over 120 clubs and sporting organisations with over 23 multi-sports fields and 18 main entertainment facilities (GRC 2017b). In addition, it is noted that a cinema (Gladstone Cinemas) is also found at the Gladstone Central Shopping complex. The area hosts a number of annual cultural events such as Ecofest, Harbour Festival and Sunfest. Bray Park, Boyne Island is the location for Boyne Tannum Hook Up (fishing event) and the Beach Arts Music event.

18.5.7.5 Transport facilities

As a regional hub, Gladstone is well serviced and connected by a range of transport modes. Interstate and interregional travel options consist of: the Gladstone daily Greyhound Bus service from Brisbane and Cairns, terminating at Agnes Water; the North Coast Line, Spirit of Queensland, Tilt Train and Spirt of the Outback rail services; the Qantaslink, Virgin Australia and Australia by Seaplane flights operating from Gladstone Airport with daily schedules to Rockhampton and Brisbane.

Within the Gladstone LGA, the modes available for travel are predominantly the bus services operated by Buslink Queensland Pty Ltd which have routes from the city to the suburbs and beyond. Blue and White Taxis Pty Ltd operates throughout Gladstone city, Calliope, Boyne Island and Tannum Sands, including the Gladstone Airport. The long-distance passenger rail line services noted above service local stations such as Iveragh, Benaraby and Parana. Curtis Ferry Service provides regular passenger services to and from the Gladstone Marina to Facing Island, Curtis Island and other Island destinations (Capricorn Island Bunker Groups).

18.6 Community values

18.6.1 Community history

The Traditional Owners of the Gladstone region include the Bailai (Byellee) and Gooreng Gooreng Aboriginal tribes. The Baiali people occupied lands extending from the mouth of the Fitzroy River at Keppel Bay, south to the Boyne River, including Gladstone and Curtis Island, and inland to Mount Morgan, while the Gooreng Gooreng people occupied lands from Baffle Creek to Agnes Waters and extending inland to Kroombit Tops (GPC 2012). Further details of Aboriginal and/or Torres Strait Islander heritage of the area are provided in Chapter 16 (Aboriginal cultural heritage).

European settlement of the area commenced with scattered sheep and cattle stations through the mid-19th century and the establishment of a free settlement at Port Curtis. Early development of the settlement while supported by gold exploration was slow until the arrival of the meatworks at Parsons Point in 1894. Significant industrial and community expansion commenced in the 1960s and has continued to the present day being underpinned by coal and aluminium industries. The European history of the region is detailed in Chapter 17 (non-Aboriginal cultural heritage).

18.6.2 Community values

Community values while difficult to quantity and measure, can indicate how a community feels about its locality and region, and what aspirations they have for its future. Key values for the SIA study area communities which may be relevant to the Project have been informed by the Gladstone Region Community Plan (Gladstone Regional Plan 2011) (the community plan) and feedback received during stakeholder engagement for the Project, as well as information complied on community values of Gladstone as a case study to support a doctorate thesis (Salinas 2018).

Consultation activities highlighted that the community has various values for the SIA study area. Many of the values identified are consistent with the core community values noted in the community plan and the doctorate thesis. Community shared values, common themes and concerns are summarised below.

- **Recreation:** Residents value the access to the sea for recreational finishing and boating activities.
- **Trust and transparency:** Across the community, trust and transparency relating to the Project and its potential impacts was a common value. It was highlighted by the community that other recent projects delivered by GPC such as the WBDDP completed in 2013, negatively influenced perceptions towards capital dredging projects in the Port. The community values continued communication and transparency.
- **Natural environment:** The natural environment is a common theme. Particularly the potential environmental impacts on the Great Barrier Reef and the Port of Gladstone. The community expressed concerned about the decline in water quality, increased turbidity, declines in marine flora and fauna health, and visual amenity. Engagement also highlighted concerns regarding the environmental effects of dredging, dredged material placement, and broader dredging operations.
- **Economic development:** Economic development is a strong value across the community including benefits of increased access to the Port of Gladstone, and future employment and commercial opportunities.
- **Cultural heritage values:** Acknowledging and engaging with Traditional Owners and respecting areas of cultural heritage (known and unknown) throughout the Project duration is important to the community.

18.6.3 Stakeholder values and issues

Table 18.24 outlines the values and issues raised by the community and key stakeholders during Project engagement process.

Table 18.24 Stakeholder values

Theme	Values and issues
Environmental impacts	▪ Great Barrier Reef World Heritage status ▪ Loss of environmental amenity on Facing Island ▪ Impacts on Great Barrier Reef and the Port, including changes to water quality, turbidity, and associated impacts on marine flora and fauna ▪ Local, state and national community reaction to dredged material placement options and further dredging ▪ Baseline monitoring and research commitments
Public perception	▪ Public perception of GBRMPA in context of dredging, dredged material placement and broader dredging operations debate ▪ Public perception of the DES in context of dredging and dredged material placement and broader dredging operations debate ▪ Legacy issues of the WBDDP
Political	▪ Accountability of political parties ▪ Local and state community reaction to dredged material placement options and further dredging
Amenity	▪ Impacts on resident's lifestyle – loss of connection to area and sense of community ▪ Potential temporary decline in water and air quality due to Project activities ▪ Impacts on Great Barrier Reef and Port, including changes in water quality and associated impacts on marine flora and fauna ▪ Increase in noise during dredging and dredged material placement reducing amenity ▪ Visual impact ▪ Local concerns regarding the potential decline in recreational harbour usage and decline in tourism
Port of Gladstone	▪ Impacts on the Port, including changes in water quality and turbidity, and associated impacts on marine flora and fauna ▪ Concerns regarding the Port maritime traffic flow ▪ Benefits of increase access/throughput through the Port of Gladstone ▪ Impacts on Great Barrier Reef and the Port specifically water quality
Gatcombe Boat Harbour	▪ Concerns that the bund walls, which were built in the 1980s, have deteriorated significantly due to combination of natural forces, soft rock and tug wash ▪ Residents are concerned about the plume from dredging and its impacts on beaches and reefs (e.g. Pumpkin Bay)
Gatcombe Beach	▪ Residents are concerned that dredging activity may cause sand degradation at Gatcombe Beach ▪ Some residents have experienced dangerous conditions resulting from tug wash, which they attribute to dredging and traffic resulting from LNG projects. Residents are concerned that the Project would lead to an increase in tug traffic and associated tug wash impacts.

Theme	Values and issues
Recreational and commercial fishing	■ Concerns about impacts on fish and crab stocks ■ Reports that fishing in the area has decreased since the WBDDP ■ Some concerns the Project will potentially change the natural tidal flows and have impacts on ability to fish ■ Due to the WBDDP, commercial fishers are concerned that the Project may lead to an increase in commercial fishers entering Gladstone into their log books and potentially seek compensation ■ Concerns about log books and consistency
Community involvement (including Traditional Owners and Aboriginal and Torres Strait Islander communities)	■ Value of land-based fishing access ■ Potential impacts on mangroves and seagrass ■ Protection of marine fauna ■ Acceptance of dredging as industry requirement ■ Dredging and placement area has spiritual value

18.6.4 Traditional Owner values

The PCCC group represents the Traditional Owners and relevant Native Title Claim Group for the Gladstone area, which includes the Port of Gladstone. The PCCC represents the Gooreng Gooreng, Gurang, Bailai and Tarebilang Bunda Traditional Owners.

Consultation with PCCC, representing Traditional Owners was carried out to inform the marine assessment for the EIS (refer Chapter 16 (Aboriginal cultural heritage)). The marine assessment involved a field survey via boat carried out in 2015 to determine the preferred dredged material placement location. Interviews were also held with PCCC Elders and knowledge holders. Traditional Owner values derived from this consultation are as follows.

- The marine precinct and the greater cultural landscape are important to Traditional Owners. Specifically, Port Curtis, located to the north of the SIA study area, is an important 'saltwater/freshwater' country connection. The marine precinct is important as a long term, inter-generational location to obtain resources. Water is of social, cultural, economic and spiritual importance and is seen to have healing properties. Mount Larcom is considered significant to the PCCC people and Bayelee people.
- Traditional Owners are concerned about the cumulative impacts on sea country and marine life. This highlights a strong connection and value placed on the marine area. It is particularly important to preserve specific species of foreshore mangrove and seagrass meadows, and their supporting marine environments to maintain connection with waters and ancestors. Dugongs and turtles are culturally significant for the PCCC people.
- Traditional Owners value continued access to the foreshore and marine areas which is seen, in part, to be important for continued economic development for individuals and families. Access is also important for cultural activities and obtaining food.
- Preserving tangible cultural heritage, such as stone artefacts and stone arrangements (quarries and shell middens) is an important link to traditional times and the people who created and discarded them.

A summary of Traditional Owner values, including specific locations of places of importance are provided in Chapter 16 (Aboriginal cultural heritage). Information regarding areas that are used by traditional owner groups for hunting and fishing (both on shore and marine water) is provided in Sections 16.3 and 16.6.

18.6.5 Summary

While there is a range of community values evident from the reviews undertaken, a number of key overarching value themes are present, being:

- Economic Prosperity and Growth: Value of continued economic development and the associated benefits in terms of employment, regional wealth and standard of living
- Quality of Life: Maintaining access to services and facilities with quality of amenities and way of life preserved
- Environmental Responsibility: Protection of the region's natural assets, in particular the marine environment.

18.7 Project workforce profile and labour supply

18.7.1 Workforce demand

The Project labour force will be sourced from local, state and overseas workers. The Project stage and associated workforce demand is shown in Table 18.25.

Table 18.25 Project workforce composition

Activity	Source of workforce	Workforce estimate (people)	Timeframe
Establishment of WBE reclamation area and BUF			
Establishment of the outer bund walls and other preparation works, including BUF	Local	20 (excluding GPC workforce)	2020 or later
Estimate total		**20**	
Dredging and reclamation			
TSHD and CSD crew (barge access channel), TSHD and support crew (channel duplication), barges and pushbusters crew	Overseas	50	Stage 1 – 2023 or later
	Local	104	
Dredged material unloading operations	Local	176	Stage 2 – 2026 or later
Reclamation area works	Local	32	
Estimate total		**362**	
Post dredging (WB and WBE reclamation areas)			
Navigational aid installation	Local	5 to 10	2024 or later
Stabilisation earthworks	Local	4 (part time)	2027 or later
Maintenance activities	Local	2 to 4 (part time)	
Estimate total		**18 (not all full time)**	
Maintenance dredging			
Annual maintenance dredging	Local and State	10 to 15	Generally, 4 to 6 weeks per annum
Estimate total		**15**	

The workforce estimates are indicative of a limited labour group with a minor overseas component of 50 workers. During peak periods of dredging and reclamation works there would be approximately 362 people employed of which up to 312 employees could be sourced from the local area.

