



# TOONDAH HARBOUR

## CHAPTER 1 PROJECT DETAILS



# 1. Project Details

## 1.1. Location and Background

Toondah Harbour is an existing marine facility located in the suburb of Cleveland in the Redland City Local Government Area (LGA), approximately 30 kilometres (km) south of Brisbane. Cleveland is Redland City's civic, commercial and cultural hub and a principal regional activity centre identified by *ShapingSEQ*, the South East Queensland Regional Plan 2017 (Queensland Government, 2017).

Toondah Harbour serves as the base for water taxi, passenger and vehicle ferry services between the mainland and North Stradbroke Island, known as Minjerribah by its Traditional Custodians, the Quandamooka People. Current terrestrial land uses within the harbour area include multiple ferry terminals, a public boat ramp, extensive areas of surface car parking for ferry customers, an office complex temporarily leased by a trade college, and a disused dredge material disposal pond. The overwater areas are made up of a mix of tidal and intertidal habitats, and include existing wet berths, the turning basin and the harbour entrance channel, known as Fison Channel. Site locality and existing features are shown on Figure 1-1 and Figure 1-2.

The harbour was constructed on reclaimed land and has been operational since 1972 when it was used as an industrial barge terminal to support sand mining operations on Minjerribah (North Stradbroke Island). Vehicle ferry services commenced in 1974. The most recent landside upgrades occurred in the early 2000s when additional hardstand car parking and the public boat ramp were added. The harbour is not located in naturally deep water therefore periodic maintenance dredging is required to maintain navigable depths in the turning basin and Fison Channel.

In June 2013, at the request of Redland City Council (RCC), the Queensland Government declared Toondah Harbour a priority development area (PDA) under the *Economic Development Act 2012* (Qld) (ED Act). PDAs are parcels of land within Queensland identified for accelerated development to deliver significant benefits to the community.

The Toondah Harbour PDA has a total area of 67.4 hectares (ha), encompassing 17.9 ha of existing land and 49.5 ha of marine and tidal environments. Approximately 42 ha of the marine and tidal environments within the PDA are also included in the boundaries of the Moreton Bay Ramsar Site (MBRS). A Ramsar site is a wetland designated to be of international importance under the Ramsar Convention. In designating a wetland as a Ramsar site, countries agree to establish and oversee a management framework aimed at conserving the wetland and ensuring its wise use (refer to section 4.3).

The intent of the PDA is to revitalise the harbour, improve the transport function by better integrating ferry and bus services and managing car parking, and establish Toondah Harbour as a high-quality urban environment that capitalises on the high amenity of Moreton Bay. The PDA needs to provide opportunities for a range of activities including outdoor dining, tourism facilities, residential and commercial development, marina facilities and a public beach.

The proposed redevelopment of Toondah Harbour is not a market led proposal – it did not originate from the private sector or from the Proponent specifically.

In June 2014, Economic Development Queensland (EDQ) and RCC called for expressions of interest (EOI) from the private sector to redevelop public lands in the Toondah Harbour PDA. The Queensland Government and RCC acknowledged the requirement for dredging, reclamation and provision of new transport and community infrastructure in the tender documents. The EOI Information Memorandum (refer to Appendix 1-A) noted that there was 6.9 ha of key developable

land parcels included in the offering at Toondah Harbour, with opportunity to develop land within the PDA below the high water mark (HWM).

Additional infrastructure and public realm requirements were detailed as follows:

*“Proponents will pay infrastructure charges for the development projects. However, in addition to the commercial elements of the project, proponents will also be expected to contribute to the delivery of additional PDA wide infrastructure or improvements that are required to realise the PDA vision and ensure the effective operating of the area as a transport and tourism hub. The government parties are seeking to upgrade or implement the following items and proponents should consider how they would contribute to the delivery of these items as an integral part of their proposals:*

- *the new waterfront plaza;*
- *provision for ferry terminals (minimum of two vehicle ferry terminals and two passenger ferry terminals);*
- *ticketing and information centre associated with the plaza;*
- *capital dredging to straighten and widen the Fison Channel and extend the swing basin;*
- *contiguous boardwalk promenade along the waterfront;*
- *improvements to GJ Walter Park;*
- *car parks associated with the ferry terminals to be delivered through a combination of at grade parking and managed off-street carparking; and*
- *a bus interchange.”*

The tender also specified that the successful tenderer must ensure no impediment to the operation of existing ferry services or net loss of public car spaces at any stage during the construction of the Project.

In September 2015, Walker Group Holdings Pty Ltd (the Proponent) was announced as the preferred development partner to redevelop the public landholdings in the PDA. In 2015/16, the Minister for Economic Development Queensland (MEDQ), RCC, Redland Investment Corporation and the Proponent entered into binding commercial agreements for the Project, including a development agreement and an infrastructure agreement. Under the development agreement, the Proponent is responsible for designing, financing and delivering the Project, including obtaining environmental and development approvals.

The Project is a standalone project – not linked to any other action and tied to specific public landholdings – that provides for the delivery of the specified infrastructure and public realm requirements as part of a single integrated proposal.

Figure 1-1: Project Location



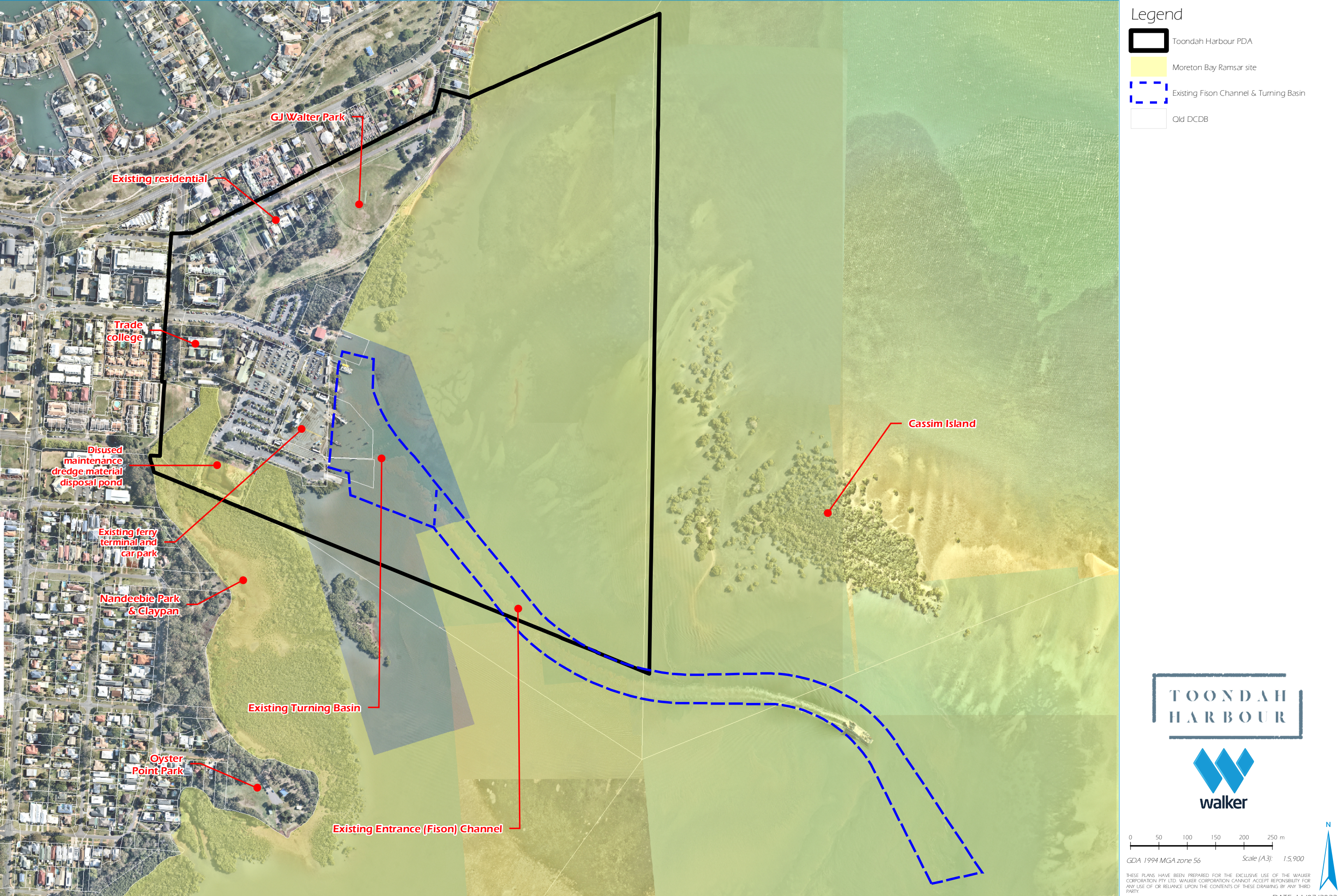
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- ★ Project location
- Moreton Bay Ramsar site

