walker

TOONDAH HARBOUR

CHAPTER 30
CONCLUSION

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30. Conclusion

30.1. Background and Description

Toondah Harbour is an existing marine facility located in the suburb of Cleveland in the Redland City LGA. It 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. In June 2013, at the request of RCC, the Queensland Government declared Toondah Harbour a PDA under the *Economic Development Act 2012* (Qld) (ED Act). 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. 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.

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.

The Toondah Harbour Project includes the following key components:

- Capital dredging of up to 530,000 m^3 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.
- 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.

In developing the overall master plan for the Project, the Proponent and the EIS project team identified eight overarching design principles to be achieved through the project design process. The principles represent the environmental, engineering and land use outcomes desired for the Project.

The design principles are:

1. The Project will not cause any direct change to the geomorphology of Cassim Island or the Nandeebie Claypan, during or because of dredging and reclamation works. The reclamation may result in localised changes to coastal processes, but these will be minimised to a level that will not cause erosion or accretion at the high tide roost sites.
2. Project design will seek to achieve a mass balance between dredging and reclamation so that no dredged material is required to be disposed outside of the reclamation area. Importation of material to stabilise the landform will be minimised through construction methods and staging of the reclamation and dredging process.
3. Channel design will provide for the safe navigation of all vessels within the Fison Channel, turning basin, marina and internal waterways. The channels and waterways will be designed in accordance with the latest standards and in consultation with the relevant authorities, including the Regional Harbour Master (Brisbane) and the Queensland Department of Transport and Main Roads (TMR).
4. The Project must incorporate at least 3.5 ha of foreshore public open space. Recreational areas must respond to and integrate with Moreton Bay and the MBRS and provide an appropriate interface between the development and natural features of the bay. Opportunities for community education, participation and awareness of wetland values and functions will be considered in the design and layout of the public open space.
5. Reclamation and channel design will allow for flushing within internal waterways and the marina to maintain acceptable water quality. The design will incorporate features such as culverts and bridges where necessary to improve flushing.
6. Ongoing maintenance dredging requirements, including potential disposal options, will be considered in the design of the Fison Channel and internal waterways. Where possible, design features will be incorporated to reduce sedimentation in the channel and waterways, thereby minimising maintenance dredging requirements. An on-land facility will be incorporated within the development for disposal of dredged material from the marina and internal waterways. Ongoing maintenance dredging of the Fison Channel and turning basin will continue to be the responsibility of RCC and the Queensland Government, with disposal outside the Project footprint at the approved regional disposal grounds (Mud Island material disposal area) or elsewhere.
7. Design of the reclamation will minimise accretion outside of the Project footprint, in particular in front of Shore Street North residences. This area contains tidal mud flats that stretch for more than 100 m from the shoreline, therefore the existing coastal processes in Moreton Bay already create conditions for deposition of material in this area. The reclamation will not result in an observable increase in the area of tidal mudflat between the reclamation and Cleveland Point.
8. A "building with nature" approach will be adopted with a focus on mitigating sea level rise, infrastructure resilience, sustainable port development and ecosystem restoration.

These principles have been applied to all aspects of project design including land use planning, engineering design and construction methods.

30.2. Potential Impacts

30.2.1 Marine Impacts

Potential direct and indirect impacts from the Project on the marine environment include:

- loss of habitat directly under the reclamation and dredge areas;
- marine fauna becoming trapped or injured within the reclamation area;
- physical interactions with marine fauna (boat strike) during dredging operations;
- changes to sedimentation rates and turbidity (water clarity) during dredging and, to a lesser extent, construction of the reclamation bunds;
- release of contaminants from dredged material;
- disturbance of potential acid sulfate soils (PASS);
- spills of hydrocarbons and other contaminants;
- noise associated with dredging and reclamation activities as well as other marine works such as piling associated with the jetty structure at the ferry terminal;
- artificial light at night (ALAN);
- introduction of pest species;
- changes stormwater runoff quality and quantity;
- spills of hydrocarbons and other contaminants including litter; and
- increased human activity including boat usage.

The Project will result in the direct loss of marine and wetland habitat within the reclamation and dredging footprint including mangroves, seagrass, and unvegetated sand/mud. Some seagrass is likely to regrow in the proposed channel, as it did after the previous maintenance dredging of the existing channel undertaken by RCC in 2019.