The dredging activities would be contracted to an international dredging contractor who would utilise a specialised workforce, sourced internationally. The reasons for an international workforce being required are:

- There is a very limited pool of dredging contractors based in Australia, that would have the capacity and capability to undertake the scale of dredging required for the Project as the demand in Australia for dredging is very small, compared to the much larger European, Middle Eastern, Asian and American markets
- As a result, dredging contractors are typically international companies based offshore with a highly mobile international workforce able to move locations as work is secured away from their home base
- Dredging programs are complex and require a highly specialised workforce due to the size of vessels involved, the volume of material being handled, the technology with which the dredgers are equipped and the complex operational environment in which they work, including marine conditions, weather, maritime traffic, environmental regulation and workplace health and safety requirements.

18.7.2 Workforce demand from other projects

Assessment of potential cumulative impacts regarding workforce requires the consideration of workforce demand from other major projects in the SIA study area. Other major projects in the SIA study area are identified in Chapter 1 (introduction). Table 18.26 provides an estimate of the workforce demand figures for these and other projects, where data was available for the EIS. The period in which the main Project activities are due to be undertaken does not coincide with significant labour demand and therefore it is expected that the Project would positively contribute to construction workforce labour supply.

Table 18.26 Other relevant projects and proposals in the Gladstone area (at December 2018)

Project name and proponent	Location	Workforce demand	Status and timeframe assumed for EIS purposes
Aldoga Livestock Handling and Processing Facility/Euroa Beef Processing Facility Asia Pacific Agri-Corp (Projects) Pty Ltd	Aldoga within the GSDA at Euroa	Jobs: 200 (construction) 150 (operational)	Approval issued September 2018 Assume 2 year construction period from 2019-2020 Therefore, works anticipated to be completed prior to Project activities commencing
300MW Aldoga Solar Farm in Gladstone Acciona	GSDA	200 to 500 (construction) 6 to 10 (operational)	Construction to commence on H2 2019 with generation from H2 anticipated in 2020 Therefore, works anticipated to be completed prior to Project activities commencing
Arrow Bowen Pipeline – Bowen Basin to Gladstone pipeline Arrow Energy	Pipeline from Bowen Basin to gas hub 22km north west of Gladstone	Construction (693 over 15 month period) Construction workforce to be accommodated in five temporary camps of which only one (Bajool) is in the Gladstone region Commissioning (10) Operations (10)	Federal approval received in October 2014 FEED commenced December 2014 and concluded in 2015 Petroleum Pipeline Licence granted April 2017 and Environmental Authority granted in November 2016 Assume project start occurs prior to 2020

Project name and proponent	Location	Workforce demand	Status and timeframe assumed for EIS purposes
Arrow LNG Plant Project Arrow Energy	Curtis Island	2,300 (construction) 450 (operational) 600 (operational)	Four train LNG plant approved with 18Mtpa capacity Project cancelled in 2015 and Arrow gas reserves contracted to QCLNG LNG plant has been officially retracted
Australia Pacific LNG Project Australia Pacific LNG	Surat Basin and Curtis Island	Operational workforce for Trains 1 and 2 is 206 Construction workforce for Trains 3 and 4 is approximately 3,000 Operational workforce at full production (four trains) is 286	Four train LNG plant approved. Two trains operational from 2015. Trains 1 and 2 operational since 2015 No current timeframe for expansion Assume construction of Trains 3 and 4 does not proceed prior to 2027
Clinton Vessel Interaction Project GPC	Port of Gladstone	Workforce of 20 dredging staff in Q1/Q2 2019	Works to commence in 2019 Therefore, works will be completed prior to Project activities commencing
Fitzroy-Gladstone Water Pipeline GAWB	GSDA	300 peak (construction over two year period) 10 (operations)	Approved however CG approval currency period expired on 2 February 2018. GAWB advise that the need for the project is being reassessed, pending new industrial demand and the timing of other water storage projects (i.e. Rockwood Weir). No current timeframe available as project is on hold
Gladstone Energy and Ammonia Project Australian Future Energy Pty Ltd	GSDA	800 (construction over two years) 200 (operational)	Project yet to be approved, with construction expected between 2020 and 2022 Therefore, works will be completed prior to the main Project activities commencing
Gladstone Liquefied Natural Gas Project Santos GLNG	Gladstone and Surat Basin, Curtis Island	Operational workforce for Trains 1 and 2 is 195 Construction workforce for Train 3 would peak at 1,848 over a three to four year construction period Operational workforce for three trains is 250	Three train LNG plant approved. Two trains operational from 2016. Trains 1 and 2 operational since 2016 No current timeframe for expansion Assume construction of Train 3 does not proceed prior to 2027
Gladstone Offline Water Storage Facility GAWB	O'Connell	60 (construction)	Construction completed
Gladstone Steel Plant Project (gazetted as Gladstone Steel Making Facility) Boulder Steel Limited	Aldoga Precinct, with marine facilities at Fisherman's Landing	2,000 (construction) 1,800 (operational)	Project has been officially retracted
Moura Link-Aldoga Rail Yard Project	Aurizon	235 (peak construction) 702 (at end of Stage 4) Construction period of 10 years over 4 stages	No current timeframe available as project is on hold

Project name and proponent	Location	Workforce demand	Status and timeframe assumed for EIS purposes
Pacificus Tourism Project (formerly Hummock Hill Island Development) Eaton Place Pty Ltd	Rodds Bay (70km south of Gladstone)	Average of 190 (construction – over a 15 year period), 350 at peak Operations (tourism activity generated), approximately 700 at peak	Project finalising approvals Assume 15 year construction period from 2020 with operational employment commencing from 2025
Queensland Curtis LNG Project Queensland Gas Company Ltd	Surat Basin, Curtis Island	Operational workforce for Trains 1 and 2 is 160 Construction workforce for Train 3 would peak at 1,500 Operational workforce for four trains is 200	Three train LNG plant approved. Two trains operational from 2014. No current timeframe for expansion Assume construction of Train 3 does not proceed prior to 2027
Queensland Energy Resources – Gladstone New Fuels Development Project QER Ltd	Landing Road, Yarwun	No information available	Stage 1 Pilot Plant (Technology Demonstration Plan) completed and currently under care and maintenance regime Stage 2 (Small-Scale Commercial Facility 8,000 barrels a day) under research and development. EIS yet to be submitted for assessment. Project is on hold pending increase in the global oil price and funding for Stage 2 Assume construction of Stage 2 does not proceed prior to 2027
Rodd's Bay Solar Farm Yarwun Solar Farm Renew Estate	Bororen (60km south of Gladstone) and Yarwun Industrial Area	300 (construction – Rodds Bay) 200 (construction – Yarwun) 20 (operational staff per site)	Construction to commence in late 2018 and project to be fully operational in Q1 2020 Therefore, works anticipated to be completed prior to Project activities commencing
Toolooa Priority Development Area Various	Toolooa, 6km south of the Gladstone CBD	Part of general local demand for construction workers	Approved Priority Development Area for future urban development Timing subject to demand in Gladstone Assume it is developed as residential growth occurs over time
Western Basin Dredging and Disposal Project (Stages 2 to 4) GPC	Port of Gladstone	Workforce of approximately 100 during dredging	Assume dredging does not occur at the same time as Project activities or proceeds after 2027

Project name and proponent	Location	Workforce demand	Status and timeframe assumed for EIS purposes
Wiggins Island Coal Terminal (WICT) Wiggins Island Coal Export Terminal Pty Ltd	Golding Point	Construction workforce for Stage 2 would peak at 450 (two year construction period) Operational workforce for Stages 1 and 2 would be 625 Construction workforce for Stage 3 would peak at 350 (two and half year construction period) Operational workforce for Stages 1, 2 and 3 would be 860	Approvals are in place for up to 84Mtpa capacity with Stage 1 completed in 2015 (27Mtpa) Assume Stages 2 and 3 do not occur at the same time as Project activities or proceed after 2027
Yarwun Alumina Refinery – Residue Management Area Expansion	GSDA	Earthworks over a 10 year period to raise RMA 1 and construction of RMA 2 No workforce details available	Declared a controlled action December 2017 Assume earthworks over a 10 year period commencing Q3 2018 with workforce demands met as part of general regional economic growth

18.7.3 Labour supply

Table 18.27 identifies and analyses local, state and national labour supply strategies and programs relevant to the Project.

Table 18.27 Assessment of relevant labour supply strategies and programs

Government body/ organisation	Relevant labour supply policy or strategy	Relevance to the Project
Local – Gladstone Regional Council	Gladstone Region Economic Development Strategy	Sets out six major 'routes' to the New Economic Future vision in Gladstone, of which facilitating new investment and jobs under Industry Development and diversification objective is one of their key goals. No specific direction provided for providing jobs for identified population groups.
State	Building and construction training policy	Supports employment opportunities and skills development in Queensland's building and construction industry. Requires contractors to employ apprentices and trainees and undertake other workforce training as a mandated component of being awarded work on eligible Queensland Government projects Focuses on increasing the economic independence of Aboriginal and Torres Strait Islander Queenslanders in the industry. Core requirement - a minimum of 10 per cent of the total labour hours on eligible projects be undertaken by apprentices and/or trainees and through other workforce training. From 1 September 2017, this core requirement increases to 15 per cent for eligible major building and/or civil construction projects. All Queensland Government departments and statutory bodies, as defined in the Financial Accountability Act 2009 and government owned corporations are required to comply with the training policy. The training policy therefore applies to the Project as GPC is a government owned corporation.