Toondah Harbour EIS



Figure 1-2: Toondah Harbour PDA and Key Features





## 1.2. Brief Description of the Project

The Project includes the following key components:

- Capital dredging of up to 530,000 m<sup>3</sup> to widen and deepen the Fison Channel and extend the turning basin to meet the minimum requirements for safe navigation set out in the PIANC (2014) Harbour Approach Channels Design Guidelines and Australian Standard 3962 – 2001 Guidelines for the Design of Marinas will be undertaken in two separate campaigns. Currently, the channel is approximately 45 m wide (excluding batters) with a target depth of -2.5 m below Lowest Astronomical Tide (**LAT**). The Project proposes to widen the channel to 75 m (excluding batters), with a target depth of -3 m LAT.
- All dredged and excavated sediments generated by capital dredging will be beneficially reused to reclaim a 37.6 ha sub-tidal area north of the harbour to create new landforms for proposed public open space and urban uses as well as internal waterways including a central marina basin. The reclamation will be formed in two discrete stages – north and south. For each stage, a perimeter bund will be established to contain the dredged material, which will limit indirect impacts outside of the project footprint. The reclamation has been designed to balance dredge material volumes with fill requirements, minimising the need to import materials from offsite.
- The internal waterways and marina, which will include up to 200 berths with floating pontoons, are located within the reclamation area and will be excavated 'in the dry'.
- New harbour and public transport infrastructure, facilities and amenities for ferry customers and visitors will be constructed south of the existing vehicle ferry loading area. These works will be undertaken concurrently with the first reclamation stage and overlap the existing ferry terminal and boat ramp aside from a 1.5 ha section to the south of the current car park made up of a disused dredged material disposal pond and a 0.7 ha patch of mangroves.
- A network of open space and recreation areas will include a 3.5 ha foreshore park with water play/lagoon pool, an education centre, boardwalks, plazas, walking paths, neighbourhood parks and a ramp for non-motorised vessels such as kayaks and dinghies.
- A mixed-use village precinct that will comprise of residential areas on the northern and southern reclamation areas and a hotel, residential apartments, retail and commercial development focused around a new marina plaza. A further residential precinct will be located in the western part of the PDA replacing the existing trade college building. Including the hotel, the Project will deliver up to 3,600 dwellings.
- Installation of civil infrastructure and services – such as electrical, gas, telecommunications, water supply, sewerage infrastructure and roads will keep pace with development projects.

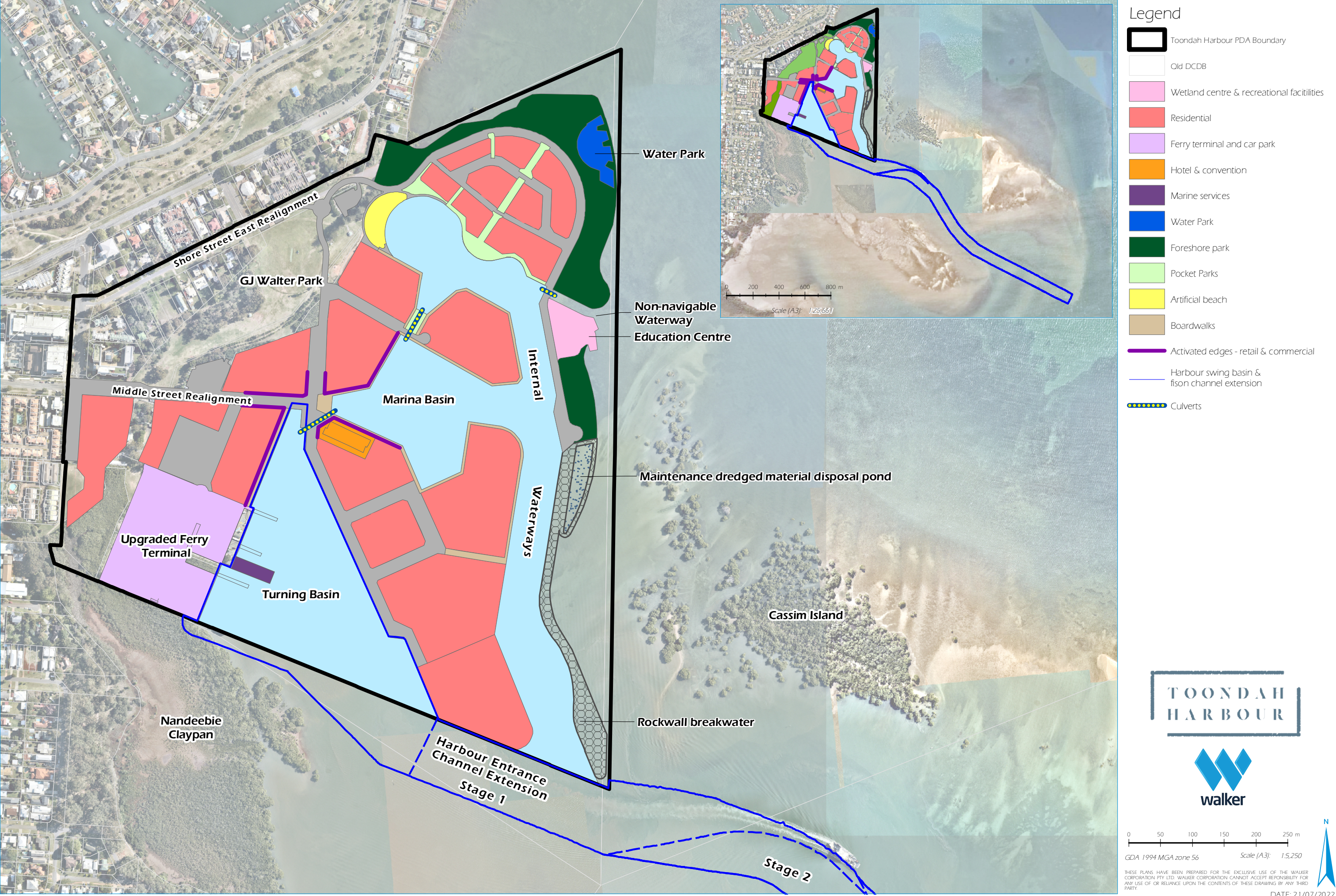
The only component of the development outside of the PDA boundary is the extension of Fison Channel and the turning basin. This is unavoidable as dredging must achieve target channel depths until naturally deeper areas of Moreton Bay are reached to provide safe navigation. The existing Fison Channel already extends outside of the PDA boundary and regularly requires dredging to maintain its target depths.

Importantly, the Toondah Harbour PDA contains privately and publicly owned land that is not part of the Project. This includes existing residential lots to the northwest and GJ Walter Park. This existing public park, which incorporates an off-leash dog park and cricket ground, will be retained and embellished. The proposed master plan is shown on Figure 1-3.

A detailed description of the site conditions, history and project design and construction is provided in Section 2 of this Volume.



Figure 1-3: Toondah Harbour Project Master Plan





## 1.3. Project Approvals History

The Project currently has no approvals in place. The EPBC Act referral is the Project's first application.

The Project was referred under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) on 5 June 2018 (EPBC Reference number 2018/8225) and was made a controlled action on 23 July 2018, to be assessed by environmental impact statement (EIS). The relevant controlling provisions of the EPBC Act for the controlled action decision were:

- Wetlands of international importance (sections 16 & 17B);
- Listed threatened species and communities (sections 18 & 18A); and
- Listed migratory species (sections 20 & 20A).

Draft tailored guidelines for the EIS were released for public comment by DCCEEW on 6 February 2019 with the comment period closing on 6 March 2019. The final guidelines were released to the public on 3 April 2019.

The Draft EIS must address all requirements of the final guidelines and the information must be sufficient to allow the Australian Minister for the Environment to make an informed decision on whether or not to approve, under Part 9 of the EPBC Act, the taking of the action for the purposes of each controlling provision.

No applications for planning or environmental approvals, authorities or permits have been made to the Queensland Government. These will be submitted following the EPBC Act decision.

The objectives of this EIS are to meet the legislative requirements under the EPBC Act by way of:

- Responding to the Guidelines for the Preparation of a Draft Environmental Impact Statement (DCCEEW, 2019);
- Assessing the potential for the Project to impact on any matters of national environmental significance (MNES), including the ecological character of the Moreton Bay Ramsar Site (MBRS);
- Providing public information on the need for the Project, alternatives to it and optioneering undertaken through the design process to balance engineering, environmental, social and economic considerations;
- Identifying and assessing potential direct and indirect environmental, social and economic impacts upon the surrounding physical and human environments during the construction and operational phases of the Project;
- Recommending mitigation measures to avoid or minimise any significant impacts identified to acceptable levels;
- Identifying potential significant residual impacts and designing an appropriate management and monitoring program for the construction and operational phases of the Project; and
- Where significant impacts to MNES cannot be avoided, proposing an offset strategy that will provide an overall benefit and positive conservation outcome for the matter(s) impacted.