Five threatened marine species have the potential to utilise habitats within or adjacent to the Project footprint: loggerhead turtle, green turtle, hawksbill turtle, dugong and Australian humpback dolphin. While dugong and marine turtles feed on seagrass, the Project footprint does not provide significant habitat for them, with population densities far higher on the Eastern Banks of Moreton Bay (the landward side of the bay islands). Australian humpback dolphin is found throughout the bay; however, the Project footprint is not part of their core habitat.

30.2.2 Terrestrial Impacts

Potential direct and indirect impacts from the Project on the terrestrial environment include:

- Temporary noise, dust and vibration associated with construction of containment bunds, excavation, treatment and compaction of marine sediments potentially impacting wildlife within and outside the Project footprint;
- Temporary generation of road traffic for the delivery of machinery and materials, as well as for workers attending the site daily, impacting on koala safety when crossing roads within and outside of the Project footprint, noting that most of the infill material would result from the channel dredging, which would minimise truck movements;
- Direct impact of removal of a small number of koala habitat trees within the Project footprint;
- Temporary noise, dust and human presence associated with civil works potentially impacting wildlife in the terrestrial and marine environments within and outside of the Project footprint;
- Temporary generation of traffic for the delivery of machinery and materials, as well as for workers attending the site, impacting on koala safety when crossing roads within and outside of the Project footprint;
- Erection of temporary fencing or other potential barriers to koala movement for terrestrial works, including temporary road traffic barriers, potentially affecting the movements of resident and transitory koalas;
- Traffic generated by the various residential, commercial and retail elements of the Project impacting on the safety of koalas crossing roads within and outside of the Project footprint;

- Recreational use of the Project footprint by new residents, a proportion of whom would be dog owners, as well as an increase in visitors from outside the Project footprint attracted by ferry terminal upgrades and improved amenity, causing disturbance to native species within the Project footprint.

With the implementation of the proposed mitigation and management measures, no significant residual impacts are expected on the terrestrial environment.

Only one primary koala food tree and 18 secondary food trees are within the Project footprint and will be removed as a result of construction works. Fifteen of these trees are within existing carpark plantings and are not considered to represent critical habitat for koalas due to the existing threats present in these locations. To mitigate this impact and enhance the value of the Project footprint as koala habitat, it is proposed to plant approximately 1,000 koala food trees with occasional shelter trees over an area of 1 ha within GJ Walter Park.

The Project will increase the potential for indirect impacts to koala through increased traffic generation internal and external to the Project footprint. The koala underpass beneath Middle Street will ensure the increased traffic at this location is not a barrier to koala movement. Further the Proponent proposes that measures will be identified and enacted by contributing to the establishment of a 'Koala Safe Neighbourhood' in Cleveland that incorporates the Project footprint and surrounds.

30.2.3 Migratory Shorebirds

Dredging and reclamation to accommodate the Project footprint will result in a permanent direct impact on 28.9 ha of tidal flat habitat that provides feeding habitat for migratory shorebird species. This area coincides with the seagrass and unvegetated mud/sand habitats. Tidal flat feeding habitat within the Project footprint is characterised as important habitat for migratory shorebirds under the EPBC Act since it occurs within the MBRS.

Due to density dependent factors, the loss of a relatively small area of feeding habitat in south-western Moreton Bay as a result of the Project is unlikely to result in a proportionate reduction in the population sizes in Moreton Bay of species such as eastern curlew, great knot, lesser sand plover and bar-tailed godwit that have undergone substantial population declines due to factors operating outside of Australia. Whether the loss of a relatively small area of feeding habitat in south-western Moreton Bay will result in a proportionate reduction in the population sizes of migratory shorebird species such as grey-tailed tattler, whimbrel, terek sandpiper, red-necked stint and common greenshank, whose populations have not declined, remains uncertain.

The implementation of a range of management measures to reduce indirect disturbance, such as fauna friendly lighting strategies and avoiding high noise generating activities during periods when shorebirds are most active, minimises potential impacts on areas outside of the immediate footprint. The Project is not expected to have significant residual impacts on migratory shorebirds using roost sites adjacent to the Project footprint.

