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# Northcote Point Ferry Wharf

## Recommendations

That the Board:

- i. Endorses utilising existing 2018/19 renewals budget to make-safe, extend the life and permit ferry operations to resume at the Northcote Point ferry wharf, noting this does not provide for a new-build “all weather” facility.
- ii. Endorses the input of public transport options and outcomes into the Detailed Business Case development for the progression of SkyPath and SeaPath by NZTA, anticipated to progress early next year.
- iii. In parallel to the Detailed Business Case development for Skypath and Seapath by NZTA to assess the potential for provision of an “all weather” facility at Northcote Point, noting this is not currently funded in the RLTP, including asset location and configuration options, for consideration by the AT Board in 2019, assessing economic benefits and costs as necessary including potential Skypath and Seapath benefits.

## Executive summary

1. Following engineering review and inspection, Northcote Wharf was closed on 20 June 2018, due to asset condition factors previously identified through routine inspections.
2. The facility has a long history of services being cancelled as a result of marine and tidal conditions, which makes it impossible for ferries to berth without compromising the safety of crew and passengers.
3. Since the wharf closed, customer communication has been regular and targeted with co-ordinated messaging onsite at the facility, and displayed through AT and operator customer communication channels and websites, social media, and direct to customers, local board, Councillors and the local MP.
4. Detailed assessments have confirmed that all of the wooden structure elements under the deck, on the structure, need to be either repaired or replaced due to worm damage, loss of section and rot. Based on an engineering assessment by Beca, repair solutions are possible within the current asset condition, but each proposed solution has advantages and disadvantages.
5. Based on expected procurement timelines to appoint a contractor to complete renewal works, it is likely that the wharf will remain closed for a further eight to twelve months.

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6. Initial pricing estimates exist from \$478,000 to \$600,000 for a renewal solution to be delivered. Due to the exposed location of the wharf, a high contingency cost rate (50%) should be added to this, meaning that a provision of up to \$1million is required in the renewal budget.
7. Renewal options will not result in the delivery of an “all weather” facility, however, services previously have been operated at 96.2%.
8. In order to provide an “all weather” ferry facility, the existing wharf will need to be either significantly altered, replaced in its current location, or relocated to a more sheltered area within the Northcote Point area.
9. Options to address the issue long term are summarised as follows:
  - a. Close the facility permanently
  - b. Close the facility temporarily, pending the construction of SeaPath and SkyPath, then undertake any repairs or improvements in association with those projects
  - c. Repair the wharf
  - d. Build a new, all-weather facility
10. Factors to be considered in the assessment of options are:
  - a. the level of existing patronage on the ferry service
  - b. expected decline in existing patronage demand over the next eight to twelve months whilst repairs are delivered
  - c. future long-term residential growth within the Northcote catchment area
  - d. suitable alternative public transport services with the introduction of New Network for buses
  - e. other funding requirements for renewal works
  - f. the impact the Northcote Point ferry wharf has on the viability of the Birkenhead ferry service
  - g. a limited current understanding of the impacts of SkyPath and SeaPath on future Northcote ferry patronage
  - h. repairs to the facility will not result in it being “all weather” and services will still be prone to cancellation due to marine, tidal and infrastructure failure

## Previous deliberations

11. None

## Strategic context

12. The Northcote Ferry wharf is situated at the southern end of Northcote Point, west of the Auckland Harbour Bridge. The area is directly served by a limited ferry service, which operates as a pick-up and drop-off point on the more established Birkenhead ferry service, and serves a limited catchment area at the end of the peninsula.