The final guidelines are provided as Appendix 1-B. A table cross-referencing the sections of the Draft EIS to the corresponding section of the guidelines is provided as Appendix 1-C.

### 1.3.1 Minor Changes from Referral

Refinements have occurred to the Project master plan since submission of the referral documentation, primarily in response to feedback from technical consultants and stakeholders. These minor changes have not altered the key Project components or uses outlined in the referral and do not result in impacts upon MNES additional to those described in the referral. Most changes are aimed at minimising direct and indirect impacts upon MNES from the Project. Table 1-1 summarises the minor changes that have been made to the master plan since the Project was referred in 2018. Additional project design features and principles are addressed in Section 1.5.2.



Table 1-1: Master Plan Minor Changes from Referral.

| Change                                 | Referral Master Plan                                                                                                                                                                                                                                                                                                                                                                           | Draft EIS Master Plan                                                                                                                                                                                                                                                                                                         | Outcome                                                                                                                                                                                                                                                                                                                |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Reclamation landform</b>            | The reclamation landforms encompassed 32 ha of tidal land                                                                                                                                                                                                                                                                                                                                      | The reclamation landforms encompass 27.1 ha of tidal land                                                                                                                                                                                                                                                                     | Reduction in tidal land disturbed by reclamation landforms by 4.9 ha                                                                                                                                                                                                                                                   |
| <b>Marina and internal waterways</b>   | Marina and internal waterways encompassed 17.7 ha of tidal land                                                                                                                                                                                                                                                                                                                                | Marina and internal waterways encompass 10.5 ha of tidal land                                                                                                                                                                                                                                                                 | Reduction in tidal land disturbed by excavation of marina and internal waterways by 7.2 ha                                                                                                                                                                                                                             |
| <b>Breakwater design</b>               | The breakwater protecting the marina and internal waterways incorporated a mangrove conservation area that would be accessible for nature-based tourism                                                                                                                                                                                                                                        | The breakwater has been redesigned as a rock wall with no public access once constructed                                                                                                                                                                                                                                      | Reduced footprint and increased distance between the project footprint and Cassim Island. Proposed mangrove habitat within the conservation buffer was considered undesirable as shorebirds roosting at Cassim Island prefer an open landscape. The rock wall will provide roosting habitat for some shorebird species |
| <b>Fison Channel and turning basin</b> | The project footprint included the turning basin and inner Fison Channel. The referral included written material and plans indicating that capital dredging of the channel would be extended as far as necessary to ensure safe navigation depth, but the actual distance could not be accurately determined at referral stage. The minimum predicted dredge volume was 500,000 m <sup>3</sup> | Once detailed bathymetry was obtained and channel design basis confirmed with Maritime Safety Queensland (MSQ), the full extent of the channel dredging could be identified, and dredge volumes calculated. Up to 530,000 m <sup>3</sup> of dredging is required to upgrade the channel, including allowance for overdredging | Channel design was optimised to provide a balance between safe navigation outcomes and minimising dredge volumes                                                                                                                                                                                                       |

### 1.3.2 Project Proponent

Walker Group Holdings Pty Ltd is the Proponent for the Project. Lang Walker AO is the majority shareholder of both Walker Group Holdings and Walker Corporation Pty Ltd, which was established in the 1960s and is one of Australia's largest private, diversified development companies. Walker Group has delivered over 1,000 projects and are experienced across all areas of the property spectrum, from residential through to master planned communities, retail, commercial, industrial and resort living. Walker Group's future development and construction pipeline is valued at \$32 billion and includes 30,000 lots of land, 10,000 apartments, 11 commercial towers and 300 ha of industrial land in Australia, and 46,000 dwellings in Malaysia, with other major projects in New South Wales, South Australia, Victoria, Queensland, and Fiji.

Walker Group has undertaken some of the most environmentally complex development projects in Australia and internationally.

For example, at Rhodes Waterside in Homebush Bay, Sydney, a related entity of Walker Group transformed Rhodes Waterside from a brownfield site into a vibrant community, driven by the NSW Government's desire to remediate the



Rhodes Peninsula ahead of the Sydney 2000 Olympic and Paralympic Games. The site had been used as a foundry, paint factory and chemical plant for more than 70 years. Over four years, as principal contract, Walker Civil Engineering completed the full remediation of the site to stringent residential standards, with no residual contamination left behind. All of the works were completed without incident in accordance with strict environmental guidelines and to the satisfaction of key stakeholders (Orica (the landowner), the independent site auditor, Concord Council (now part of City of Canada Bay Council), NSW Environment Protection Authority and Planning NSW). On the former CSR part of the site, hydrocarbon contaminated soil was pumped to the surface and treated off-site. The soil contamination was treated by way of 'land farming', entailing the mixing and aerating of the soil to evaporate hydrocarbons and initiate organic biological processes to break down contaminants. On the former Berger Paints part of the site, which was found to have lead contaminants, material was excavated and disposed of off-site in accordance with EPA guidelines at the time. The remediation works cost \$100 million. The project won the Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) 2001 National Award for Remediation.

At Senibong Cove in Johor Bahru, Malaysia, the Proponent has undertaken land reclamation on soft soils and remediation of an old prawn farm to deliver an 81-ha, \$1.3 billion mixed use development, including residential, retail, marina and hotel uses in addition to a Customs Immigration and Quarantine complex for boat transit to Singapore.

More recently, in Paramatta, NSW, the Proponent successfully remediated a 3-ha site to enable the development of the highly successful Parramatta Square in a joint venture arrangement with Parramatta City Council. Contaminants included asbestos, general solid waste and general solid waste CT1, which resulted from fill of unknown origin being imported to the site, impacts from historical uses, and improper disposal of hazardous building materials. The works successfully implemented to achieve the remediation and validation aims included (i) waste classification and off-site disposal of existing fill materials at the site; (ii) asbestos removal and clearance/validation of asbestos containing material (ACM)/pipes/ infrastructure and localised ACM impacted fill; and (iii) validation of the natural materials (top of residual clay).

The Proponent details are:

Entity: Walker Group Holdings Pty Ltd  
Address: Level 21 Governor Macquarie Tower, 1 Farrer Place, Sydney NSW 2000  
Contact: (02) 8273 9600

## 1.4. Project Need

### 1.4.1 Dredging Requirements

The Fison Channel is a critical artery for the transport of residents, businesses, commuters, school children and visitors between the mainland and Minjerribah (North Stradbroke Island). Similar to road and rail networks, the artificially deepened channel and turning basin at Toondah Harbour needs to be continuously maintained through maintenance dredging and, at times, developed further through capital dredging.

Capital and maintenance dredging are essentially the same process with the only difference the areas being dredged. Capital dredging is carried out to enlarge or deepen existing channel and port areas or to create new ones while, as the name implies, maintenance dredging is required to remove sediment build up in existing channels and port areas to maintain current operational capacity. Capital dredging is one-off event while maintenance dredging is a routine requirement in most operational ports and harbours which generates lower volumes of material for disposal. Maintenance dredging to remove sediments that accumulate in the Fison Channel and turning basin already occurs at



approximately five-year intervals and will continue to be required to ensure all tide access for ferries and recreational vessels.

The capacity of Toondah Harbour to operate efficiently directly impacts on the Redlands' ability to grow and develop a sustainable nature and culture-based tourism sector. Widening and deepening of the Fison Channel and turning basin through capital dredging have been identified as necessary to enable vessels to pass each other and manoeuvre safely in the turning basin, and to future-proof the harbour by enabling it to accommodate larger ferries. Consequently, beneficial reuse of the dredge material by placing it within another part of the PDA has been proposed in accordance with national best practice for disposal of dredge material.

#### 1.4.2 The Need for Tourism Enabling Infrastructure

Redland City has approximately 335 km of coastline, with Moreton Bay and the bay islands offering a range of natural and recreational attractions for residents and tourists to the region. Despite this, there are few mainland foreshore locations in the Redlands that provide a focal point for waterfront leisure, recreation and cultural activities.

Toondah Harbour has been the subject of development proposals dating back to the 1930s and barge operations have been ongoing since 1972. The site currently provides regular passenger and vehicle ferry services to Minjerribah (North Stradbroke Island) bringing significant numbers of visitors to the city. Information provided by the existing ferry operators indicates that more than a million passengers and 200,000 vehicles move through Toondah Harbour each year, with the existing facilities considered to be operating at capacity during peak periods. The North Stradbroke Island Visitor Research Program (Queensland Government 2018) found that, between 2011 and 2018, annual growth in tourist visitations (day trippers and overnight) averaged around 10 per cent each year. Any future growth will be limited by the existing, deficient harbour infrastructure and lack of amenity for visitors.

RCC's *Tourism Strategy and Action Plan 2015-2020* provides a region-specific strategy for improving local tourism and amenity. The strategy highlights several issues that restrict tourism growth in the region including:

- Lack of higher end and large-scale accommodation to support groups, conferences and functions;
- Lack of jetty/boating infrastructure;
- Parking issues, particularly around ferry access points;
- Lack of a clear identity for the Redlands and its past – no destination identity;
- Lack of quality visitor information services;
- Lack of public boat moorings/berthing;
- Limited bay access; and
- Limited quality dining.