30.3. Significant Impacts to MNES

The Toondah Harbour Project was made a controlled action under the EPBC Act as it has the potential for significant impacts on Wetlands of international importance; Listed threatened species and communities; and Listed migratory species.

30.3.1 Listed Threatened Species

Assessment against the relevant criteria for the threatened species Matter of National Environmental Signficance (MNES) found the following species are likely to be significantly impacted by the Project:

- Eastern curlew – Critically endangered;
- Great knot – Critically endangered;
- Lesser sand plover – Endangered; and
- Bar-tailed godwit – Vulnerable.

All four threatened species likely to be impacted are migratory shorebird species that use the mudflats where reclamation and dredging will occur as foraging habitat. It is of note that two of the species, great knot and lesser sand plover, have very rarely been observed using the mudflats. A single great knot was observed during one survey of the 49 carried out at the mudflats. That was in 2014 and the species has not been observed on the mudflats since that time. Two lesser sand plovers were observed during a single survey of the 49 carried out, which was in 2019. Eastern curlew is observed regularly at the site but in low numbers (average of 3 when present). They do not utilise the adjacent Cassim Island roost site and, while they were observed regularly at Nandeebie Claypan, this roost site is considered abandoned as no migratory shorebirds have been observed since 2019. The bar-tailed godwit is observed regularly in small numbers (average of 13 when present) as well as Cassim Island which they occasionally use as a mid tide roost site (i.e. they must find another site for roosting during high tides).

Importantly, significant impacts are considered likely for all four species due to a loss of critical habitat or 'area of occupancy' for that species. Tidal flats in Toondah Harbour are only considered critical habitat for these species as they are located within the Moreton Bay Ramsar Site (MBRS) and therefore automatically considered important habitat. If the site was not in the MBRS it would not meet any other criteria to be considered critical habitat for these species.

Dredging and reclamation will reduce the area of occupancy of the species in tidal flat feeding habitat by 0.29% within Moreton Bay. Moreton Bay likely retains significant carrying capacity in available foraging habitat for these species therefore it can be reasonably expected that these migratory bird species will utilise other foraging habitat nearby. Consequently, the loss of a relatively small area of feeding habitat as a result of the Project is unlikely to result in a proportionate reduction in the population sizes of these species.

30.3.2 Listed Migratory Species

Assessment against the relevant criteria for the migratory species MNES found the following species are likely to be significantly impacted by the Project:

- Grey-tailed tattler;
- Whimbrel;
- Terek sandpiper;
- Red-necked stint; and
- Common greenshank.

Similar to the threatened species all five migratory species considered likely to be significantly impacted are migratory shorebirds. The dominant migratory species observed at Toondah Harbour were the Grey-tailed Tattler and Whimbrel.

Both species were observed consistently feeding on the mudflats within the Project footprint in low numbers (average of 12.5 and 7.6 when present for the grey-tailed tattler and whimbrel respectively) and both used Cassim Island as roosting habitat. Cassim Island is a significant roosting site for grey-tailed tattler in particular with an average of 655 birds observed whenever they were present. An average of 159 whimbrels and 32 terek sandpipers were also observed when present at Cassim Island. Based on these observations the roost site is considered internationally significant for grey-tailed tattler, and nationally significant for whimbrel and terek sandpiper.

While short-term disruption of roosting behaviour from noise and activity is possible at Cassim Island during construction, particularly revetment wall construction, the risk of disruption will be minimised by scheduling activities generating noise levels exceeding 60 dB(A) in the receiving environment of the high-density roost areas to the winter months when fewer migratory shorebirds are present. Disruption from long-term operational activities is unlikely once mitigation measures are successfully implemented, particularly the exclusion of non-motorised watercraft from entering the Cassim Island roost site.

The Project will result in the loss of 28.9 ha of feeding habitat for these species, which corresponds to 0.29% of the approximately 10,000 ha of important tidal flat habitat within Moreton Bay.

30.3.3 Moreton Bay Ramsar Site

The Project will result in the loss of wetland habitat including mangroves, saltmarsh, seagrass and unvegetated mud/sand. The area of wetland habitat being lost is relatively small and are well under 1% of comparative habitats in the Moreton Bay Ramsar Site (MBRS).