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13. The immediate catchment area is primarily zoned Single House under the Unitary Plan, which provides for low-density suburban housing that is generally characterised by one building per site of one or two storeys, surrounded by areas of private open space. Large amounts of subdivision or multi-unit development is not anticipated within the catchment area due to the minimum site size requirements
14. To the north of the area, a frequent and high-capacity bus service operates along the Onewa Road corridor, served by double decker buses, which provide direct links to the Northern Motorway and the downtown Auckland city centre.
15. The wharf is also in close proximity to the Auckland Harbour Bridge, which in future will have a pedestrian and cycleway attached to the eastern side. The 'SkyPath' is proposed to be served by a new 3km shared walking and cycling connection called 'SeaPath' which will connect Northcote Point to Esmonde Road, Takapuna.
16. Adjacent to the wharf there is a restaurant venue and function centre which was originally built in 1971 and significantly refurbished in 2007 which serves the high-end of the market. As there is ample on-street parking next to the facility, patrons do not generally use the ferry service to visit this site. Other than the venue, there are limited amenities or attractions close to the ferry wharf.
17. The upgrade to an all weather ferry facility is estimated to cost \$11million. However, as part of the prioritisation in the development of the 2018 RLTP, this project did not receive funding allocation.

## Background

18. An operational wharf is believed to have been at the site at Northcote since the mid-19<sup>th</sup> century (1856), but the current ferry facility is approximately 60 years old. A ferry service was established in 1864, and operated until 1959. Service recommenced as part of the Birkenhead contract in 1991, and has been operating on a regular basis since.
19. Over the past decade there has been local political support to upgrade the wharf into an all-weather ferry terminal to make the ferry services more reliable.
20. Regular maintenance has been undertaken on the facility, with repairs and replacement to hydraulic controls in recent years, in addition to repairs to damage as a result of the difficult berthing conditions of the wharf. Minor repair work was carried out in 2001 when the new extension was built to accommodate the ferry boarding platform. Additional maintenance renewals completed include: replacement of handrails and deck fixings, two piles have been jacketed, the replacement of some cross braces and bearers, the renewal of four fender piles, and the reskinning of the main deck.
21. Regular condition assessments of the facility have been completed over the past 10 years. A "general condition assessment" of the wharf carried out by GHD on 22 February 2016 identified that the wharf was in a good to moderate condition, with no recommended remedial action required.

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22. Continued inspection of the wharf had resulted in items being identified for inclusion on the Assets Forward Work Plan for 2019/2020 which included pile jacket replacement, bearers, joists, bolt replacements, replace corroded fender cleats and apply corrosion protection treatment.
23. The most recent Structural and Facility Condition Assessment was completed in April 2018 which identified that:
- a significant proportion of timber elements reaching end of life and requiring replacement in the short term
  - five failed fender piles were snapped below the water
  - remediation of the identified issues effectively means replacement of the wooden structure elements, replacement of many canopy supports and repair and realignment of the gangway
  - the assessor recommended: that consideration of replacing or decommissioning and removing the facility be undertaken before investing in significant remediation work
24. Following an engineering review, a further inspection confirmed that the wooden structural supports of the wharf had deteriorated quickly, and the decision was made to close the wharf on 20 June 2018 before the onset of bad weather expected later that week.
25. Detailed inspections were completed by Beca Structural Engineers and DiveCo divers to visually assess the condition of the wharf and obtain samples in July 2018. The assessment provided an overview of the conditions of the existing timber piles and cross braces. Measurements of the timber pile sizes and general layout of the wharf were taken to allow for further structural analysis and current loading requirements and the impact of wave force in its deteriorated state
26. The ferry utilising the Northcote wharf also serves both Birkenhead (an approximate five minute trip) and the Downtown Ferry Terminal (an approximate five minute trip). Included in the timetable is an additional two minutes for the stop at Northcote.
27. Timetabled ferry services allow for 24 trips to the city on a daily basis, and 22 trips in the Birkenhead direction Monday to Thursday, with one additional return trip provided on a Friday evening. A reduced level of service of six trips in each direction are operated on a Saturday, with five return trips on a Sunday and Public Holidays.
28. Due to the location and configuration of the wharf, services are often affected by marine and tidal conditions, making it impossible for ferries to berth without compromising the safety of crew and passengers. It is the poorest performing ferry service on the ferry network in terms of service reliability due to marine and tidal conditions. In the 12 months to May, 3.8% of services (488 service trips) were unable to stop at the wharf due to either marine and tidal conditions or infrastructure failure.
29. Patronage in the twelve months to May 2018 was approximately 33,000 passenger journeys per annum, which has steadily declined over the last 3 years. Daily patronage in May 2018 was approximately 154 passenger journeys a day, which are usually taken by return customers. It is estimated that there are around 80 regular users of the service on a daily basis (during the week), with weekend usage generally being more ad-hoc. Prior to closure, annual patronage was projected as 32,700 for the 2018/19 financial year, a reduction of 5%.