The delivery of a dedicated tourism precinct is a key action in the tourism strategy. The Project will directly address and improve on a number of these issues by delivering a broad range of infrastructure including visitor accommodation and various activities that will heighten visitors' and residents' experience of Toondah Harbour and southern Moreton Bay, and create a new destination and set of attractions for the Redlands.

RCC's *Economic Development Framework 2014-2021* acknowledges that Toondah Harbour is a catalytic project for the construction and tourism sectors in the Redlands, with the potential to drive employment and tourism development in the region. Conversely, *ShapingSEQ*, suggests that the emergence of the Cleveland-Toondah Harbour as an area that supports specialisations in priority sectors of the economy including tourism, health and knowledge and professional services, will not occur unless the Toondah Harbour PDA is delivered and connections between the area's economic components improved.



### 1.4.3 North Stradbroke Island Economic Transition Strategy

In May 2016 the Queensland Parliament passed legislation to substantially cease sand mining on Minjerribah (North Stradbroke Island), with operations halting in December 2019. Sand mining first commenced on the island in 1949 and was its major industry.

The Queensland Government's North Stradbroke Island Economic Transition Strategy (NSIETS), released in 2016, was formulated to ensure a strong, sustainable economy for the island. The Queensland Government allocated \$20 million to implement the strategy and ensure a strong, sustainable economy for the island through a range of actions:

- Leveraging \$40 million private sector and stakeholder co-investment;
- Growth in international and domestic tourism markets including establishment of new adventure tourism operations;
- New training and educational service offerings; and
- Growth in existing local business services and development of new industry sectors focusing on seafood, forestry and timber products and traditional medicines, through capability development and business development funds.

The Minjerribah Futures program extended the work of the former NSIETS and is delivering a range of infrastructure projects on the island to support its new future as a leading destination for cultural and nature-based tourism. Supported by the Queensland Department of Tourism, Innovation and Sport (DTIS), with strong involvement of the Quandamooka Yoolooburrabee Aboriginal Corporation (QYAC), the projects that make up the Minjerribah Futures program include:

- Better walking and recreational tracks;
- Quandamooka Art, Museum and Performance Institute (QUAMPI);
- Yalingbila Bibula (Whale on the Hill) tourism attraction at Mulumba (Point Lookout);
- Minjerribah Ganaba, the redeveloped education, training and employment centre;
- Public art in Gumpi (Dunwich), Pulan (Amity Point) and Mulumba (Point Lookout); and
- The Dunwich (Gumpi) master plan to enhance Dunwich's role as the gateway to Minjerribah.

Toondah Harbour complements the island's transition to a more diversified economy and the Minjerribah Futures program by:

- Offering workforce retraining and employment opportunities;
- Providing suitable mainland tourism infrastructure to support the growth of sustainable nature and culture-based tourism industry;
- Facilitating the Quandamooka People's access to infrastructure to support cultural tourism activities, education and sales of tours and products on the mainland and the island; and
- Stimulating longer-term economic and industry growth, particularly in the day tripper market.

The Project will contribute to realising the potential for Minjerribah (North Stradbroke Island) and Moreton Bay to become great Australian tourism assets by enhancing and future proofing the regional gateway to the island and the bay with modern, safe marine facilities and a vibrant mainland destination that will grow visitation to Cleveland and the Redlands Coast ahead of the Brisbane 2032 Olympic and Paralympic Games.

In March 2022, the South East Queensland City Deal (SEQ City Deal) was announced, including \$41 million for an upgrade of the Dunwich ferry terminal at Junner Street. The Toondah Harbour and Dunwich upgrades will improve connectivity and promote sustainable nature and culture-based tourism to Minjerribah (North Stradbroke Island).

#### 1.4.4 Project Related Employment

An economic assessment was carried out for the Project and included as Chapter 21 of the Draft EIS. During peak construction periods the Project is expected to support 390 jobs at the construction site annually and a further 380 jobs through indirect industrial and consumption support (supply chain, consumables, etc). This gives a total possible annual employment impact of 770 jobs at peak in supplying industries and in other sectors supplying consumers. Once construction is completed the Project has the potential to generate an additional 357 FTE jobs split between the mainland and Minjerribah (North Stradbroke Island). This represents a critical source of growth for the Minjerribah economy, noting the loss of economic activity and employment following the cessation of sand mining in 2019.

### 1.5. Project Alternatives

Alternatives to projects can take several forms including achieving similar development outcomes in a different location, altering some aspects of project design to minimise environmental impacts or doing nothing and maintaining the current situation. For Toondah Harbour, another alternative also applies which is the 'dredge and disposal offsite' option. This option looks at issues associated with carrying out capital dredging of the Fison Channel and turning basin and disposing of the material somewhere offsite. Multiple options for placement of the material have been investigated.

#### 1.5.1 Alternative Locations

Toondah Harbour is unique in SEQ based on its location, PDA status, tenure, history and existing land uses. Toondah Harbour is a marine transport hub built on reclaimed land that has provided access to Minjerribah (North Stradbroke Island) for business, residents, and visitors for decades. It has been subject to proposals dating back 90 years to develop a major boat harbour for recreational vessels and a 'harbour town' development, while providing improved marine transport facilities.

Toondah Harbour was declared a PDA in 2013. The location was identified by the Queensland Government and RCC on the basis that the area includes the existing marine facility, a public boat ramp for recreational vessels and several large lots in public ownership. The PDA development scheme states:

*"Toondah Harbour is a key waterfront destination within Cleveland, Redland City and South East Queensland. Development establishes a strong community identity which benefits from the indigenous heritage and amenity of Moreton Bay and a mixture of residential, retail, tourism, commercial and community uses.*

*As the principal point of departure and arrival for ferry services between the mainland and North Stradbroke Island, Toondah Harbour is "the gateway to Straddie". Water based transport and boating facilities are provided including separate terminals for passenger and vehicle ferries, a marina, boat industries and marine services. The harbour is also utilised for the launch of recreational boats from trailers.*

*Development will revitalise the ferry terminal and improve the transport function by better integrating ferry and bus services and managing car parking. Development establishes Toondah Harbour as a high quality urban environment that capitalises on the high amenity of Moreton Bay and provides opportunities for a range of activities including outdoor dining, tourism facilities, residential, commercial development, marina and a public beach."*

The Queensland Government and RCC have approached Toondah Harbour as a major urban and infrastructure renewal project. In this case, the complete upgrade of a dilapidated ferry terminal that has served the mainland and island communities and visitors for decades is to be facilitated by the integrated redevelopment of underutilised state and council assets.



The Project is tied to the declared PDA and the identified parcels of land in public ownership. The proposed development outcomes have been endorsed by the Queensland Government and RCC through the making of a statutory development scheme for the Toondah Harbour PDA. The development scheme was subject to public notification.

The Proponent has entered into binding commercial agreements that are tied to specific landholdings in the PDA and is therefore not in a position to consider alternative locations in this EIS process. Notwithstanding, studies preceding the PDA declaration have been reviewed below to provide context as to why Toondah Harbour is considered the best location for the proposed development.

#### *1.5.1.1 Southern Moreton Bay Islands Water Transport Alternative Route Strategy*

RCC commissioned a study investigating potential water transport routes to the Southern Moreton Bay Islands (SMBI), namely Russell, Karragarra, Lamb and Macleay Islands (GHD 2011). The scope of the study was not to recommend a single preferred location or structure, but to identify a range of feasible locations for multiple types of marine infrastructure. This included:

- Alternative and/or additional vehicle ferry routes;
- Alternative and/or additional water taxi routes; and
- A bridge from the southern end of Russell Island to the mainland.

While new or existing routes to Minjerribah were not within the scope of the study, Toondah Harbour was assessed as a potential location to provide vehicle and passenger ferry services from the mainland to the SMBI.

