Granite Island Causeway Frequently Asked Questions

Why do we need a new Causeway?

A condition assessment has identified that the existing Causeway was approaching the end of its useful life and a feasibility study into the potential upgrade options determined that retaining and refurbishing the entire existing structure was not viable.

Why can't we restore or reconstruct the existing Causeway?

In 2019, following the failure of another pile, GHD undertook extensive structural assessment on a bent by bent basis. It identified the location of original fabric and provided a structural assessment. GHD also engaged Flightpath (Heritage Architects) in 2019, to advise on urgent localised repair, participate in a Multi Criteria Analysis into the Causeway's retention and refurbishment options and prepare a Heritage Impact Statement that carefully considered the structural condition and Heritage Value.

GHD confirmed that only a very small proportion of the existing timber structure is original fabric and that existing timber elements have degraded to the point where they are no longer providing adequate support, resulting in the structure needing to be temporarily propped.

Restoration was considered as part of the initial structural review. A multi-criteria analysis was undertaken and it was concluded that restoration of the existing structure would require major intervention and alteration of the State Heritage Place to meet current technical and safety standards whilst incurring higher whole of life costs.

The reconstruction of the existing structure would also completely shut off access to Granite Island for a prolonged period of approximately eighteen months. This would have a detrimental impact on the local community and tourism in the area.

It is important to realise that two main end portions of the existing Causeway will be retained and conserved. The important mainland and curved island sections of the Causeway will be retained at each end and integrated with the urban design and wayfinding improvements.

Why can't the piles just be replaced?

From a constructability perspective, the replacement of the piles would require a complete deconstruction of the Causeway substructure in the vicinity of the pile, because piles cannot be driven in the same location as an existing pile. This would require a complete reconstruction of the Causeway, rather than member-by-member restoration, which is not feasible.

The reconstruction of the existing structure would also completely shut off access to the island for a prolonged period of approximately eighteen months. This would have a detrimental impact on the local community and tourism in the area.

Further, the proposal for a timber reconstruction was assessed as being able to achieve a 25 year design life. Extension of life requires a higher maintenance regime and a program of element replacement that is likely to be required from “year 20” on a five year program, with associated costs.

Why can’t the piles be wrapped?

Pile wrapping was considered as one of many options during the feasibility investigation, however it was discounted as a viable treatment method.

When the core of the timber pile may be compromised at the pile head (where it directly connects with the crosshead) then pile wrapping alone is not a viable method.

The piles on the Granite Island Causeway have multiple issues including weathering/rot, marine borer attack, and white ant damage. The pile connections to the Causeway headstocks in many instances have been compromised, where multiple bolts, plates and connections have been applied in the past which has weakened the structural integrity of these connections. Pile wrapping is not effective at addressing the degradation at the connection points, as wrapping cannot be effectively applied over a connection.

Finally, notwithstanding the technical limitations of this construction methodology in the context of the Granite Island Causeway, pile wrapping would also substantially alter the appearance of the structure by increasing the diameter and the covering of timber piles with composite wrapping. As has been demonstrated by other repair attempts, this would significantly alter the visual appearance and aesthetic appeal of weathered marine timber in this listed State Heritage Place.

History of the Causeway?

In the late 19th century, South Australian trade activities were focused on the River Murray, with the Port of Goolwa a major hub for wheat and wool. The construction of the railway to Victor Harbor provided an export outlet to the sea, with the establishment of a reasonably sheltered port near Granite Island. The construction of the Causeway, breakwater and cutting at Granite Island was required once Victor Harbor was established as the main seaport for River Murray trade. A jetty, including the Victoria Pier spur and its structures, was constructed and officially opened in 1864 where cranes loaded cargo onto ships.

As trade intensified and larger ships required anchorage, there was an increasing demand for the Victoria Pier to be extended to Granite Island and a new wharf built in deeper water. The pier was extended to Granite Island in 1875 and became known as the “Causeway” and a railway was laid on it, providing access to the newly constructed wharf or “Working Jetty”.

