SEAPATH WALKING AND CYCLING CONNECTIONS

DETAILED BUSINESS CASE

New Zealand Government
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# GLOSSARY OF TERMS

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<tr>
<td>AEE</td>
<td>Assessment of environmental effects</td>
</tr>
<tr>
<td>AO</td>
<td>Approved organisation</td>
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<tr>
<td>ATAP</td>
<td>Auckland Transport Alignment Project 2018</td>
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<tr>
<td>BCR</td>
<td>Benefit-cost ratio</td>
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<tr>
<td>CAPEX</td>
<td>Capital expenditure</td>
</tr>
<tr>
<td>CBD</td>
<td>Central business district</td>
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<tr>
<td>CEMP</td>
<td>Construction environmental management plan</td>
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<tr>
<td>CVIU</td>
<td>Commercial vehicles investigation unit</td>
</tr>
<tr>
<td>D&amp;C</td>
<td>Design and construct</td>
</tr>
<tr>
<td>DE</td>
<td>Design estimate</td>
</tr>
<tr>
<td>EEM</td>
<td>Economic evaluation manual</td>
</tr>
<tr>
<td>EIR</td>
<td>Environmental impact report</td>
</tr>
<tr>
<td>EOI</td>
<td>Expression of interest</td>
</tr>
<tr>
<td>EPA</td>
<td>Environmental Protection Agency</td>
</tr>
<tr>
<td>FYRR</td>
<td>First year rate of return</td>
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<tr>
<td>GPS</td>
<td>Government Policy Statement</td>
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<tr>
<td>HCV</td>
<td>Heavy commercial vehicle</td>
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<td>HNO</td>
<td>Highways and Network Operations</td>
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<tr>
<td>HPT</td>
<td>Historical Places Trust</td>
</tr>
<tr>
<td>IAF</td>
<td>Investment Assessment Framework</td>
</tr>
<tr>
<td>IAP2</td>
<td>International Association for Public Participation</td>
</tr>
<tr>
<td>ILM</td>
<td>Investment logic map</td>
</tr>
<tr>
<td>IRS</td>
<td>Investment and revenue strategy</td>
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<tr>
<td>ITS</td>
<td>Intelligent transport systems</td>
</tr>
<tr>
<td>KPI</td>
<td>Key performance indicator</td>
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<tr>
<td>LLR</td>
<td>Lessons learnt review</td>
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<tr>
<td>LTMA</td>
<td>Land Transport Management Act</td>
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<tr>
<td>MOU</td>
<td>Memorandum of understanding</td>
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<tr>
<td>MVKT</td>
<td>Million vehicle kilometres travelled</td>
</tr>
<tr>
<td>NES</td>
<td>National environmental standards</td>
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<tr>
<td>NIU</td>
<td>National infrastructure unit</td>
</tr>
<tr>
<td>NLTF</td>
<td>National Land Transport Fund</td>
</tr>
<tr>
<td>NLTP</td>
<td>National Land Transport Programme</td>
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<tr>
<td>NOR</td>
<td>Notice of requirement</td>
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<tr>
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<tr>
<td>NPC</td>
<td>Net Present Cost</td>
</tr>
<tr>
<td>NZCID</td>
<td>New Zealand Council for Infrastructure Development</td>
</tr>
<tr>
<td>NZTA (or the Agency)</td>
<td>The New Zealand Transport Agency</td>
</tr>
<tr>
<td>NZTS</td>
<td>New Zealand transport strategy</td>
</tr>
<tr>
<td>OPEX</td>
<td>Operating Expenditure</td>
</tr>
<tr>
<td>P&amp;I</td>
<td>Planning and Investment</td>
</tr>
<tr>
<td>PI</td>
<td>Performance Indicator</td>
</tr>
<tr>
<td>PMS</td>
<td>Project Management Services</td>
</tr>
<tr>
<td>PoPS</td>
<td>Portfolio Procurement Strategy</td>
</tr>
<tr>
<td>PPFM</td>
<td>Planning Programming and Funding Manual</td>
</tr>
<tr>
<td>PPM</td>
<td>Principal Project Manager</td>
</tr>
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<td>PPP</td>
<td>Public Private Partnership</td>
</tr>
<tr>
<td>PT</td>
<td>Public Transport</td>
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<tr>
<td>PWA</td>
<td>Public Works Act</td>
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<tr>
<td>RAMM</td>
<td>Road Assessment and Maintenance Management</td>
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<tr>
<td>RFP</td>
<td>Request For Proposal</td>
</tr>
<tr>
<td>ABBREVIATION</td>
<td>TERM</td>
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<tr>
<td>RLT</td>
<td>Regional Land Transport</td>
</tr>
<tr>
<td>RLTS</td>
<td>Regional Land Transport Strategy</td>
</tr>
<tr>
<td>RMA</td>
<td>Resource Management Act</td>
</tr>
<tr>
<td>RoNS</td>
<td>Road of National Significance</td>
</tr>
<tr>
<td>SAR</td>
<td>Scheme Assessment Report</td>
</tr>
<tr>
<td>SE</td>
<td>Scheme Estimate</td>
</tr>
<tr>
<td>SH(#)</td>
<td>State Highway (number)</td>
</tr>
<tr>
<td>SOI</td>
<td>Statement of Intent</td>
</tr>
<tr>
<td>SSC</td>
<td>State Services Commission</td>
</tr>
<tr>
<td>SSEMP</td>
<td>Site Specific Environmental Management Plan</td>
</tr>
<tr>
<td>TA</td>
<td>Territorial Authority</td>
</tr>
<tr>
<td>TDM</td>
<td>Traffic Demand Management</td>
</tr>
<tr>
<td>TOC</td>
<td>Total Outturn Cost</td>
</tr>
<tr>
<td>VAC</td>
<td>Value Assurance Committee (formerly SSRC)</td>
</tr>
<tr>
<td>VMS</td>
<td>Variable Message Sign</td>
</tr>
<tr>
<td>WEBs</td>
<td>Wider Economic Benefits</td>
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Cycling is on the increase in Auckland, with 11% growth seen in the city centre this year. There is currently 1% cycling mode share in Auckland, with an aim to reach 3% by 2028. Auckland is at a stage where more transport infrastructure would be beneficial to increasing people’s journey choices and overall network resilience. SeaPath is a proposed four kilometre shared walking and cycling path along the Northern Motorway corridor from the Auckland Harbour Bridge to Esmonde Road, Takapuna. This business case outlines the case for investing in SeaPath and the next steps.

THE CASE FOR CHANGE - WHY NOW / WHY HERE

THE POPULATION IS GROWING

Auckland is New Zealand’s largest urban area and home to about 1.5 million people. Rapid population and employment growth is concentrated in the city centre and metropolitan centres such as Takapuna; with 53,000 more residents and 74,000 jobs expected in Takapuna alone over the next 30 years. Intensification through development provided for in the Auckland Unitary Plan, and development of Special Housing Areas in Birkenhead will also see more people living in the lower North Shore area.

THE EXISTING TRANSPORT NETWORK IS REACHING CAPACITY

Existing transport options, both private and public transport, are at or near capacity meaning that to support growth, more travel choice, capacity and demand management are required. Gaps in the existing urban cycle network in areas of high demand between Auckland’s North Shore and city centre make it difficult for walking and cycling to be an effective choice for people.

THERE IS SUPPORT FOR A CONNECTION

Engagement with project partners, stakeholders and the community indicates strong support for a walking and cycling connection between Takapuna and the Harbour Bridge, with over 95% of respondents to a survey during the IBC phase supporting a walking and cycling link. A walking and cycling connection will also improve access to existing open spaces, reserves and community facilities.

SEAPATH ALIGNS WITH CORE NATIONAL AND REGIONAL STRATEGIES

The lower North Shore is a focus area in the Auckland Cycling Investment Programme between 2021 and 2028 and a walking and cycling connection is identified for funding in National Land Transport Programme (NLTP) to encourage continued increase in cycling.

SeaPath aligns with the key strategic priorities in the Government Policy Statement on Land Transport

- Safety - drives improvements in safety outcomes for all road users, including increased investment in footpaths and cycleways to support access to, and uptake of, active travel modes.
- Access - The increased focus on urban areas is to ensure that transport and land use planning reduces the need to travel by private motor vehicle (excluding commercial vehicles) by supporting a mode shift for trips in urban areas from private vehicles to more efficient, low cost modes like walking, cycling and public transport.
- Environment - recognises the public health benefits of reducing harmful transport emissions and increasing uptake of walking and cycling.

SKYPATH + SEAPATH

CONNECTING CITY AND NORTH SHORE WITH WALKING & CYCLING
The Preferred Option for SeaPath is to provide a new four-metre wide shared path facility on the most direct and mainly separated alignment running parallel to State Highway 1 (SH1) between the Harbour Bridge and Esmonde Road. This will be supported with local road and cycle network improvements and access to parks and reserves which will require further collaboration with Auckland Transport (AT) and Auckland Council (AC) Parks. The preferred implementation strategy is delivery of SeaPath in its entirety in a single stage. This allows the project to deliver on the project investment objectives and strategic intent of the government as soon as practicable.

While being developed independently of other projects and able to deliver significant benefits in its own right, SeaPath will also provide an important link between the proposed SkyPath walking and cycling connection over the Harbour Bridge, and the local network. This will result in a comprehensive active mode walking and cycling network between the city centre at Westhaven, and Takapuna on the North Shore, and further via local networks to Northcote, Birkenhead and beyond.

The proposed SkyPath project is being considered independently, but is strategically interdependent resulting in a safe, dedicated connection providing travel choice and additional capacity within the existing motorway corridor.

The local walking and cycling network is still being developed with the Northcote Safe Cycle Route (NSR) being the primary walking and cycling facility in the area. The NSR provides an on-road facility from Northcote Point, along Queen Street, Lake Road and continues onto Akoranga Drive. At present, Queen Street, Onewa Road and Lake Road intersections do not include any cycle infrastructure making it difficult for pedestrians and cyclists to cross at these intersections. The routes are indirect, cross busy intersections, have high traffic volumes, undulating terrain and lack of separation for cyclists from vehicles. Connections to SeaPath from the local walking and cycling network will provide a safe and convenient connection between neighbourhood areas, parks and open space areas, and community facilities for active modes.
**SEAPATH WILL:**

- Deliver critical missing links in the urban cycle network in areas of high demand between the North Shore and city centre
- Increase the number of people who live within a reasonable walking or cycling distance to frequent and reliable public transport
- Improve transport choices for people by providing good quality, safe, fit-for-purpose walking and cycling infrastructure encouraging more people to use active travel modes such as walking and cycling to
- Support environmental and public health objectives by providing for lower emission and lower cost modes of transport, and encouraging people to walk and cycle to work, education and employment.
- Improve overall transport network capacity and resilience by increasing the capacity of the motorway corridor and shifting people away from private cars
- Integrate with the proposed SkyPath providing a dedicated walking and cycling path from the North Shore to the City and real alternatives to private vehicle and bus options
- Provide economic benefits and more certainty for the freight and servicing industry by decongesting the existing network
- Support the aims of Vision Zero by Decongestion benefits providing facilities for safe, enjoyable and healthy walking and cycling and separating these modes as much as possible from conflicts with motorised vehicles.

**WIDER CONSIDERATIONS / RISKS**

Both SeaPath and the proposed SkyPath have different forms of construction, consent status and risk associated with each other and therefore will be delivered independently, but will need to work closely with each other to ensure consistency and user experience.

**RECOMMENDATIONS**

- The Preferred Option is taken forward to the pre-implementation stage;
- Continue collaboration with AT and AC regarding the connections to the local road and cycle network and the access to reserves and natural features.

---

**“SEAPATH... JOURNEY CHOICES... NETWORK RESILIENCE.”**

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**WALKING AND CYCLING PATHS**

- 1. Northern Cycleway
- 2. Kapahaka Connections
- 3. Northcote Safe Cycle Route
- 4. Onewa Road Shared Path
- 5. Devonport ‘Green Route’
- 6. Skypath / AWHC Cycle Lane
- 7. Waitemata Greenways
- 8. Westhaven Promenade
- 9. Seymour Street Connection
- 10. Beach Road Cycleway
- 11. Nelson Street Downtown Cycleway
- 12. Grafton Gully Cycleway
- 13. Ian McKinnon Drive Cycle Route
- 14. North Western Cycleway
- 15. Glen Innes to Tamaki Drive Cycleway
- 16. Lake Road
- 17. Upper Harbour Motorway
- 18. Upper Harbour Drive
- 19. Northern Corridor Shared Path
- 20. Waterview Shared Path

---

**Existing walking / cycling paths**

**Proposed SeaPath**

**Ferry Routes**

**Planned walking / cycling projects or under construction**
BUSINESS CASE

SUMMARY

The following pages provide a summary of the supporting evidence from the SeaPath Detailed Business Case.
NATIONAL CONTEXT

The Government Policy Statement on Land Transport (GPS) sets the priorities for investment for land transport. It takes a step change in approach for investment with a key priority on increasing and accelerating mode shift from private vehicle trips to walking, cycling and public transport. These forms of transport are very important in:

- Supporting an efficient, sustainable and affordable system
- Contributing to improved health outcomes as people increase levels of physical activity, through regularly incorporating active travel into their daily lives,
- Making streets more inviting places for people to gather, attracting people to frequent local businesses, connect with their neighbours and partake in recreational and cultural activities.

The SeaPath project meets a number of investment priorities identified in the GPS, including:

- Delivering critical missing links in the urban cycle network in areas of high demand, for example, between Auckland’s North Shore and city centre
- Provision of good quality, safe, fit-for-purpose walking and cycling infrastructure
- Increasing the proportion of population who live within a reasonable walking or cycling distance to frequent and reliable public transport
- Supporting mode shift to lower emission and lower cost modes of transport
- Supporting the increased uptake of active travel modes such as walking and cycling to support environmental and public health objectives.

The SeaPath project meets a number of investment priorities identified in the GPS, including:

- Delivering critical missing links in the urban cycle network in areas of high demand, for example, between Auckland’s North Shore and city centre
- Provision of good quality, safe, fit-for-purpose walking and cycling infrastructure
- Increasing the proportion of population who live within a reasonable walking or cycling distance to frequent and reliable public transport
- Supporting mode shift to lower emission and lower cost modes of transport
- Supporting the increased uptake of active travel modes such as walking and cycling to support environmental and public health objectives.

The NLTP identifies SeaPath and the proposed SkyPath as key links in Auckland’s walking and cycling network which will be delivered by NZ Transport Agency, enabling project efficiencies and improved coordination.

While these two projects will be delivered independently, through strategically they are interdependent. Collectively they will provide Aucklanders with the freedom to walk and cycle across the Waitemata Harbour and support regional connectivity between communities in the North Shore and City.

REGIONAL CONTEXT

More than 1.5 million people live in Auckland already and that number is expected to increase by another 730,000 people to reach 2.4 million by 2043. This could mean another 320,000 dwellings and 270,000 jobs for Auckland.

As Auckland grows it is essential that more people use active modes and travel by public transport. This will reduce pressure on the roads and free up room for freight and commercial travel supporting regional economic productivity.

Auckland’s cycling network is currently under-developed and will take sustained investment and effort to be completed.

The recommended approach is to target investment in cycle network facilities:

- That target particular trips that are amenable to cycling i.e. commuter and recreational
- Where mode shift to cycling would benefit the wider transport system, particularly heavily congested corridors such as the Northern Motorway, and
- That provide direct access to key destinations and follow corridors of high current and future demand.

These are discussed in more detail on the following page.
TARGET PARTICULAR TRIP TYPES THAT ARE AMENABLE TO CYCLING

Commuter cycling has potential to serve short-medium distance trips, while very short trips are more likely to be undertaken by walking. Census data indicates that the average commuter trip (all modes) in the lower North Shore is around 9km. At present, there are over 3,500 people commuting up to 9km within the SeaPath catchment area - between the city centre and lower North Shore. Of these, less than 100 people currently commute by cycle. With the anticipated high population growth in the lower North Shore, this is likely to increase to over 6,000 people by 2046. This highlights the scale of potential trips that could be made by cycle along SeaPath and the proposed SkyPath over the next 30 years. The catchment for commuter trips made by cycle could also increase with the continued growth in E-mobility such as Electric Bicycles (E-Bikes). This could easily increase the average commuter trip distance and catchment by cycle to 13km and 10,000 trips by 2046.

THE LOWER NORTH SHORE’S WALKING AND CYCLING NETWORK IS UNDERDEVELOPED.

Tertiary education commutes are also important in the context of walking and cycling. The cost of living including transport is a big factor for university students.

At present, almost half of students travelling to AUT North Campus, located near Esmonde Road, Takapuna, do so by car as shown in FIGURE 1. The majority (80%) of these trips occur during the morning peak. These are key commute trips that could be made by walking and cycling.

Walking and cycling for the purposes of recreation and tourism is an important part of residents and visitors daily lives. The main motivators other than for point-to-point commuter trips are around keeping fit, providing ‘me’ time and allowing people to enjoy the outdoors. Research undertaken by AC, for the proposed SkyPath Business Case indicated that recreation and tourist trips could account for over 70 per cent of the estimated patronage. A direct link from the Harbour Bridge to Takapuna could support onward resident and visitor trips to valuable local architectural and heritage assets such as Onepoto Domain, Tuff Crater and Takapuna beach.
WHERE MODE SHIFT TO CYCLING WOULD BENEFIT THE WIDER TRANSPORT SYSTEM, PARTICULARLY HEAVILY CONGESTED CORRIDORS

Cycling mode share of journeys to work in Auckland is currently 1%, with an aim to reach 3% mode share by 2028. The state highway corridor is increasingly becoming a key part of Auckland’s active transport network offering high quality fully separated walking and cycling journeys connecting sub-regions of Auckland. Since 2011 the number of cycle trips along the Northwestern Cycleway has increased by 9% a year. This has been driven by recent upgrades to local community connections at Waterview, Te Atatu and St Luke’s Road. Continued linear growth along this corridor could see 1.2 million annual cycle trips by 2046.

A dedicated cycleway from Takapuna along the SH1 corridor connecting over the Harbour Bridge has similarities to the Northwestern corridor:

- Connecting people across the harbour with the city centre
- Connecting future high growth areas
- Providing walking and cycling infrastructure in areas with high potential to support short-medium distance commuter trips.

THAT PROVIDE DIRECT ACCESS TO KEY DESTINATIONS AND FOLLOW CORRIDORS OF HIGH CURRENT AND FUTURE DEMAND

Takapuna and Northcote centres are identified as future urban growth areas in Auckland. Increased people and jobs will place additional pressure on the already congested strategic road network, particularly the Harbour Bridge.

The number of residents and jobs in Takapuna are expected to increase by 69% and 35%, respectively, over the next 30 years. There will also be proportionately more working age people (15-64) living in these areas which in turn will increase the number of people commuting to work.

Northcote Town Centre has also been identified as a Special Housing Area for over 700 new housing sites with a feasible capacity of approximately 10,800 dwellings.

With the completion of SeaPath and the proposed SkyPath, the area will have a direct walking and cycling link to and from the city centre.
NSR provides an on-road facility from Northcote Point, along Queen Street, Lake Road and continues onto Akoranga Drive. At present, Queen Street, Onewa Road and Lake Road intersections do not include any cycle infrastructure making it difficult for pedestrians and cyclists to cross these intersections.

There are onward connections from Akoranga Drive into the North Shore including connections to Takapuna and Devonport via the Devonport Green Route and Lake Road. However, current cycle access to the city centre is either via the Devonport or Birkenhead Ferry or a 40 km circular route around West Harbour through Hobsonville, Te Atatu and the Northwestern Cycleway, as shown in FIGURE 2.

The transport network consists of the Northern Motorway, regional connectors, arterials and low volume local streets such as Northcote Safe Cycle Route (NSR). The roads are generally built around the topography and outstanding natural features in the area.