The study assessed 12 mainland sites for their suitability for marine transport infrastructure based on:

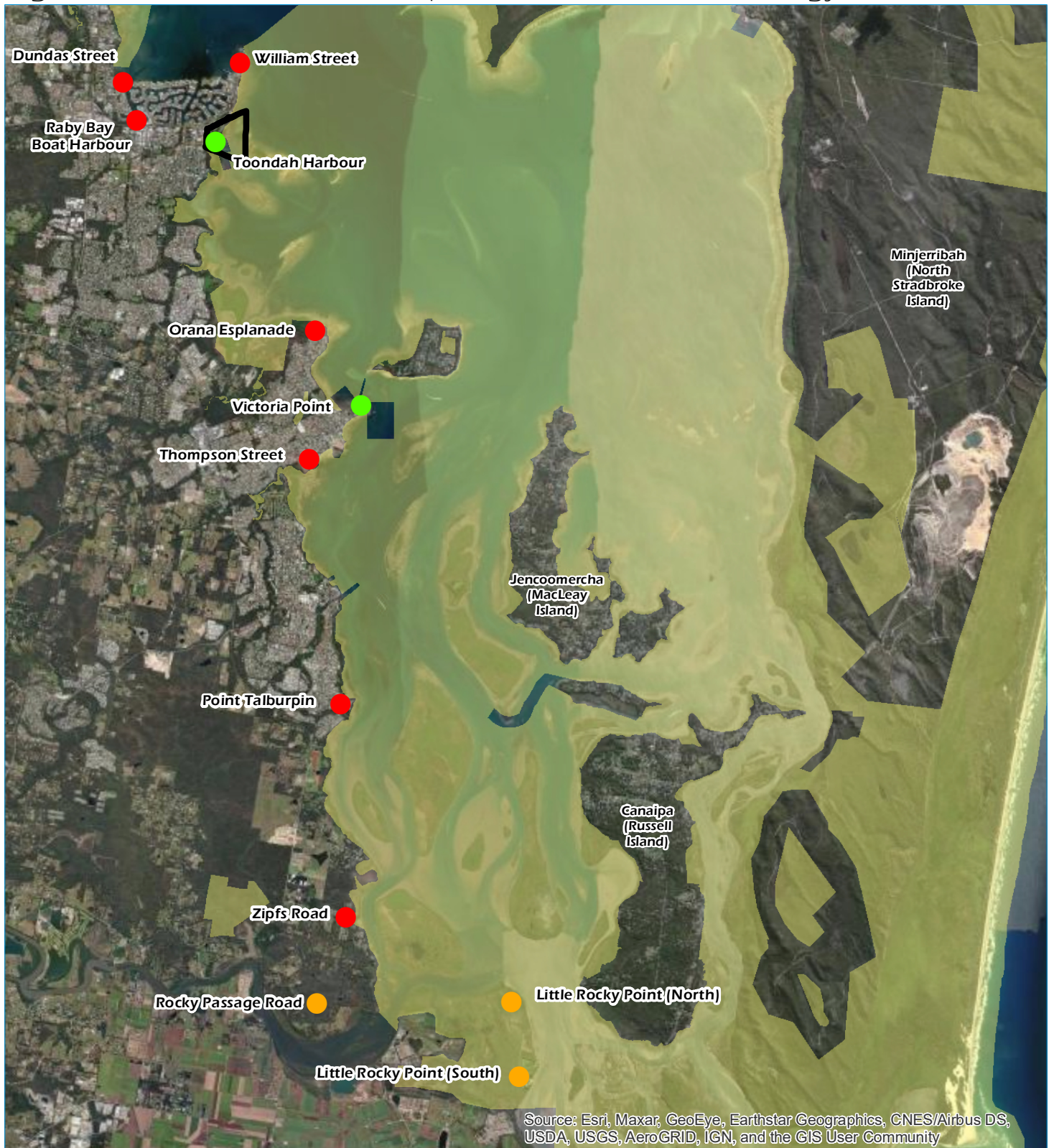
- Land zoning, tenure and availability;
- Shelter from prevailing wind and waves;
- Access to navigable water without dredging;
- Conflicts with use of other marine infrastructure (e.g., recreation boat ramps and moorings); and
- Extent of environmental constraints.

The 12 sites are shown on Figure 1-4 with extracts of relevant sections from the SMBI Water Transport Alternate Route Strategy included as Appendix 1-D. The study found seven of the 12 sites were highly constrained (i.e., unfeasible due to engineering requirements or prohibitive infrastructure costs) and did not warrant further assessment. All five of the remaining sites would require works within the MBRS. Of these, three sites located north and south of the Logan River, would require significant clearing of remnant vegetation and mangroves, therefore were discounted.

The two remaining sites were Toondah Harbour and Victoria Point Reserve. Victoria Point Reserve is the location where passenger ferries currently leave the mainland for Coochiemudlo Island. The study only assessed works required for additional passenger ferry services at Victoria Point, as vehicle ferries would have major capital dredging requirements. Even then, the study concluded that the introduction of additional passenger ferry services at Victoria Point was not recommended due to significant site constraints, including a large capital dredging requirement, traffic and parking issues and conflicts with existing commercial and recreational uses.

Key constraints identified for Toondah Harbour were capacity constraints associated with the existing Minjerribah (North Stradbroke Island) vehicle ferry services and the potential for upgrades to impact on Cassim Island. The study concluded that any additional water transport services would be dependent on an extensive redevelopment of the harbour facilities. As the Project addresses these capacity constraints and has been designed to minimise impacts on Cassim Island, Toondah Harbour is the only mainland alternative location with potential to provide vehicle and passenger ferry services from the mainland to the SMBI.

Figure 1-4: SBMIs Water Transport Alternate Route Strategy Mainland Sites



Legend

- Moreton Bay Ramsar site
- Toondah Harbour PDA
- Prohibitive engineering and cost constraints
- Serious environmental constraints
- Least constrained

Toondah Harbour EIS



## 1.5.2 Alternative Designs

### 1.5.2.1 Structure Plan Layout

The Project is located within the Toondah Harbour PDA therefore is subject to the Toondah Harbour PDA Development Scheme (the development scheme) which was made under the ED Act in May 2014 and is administered by EDQ.

The development scheme is the regulatory document that controls land use, infrastructure planning and development in the PDA overriding the Redland City Plan and ShapingSEQ. Importantly, the development scheme does not override regulatory requirements under the EPBC Act, *Nature Conservation Act 1992* (Qld) (NC Act), the *Marine Parks Act 2004* (Qld) (MP Act) or the *Environmental Protection Act 1994* (Qld) (EP Act).

Spatial outcomes for the Toondah Harbour PDA are governed by the development scheme's land use plan and infrastructure plan. The land use plan includes a vision statement, structure plan, precinct plan and a height plan.

The vision statement describes the overall outcomes to be achieved for the PDA, including:

- Creating a mixed-use node incorporating medium density residential development, commercial offices, cultural facilities, tourist accommodation including a boutique hotel, and restaurants, cafes and shops;
- Providing appropriate infrastructure and parking facilities in accessible locations that have regard to coastal resources; and
- Providing a marina with accompanying marine services, boating industry and car parking.

The infrastructure plan details the infrastructure necessary to support the proposed land uses within the PDA and identifies applicable infrastructure charges. Key infrastructure requirements that inform the design and master planning for the Project include:

- Development of a new plaza and passenger ferry terminals;
- A ticketing and information centre for Moreton Bay and Minjerribah (North Stradbroke Island);
- Capital dredging to straighten, widen and deepen the Fison Channel;
- A staged marina and associated marine engineering and dredge spoil disposal strategy;
- Extension of the existing turning basin to meet the needs of the existing and future vehicle ferry fleet;
- Provision to create new land, including the development of piers/land reclamation areas which may accommodate dredge spoil disposal and be utilised for marine services and marine based maintenance service industries and urban purposes;
- Opportunities to extend GJ Walter Park into the bay with a north facing tidal area, through land reclamation and dredge spoil disposal; and
- Establishment of a new mixed-use plaza as civic space and an attractive arrival point into the PDA.

The land use plan includes a proposed structure plan for illustrative purposes. This plan indicates preferred locations for infrastructure and reclamation areas and may be considered by some stakeholders as an 'alternate design' (Figure 1-5).

This structure plan was created by government in the absence of detailed geotechnical and engineering studies being carried out and did not take a range of factors into account including dredge volumes, sediment characteristics, prevailing winds and currents and coastal dynamics. It has a number of issues, including:

- The dredge volumes generated by this plan would far exceed the reclamation areas requiring disposal of significant amounts of dredge material in an alternate location;
- Many features of the structure plan, including a north-facing marina with a second public navigation channel, are considered sub-optimal for navigational safety due to the prevailing winds and currents in Moreton Bay;