Potential for impacts outside of the Project footprint, including on adjacent high tide roost sites, is considered to be minimal with any minor impacts expected to be short term (e.g. construction noise) or activities that shorebirds will habituate to over time (e.g. increased pedestrian use of foreshore public open space and walking/cycle paths). The potential for disturbance will be further minimised through careful placement of designated walking tracks, use of exclusion fencing and educational signage.

As the Project is unlikely to have any significant impact on critical components and processes outside of its footprint, impacts to services will only occur at the local scale. Impacts to these services are expected to be minor and the Project will provide a range of benefits in the context of sustainable development to balance these minor impacts including:

- Creation of approximately 1.5 km of rockwall that will be designed to provide fish habitat and roosting habitat for a number of migratory bird species, including grey-tailed tattler, ruddy turnstone and terek sandpiper.
- Marine structures such as dolphins and jetties will provide habitat for fish species.
- Creation of oyster reefs within the Project footprint will provide further habitat for fisheries species.
- Stormwater treatment will reduce nutrient loads released into Moreton Bay during storm events given that the existing harbour currently has no treatment measures.
- The upgrade of the ferry terminal, turning basin and Fison Channel, and the provision of an education centre as well as a visitor information centre, will add significantly to the recreational, tourism and educational values of Moreton Bay, both of which are considered critical services of the MBRS.
- The interpretation and awareness raising of Aboriginal cultural heritage values through signage, public art and opportunities for land and sea country management and cultural and nature-based tourism activities will promote the Indigenous cultural heritage of Moreton Bay, which is considered a critical service of the MBRS.
- A 3.5 ha foreshore park including an education centre, providing for a range of recreational activities and community engagement with Moreton Bay.

Accordingly, a change in ecological character of the MBRS as defined by the Ramsar Convention will not result from the Toondah Harbour Project. While impacts will be localised and not result in a change to the ecological character of the

MBRS, a small area of the wetland (less than 0.02%) will be substantially modified resulting in a significant impact to a wetland of international significance under the EPBC Act.

While the Project is considered likely to have a significant impact as defined by the EPBC Act, avoidance and management measures will ensure impacts are contained to the Project footprint. The habitats impacted are not considered to provide significant or unique values in comparison to other similar areas with the MBRS.

Unavoidable residual impacts to wetland habitats within the MBRS resulting from the Project are:

- 2.5 ha of mangroves;
- 24.8 ha of seagrass, excluding 10 ha in the Fison Channel which are likely to recolonise; and
- 7.5 ha of unvegetated intertidal sandbanks and mudflats.

These residual impacts will offset through the implementation of a fund that will deliver a range of beneficial projects in the Redland LGA and broader MBRS providing an overall benefit to migratory birds and wetland habitats in the MBRS.

30.4. Environmental Offsets Strategy

The overall objective of the offsets strategy is to provide a conservation gain for the MNES impacted by the Project and an overall benefit to the ecological character of the MBRS.

Offset projects are particularly challenging to implement in coastal and marine environments where most available natural areas are under council or state government ownership. The complicated tenure arrangements and overlapping rights and interests make it difficult for non-government organisations to access such areas to undertake physical works or research activities.

As a result of these difficulties, the Proponent proposes to deliver a suite of direct and indirect offsets through a fund managed by a third party with the ability to access public land and obtain approvals not available to a commercial entity such as the Proponent. The fund will be established so that offset projects delivered through it meet the principles outlined in the EPBC Act Environmental Offsets Policy.

Using the Queensland financial offsets calculator, significant residual impacts to 28.9 ha of foraging habitat for threatened and migratory shorebirds, 32.3 ha of marine wetland habitats and 2.5 ha of marine plants requires a financial offset of $4.75 million.

The offset funds will be released in stages aligning with impacts associated with dredging and reclamation stages:

- The northern reclamation and stage 1 dredging will result in approximately 65 per cent of the significant residual impacts therefore $3.09 million will be provided for offset projects prior to the commencement of external sheet piling for the northern reclamation.
- The southern reclamation will result in approximately 35 per cent of the significant residual impacts therefore $1.66 million will be provided for offset projects prior to the commencement of external sheet piling. Initial works on the southern reclamation are expected to start approximately 5 years after project commencement.