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## External Consultation/Engagement

30. Since the wharf closed on 20 June 2018, customer communication has been regular and targeted with co-ordinated messaging onsite at the facility, and displayed through AT and operator customer communication channels and websites, social media, and direct to customers, local board, councillors and the local MP. Buses between Northcote ferry wharf and Birkenhead wharf were discontinued due to low patronage.

31. Stakeholder engagement / updates have been as follows:

- Media releases issued on closure of ferry wharf. AT website, Fuller's text and website, and targeted social media messaging sent out on a regular basis.
- Local Board Members & Councillors have been regularly updated.
- Update discussions have been held with Local MP Dan Bidios.
- Kaipātiki Local Board resolved to allocate \$2 million funding from Local Board Transport Capital Fund for an "all weather" facility at Northcote.

32. AT and the Ferry Operator have received feedback from customers and the public, with the local Residents Association being particularly vocal. Most of the feedback has extended beyond the issue of Northcote wharf, and has included comment on the SkyPath proposal, general provision of ferries to the North Shore and in Auckland in general, AT's ability to manage infrastructure projects and the prioritisation of public transport spend.

## Issues and options

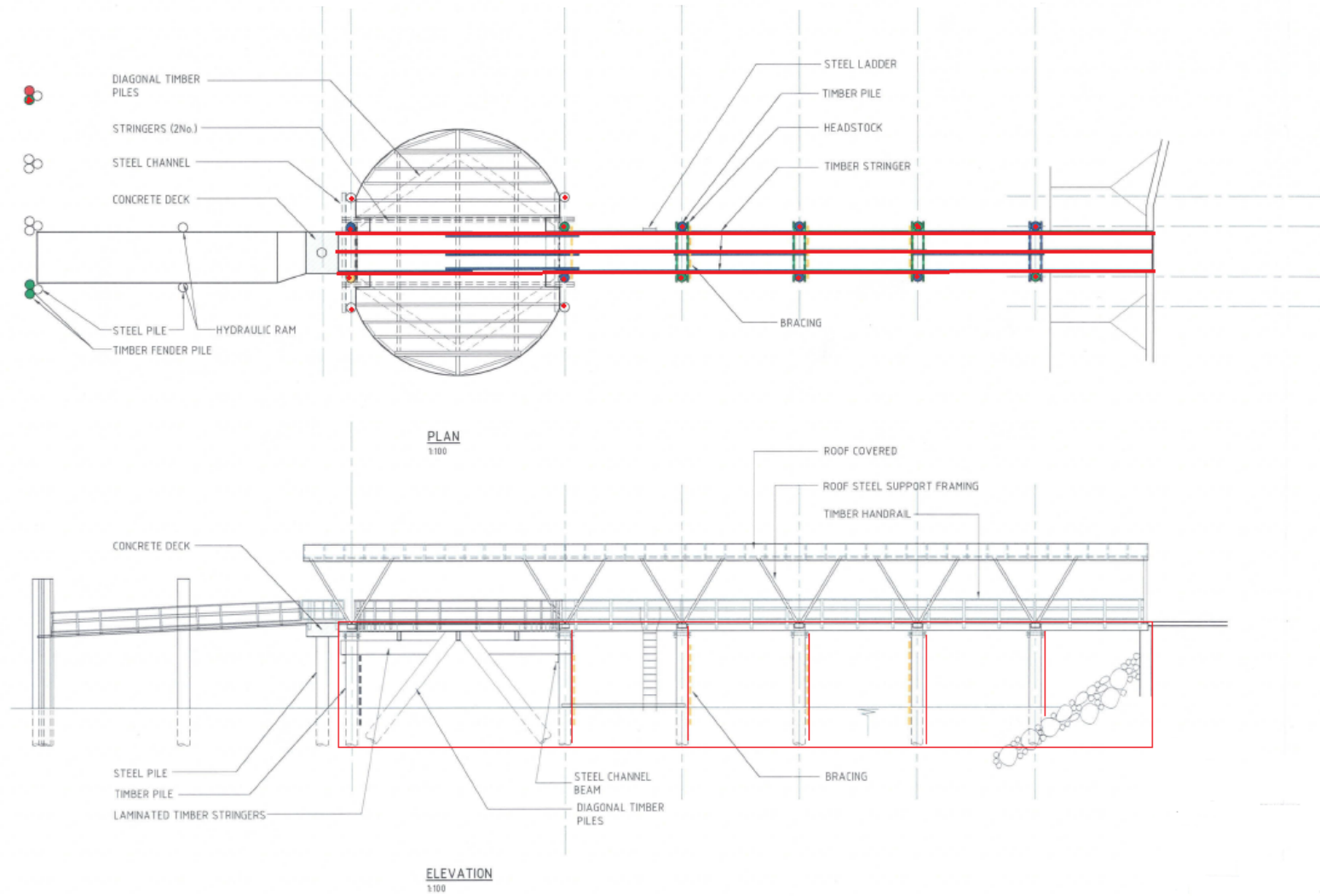
33. Site inspections to date conclude that:

- a. Rotten timber was found in numerous piles at or near the low tide level, particularly the four inner piles directly underneath the observation platform that needs replacing.
- b. Varying pile diameters were measured along the height of all piles, indicating varying deterioration of the timber piles across the entire wharf
- c. All bracing needs to be replaced due to rot and worm incursion or, a repair designed so that bracing is not required as the connection plates also have a significant design and construction flaw
- d. There are heavily corroded fixings, steel tie beams and structural bolts with many exhibiting a loss of section

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- e. The hydraulic system is generally in poor condition and needs refurbishment to many components such as the hydraulic cylinders, power unit, replace flow divider, wood refurbishment and excessively long hoses and replace corroded fittings and fasteners wood replacement
- f. The timber deck planks and topping were in good condition with no signs of excess degradation

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34. Due to the deteriorated diameters of the piles, it is not expected that they would be able to resist current loading requirements and wave forces. As a result, all piles and associated bracing will need to be repaired before the facility can be reopened for public use.
35. Two different methods have been identified to complete the pile renewal works.
- Due to the number of piles being in very poor condition, it has been concluded that 'jacketing' alone would not suffice due to the eroded section of the piles not providing sufficient capacity and stability. As a result, these piles will have to be anchored to the seabed to ensure that loads reliably transfer to the rock seabed. Anchoring would make the piles sturdier meaning bracing would not be required.
  - Undertaking the works is not straight forward and an alternative solution is to replace / duplicate the existing piles by, 'sister piling' – effectively putting new piles on the outside of the existing piles so the wharf ends up resting on these. From an engineering perspective, the sister piling option would be less complex to construct and therefore likely quicker and cheaper to install than the complex jacketing and anchoring option, which is difficult to complete in such an exposed location.