The Northern Motorway is a critical national transport link that supports around 150,000 vehicles per day (between Esmonde Road and the Harbour Bridge). It experiences significant congestion in the morning and evening peaks and feeds into the local network at Onewa Road and Esmonde Road along the lower North Shore.

At present, the lower North Shore’s walking and cycling network is under-developed. The routes are indirect, have high traffic volumes, undulating terrain and lack separation for cyclists from vehicles.

The natural environment along the western edge of the Northern Motorway comprises volcanic explosion craters including Onepoto Domain and Tuff Crater, coastal marine area and Waitemata sandstone headlands - a significant landscape iconic to Auckland that holds strong mana whenua cultural value. The steep cliffs are lined with pohutukawa trees and there are a number of hilltop properties that are heritage-listed.

The proximity of the cliff edges, marine environment and motorway makes it a significantly challenging environment to construct a safe and separated walking and cycling path that:

- Enhances local connections to the community
- Does not adversely impact the natural environment
- Does not reduce existing road network capacity.

The WALKING AND CYCLING PATHS

1. Northern Cycleway
2. Kapakaka Connections
3. Northcote Safe Cycle Route
4. Onewa Road Shared Path
5. Devonport ‘Green Route’
6. Skypath / AWHC Cycle Lane
7. Wallawalka Greenways
8. Westhaven Promenade
9. Beamont Street Connection
10. Beach Road Cycleway
11. Nelson Street Downtown Cycleway
12. Grafton Gully Cycleway
13. Ian McKinnon Drive Cycle Route
14. North Western Cycleway
15. Glen Innes to Tamaki Drive Cycleway
16. Lake Road
17. Upper Harbour Motorway
18. Upper Harbour Drive
19. Northern Corridor Shared Path
20. Waterview Shared Path

The key diagram shows the existing walking and cycling paths and the proposed Seapath ferry routes.
INVESTMENT LOGIC

At the outset of the Detailed Business Case (DBC), representatives from NZ Transport Agency, AT and AC reviewed the Investment Logic. Through the process of reconfirming the problems, the following objectives were rationalised for the project as highlighted in Table 1.

The revised Investment Objectives provide clear focus for delivering infrastructure that enhances transport choice and increases access for various walking and cycling user groups (including tourists and recreational users).

Specific evidence to support these problems and how these contribute towards the objectives is presented on the next page.

Investment partners agreed on two benefits:

**Benefit 1:** Improved transport system capacity;

**Benefit 2:** Improved access to community assets and the natural and built environment.

These reflect the expected outcome from addressing the problems. The benefits are linked to two investment objectives and five Key Performance Indicators (KPIs) which are presented in **TABLE 61**.

### PROBLEM ONE

There are no suitable walking and cycling facilities between Esmonde Road and the Harbour Bridge to serve the potential demand for commuter and education travel, placing additional strain on an already congested transport system in the lower North Shore.

70% of the problem

**INVESTMENT OBJECTIVE**

Increase the total number of walking and cycling trips between Esmonde Road and Harbour Bridge to 1,500 by 2046.

**KPI**

Increase people throughput using active modes between Esmonde Road and Harbour Bridge by 40% in comparison to the reference case (526 trips) using the existing on-road facilities by 2026 (interim measure).  

Improve the cycling Quality of Service between Esmonde Road and Harbour Bridge to a level of 1.

Reduce the cycling time between Esmonde Road and Harbour Bridge from 13 minutes to under 9 minutes.

### PROBLEM TWO

Lack of safe and accessible cycle and pedestrian connections that result in reduced opportunities for people to experience community assets and the natural and built environment in the lower North Shore.

30% of the problem

**INVESTMENT OBJECTIVE**

Increase the number of households within access to the natural environment and community assets between Esmonde Road and Harbour Bridge by active modes.

**KPI**

Increase the number of walking and cycling connections points to Onepoto Domain, Tuff Crater and other natural assets within the project extent.

Increase the 30 minute walking and cycling catchment to education facilities, public transport hubs and other community assets within the project extent.
PROBLEM ONE

There are no suitable walking and cycling facilities between Esmonde Road and the Harbour Bridge to serve the potential demand for commuter and education travel, placing additional strain on an already congested transport system in the Lower North Shore.

- At present, the average distance by cycle from Esmonde Road to Northcote Point is 4.7km with an estimated travel time of 13 minutes
- The route is predominantly on-road and has a medium to low (3 to 4) quality of service for cycling based on gradient, road conditions and lack of safe intersection treatments for walking and cycling
- There are severance issues with Onewa Road due to high volumes of vehicle traffic and limited crossing points for pedestrians and cyclists
- There is currently a high private vehicle mode share in the area with 61% of people travelling to work by motor vehicle. Walking accounts for 7% and cycling 1%
- AUT north campus is a key local traffic generator and currently 50% of trips are made by car and 32% by public transport
- Similarly to the regional average, walking and cycling still only accounts for 8% for all trips
- AUT north campus is much more car dominated in comparison to the average (34%) for all eleven campuses in Auckland
- A large number of current (3,500) and anticipated future (6,000) commuter trips could be made by cycle. 20% of these trips could be made by bicycle if the city centre achieves the target peak travel mode share set out AC’s city centre Masterplan
- Looking at commute-to-work trips by Local Board areas, the proposed SeaPath route could increase cycle mode share in Kaipatiki from 0.7% (Census 2013) to 3% by 2046 and Devonport-Takapuna increases from 2.1% (Census 2013) to 3.1% by 2046
- The system capacity of adding a cycle lane is, however, significantly high. A cycle lane between one and two metres wide can accommodate over 2,000 people per hour, equivalent to more than one lane of motorway traffic.

PROBLEM TWO

Lack of safe and accessible cycle and pedestrian connections result in reduced opportunities for people to experience community assets and the natural and built environment in the lower North Shore.

- This area has high amenity value due to outstanding natural features such as Onepoto Domain and the Tuff Crater. These locations also have good sight lines across Waitemata Harbour and the city skyline. The quality of the existing public access to these locations is however considered to be low.
- Access by bicycle from Esmonde Road to Onepoto Domain is via Akoranga Drive, College Road, Lake Road and Onewa Road.
- There is limited or no access by walking and cycling to these areas from the city centre and Takapuna.
- Accessing these areas from the city centre is not possible by walking or cycling without a 45km detour to Hobsonville or via ferry to Devonport and Birkenhead or bus to Akoranga bus station and then walk. These routes incur significant time penalties and are unrealistic within a 30 minute journey time.
- A key priority within the GPS is improving access to social and economic opportunities so that urban areas are well connected, safe, accessible and liveable. This Project can support this outcome and provide increased social benefits to the surrounding area.
- This area is predominantly car dominated with limited walking and cycling for work and recreation. Research undertaken by Arup titled Cities Alive: Towards a walking world, investigates the role walkability plays in developing more liveable, sustainable, healthy, safe and attractive cities. The research draws on 80 case studies from around the world and identifies that: Traffic infrastructure can provoke physical and social segregation even within dense urban contexts, reducing the level of accessibility between neighbourhoods. Breaking down traffic speed, improving pedestrian connectivity and increasing the number of crossing facilities are all measures that can integrate and encourage the idea of inclusiveness.
- The Project will provide increased connectivity and increase accessibility to social infrastructure including schools, parks and sporting fields.
- With the introduction of SkyPath and SeaPath, AUT North Shore site will be accessible by walking and cycling from the city centre and Isthmus – increasing travel choices in the lower North Shore.
- SeaPath along with AT’s proposed local road network investment (identified in the Auckland Cycling PBC) will provide a growing active mode network of dedicated walking and cycle infrastructure to increase the connectivity between suburbs, linking Special Housing Areas (where intensive fast-tacked housing development is occurring) along with existing communities with existing transport infrastructure, local shops, cafes, restaurants, services and historical architecture.
DEVELOPING THE PREFERRED OPTION

The process for identifying the preferred option involved two key phases:

INITIAL ASSESSMENT OF THE INDICATIVE BUSINESS CASE (IBC)

The IBC assessed four options:

1. Base Case option was considered for comparison purposes which included NSR.
2. The Seaward option consists of partially freestanding boardwalk along the eastern edge of SH1 with sections of freestanding boardwalk within Shoal Bay. This was discounted due to constructability constraints, increased personal safety risks due to isolation and severance to the local communities.
3. The Coastal Edge option consists of partially freestanding boardwalk along the coastal edge of SH1 with longer sections of freestanding boardwalk within Shoal Bay. This option was discounted due to constructability constraints and severance to the local communities. Both options were discounted for similar reasons including:
   - increased personal safety risk
   - the routes were mostly isolated with few possible escape routes for users that were concerned about their personal security (CPTED) with limited passive surveillance available
   - connectivity to the local communities were reduced in these options
   - these route options pass directly through the Coastal Marine Area and ecologically sensitive areas and are likely to have constructability constraints.
4. The Landward option followed Sulphur Beach Road, along SH1 on the western side, up and around Onewa interchange to Esmonde Road. This was the preferred route as it provides improved connectivity to the local road network as well as benefiting the short and long distance commuting trips. In comparison to the other short listed options it was assessed that the Landward option would:
   - provide improved connectivity to local roads and communities
   - encourage greater use, including short journeys
   - increase personal user security through improved levels of passive surveillance and
   - avoid ecologically sensitive areas.

DBC OPTION DEVELOPMENT AND ASSESSMENT

The key considerations during the option development and assessment phase were:

• Alignment with the GPS
• Alignment with the project investment objectives
• Integration with the wider Auckland walking and cycling network, which is under developed on the North Shore
• Constructability of the option
• Value for money proposition.

Qualitative values were considered through the engagement work with mana whenua, Bike Auckland and other stakeholders.

Options were developed through a series of workshops that were attended by key stakeholders, partners and technical specialists. The options gave consideration to different levels of integration between existing walking and cycling infrastructure within the AT road network and new facilities along SH1.

The options were also assessed on their effectiveness in delivering patronage to the proposed SkyPath facility at the Harbour Bridge.
PREFERRED OPTION

The result from the options development and assessment process is a preferred option alignment with two groups of facilities:

The Preferred Option is to deliver a new four-metre shared path facility that provides the most direct and mainly separated route with the alignment running parallel to SH1 between the Harbour Bridge and Esmonde Road.

The majority of this alignment is within the existing motorway designation. Although it follows a similar alignment to the motorway, the structures required to facilitate the shared path vary in construction type and method. The details of the option include:

- Clipped on bridge from the car park under the Harbour Bridge to Sulphur Beach Boat Ramp
- Shared space facility from Sulphur Beach Boat Ramps to Sulphur Beach Road and Beach Road intersection
- Off-road shared path along Sulphur Beach Road, past the police station and across Stafford Road to Stafford Park
- Boardwalk and bridge structure from Stafford Park across the estuary, over the north-bound motorway Onewa Road off-ramp and under the south-bound off-ramp bridge
- Bridge structure under the south-bound motorway on-ramp bridge and over the north-bound motorway on-ramp
- Bridge structure over the retaining wall pinch point along SH1
- Off-road shared path at motorway grade across Heath Reserve
- Boardwalk from Heath Reserve, across Tuff Crater to the embankment of Esmonde Road motorway off-ramp
- Off-road shared path along the embankment to Esmonde Road intersection
- Signalised crossing across to Esmonde Road/Akoranga Drive shared path.

Complementary local road network improvements have been identified to support possible staged implementation and support better integration with the existing local network. This is explored further as part of the implementation strategy. Further design and development would require collaboration with AT.

Details of this option include:

- Shared space from the car park under the Harbour Bridge to Alma Street
- Speed calming and wayfinding around Alma Street connecting to Queen Street
- Improvements to Queen Street cycle facilities
- Intersection upgrade to Queen Street/Onewa Road
- Minor upgrade to the shared path along Onewa Road, this will include removing existing barrier fences, relocating existing light columns and signs posts, and
- Bridge connection from Sylvan Avenue/Onewa Road intersection to the bridge structure over the north-bound motorway on-ramp.

The preferred option is displayed in FIGURE 3.
FIGURE 2 Preferred Design Outcome
**PREFERRED OPTION ASSESSMENT**

**IAF RESULTS ALIGNMENT**

The Preferred Option is strongly aligned with the GPS as outlined below. Under the Investment Assessment Framework (2018-2021), the Preferred Option attracts a “high” rating.

**ACCESS TO OPPORTUNITIES, ENABLES TRANSPORT CHOICE AND ACCESS, AND IS RESILIENT - LIVEABLE CITIES.**

**HIGH**

Targets the completion and promotion of networks in high growth urban areas to enable access to social and economic opportunities.

The project is in close proximity to Northcote and Takapuna development areas, which have:

- substantial capacity provided in the Auckland Unitary Plan for housing and business development
- access to a large number of jobs within a reasonable commuting time
- access to centres and the strategic public transport network within easy walking distance
- major public landholdings with intended or potential redevelopment
- current or planned infrastructure capacity that is likely to enable significant additional growth – for example, the expansion of the strategic transport network that improves connectivity.

**VALUE FOR MONEY**

The implementation of the project has been assessed based on two options:

- Full delivery of the Preferred Option - a new shared use path parallel to the Northern Motorway, from Akoranga Road to Stafford Road, and from the end of Sulphur Beach Road to the proposed SkyPath. New protected on-street cycle lanes are planned on Sulphur Beach Road
- Staged delivery of the Preferred Option would have the construction of Onewa Road to Northcote Point delayed. This staged option is a fall back if funding for the Preferred Option is not available within the assumed timeframes.

The estimates and the benefit cost ratios for the Project are outlined in the table below:

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>FULL SCHEME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expected estimate</td>
<td>$72.3m</td>
</tr>
<tr>
<td>Benefit Cost Ratio</td>
<td>1.2</td>
</tr>
</tbody>
</table>

The full delivery option is predicted to have the higher benefits than staged, as a result of realising the benefits earlier. Health and environmental benefits for cyclists comprises approximately 48% of total benefits.

Traffic decongestion benefits also make up a significant portion of the overall benefits at approximately 20% of total benefits. SeaPath will provide an alternative to private car travel on the Northern Motorway and Auckland Harbour Bridge. As a result, any mode shift in favour of cycling will reduce existing (or forecast future) congestion on the Northern Motorway.

The sensitivity of the evaluation has been assessed against 12 key parameters. The results show the BCR is sensitive to the changing assumptions producing a range between 0.3 and 2.3.

The lower bound tests show that the viability of SeaPath is highly linked to the presence of the proposed SkyPath. Without SkyPath, SeaPath BCR is 0.3. Also the BCR drops slightly below one if the discount rate is 8% or if benefits fall by 20%. All other sensitivity tests keep the BCR as a ‘Low’ rating (BCR between 1 and 3) under PIKB Assessment Framework criteria.

**INVESTMENT PROFILE**

The Preferred Option has been assessed as having a high strategic fit in accordance with the Investment Assessment framework (2018-2021) with strong policy alignment with the GPS 2018. The Preferred Option is forecast to be an economic option with a BCR of 1.2, and is rated a ‘Low’ against the PIKB Allocation Profile criteria. Delaying construction of Sulphur Beach Road section to 2036 under Option 2 only marginally increases the BCR and therefore this option is not recommended over Option 1, unless funding is not available.

This places the project with a results alignment profile of HL Priority 5.
IMPLEMENTING THE PREFERRED OPTION

IMPLEMENTATION STRATEGY

It is recommended that there is a robust pre-implementation stage to confirm procurement and the implementation strategy including considering staging options if financial constraints dictate. There is strong motivation, need and support to deliver SeaPath as soon as possible, and the implementation strategy will consider how this can be achieved in the most effective and efficient manner.

Key considerations include:

- High level of ability to deliver on the GPS and government intent
- Ensuring design and construction can commence within the current NLTP funding round
- Strong existing national and local government support and motivation
- Level of connections and interfaces with AT and AC networks and environmental features
- Complementary consent, design and construction timing with the proposed SkyPath.

The preferred implementation strategy is delivery of SeaPath in its entirety from Esmonde Road to Auckland Harbour Bridge on the basis that:

- The option delivers strongly on the project issues and objectives
- It is expressed as the community and local board preference
- It best meets the strategic intent of the government and
- A full delivery model will allow for bulk purchase of services and materials providing overall cost savings.

Should funding constraints be experienced, the delivery of SeaPath could revert to a staged approach.
PROCUREMENT STRATEGY

The key attributes for consideration are as follows:

• Scale and complexity of the project - The majority of the risks are associated with planning, design and stakeholder/political influences.

• Timeframes – there is pressure to deliver walking and cycling initiatives to support better transport outcomes and government intent. This is coupled with high public and political expectation.

• Market competition – use of standard Transport Agency procurement for professional services is likely to provide the best value-for-money, and help to sustain competition in the professional services industry.

The recommended delivery model for procuring SeaPath is a Staged/Traditional approach. This method is appropriate as the project complexity, uncertainty, innovation and risk is low. It will allow the project to come to the market in a timely manner as well as be delivered within the anticipated timeline. It also allows for a high level of involvement and control of the project by the Transport Agency. If possible it would be beneficial to engage and obtain involvement from contractors to inform the design process and iteratively compile the design and construction components and quantities before releasing to the market.

CONSENT STRATEGY

The consent strategy identified key features of the preferred route requiring specific consideration as summarised below:

• Proximity to the proposed SkyPath route and the conditions of the existing the proposed SkyPath consent decision.

• The extent of works within the Coastal Marine Area (CMA). Specifically where the alignment connects to the Harbour Bridge and where it also passes through the Tank Farm Volcano (Outstanding natural Feature No.203) and Onepoto Explosion Crater (Outstanding natural Feature No.142) and Onewa Road portions of the CMA.

• Effects on significant marine ecological area including wading bird habitats, shoal bay intertidal area, shell banks, mangroves and salt marshes within the Tank Farm Explosion Crater.

• Stormwater management, specifically management of storm water flow and discharge of flow from the Harbour Bridge clip-ons.

• Mana whenua values, particularly protection of the existing retaining wall at the base of the Sylvan Ave cliff, significance of the natural landform at the cliff face to iwi and the need to avoid any disturbance.

• The interface with AT network corridors at:
  - Onewa Road/Queen St intersection;
  - Onewa Road/Sylvan Park Ave intersection; and
  - Sulphur Beach Road.

• The notable trees and outstanding natural feature along the cliff base below Sylvan Park Ave (including the large pohutakawa tree directly in line of the pathway).

It is recommended that ‘Pathway 4 – Land use and Regional Consents’ as the preferred pathway for obtaining all necessary statutory approvals. This allows the Transport Agency to seek land use and regional consents for the full package of works through the lodgement of a single consent package. This approach still provides delivery flexibility. The consents could be lodged in two packages either concurrently or independently for Staged Option then Full Scheme. Subject to delivery timing and funding there may be advantages to lodging Staged Option early.
MANAGING THE DELIVERY OF THE PREFERRED OPTION

On-going stakeholder collaboration, consultation and management with the key partners and mana whenua will be required to finalise arrangements to deliver the SeaPath preferred option.

Formalisation of the relationship and obligations between NZ Transport Agency and both AT and AC are progressing with the aim to work with Council.

The anticipated programme to implement the project is outlined in TABLE 2.

TABLE 2 Implementation Programme

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>COMPLETION DATE</th>
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</thead>
<tbody>
<tr>
<td>NZ Transport Agency Board approval of DBC</td>
<td>December 2018</td>
</tr>
<tr>
<td>Procurement: Pre-Implementation Tender</td>
<td>April 2019</td>
</tr>
<tr>
<td>Complete</td>
<td></td>
</tr>
<tr>
<td>Procurement: Pre-Implementation Tender</td>
<td>May 2019</td>
</tr>
<tr>
<td>Evaluation Complete</td>
<td></td>
</tr>
<tr>
<td>Pre-Implementation Complete (Design &amp; Consent)</td>
<td>May 2021</td>
</tr>
<tr>
<td>Implementation Complete (to Practical Completion)</td>
<td>November 2023</td>
</tr>
<tr>
<td>Implementation Complete (including Defects Liability Period 1yr)</td>
<td>November 2024</td>
</tr>
</tbody>
</table>

SUMMARY AND RECOMMENDATIONS:

This DBC identifies the preferred option for a new four kilometre shared walking and cycling path through the lower North Shore from Northcote Point to Esmonde Road.