By the time of its completion, ships were even larger and the Working Jetty and wharf proved to be in water too shallow. Plans for the deep-water Screwpile Jetty commenced in 1878 along with the breakwater. The Cutting through the granite along the north-east coast of Granite Island was completed in 1879 in order to

extend the road/tramway to the new Screwpile jetty which opened in 1881, followed by the completion of the breakwater in 1882.

Chronology of development

The development of the Causeway, Screw Pile Jetty, Breakwater and Cutting is summarised in the following chronology.

- 1857 – Victor Harbor is surveyed and declared safe all-weather anchorage
- 1862 – Work begins on building Victoria Pier
- 1864 – Victoria Pier is officially opened on 4 August
- 1872 – Work begins on extending the Victoria Pier to Granite Island in July
- 1875 – Work on the extension to Granite Island (Causeway) and Working Jetty is completed
- 1878 – Contracts are let for construction of Screwpile Jetty and breakwater on Granite Island on 13 August
- 1881 – Screwpile jetty is used for the first time on 3 November
- 1882 – Breakwater is completed on Granite Island
- 1895 – Horse drawn tramway is introduced on the Causeway to Granite Island
- Early 1950s – Repairs are undertaken to Causeway
- Mid 1950s – Victoria Pier spur and its structures are demolished
- 1956 – Working Jetty and wharf are demolished
- 1957 – Causeway is rebuilt and Screwpile Jetty reconditioned
- 1994 – Steel piles installed to Causeway in place of several deteriorated timbers
- 1997 – Repairs to Causeway decking take place
- 2002 – Repairs to 93 timber piles to the Causeway take place
- 2019 – Partial collapse of the Causeway triggers emergency repair works and temporary propping

Why has the Causeway been closed at times since the works were carried out earlier this year?

Following the failure of a structural pile in January 2019, DIT undertook emergency temporary works to the existing structure to maintain continued safe access to Granite Island.

If winds are forecast to be 75km/h or greater, the Causeway will be closed to all vehicle traffic, including the horse-drawn tram. If winds are forecast to be 100km/h or greater, the Causeway will be closed to vehicles and pedestrians, to ensure public safety.

Following the closure and once winds have subsided, the Causeway will be inspected to ensure no damage has occurred and it is safe for use, before being re-opened.

DIT advises the public to be very careful around jetties during strong winds.

What was the work undertaken on the Causeway in 2019?

In late 2018, State Government funding was committed to refurbish the existing Granite Island Causeway and preliminary planning work was scheduled to commence in 2019.

Following the failure of a structural pile in January 2019, the Department for Infrastructure & Transport and (DIT) commissioned a detailed condition assessment and structural review of the entire Causeway. The condition assessment concluded that the structure had reached the end of its life and directed major causeway refurbishment or replacement within a 12 – 24 month period.

As a result DIT undertook emergency temporary works to the existing structure to maintain continued safe access to Granite Island.

What are the concerns with the existing Causeway?

- Much of the original timber has been replaced by new timber, steel and recently temporary props to stabilise the structure and provide short term safety and access to Granite Island.
- Only approximately 12.5% of the original structure below deck remains. Above deck, including all handrails, have been completely replaced over the years and none of it is original.
- In 2019 the Causeway partially collapsed and is currently propped by temporary bracing. The existing structure was assessed to enable repairs and maintain temporary safe access to Granite Island.
- A significant number of components of the old Causeway have been assessed as being of poor to failed condition with very advanced deterioration. This poses major safety, maintenance, costs, and access issues, requiring ongoing monitoring, checking and propping to maintain safety, which is not sustainable.
- Of the significantly deteriorated components are 98% of the timber piles, which if they were replaced, would result in no original piles remaining; 100% of the bracing, 30% of crossheads, and 69% of balustrade posts.

What are the benefits of building a new Causeway?