Government body/ organisation	Relevant labour supply policy or strategy	Relevance to the Project
	Strong and Sustainable Resource Communities Act 2017 and Social impact assessment guideline 2018 (DSDMIP 2018)	In relation to recruitment and attraction, the Act and guidelines seek to: ■ Ensure that residents of communities in the vicinity of large resource projects benefit from the construction and operation of the projects. ■ Employ people from nearby regional communities; ■ Prohibit discrimination against residents from nearby regional communities when employing for the projects. ■ Prevent the future use of 100% FIFO workforce arrangements near regional communities ■ Allow existing FIFO workers to move to a local community if they choose ■ Support resource communities to attract and retain workers and their families These objectives apply as a guideline to the Project rather than a statutory requirement.
	Black Business Finder	This database aims to support government and the private sector to purchase goods and services from Indigenous businesses by increasing the availability of information on the existence and capability of Aboriginal and Torres Strait Islander businesses. The database includes five businesses within the Gladstone LGA, providing services including: ■ Strategic workforce capacity development ■ Environmental, cultural advisory, community engagement and ecotourism services ■ Occupational psychology and labour market development ■ Transport logistics ■ Civil construction and mining support services
National	Visa supply/listing	Maritime Crew visa (subclass 988) – required for supply of dredging personnel, who are likely to be foreign nationals and will enter Australia by sea on the dredging vessels.
	Australian school-based apprenticeship	Undertaken part-time while the Australian Apprentice is at school. Combines paid employment as an apprentice or a trainee, off-the-job vocational training and senior secondary school studies Employed under a federal or state award or agreement which sets out their wage and conditions of employment Employer works with an Apprenticeship Network provider to identify the right training and support for the apprentice
Gladstone Ports Corporation	*Queensland Charter for Local Content* *Best Practice Guidelines for Agencies*	The charter and guidelines will be adopted for making procurement decisions, to ensure that reasonable opportunity is given to local suppliers to be considered as potential suppliers to the Project.

The labour supply and procurement strategy for the Project includes the following to align with the relevant labour supply strategies and programs:

- The Project is expected to employ people recruited both locally and regionally/internationally
- The dredging works would be carried out by an overseas contractor, due to the complex and specialist nature of the dredging works. The contractor will source a skilled workforce to complete this work, with minimal training opportunities available. The infrequency of major capital dredging campaigns limits the opportunities to provide for local training however, GPC will work with the appointed contractor to identify roles that may be filled by locals, such as earth moving, rehabilitation and environmental management. The international component of the workforce is likely to comprise less than 15% of the dredging and reclamation workforce during the peak periods. The bund wall and BUF construction works and barge unloading and dredged material placement activities are likely to be undertaken by workers with skills found in the local workforce.
- The Project will comply with the Queensland Government Building and Construction Training Policy meeting the core requirement of a minimum of 10-15% of the total labour hours on eligible projects undertaken by apprentices and/or trainees and through other workforce training
- The WBE reclamation area bund wall and BUF construction will be carried out by a contractor on behalf of GPC. As general civil construction works would be required, including machine and plant operations, it is expected the contractor would be locally based given the prominence of these skills in the Gladstone LGA.
- Staff sourced internationally would be accommodated in Gladstone in short-medium term accommodation
- The gender composition of the workforce is expected to be similar to national industry gender average for heavy and civil engineering in the construction sector. This sector averaged 12.6% female workers in 2017 (Australian Government Workplace Gender Equality Agency).
- GPC would work with the appointed dredging contractor and the bund wall construction contractor to develop appropriate recruitment and training programs as relevant and in accordance with the appointed contractor's labour procurement policies. This would include identifying roles that can be filled by local workers, with a focus on recruitment and training opportunities for apprentices, trainees, Aboriginal and Torres Strait Islander peoples, women, unemployed or under employed people, secondary school students and graduates.
- GPC would work with the appointed contractors to identify opportunities to source goods and services from regional businesses and suppliers including, Indigenous businesses. A Local Industry Participation Plan would be prepared in consultation with the Office of Advanced Manufacturing and the Queensland Office of the Industry Capability Network.

Projected construction labour supply and demand for the Central Queensland region is outlined in Table 18.28 and Figure 18.19. Based on these projections, there is likely to be a surplus of construction workers in the region until 2019 and from 2019 until 2022 there is likely to be a shortage of construction supply workers in the region (CSQ 2018a). Some 85% of overall construction activity is predicted to occur in the engineering sector, of which dredging projects are included (CSQ 2018b). However, this information needs to be balanced with the projects detailed in Table 18.26 which indicates that for the Gladstone LGA, a number of construction projects are either on hold or not anticipated to commence until post 2027, based on information available as at December 2018.

Table 18.28 Central Queensland region construction labour supply profile (2015 to 2022)

Fiscal year	Workers required for construction	Workers available for construction
2015	12681	9071
2016	9815	13937
2017	9449	10206
2018	9302	9414
2019	9959	9379
2020	10791	9626
2021	11132	10166
2022	11142	10643

Source: CSQ (2018a)

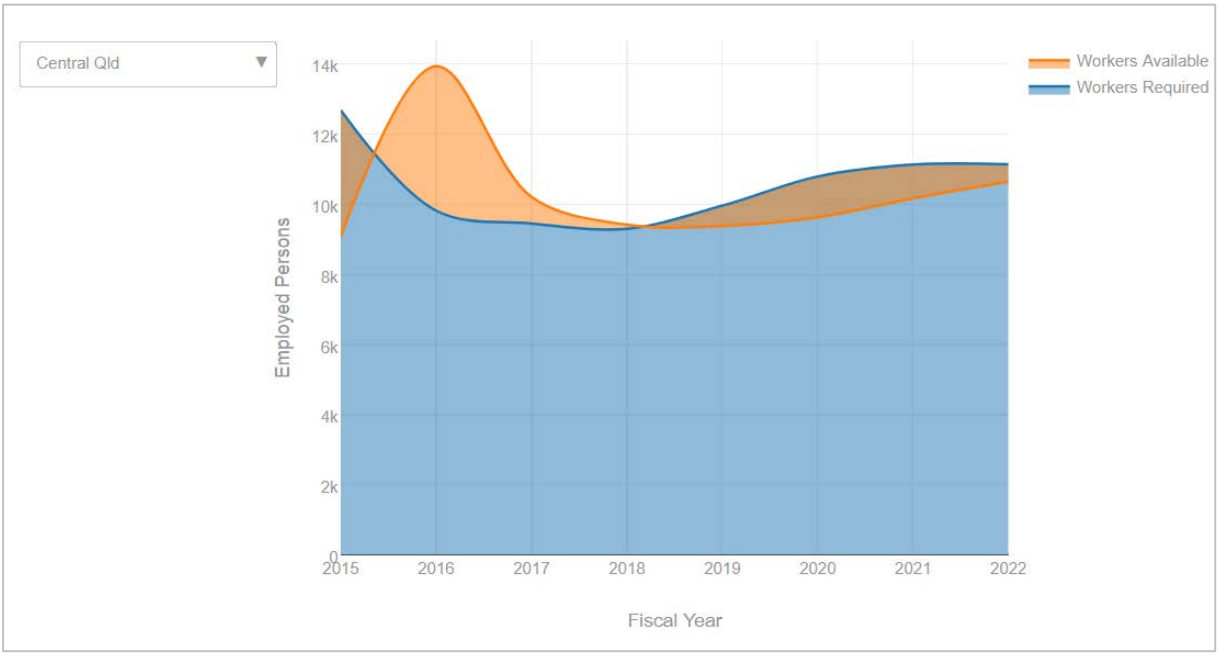

Figure 18.19 Central Queensland construction labour supply profile (2015 to 2022)

Source: CSQ (2018a)

18.8 Impact assessment

18.8.1 Scoping

Scoping of potential impacts, impact type, sensitive receptors and potential impact magnitude is outlined in Table 18.29.

Each potential social impact is described in Sections 18.8.2 to 18.8.14.

Table 18.29 Scoping of potential social impacts

Impact code	Description of potential impact	Sensitive receptors	Project phase	Type of potential impact[1]	Potential magnitude of impact
WBE reclamation area and BUF					
WBE01	Landscape character – construction of the WBE reclamation area and BUF would change the character of the current landscape in the vicinity of the WBE reclamation area	Maritime users surrounding WBE reclamation area Residents, workers and communities surrounding the WBE reclamation area or those who have views of the WBE reclamation area	Construction Maintenance	Negative Permanent	High
Port of Gladstone					
GH01	Visual amenity – the presence of dredging vessels, possible increased water turbidity and lighting during construction works has the potential to reduce the visual amenity of the Port	Maritime users and communities of Gladstone, near the WB and WBE reclamation areas and the areas to be dredged	Construction	Negative Temporary	Medium
GH02	Noise and vibration – construction activities and dredging have the potential to cause, or be perceived to cause, increased noise and vibration in nearby communities and areas	Communities of Gladstone city, Boyne Island, Tannum Sands and Facing Island Maritime users	Construction Maintenance	Negative Temporary and long term for maintenance dredging	High for receptors nearest the dredging activity Low for other receptors
GH03	Commercial fishing – reduced water quality during dredging and reclamation area construction has the potential to impact on commercial fisheries values, however due to the extent of other Port Curtis seagrass meadows, mangrove communities and other inshore areas identified as having fisheries importance, the Project water quality impacts and direct loss of inshore habitat will not result in any adverse impacts on Port Curtis fisheries. There will be no impact on commercial fishing facilities in the Port. The minor changes in velocity identified in Section 8.6 in the Western Basin area and in the vicinity of the deepened shipping channels will not impact commercial boating as these changes are predicted to be comparable to the range of velocities currently experienced by commercial and recreational boating in the Port.	Commercial fishers and people employed within the fishing industry in Gladstone	Construction Maintenance (limited)	Negative Cumulative Material Temporary	Medium