SeaPath will connect at Northcote Point with the proposed SkyPath link across the Harbour Bridge. The two projects combined will deliver transformative change through provision of a direct walking and cycling route from the North Shore to the city centre.

From Northcote Point, SeaPath will follow a route to Esmonde Road predominantly running on the western-side of the Northern Motorway. This northern link and connections with communities along the route will maximise accessibility between the places people live, work, study, and play. SeaPath’s route along the original shoreline will also showcase the area’s natural features and cultural history.

Both the proposed SkyPath and SeaPath projects have different histories, construction challenges and timelines, but will need to work closely with each other to ensure consistency and user experience.

IT IS RECOMMENDED THAT:

- The Preferred Option (Full Scheme) is taken forward to the detailed design/implementation stage
- Continue collaboration with AT and AC regarding the SeaPath interface and connections to the local road network and the access to reserves and natural features.
PART A
THE CASE FOR INVESTMENT
1. OVERVIEW

This DBC identifies the Preferred Option for a new four kilometre shared walking and cycling path on the lower North Shore from Northcote Point to Esmonde Road, Takapuna.

The SeaPath route seeks to maximise accessibility between the places people live, work, study, and play. SeaPath’s route along the original shoreline will also showcase the area’s natural features and cultural value and heritage.

SeaPath will connect at Northcote Point with the proposed SkyPath link across the Harbour Bridge. Both SkyPath and SeaPath projects have different histories, construction challenges and timelines, but will need to work closely with each other to ensure consistency and user experience.

The NZ Transport Agency, AC and AT are working together to create a well-connected network of walking and cycling routes throughout Auckland and making urban walking and cycling safer and a more attractive transport choice.

NZ Transport Agency is responsible for both the SeaPath and SkyPath projects. The two projects combined will deliver transformative change through a direct walking and cycling route between the lower North Shore and the Auckland isthmus including the city centre.
2. PARTNERS AND KEY STAKEHOLDERS

2.1. THE INVESTOR

NZ Transport Agency is the crown entity responsible for planning, operating and managing the state highway network and is an investor in the transport system.

The NZ Transport Agency has an objective to make cycling a safe and attractive transport choice and has multiple roles relevant to SeaPath including:

- Allocating funds under the NLTP that determines funding availability for the project
- Leading the planning and delivery of cycle network components within state highway corridors.

2.2. PROJECT PARTNERS

2.2.1. AUCKLAND COUNCIL

AC is responsible for land use planning and setting long-term policies for Auckland. In addition, AC manages public parks including developing cycle facilities within them. Most Outstanding Natural Features (ONF) within the project site are public recreational areas that are managed by AC. Various paths run through the parks and reserves linking neighbouring streets, creating informal connections across the site. Some of these paths have the potential to be formalised either through public demand or programmed works; this can impact the project at a network level and should be considered and managed with AC stakeholders.

AC Parks team was engaged through a series of meetings held throughout the Project’s development. The meetings sought to exchange information and maximise opportunities to co-ordinate proposed connections to and from SeaPath with the local recreational areas managed by AC (such as Tuff Crater).

Representatives from AC who attended the site visit held in September 2017 also attended and participated in the Project’s long list and short list option workshops.

2.2.2. AUCKLAND TRANSPORT

AT is responsible for all of the region’s transport services (excluding state highways and rail freight). AT has an investment priority to extend the regional cycleway network. It is important that NZ Transport Agency work with AT to ensure that committed cycling schemes within the wider cycle network are coordinated and delivered in a timely manner in relation to the SeaPath project. When cycle facilities are well utilised, they can enable more people to access key destinations without requiring more space for travel or car parking, which effectively improves the efficiency of the transport system.

The Project Team engaged with AT’s walking and cycling team and Technical Specialists throughout the project. The SeaPath route alignment deviates between the designations of both NZ Transport Agency and AT. Engagement between organisations sought to collaborate on the interface between SeaPath and complementary feeder connections that support the development of a comprehensive cycle network.

AT representatives were invited to the long list and short list workshops to assist in the options development process. Meetings were held at regular intervals to assist in the co-ordination of the investment strategy of AT within the Project site and the proposed SeaPath connections.

AT representatives were also engaged in the lead up to public engagement. AT staff were present at some of the pop-up engagement sessions to provide information to members of the public with regards to the AT walking and cycling network within the Project Area.

Key meetings held by the Project Team sought to inform AT on project progress, discuss challenges relating to interface of the SeaPath route with AT road network and upgrades required on the local road network. Meetings were held on 9 October 2017, 13 April 2018, 28 June 2018 and a progress update prior to public engagement on 14 August 2018.
2.2.3. MANA WHENUA

Mana whenua are partners to the Crown under the Treaty of Waitangi and are consequently considered partners to the process. The relationship of mana whenua with their ancestral lands, water, sites, wahi tapu and other taonga is a matter of national importance and has been recognised and provided for when considering the project. The Treaty relationship, including the outcomes of Treaty settlements, are also an important consideration to be taken into account.

The Project Team collaborated on decisions impacting mana whenua values and sensitive issues during Iwi Integration Group (IIG) meetings held every month throughout the duration of the DBC. The aim of these IIG meetings was for the Project Team to inform and seek input from mana whenua on the progress of the DBC. The meetings also provided mana whenua the opportunity to engage directly with members of the Project Team and raise any project specific concerns.

Site visits were held with mana whenua in March 2017 and July 2018. The July site visit was undertaken to understand the location of the original shoreline, the likely material behind the mass block wall and the possible solutions to avoid or minimise potential impacts the Project creates.

Mana whenua helped identify sites of cultural significance and indicated the design principle of “avoidance by design”. Mana whenua also highlighted the project should give greater prominence to environmental outcomes such as stormwater run-off.

The following sessions were held between the IIG, NZ Transport Agency and the Project Team:

<table>
<thead>
<tr>
<th>DATE</th>
<th>TOPIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>25 MARCH 2017</td>
<td>Introduction meeting</td>
</tr>
<tr>
<td>30 JUNE 2017</td>
<td>Project update and discussion of Onewa Road pinch point (mass block wall)</td>
</tr>
<tr>
<td>28 JULY 2017</td>
<td>Project update</td>
</tr>
<tr>
<td>18 AUGUST 2017</td>
<td>Discussion of proposed routes in IBC and confirmation of landward options as preferred in the DBC</td>
</tr>
<tr>
<td>29 SEPTEMBER 2017</td>
<td>Long-list workshop debriefing session</td>
</tr>
<tr>
<td>27 OCTOBER 2017</td>
<td>Discussion of preferred mana whenua route alignment following long-list workshop</td>
</tr>
<tr>
<td>23 MARCH 2018</td>
<td>Discussion of lessons learnt from past options assessment workshops</td>
</tr>
<tr>
<td>27 APRIL 2018</td>
<td>Post-options assessment workshop briefing session</td>
</tr>
<tr>
<td>22 JUNE 2018</td>
<td>General update session and presentation of post options assessment workshop material to mana whenua</td>
</tr>
<tr>
<td>26 JULY 2018</td>
<td>Post-pinch point site investigation discussion</td>
</tr>
</tbody>
</table>
## 2.3. KEY STAKEHOLDERS

The key stakeholders engaged through this DBC are outlined below:

### TABLE 4  Key Stakeholders

<table>
<thead>
<tr>
<th>STAKEHOLDER</th>
<th>FOCUS AREA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auckland Motorway Alliance</td>
<td>Safe, efficient and reliable travel on the Auckland motorway network</td>
</tr>
<tr>
<td>Bike Auckland</td>
<td>Safe, connected and high quality facilities for cyclists</td>
</tr>
<tr>
<td>Department of Conservation</td>
<td>How the proposals impact conservation of New Zealand's natural and historic heritage</td>
</tr>
<tr>
<td>Forest and Bird</td>
<td>Protection and conservation of New Zealand's environment and native species</td>
</tr>
<tr>
<td>Heritage New Zealand</td>
<td>Identification, protection, preservation and conservation of the historic and cultural heritage of New Zealand</td>
</tr>
<tr>
<td>Living Streets Aotearoa</td>
<td>Promotion of walking friendly communities</td>
</tr>
<tr>
<td>Local Board – Kaipatiki, Devonport/Takapuna</td>
<td>How proposals benefit their established and emerging communities</td>
</tr>
<tr>
<td>Residents and business associations</td>
<td>How proposals benefit the community and wider businesses in the area</td>
</tr>
<tr>
<td>SkyPath Trust</td>
<td>Walking and cycling facility on the Harbour Bridge</td>
</tr>
<tr>
<td>Technical specialists</td>
<td>Potential impact of proposals on their area of subject matter expertise</td>
</tr>
<tr>
<td>Utility Service providers</td>
<td>Potential impact on existing and future upgrades of their respective utilities</td>
</tr>
</tbody>
</table>
2.3.1. TECHNICAL SPECIALISTS

Technical specialists were engaged by the Project Team during the DBC process to gain relevant information and understanding on the specialist areas required for the Project, i.e. arboriculture, archaeology, coastal avifauna, etc.

Technical specialists attended the options assessment workshop and ‘scored’ on the short list options using a Multi-Criteria Assessment (MCA) framework. They also attended site visits with mana whenua to work together to understand and develop sensitive solutions.

2.3.2. LOCAL BOARD

The Project Team presented an update on the Project’s progress to the Kaipatiki Local Board and Takapuna-Devonport Local Board in June 2017. This was followed with a joint site visit with AT and AC in September 2017 in which various members of the local boards attended.

A further update was presented to the local boards on July 2018, prior to public engagement and Local Board members attended pop-up engagement sessions.

2.3.3. BIKE AUCKLAND

The Project Team engaged with Bike Auckland during the DBC process as a key walking and cycling stakeholder. A joint site visit was held in September 2017 with AC and the Kaipatiki Local board. A further site visit was held with Bike Auckland in May 2018.

Bike Auckland representatives attended the long list and options assessment workshops in October 2017 and May 2018 respectively.

The Project Team also provided updates on the Project to Bike Auckland at regular intervals. The updates focused on seeking feedback from Bike Auckland on both the design form and the route alignment of SeaPath. Bike Auckland provided comments and design preferences following key meetings and site visits.
3. PUBLIC ENGAGEMENT

During August 2018, the SeaPath Project Team held six ‘pop-up’ community engagement events in the area surrounding the project route and held meetings with some key stakeholders. The engagement was an opportunity to update on project progress, outline next steps, and seek feedback to assist a Social Impact Assessment for the Project. The public were engaged via:

- 2,500 newsletters
- Facebook posts
- Web page
- Media release
- Emails to the SeaPath subscriber database
- 29 emails to key stakeholders
- 7 pop-up events

There was a total of:

- 740 pop-up event ‘interactions’ with people
- 225 “How will you use SeaPath?” Stickers
- 207 pieces of pop-up feedback
- 6 feedback emails

At each pop-up session, attendees were asked to identify the different ways they might use SeaPath.

It is clear from FIGURE 3 that people will primarily use SeaPath for commuting and for health, fitness and recreational purposes. Overall, there was strong community support for SeaPath, but a number of concerns were raised around the impact of large number of cyclists as a consequence of SkyPath interface around Northcote Point and safety issues with local roads. These concerns have been considered through the option development process and are documented further in Part B of this document.

![FIGURE 3 - Public Engagement Feedback](image-url)
This section describes the case for change for the SeaPath project. It addresses a number of key features including:

- National context for increasing mode shift to walking, cycling and public transport
- Auckland’s growth and the implications on travel demand
- The importance of targeted investment in walking and cycling, including:
  - Providing infrastructure in high growth areas
  - Understanding the current and future customer
  - Where mode shift to cycling would benefit the transport wider system.

4.1. NATIONAL CONTEXT

The GPS sets the priorities and focus of investment for land transport. It is a step change in approach for investment with a key priority on increasing mode shift from private vehicle trips to walking, cycling and public transport.

The GPS acknowledges that currently most people require a private motor vehicle to get to most places. This high level of dependency on private motor vehicles results in high transport costs, higher greenhouse emissions and increased congestion in our larger urban areas.

Walking, cycling and public transport are very important in supporting an efficient, sustainable and affordable transport system. Enabling more people to walk and cycle and to use public transport can also contribute to improved health outcomes as people increase levels of physical activity, through regularly incorporating walking and cycling into their daily lives.

The SeaPath project meets a number of investment priorities identified in the GPS, including:

- Delivering critical missing links in the urban cycle network in areas of high demand, for example, between Auckland’s North Shore and city centre
- Provision of good quality, safe, fit-for-purpose walking and cycling infrastructure
- Increasing the proportion of population who live within a reasonable walking or cycling distance to frequent and reliable public transport
- Supporting mode shift to lower emission and lower cost modes of transport
- Supporting the increased uptake of walking and cycling to support environmental and public health objectives.

Further evidence of how SeaPath meets investment priorities is set out in the following sections.

The NLTP, published on 31 August 2018, indicates that during 2018-21 about $390 million will be invested in walking and cycling initiatives across New Zealand. The aim of this investment is to improve connections to a range of transport choices, safety, accessibility and make a significant contribution to the revitalisation of town and city centres.

Both SeaPath and SkyPath are identified within the NLTP 2018-21 as key links in Auckland’s walking and cycling network, which will both be delivered by NZ Transport Agency, enabling project efficiencies and improved coordination.

More broadly, the NLTP focuses on ensuring people have improved choice for how they access employment, education and services. Central to this is the need for improved public transport, walking and cycling on critical corridors through Auckland.

The approach to reducing car dependency and enabling a shift to more public transport, walking and cycling use is becoming a high priority in transport policy for cities around the world.

Rapid population growth means that cities are looking to move people more efficiently to keep them functioning and to maintain and improve the quality of life of their residents. Planning a city where public transport, walking and cycling are the first choices for travel is embedded in the principles of the Healthy Streets Approach. The Approach (adopted in London) seeks to make the city healthier, more sustainable, safer and more connected which aligns with the investment approach identified in the GPS. This is backed by evidence that it improves health, reduces inequalities and encourages people to walk and cycle. It highlights that:

- Active travel enables Londoners to achieve the recommended physical activity levels to stay healthy (20 minutes a day). Inactivity is responsible for one in five deaths and diseases including type 2 diabetes, heart disease and some cancers
- People walking and cycling make up over half of all those killed or seriously injured on London streets. Walking levels are influenced by safety concerns and perceived road danger is a barrier to cycling in London
- Physical barriers or heavy traffic can make streets difficult to cross. This can disrupt social networks and lead to social isolation. Unsafe streets with fewer crossings and higher traffic speeds and volumes are all associated with lower levels of active travel.
4.2. REGIONAL CONTEXT

The next 10 years are expected to underline Auckland’s performance as the fastest growing major city in Australasia. The city is expected to grow by some 730,000 and its population is forecast to reach 2.4 million by 2043 – an increase greater than the rest of New Zealand’s population growth combined, and requiring 400,000 new homes. Of the 21 Auckland Local Boards, 16 are projected to grow at a faster rate than the national average including Waitemata, Upper Harbour, and Devonport-Takapuna.

Population growth is expected to be accompanied by employment and economic growth. This is expected to be concentrated in and around key business areas, such as the city centre and fringe area and new and existing metropolitan centres such as Takapuna, Westgate, Henderson, Manukau and Albany. Higher employment levels in Auckland’s city centre and other major employment centres will place additional pressure on already congested city centre access routes and access routes to other centres.

The GPS and the Auckland Plan recognise the critical role transport has to play supporting Auckland’s growth. This is also reflected through the ATAP which places greater weight on public transport, walking and cycling to support the realisation of environmental, health and growth outcomes.

Over the past few years investment in cycling has increased substantially in Auckland, from under $20 million a year in 2013 to around $40 million in both 2016 and 2017. Investment has focused on providing safe and protected cycling and walking infrastructure, which previously only existed along a very limited number of corridors (e.g. the Northwestern Cycleway next to SH16).

Between 2015 and 2018 the Urban Cycleway Investment Programme delivered 27 km of new cycleways in Auckland. This was particularly focused in the city centre including Quay Street and towards West Auckland linking with the Northwestern Cycleway and Waterview shared path.

There is strong evidence that the delivery of cycleways is supporting Auckland’s transport system. AT research into measuring and growing active modes of transport in Auckland indicates that:

- Across Auckland, the number of people frequently cycling to work and to public transport is continuing to grow particularly in the city centre and west Auckland where investment in infrastructure has been made.
- The numbers cycling for key point-to-point journeys such as for work, school and to public transport continue to increase from 31% in 2015 to 41% in 2018.
- The city centre and west Auckland has seen the greatest gains in cyclists - 11% and 9%, respectively in 2018.
- Cycling infrastructure is helping to drive improved perceptions of safety and confidence with over 50% of people believing that a lot has been done to improve cycling in Auckland.

There are still a number of barriers to growing the uptake in cycling including people’s low confidence to cycle in heavy traffic (due to safety concerns) and lack of safe infrastructure.

Improving the level of service for people cycling is critical to enabling this change. AT’s research into the quality of service for cycle facilities indicates that there is a growing body of evidence from around the world that shows the importance of providing high-quality cycle facilities in order to maximise the effectiveness of investment in cycling infrastructure. Cities with high levels of cycle use have extensive cycle networks that separate users from fast-moving and heavy traffic. By developing high quality, low stress cycling infrastructure, there is potential to attract the widest number of users.

Despite the recent increase in cycling infrastructure investment, Auckland’s cycling network is still underdeveloped and will take sustained investment and effort to be completed. The Auckland Cycle Programme Business Case was approved by AT and NZ Transport Agency in 2017. The Business Case guides the next 10 years of investment priorities for cycling in Auckland and informed ATAP cycling and walking investment package. The recommended approach was to target investment in areas of high growth, particular trip types and where mode shift would benefit the wider transport system. These three features are discussed in further detail below.

Stats NZ, Subnational population projections: 2013(base)-2043 update, 22 February 2017
1 Auckland Transport Alignment Project, April 2018
4 Evaluating Quality of Service for Auckland Cycle Facilities, 2016
4.3. PROVIDING WALKING AND CYCLING INFRASTRUCTURE IN HIGH GROWTH AREAS

Waitemata and Devonport-Takapuna Local Boards are both identified as high urban growth areas and are expected to grow by 35% and 18%, respectively. The proportion of working age (15-64) and over 65 is expected to increase in the future (see FIGURE 4). This is expected to increase the number of people commuting to work and in turn increasing the travel demand in the lower North Shore.

The growth in employment and residential population are expected to be concentrated in and around key business areas and existing metropolitan centres such as Takapuna, Akoranga, Northcote and the city centre and inner west suburbs.

Takapuna is a metropolitan centre located next to one of Auckland’s most popular beaches. Its high amenity, good connections to the city centre via bus, and high development potential have resulted in a number of recent medium density developments. To support this growth, AC has invested in open space upgrades in the area and identified it for Panuku’s urban regeneration programme, concentrating on the redevelopment of a few key sites. By 2046, the number of residents and jobs in Takapuna alone is expected to increase by 69% and 35%, respectively, as shown in FIGURE 4.

Takapuna has also been identified as a priority area for investment in the Auckland Cycling Programme Business Case between 2021 and 2028. The proposed investment includes providing feeder services to SeaPath and onward access to Takapuna metropolitan centre, Smales Farm and Akoranga bus stations as well links to local schools. This local investment along with national investment in SeaPath and SkyPath highlights the coordinated approach AT and NZ Transport Agency are taking to deliver a complete network in Auckland.