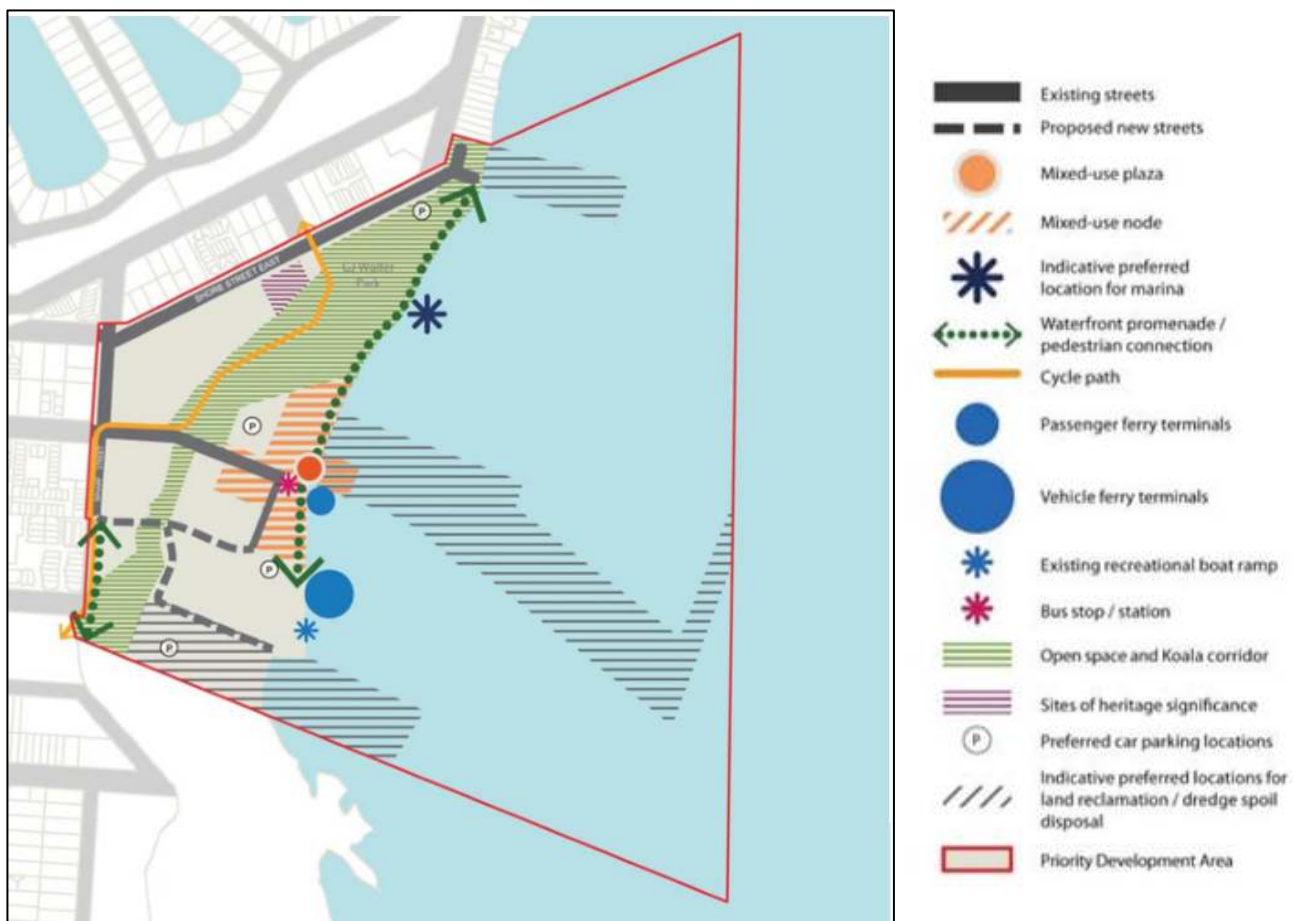
- A second navigation channel would further impact on the MBRS; and
- The southern arm of reclamation joins up the mainland and Cassim Island, which would result in disturbance to migratory shorebirds using the roost at high tide.

Accordingly, the footprint indicated by the structure plan cannot be achieved by the Proponent while also addressing the planning and infrastructure outcomes required by the development scheme, other legislative requirements.

Importantly, the structure plan demonstrates that reclamation areas within the MBRS and the Moreton Bay Marine Park have always been considered necessary for the development of Toondah Harbour. This is reinforced by the provisions for Precinct 4 – Marina and Water Based Development in the precinct plan. The intent of this precinct is to *“include development and works undertaken in water based areas of the PDA. This will include the opportunity for a staged marina and land reclamation. Land reclamation, through the ongoing settlement of dredge spoil, provides an opportunity to create land that will be utilised for development in the future. Any areas created through land reclamation will be integrated with the adjoining precinct”*.

This approach is consistent with the National Assessment Guidelines for Dredging 2009 (NAGD), which state:

*“It is important to recognise the potential value of dredged material as a resource. Possible beneficial uses include engineered uses (land reclamation, beach nourishment, offshore berms, and capping material) agriculture and product uses (aquaculture, construction material, liners) and environmental enhancement (restoration and establishment of wetlands, upland habitats, nesting islands, and fisheries)”*.



**Figure 1-5: The Toondah Harbour PDA Development Scheme Structure Plan.**



#### 1.5.2.2 Master Plan Optimisation

The proposed master plan, development footprint and construction methods for the Project have been refined and optimised over several years to balance economic and engineering feasibility with the best possible environmental outcomes. Optimisation of the design has included:

- Keeping the proposed widening and deepening of the Fison Channel and turning basin to the minimum standard required for safe navigation of multiple vehicle and passenger ferries to and from the harbour, while noting that any reduction in channel widths or depths would impact on the safety and utility of the harbour;
- Aligning the upgraded channel with the existing channel as much as possible to minimise dredged material volumes;
- Designing reclamation areas with the intent of achieving a net balance between dredging and reclamation volumes, minimising imported fill material requirements—quarry sourced material is generally only required for rock armouring of seawalls and treatment and stabilisation of dredge material;
- Ensuring the design of the Project does not impact on the Cassim Island and Nandeebie Claypan high tide roost sites—design features to ensure impacts are avoided include:
  - Separating the proposed landform from Cassim Island;
  - Incorporating a non-navigable waterway through the outer arm of the development, which will connect the marina and internal waterways to the bay to disperse tidal flows; and
  - Providing a minimum 250 m buffer between the Cassim Island and Nandeebie Claypan high tide roosting areas and any dwellings or sources of disturbance;
- Separating recreational vessels and ferries to improve safety and direct recreational vessels away from the Cassim Island high tide roost site; and
- Incorporating fish friendly design features when planning and constructing marine structures, revetment walls and fishing structures<sup>1</sup>.

The Project design has also considered the land use and urban design requirements identified in the PDA development scheme and balanced them with engineering and environmental constraints to achieve an environmentally sustainable outcome.

#### 1.5.3 Alternate Project: Capital Dredging, Disposal Offsite

Upgrading the existing marine facilities at Toondah Harbour, including the Fison Channel, to meet current and future needs requires the following activities at a minimum:

- Expansion of hardstand and car parking areas;
- Incorporation of a transport interchange in the ferry precinct designed to relevant standards, which will connect the new ferry terminal with Cleveland CBD and the Cleveland Rail Station by public transport, taxis and private vehicles;
- Construction of new commercial facilities to provide offices and storage for ferry operators;
- Upgrading loading and unloading facilities for vehicle and passenger ferries;
- Offering berths for tourism and charter operators—these businesses are currently unable to access the harbour due to capacity constraints:

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<sup>1</sup> Refer to the Factsheet - What are fish friendly structures? (DAF, last viewed on 5 April 2022 at [www.daf.qld.gov.au/business-priorities/fisheries/habitats/policies-guidelines/factsheets/what-are-fish-friendly-structures#:~:text=Examples%20of%20infrastructure%20that%20may,mooring%20buoys%20and%20fishing%20platforms.](http://www.daf.qld.gov.au/business-priorities/fisheries/habitats/policies-guidelines/factsheets/what-are-fish-friendly-structures#:~:text=Examples%20of%20infrastructure%20that%20may,mooring%20buoys%20and%20fishing%20platforms.)

- Dredging to widen and deepen the Fison Channel and turning basin to meet minimum navigational safety standards for a two-way channel and allow for the anticipated growth of ferry operations and increasing ferry sizes.

Without land reclamation, an alternative dredge material disposal method would be required.

#### 1.5.3.1 *Assessment of Disposal Options*

For the purposes of alternate option assessment, dredge material quantity is assumed to be up to 530,000 m<sup>3</sup> as any alternative options meeting minimum navigational safety requirements would generate a similar volume of material to what is proposed for the Project.