Impact code	Description of potential impact	Sensitive receptors	Project phase	Type of potential impact[1]	Potential magnitude of impact
GH04	Recreational fishing – reduced water quality during dredging and reclamation area construction has the potential to impact on recreational fisheries values, however due to the extent of other Port Curtis seagrass meadows, mangrove communities and other inshore areas identified as having fisheries importance, the Project water quality impacts and direct loss of inshore habitat will not result in any adverse impacts on Port Curtis fisheries. There will be no impact on recreational fishing facilities in the Port. The minor changes in velocity identified in Section 8.6 in the Western Basin area and in the vicinity of the deepened shipping channels will not impact commercial boating as these changes are predicted to be comparable to the range of velocities currently experienced by commercial and recreational boating in the Port.	Recreational fishers People employed within the tourism industries in Gladstone	Construction Maintenance (limited)	Negative Temporary	Medium
GH05	Traditional Owner values – general development of the Port of Gladstone, the reduction in the area of natural waterway in the Port, and reclamation area construction has the potential to impact on Traditional Owner fisheries values, however due to the extent of other Port Curtis seagrass meadows, mangrove communities and other inshore areas identified as having fisheries importance, the Project water quality impacts and direct loss of inshore habitat will not result in any adverse impacts on Port Curtis fisheries	Traditional Owners	Construction Maintenance	Negative Potentially long term	Medium
GH06	Tourism (including water-based recreation activities) – reduced water quality has the potential to impact the recreational values of the Port, including recreational water quality, visual amenity and possible changes in the location of marine species in and around the Port	Tourism operators Tourists Recreational users Residents	Construction	Negative Potentially temporary or long term Cumulative	Medium
GH07	Maritime use (construction) – the physical presence of dredging vessels and vessel activity near the WB and WBE reclamation areas and in the areas to be dredged may cause temporary disruption, maritime congestion and changes to operational practices for existing maritime users	Maritime users, including small vessel operators, commercial fishing fleet, recreational fishers, tourist operators and resource exporters	Construction	Negative Temporary	Low

Impact code	Description of potential impact	Sensitive receptors	Project phase	Type of potential impact[1]	Potential magnitude of impact
GH08	Maritime use (maintenance) – increased frequency of large vessel movement in and out of Port of Gladstone following dredging may result in increased maritime traffic which may increase maritime congestion	All maritime users, including small vessel operators, commercial fishing fleet, recreational fishers, tourist operators and resource exporters	Maintenance	Negative Long term	Low
Rock haulage roadways					
T01	Road amenity – potential change in the amenity of areas along roads due to increased noise, dust and vibration, from volume of heavy vehicles using public roads to haul rock for bund wall construction	Users of Landing Road and the marine areas between the WB and WBE reclamation areas and Curtis Island.	Construction	Negative Temporary	Low
T02	Road safety – movement of large trucks along the haul roads could increase road safety risk for existing and/or future users of public roads	Users of Landing Road and the marine areas between the WB and WBE reclamation areas and Curtis Island	Construction	Negative Temporary	Low
General Project impacts					
P01	Jobs (construction) – increase in the availability of local jobs during the construction phase	Local Gladstone community	Construction	Positive Temporary	Low
P02	Jobs (maintenance) – increase in the availability of local jobs during the maintenance phase	Local Gladstone community	Maintenance	Positive Long term	Low
P03	Regional economic growth – impacts on the regional and local economy due to improved efficiency of the Port to move resources on and offshore	Central Queensland region community	Maintenance	Positive Long term	High
P04	Workforce influx – influx of non-local workforce during construction for the Project may increase the full-time equivalent worker population in Gladstone. This may result in increased pressure on labour markets, housing and rental accommodation, impacts on Aboriginal and/or Torres Strait Island peoples.	The community surrounding Gladstone Harbour	Construction	Negative Temporary Cumulative	Low
P05	Community and other stakeholder perceptions – the construction phase could generate negative community perceptions about the Project. These may be exacerbated by historical community concerns regarding past dredging activity in the Port (perceived or actual).	Local Gladstone community	Construction	Negative Temporary or long term Cumulative	High

Impact code	Description of potential impact	Sensitive receptors	Project phase	Type of potential impact[1]	Potential magnitude of impact
Cumulative impacts					
CU01	The construction of the Project, and other projects in the Gladstone LGA, may potentially result in impacts to the local population, workforce, housing availability and affordability and the use of community infrastructure and services	Local Gladstone community (existing residents) Non-local workforce	Construction	Negative Temporary Cumulative	Low

Table note:

1 For example, positive, negative, direct, indirect, cumulative, reversible, temporary, long term, irreversible and/or material.

18.8.2 WBE01 – Landscape character

18.8.2.1 Summary of existing environment

Chapter 4 (visual amenity) outlines the existing landscape character of the Port and surrounding area.

The Port of Gladstone is located within the southern part of the GBRWHA and consists of multiple reefs and islands. The Port of Gladstone is defined by the large islands of Curtis Island and Facing Island. Curtis Island has an undulating topography which provides a vegetated backdrop to the visual landscape, and Facing Island which has a lower profile spans across most views to the east from the Gladstone urban centre. Industrial and port-related development is a major feature of the visual landscape of the Port.

The WBE reclamation area is to be situated within the intertidal zone and is defined by exposed mud flats and seagrass, and the adjacent existing WB reclamation area, saltmarsh, mangroves and foreshore vegetation. Recent developments adjacent to the WBE reclamation area include Fisherman's Landing, the existing WB reclamation area and industrial development on Curtis Island. This development includes infrastructure such as wharves, large scale machinery, stockpiles, rail movements, long jetties and ships at berth.

Sensitive receptors of potential landscape character effects include the following viewpoint locations:

- Yarwun and Friend Point, which have immediate views to the WBE reclamation area
- Port of Gladstone, particularly the marine areas between the WBE reclamation area and Curtis Island
- Elevated urban areas of Gladstone, including the Radar Hill, Round Hill and Auckland Point lookouts, and residential areas.

The Gladstone community values visual amenity and the natural environment.

18.8.2.2 Project induced changes

The primary visual amenity impacts with respect to the magnitude of the impact are likely to occur from the construction of the WBE reclamation area and the BUF. This would be a permanent change to the visual landscape and amenity when viewing this area, particularly when viewed from nearby viewpoints.

The WBE reclamation area would be filled up to a height of +8m LAT. Following completion of the filling operation within the WBE reclamation area, GPC will undertake surface stabilisation works for the portion of the reclamation area that have achieved the final surface level. The final land uses for the WBE reclamation area post Project dredging (Stages 1 and 2) will be stormwater ponds and Port development areas. The loss of water view and introduction of land would result in a change to the existing naturalness of the landscape. The BUF would create a minor and insignificant change to the visual landscape on the western side of the existing WB reclamation area.

Outer bund wall warning lights would also be installed every 100m along the outer seaward reclamation areas bund walls and BUF for maritime safety.

18.8.2.3 Impact assessment

A change to the landscape character may cause a disruption to the community's sense of place and visual outlook. Some people may experience feelings of anxiety as a result of not fully understanding the potential changes to existing landscape character.

Mitigation measures will be implemented to reduce this effect, with an emphasis on communication with potentially affected communities.

Chapter 4 (visual amenity) identifies that the effects of the WBE reclamation area and BUF on the landscape character would largely be minor and will be managed through stabilisation works and communication with surrounding communities during the construction period.

Table 18.30 Impact assessment – landscape character

Potential impact	Construction of the WBE reclamation area and BUF would change the character of the current landscape in the vicinity of the WB and WBE reclamation areas.
Impact description	The WBE reclamation area would permanently change the visual landscape by the loss of water elements in views and the introduction of land which would result in a change to existing naturalness of the landscape. This may affect the values that surrounding communities hold for the natural environment and visual outlook. There may be some residents who experience anxiety as a result of not fully understanding the landscape changes. The BUF would create a minor and insignificant change to the visual landscape.
Sensitive receptors	■ Yarwun and Friend Point which has immediate views to the WB and WBE reclamation areas ■ Port of Gladstone, in particular, the marine areas between the WB and WBE reclamation areas and Curtis Island ■ Elevated urban areas of Gladstone, including the Radar Hill, Round Hill and Auckland Point lookouts, and residential areas.
Mitigation	Ongoing communication with sensitive receptors to advise on the likely landscape character outcomes.
Monitoring	None

18.8.3 GH01 – Visual amenity

18.8.3.1 Summary of existing environment

Chapter 4 (visual amenity) outlines the existing visual amenity.

The Port of Gladstone is characterised by the coastal waters, large islands such as Curtis Island and Facing Island with numerous smaller islands scattered throughout the Port, reclaimed land and intertidal areas along the coast extending to the ridgelines that stretch through the northern suburbs of Gladstone, and into the wider mountain ranges behind. Industrial and port-related development is a major feature of the visual landscape of the Port of Gladstone.

The nearest settlements to the SIA study area are those with the most potential for their visual amenity to be adversely affected. These sensitive receptors include:

- Yarwun and Friend Point (immediate views to the WB and WBE reclamation areas)
- Port of Gladstone, particularly the marine areas between the WB and WBE reclamation areas and Curtis Island
- Elevated urban areas of Gladstone, including the Radar Hill, Round Hill and Auckland Point lookouts, and residential areas
- Waterfront residential areas of Tannum Sands and Gatcombe Heads.

18.8.3.2 Project induced changes

Project induced changes would mainly occur during construction. Dredging operations and truck movements would result in short term changes to visual amenity. Bund wall and BUF construction would result in long term changes to visual amenity.

The following visual amenity impacts are anticipated:

- The primary visual amenity impacts arising from construction-related activities associated with the Project would occur as a result of the dredging operations and construction of the WBE reclamation area and BUF

- The presence of dredgers and associated tender boats and servicing vessels in the Port
- The plumes and increased water turbidity during dredging and barge unloading
- There would be an increase in truck movements to transport the material for the construction of bund wall and BUF and associated with barge unloading and dredged material placement
- There would be increased lighting associated with night-time dredging operations and dredged material placement.

18.8.3.3 Impact assessment

Visual amenity impacts can result in perceived or actual loss of views and generally lower sense of satisfaction with people's visual outlook. The social effect is likely to be anxiety and visual nuisance with heightened activity (e.g. people, machinery) and change to visual outlook (WBE reclamation area and BUF). The degree of effect will depend on the magnitude of the change, and sensitivity of the receptor to the landscape and visual change.

Dredging vessels and ships are a frequent aspect of the landscape and therefore the dredging vessels associated with the Project are not considered to be out of character with the existing Port environment. The locality comprises existing industrial land uses, heavy industrial activity and vehicle movements are an already established part of the landscape. The increase in truck movements are unlikely to result in an adverse visual amenity impact as the proposed haulage route is short in distance and within a modified receiving environment with visual receptors of negligible sensitivity along the route. Truck movements within the WB and WBE reclamation area will be also be remote from sensitive visual receptors.