Northcote town centre, in the Kaipatiki suburb, has been identified for housing intensification including a number of Special Housing Areas that are expected to create over 700 new housing sites and a feasible capacity of approximately 10,800 dwellings.

Both Takapuna and Northcote town centres are well located close to the Northern Busway, the harbour bridge and state highway network. The increased employment, residential growth and aging population will place additional pressure on the already congested transport network and particularly the harbour bridge.

With the completion of SeaPath and SkyPath, the area will have direct walking and cycling connections to and from the city centre. It is therefore important to understand potential demand for walking and cycling in the area, how outcomes may be influenced by trip purposes, and the role SeaPath can have in supporting the transport system.

![FIGURE 4](image-url)
FIGURE 5  Forecast Population and Employment Growth (30 years)

<table>
<thead>
<tr>
<th></th>
<th>2016</th>
<th>2026</th>
<th>2046</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northcote</td>
<td>7,600</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Takapuna</td>
<td>11,400</td>
<td>15%</td>
<td>35%</td>
</tr>
<tr>
<td>Auckland CBD and Inner West</td>
<td>111,900</td>
<td>17%</td>
<td>38%</td>
</tr>
<tr>
<td>Population</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northcote</td>
<td>16,800</td>
<td>15%</td>
<td>26%</td>
</tr>
<tr>
<td>Takapuna</td>
<td>5,100</td>
<td>51%</td>
<td>69%</td>
</tr>
<tr>
<td>Auckland CBD and Inner West</td>
<td>73,200</td>
<td>18%</td>
<td>33%</td>
</tr>
</tbody>
</table>

* Based on ART36

SeaPath Walking and Cycling Connections | Detailed Business Case
4.4. **TARGET PARTICULAR TRIP TYPES THAT ARE AMENABLE TO WALKING AND CYCLING**

The Auckland Cycle PBC identified that the cycling network needs to provide for a broad range of customers to maximise potential for increased cycling uptake. Particularly trip types that are more amenable to cycling and where mode shift would benefit the wider transport system. This section therefore summarises the potential demand for different trip including commuting for work and education, recreation and tourism.

**COMMUTER TRIPS:**

The lower North Shore is identified as a priority area for investment due to the relatively low levels of current transport choice and the ability for walking and cycling to serve short to medium commuter trips. Particularly between the residential areas and employment centres of Takapuna, Northcote, Akoranga Business Park, the city centre and education facilities such as Auckland University of Technology (AUT).

Census data indicates that the average commuter trip in Auckland is around 11.8km and the average cycling trip length is 9.8km. This is equivalent to the distance between Takapuna and the city centre.

Census commuting data indicates that there are around 3,500 people commuting within a 9km catchment of SeaPath, including trips to/from the city centre and lower North Shore indicated by the red and blue zones within **FIGURE 6** below. Of these, less than 100 people currently commute by bicycle. This is likely to almost double over the next 30 years due to the expected high growth in population and employment in the area. This highlights the scale of potential commuter trips that could be made by bicycle along SeaPath and SkyPath over the next 30 years.

The catchment for commuter trips made by bicycle could also increase with the continued growth in E-bikes. There is currently an estimated 41,000 E-bikes in Auckland, up from 13,000 in 2016. Although only a small proportion of the population own an E-bike, a third of Aucklanders would consider purchasing one in the future.

Research into the regulation and safety of E-bikes highlighted that the average speed of E-bikes in the current market is around 23 km per hour. This is substantially faster than people cycling on unpowered bicycles and helps to address many barriers to cycling including reducing the physical exertion.

People are also being attracted to E-bikes for the increase in distance that could be covered and the ease of carrying items for point-to-point trips. They are also influenced by improved cycle infrastructure and an aging population is more likely to use E-bikes than unpowered bicycles.

This could increase the average commuter trip by bicycle to 12km (based on achieving an average speed of 23kph over 30 minutes). This would unlock large residential areas (c. 60% additional commuter trips to/from the city centre) to the north (Forest Hill, Crown Hill and Lake Pupuke) and south (Narrowneck and Seaclife) of Takapuna that would be within 30 minutes cycle by E-bike of the city centre.

At the same time, the significant rise of motorised electric scooters and other forms of e-mobility in Auckland and other cities around the world is having an impact people’s personal mobility. Dockless e-scooter share schemes allow customers to make easy point to point journeys that may be too far to walk but too short to drive. This is expected to expand customers views on what is an acceptable short trip and targets new customers who may not want to undertake physical exercise i.e. walking and cycle to/from work.

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5 Auckland Cycling Programme Business Case, 2017
6 Based on 2013 census data of total people commuting to/from each suburb
7 Based on ART model cycle to work trip data
8 Measuring and growing active modes of transport in Auckland, TRA, May 2018
9 NZ Transport Agency research report 621; regulations and safety for electric bicycles and other low-powered vehicles; July 2017
FIGURE 6
Commuter Trips Between the City and Lower North Shore

Commuter Trips to North Shore:
- City to Northshore
- Northshore to City

Commuter Trips Growth:
- High Growth
- Medium Growth
- Low Growth

SeaPath Walking and Cycling Connections | Detailed Business Case
EDUCATION TRIPS:
Tertiary education trips are particularly important in the context of walking and cycling as the cost of living including transport is a big factor for university students. AT undertakes an annual survey into student travel patterns at eleven Auckland campuses. The main purpose of this research is to better understand the tertiary student market, identify travel modes they typically use, propensity and motivations for behaviour change.

In 2018, around a third (34%) of all trips to all campuses were made by car, while two thirds (68%) were made by non-car based trips including the bus, train, ferry, cycling and walking. However, students outside the city centre were more likely to use a car as the main mode of travel. Almost half (49%) of all trips to/from the AUT north campus were made by car in comparison to 29% by public bus, 7% by the university shuttle and a further 12% by walk and cycle. Over 75% of students also travelled to the campus in the morning peak (07:00 – 10:00) when the transport system is most heavily congested. The results highlight potential for shifting trips to walking and cycling. One-fifth of students indicated they lived close enough to either walk and/or cycle to campus. Over half students interviewed mentioned that having bigger, better and more cycle lanes would make cycling to the campus easier. Other commonly mentioned suggestions included the need for safe routes or less traffic.

RECREATION AND TOURISM TRIPS:
Walking and cycling is an important part of residents and visitors daily lives for keeping fit, providing ‘me’ time and allowing people to enjoy the weather.

SeaPath and SkyPath can play a role in creating safe, healthy and attractive options for residents and visitors to experience the city vista and Waitemata Harbour from the Bridge and lower North Shore. Research undertaken by AC for the SkyPath Business Case indicated that recreation and tourist trips could account for over 70% of the estimated patronage for SkyPath. A direct link from the Harbour Bridge on to Takapuna could support a lot of local trips to valuable local assets such as Onepoto Domain and Takapuna beach.

4.5. WHERE MODE SHIFT TO WALKING AND CYCLING WILL BENEFIT THE WIDER TRANSPORT SYSTEM
The state highway corridor is increasingly becoming a key part of Auckland’s active transport network offering high quality fully separated walking and cycling journeys connecting sub-regions of Auckland. Several shared walking and cycling links have already been provided alongside the motorway including the Northwestern Cycleway and the SH20 Cycleway.

The Northwestern Cycleway is approximately 13km long and follows the general alignment of the Northwestern motorway, running from central Auckland to Lincoln Road in the western suburbs. The cycleway is almost entirely off-road and provides additional transport capacity to the motorway. Since 2011, the number of cyclists using the Northwestern Cycleway has increased by 60 per cent to over 220,000 in 2017. Based on 2016 traffic count data taken from AT’s open GIS database, this equates to around 0.5% cycle mode share along the Northwestern Motorway.

In the longer term, the route is likely to be extended past Westgate and link with the Northwest Growth Area in Auckland (which includes the areas of Whenuapai, Riverhead and Kumeu). These areas have been earmarked for significant urban growth including 40,000 new homes and 186,000 people by 2050. This is likely to increase travel demand on an already congested transport corridor between West Auckland and the city centre.

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10  Measuring and growing active modes of transport in Auckland, 2018
The future potential growth for the cycleway is therefore significant. Three growth factors were applied to the 2017 cycleway counts to determine a low, medium and high estimate for cycleway patronage in 2046. These were 4%, 6% and 9%, respectively. The growth rates were based on the average yearly growth rate along the North-western cycleway between 2011 and 2017 of 9%. This was taken as a high estimate as it includes the upgrade of the North-western cycleway as part of the Waterview connection. Prior to the Waterview upgrade the average yearly growth rate is 4%, this was taken as the low estimate. FIGURE 7 highlights that the low and medium growth rate is expected to achieve between 680,000 and 1.2 million cycle trips a year by 2046, which is equivalent to 1700-3300 daily cycle trips.

Northern Motorway has a number of similar characteristics to the Northwestern motorway including:

- They are both strategic transport corridors which are heavily congested at peak times
- The Northwestern causeway and harbour bridge are pinch points in the network
- The Northwestern links west Auckland with the rest of the city and the harbour bridge links the north shore with Auckland Isthmus
- There are limited alternative routes between the urban areas which reduces the opportunity to spread transport demand
- It is very difficult and costly to expand road capacity on these corridors particularly at the pinch points.

Like Northwestern cycleway, both SeaPath and SkyPath have the opportunity to improve the transport system performance and increase transport choice on a key congested corridor where additional capacity is limited by other modes.

At present, the Northern motorway (between Esmonde Road and the Harbour Bridge) carries around 150,000 vehicles a day and is at vehicle carrying capacity at peak times. Around one third of these trips are made on the Northern busway and this is expected to increase to around 50% by mid-2020s. This is due in part to road capacity constraints on the harbour bridge and increased travel time reliability at peak times of the Northern busway over general traffic.

The North Shore RTN Study, developed in 2016, indicated that demand would exceed functional capacity on the northern busway by mid-2030. However, the busway continues to exceed expectations and there are growing capacity concerns within the city centre. At the same time, the anticipated population and employment growth in the North Shore and city centre has increased substantially since the RTN study was published. These factors are expected to bring forward the capacity constraints on the busway and lead to a deterioration in performance sooner than anticipated, impacting journey time reliability, increasing congestion and crowding and reducing household accessibility to the city centre.
5. **ACTIVITY CONTEXT**

5.1. **GEOGRAPHICAL**

The Project area is located along the western edge of Shoal Bay, a large north-south bay opposite Auckland City. The area was originally a complex coastline with sandy beaches and several estuaries that were modified with the introduction of the Northern motorway from the late 1950s. There is currently very little public access or facilities east of the motorway along Shoal Bay and there is significant ecological habitat especially for wading birds such as terns, oyster catchers and dotterels.

Surrounding suburbs include Takapuna to the northeast, Hillcrest and Northcote to the northwest, and Northcote Point and Birkenhead to the west, as shown in **FIGURE 8**.

There are a number of significant natural, ecological and transport challenges that influence the outcomes that this project is seeking to achieve. These are discussed in more detail below.
5.2. ENVIRONMENT

Shoal Bay is the central feature between the city centre and the North Shore. Shoal Bay and the surrounding area have a number of important ecological, cultural and historical characteristics. Shoal Bay, on the coastal edge of SH1, is a natural heritage location of regional significance and is home to extensive mangroves, saltmarsh and shell bank communities. Mangrove habitat extends inland of the motorway in the inlets leading to Tuff Crater and Onepoto Domain at the Onewa interchange. It is also a key feeding and roosting area for migratory and coastal wading bird species including Oyster catchers, Caspian tern and NZ Dotterel.

The geology along the western edge of SH1 comprises of volcanic explosion craters including Onepoto Domain and Tuff Crater (Tank Farm) which were formed by volcanic explosions 30,000 years ago and Waitemata sandstone headlands - a significant landscape iconic to Auckland that holds strong mana whenua cultural value. The steep cliffs are lined with pohutukawa trees and there are a number of hilltop properties that are heritage-listed.

The proximity between the cliff edges including retaining wall pinch point located just after the northbound on-ramp to the motorway and pohutukawa tree (highlighted in FIGURE 9 below) and SH1, plus the coastline, waterways and mangroves (highlighted in FIGURE 10) mean it is significantly challenging to construct a safe and separate walking and cycling facility that:

- enhances local connections to the community
- does not adversely impact the natural environment
- does not adversely impact traffic operations on SH1.

FIGURE 8  SeaPath Geographical Context
The immediate context of the SeaPath project area includes:

- Over 15 parks and reserves including Sulphur Beach, Stafford Park, Onepoto Domain, Heath Reserve and Tuff Crater/Tank Farm. Both the Onepoto Domain and Tuff Crater reserves are popular locations for families with walking tracks, playgrounds and a learn-to-ride track for children.
- A number of schools including Northcote College; St Mary’s School; Northcote Primary School; Northcote Intermediate School; Onepoto Primary School; and Hato Petera College.
- AUT North Campus just beyond where SeaPath terminates at Esmonde Road.
- Cycleway links to the communities of Birkenhead, Northcote Point and Northcote.
- Northcote Town Centre, Onewa Road shops and Birkenhead Town Centre.
FIGURE 10  Local Natural Constraints

SeaPath Walking and Cycling Connections | Detailed Business Case
FIGURE 11  Local Amenities
5.3. TRANSPORT

The road network in the context of SeaPath consists of SH1, regional connectors, arterials and low volume local streets highlighted in FIGURE 12 below. These roads are generally built around the outstanding natural features in the area.

SH1 is a critical national transport link connecting Auckland, the North Shore and Northland. It is a 7-lane motorway (between the Harbour Bridge and Esmonde Road) that supports around 150,000 vehicles per day.

Onewa Road is a 4-lane regional collector for the North Shore suburbs of Birkenhead, Northcote and Glenfield and supports around 25,000 vehicles per day. The road has a high movement function with limited priority for pedestrians and people cycling.

Both corridors face significant congestion, particularly at peak times, which has grown substantially in recent years, and is set to worsen with continued increases in population, housing and freight movements over the next 30 years.

FIGURE 13 highlights the existing walking and cycle facilities which consist of on-road and shared paths on local arterials and collector roads. NSR runs along Queen Street and continues onto Lake Road and Northcote Road to the north.

At present, access to the city centre via cycle is either via ferry or a 40-km circular route around the West Harbour through Hobsonville, Te Atatu and the Northwestern Cycleway, as highlighted in FIGURE 14.

There are onward walking and cycling connections from Akoranga Drive and Esmonde Road into the North Shore. This includes connections to Takapuna and Devonport via the Devonport Green Route and Lake Road.

There are also a number of planned walking and cycling connections highlighted in FIGURE 14 and described below including:

NORTHERN CORRIDOR

Northern Corridor Improvement project is widening SH1 as well as providing better links with the Upper Harbour Highway. The Project will also deliver over 7kms of new off-road shared use paths between Albany and Constellation drive and a wide range of local road and park connections.

This activity is part of the Regional Cycle Network and links several large residential and employment areas. There are currently no off-road cycle routes for north-south movements on the North Shore and limited on-road cycle routes. An off-road quality cycle route presents a great opportunity for improving the uptake of active modes.

The 2018-21 NLTP allocates $2.5m to undertake a DBC to assess the provision of walking and cycling facilities to cater for north-south movements on the North Shore and limited on-road cycle routes. An off-road quality cycle route presents a great opportunity for improving the uptake of active modes.

The future cycle link is proposed to follow the Northern Motorway from Constellation Drive to Esmonde Road with the aim of linking Albany to the city centre.

AT LOCAL ROAD IMPROVEMENTS

The proposed walking and cycling improvements include providing feeder services to SeaPath and onward access to Takapuna metropolitan centre, Smales Farm and Akoranga bus stations as well links to local schools. This is expected to be delivered between 2021 and 2028 and is identified within the Auckland Cycling Programme Business Case.

PATUONE RESERVE WALKWAY

Devonport-Takapuna Local Board has also been working to deliver a number of transport projects that set to transform how people can get around the North Shore and into the city once SeaPath and SkyPath projects are delivered.

The Patuone Reserve Walkway in Takapuna has received funding to proceed to construction from both Devonport-Takapuna Local Board and AC. When completed, the project will deliver a 1km long, 2.5m wide off-road path between Esmonde Road and Auburn Street in central Takapuna.

FIGURE 12  Local Road Network

KEY
- **State Highway**
- **Regional**
- **Arterial**
- **Primary Collector**
- **Secondary Collector**
- **Access/Low Volume**
- **Bridges**

Intersections:
- **Signalised Intersection**
- **Roundabout**
FIGURE 13  Local Existing Walking and Cycling Facilities

SeaPath Walking and Cycling Connections | Detailed Business Case
5.4. SOCIAL AND CULTURAL

The social area of influence for the Project is focused on the people who will be impacted by the Project’s infrastructure, either in a positive or negative way across the life of the project. If SkyPath were included, the social area of influence would extend across the harbour and central Isthmus as well as further north to include Hibiscus Bay and Upper Harbour Local Board areas.

The wider community for the Project consists of the Kaipatiki and Devonport-Takapuna Local Board Areas. The key features of the local board areas in the wider community are described in TABLE 5 and further information is presented in Appendix H.

![Regional Walking and Cycling Network](image-url)
### TABLE 5  Key Features of Local Board Areas in the Wider Community

<table>
<thead>
<tr>
<th>FEATURE</th>
<th>KAIPATIKI</th>
<th>DEVONPORT-TAKAPUNA</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHARACTER</td>
<td>Northcote and Birkenhead Points are renowned for their built heritage.</td>
<td>The Devonport and Takapuna communities have their own unique characteristics.</td>
</tr>
<tr>
<td></td>
<td>Kaipātiki is defined by its green and blue taonga (treasure). Kaipātiki has one of the largest areas of continuous urban native vegetation remaining in Auckland’s ecological region, forming part of the North-West Wildlink. It has 30% tree cover spread between public and private landowners.</td>
<td>The area is prosperous, dynamic and diverse, and offers a range of quality lifestyles. There are numerous education and employment opportunities within the board area.</td>
</tr>
<tr>
<td>TOWN CENTRES</td>
<td>Town centres – Birkenhead, Glenfield and Northcote.</td>
<td>Metropolitan centre – Takapuna</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Town centres - Sunnynook, Devonport and Milford</td>
</tr>
<tr>
<td>NATURAL FEATURES AND OPEN SPACES</td>
<td>There are also a number of heritage sites important to Māori, such as the pa at Stokes Point. Approximately 540ha of local parks and reserves, including destination parks like Onepoto Domain and Chelsea Heritage Park and the Waitematā.</td>
<td>More than 110 local parks and sports fields. Natural features include a number of beautiful beaches with high recreational values, Mt Victoria and North Head, and the large volcanic crater of Lake Pupuke.</td>
</tr>
<tr>
<td>AMENITIES</td>
<td>Major venues such as the North Shore Events Centre and the Barfoot &amp; Thompson Netball Centre draw sports people and spectators from within Kaipātiki and other parts of Auckland. The North Shore campus of AUT University is located on Akoranga Drive, Northcote. Major leisure venues include the North Shore Events Centre, the Netball North Harbour complex and Takapuna golf course. The Chelsea Estate Heritage Park and Sugar Refinery along with Shoal Bay provide stunning coastal views and a cityscape of central Auckland.</td>
<td>The area has many cultural facilities, such as the Bruce Mason Centre, The Pumphouse, Rose Centre, Depot Artspace, Michael King Writers’ Centre and Lake House. 2 libraries. 1 leisure centre. 3 community centres. 6 arts and culture facilities.</td>
</tr>
</tbody>
</table>

There are a range of age groups in the local communities, with a higher proportion of more mature people than in other parts of Auckland. People are relatively affluent with low levels of deprivation and there is an existing proportion of the working population that travel to work by bicycle, walking or jogging.  