Options available for disposal of capital dredged material from the Fison Channel and turning basin are:

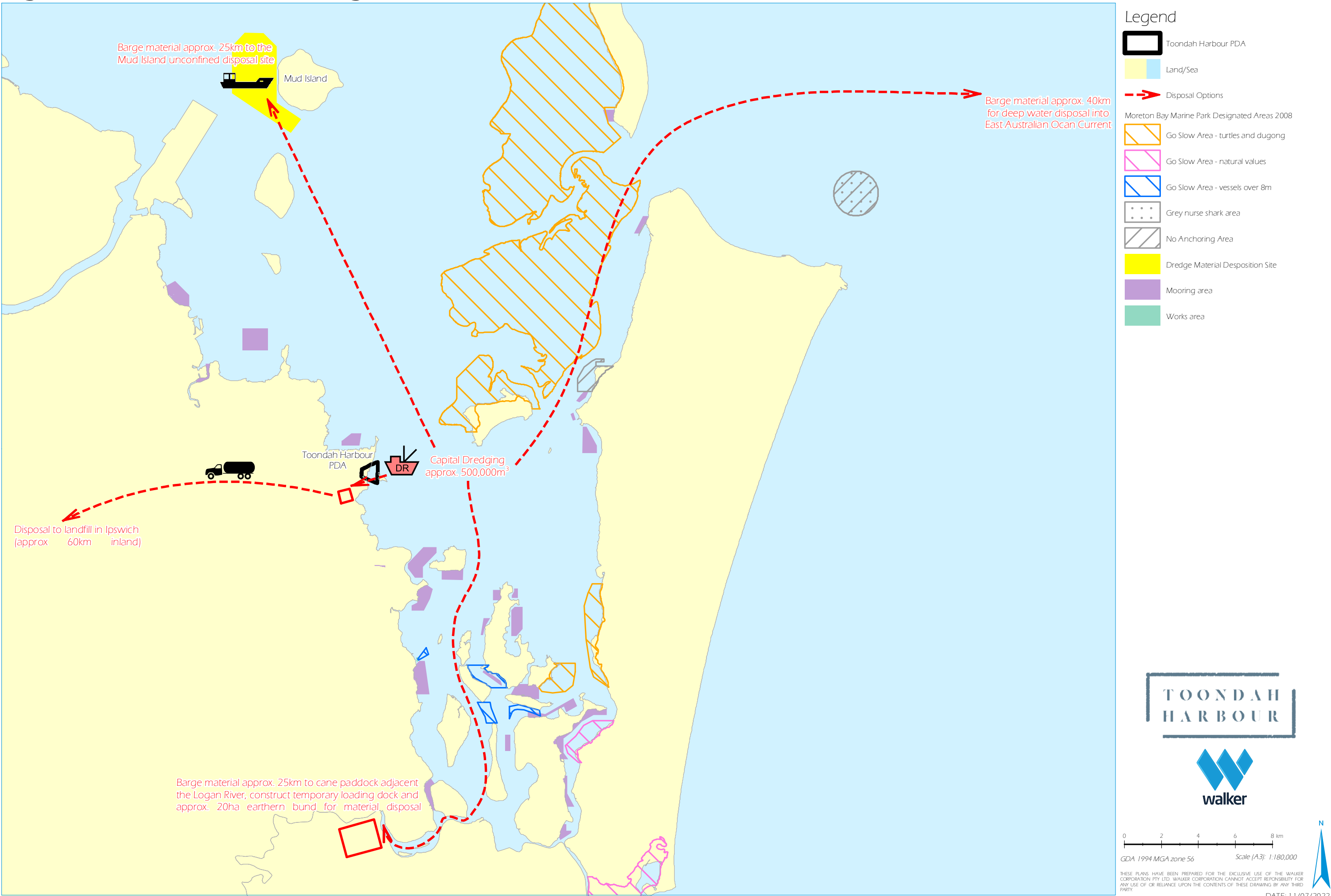
- On-land disposal;
- Unconfined ocean disposal within Moreton Bay at the designated Mud Island material disposal area (the only approved ocean disposal area in the Moreton Bay Marine Park);
- Deep-water ocean disposal offshore of the bay islands; and
- Potential environmental enhancement applications for placement of the capital dredged material.

Detailed descriptions of each option as well as an assessment of environmental, engineering and economic issues is provided as Appendix 1-E with conceptualisations of each option shown on Figure 1-6. Key issues identified by the assessment of disposal options include:

- None of these disposal options will provide significant additional amenity or destination appeal (e.g., foreshore parkland), therefore would not meet the primary goals of the development scheme.
- Lack of available land in the Redland City LGA makes on-land disposal of this volume of material technically unfeasible, as the material would need to be moved long distances. The only land in south-western Moreton Bay large enough to accept all of the dredge material are cane paddocks to the south of the Logan River, approximately 25 km from the dredge area. The maximum distance sediment can be transported using a pipeline and pumps is 11 km before the process becomes too inefficient to be effective. If the sediment was transported by barge, dredging would be required to provide access from the ocean, and mangroves and intertidal habitats would need to be removed to construct an unloading dock.
- If a smaller parcel of land could be obtained near Toondah Harbour, dredging would need to be staged over several years with material allowed to dry in the on-land facility before being trucked to a permanent disposal site further inland. This option may be technically feasible from an engineering standpoint, however, is considered unfeasible due to logistical and financial constraints and social impacts. These include:
  - A fleet of more than 50 trucks would be required to carry out more than more than 45,000 trips over a period of approximately 18 months to remove the total volume of dredged material from capital dredging of the Fison Channel and turning basin. This would result in approximately 100 trips per day. Without the proposed upgrades to Middle Street and Shore Street East, that would be unlikely to occur without the Toondah Harbour Project, significant traffic congestion and road wear around the PDA, the Cleveland CBD and local residential streets would result.
  - Ultimately, treated and dried material would need to be placed at a landfill site. The only landfills with the capacity and facilities to accommodate this volume of material are decommissioned mine sites near Ipswich, such as the New Chum site, which is approximately 60 km by road from Toondah Harbour. Given the significant amount of truck movements and distances to travel, there is significant potential for safety and environmental issues to arise. Traffic and infrastructure along this corridor would also be impacted.



Figure 1-6: Alternate Dredge Material Disposal Options Conceptualisation



- Costs associated with dredging and transporting the material to a facility like New Chum would be approximately \$80 million (Appendix 1-E), excluding waste levy fees at the disposal site. Dredge material would be considered a category 2 regulated waste (non-toxic salts, including, for example, saline effluent) which attracts a levy fee of \$115 per tonne (Appendix 1-E), therefore total levy fees would be in the order of \$60 million. The total cost of dredging and transporting material inland for disposal at landfill would be approximately \$140 million.
- Ocean disposal options have regulatory and logistical constraints that would make them very difficult to implement:
  - Deep ocean disposal would require temporary storage at the Port of Brisbane to transfer the material into a large barge for transport offshore. It is unlikely that the Port would provide access to land for temporary storage given the high value of the land for port and industrial purposes.
  - The disposal vessel would likely be required to travel to the north of Mulgumpin (Moreton Island) in order to safely navigate outside of the Bay Islands, which would have significant cost and timing issues.
  - The Mud Island material disposal area within the Moreton Bay Marine Park (and adjoining the MBRS) is currently utilised for disposal of uncontaminated maintenance dredged material from boat harbours and marinas throughout Moreton Bay. While it is an open disposal site, it has finite capacity due to the relatively shallow depth of the area. Approvals for the Mud Island material disposal area are held by MSQ. The Port of Brisbane is usually consulted prior to third parties being able to utilise the site, given that capacity of the material disposal area to receive material from the port is crucial to its ongoing operations. As part of the alternative options assessment, MSQ and Port of Brisbane Limited were consulted to seek feedback on their likely response to a potential application for disposal of more than 500,000 m<sup>3</sup> of capital dredged material at the Mud Island material disposal area. Both organisations indicated they would not support such an application as the material disposal area's primary purpose is for the disposal of maintenance dredged material (Appendix 1-E). MSQ currently only allows capital dredged volumes of up to 5,000 m<sup>3</sup> to be disposed of at Mud Island, as loss of the resource (from it being filled up prematurely) would make maintenance dredging of existing infrastructure cost prohibitive and potentially reduce or shut down operations of existing marine infrastructure, such as boat ramps and boat harbours in Moreton Bay.
- The cost associated with any of the above options would be met entirely by public funds. The cheapest option for disposal of the dredged material would be the Mud Island material disposal area at a cost of approximately \$40 million, however disposal at that site is not intended for capital dredged material and is not supported by either MSQ or Port of Brisbane. Upgrades to the ferry loading and on-land facilities at the harbour including additional car parking, loading areas, entry road and terminal building would cost at approximately \$50 million resulting in an overall cost for 'upgrading the port' of about \$90 million.
- An assessment of the economic feasibility (Appendix 1-E) based on the cheapest scenario, disposal at Mud Island material disposal area, found that the 'dredging only' option would have a benefit cost ratio (BCR) of 0.2. The Building Queensland Business Case Development Framework states that generally projects need to have a BCR of at least 1 to be accepted by the Queensland Government as economically viable. A BCR of less than 1 means that the investment option generates losses.

The assessment of alternative options to dispose of material from the capital dredging of the turning basin and Fison Channel found that onshore placement is likely to be unfeasible due to the lack of land near Toondah Harbour to place the material or act as a storage and rehandling area. Therefore, further consideration was given to offshore disposal either outside of the bay islands or within Moreton Bay at the Mud Island material disposal area.

Deep ocean disposal would minimise environmental impacts from a dredge plume perspective, however, is considered technically unfeasible.



Unconfined disposal of the material in the Mud Island material disposal area could give rise to indirect impacts to water quality and benthic communities due to resuspension and transport of dredged material post-settlement.

Both of these unconfined ocean disposal options would avoid impacts associated with reclamation of the mudflat habitat at Toondah Harbour. However, the same mudflats are expected to reduce over time as a result of sea level rise. The Queensland Government predicts a 0.8 m sea level rise by 2100. If that was to occur, the entire mudflat in the Toondah Harbour PDA would be submerged in nearly all tidal conditions.