The offset will be delivered through an established and experienced third party not for profit or government supported organisation (henceforth referred to as the Offset Fund Manager). While the funds from the Toondah Harbour Project will only be spent on offsets providing a conservation outcome for the significantly impacted MNES (habitat for migratory and threatened shorebirds, marine wetland habitats and marine plants) it is anticipated they will be a catalyst for further environmental investment. The Offset Fund Manager (OFM) may utilise grants, donations and other voluntary regulatory

(offset) contributions to fund essential and highly needed landscape-scale environmental works programs throughout SEQ to provide a benefit for Moreton Bay and its tributaries.

The OFM will establish an independent advisory group (IAG), including key stakeholder representatives, to provide advice and oversight for selection and implementation of projects under the fund. The IAG will be made up of scientific, community, government and industry members with knowledge and interest in Moreton Bay.

Delivery of environmental offsets through a third party not for profit or government supported organisation overseen by a panel of independent experts will ensure transparency in the process and provide positive conservation outcomes for the MNES impacted by the Project. It is expected that offset projects will be delivered within the Redland City LGA as well as the broader Moreton Bay area providing benefits at the local and regional scales. While the $4.75 million divested to the OFM from the Project will be used to provide an overall benefit for threatened and migratory shorebird species and wetland habitats, it is expected that it will be the catalyst for further financial contributions that will combine to provide significant conservation benefits to Moreton Bay.

30.5. EPBC Act Objectives

The objects of the EPBC Act are:

a) to provide for the protection of the environment, especially those aspects of the environment that are MNES; and
b) to promote ecologically sustainable development through the conservation and ecologically sustainable use of natural resources; and
c) to promote the conservation of biodiversity and to provide for the protection and conservation of heritage; and
d) to promote a co-operative approach to the protection and management of the environment involving governments, the community, land-holders and indigenous peoples; and
e) to assist in the co-operative implementation of Australia's international environmental responsibilities; and
f) to recognise the role of indigenous people in the conservation and ecologically sustainable use of Australia's biodiversity; and
g) to promote the use of indigenous peoples' knowledge of biodiversity with the involvement of, and in co-operation with, the owners of the knowledge.

The Toondah Harbour Project addresses these objectives by:

- Protecting the environment by implementing the project design principles to avoid and minimise impacts on MNES including the Cassim Island and Nandeebie Claypan high tide migratory shorebird roost sites. While some direct impacts to marine wetland habitats are unavoidable design features such as the placement of culverts and a non-navigable channel through the eastern arm of the development minimise indirect impacts outside of the project footprint.
- In addition to management through design the proposed adaptive environmental management framework will include constant review of project activities to ensure best practive measures are utilised and indirect impacts are minimised. Management measures such as the use of silt curtains around the dredge will further minimise the potential for indirect impacts to MNES.
- Toondah Harbour is an ecologically sustainable use of an existing marine facility already considered the 'gateway to Straddie'. There is a need for these facilities to allow residents and tourists to safely travel to and from the Island as well as future proofing the regional gateway to the island. Previous studies carried out by RCC have not identified a viable alternative location for similar facilities. The harbour has been operational since the 1970s and is subject to regular maintenance dredging events to maintain navigational depths to and from the

ferry terminal therefore is already subject to disturbance from the existing uses. The facilities at the harbour have become dilapidated and there is a need to widen and deepen the entrance channel to provide safe passage. The intent of the Project is to revitalise the existing harbour, provide improved infrastructure including an upgraded entrance channel and provide a high-quality urban environment.

- The Project will not affect Australia's international environmental responsibilities or agreements as impacts to these matters have been avoided where possible. Residual impacts that cannot be avoided will be offset through beneficial actions implemented via the proposed environmental offsets fund to provide an overall benefit to the Moreton Bay Ramsar Site and Migratory Birds.
- QYAC is the body responsible for determining ongoing risks to cultural heritage and have been consulted throughout the Project's lifecycle. Indigenous cultural heritage will be managed under a cultural heritage management plan (CHMP) specific to the Project.