Based on feedback during the Project engagement and desk-based research, key features of the suburbs in the local area are:

- The natural environment including the coastline and beaches
- The area’s amenity including views of the Waitematā Harbour, Auckland Harbour Bridge and Auckland city
- Proximity to local shops, cafes, restaurants and services
- Each suburb has its own ‘village’ providing a sense of community
- The history of the area and its historical architecture
- Social infrastructure including schools, parks and sporting fields
- Transport infrastructure including the state highway network, ferry services to Auckland city and local footpaths and walkways.
6. STRATEGIC ASSESSMENT

6.1. DEFINING THE PROBLEM

At the outset of the DBC, representatives from the NZ Transport Agency, AT and AC reviewed the problems from the IBC stage to ensure they were still fit for purpose.

The partners agreed on the following key problems:

**Problem One:** There are no suitable walking and cycling facilities between Esmonde Road and the Harbour Bridge to serve the potential demand for commuter and education travel, placing additional strain on an already congested transport system in the lower North Shore.

**Problem Two:** Lack of safe and accessible cycle and pedestrian connections that limits the opportunity for people to experience community assets and the natural and built environment in the lower North Shore.

Specific evidence of these problems and evidence to support the investment objectives is presented in sections 6.3 and 6.4 below.

6.2. THE BENEFITS OF ADDRESSING THE PROBLEMS

Through the process of reconfirming the problems, the following objectives were rationalised for the project. The revised Investment Objectives provide a clearer focus around delivering infrastructure that enhances transport choice and increases access for the various walking and cycling user groups (including tourists and recreational users).

Investment partners agreed on two benefits:

**Benefit 1:** Improved transport system capacity;

**Benefit 2:** Improved access to community assets and the natural and built environment.

These reflect the expected outcome from addressing the problems. The benefits are linked to two investment objectives and five Key Performance Indicators (KPIs) which are presented in **TABLE 6**. These are discussed in more detail in sections 6.3.4 and 6.4.1.
<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>BENEFIT</th>
<th>INVESTMENT OBJECTIVE</th>
</tr>
</thead>
<tbody>
<tr>
<td>There are no suitable walking and cycling facilities between Esmonde Road and the Harbour Bridge to serve the potential demand for commuter and education travel, placing additional strain on an already congested transport system in the lower North Shore.</td>
<td><strong>Improved transport system capacity</strong> &lt;br&gt; <strong>50%</strong>  &lt;br&gt; <strong>KPI1</strong> Increase people throughput using active modes between Esmonde Road and Harbour Bridge by 40% in comparison to the reference case (526 trips) by 2026 (interim measure).  &lt;br&gt; <strong>KPI2</strong> Improve the cycling Quality of Service between Esmonde Road and Harbour Bridge to a level of 1.  &lt;br&gt; <strong>KPI3</strong> Reduce the cycling time between Esmonde Road and Harbour Bridge from 13 minutes to under 9 minutes.</td>
<td>Increase the total number of daily commuter and educational walking and cycling trips between Esmonde Road and Harbour Bridge to 1,500 by 2046</td>
</tr>
<tr>
<td>Lack of safe and accessible cycle and pedestrian connections that limits the opportunity for people to experience community assets and the natural and built environment in the lower Northshore.</td>
<td><strong>Improved access to community assets and the natural and built environment</strong> &lt;br&gt; <strong>50%</strong>  &lt;br&gt; <strong>KPI4</strong> Increase the number of walking and cycling connections points to Onepoto Domain, Tuff Crater and other natural assets within the project extent.  &lt;br&gt; <strong>KPI5</strong> Increase the 30 minute Walking and Cycling catchment to education facilities, Public Transport Hubs and other community assets within the project extent.</td>
<td>Increase the number of households access to the natural environment and community assets between Esmonde Road and Harbour Bridge by active modes</td>
</tr>
</tbody>
</table>
6.3. EVIDENCE TO SUPPORT PROBLEM ONE

6.3.1. THE EXISTING ROAD NETWORK IS UNSUITABLE

The only existing routes available for walking and cycling between Esmonde Road and Northcote Point are on the local road network. A number of the roads are unattractive to cyclists; they are indirect, cross several intersections, there are high traffic volumes, undulating terrain with several roads with steep gradient as indicated in FIGURE 15 and lack of segregation for people cycling from vehicles.

At present, the average travel time by bicycle from Esmonde Road to Northcote Point is 4.7km. This is via Akoranga Drive, College Road, Lake Road, Queen Street and Princes Street with an estimated travel time of 13 minutes. By 2026 and 2046, there is forecast to by 625 and 1070 (respectively) daily walking and cycling trips along this route.

The route is predominantly on-road and has a low to medium quality of service for cycling. College Road is a particularly narrow street as highlighted in the image in FIGURE 15. There is one general traffic lane in each direction, on-street parking and limited kerb to property boundary width to provide a shared path suitable for walking and cycling. People cycling along this route would need to be on-road and it would be an uncomfortable experience with a number of conflicting interactions with on-street car parking on the north side, bus stops and driveways along the street.

There are also severance issues with Onewa Road in particular due to the high volumes of vehicle traffic heading to and from SH1 and limited crossing points for pedestrians and people cycling. The Onewa Road and Lake Road intersection was not treated as part of the NSR scheme and therefore adds additional delay for people wanting to cross on foot or cycle.

The gradient around the Project area is also often steep as highlighted in FIGURE 15 limiting access to some natural local features such as Onepoto Domain and the Tuff Crater.

The quality of the walking and cycling facility is an important factor in supporting uptake patronage. International research has found that high levels of cycling are generally supported by the provision of high quality facilities. Attracting large numbers of new cyclists will require new facilities that meet high standards for safety, comfort and directness. The cycle facility quality of service evaluation tool (QoS tool) has been developed by Auckland Transport and aims to highlight where facilities meet critical minimum standards and will be comfortably used by a broad range of cyclists.

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15 This is based on the average mean speed from five cycle tube counts located on Lake Road and Queen Street in 2016 and delays at two intersections along the route
16 Evaluating Quality of Service for Auckland Cycling Facilities: A Practitioner’s guide, 2016
FIGURE 15  Existing Cycle Route from Esmonde Road to Northcote Point
6.3.2. CURRENT LIMITED TRANSPORT CHOICE IN THE LOWER NORTH SHORE

Walking and cycling currently play a minor role in commuter and education trips in the lower North Shore. Data available from the Census shows that at present:

- Walking accounts for 7% and cycling less than 1% of people travelling to work
- On average there are 60-70 daily cyclist trips from Akoranga to Northcote Point based on the ACM and cycle count data collected by AT (see Appendix E). This low level of cycle trips is representative of the overall means of transport in the area, which is predominately focused on private vehicle travel
- 62% of people travel to work by motor vehicle and 9% by public transport
- Similarly to the regional average, walking and cycling still only account for 8% of all trips
- AUT north campus is a key local traffic generator and currently 50% of trips to this facility are made by car and 32% by public transport
- AUT north campus is much more car dominated in comparison to the average (34%) for all eleven campuses in Auckland
- On average, around 80% students who travel to AUT north do so during the morning peak (07:00-10:00), which highlights that these trips are of similar nature to commuting
- One in five students at the AUT north campus indicated they lived close enough to walk or cycle to the campus. Of the students who live close enough to cycle, only 53% agree to some extent that cycling would be easy, 35% disagree. Further to this, almost half of students mentioned that having bigger, better and more cycle lanes would make cycling to the campus easier.

6.3.3. WALKING AND CYCLING CONTRIBUTION TO TRANSPORT SYSTEM CAPACITY

The lower North Shore has a low level of walking and cycling currently, but has been identified as an area with huge potential to serve short to medium distance trips. There are currently around 3,700 commuter trips within 9km distance that could be made by bicycle along SeaPath and connecting with SkyPath to/from the city centre and lower North Shore. This is expected to increase to around 6,200 commuter trips based on the medium to high urban growth projections for the area. This highlights the potential demand for cycling, however, does not reflect that forecast active mode demand.

Preliminary results from the Auckland Cycle Model which is based on cycle-to-work census data, predicts that the morning peak cycle mode share across the harbour bridge by 2046 would be 2.1% (or 600 trips) - with the delivery of SeaPath and SkyPath.

Looking at commute-to-work trips by Local Board areas, SeaPath alone would increase cycle mode share in Kaipatiki from 0.7% (Census 2013) to 3% by 2046 and Devonport-Takapuna increases from 2.1% (Census 2013) to 3.1% in 2046.

The system capacity of adding a cycle lane is, however, significantly higher. A cycle lane up to two metres wide can accommodate over 2,000 people per hour. This is equivalent to more than one lane of motorway traffic.

The construction of SkyPath and SeaPath will deliver the missing link in the walking and cycling network between the city centre and North Shore. This will provide an alternative to private car travel as well as public transport. As a result, any mode shift in favour of walking and cycling will provide additional capacity to the existing motorway.

6.3.4. SMART INVESTMENT OBJECTIVES

Increase the total number of commuter and educational walking and cycling trips between Esmonde Road and Harbour Bridge to 1,500 by 2046.

<table>
<thead>
<tr>
<th>TABLE 7</th>
<th>Key Performance Indicators and Associated Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>KPI</strong></td>
<td><strong>TARGET</strong></td>
</tr>
<tr>
<td>Increase people throughput using active modes between Esmonde Road and Harbour Bridge</td>
<td>Increase the daily walking and cycling trips by over 40% in comparison to the reference case (1070 trips) by 2046.</td>
</tr>
<tr>
<td>Improve the cycling Quality of Service between Esmonde Road and Harbour Bridge</td>
<td>Improve the Quality of Service of cycle facilities to 1 or 2.</td>
</tr>
<tr>
<td>Reduce the cycling time between Esmonde Road and Harbour Bridge</td>
<td>Reduce the average journey time and distance below 13 minutes and 4.7km</td>
</tr>
</tbody>
</table>
6.4. EVIDENCE TO SUPPORT PROBLEM TWO

This area has high amenity value due to outstanding natural features and parks including:

- Heath Reserve - located at the end of Exmouth Road and is the starting point for walking and cycling tracks through Tuff Crater reserve
- Stafford Park - a popular park for local residents and people from the wider area who travel to play and watch sporting events
- Onepoto Domain - a large park area with a number of playgrounds and a learn-to-ride track for children;
- Tuff Crater reserve - known for its walks, ecological values and visual appeal with good sight lines across Waitemata Harbour and the City skyline.

Both the Tuff Crater and surrounding Shoal Bay is a Department of Conservation Site of Special Wildlife Interest. The Tuff Crater restoration project is being led by Forest and Bird and has raised funds and arranged a major upgrade of the track around the crater to allow access for recreation and tourism.

Forest and Bird has proposed a nature path from the Harbour Bridge to Stafford Road connecting with Onepoto Domain and Tuff Crater. Opportunities exist to support this Project and provide more direct and accessible connections along the SH1 corridor particularly at Heath Reserve. This is instead of the existing roads such as Exmouth Road which is steep (greater than 10% gradient) and not easily accessed from Takapuna or the Harbour Bridge.

The quality and experience of the existing public access to these locations is considered to be low for the following reasons:

- Access by cycle on-road from Esmonde Road to Onepoto Domain is via, Akoranga Drive, College Road, Lake Road and Onewa Road
- Access by cycle off-road from Esmonde Road to Onepoto Domain is via AUT and Tuff Crater footpath. The access is not clearly signposted and there are steep gradients getting into and out of the Tuff Crater
- Access to the Shoal Bay is via three connection points Princess Street, Sulphur Beach Road and Tennyson Street.
- Access to Heath Reserve from Esmonde Road is 2.5km via Akoranga Drive, College Road, Tuff crater Path and Exmouth Road. The proposed SeaPath route would reduce this to 1km along the motorway alignment.
- At present, there is no direct walking and cycling access to these areas from the city centre. The introduction of SkyPath will provide the link between city centre and the North Shore. The distance from SkyPath (proposed landing point in Northcote Point) to Takapuna is around 9km as highlighted in FIGURE 16.

FIGURE 16 also highlights the opportunity that SkyPath, SeaPath and NSR presents in connecting a large proportion of the households in the North Shore (a city centre including inner suburbs) with dedicated walking and cycling facilities.

In the 2013 Census, 2% of the people walked or jogged to work in the Tuff Crater and Northcote South Census areas. This figure does not capture the people who travel to the area to enjoy the walks. However, one of the aims of the Project is to increase access by providing links from the proposed infrastructure to the existing walks. This is important on existing roads like Sulphur Beach Road, which is used as a marine access point and there are no footpaths. A new shared path will provide safe and accessible means for people to walk along this road for recreation and open opportunities to better access Shoal Bay. This is supported by public engagement undertaken in 2018 with 40 percent of people indicating they would use SeaPath for health, fitness and recreation purposes (see Appendix A).
A key priority within the GPS is about improving access to social and economic opportunities so that urban areas are well connected, safe, accessible and liveable. This Project can support this outcome and provide increased social benefits to the surrounding area. As highlighted previously, this area is predominantly car dominated with limited walking and cycling for work and recreation. Research undertaken by Arup titled *Cities Alive: Towards a walking world*, investigates the role walkability plays in developing more liveable, sustainable, healthy, safe and attractive cities. The research draws on 80 case studies from around the world and identifies that: ‘Traffic infrastructure can provoke physical and social segregation even within dense urban contexts, reducing the level of accessibility between neighbourhoods. Breaking down traffic speed, improving pedestrian connectivity and increasing the number of crossing facilities are all measures that can integrate and encourage the idea of inclusiveness’.

The Project will provide increased connectivity and increase accessibility to social infrastructure including schools, parks and sporting fields. With the introduction of SkyPath and SeaPath, AUT North Shore site will be accessible by walking and cycling from the city centre and Isthmus – increasing travel choices in the lower North Shore. SeaPath along with AT’s proposed local road network investment (identified in the Auckland Cycling PBC) will provide enhanced active mode network of dedicated walking and cycle paths. This will increase the connectivity between suburbs, Special Housing Areas (where intensive fast-tacked housing development is occurring) and existing communities with existing transport infrastructure, local shops, cafes, restaurants, services and historical architecture.

At present, access between AUT and Northcote Point (the proposed connection point with SkyPath) is over 3km as highlighted in FIGURE 17.

Access between Takapuna and Northcote Point is over 6km. With the introduction SkyPath but not SeaPath, access between Takapuna and the city centre would not be achievable within 30 minutes (based on 20km/h typical on-street cycling speed for a range of user abilities defined in Appendix B).

The catchment area around Akoranga centre which includes AUT and Akoranga bus station is highlighted in FIGURE 17. At present, the 3km catchment area includes local schools such as Northcote intermediate, Rosmini college, Westlake girls school, Onepoto primary school. Non-car based access to these public transport hubs and schools via the current NSR, local roads and footpaths and the bus network. There are a number of local and feeder bus services serving the local community and the Northern Expressway. These generally operate every 30 minutes however the frequency can vary requiring users to plan ahead. This reduces the convenience and potential uptake of these services. Providing safe, direct walking and cycling facilities is supported by the local community (see Appendix A) and can provide an alternative to short distance trips to key interchanges such as Akoranga bus station supporting the public transport network.

### 6.4.1. SMART INVESTMENT OBJECTIVES

- Increase the number of households within access to the natural environment and community assets between Esmonde Road and Auckland Harbour Bridge by active modes

**KPI**

- Increase the number of walking and cycling connections points to Onepoto Domain, Tuff Crater and other natural assets within the project extent
- Increase the 30 minute Walking and Cycling catchment to education facilities, Public Transport Hubs and other community assets within the project extent
FIGURE 16  Existing Assess to Local Community Assets
FIGURE 17  Cycle Catchment Analysis from SkyPath (Northcote Point)

Legend
- Base of Sky Path
- Cycle Catchment
  - 3km
  - 6km
  - 9km

DRAWN BY: RF
CHECKED BY: MJ
DRAWING REFERENCE: GIS 001
REV: N/A
DATE: 27/07/2018
SCHEME: AECO 004
SCALE: 1:100,000
ON BEHALF OF: AECOM
SKYPATH

SkyPath was originally proposed by the Auckland Harbour Bridge Pathway Trust. Resource consent was granted in 2016 for a proposed four-metre wide shared path clip-on structure on the eastern side of the Harbour Bridge. It is designed to attract tourists, recreational users and commuters.

The resource consent conditions include (but are not limited to) media, way-finding and signage of the link, which have been driven by concerns regarding the use of private cars to access the cycleway particularly on the northern landing around Northcote Point, increasing parking pressure in the surrounding residential area.

In August 2016, AT undertook consultation for proposed parking changes in three areas in Northcote Point. The purpose of the proposed parking scheme is to assist with the management of the potential increase in parking demand associated with the link.

There are a number of other completed and proposed projects in the area that will support the SeaPath project. These include:

6.5. DEPENDENCIES

There are a number of dependencies that the SeaPath project is reliant on. SkyPath and the Additional Waitematā Harbour Crossing (AWHC) are two major projects that are progressing in parallel to the SeaPath project. Other dependencies include programmed work with AT’s network and AC’s parks and reserves as they will have an impact on the project.

ADDITIONAL WAITEMATA HARBOUR CROSSING

AWHC is to provide an additional crossing of the Waitemata Harbour between the North Shore and City. The AWHC will offer increased options for crossing the harbour including the potential for multi-modal transport choices (including potentially walking and/or cycling across the Harbour Bridge as capacity is released) and improved resilience and performance of Auckland’s transport network. ATAP identifies that AWHC will be required between 2038 and 2048.

NORTHCOTE SAFE CYCLE ROUTE

The Northcote Safe Cycle Route stretches from the Taharoto Road/Northcote Road intersection (near Smales Farm) to Northcote Point Ferry Terminal. The main objective of the project is to encourage more local trips to be taken by bike.

There are currently limited dedicated cycling facilities along the route, which services many attractions that could be accessed by bike, including schools, places of employment, public transport interchanges, leisure and shopping centres. The walking and cycling improvements along the route will improve the safety of pedestrians and people cycling and deliver this section of the Auckland Cycle Network.

POINT CHEVALIER TO HERNE BAY CYCLE PROJECT

This project seeks to deliver a safe cycle facility for local and utility trips for existing riders and encourage new confident people on bikes on Point Chevalier Road, Meola Road and West End Road. A further objective of this project is to create a link for more confident people on bikes between the central western suburbs and the city centre via the Northwestern Cycleway or the proposed Western Waterfront connection through Herne Bay, the Westhaven Promenade and Wynyard Quarter.

This will link and expand the Auckland Cycle Network and provide a continuous cycle provision between the western suburbs, the Harbour Bridge and the lower North Shore.

NORTHERN CONNECTIONS DBC

The Northern Connections DBC is building a new shared path all the way along the new Busway extension, with a range of access points from the East Coast Bays. There are also proposals for several new paths and highway crossings along the length of Upper Harbour Highway (SH18), linking into Albany Highway’s new cycle paths. These will be built from 2018. A wide range of connecting walkways and cycleways are also being investigated to link to the new Northern Corridor paths. This network is being investigated by NZ Transport Agency, AT and AC.
There have been a number of changes to the policy settings for investment in the land transport system since the IBC was approved. This project continues to have a strong alignment with the changes in direction, as highlighted below.

7.1. GOVERNMENT POLICY STATEMENT ON LAND TRANSPORT

The GPS on land transport outlines the Government’s priorities for investment in the land transport system. The GPS influences decisions on how money from the National Land Transport Fund will be invested across activity classes such as improvements to the state highway and walking and cycling.

The new GPS highlights that in the past, road design has prioritised faster movement of vehicles resulting in an urban cycleway network that is significantly underdeveloped. The GPS now has an increased focus on supporting a mode shift for trips in urban areas from private vehicles to more efficient, low cost modes like walking and cycling.

GPS supports investment in:

- provision of good quality, safe, fit-for-purpose walking and cycling infrastructure;
- extending dedicated cycle networks in urban areas that are moving towards being complete to connect to other networks;
- delivering critical missing links in the urban cycle network in areas of high demand (namely, between Auckland’s North Shore and city centre).