- The new structure would provide a holistic, design solution of similar design appearance and simplicity with a 100 year design life that creates an elegant local landmark, respectful of heritage and place.
- The new Causeway will be integrated with the retained portions of the existing Causeway at the mainland and island.
- The new Causeway will continue to deliver and enhance social and economic benefits to the region and provide a long-term solution that is environmentally sensitive.
- Continuation of the historic horse drawn tram operation’s which have been compromised by the restrictions due to the condition of existing Causeway.
- New Causeway achieves disability access compliance and provides improved pedestrian amenity.
- The Causeway will provide, a pedestrian priority zone and with separation of pedestrians and horse drawn tramway.
- The Causeway will provide uninterrupted, reliable access to the island

- The new Causeway is to include three rest areas, with locations mirroring existing Causeway whilst providing improved seating and interpretive signage;
- The new Causeway will be able to provide ongoing access to Granite Island with a modern structure that accentuates, reflects and respects its historical significance.
- Delivery of a “whole of life” solution that minimises ongoing maintenance costs.
- Retention and restoration of a significant portion of the Causeway which allows an appreciation of the original fabric and sightlines.
- This project will also enable the existing Causeway to remain open to pedestrians, horse drawn tram and the existing small business and key stakeholders during the construction of the new Causeway. The operation of the existing Causeway will continue to be subject to current operating restrictions and construction staging requirements for the new Causeway.
- Installation of new and improved boat ramp, which will better accommodate the requirements of the commercial tourism operators that currently utilise this asset.
- Provides more efficient full access to and from Granite Island for emergency services.
- Opportunities for public realm investment which will improve people’s appreciation of the structures and locality through historic storytelling, interpretive signage and public art including the reuse of original timbers from the carefully dismantled central portion of the Causeway;
- Installation of new fox gate to protect local fauna.

Where will the new Causeway alignment go?

The new Causeway is proposed to be constructed adjacent to the existing Causeway, offset 10 metres to the east of the current alignment (narrowing at each end). The new Causeway will follow both the alignment and the height of the existing Causeway.

What are the dimensions of the new Causeway?

The length will be approximately 630 metres with a width of 6 metres, an increase of 2 metres to comply with design codes and standards and allowing disability compliance and improved pedestrian amenity access to Granite Island.

The wider Causeway will allow improved accessibility for pedestrians, and clearance past the horse tram. The wider walkway will greatly improve the safety of pedestrians together with the addition of rest areas (7.5 m width at the rest areas).

During construction will the existing Causeway remain open?

Yes, the existing Causeway is to remain open to pedestrians, horse drawn tram and the existing stakeholders until completion of the new Causeway. The operation of the existing Causeway will continue to be subject to current operating restrictions (structural safety and weather) and construction staging requirements for the new Causeway.

I attended an information session in 2019, what happened to the community's feedback?

The project team held two information sessions in late 2019 to receive valuable feedback from the community on the concept plan that was developed at the time. The information was collated and provided to the project team. This has been used when considering best possible design solutions.

Who is being consulted and how often will the community be updated?

DIT is engaging with government and non-government organisations, local businesses, the community, key stakeholders including Aboriginal groups. The community will be informed about the project through various information sessions and the project web page. Members of the public are encouraged to register to have their details added to the project mailing list to receive project updates and information as it becomes available. To register your details or for the latest project information visit www.dit.sa.gov.au/gicauseway

Does the Causeway impact Aboriginal Heritage?

The Causeway project aims to capture and highlight the important Aboriginal cultural and heritage values that exist in the area.

The Department has undertaken an extensive process of consultation and engagement with the Ngarrindjeri and Ramindjeri representative bodies in determining the management of the cultural and heritage aspects of the area. Every effort has been, and will continue to be made throughout the the project to avoid and minimise any impact to Aboriginal Sites, Objects and Remains as required by the Aboriginal Heritage Act 1988.

Heritage surveys were conducted with the Traditional Owners of the area, with the findings informing the heritage management process and the appropriate approvals process. As a result, a Section 23 Authorisation under the South Australian Aboriginal Heritage Act 1988 was sought and acquired for this project. This process included broad consultation with the Traditional Owners of the area, with their opinion and guidance viewed as a very welcome and valuable asset to the successful delivery of the project.

The Aboriginal communities have also been actively engaged and kept informed on the management and design of the Cultural Heritage Management Plan for the area.

Will the heritage of the Causeway and surrounding area be maintained?