Table 18.31 Impact assessment – visual amenity

Potential impact	The presence of dredging vessels, increased water turbidity, vehicle movements and lighting during construction works has the potential to reduce the visual amenity of the Port environment.
Impact description	Construction activities would cause an increased presence of dredging vessels, truck movements and machinery, which can cause negative visual amenity impacts on sensitive receptors. This may affect the values that surrounding communities hold for the natural environment and visual outlook. There may be some residents who experience anxiety as a result of not fully understanding the landscape changes.
Sensitive receptors	People occupying the following areas: ■ Yarwun and Friend Point ■ Port of Gladstone, particularly the marine areas between the WB and WBE reclamation areas and Curtis Island ■ Elevated urban areas of Gladstone, including the Radar Hill, Round Hill and Auckland Point lookouts, and residential areas ■ Waterfront residential areas of Tannum Sands and Gatcombe Heads.
Mitigation	Ongoing consultation and communication about the timing, duration and likely visual amenity impacts of construction works.
Monitoring	Number of complaints regarding visual amenity. Rate of resolution for registered complaints.

18.8.4 GH02 – Noise and vibration

18.8.4.1 Summary of existing environment

Chapter 13 (noise and vibration) identifies the existing noise and vibration environment (terrestrial and aquatic) and quantifies actual and potential noise and vibration effects associated with the construction and maintenance phases of the Project.

Sensitive receptors are those residents, workers or people who use community infrastructure, reside or work near the Port of Gladstone.

Underwater noise and vibration can adversely affect marine fauna, which could have an indirect social impact for maritime users.

18.8.4.2 Project induced changes

Project construction activities, such as dredging, construction of bund walls and the BUF, installation of navigational aids and transporting, unloading and placement of dredged material have the potential to result in noise impacts.

The majority of construction activities will be undertaken at sufficient distance from sensitive receptors so that received noise levels would be low (below the current ambient noise levels).

The mobile plant and equipment required for construction of the WBE reclamation area and BUF has the potential to be a source of ground vibration. Ground vibration can cause disturbance to occupants of buildings, increasing anxiety and stress.

Noise and vibration from the dredging and piling can cause effects on underwater ecology (i.e. mammals, turtles and fish), which could have an indirect social impact for maritime users (such as fishers and tourism operators). Piling during the installation of the BUF wall and navigational aids is predicted to result in potential underwater noise and vibration impacts, which may disturb marine fauna close to the piling locations.

The maintenance phase of the Project includes the maintenance dredging works for the duplicated channels. The maintenance dredging would be undertaken 24 hours a day and require dredging over a 4 to 6 week period per year. This has the potential to cause short term noise impacts for sensitive receptors, particularity during night-time periods, which can disrupt sleep patterns.

18.8.4.3 Impact assessment

Due to the separation distance of at least 3.6km between sources of ground vibration and sensitive terrestrial receptors, no physical vibration impacts are expected to occur during the Project activities.

Noise and vibration impacts on marine fauna may cause disturbance to marine fauna both temporarily and spatially in the Port. With the mitigation measures in Chapter 13 (noise and vibration) implemented, the likelihood of this occurring is reduced and the potential indirect social impact for maritime users who rely on marine fauna for their livelihoods, is considered to be low.

The majority of construction and maintenance noise would not be audible at most receptors. However, for Facing Island and Boyne Island receptors who are located near the areas to be dredged, the navigational aids installation activities may be audible above the background noise environment. For Facing Island, the night-time dredging during construction and maintenance dredging may also be audible and result in noise impacts. There are currently commercial shipping and dredging maintenance activities undertaken near Facing Island receptors, therefore the Project noise impact is unlikely to generate a social impact for these receptors as they are accustomed to commercial shipping and dredging activities.

During consultation, adjacent landowner stakeholders at Gatcombe Heads specifically raised concerns regarding noise during dredging and dredged material placement. Stakeholder engagement also highlights concerns for the loss of livelihood and amenity which could be caused by increased noise and vibration effects from the Project. The increased noise and/or perceived noise effects have the potential to result in increased stress impacts and loss of sleep (particularly for works undertaken at night-time).

The methods to control construction and maintenance noise are outlined in Chapter 13 (noise and vibration). Communication with potentially affected communities is the primary mitigation method to be implemented to minimise social impacts as a result of noise emissions.

Table 18.32 Impact assessment – noise and vibration

Potential impact	Construction activities and maintenance dredging has the potential to cause, or be perceived to cause, increased noise and vibration in nearby communities and for marine fauna.
Impact description	Due to the separation distance between sources of vibration and sensitive terrestrial receptors, no significant vibration impacts are expected. Similarly, due to the separation distance, the majority of Gladstone LGA receptors would not be impacted by noise from construction and maintenance activities. For Facing Island and Boyne Island communities, construction and maintenance noise effects may be audible, which has the potential to cause impacts on these residents. Underwater noise and vibration may adversely affect marine fauna.
Sensitive receptors	Communities of the greater city of Gladstone, Boyne Island, Tannum Sands and Facing Island, and maritime users.
Mitigation	■ Consultation with Facing Island residents to determine the least sensitive daytime and evening periods for dredging adjacent to residences ■ Provision of community liaison phone number and permanent site contact so that noise-related complaints can be received and addressed in a timely manner ■ Ongoing consultation with potentially affected receptors to assist in limiting perceived noise effects.
Monitoring	Number of complaints regarding noise and vibration. Rate of resolution for registered complaints.

18.8.5 GH03 – Commercial fishing

18.8.5.1 Summary of the existing environment

Section 9.10.3.5 describes commercial fishing activities in the SIA study area. As noted in Section 18.2.1, the fishing data is limited for the Port of Gladstone, it can be assumed that the data collected from the Port Curtis region and secondary data at a State-wide scale represents a holistic interpretation of commercial and recreational fishing in the Gladstone region. Data for Port Curtis is relied upon for the assessment below.

Port Curtis and the associated intertidal areas and upstream rivers and creeks are an important resource for Queensland's commercial fisheries and the local economy. Known areas of value to commercial fisheries in the Gladstone region include:

- Mangrove areas in The Narrows and estuarine inlets
- Seagrass meadows and intertidal wetlands in coastal areas
- Cape Capricorn on the northeastern headland of Curtis Island (wider area)
- Capricorn Bunker Group of offshore reefs (wider area).

The waters of Port Curtis are naturally turbid with higher turbidity levels generally experienced during the wet season and flood events. However, this environment supports a diversity of fish species and fish habitats that in turn directly support the commercial fishing industry.

Sensitive receptors include commercial fishers and people employed in the commercial fishing industry in the SIA study area.

18.8.5.2 Project induced changes

Project construction activities have the potential to result in temporary changes to the location of fish stocks resulting in a change to catch size in some parts of the Port. However, fish stocks are likely to relocate into other parts of the Port and adjoining waters during Project activities.

18.8.5.3 Impact assessment

Table 18.33 Impact assessment – commercial fisheries

Potential impact	Reduced water quality during Project activities and direct loss of inshore habitat for fisheries.
Impact description	Reduced water quality during dredging and reclamation area construction has the potential to impact on fisheries values, however due to the extent of other Port Curtis seagrass meadows, mangrove communities and other inshore areas identified as having fisheries importance, the Project water quality impacts and direct loss of inshore habitat will not result in any adverse impacts on Port Curtis fisheries. There will be no impact on commercial fishing facilities in the Port.
Sensitive receptors	Commercial fishers and people employed within the fishing industry in Gladstone.
Mitigation	■ Ongoing, targeted engagement with commercial fisher groups leading up to and during construction to reduce anxiety around effects to the commercial fishing industry and to obtain better fishing data ■ Adherence to mitigation measures identified in chapters for water quality, nature conservation and noise and vibration, which will minimise water quality and marine flora and fauna impacts.
Monitoring	Regular data collection from Queensland Fishing (QFish) to monitor outputs from the commercial fishing industry to understand the level of impact being experienced over the construction period of the Project.

18.8.6 GH04 – Recreational fishing

18.8.6.1 Summary of the existing environment

Section 9.10.2.5 describes recreational fishing activities in the SIA study area.

The Port of Gladstone supports recreational fishing, which is a key component of the recreational activities and tourism industry in the SIA study area. Fishing activities predominantly include line fishing, crabbing and prawning. The most commonly retained species are Mud Crab, Seabream (Yellowfin and Pikey) and Barramundi. Most fishing is done by boat however beach and other land-based fishing is common.

Sensitive receptors include recreational fishers and people employed in the recreational fishing and tourism industries.

18.8.6.2 Project induced changes

Project construction activities and dredging have the potential to reduce water quality which could result in a change in the location of Port fish stocks and a change in the visual amenity of the Port. There would be a small reduction in the area of waterway in the Port as a result of the construction of the WBE reclamation area and BUF.

18.8.6.3 Impact assessment

Table 18.34 Impact assessment - recreational fishing

Potential impact	Reduced water quality during Project activities and direct loss of inshore habitat for fisheries.
Impact description	Reduced water quality during dredging and reclamation area construction has the potential to impact on fisheries values, however due to the extent of other Port Curtis seagrass meadows, mangrove communities and other inshore areas identified as having fisheries importance, the Project water quality impacts and direct loss of inshore habitat will not result in any adverse impacts on Port Curtis fisheries. There will be no impact on recreational fishing facilities in the Port.

Sensitive receptors	Recreational fishers and people employed within the tourism industries.
Mitigation	■ Ongoing engagement with recreational fishers and the tourism industry leading up to and during construction ■ Adherence to mitigation measures identified in chapters for water quality, nature conservation and noise and vibration.
Monitoring	Number of complaints regarding recreational fishing. Rate of resolution for registered complaints.

18.8.7 GH05 – Traditional Owner values

18.8.7.1 Summary of the existing environment

Traditional Owner values are outlined in Section 18.6.4 of the SIA with the values based on information gathered from consultation as part of the Aboriginal cultural heritage assessment (refer Section 16.5.8).