This project has a strong alignment with the strategic investment priorities identified in the GPS through provision of a high quality new active mode link that connects the high demand areas of Auckland’s North Shore and city centre. SeaPath will deliver a critical link in the urban cycle network and improve walking and cycling opportunities and wider Government strategic priorities.

7.2. AUCKLAND TRANSPORT ALIGNMENT PROJECT

AC and the Government have worked together to develop an aligned strategic approach to the development of Auckland’s transport system for the next 30 years.

ATAP ensures transport investment priorities reflect the aligned transport vision of both the Government and AC.

More investment for walking and cycling is one of the highest priority future investments that should be progressed as funding becomes available. A key outcome expected from the investment includes increased cycle mode share with flow-on benefits for health, safety, environment and congestion.

Overall, around $640 million of investment in cycling infrastructure has been included in the ATAP Package. This includes significant cycling investments along state highway corridors including SeaPath and SkyPath.

7.3. NATIONAL LAND TRANSPORT PLAN

NLTP is a three-year programme of planned activities and a 10-year forecast of revenue and expenditure prepared by NZ Transport Agency to give effect to the GPS.

All proposed activities have been assessed for inclusion within the NLTP and prioritised through NZ Transport Agency’s Investment Assessment Framework (IAF) according to their value for money and alignment with the priorities, objectives and expected results within GPS. The result is a planned programme of national and regional activities that responds to the GPS and will ensure our transport system meets the needs of all New Zealanders now and in the future.

SkyPath and SeaPath have been identified as key links in Auckland’s walking and cycling network which will both be delivered by NZ Transport Agency, enabling project efficiencies and improved coordination.

To encourage a continued increase in people cycling in Auckland, $31m will be invested in SeaPath and $67m to develop the SkyPath project across the Harbour Bridge.
PART B
OPTION DEVELOPMENT AND ASSESSMENT
8. OVERVIEW

Part B1 summarises the option assessment process for SeaPath which is shown diagrammatically in Figure 18. It concludes with the MCA exercise completed with input from a range of technical experts and stakeholders. The details are expanded in the accompanied Option Assessment Report, Appendix B.

The options assessment is delivered in three stages:

- Initial Assessment
- Landward Long List Options
- Landward Short List Options including MCA

The process evaluates the IBC preferred option and seven Landward Long List Options. Further design development distils this to four Landward Short List Options. Patronage modelling, engineering design, further engagement with project partners / stakeholders and a MCA assessment forms the MCA recommended options.

The MCA recommends the favoured design for each section of the Short List Options which were developed with input from a range of specialists based on concept level design drawings. The geometric and construction feasibility was considered in the development of the options however further consideration for urban design, consent strategy, property impact and other holistic aspects of the project is required to develop the Preferred Option.

FIGURE 18 Option Development and Assessment Process
9. INITIAL ASSESSMENT

9.1. ALTERNATIVE OPTIONS DEVELOPMENT

The initial step was to evaluate the Indicative Business Case (IBC) options, which was completed in early 2016, to better understand the relevant geographical, technical, environment and cultural context and the potential constraints and opportunities.

TABLE 8 provides a summary of assessment undertaken by the Project Team at the start of the DBC.

<table>
<thead>
<tr>
<th>INITIAL ASSESSMENT</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PURPOSE</td>
<td>To evaluate the IBC preferred option and understand the various constraints and risks. Also revise the cost estimate for the IBC option as the baseline for the DBC</td>
</tr>
<tr>
<td>DETAILS</td>
<td>Revised cost estimate was prepared at the initial stage of the DBC for the IBC preferred landward option</td>
</tr>
<tr>
<td></td>
<td>Revise the Investment Logic Map (ILM) and update the Project Investment Objectives for the DBC</td>
</tr>
<tr>
<td>STAKEHOLDERS</td>
<td>Project Team</td>
</tr>
<tr>
<td></td>
<td>The Agency</td>
</tr>
<tr>
<td>OUTCOME</td>
<td>Revised Cost Estimate</td>
</tr>
<tr>
<td></td>
<td>Update project risks and challenges</td>
</tr>
<tr>
<td></td>
<td>Revised Problem Statements and Benefits</td>
</tr>
<tr>
<td></td>
<td>Updated Project Investment Objectives better aligned with GPS 2018</td>
</tr>
<tr>
<td></td>
<td>Agreement to investigate a range of landward options within the site extent</td>
</tr>
</tbody>
</table>

TABLE 8 Summary of Initial Assessment
The IBC assessed four options:

- **Base Case Option.** This option was considered for comparison purposes which assumed maintaining the status quo, but with the inclusion of the then Northcote Safe Route (NSR).

- **Seaward.** Consists of small sections of freestanding boardwalk along the eastern edge of SH1, with long sections of freestanding boardwalk within the Shoal Bay. The boardwalk structure would be away from the coastline. This option was discounted in the IBC due to the following reasons:
  - Increased personal safety risk - the route is the most isolated with few possible escape routes for users that were concerned about their personal security (CPTED) with limited passive surveillance available. Also travelling over water may allow some users to perceive a feeling of being less safe.
  - Connectivity to the local communities - the option is difficult to gain access to from local neighbourhoods.
  - Constructability constraints - This route option passes directly through the Coastal Marine Area and ecologically sensitive areas. Shoal Bay is an important nesting area for the Variable Oystercatcher as well as the nationally threatened Caspian tern and NZ Dotterel, which are being constantly monitored.

- **Coastal Edge.** Consists of partially freestanding boardwalk along the eastern edge of SH1, with small sections of freestanding boardwalk within the Shoal Bay. The path would be along the coastal edge of SH1. This option was discounted in the IBC for the same reasons as the Seaward option including; CPTED, constructability constraints and severance to the local communities.

- **Landward.** This option follows Sulphur Beach Road, along SH1 on the western side, up and around Onewa interchange and then links to Esmonde Road. This was the preferred route from the IBC as it provides improved connectivity to local road network as well as benefiting the short and long distance commuting trips. In comparison to the other short listed options it was assessed that the Landward option would:
  - Provide improved connectivity to local roads and communities;
  - Encourage greater use, including short journeys;
  - Increase personal user security through improved levels of passive surveillance and provide more possible escape routes for users;
  - Avoid ecologically sensitive areas, including roosting and feeding sites for threatened bird species resulting in lower ecological impacts and therefore less consenting risks.

The conclusion of the IBC was a continuous landward dedicated shared path between Auckland Harbour Bridge and Esmonde Road. This was the baseline option for the DBC.

The scope of the IBC did not assess alignments and permutations within the landward option in detail, these permutations are indicated in **FIGURE 19**. The DBC considered the NSR project, now partially completed, as the western boundary for the landward option assessment, and investigated a range of route options with the potential to provide a safe and attractive walking and cycling connection between Northcote Point and Takapuna. This optioneering process was the basis for the DBC Long List assessment.
KEY CONSTRAINTS

The key considerations and constraints identified during the initial assessment were:

Geographical/Natural constraints – cliff faces, craters, waterways, etc.

Resource consenting challenges – Outstanding Natural Features (ONF) such as craters, protected trees, Significant Ecological Area (SEA) and Marine.

• Location of local amenities and suburbs.
• Existing road network
• Existing walking and cycling facilities in the area.
• Public transport provisions in the area.
• Road gradients.

These constraints were mapped to indicate areas or routes that were:

• Challenging or unfavourable to the users of the walking and cycling facility
• Within or close to natural, ecological and marine environments that may pose consenting issues
• Sites of significant cultural value to mana whenua

These maps are included in Appendix A. This detailed mapping set the basis for the development of the DBC landward Long List options.
Development of the DBC landward Long List took place in early 2017. The process concluded with the Long List Options Stakeholder Workshops in October 2017. The Project Team worked with a range of technical specialists and engaged with a wide range of stakeholders in the months leading up to the workshop. This prepared all interested parties on the potential opportunities and constraints.

The Long List Options Workshop was facilitated as a participatory design workshop. The outcome of the workshop was a firm understanding of the future users of SeaPath and the seven landward options. Stakeholders agreed that there was sufficient evidence to discount the Seaward or Coastal options due to the proposed costs, lower connectivity and associated risks of ecological, construction and consenting.

Table 9 summarises the Long List development and assessment process.

<table>
<thead>
<tr>
<th>TABLE 9</th>
<th>Summary of Long List Development &amp; Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LONG-LIST DEVELOPMENT AND ASSESSMENT</strong></td>
<td></td>
</tr>
<tr>
<td><strong>PURPOSE</strong></td>
<td>To identify DBC Landward Long List options that aligned with the GPS and met the updated Project Investment Objectives. The options should be sensitive to physical, cultural and natural constraints and considers constructability.</td>
</tr>
<tr>
<td><strong>DETAILS</strong></td>
<td></td>
</tr>
<tr>
<td>• Agreement on the site extent</td>
<td></td>
</tr>
<tr>
<td>• Analysis of site context in detail</td>
<td></td>
</tr>
<tr>
<td>• Facilitated Long List Design Workshop with stakeholders to generate a range of possible landward route options</td>
<td></td>
</tr>
<tr>
<td>• User types, trip purposes and customer expectations were identified and confirmed at the workshop</td>
<td></td>
</tr>
<tr>
<td>• The workshop confirmed seven Landward Long List route options</td>
<td></td>
</tr>
<tr>
<td>• Following the workshop, the Project Investment Objectives were further assessed and redefined to ensure alignment with the GPS 2018 and the IAF 2018-21</td>
<td></td>
</tr>
<tr>
<td><strong>STAKEHOLDERS</strong></td>
<td>NZTA, AECOM, AT, AC parks and Panuku Development</td>
</tr>
<tr>
<td><strong>OUTCOME</strong></td>
<td>Seven route alignment options were identified to take forward for short list options development and assessment</td>
</tr>
</tbody>
</table>
10.1. **THE USERS**

Understanding the relationship between the user types and their trip purposes was critical to developing the long-list route options. The journey and facility expectations vary depending on the users’ trip purpose, therefore it was necessary for the anticipated users to understand and agree on this aspect of the project.

The user types and corresponding trip purposes developed, identified and agreed by stakeholders are outlined in **TABLE 10**.

The group recognised that it was difficult to provide one route alignment that would meet the expectations of all user groups. Therefore a development process was required to rationalise the options in alignment with the Project Investment Objective, GPS and value for money proposition i.e. considering the implementation costs with the outcomes and benefits delivered to society.

**TABLE 10** Trip Types and Purposes

<table>
<thead>
<tr>
<th>USER TYPE</th>
<th>TRIP PURPOSE</th>
<th>USER EXPECTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>COMMUTER</td>
<td>Journey for purpose of travelling to and from work</td>
<td>Direct route between A-B</td>
</tr>
<tr>
<td>EDUCATION</td>
<td>Trips undertaken by students to tertiary institutions in the city and nearby primary and secondary schools</td>
<td>Similar to commuting, direct route between A-B. However higher emphasis on safety due to the age and ability range of the users</td>
</tr>
<tr>
<td>TOURIST</td>
<td>Users from wider Auckland region as well as tourists including from overseas and outside of Auckland to explore the city</td>
<td>Good connections to sight-seeing locations. Not necessarily the most direct route</td>
</tr>
<tr>
<td>RECREATION</td>
<td>Trips undertaken for recreational purposes by families, for fitness and leisure</td>
<td>Good connections to parks, reserves and other recreational locations. Not necessarily the most direct route. Mostly weekend</td>
</tr>
<tr>
<td>LOCAL ACCESS</td>
<td>Local trips made by residents to local amenities and areas</td>
<td>Quiet local street and direct connection to community amenities</td>
</tr>
<tr>
<td>‘OTHER’</td>
<td>Short trips to local amenities such as corner shops, where convenient routes and short cuts are available</td>
<td>Convenient short trips, good end of trip facilities</td>
</tr>
</tbody>
</table>
10.2. LONG LIST OPTIONS

Seven landward Long List options were identified during the Long List Options Workshop. These are indicated in Figure B. All of the key technical specialists participated in this workshop and provided advice on the key risks and opportunities within their particular area of expertise. This analysis helped inform the Statutory RMA assessment of each option as part of the long list process. The degree to which these options met the Project Investment Objectives was also discussed during the workshop and developed further post-workshop. All seven options included different levels of integration between existing walking and cycling infrastructure within AT road network and new facilities along SH1. All options also considered the connection to city centre cross the AHB with the proposed SkyPath.

The rationale for choosing these routes was driven by the different user experiences. For example, technical specialists agreed that the most direct routes would be more favourable to commuter and education trips i.e point-to-point trips. Where as recreational trips might like to incorporate good connections to parks, reserves and other recreational locations.

FIGURE 20  Long List Options
### TABLE 11  SeaPath Long List Options

<table>
<thead>
<tr>
<th>OPTION</th>
<th>TRIP PURPOSE</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Route 1</td>
<td>Commuter</td>
<td>A direct route to Esmonde Road using part of the existing NSR facility on Queen Street and link to SH1 via Stafford Road</td>
</tr>
<tr>
<td>Route 2</td>
<td>Education</td>
<td>A link using the existing NSR facility up to Onewa Road to gain access to the school along Lake Road. Onewa Road was utilised to connect to SH1 towards Esmonde Road</td>
</tr>
<tr>
<td>Route 3</td>
<td>Recreation</td>
<td>This facility focused on access to the leisure attractors which included the estuary area, connections to Onepoto Domain and then links to Tuff Crater. The connection to Esmonde Road is via College Road west of Esmonde Road. Connection links were proposed on Stafford Road and along Onewa Stream in order to provide local access to these recreational area.</td>
</tr>
<tr>
<td>Route 4</td>
<td>Tourist</td>
<td>The tourism route is similar to the commuter route however the other connector routes were proposed such as the connection from Lake Road to Esmonde Road via College Road.</td>
</tr>
<tr>
<td>Route 5</td>
<td>Commuter &amp; Education</td>
<td>The complementary trip purposes generated a route that is a combination of the Route 1 and 2. College Road was included as a key link for connecting the residential catchment to the school facilities around the area. Staging the project was proposed, where the northern portion between Onewa Road and Esmonde Road can potentially progress ahead of the southern portion to AHB in order to deliver more immediate connections and benefits.</td>
</tr>
<tr>
<td>Route 6</td>
<td>Local Residents &amp; Other</td>
<td>The local trips focused on providing quiet or separated routes to connect from AHB to Lake Road. The AUT and Takapuna attractors did not influence the route selection as this route concentrated on the immediate neighbourhood walking and cycling access and connections.</td>
</tr>
<tr>
<td>Route 7</td>
<td>Recreation &amp; Tourist</td>
<td>The combination of recreation and tourist routes highlighted the importance of Tuff Crater boardwalks as a connection. The amenity value of the reserves provided key destination for the users, and the connection from Esmonde Road was provided also.</td>
</tr>
</tbody>
</table>

A record of the Long List Workshop, the material presented and a summary can be found in Appendix B.
11. SHORT LIST DEVELOPMENT

The DBC landward Short List development process distilled the seven Long List options down to four Short List options. This process tested the Long List options against a set of four criteria, focusing on the overall strategic fit and SeaPath outcomes. Many segments of the Long List options were duplicated, this demonstrated their alignment with the Project Investment Objectives and user expectations, however the testing focused on the segments with minimal or no duplication with other options as they are unlikely to meet the strategic fit.

An Options Assessment (Short List) Workshop was held with an extended range of stakeholders and technical specialists in May 2018. This was followed by a MCA process to aid development of the Preferred Option. This workshop and MCA process was developed as an alternative to the typical silo approach to technical assessments and evaluations typically undertaken for the DBC process. The aim being to have all the key stakeholders and technical specialists working together through a robust workshop evaluations and subsequent MCA process to identify the preferred shortlist of options.

One of the key objectives of the workshop process was to ensure the individual and technical specialist stakeholders were able to hear and understand each other’s views prior to their MCA individual evaluations. TABLE 12 provides a summary of the short-list options development process and outcome.

### TABLE 12  Short-List Development and Assessment Process

<table>
<thead>
<tr>
<th>SHORT-LIST DEVELOPMENT AND ASSESSMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PURPOSE</strong></td>
</tr>
<tr>
<td>To rationalise the seven Long List route options and determine a selection of Short List options within the alignment with updated Project Investment Objectives and other technical specialist assessment criteria.</td>
</tr>
<tr>
<td><strong>DETAILS</strong></td>
</tr>
<tr>
<td>A distillation process was undertaken to identify a Short List of four options.</td>
</tr>
<tr>
<td>The assessment recognised that routes along local roads, where walking and cycling facilities are currently present or can be implemented, created opportunities to provide more a connected and accessible network.</td>
</tr>
<tr>
<td>The walking and cycling facilities within the local road network could complement the direct shared path facility between AHB and Esmonde Road, and could be considered for implementation as a secondary facility to support the main SeaPath alignment.</td>
</tr>
<tr>
<td>Four Short List options were identified and the routes were divided into seven sections based on physical and natural constraints. This focused the design development on specific challenges.</td>
</tr>
<tr>
<td>A high-level engineering design assessment was carried out for each option within the Short List routes. This focused on the feasibility of the geometric alignment and constructability.</td>
</tr>
<tr>
<td>An Options Assessment (Short List) Workshop with a range of stakeholders and technical specialists was undertaken with the aim being to determine the key challenges and opportunities with of each option.</td>
</tr>
<tr>
<td>A MCA was undertaken following the workshop.</td>
</tr>
<tr>
<td>The MCA recommended route was identified.</td>
</tr>
<tr>
<td><strong>PARTICIPANTS</strong></td>
</tr>
<tr>
<td>NZTA, AECOM, AT, AC, Just Add Lime, Boffa Miskell, Bike Auckland, Mana Whenua, Isthmus, Kensington Swan, Matthews and Matthews, Clough and Associates</td>
</tr>
<tr>
<td><strong>OUTCOME</strong></td>
</tr>
<tr>
<td>Four Short List route options were identified for assessment, and one MCA recommended option was determined with input from a range of stakeholders.</td>
</tr>
</tbody>
</table>
11.1. DISTILLATION

The map overlaying all seven Long List options illustrated option duplication within the site extent. The segments with similarities demonstrated alignment with either Project Investment Objectives or user expectations, or both. The Project Team therefore focused on testing the fit of each segment without duplication against these four criteria:

1. Alignment against the Investment Objectives (i.e. how strongly they contributed towards the Objectives);
2. Strategic fit with the GPS, IAF and the surrounding networks;
3. Technical complexity (ease of implementation); and

A number of segments were discounted through this testing process. FIGURE 21 graphically illustrates these discounted segments, and TABLE 13 shows the rationale for discounting them.

---

**FIGURE 21** Discounted Segments of the Long List Options

---

**TABLE 13**

<table>
<thead>
<tr>
<th>KEY</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>Discounted Segments</td>
</tr>
<tr>
<td>SEGMENT</td>
<td>NAME</td>
</tr>
<tr>
<td>---------</td>
<td>------------------</td>
</tr>
<tr>
<td>A</td>
<td>Onepoto Domain</td>
</tr>
<tr>
<td>B</td>
<td>Exmouth Road</td>
</tr>
<tr>
<td>C</td>
<td>Access Path</td>
</tr>
<tr>
<td>D</td>
<td>Heath Reserve</td>
</tr>
<tr>
<td>E</td>
<td>College Road</td>
</tr>
<tr>
<td>F</td>
<td>Tuff Crater</td>
</tr>
<tr>
<td>G</td>
<td>Akoranga Drive</td>
</tr>
</tbody>
</table>
11.2. SHORT LIST OPTIONS

Following the segment discounting process the remaining routes were packaged into four Short List options. These are illustrated in FIGURE 22.