The Granite Island Causeway is one element of a State Heritage listed item on the SA Heritage Register, in relation with the connection between the mainland and Granite Island. Other elements include the Cutting, Screw Pile Jetty and Breakwater, all of which remain. The Causeway is currently partly located within Granite Island Recreation Park. The listing recognises the historical significance of the elements as port facilities that were built to serve as the ocean port for the River Murray trade.

The Causeway project aims to maintain respectful contextual relevance with regard to State Heritage and Traditional Owners. Potential impacts have been identified and will be taken into consideration. No archaeological sites have been identified to date on the northern coast of the island, plausibly due to the area previously being subject to major disturbance from harbor works, quarrying and road construction.

What economic benefit will the new Causeway provide Victor Harbor?

A key driver to the Granite Island Causeway Project is to provide the community and region with economic benefit. The Causeway will continue to be a major tourism drawcard for Victor Harbor and also the Fleurieu Peninsula, and will deliver and enhance social and economic benefits to the region and provide a long-term solution that is environmentally sensitive.

What will happen to local businesses and tourism operators such as the Funfair/Girdlers, Kiosk, food vans, camel rides etc?

The department will work closely with City of Victor Harbor, local businesses and tourism operators throughout the project.

This project will enable the existing Causeway to remain open to pedestrians, horse drawn tram and the existing small business and key stakeholders until completion of the new Causeway. The operation of the existing Causeway will continue to be subject to current operating restrictions and construction staging requirements for the new Causeway.

The boat ramp to the east of the Causeway will be closed to public during construction and alternative boat launching facilities will be located at the Bluff Marina. ***The Project will provide advance notification to stakeholders of any changes in access to Granite Island.***

When will the main construction commence?

Island Causeway expected to commence in March 2021 subject to approvals.

How will the new structure be built?

Commencing at the Victor Harbor landing and moving towards Granite Island, a progressive system of piling and deck installation will be used. A leading “front” crane will drive and install the piles, with a second crane following and laying precast concrete decking onto the newly installed piles. A total of 82 steel piles and 82 precast concrete decks will be installed.

Whilst it will be necessary for piling works to occur to establish the structure, these works will be short in duration, undertaken during day light hours and are not expected to cause disruption to the local community. Some noise disturbance can be expected at times while these works are completed, however they will be managed to minimise disturbance as much as practically possible.

It is anticipated that piling works will be scheduled for approximately 2 hour time slot twice per week. In each time slot, 2 piles will be driven, with the day and time dependent on prevailing weather conditions and marine activity.

When will the project be completed?

The new Causeway is expected to be operational for late 2021, subject to approvals and weather permitting.

What is proposed to be done with the existing Causeway?

Once the new Causeway is constructed, subject to approval it is proposed to decommission the existing causeway and carefully dismantle the middle portion of the existing structure, retaining the existing Causeway at each end.

Retained portions of the Causeway at each land end will be repaired and enhanced as viewing platforms, designed as part of the landings to each end, with integrated signage and allow an appreciation of the original fabric and sightlines.

Salvage material will be carefully dismantled and used for repair of retained portions and also reused in landscaping, public art, interpretation and wayfinding.

Subject to approval, decommissioning is expected to be completed in the second half of 2022.

Management of potential impacts to Whales, Penguins and other Fauna

The Department is committed to the protection of the environment and the project design and construction methodology reflects this commitment. During the planning phase of the project, an assessment was undertaken to determine the management measures required to mitigate potential impacts to whalers, penguins and other fauna.

The waters around the Granite Island Causeway are located in a Habitat Protection Zone of the Encounter Marine Park. The broader area provides habitat to a variety of plants, birds (including Little Penguins), mammals (including whales), sharks and syngnathid (including seahorses, pipefish and sea dragons). The protection of whales, penguins and other sensitive marine fauna was considered throughout the planning and design of the Project.

Construction works associated with the Project (particularly piling work) can generate underwater noise which has the potential to impact marine fauna. The design of the Project and construction methodology has been assessed and will be managed to minimise and avoid such potential impacts. Local knowledge has been sought during consultation with experts from Flinders University, the Department of Environment and Water and members of the Save the Granite Island Penguins committee to support such assessment.