Neither of the unconfined ocean disposal options would be economically feasible, nor would they meet the minimum cost benefit thresholds that are normally required for a project to be supported by Queensland Government funding.

Consideration was also given to potential environmental enhancement applications for placement of the capital dredged material (such as restoration and establishment of wetlands) in accordance with the NAGD; however, this was not deemed practical given that:

- The volume of material from the Project (530,000 m<sup>3</sup>) limits the options to create habitat.
- Adjacent coastal lands are either urbanised or already have conservation value.
- Surrounding habitats in Moreton Bay are generally in good condition with few known degraded areas where constructed tidal wetlands would be beneficial.

#### 1.5.4 The 'Do Nothing' Option

The 'without project' option would leave Redland City LGA and SEQ in the untenable position that has persisted for many years at Toondah Harbour—poor amenity, safety and operational issues, limited foreshore access, and dilapidated facilities that already cannot cater for peak demand. These conditions do not provide a suitable platform to support or foster the desired and necessary growth in the tourism industry envisaged for the Redlands Coast; neither will they contribute to the economic transition of Minjerribah (North Stradbroke Island) to a sustainable nature and culture-based tourism-based economy. The Project must also be viewed in the context of the important 'region shaping' period for the SEQ associated with the staging and legacy of the 2031 Brisbane Olympic and Paralympic Games. Without quality infrastructure and experiences, Redland City could be left behind other parts of SEQ in terms of international tourism on a longer-term basis.

Redland City is a regional community with a relatively low employment self-sufficiency rate, an ageing population (the percentage of people aged 60 and over is growing at around double the SEQ average) and high cost of living. Redland City is also falling behind other regional locations in achieving amenity, proximity and efficiency to appeal across the age range and business sectors. Not proceeding with the Project will remove the large-scale economic opportunity and private capital investment associated with the catalytic harbour development for which the PDA was designed.

As discussed above, the Queensland Government predicts a 0.8 m sea level rise by 2100. If that was to occur, the existing ferry terminal, car parking and GJ Walter Park will be inundated during tides greater than mean high water springs (MHWS). In a 'without project' scenario, protecting this infrastructure from rising sea levels and severe weather events will likely necessitate the installation of a seawall and other public works to mitigate coastal inundation.

#### 1.5.5 Advantages and Disadvantages of Alternate Options

Short, medium- and long-term advantages and disadvantages for each of the project alternatives are summarised in Table 1-2. All alternative options are either unfeasible or have major environmental, economic or engineering challenges that exceed the challenges of redeveloping Toondah Harbour.

Table 1-2: Summary of Short, Medium, and Long-Term Advantages and Disadvantages of Project Alternatives.

| Option                                                               | Advantages                                                                                                                                                                                                                                                                                                                                | Disadvantages                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Alternative location                                                 | <ul style="list-style-type: none"> <li>No feasible alternative location was identified as existing infrastructure renewal is at the core of the Project. In addition, the Proponent's proposal is tied to specific land in the Toondah Harbour PDA under binding commercial agreements with the Queensland Government and RCC.</li> </ul> | <ul style="list-style-type: none"> <li>If passenger and vehicle ferry services were implemented in any other location in southern Moreton Bay, significant engineering challenges and similar or greater environmental impacts as would occur at Toondah Harbour would result.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Alternative designs                                                  | <p>Not applicable as the structure plan is not able to be implemented. The Project master plan has been designed in accordance with the statutory planning instrument for the Toondah Harbour PDA and has already been optimised to balance functionality and amenity with environmental and engineering constraints</p>                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Alternative option: Port upgrade only (dredging without reclamation) | <ul style="list-style-type: none"> <li>Direct impacts to mudflats avoided in the short term and medium terms. However, sea level rise is likely to reduce the same habitat in the long term.</li> </ul>                                                                                                                                   | <ul style="list-style-type: none"> <li>Direct and indirect impacts associated with dredging and ocean disposal would occur in the short term.</li> <li>Decreased capacity at the Mud Island material disposal area in the long term.</li> <li>Disposal at the Mud Island material disposal area is not supported by key stakeholders – MSQ and Port of Brisbane.</li> <li>Increased ongoing maintenance dredging requirements in the medium and long term.</li> <li>No private capital sourced investment in community and transport infrastructure.</li> <li>Not likely to be supported by State Government funding in the short, medium or long term.</li> <li>Significant capital costs to carry out the works in the short term (~\$90M).</li> <li>Minimal new landside facilities means no cost benefit in the longer term.</li> <li>No urban renewal of the Toondah Harbour area or new amenity associated with the foreshore parks, etc in the short, medium and long term.</li> </ul> |
| Do nothing                                                           | <ul style="list-style-type: none"> <li>No environmental impacts associated with the dredging or reclamation would occur in the short or medium term.</li> </ul>                                                                                                                                                                           | <ul style="list-style-type: none"> <li>Poor amenity, safety and operational issues, limited foreshore access, and dilapidated facilities that cannot cater for existing peak demand would persist in the short, medium and long term.</li> <li>No catalytic urban renewal project would occur, which will discourage investment in the Redlands and see a range of economic opportunities and benefits foregone.</li> <li>Existing infrastructure and open space would be unprotected against future sea level rise.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                               |



## 1.6. EIS Structure

### 1.6.1 Document Structure

The EIS is partitioned into four parts which have been designed to align with the level of detail and focus of the various stakeholders and reviewers. The parts are as follows:

- **Contents and Executive Summary;**
- **Volume 1: Project Description and Planning Framework** – includes background information on the Project and Proponent, a detailed description of project construction and operations, and the planning framework;
- **Volume 2: Existing Environment and Potential Impacts** – detailed analysis and risk assessment of potential for direct and indirect impacts from the Project to the physical, biological and social environment;
- **Volume 3: MNES Significant Impact Assessment** – includes assessment of significant residual impacts to MNES using published guidelines, method and assessment of impacts to the ecological character of the MBRS, assessment of other cumulative and consequential impacts on MNES, and outlines the proposed management framework and offsets strategy to provide an overall conservation outcome for Moreton Bay.

### 1.6.2 Project Team and Independent Advisory Panel

The EIS project team reflects the unique challenges presented by the Project and sensitive environments of Moreton Bay. Subsequently, a range of specialist consultants were identified with extensive experience in their areas of expertise, with many also having significant knowledge of the existing environmental values within and adjoining the Project footprint. Members of the EIS project team are listed in Appendix 1-F including key team members and relevant experience.

The Project has been informed by open, transparent and independently peer reviewed science through an Independent Advisory Panel (IAP) established for the purpose. The IAP was convened by the International WaterCentre, a subsidiary of Griffith University.

The IAP is made up of independent experts across the key scientific, environmental and technical disciplines to provide independent review and advice into the EIS, ensuring the integrity and rigour of the process. The IAP has worked with the Proponent and the EIS project team to ensure that the underpinning planning, design, methods, analysis, synthesis and recommendations of the EIS are challenged and verified through the provision of independent scientific advice, review and direction.

The specific role of the IAP was to ensure that:

- The technical components of the EIS were designed, implemented, integrated and reviewed in accordance with best practice in the scientific community;
- Information presented in the EIS is informed by the best scientific information and provides adequate supporting technical information for the design and assessment and regulatory approval of the various stages;
- The quality assurance and control procedures provide adequate confidence in the EIS;
- The design and analysis of the EIS and outputs are fit-for-purpose; and
- Alignment and opportunities for collaboration with the Project are identified to reduce duplication of efforts and enhance knowledge sharing.

The IAP reviewed a preliminary draft of the EIS and provided its final recommendations letter to the Proponent on 1 October 2021. Four overarching recommendations were included in the letter to assist in the finalisation of the EIS. These were:

**Recommendation 1:** Formally adopt an adaptive management framework for proposed activities. Adaptive management (or ‘learning by doing’) is particularly needed when developing management activities without a strong precedence – and some of the activities proposed, designed to minimise impacts to a Ramsar wetland site, and will require “learning by doing”. The Project is being designed as a staged project, which helps enable effective adaptive management.

**Recommendation 2:** Production of a ‘digest’ document for public dissemination that summarises the key messages in an easily assimilated manner. A public-facing document synthesising key results and implementing effective science communication principles can be produced to communicate findings to a broader audience.

**Recommendation 3:** An upfront description of the purpose of sections. The summaries and major conclusions are at the end of the relevant sections—a flipped approach of providing the summaries and conclusions at the beginning would help communicate the most important findings.

**Recommendation 4:** Recognition of the importance of ecological ‘tipping points’ also known as ecological thresholds. These are ecosystem states where small changes in environmental conditions result in large or rapid shifts in ecological status or function.

The IAP also made a broader recommendation that the Queensland Government and the Australian Government finalise the ecological character description (ECD) and develop a management plan for the MBRS, which could take into consideration the cumulative impacts of future developments on the site.

The IAP commended the Proponent’s commitment to ensure that the Toondah Harbour Project was informed by open, transparent and independent peer-reviewed science.

The IAP final recommendations letter is included as Appendix 1-G.