TABLE 14 provides a short description of each short list of options. Further information can be found in Appendix B.
## TABLE 14  Short List Options

<table>
<thead>
<tr>
<th>OPTION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>This route utilises the length of Queen Street NSR to get users to Onewa Road, then use the Onewa Road shared path to connect onto a new shared path facility north bound towards Esmonde Road.</td>
</tr>
<tr>
<td>2</td>
<td>The route follows a part of Queen Street NSR until Stafford Road, then travels down Stafford Road to connect to a new shared path facility at SH1. The shared path enters into the Onepoto Stream and connects to Onewa Road at Onewa Bridge. A new shared path then follows SH1 towards Esmonde Road.</td>
</tr>
<tr>
<td>3</td>
<td>This is more direct route starting from AHB following Sulphur Beach Road alignment, across Stafford Road, fords Onewa Stream and along Onewa motorway off ramp towards Sylvan Avenue. A new shared path would then take the user from Sylvan Avenue to Esmonde Road along SH1.</td>
</tr>
<tr>
<td>4</td>
<td>This is the most direct route, where the shared path follows the Skypath alignment on the east side of the harbour bridge and crosses to Sulphur Beach Road at the boat sheds. Then sought the most direct route to Esmonde Road. The alignment is mostly the same with other options, except at the Onewa Interchange where bridge structures were proposed to provide the users with the highest level of safety, connectivity and convenience across the motorway.</td>
</tr>
</tbody>
</table>

A high-level engineering design assessment was carried out on the four Short List options. Due to the length and complexity of the routes, they were divided into multiple sections to ensure the robustness of the engineering evaluation. This assessment focused on geometric design, construction feasibility and overall route alignment. The details of the assessment can be found in the Options Assessment Report in Appendix C.

The four Short List options and their engineering designs were developed in collaboration with mana whenua, the key stakeholders and technical specialists including AT and AC. The stakeholder engagement process and the material produced was designed to aid the Short List Workshop and the MCA that followed.
11.3. **SHORT LIST OPTIONS VALIDATION**

Four options were progressed for preliminary patronage modelling. While the primary intention is to understand the walking and cycling demand forecast for the different options; a secondary aim was to conduct sensitivity testing for variations (referred to as route A-D) of the four Short List options, including the ones discounted from the Long List options. For this reason, the modelled routes did not match the four Short List options exactly. **FIGURE 23** shows the modelled routes. The key aim was to understand how the patronage was impacted by using certain local roads, namely College Road and Stafford Road.

![Modelled Route Options](image)

**FIGURE 23** Modelled Route Options
Route A - New segregated on-street cycle lanes on College Road, Queen Street and a short section of Exmouth Road.

Route B - New segregated on-street cycle lanes on College Road, Stafford Road, a short section of Exmouth Road and Sulphur Beach Road.

Route C - New shared path running parallel to SH1 from Akoranga Road to Stafford Road. New segregate cycle lanes on Stafford Road and southern end of Queen Street.

Route D - New shared path running parallel to SH1 from Akoranga Road to Stafford Road, and end of Sulphur Beach Road to AHB. New segregate cycle lanes on Sulphur Beach Road.

Route A and B are expected to cater mainly local shorter length trips between Northcote Point/Birkenhead and Takapuna. In comparison, Route C and D provided a direct and continuous route that attracts higher commuter and education trips whilst providing access at various points along the route to the local road network and natural environment.

Modelling was undertaken for the future year scenarios 2026 and 2046. The modelled network assumed connection of the SeaPath to the SkyPath at AHB. Other infrastructure assumed in the model included the NSR and various networks of adjacent cycleways within the Auckland Cycling Programme Business Case. SeaPath assumption captured additional user demand as SeaPath route would provide the direct connection from Takapuna catchment area to the city centre.

An assessment was undertaken to measure the SeaPath route in delivering patronage to the SkyPath facility at AHB. TABLE 15 provides the expected volume of people cycling at the SkyPath connection at Northcote Point, the predicted percentage contribution by each option is also presented.

The modelling showed that Route C and D would contribute higher volume of cyclists to SkyPath as they will provide a direct and predominantly segregated path for people walking cycling between Takapuna and city centre.

The routes using predominantly local roads including College Road, NSR and Stafford Road did not perform as well. They generally served shorter, internal trips to the north shore rather than point-to-point commuter/education trips generating only modest benefits. They also did not generate much additional pedestrian trip demand.

The modelling suggests that Route D would yield the most mode split for cycling given the directness of the route and its separation from the local road network. This information would aid development of the MCA process and ultimately the Preferred Option.

TABLE 15  Forecast Daily Trips - SkyPath

<table>
<thead>
<tr>
<th>MODELLED YEAR</th>
<th>REFERENCE CASE</th>
<th>ROUTE A</th>
<th>ROUTE B</th>
<th>ROUTE C</th>
<th>ROUTE D</th>
</tr>
</thead>
<tbody>
<tr>
<td>2026</td>
<td>1,390</td>
<td>1,460 (+70)</td>
<td>1,430 (+40)</td>
<td>1,530 (+140)</td>
<td>1,610 (+220)</td>
</tr>
<tr>
<td>2046</td>
<td>2,610</td>
<td>2,750 (+140)</td>
<td>2,680 (+70)</td>
<td>2,900 (+290)</td>
<td>3,080 (+470)</td>
</tr>
</tbody>
</table>

1 College Road is included as one of the route sections because this road was identified as a potential connecting route from Akoranga Drive to NSR within the Long-List Options workshop.
11.4. **SHORT LIST WORKSHOP**

A facilitated Route Assessment (Short List) Workshop was hosted in early May 2018, where key stakeholders, partners and technical specialists provided input to the four DBC Short List options with the aim of aiding the planned MCA process. A full list of workshop participants is included in Appendix C.

The theme of the workshop was centred on the three key questions below:

**What are the key issues or challenges?**

**What are the benefits or opportunities?**

**What would it take to resolve the issues or realise the benefits?**

The participants were expected to form objective and constructive feedback to the wider workshop group in order to develop deeper understanding between the stakeholders and trade-off tensions and opportunities.

**TABLE 16 Options Assessment Workshop Feedback**

<table>
<thead>
<tr>
<th>OPTIONS ASSESSMENT WORKSHOP FEEDBACK</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>KEY OPPORTUNITIES (ALL OPTIONS)</strong></td>
</tr>
</tbody>
</table>
| Improved connectivity, such as linking the local street network to maximise functionality and create an increase patronage for residents in nearby suburbs, and to the west and south of the site area. | Options including routes traversing close to the areas of ecological, natural feature and cultural sensitivity. These intervention should:
  - Protect marine environment
  - Protect ecology
  - Protect cliffs and volcano features of cultural value. Protecting cliff along SH1 (Pohutukawa Tree/Retaining Wall) remains a challenge to find an appropriate alignment to provide a route across this section. Finding an acceptable alignment for the pinch point is the key to realising the funding and project objectives else, the SeaPath route will remain truncated and no direct connection to Esmonde Rd would be possible. |
| Encourage longer commuting trips between city centre and Northshore. |  |
| Enhancing existing shared path, such as on Onewa Road. |  |
| Use of existing infrastructure and cycleways to provide connection to existing NSR where possible. |  |
| Improve access to open space, such as Onepoto Domain. |  |
| Sequencing the delivery of SeaPath by delivering the sections that connects NSR to Esmonde Road first. |  |

In preparation for the MCA process, the workshop interactions were designed to allow participants to:

- Have an opportunity to meet each other
- Present the different perspectives to inform the decision making of others
- Gain and appreciation for the challenges the design team face
- Understand the next step post the workshop

The workshop was an important milestone for collaboration, as a range of stakeholders and technical specialists are not locally based. The outcome of the workshop prepared the technical specialists for their assessment for the MCA process.

At-grade crossings do not align with safety visions and create excessive operational impacts on existing roads and motorway, particularly at Stafford Road and Onewa Road intersections

Steep gradients – Onewa Road and Stafford Road, in particular. These should be avoided.
11.5. MULTI-CRITERIA ASSESSMENT

A MCA was the preferred method of options assessment. This MCA scoring was conducted by a range of technical specialists from a variety of organisations undertaken in the 10 days following the Options Assessment Workshop.

The MCA process aligns with the business case approach and RMA requirements by providing evidence of a structured option analysis. The specialists included geotechnical engineering, noise engineering, ecology, storm water, earthworks engineering and transport planning. A detailed record of the specialisation and organisations involved in the MCA process is documented in Appendix B.

Inputs from AT, AC, Bike Auckland and mana whenua were received through meeting engagements or in the Options Assessment Workshop. This feedback aided the technical specialists in their decision making.

To ensure consistency in the MCA process, all technical specialists were invited to participate in site visits and briefing sessions. They were all provided the same technical drawings. Each specialist was also provided the opportunity to change or update their MCA score before the project team compiled the assessment. The final scores and justifications were recorded and sent to the Project Team for record and the MCA scores are documented in Appendix B.

### TABLE 17  MCA Criteria

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>CRITERIA</th>
<th>CONSIDERATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>INVESTMENT OBJECTIVES</td>
<td>Investment objective 1</td>
<td>Increase commuter and educational walking and cycling trips</td>
</tr>
<tr>
<td></td>
<td>Investment objective 2</td>
<td>Improve walking and cycling access to natural environment and community assets</td>
</tr>
<tr>
<td>IMPLEMENTABILITY</td>
<td>Technical</td>
<td>Engineering degree of difficulty (considering social, cultural and environmental interventions), technical risks, Safety in Design (SiD)</td>
</tr>
<tr>
<td></td>
<td>Strategic Planning</td>
<td>Social aspects, impact on built / natural environment</td>
</tr>
<tr>
<td></td>
<td>Statutory Planning</td>
<td>Policy alignment (GPS, IAF)</td>
</tr>
<tr>
<td></td>
<td>Safety in Design</td>
<td>Safety developed into design process, safety considerations and risks in design and build.</td>
</tr>
<tr>
<td>ASSESSMENT OF EFFECTS</td>
<td>Operational/Maintenance</td>
<td>Factors affecting ability to operate and maintain the option. Will costs going forward increase?</td>
</tr>
<tr>
<td></td>
<td>Financial</td>
<td>Likely BCR and value for money</td>
</tr>
<tr>
<td></td>
<td>Stakeholders/Customers</td>
<td>How acceptable is the option to the community?</td>
</tr>
<tr>
<td></td>
<td>Property</td>
<td>Land use impact</td>
</tr>
<tr>
<td></td>
<td>Cultural</td>
<td>Impacts on cultural and mana whenua values</td>
</tr>
<tr>
<td></td>
<td>User Safety</td>
<td>To what extent will the option enhance safety for different types of transport users, including cyclists and pedestrians? What is the impact on personal safety/security?</td>
</tr>
</tbody>
</table>
MCA OUTCOMES

The MCA process identified two options to be progressed for further option development:

- Option 1 - utilises the length of Queen Street NSR to get users to Onewa Road, then uses the Onewa Road shared path to connect onto a new shared path facility northbound towards Esmonde Road.
- Option 4 - follows the Skypath alignment on the east side of the harbour bridge and crosses to Sulphur Beach Road at the boat sheds. Then follows the most direct (motorway) alignment to Esmonde Road with a bridge structure at the Onewa Interchange to provide the users with the highest level of safety, connectivity and convenience across the motorway.

All participants agreed that the section between Onewa Road and Esmonde Road along the motorway alignment was an important connection and is consistent with both options. The participants recommended Option 1 as it promoted the local connection and access to neighbourhood amenities which would increase usage for residents in nearby suburbs. Participants also noted that this alignment was predominantly on existing roads and would require less design and engineering to overcome valuable cultural and environmental features than Option 4.

### CATEGORY CRITERIA CONSIDERATIONS

<table>
<thead>
<tr>
<th>ASSESSMENT OF EFFECTS</th>
<th>CRITERIA</th>
<th>CONSIDERATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASSESSMENT OF EFFECTS</td>
<td>Human Health</td>
<td>Any risks to human health related to noise, contaminated land or air quality? What positive benefits with regards to well-being and health does this option provide?</td>
</tr>
<tr>
<td>ASSESSMENT OF EFFECTS</td>
<td>Heritage and Archaeology</td>
<td>Does the option impact on the heritage values and archaeology of the natural environment?</td>
</tr>
<tr>
<td>ASSESSMENT OF EFFECTS</td>
<td>Coastal</td>
<td>Does the option impact on the coastal environment?</td>
</tr>
<tr>
<td>ASSESSMENT OF EFFECTS</td>
<td>Natural character, outstanding natural features/landscapes, notable trees</td>
<td>Does the option impact on the natural environment?</td>
</tr>
<tr>
<td>ASSESSMENT OF EFFECTS</td>
<td>Terrestrial Ecology</td>
<td>Does the option impact on the terrestrial ecology of the natural environment?</td>
</tr>
<tr>
<td>ASSESSMENT OF EFFECTS</td>
<td>Urban design and landscape</td>
<td>Urban design considerations and landscaping required for the option?</td>
</tr>
<tr>
<td>ASSESSMENT OF EFFECTS</td>
<td>Social</td>
<td>Does the option could affect accessibility for the public, including access to jobs, communities, shops, services and other facilities?</td>
</tr>
<tr>
<td>ASSESSMENT OF EFFECTS</td>
<td>Economics</td>
<td>How does the option impact economic growth? How well does the option enhance the development potential of adjacent land/attract new jobs/help existing businesses?</td>
</tr>
</tbody>
</table>
Option 4 also performed strongly against the project objectives as it was more direct and promoted longer trips that would in turn generate greater benefits for mode shift to cycling. Participants highlighted that a separated facility that was grade separated at intersections such as Onewa Road best aligned with the GPS safety focus. The direct nature of the route also aligned with wider network connectivity with SkyPath and the northern corridor cycleway – providing a continuous a direct cycle way from the city to upper north shore.

The MCA results provided recommendations for the engineering intervention required for achieving these alignments. This is shown in FIGURE 24. The overall MCA recommendations and its details are provided in Appendix B. Further design development was required to evaluate the MCA recommendations to ensure continuity, safety and operational requirements can be met when developing the option into the Preferred Option.
PART B2
DEVELOPING THE PREFERRED OPTION
12. DEVELOPING THE PREFERRED OPTION

12.1. OVERVIEW
Part B2 summaries the design development process that led to selection of the Preferred Option. Further design development was undertaken on the recommended options from the MCA process taking into account Road Safety Audit and Economic Analysis. This resulted in the preferred way forward for the Project.

12.2. DEVELOPING THE PREFERRED OPTION
A Road Safety Audit (RSA) was completed for the MCA Recommended Options. Feedback from the RSA highlighted user safety concerns with selected segments of the SeaPath alignment. These safety concerns were mostly limited to the sight-distance for downhill cycling, sharp corners for cycling and visual obstruction for motorway users. It was recognised that further refinements were needed to be undertaken to address the highlighted safety concerns.

Considering these safety concerns, the preferred option alignments underwent further design development and developed from the MCA recommendations at selected locations in order to ensure continuity, safety and operational requirements were met, as well as to reduce excessive adverse impact on the natural and built environment.

12.3. DESIGN DEVELOPMENT FROM MCA FINDINGS
Further design development and engagement with stakeholders determined that the selected MCA recommendations would have significant and unacceptable effects to the safety of the users of all modes. The RSA raised comments in alignment with the findings from the Project Team. Therefore the design was refined from the MCA recommendations. The justification for each design change is summarised in TABLE 19.
### TABLE 18  MCA Recommendation to Preferred Option

<table>
<thead>
<tr>
<th>SEAPATH SECTION</th>
<th>MCA FINDINGS</th>
<th>PREFERRED OPTION</th>
<th>JUSTIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>AHB CARPARK &amp; CONCRETE VIADUCT</td>
<td>Improve the Alma Street connection connect to NSR</td>
<td>Improve the Alma Street connection connect to NSR</td>
<td>A direct facility to Sulphur Beach Road was considered post-MCA to provide options that enabled better alignment with the Project Investment Objectives. A clip-on bridge from AHB carpark to Sulphur Beach Road would provide the direct access toward Esmonde Road that is unachievable via the NSR facility.</td>
</tr>
<tr>
<td>And</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Connection to the harbour side via a new clip on bridge</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AHB CONCRETE VIADUCT &amp; LANDING AT THE BOAT SHEDS</td>
<td>Diagonal link from Princes Street to Sea side of AHB</td>
<td>Landing and loop at the boat sheds plus potential enact restricted vehicle access only.</td>
<td>The safety impediment of poor sight lines between concrete piers, steep grades, blind crests, sharing narrow road with cars and blind corners meant that the adverse safety impact was very high and marginal improvement was unacceptable. The Preferred Option utilises a different alignment which eliminates majority of the key safety concerns and opens the opportunities for tangible urban design improvements that were otherwise locked.</td>
</tr>
<tr>
<td>SEAPATH SECTION</td>
<td>MCA FINDINGS</td>
<td>PREFERRED OPTION</td>
<td>JUSTIFICATION</td>
</tr>
<tr>
<td>----------------</td>
<td>--------------</td>
<td>------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>STAFFORD ROAD</td>
<td>Around the park and cross at the intersection</td>
<td>Follow the motorway off ramp alignment and cross at the intersection</td>
<td>Safety concerns with not following the user desired lines and lack of treatments at the intersection was raised in the RSA. Further design development updated the alignment to follow the motorway off ramp and formalised the at-grade crossing to ensure the desired line was met as close as practicably possible without introducing crossing points on the motorway off ramp.</td>
</tr>
<tr>
<td>ONEWA INTERCHANGE</td>
<td>Shared path follow the Onewa Road off ramp and link to signalised at-grade crossing across Onewa Road</td>
<td>Bridge structure through Onewa Interchange and bridge connection to Onewa Road</td>
<td>Further design development and engagement with affected stakeholders revealed significant traffic impacts to the motorway operations at the Onewa Road on/off ramps with the at-grade crossing option. The bridge option provides the most balanced facilities this highly constrained location. The grade separation for walking and cycling meant the high quality connection to and from Esmonde Road is provided while offering minimal impact on the traffic operation in the area, which is the key movement function for the location.</td>
</tr>
<tr>
<td>RETAINING PINCH POINT</td>
<td>Reduce the motorway shoulder width and provide a path between the retaining wall and the motorway</td>
<td>Bridge across the retaining wall with 4m elevated shared path facility</td>
<td>The reduction of a motorway shoulder width would impact 2km of motorway alignment along SH1. This would also remove the existing bus lane on motorway between Onewa Road and Esmonde Road, while providing a pinched shared path. A grade separated facility eliminates any physical effects on the highly sensitive cultural site, the motorway alignment while providing a high quality elevated shared path facility for walking and cycling.</td>
</tr>
</tbody>
</table>

This resulted in a direct SeaPath alignment between AHB and Esmonde Road with more than 1km of the alignment on boardwalks and bridges. This change resulted in a financial impact on the investment CAPEX.

A Preliminary Urban Landscape Design Framework (ULDF) was prepared by the urban design specialist to assess the Preferred Option for its integration with the natural and built environment. Cultural and heritage values were highlighted as aspects to develop further with key stakeholders in the next phase of the project.

A staged option approach was highlighted as a possible delivery mechanism. This meant the Preferred Option had two delivery parts based on the asset ownership of the different organisations. This is summarised in TABLE 19 and FIGURE 25 shows the route diagrammatically. The Preferred Option and Staged option is discussed further in 13.6.

The notable dependency for this project remains to be the development of SkyPath, which was granted resource consent in 2016. Other dependencies include the improvements to the walking and cycling network within the local road network and the reserves. The Project Team formalised working principles with AT and AC in order to set the foundation to collaborate in the next phase of SeaPath.