Noise modelling and recommendations regarding the management of underwater noise impacts have been developed in accordance with the Department’s Underwater Piling Noise Guidelines (2012) and recent globally recognised peer reviewed research,

namely Southall et al. (2019). These guidelines include measures that have been used successfully across Australia, including for repair work previously undertaken on the Granite Island Causeway.

The Project was referred to the Commonwealth Department of Agriculture, Water and the Environment

In accordance with the Environment Protection and Biodiversity Conservation Act 1999 (the EPBC Act), due to the presence of Commonwealth protected species which are known to occur in the area i.e. Southern Right Whales, Humpback Whales and the Australian Sea-Lion. The Commonwealth Government confirmed the project would not require formal assessment (i.e. Not a Controlled Action), if undertaken in a Particular Manner. A summary of the particular manners / control measures include:

- All piling for construction of the new Causeway will be undertaken with the use of a modified piling gate which has been developed especially for this project. Refer to Figure 1 for a diagram of this unit.
- For whales, a shutdown zone (or exclusion zone) of 1 kilometre in all seaward directions from piling activity will be adopted, where piling works will cease if a whale enters the zone. For sea-lions and penguins, a shutdown zone (or exclusion zone) of 300 metres in all seaward direction will be adopted, where piling works will cease if a penguin or sea-lion enters the zone (in water). The indicative extents of the shutdown zone is provided in Figure 2.
- An observation zone of 1.25 kilometres will be continuously monitored during and 30 minutes prior to piling works for the presence of whales. The indicative extent of this zone is shown in Figure 2.
- The visual monitoring of the observation and shutdown zones will be undertaken by two dedicated specially trained and qualified marine fauna observers.
- Soft start procedures will be adopted during all piling works. This procedure allows for a slow build-up of piling power (and associated noise) over a period of at least 10 minutes. This method provides an additional safeguard to allow any whales (or other noise sensitive fauna) to move away from any areas of discomfort.