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Table 2: Proposed Concept Solutions - Northcote Wharf

Option	Sketch	Pros/Cons/Outstanding Questions	Notes
<p><b>Pile Jacketing – New Concrete Piles.</b></p> <p>Anchor Reinforcing Bars into existing rock level.</p> <p>Encase existing timber pile with concrete.</p>		<p><b>Pros</b></p> <ul style="list-style-type: none"> <li>Repair existing timber piles with new concrete piles.</li> <li>Possibly no bracing required as the concrete piles would be stiff enough to provide lateral stability.</li> </ul> <p><b>Cons/Outstanding Questions</b></p> <ul style="list-style-type: none"> <li>An adequate methodology to this solution would have to be discussed with experienced contractors.</li> <li>How do we satisfy the bars are adequately anchored into rock level, prior to casting of the new concrete pile jackets.</li> </ul>	<ul style="list-style-type: none"> <li>Maximum bending moment of the pile occurs at the point of fixity. I.e. Just below seabed level.</li> <li>Traditional Pile Jacketing methods (such as SeaShield 400 System, requires a bottom seal to secure the fibre-form jacket. This seal occurs at the location of our Max Moment, and prevents us from anchoring reinforcement bars through the seabed.</li> </ul>
<p><b>Install New Outer Timber Piles</b></p> <p>Install new outer diameter timber piles.</p> <p>Install new transverse beams that will support the existing decking.</p> <p>Can remove existing, deteriorated timber piles and bracing members.</p>		<p><b>Pros</b></p> <ul style="list-style-type: none"> <li>Installing new timber piles on the outside represents a more traditional methodology compared to the first concept.</li> <li>Removes potential environmental issues associated with concrete works in a marine environment.</li> </ul> <p><b>Cons/Outstanding Questions</b></p> <ul style="list-style-type: none"> <li>Not as aesthetically pleasing having a narrower timber deck relative to the locations of the new piles.</li> </ul>	<ul style="list-style-type: none"> <li>Pile replacements beneath the observation deck would require further development</li> </ul>

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36. Direct appointment would likely be the recommended procurement approach, considering the market's capacity due to the large volume of work being commissioned in advance of America's Cup 36. Tendering would likely add around two-three months to the timeline for completion, with no certainty of a successful outcome.
37. AT's current marine maintenance and renewals contractor has the experience and knowledge to complete the required works but, already has a full renewals workload for this current year (subject to variation approval). Awarding the Northcote works to them will require reprioritisation of the remainder of this year's maintenance renewal work programme which may result in some work items having to be deferred until next year.
38. Assuming it takes four weeks to appoint the successful contractor through direct appointment, six weeks for design, 24 weeks time for delivery of materials (unless AT order them during tender process and design accordingly), and 12 weeks for site construction; the wharf is likely to remain closed for a minimum nine to twelve months.
39. For the two options identified, initial pricing estimates have been obtained from AT's marine contractor. These are summarised below, but the practicalities of each solution have not yet been worked through during a design phase to see if they are feasible or not.
  - a. Option 1: Pile Jacketing / New Concrete Piles: Jacket piles because jacketing alone will not be sufficient so anchor reinforcing will be required
  - b. Option 2: Sister piling option: install new piles and bracing outside of current structure to support existing decking Due to the exposed location of the wharf, a high contingency cost rate should be allowed for, as there may be repeated delays to completing the work due to marine and tidal conditions – e.g. swell will need to be minimum to be able to pile accurately. Based on preliminary and investigate and allowing for contingency, repair works are currently estimated at up to \$1 million. This will be confirmed through procurement process and detailed design.
40. It must be noted that neither of the above options will result in the delivery of an "all weather" facility as requested by the local community, and there is unlikely to be any improvement to the facility's ability to operate ferry services. In order to provide an "all weather" ferry facility, the existing wharf will need to be either significantly altered, replaced in its current location, or relocated to a more sheltered area within the Northcote Point area.
41. Options to alter, replace or relocate have been assessed by GHD (as part of a separate commission that was already underway before the current asset condition concerns). This analysis suggests that the possibility of amending the layout in its existing location to make it "all weather" is limited due to seabed conditions. While alternative locations may exist to the east of the Auckland Harbour Bridge, accessibility may be constrained. There are also potentially Mana Whenua and environmental considerations that will need to be considered.
42. The construction of a new facility at a new location is estimated to be between \$10 and \$20 million.