Traditional Owner values mainly relate to the sustainability of the marine environment for cultural and economic reasons. From the consultation undertaken, traditional fishing grounds important to Traditional Owners include the Port of Gladstone, including the coastal fringes, intertidal zones and waterways which provide a source of marine foods such as crustaceans, fish and shellfish, and are still regularly utilised by PCCC people.

18.8.7.2 Project induced changes

Project activities likely to impact Traditional Owner values are as follows:

- Construction-related activities, specifically dredging of seabed material and construction of the WBE reclamation area and BUF
- Maintenance dredging within the duplicated channels and barge access channel.

18.8.7.3 Impact assessment

Table 18.35 Impact assessment – Traditional Owner values

Potential impact	Potential impacts mainly relate to the construction of the Project, specifically loss of waterway, impacts on traditional fishing grounds, and cumulative effects on the marine environment.
Impact description	Existing access to the Port for cultural and recreational purposes would not be restricted by the Project. Possible water quality changes may affect marine flora and fauna which would affect Traditional Owner values to maintain the health and sustainability of these natural resources.
Sensitive receptors	Traditional Owners
Mitigation	■ Ongoing engagement with Traditional Owners about their values, traditional fishing grounds and addressing potential Project impacts in accordance with the Cultural Heritage Protocol ■ If an unknown item of tangible cultural heritage is uncovered during construction, work must cease until Traditional Owners are consulted in accordance with the Cultural Heritage Protocol (refer Appendix M).
Monitoring	GPC will utilise PCCC Sea Rangers to monitor the potential impacts of Project marine activities.

18.8.8 GH06 – Tourism (construction)

18.8.8.1 Summary of the existing environment

The Port of Gladstone is a major tourist attraction in Gladstone. Tourism in Gladstone is predominantly water-based with the main attractions, including Gladstone Harbour tours, fishing, boating, island visits and other nature-based activities. About 490 people were employed in tourism in the Gladstone LGA in 2016. Domestic visitation to the southern Great Barrier Reef has increased steadily since 2009 and international visitation to the reef has increased steadily since 2014. The Port of Gladstone is also home to a growing cruise ship industry.

People visit the area because of the attractive natural environment. As such, maintenance of this environment is valued by tourism operators.

18.8.8.2 Project induced changes

Project construction activities have the potential result in impacts on water quality, recreational fishing and amenity of the marine environment. It could also temporarily influence the attractiveness of the Port as a destination for local and international visitors.

The Project has the potential to impact on marine flora and fauna, these impacts are assessed in detail in Chapter 9 (nature conservation).

There is potential for Project construction activities to reduce water quality within the Port, details of the impacts are assessed in Chapter 8 (water quality).

Potential impacts to tourism operators that may be associated with the Project construction activities include:

- Reduced visual and recreational aesthetics of the Port for water-based tourism (due to possible increased turbidity). This will vary in correlation with the level of dredging being conducted.
- Potential reduced tourist activity and negative consequences to the wider industry. It is important to note that the baseline water conditions are naturally turbid, and Port of Gladstone undergoes routine maintenance dredging presently and has a relatively high level of commercial shipping and industrial development.

18.8.8.3 Impact assessment

During community engagement for the Project, multiple stakeholders highlighted concern about the potential impacts of the Project on the natural environment of the Port, including water quality and associated impacts on marine flora and fauna.

Chapter 8 (water quality) outlines the mitigation measures to be implemented to minimise water quality impacts. Further mitigation to minimise social impacts would primarily be through consultation with tourism industry operations, particularly during periods of high turbidity.

Table 18.36 Impact assessment – tourism (construction)

Potential impact	Tourism (including other water-based recreation activities) has the potential to be impacted by reduced water quality and changes in visual amenity.
Impact description	Possible reduction in water quality and any sediment plumes due to dredging and the construction of the WBE reclamation area and BUF have the potential to result in a change to the recreational/tourism values of the Port, including recreational water quality, visual amenity and a change in the location of large marine species in and around the Port which may serve as tourist attractions.

Sensitive receptors	■ Tourism operators ■ Tourists ■ Recreational users ■ Residents.
Mitigation	■ Ongoing consultation with the tourism industry, particularly during the dredging activities ■ Adherence to mitigation measures identified in chapters for water quality, nature conservation and noise and vibration, relating to water quality and marine flora and fauna.
Monitoring	Number of complaints regarding tourism issues. Rate of resolution for registered complaints.

18.8.9 GH07 and GH08 – Maritime use

18.8.9.1 Summary of existing environment

The Port of Gladstone is used for commercial and recreational maritime uses.

In 2016/2017, there were 1,788 commercial vessel movements in the Port. The number of vessels is generally increasing annually within the Port.

Maritime users who may be potentially affected by the Project include commercial and recreational fishers, ferry services, marine rescue, and tourism operators.

18.8.9.2 Project induced changes

The relatively small number of additional Project construction vessel movements associated with the Project will have an insignificant impact on existing and likely future vessel movements in the Port, including both commercial and recreational vessel movements. With all vessels operated in accordance with Port Procedures and under the direction of the Regional Harbour Master, and by appropriately licenced operators, maritime safety in the Port will not be compromised by the Project activities.

A small reduction in the area of navigable waterway within the Port will occur during dredging operations and also following completion of the WBE reclamation area and BUF, however this reduction is not expected to be significant and will not compromise maritime safety or the safe navigation of vessels within the Port.

It is important to note that while the Project will facilitate an improvement in the existing and future vessel movement efficiency, and a reduction in the likelihood of vessel incident risk, the duplication of the Gatcombe and Golding Cutting Channels will not have any direct influence on increasing vessel movement numbers within the Port.

18.8.9.3 Impact assessment

Recreational fishers and other marine users of the SIA study area are most likely to be impacted by any change in maritime safety. However, the increased likelihood of a maritime safety incident is very low to negligible.

Feedback received from the Gatcombe Head community through consultation has raised the issue regarding the increase in tug boats and the impacts of tug wash on recreational marine users, stating that the Project would further exacerbate this risk as tug traffic increases.

Communication of construction and operational dredging scheduling and adherence to maritime safety policies and guidelines would reduce the potential for safety impacts on maritime users.

Table 18.37 Impact assessment – maritime use

Potential impact	The physical presence of dredging vessels and vessel activity within the access channel to the Port and near the WB and WBE expansion areas may cause temporary disruptions, congestion and/or changes to operational practices for existing maritime users.
Impact description	Project activities would result in a small increase in construction-related maritime traffic, which is unlikely to increase maritime safety risk. Maintenance dredging activities may marginally increase congestion for other maritime users. The safety impacts from tug boats on small vessels has been raised by recreational marine users.
Sensitive receptors	All maritime users (e.g. small vessel operators, commercial fishing fleet, recreational fishers, tourist operators).
Mitigation	■ Communicate scheduled construction dredging activities to maritime users (such as signage and advertising advising of the restriction and their period of applicability). ■ Additional safety information for boating around dredging vessels and barges.
Monitoring	Number of complaints regarding maritime safety and congestion. Rate of resolution for registered complaints.

18.8.10 T01 – Road amenity and safety (construction)

18.8.10.1 Summary of existing environment

Chapter 15 (transport) outlines the transport assessment for the Project.

The Gladstone region is serviced by an extensive heavy freight road network. Between 2010 and 2014, Gladstone experienced substantial traffic growth associated with other major projects, including the WICT project and three LNG plants on Curtis Island. Current traffic volumes are at 2008 levels with future traffic volume growth dependent on future large-scale projects.

There are no dedicated facilities for pedestrians and cyclists along the proposed haul roads (between Landing Road and Guerassimoff Road and the WBE reclamation area) and as such is very limited. Road users along the proposed haulage routes are mainly commercial and industrial vehicles with minimal private vehicle movement.

18.8.10.2 Project induced changes

Road traffic associated with the Project will have an insignificant impact on the road network in Gladstone. The main impact will be the transport of rock for the WBE reclamation area bund wall and BUF construction which will be limited to Landing Road and Guerassimoff Road. Daily truck movements for the WBE reclamation area (southern and northern reclamation areas) and BUF would occur over a 36 month construction period and over a six-day working week. Truck movements associated with dredged material unloading and placement would be limited to the reclamation areas over the 33 week (Stage 1) and 25 week (Stage 2) dredging periods.

The use of the Guerassimoff Road, Landing Road intersection and the haulage routes is unlikely to result in direct community impacts. This is because the intersection is remote from sensitive receptors, is located near existing industrial activities and is not located near any social infrastructure.

18.8.10.3 Impact assessment

Due to the low levels of employment and the main transport activity being marine based, the impact on the Gladstone road network will be negligible. The main impacts will occur on the haul route between the Targinnie/Yarwun quarry area and the WBE reclamation area via Guerassimoff Road and Landing Road over a 36 month construction period followed by the truck movements within the reclamation areas over the dredging period. Commercial and industrial vehicles using Landing Road are most likely to be impacted by increased vehicle movements associated with bund wall construction and BUF. The use of these public roads will have minimal impact on road users, pedestrians, school communities, cyclists and public transport users.

Table 18.38 Impact assessment – road amenity and safety (construction)

Potential impact	Negligible impact on the Gladstone road network and on residents, pedestrians, cyclists and public transport users. Increased volume of construction traffic associated with bund wall and BUF construction for a 36 month period on Guerassimoff Road and Landing Road has the potential to impact on existing commercial and industrial vehicle road users using Landing Road. No impacts on public roads associated with dredged material unloading and placement activities.
Impact description	Construction activities will cause an increased truck movement on Guerassimoff Road and Landing Road, which may lead to short term disruption to commercial and industrial users of Landing Road.
Sensitive receptors	■ Workers and commercial and industrial users of Landing Road.
Mitigation	Undertake consultation and information sessions with the Targinnie/Yarwun community and local industry about potential impacts and mitigation measures to be implemented.
Monitoring	Number of complaints regarding Project-related truck and vehicle movements. Rate of resolution for registered complaints.

18.8.11 P01, P02, P03 – Jobs and economic growth

Regional economic growth is likely to occur due to the Project and the analysis of these benefits is provided in Chapter 19 (economic impact assessment).