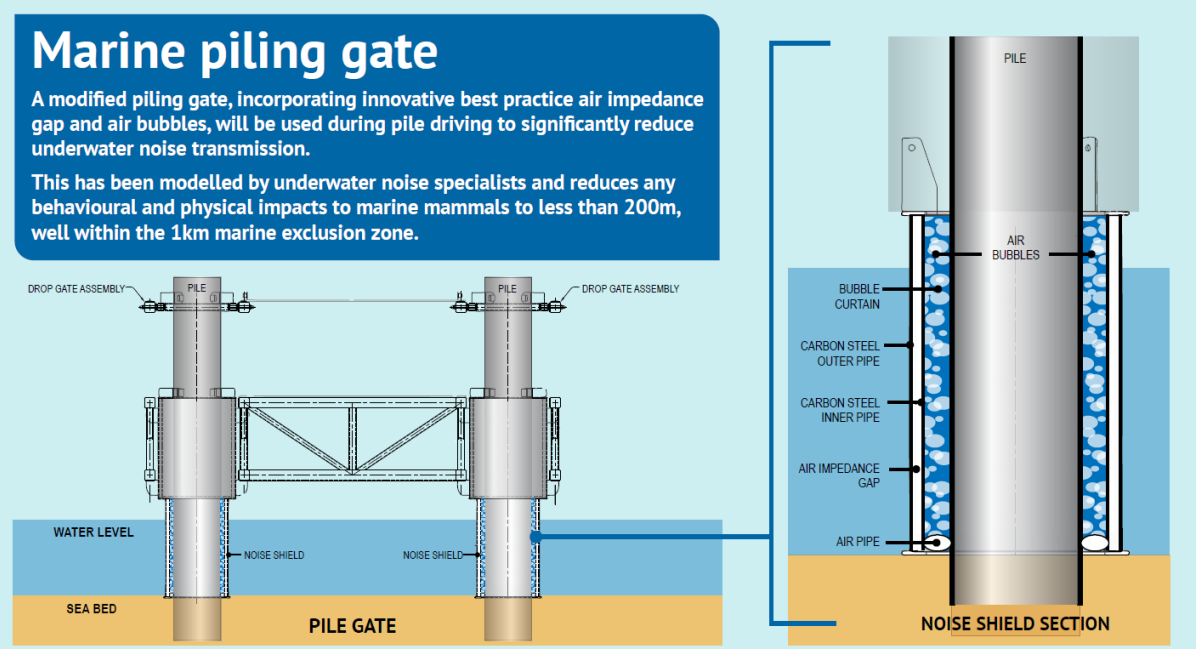

Figure 1 Concept Design for Underwater Noise Mitigation

With the adoption of the detailed mitigation measures, the risk of behavioural disturbance to whales is considered low. Furthermore, the adopted shutdown zone 'exclusion zone' is significantly greater than the modelled noise impact zone which is based on widely accepted physical injury criteria and commonly adopted behavioural impact criteria. Noise monitoring will be undertaken at the onset of piling works to validate underwater noise predictions and to check background noise levels present in the area. Adaptive environmental management will be adopted depending upon the outcome of the monitoring results.

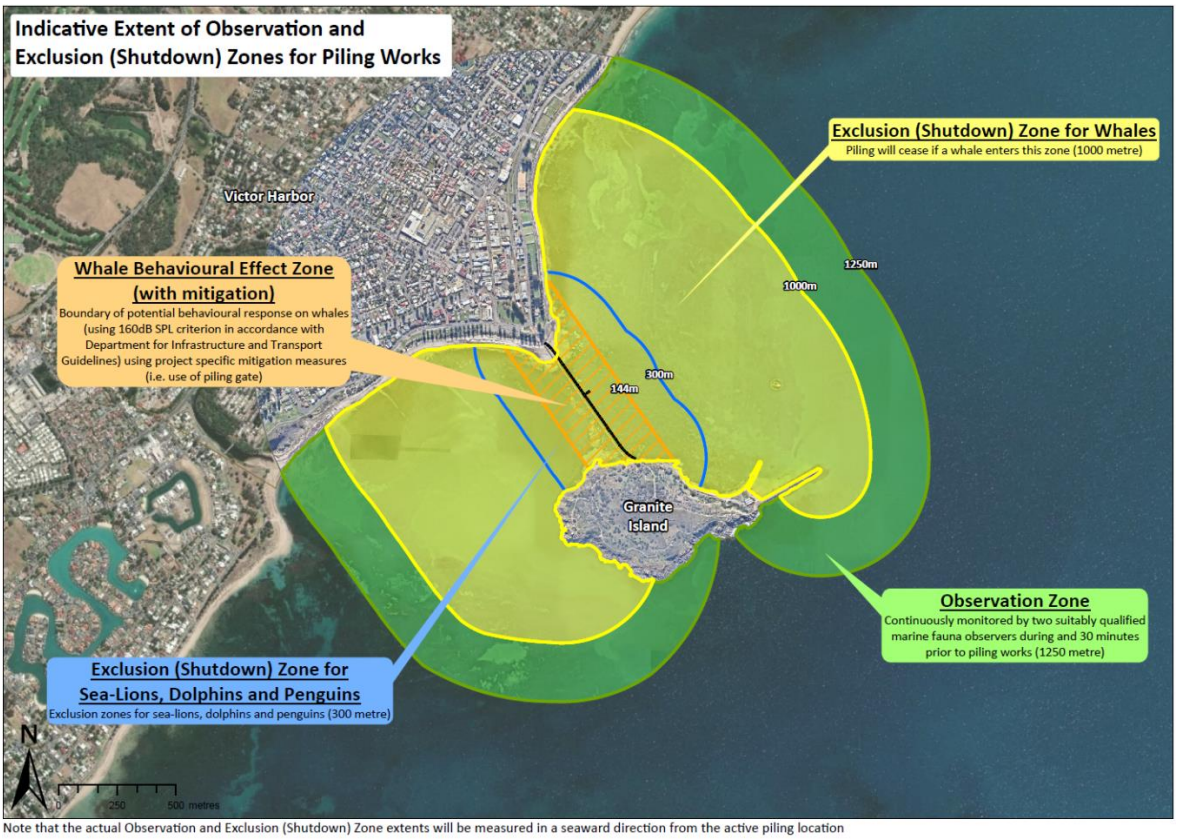

Figure 2 Indicative Extent of Observation and Exclusions (Shutdown) Zones for Piling Works