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43. Prolonged closure is expected to have a negative impact on patronage and previous users of the facility are likely to adopt alternative travel patterns which will be difficult to break for customers should the Northcote facility reopen. In late September the New Network North has been implemented, which offers enhanced bus service connections for residents of Northcote Point. These new services provide new and alternative public transport options for residents and ferry users during the period of the extended ferry service suspension.
44. Indicative quotes have been received from the marine maintainer for complete removal of the existing facility. This has been estimated to be around \$145,000.
45. The proposed SkyPath and SeaPath initiatives will need to be considered as they will likely have an impact on potential patronage for ferry services once delivered.
46. Media and stakeholder comments suggest that the Northcote ferry service should receive a positive boost from these two initiatives, but to what extent is unknown. The NZTA Detailed Business Case (DBC) is still in development for SkyPath and it is proposed that the DBC considers the role that ferries can play in supporting these two high-profile programmes of work.
47. Another consideration is the impact of the wharf at Northcote Point in the delivery of the Birkenhead ferry service. Currently, the scheduled journey time for the Birkenhead to Downtown via Northcote Point service is 12 minutes. Due to operator performance and increased vigilance by the Harbourmaster relating to speed restrictions in the Waitemata Harbour, this journey time is often exceeded. This has resulted in the performance of the Birkenhead service, and patronage, being adversely affected.

- [REDACTED]
49. Whilst stakeholder engagement has been proactive and amicable to date, it should be noted that there are Local Board and Council elections in spring 2019. Considering the level of interest to date from the local MP, Local Board members and Councillors, it is important that AT considers the wider context in considering the next steps.

## Summary

50. The request for funding to investigate and construct a new facility at Northcote was unsuccessful in the current RLTP submission. There is also considerable pressure on renewal budgets for the period 2018-21, and several urgent maintenance renewal items or high-priority safety and customer led renewal items which require funding.
51. Whilst the ferry service from Northcote is important to those that use the service wharf (circa 80 unique customers per day), these numbers are expected to decline as a result of the closure, and will potentially further decrease with the introduction of the New Network North, as there will be enhanced bus service options for local residents.

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52. The impacts of SkyPath and SeaPath are not yet unknown. It may be that ferry patronage from Northcote increase as customers potentially walk / cycle across the bridge and ferry back. Alternatively, patronage may decrease as potential customers prefer to use Skypath, SeaPath or new bus services.
53. Completion of the proposed repair works will not positively impact the provision of “all weather” ferry services, as the marine and tidal challenges in its current location will still be present.
54. It should be noted that the Kaipātiki Local Board has resolved to allocate \$2 million in funding from their Transport Capital Fund for an “all weather” facility at Northcote. There may be an opportunity for the Local Board to allocate future Transport Capital Fund budgets for an increased investment in a new, or substantially reconfigured facility. However, this would be dependent on the Local Board in the next electoral term. This is noted, but at this stage an “all weather” facility is not proposed.
55. It should also be noted that the business case analysis from an NZTA perspective may not result in a positive outcome based on existing, and potential, patronage. Therefore, any potential future funding decision to invest in reconfiguring the existing facility or the construction of a new facility to make the ferry service “all weather” may require alternative external funding or a 100% Auckland Council share. This will be considered further as part of the business case during next year.

## **Next steps**



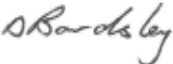


56. Input is provided into the NZTA DBC for SkyPath and SeaPath early next year.
57. Options are progressed next year to assess the options and economic rationale for a potential all-weather facility when the impacts and benefits from Skypath and Seapath are known, including location and configuration options.
58. Budget currently assigned in the 2018/19 renewals budget for Northcote Point is utilised for renewal activities to proceed to extend current life of the asset.

## **Attachment**

No attachments.

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## Document ownership

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