18.8.12 P04 – Workforce influx (construction)

18.8.12.1 Summary of the existing environment

As outlined in Section 18.5.3, in 2016, Gladstone's labour force participation rate was 63.8%, greater than that of Queensland (61%). During construction phases of large resource projects in the past, non-resident workers in Gladstone have typically been housed in WAVs, predominantly on Curtis Island.

18.8.12.2 Project induced changes

During the peak construction period there would be approximately 362 workers employed. An overseas contractor would be used for dredging activities, therefore part of the workforce (approximately 50 workers) will be from overseas working aboard vessels on a roster period during part of the construction period. The remaining workers would be sourced from local and regional workforces.

18.8.12.3 Impact assessment

The additional workforce is unlikely to have negative effects on social cohesion and impacts on housing and accommodation supply due to the small number of workforce influx.

Impacts on social infrastructure are unlikely as incoming workers will present short term, are limited in number and are unlikely to bring families who may place additional burden on educational, health or other service provision.

Table 18.39 Impact assessment – workforce influx

Potential impact	The Project workforce demand could lead to increased housing and accommodation demand, increased demand on social infrastructure and social conflict.
Impact description	Due to the limited workforce influx, the impacts on social infrastructure, housing and social cohesion would be low to negligible.
Sensitive receptors	Gladstone communities and community infrastructure surrounding the Project.

Mitigation and enhancement	■ Encourage non-resident employees and contractors to integrate and become involved in local communities ■ Enforce a work Code of Conduct and a policy on appropriate worker behaviour and interaction with the public ■ Provide information and Australian cultural awareness briefing for overseas workers on how to undertake day-to-day activities.
Monitoring	Number of complaints or community concerns raised regarding the workforce influx. Rate of resolution for registered complaints/concerns.

18.8.13 P05 – Stakeholder perceptions

18.8.13.1 Summary of the existing environment

Section 18.6.3 summarises consultation feedback received for the Project.

Consultation for the Project identified that the surrounding community value access to recreational opportunities and use of waterways, the natural environment, economic development opportunities and Aboriginal and cultural heritage values as well as trust in those they are liaising with and the information provided. People are most concerned about changes to water and air quality, the perception of Gladstone formed by others, habitat and resource degradation, information access, and continued stakeholder involvement and consultation. Performance and accountability was a key matter. This may be influenced by previous projects in and around the SIA study area.

Gatcombe Head residents raised concerns about environmental health and loss of visual amenity of Gatcombe Boat Harbour and Gatcombe Beach. Community and commercial fishers perceive that previous large-scale developments in the Port of Gladstone, such as the WBDDP and LNG facilities, have had a negative impact on the Port water quality and marine ecology. Past projects within the Gladstone region have the potential to exacerbate views about the Project if they are not managed appropriately.

18.8.13.2 Project induced changes

Values identified by the community consultation need to be considered and integrated as the Project progresses. Perceptions about other projects in the area should also be managed.

Therefore, some potential impacts from stakeholder perceptions may include:

- Negative public perceptions towards the Project, including media
- Loss of the social licence to operate
- Loss of trust in government and other organisations
- Project delays and loss of revenue if there is public opposition
- Protest groups
- Inaccurate information based on public perceptions.

18.8.13.3 Impact assessment

Table 18.40 Impact assessment – stakeholder perceptions

Potential impact	Some stakeholders may have negative attitudes towards the Project, influenced by previous projects, potentially influencing perceptions of other stakeholders.
Impact description	Stakeholders may hold and share negative perceptions of the Project and may have low expectations for positive outcomes of the Project.
Sensitive receptors	Community stakeholders (Gatcombe Head community), commercial and recreational fishers, local business, environmental and Aboriginal and Torres Strait Islander stakeholders.

Mitigation	■ Ongoing engagement with stakeholders, including through the SRG ■ Adherence to Project design features and management principles intended to minimise environmental and social impacts.
Monitoring	■ Monitor grievance register for number of complaints and rate of complaints resolution ■ Completion rate of action items arising from minutes of the SRG.

18.8.14 CU01 – Cumulative workforce influx impacts (construction)

18.8.14.1 Summary of existing environment

A cumulative impact assessment for the Project is undertaken in Chapter 21 (cumulative impact assessment). This considers the Project impacts in conjunction with other recent, current and future projects in and around the SIA study area.

This section relates to cumulative workforce influx impacts only.

18.8.14.2 Project induced changes

As outlined in Section 8.7.1.1, the workforce influx is predicted to have a low impact due to the limited workforce required. The dredging would be undertaken by an overseas contractor with a short term influx of overseas workers, thus resulting in minimal social and community conflict and minimal demand on social infrastructure.

There are numerous other projects in the Gladstone area (refer Section 18.7.2), with the majority requiring higher workforce demands than the Project. Many of these construction projects will be completed prior to construction of the Project, or are not forecast to begin construction until after 2027.

18.8.14.3 Impact assessment

Due to the low impact of the Project workforce influx associated with the Project, the potential cumulative social impacts with other Projects is considered to be low to negligible.

Table 18.41 Impact assessment – cumulative effects

Potential impact	The construction of the Project, and other projects/proposals in the region, would potentially result in additional impacts to the local population, workforce, housing and the use of community infrastructure and services.
Impact description	The actual cumulative impact is considered to be minimal due to the small number of workers required with the Project, and the timing in conjunction with other projects.
Sensitive receptors	Local community and community infrastructure
Mitigation	■ Provide State and local government departments responsible for educational, health and other social infrastructure with forecasts of workforce numbers to assist in their future service planning ■ Number of complaints or community concerns raised regarding the workforce influx. Rate of resolution for registered complaints/concerns.
Monitoring	None required

18.9 Mitigation and enhancement measures

18.9.1 Mitigation

Based on the assessment undertaken in Section 18.8, the mitigation measures below will be implemented to address the actual and potential social effects of the Project.

- Appoint a Project Liaison Person for the duration of the Project activities to be the main and readily accessible single point of contact for affected parties, stakeholders and the wider community. The contact details will be made available through a Project website and prominently advertised.
- Preparation of a Social Impact Management Plan will be prepared for the Project (refer Appendix N3) and will include as a minimum:
  - A summary of the social impacts and affected stakeholders as identified through the SIA process
  - Describe GPC's impact management activities and commitments (mitigation strategies) to minimise negative social impacts and to enhance benefits for the community and other stakeholders
  - Describe the mechanisms to monitor the impacts to adjust mitigation strategies and Action Plans
  - Identify stakeholders to be included in the development and implementation of mitigation strategies throughout the life of the Project
  - Determine a timeframe for the development and implementation of the identified management strategies
  - Provide guidance to GPC's social performance activities.
- Prior to the commencement of the Project's construction works (or individual stages), a Communications Plan will be prepared and implemented. The purpose of the Communications Plan is to set out procedures detailing how affected parties, stakeholders and the wider community, will be communicated with throughout the pre-construction and construction phases of the Project. As a minimum, the Communications Plan will include:
  - Communication about the timing, duration and likely impacts of construction works (or stages) ensuring activities and engagement with the following sensitive receptors:
    - Residents' potentially affected by landscape character changes associated with Project activities, including engagement regarding proposed landscape schemes and outcomes
    - Facing Island residents potentially affected by noise and vibration associated with Project activities
    - Commercial fisher groups and recreational fisher groups (including tourism operators)
    - Maritime users (such as small vessel operators, commercial fishing fleet, recreational fishers and tourist operators). Communication will include signage and advertising advising of restrictions and their period of applicability, including safety information for recreational boating around dredging vessels.
    - Users of the rock haulage routes (Targinnie/Yarwun community and local businesses)
  - A complaints and response process
- Continue the SRG (and other groups where necessary) to minimise potential impacts during the Project's construction through awareness of Project activities and provide input into more detailed design and feedback on Project mitigation measures

- Continue ongoing engagement with Traditional Owners about their values and traditional fishing grounds. Engagement will be undertaken in accordance with the Cultural Heritage Protocol (refer Appendix M). If an unknown item of tangible cultural heritage is uncovered during construction, work will cease until Traditional Owners are consulted as per the procedures set out in the Cultural Heritage Protocol.
- A Workforce Management Plan will be implemented to mitigate workforce influx and cumulative workforce influx impacts. This will be in place prior to Project construction works commencing and reviewed annually over the duration of the Project's construction activities.
- Adherence to mitigation measures identified in chapters for water quality, nature conservation and noise and vibration.
- Mitigation will be monitored through complaints received, by maintaining a grievance register and reviewing on a monthly basis.

18.9.2 Workforce Management Plan

The content of the Workforce Management Plan has been developed in recognition that the Project is expected to employ people recruited both locally and regionally/internationally. The Project dredging would be carried out by an overseas contractor, due to the complex nature of the work and requirement for a specialist labour skill set. The dredging contractor would recruit a skilled workforce to complete this work, with minimal training opportunities available. Due to the infrequency of major capital dredging campaigns limits the opportunities to provide local training however, where possible, the local workforce may be utilised for tasks such as barge unloading and dredge material placement, other earthworks, rehabilitation and environmental management. The WBE reclamation area bund wall and BUF construction would likely be carried out by a local/regional contractor who will utilise the local workforce.

Outlined below are the principles that will be adopted to manage the Project construction workforce.

Workforce behaviour

- Adhere to relevant legislation for construction workers, including the *Coal Mining (Safety and Health) Act 1999* and *Work Health and Safety Act 2011*.
- Develop a workforce code-of-conduct which outlines acceptable behaviour, standards for work performance and appropriate ways of interacting with the residents of Gladstone.
- Implement the code-of-conduct by ensuring that this is included in all contract documentation as well as training and induction programs before workers commence their employment. Ensure that abiding by the code-of-conduct is a condition of employment and a breach of the code could result in automatic dismissal. Proactive 'refresher' training will be undertaken at regular periods throughout the construction period to minimise the risk of breaches.

Workforce recruitment

- GPC will work with the appointed dredging contractor and the bund wall and BUF construction contractor to develop appropriate recruitment and training programs as relevant and in accordance with the appointed contractor's labour procurement policies. This would include identifying roles that can be filled by local workers, with a focus on recruitment and training opportunities for apprentices, trainees, Aboriginal and/or Torres Strait Islander peoples, women, unemployed or under employed people, secondary school students and graduates.
- All Project employees will be hired through formalised recruitment processes with no 'at the gate' sign ups allowed. Utilise local and regional recruitment and training providers where possible and practical to meet vacant position requirements.