The construction of the Causeway will implement all possible mitigation measures to minimise impacts to the Little Penguin population on Granite Island. A recent census undertaken in October 2020 confirmed that the project footprint does not overlap with any active burrows. It is however noted that the status of burrow activity can change and as such, a pre-construction 'active penguin burrow' survey on Granite Island in the immediate vicinity of the project construction activity zone will be undertaken prior to the commencement of works on the island. The Department is working closely with Little Penguin interest groups (such as Save Granite Island Penguin Committee) and will undertake consultation with such groups on the best course of action should an active penguin burrow be identified near the construction activity zone. Access for the penguins to and from their burrows and the marine environment will be maintained and construction activities will be timed to avoid periods of the day when penguins are most active.

During piling works, trained marine fauna observes will be present to keep a look-out for any little penguins within a 300m exclusion zone. Piling will cease if little penguins are observed in water, within 300m of piling operations.

Considering the small number of active nests within the area of the planned development and their location in relation to the development, minimal disturbance to the paths leading to Little Penguin nests is expected. With mitigation measures in place, significant impacts on the Little Penguin population is not expected. The Department is committed to install fox proof fence on the new Causeway and is also

investigating opportunities to install interpretive signage as part of the project, to assist with educating users of the new Causeway in how to best care for the valued Little Penguin population.

Will vegetation need to be removed?

Vegetation clearance has been avoided and minimised where possible through the design and construction methodology development, however, some vegetation (terrestrial and marine) will need to be cleared to facilitate the construction of the project.

At Police Point, some vegetation will need to be cleared to facilitate the construction of the landing of the new Causeway. This vegetation consists of planted and self-seeded amenity vegetation of various species typical of local coastal environments and is not considered to provide significant habitat value. Norfolk Island Pines near construction works will be retained and protected during works.

At Granite Island, construction of the new abutment and landing area will be confined largely to areas that have been previously disturbed and are devoid of vegetation. As such, impacts to vegetation are expected to be minimal. The prominent Morton Bay Fig tree will be protected.

The driving of piles into the seabed will cause the direct loss of less than 100 square metres of marine vegetation (predominantly seagrass, dominated by Posidonia, with some Amphibolis and Zostera). It is possible that the removal of piles as part of the proposed decommissioning of the existing Causeway will result in some disturbance to seagrass. Similarly, shading from the new Causeway is not expected to have a significant impact on growth of seagrass.

Will pedestrian access be maintained during construction?

Pedestrian Access along the existing Causeway will remain open, until completion of the new Causeway. The operation of the existing Causeway will continue to be subject to current operating restrictions and construction staging requirements for the new Causeway. During these times there will be clear signage and traffic management in place to direct pedestrians.

Will services such as water, gas or power be impacted during construction?

Services will be relocated from the old Causeway onto the new Causeway, once the new Causeway has been constructed. Any planned outages of services will be advised in writing via the service provider prior to the works commencing.

Will there be lights along the new Causeway?

Regularly spaced LED lighting is proposed along the length of the new Causeway, recessed into the side of the balustrade rail, minimising the visibility of the infrastructure.

Proposed lighting on the new Causeway (including rest areas) will be designed to achieve a minimum lighting illuminance level in accordance with AS/NZS1158.3.1:2020 and seeks to address the Best Practice recommendations contained within the Department of the Environment and Energy Light Pollution Guidelines document “National Light Pollution Guidelines for Wildlife (Jan 2020)”.

No further waterway navigational lighting is deemed required for the new Causeway structure beyond the balustrade lighting.

How will the new structure impact existing operations and the horse-drawn tram?

The new structure will maintain all existing operations, including pedestrian access, tracks for the horse-drawn tram and commercial vehicle access to service Granite Island. The new Causeway will also allow for full emergency service vehicles to access the island.

How do I contact the project or seek further information?

To ask a question, provide feedback or register for project updates please contact us via:

Phone: 1300 049 048

Email: DIT.gicauseway@sa.gov.au