Accommodation planning

- GPC will work with local real estate agents, and residential dwelling and unit providers in the Gladstone area to secure long term accommodation for non-local Project employees

- During the low and shoulder season, utilise the holiday accommodation market where possible and practical to meet any short term accommodation need for Project employees.

The local community

- Wherever possible and practical, procure personnel, goods and services locally to enhance benefits to the local economy. Prepare and implement a Local Industry Procurement and Participation Plan if not already developed.
- Promote contribution to and connection with the local community. For example, developing a workforce sporting team and playing in local competitions can be a way of facilitating connections with the community.

18.10 Risk assessment

To assess and appropriately manage the potential social impacts 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 social impact risks to environmental values/receptors for both the establishment of the reclamation area and BUF, 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 18.20.

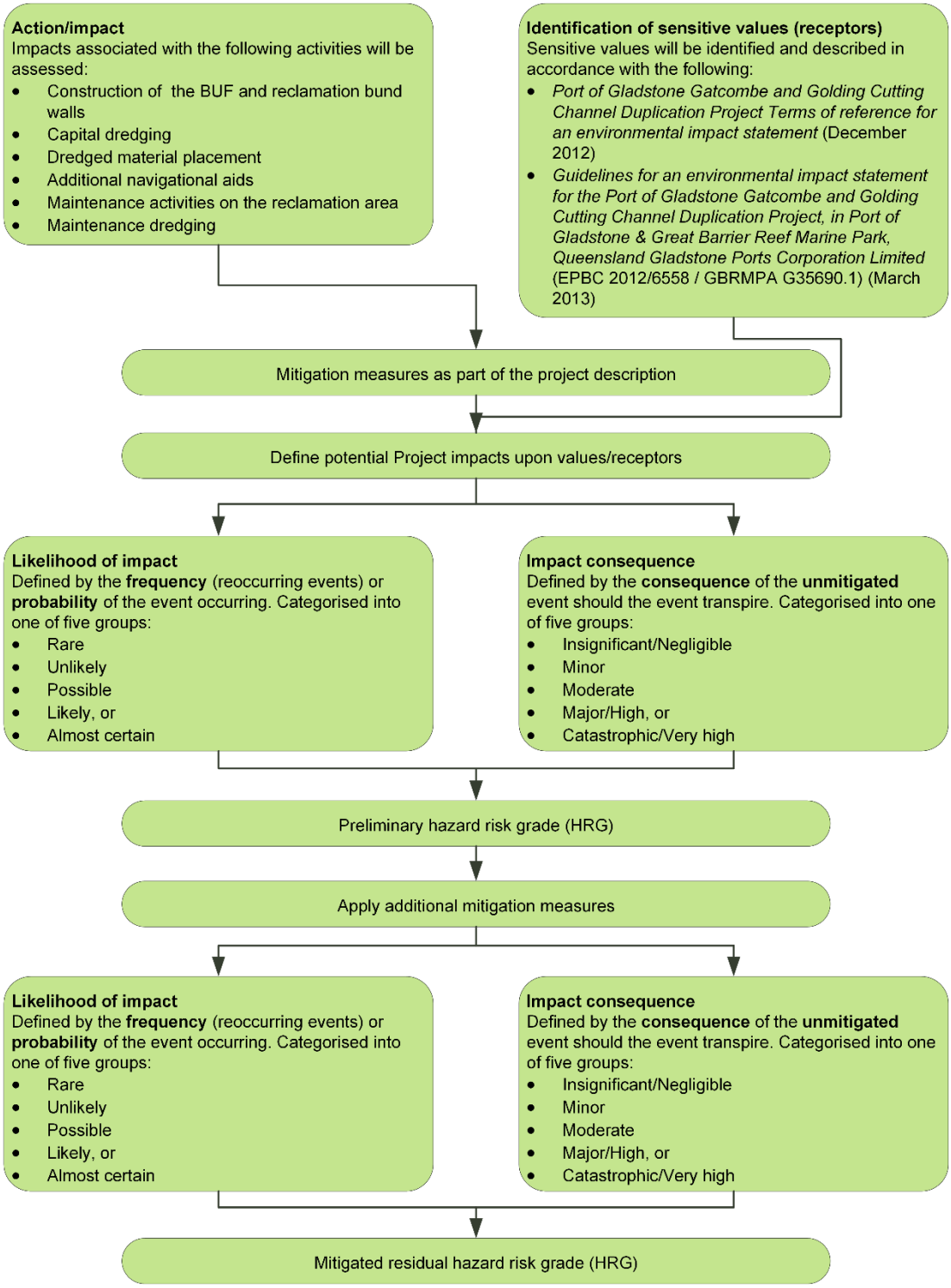

Figure 18.20 Risk assessment framework

Criteria used to rank the **likelihood** and **consequence** of potential impacts are provided in Table 18.42 and Table 18.43, respectively.

Table 18.42 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 18.43 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 18.44).

Table 18.44 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 this table are defined in Table 18.45.

Table 18.45 Risk definitions and actions associated with hazard risk categories (adapted from GBRMPA 2009)

Hazard risk category	Hazard Risk Grade (HRG) definition
Low	These risks should be recorded, monitored and controlled. Activities with unmitigated 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.

Table 18.46 is a summary assessment of impacts and opportunities, both initial and residual (post implementation of mitigation measures).

Table 18.46 Summary assessment of social 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
Landscape character											
■ WBE reclamation area and BUF permanently changes landscape ■ Introduction of land and BUF into marine environment and a change in the natural character of waterway ■ Change to receptors' sense of place and visual amenity	✓					Almost certain	Low	Medium	Almost certain	Low	Medium
Visual amenity											
■ Construction-related activities causing reduced visual amenity ■ Perceived and actual loss of views	✓	✓	✓	✓	✓	Likely	Low	Medium	Possible	Low	Medium
Noise and vibration											
Construction noise and vibration for Facing Island and Boyne Island residents closest to the Project activities have the potential to impact on residents amenity and/or loss of sleep		✓	✓	✓		Possible	Moderate	High	Unlikely	Moderate	Medium
Construction and maintenance noise and vibration for other receptors have the potential to impact on residents amenity and/or loss of sleep	✓	✓	✓	✓	✓	Unlikely	Moderate	Medium	Unlikely	Moderate	Medium
Commercial fishing											
Potential for reduced water quality, and change in the location of fish stock		✓			✓	Likely	Moderate	High	Unlikely	Moderate	Medium

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
Recreational fishing											
Potential for reduced water quality, and change in location of fish stocks and reduced amenity for recreational fishers		✓			✓	Likely	Low	Medium	Unlikely	Low	Low
Traditional Owners											
Loss of waterway area, access to harbour and impacts on traditional fishing grounds	✓	✓			✓	Likely	Moderate	High	Unlikely	Moderate	Medium
Tourism (construction)											
Potential impact on the marine environment	✓	✓	✓	✓	✓	Likely	Moderate	High	Unlikely	Moderate	Medium
Change in visual amenity, recreational value/attractiveness of the Port	✓	✓				Likely	Low	Medium	Unlikely	Low	Low
Maritime use											
Construction vessels could increase maritime congestion and increase safety risks	✓	✓	✓	✓	✓	Possible	Low	Medium	Unlikely	Low	Low
Road amenity and safety											
Increased truck movements, decline in amenity, increased safety risks and congestion on Landing Road	✓					Likely	Low	Medium	Unlikely	Low	Low
Workforce influx											
■ Impacts on housing and accommodation ■ Impacts on community cohesion and social infrastructure	✓	✓				Unlikely	Low	Low	Unlikely	Low	Low
Stakeholder perceptions											
Negative stakeholder perception of the Project	✓	✓			✓	Almost certain	High	Extreme	Possible	Moderate	High

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
Cumulative effects											
Impacts from workforce influx in conjunction with other projects	✓	✓				Unlikely	Low	Low	Unlikely	Negligible	Low

18.11 Summary

This SIA provides a baseline assessment of the Gladstone LGA social environment and an assessment of the potential social impacts, with risk ratings and mitigation measures to be implemented.

The social impacts are predicted to vary for different groups, mainly correlating to their proximity to the Project impact areas (for landscape character, visual amenity and noise and vibration), and their use of the marine environment (commercial, recreational fishing and tourism).

The construction and maintenance of the Project has the potential to result in impacts on local communities. The majority of construction-related social impacts (from visual amenity, noise and vibration, and road safety) would be during construction and therefore temporary and short term.

The permanent impacts on landscape character would relate to the construction of the WBE reclamation area and BUF. Considering the low elevation of the WBE reclamation area and BUF, the co-location within the existing WB reclamation area and the proposed stabilisation, the social impacts on the local community's visual amenity and outlook would be minor.

The nearest settlements to the Project are those with the highest potential for their amenity to be impacted during construction. Ongoing consultation and communication about the timing, duration and likely impacts of construction works will be important in managing potential impacts, and therefore reducing social impacts of anxiety and changes in amenity.

Commercial and recreational fishers, tourism operations and other maritime uses have the potential be impacted by the Project construction activities, particularly if there is a decline in water quality causing a change in the location of fish stocks. However, with the implementation of mitigation measures, the consequences are expected to be reduced as access to fishing and the Port and outer harbour marine environment would continue throughout the duration of Project activities. The potential social impacts on maritime use would be minor due to the limited number of additional dredging and support vessels during construction. Mitigation measures including adherence to safety procedures would reduce these potential social impacts.

Construction and maintenance dredging of seabed material and the beneficial reuse of dredged material within the WB and WBE reclamation areas have the potential to impact Traditional Owner values. Ongoing consultation with Traditional Owners about their values, traditional fishing grounds and potential Project impacts will be integral to further understanding and managing these impacts, in accordance with the Cultural Heritage Protocol.

There will be low to negligible workforce influx and cumulative workforce influx impacts due to the small number of workers required for the construction and maintenance of the Project.

Based on previous projects in the Gladstone region, there is potential for negative public perceptions towards the Project. The most effective method for mitigating these perceptions and for managing social impacts will be effective ongoing consultation with relevant communities and groups throughout all stages of the Project.