The Preferred Option deviated from the MCA recommendations; however the reasons for change were grounded in unacceptable safety compromises and other significant adverse effects. The Preferred Way Forward was formulated based on the known project dependencies and to ensure design and construction within the current NLTP funding round.
**FIGURE 25** SeaPath Preferred Option

**KEY**

<table>
<thead>
<tr>
<th>A</th>
<th>Motorway Designation</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>Local Road Network</td>
</tr>
</tbody>
</table>

- At-grade crossing over Stafford Road
- Bridge over Onewa Interchange
- Proposed upgrades to Onewa Road
- Proposed improvements to Northcote Safe Cycle Route (NSR)
- Connection to SkyPath to be confirmed
- Bridge over Onewa Road motorway off-ramp
- Bridge over Onewa Road motorway on-ramp
- Bridge over Onewa Road Shared Path link to NSR
- Proposed upgrade to Alma Street link to NSR
- Bridge over Onewa Road Shared Path
- Loop and landing at the boat lockers
- Clip-on bridge to concrete viaduct
- Boardwalk over Tuff Crater
- Localised 2.5m path at Pohutukawa tree
- Follow motorway off-ramp with shared path on embankment
- Connection to Onewa Road shared path
- Bridge over retaining wall pinch point
- At-grade signalised crossing to Esmonde Road shared path

City Centre
Auckland Harbour Bridge
Queen Street
Sulphur Beach Road
Northcote Road
Lake Road
College Road
Sulphur Beach
Domain
Birkenhead
Hillcrest
Takapuna
Exmouth Road
Onewa Road
Tuff Crater
Onepoto
Takapuna
Hillcrest
The Preferred Option for SeaPath is a direct shared path facility from AHB to Esmonde Road. This is supplemented by a range of walking and cycling improvements in the local road network.

The design development post MCA determined a range of factors the option would need to respond to.

The resulting SeaPath Preferred Option includes more than 1km of grade separated boardwalks and bridges in order to address the impact to the estuary, conflicts with motorway traffic and safety concerns from the RSA. The proximity of portions of the SeaPath facility to the motorway also introduce the need for fence and barrier upgrades along the motorway in order to provide the appropriate and compliant levels of safety and separation between walking and cycling as the motorway traffic. This enabling work has a significant financial impact.

FIGURE 26 highlights the different facility types and the extent of motorway barrier upgrade for the Preferred Option.

Key features of the Preferred Option are shown in TABLE 19 below.

### TABLE 19 SeaPath Preferred Option

<table>
<thead>
<tr>
<th>FACILITY</th>
<th>KEY FEATURES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A</strong></td>
<td>Clipped on bridge from car park under the AHB to Sulphur Beach Boat Ramp</td>
</tr>
<tr>
<td></td>
<td>New public space at the boat shed at the end of Sulphur Beach Road</td>
</tr>
<tr>
<td></td>
<td>Bridge structure over the pinch point and provides a viewing platform across the motorway</td>
</tr>
<tr>
<td><strong>B</strong></td>
<td>Speed calming, wayfinding and urban design improvements to connect people to Queen Street NSR</td>
</tr>
<tr>
<td></td>
<td>Improvements to Queen Street cycle facilities</td>
</tr>
<tr>
<td></td>
<td>Minor upgrade to the shared path along Onewa Road, this will include removing existing barrier fences, relocating existing light columns and signs posts, and enforcing the property boundaries</td>
</tr>
</tbody>
</table>
FIGURE 26  SeaPath Facility Types

At-grade Facility  2270m
Bridge Structure  1351m
Boardwalk  414m
Local Road Network Improvements
13.1. LOCAL CONNECTIVITY

There are eight connections to the local road network and recreational reserves, and these are across more than 10 access points. These connections provide the connectivity and access to the local communities, which is crucial activating the facility as well improving the resilience of the transport choice for the neighbourhood. The access points are highlighted in FIGURE 27 below.

FIGURE 27 Connections to Local Amenities
## 13.2. A - MOTORWAY ALIGNMENT

Majority of this alignment is within the existing motorway designation. Although it follows a similar alignment to the motorway, the structures required to facilitate the shared path vary in construction types and method.

The following sections illustrate the Preferred Option for SeaPath.

### AHB CARPARK & CONCRETE VIADUCT

The SkyPath Landing area will be determined prior to development and completion of the SkyPath project. The intention is to provide a safe and legible connection between the SkyPath Landing and the direct SeaPath facility.

The geometric alignment for the clip on bridge at the viaduct was challenging due to the concrete piers obstructing the sight-line with gradient. A change of alignment was required to address the sight-line safety concerns, which meant the main alignment is a clip-on structure on the eastern, harbour side, of the AHB. The design cues for the structure will be complimentary to SkyPath in order to coordinate a consistent approach to the facilities.

### TABLE 20  Local Connections of SeaPath

<table>
<thead>
<tr>
<th>CONNECTION</th>
<th>DESCRIPTION</th>
<th>ORGANISATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Princess Street to NSR from SkyPath landing</td>
<td>AT</td>
</tr>
<tr>
<td>02</td>
<td>Sulphur Beach Road Boat Sheds</td>
<td>AC</td>
</tr>
<tr>
<td>03</td>
<td>Sulphur Beach Road to Beach Road and Tennyson Street</td>
<td>AT</td>
</tr>
<tr>
<td>04</td>
<td>Stafford Park and Stafford Road to NSR</td>
<td>AT</td>
</tr>
<tr>
<td>05</td>
<td>Onewa Road, Sylvan Avenue and Onepoto Domain</td>
<td>AT</td>
</tr>
<tr>
<td>06</td>
<td>Heath Reserve</td>
<td>AC</td>
</tr>
<tr>
<td>07</td>
<td>Tuff Crater walkway</td>
<td>AC</td>
</tr>
<tr>
<td>08</td>
<td>Akoranga Drive and Esmonde Road</td>
<td>AT</td>
</tr>
</tbody>
</table>
Discounted due to compromised user safety

Proposed speed management features. To be developed further with AT

Connection to NSR

SkyPath Landing TBC

AHB alliance office

Gold Hole Reserve

Northcote Ferry Wharf
AHB CONCRETE VIADUCT & LANDING AT THE BOAT SHEDS

The SeaPath alignment on the harbour side of the concrete piers is offset from Sulphur Beach Road, where connection from SkyPath to the SeaPath facility is proposed. The MCA recommendation of providing a direct connection from the harbour side clip-on facility that diagonally links to Sulphur Beach Road under the AHB viaduct raised safety concerns during the RSA process.

The elevation difference between the SeaPath clip-on and Sulphur Beach Road also introduced a steep gradient of 7% over 150m, which is not preferred for the users. Plus the connection point to the local road is obstructed by concrete piers and a retaining wall. Further design development revealed that the operational safety is unlikely to improve to an acceptable level without changing the alignment of the MCA recommended option.

The Preferred Option introduces a longer alignment compared to the MCA recommendation. The longer length meant the gradient was able to be reduced down to a more acceptable below 5%, plus it removed the obstructed sight line and operational safety concerns.

This option also introduced other positive effects to the project which was identified in the ULDF. This option would improve access to the existing walking facility along the waterfront, activate the boat shed area with walking and cycling and consolidate the Auckland skyline view from the boat shed as the captivating destination of SkyPath and SeaPath.
SULPHUR BEACH ROAD

The shared path on Sulphur Beach Road is narrow and has three blind-crests, which creates significant safety concerns if the space is shared between walk, cycling and motor vehicles. This potential conflict was raised in the RSA.

The Project Team worked with AT and AC on the possibility of designing Sulphur Beach Road boat shed connection as a limited access road. The intention is to eliminate general traffic movement to the boat sheds and therefore minimise the chances of walking and cycling users encountering a motor vehicle, this would therefore reduce conflict probability and safety risks for this area.

A separated shared path on the embankment is proposed for the residential section of Sulphur Beach Road. A visualisation of this facility is included below.

A bridge structure is proposed to provide a direct alignment over the top of the underpass entry. This would continue path in front of the Police Station onto Stafford Road. The Project Team worked with AT regarding the design treatment at the underpass entry to ensure consistency with other similar facilities in the area.

FIGURE 30 Sulphur Beach Road
FIGURE 31  Visualisation of Sulphur Beach Road Facility
STAFFORD ROAD

The Stafford Road crossing is proposed to follow the motorway off ramp alignment, then cross Stafford Road at the intersection before continuing along Stafford Reserve. This alignment changed from the MCA recommendation due to the safety concerns raised in the RSA. The deviation from the desired line meant the users are likely to form short cuts through the reserve and crossing at the motorway off ramp where the approaching speed is high.

The current Preferred Option leads the shared path users parallel to the people driving toward Stafford Road which effectively addresses the operation conflict. However it was noted in the RSA that a grade-separated facility is preferred if the budget is unconstrained.

FIGURE 32  Stafford Road
The connection between Stafford Park and the retaining pinch point is proposed to be grade separated. This would provide a high quality, direct and safe connection for people walking and cycling across the Onewa Interchange.

The MCA recommendation of a signalised at-grade crossing was discounted after further design development. The crossing from north to south across Onewa Road would induce significant traffic impact delay on Onewa Road and on the motorway off ramp. The alternative would be to increase the delay time between each cycle for walking and cycling. However the lengthy delay would introduce risk crossing behaviour for those walking and cycling and the quality of the service would be reduced for the crossing convenience. Therefore a grade separated facility was considered as the Preferred Option.

The bridge structure is approximately 800m in length including all ramps and bridges spans across the motorway on and off ramps. These bridges structures would place the shared path above the motorway level for its entire length which improves the user experience of the facility by providing better vantage points, increase noise and air pollution separation from motor vehicles and improves the resilience level of the facility for walking and cycling.

A bridge structure is proposed along the Onewa Road motorway on ramp which would provide the access between Onewa Road to SeaPath. This connection enables the access to the local road network and Onepoto Domain and act as a crucial commuting and recreation route between Onewa Road and Esmonde Road.

The visual impact of these structures were discussed in principle within the ULDF, which provided guidance for the look and feel of the structure for the next phase of design. These structures would have a notable physical presence which requires to be addressed to complement the existing site context.
RETAINING WALL PINCH POINT

The pinch point went through an extensive desktop investigation and engagement with mana whenua due to its physical constraints and cultural significance of the proximity to the original shoreline. The MCA recommendation of narrowing the motorway shoulder to accommodate an at-grade facility was discounted due to the significant extent of the motorway impact which would result in notable safety and operation impact for the SH1.

The Preferred Option forward is a grade separated facility, linking to the bridges at Onewa Interchange, which would provide a shared path facility clear of the obstruction at the pinch point, effectively providing a consistent user experience for walking and cycling while eliminating the conflicts for the motorway and intruding on sites of high cultural significance. The bridge would ramp down to ground level once the pinch point is cleared.
TUFF CRATER

Tuff Crater area is within the CMA and much of the SeaPath alignment is over an estuary. The Preferred Option proposes a raised boardwalk for the length of Tuff Crater which sits above the estuary and above the motorway level. This boardwalk would connect Heath Reserve to the embankment of the Esmonde Road motorway off ramp.

Access to Heath Reserve and Tuff Crater are planned and access points were appointed in collaboration with AC and the local board. These connections would enhance the Tuff Crater walkway and provide direct access for people walking and cycling to the recreational facility from Takapuna and the city. Heath Reserve also connects to Exmouth Road, which it is steep at up to 10% grade, provides an access point to the local road network and increase the permeability of the walking and cycling network for the area.

A signalised at-grade crossing is proposed for Esmonde Road linking the SeaPath facility to the shared path of the north side of Esmonde Road. This connection ties the SeaPath facility to existing local road network and walking and cycling facility to Takapuna and Hillcrest.

FIGURE 35  Boardwalk across Tuff Crater
13.3. **B - LOCAL ROAD NETWORK**

The local road network and walking and cycling facilities on NSR around Northcote provides the crucial links for people walking and cycling to connect to the local amenities. This complementary connection would provide up to 50% of the SkyPath patronage according to the modelling results. The local connections, plus the direct SeaPath facility would be able to generate the maximum modal shift for walking and cycling.

AT is the Road Controlling Authority for the local road network. The Project Team worked closely with AT stakeholders to ensure alignment of the project outcome with the Auckland Cycling Programme Business Case. The depth of design for the local road network was limited to concept only as the design development would ultimately follow the AT process. Therefore the Project Team recommended to decouple the design development of this component to the next project phase.

The following figures show the Preferred Option within the local road network.

**ALMA STREET CONNECTION**

The NSR facility at Northcote Point is within close proximity to the SeaPath and SkyPath transition point, and Princess Street and Alma Street provides a natural transition to the local road network. The traffic volume at Alma Street is expected to be low and therefore interventions would focus on speed reduction and wayfinding only. Resurfacing the footpath and carriage way of Alma Street is proposed to improve the overall user experience of the facility.

The Project Team worked closely with AT regarding the potential treatment of the facilities to ensure consistency with other similar local street facilities throughout Auckland. Concept designs were produced however further design development is required with AT for the next project phase.
**ONEWA ROAD CONNECTION**

Onewa Road was deemed a crucial connection for SeaPath from a patronage, connectivity and access perspective. However the corridor is constrained in width and providing high quality walking and cycling facility within the five year term is unlikely based on engagement with AT.

The SeaPath project therefore proposed a range of minor improvements to the existing shared path facility on Onewa Road to enable an improved walking and cycling experience to SeaPath. The proposed minor improvements focused on removing unnecessary shared path clutter such as protruding barrier fences, signage columns and private garden build outs.

The Queen Street and Onewa Road intersection is proposed to receive infrastructure upgrade to enable SeaPath users to connect to and from Queen Street via the intersection. This intersection was previously included in as a part of the NSR project, however the Project Team worked with AT on the concept design to further improve the facility for walking and cycling.

The direct access from Onewa Road to SeaPath is via a signalised at-grade crossing on Sylvan Avenue. This controlled crossing enables safe crossing for people walking and cycling, and also creates the access point from SeaPath to Onepoto Domain, which is a main recreational area for the Northcote area.
FIGURE 38  Onewa Road / Queen Street Improvement
13.4. REFLECTING ENGAGEMENT FEEDBACK IN THE PREFERRED OPTION

13.4.1. HISTORY OF ENGAGEMENT

Extensive engagement has been undertaken by the Transport Agency and its representatives during both the IBC and DBC phases. During the IBC phase more than 2,600 people provided feedback on a number of options, and over 95% of those people supported a walking and cycling link. The IBC recommended a landward route which has then been considered further during the DBC process.

13.4.2. ENGAGEMENT DURING THE DBC

Engagement during development of the DBC has built on engagement undertaken during the IBC with a focus on the Landward option. Engagement has been guided by the Communication and Engagement Plan attached in Appendix N which identifies the objectives of engagement, stakeholders, and the methods of engagement.

The primary methods of engagement for stakeholders were a combination of site visits, meetings/hui, presentations and participation at the options assessment workshop as described in Section 11.4. Site visits in particular were valuable for stakeholders to better understand project aims and challenges and for the project team to better understand issues and opportunities from the stakeholders’ perspectives. Section 2 provides more information on how stakeholders were engaged in the DBC.

This has helped the Transport Agency better understand issues and opportunities and how they can be responded to through design development.

The Preferred Option has been informed through the iterative engagement and design process. A summary of how the engagement with stakeholders and wider community has influenced the preferred option is outlined in more detail below.

POTENTIAL STAGING

Staging was a key issue of discussion with all stakeholders, noting that additional NLTP funding allocation would be required to deliver the full route from the outset. Stakeholders had different views on how the project might be staged, with Auckland Transport and Bike Auckland supporting the development of the route section between Esmond Road and Onewa Road as the preferred first stage. This would then connect to the existing Northcote Safe Cycle Route along Queen Street, making effective use of existing infrastructure, while still providing a complete connection. The Kaipatiki Local Board and Northcote Point Heritage Preservation Society expressed a preference to construct the southern Onewa to Harbour Bridge section first to provide a seamless connection from the proposed Skypath and mitigate potential effects on large numbers of the Northcote Point community.
**CONNECTION TO SKYPATH**

The interdependency of SeaPath with the proposed SkyPath was a constant theme raised during all engagement. Questions were raised around timing of the two projects and the potential impact of SkyPath patronage on the Northcote Point residential community and NSCR, particularly if the SeaPath were to be staged.

**SULPHUR BEACH ROAD**

Sulphur Beach Rd is narrow in places and shared with cars. It is a popular location for recreation, used by people walking and fishing, and it provides access to the dinghy storage area which is a significant feature. Retaining access to this area is important, particularly for the Kaipatiki Local Board and dinghy locker owners.

The existing SH1 pedestrian underpass is an important connection and the opportunity of utilising this as part of the route as a complementary route to provide a true coastal section was identified. The proposed design treatment at the underpass entry will be developed to ensure consistency along the route, and will be developed in further discussion with the Kaipatiki Local Board. Opportunities to upgrade the underpass will also be explored with Council during design.

The design of the elevated SeaPath clip-on section of the route and Sulphur Beach Road reflects the significance of the area for the community and the Kaipatiki Local Board. It has been designed to retain access to all areas and improve access to the existing walking facility along the waterfront.

Safety was raised as a particular issue by Bike Auckland, Auckland Transport and the Kaipatiki Local Board with concerns about a space shared by pedestrians, bikes and vehicles. Bike Auckland in particular suggested solutions to slow vehicles and improve safety for people on bikes, if sharing the road with motorists. For the residential section of Sulphur Beach Road, a separated shared path on the embankment is proposed, providing a dedicated walking and cycling space, separated from vehicle traffic.

Engagement with the Police regarding the operation of their site on Sulphur Beach Road and safety concerns contributed to the extension of the shared path past this facility.

In addition, the Project Team worked with Auckland Transport and Auckland Council on the possibility of designing the Sulphur Beach Road boat shed connection as a limited access road. The intention is to eliminate general traffic movement to the boat sheds and therefore minimise the chances of walking and cycling users encountering a motor vehicle. This would reduce conflict probability and safety risks for this area.

**STAFFORD ROAD**

The Stafford Road offramp is a conflict point along the route and while a grade separated facility would address safety concerns, it was recognised by stakeholders that an alternative more affordable solution through this section could also be explored.

Bike Auckland expressed a preference to cross Stafford Rd on a priority crossing just east of the Nelson Ave intersection as it is more direct than other options. At this location there is only one lane of traffic to cross, and vehicle speeds are slower due to the 35kph off-ramp corner. This is the preferred crossing point.
ONEWA ROAD AND INTERCHANGE

A number of options were presented to navigate the Onewa Interchange and Onewa Road. Initial options placed the path on the edge of, or inside the CMA and either passed underneath the existing Onewa Road Bridge, or crossed over Onewa Road at grade. Both of these options raised issues with stakeholders, including environmental, flooding, safety and convenience. After further design development the preferred option of providing a direct and safer grade-separated connection across the Onewa Interchange was developed.

The Kaipatiki Local Board has plans to improve the Onepoto Domain and good connections from SeaPath to the domain are important. The preferred route includes a link back to Sylvan Ave, which provides good access to the Onepoto Domain and connects to Onewa Road and onto the Northcote Safe Cycle Route.

The high speed slip lane from Onewa Rd to Sylvan Ave was raised by Bike Auckland as a safety concern and will need to be considered further during the next phase of the Project. An option that avoids the coastal marine area is also preferred by mana whenua.

MOTORWAY CORRIDOR PINCH POINTS

The motorway pinch point is in an area of high cultural significance to mana whenua, as the historic foreshore.

After further design development and considerations regarding protection of cultural values, topographical constrains and safety, the preferred option of bridging the pinch points was developed. This will maintain a full 4m width path, and reduce the potential encroachment into the cliff. The elevated solution also provides greater amenity to cyclists rather than being confined to a narrow corridor next to a busy motorway.

CONNECTIONS TO OPEN SPACE AND THE TUFF CRATER

Auckland Council is enhancing the Tuff Crater walkway and the Kaipatiki Local Board requested connections to Heath Reserve, to provide more connection points for the local community. The preferred option includes access to Heath Reserve and the Tuff Crater walkway, which will be developed further in collaboration with the Kaipatiki Local Board and Auckland Council Parks, and the Forest and Bird Protection Society (Forest and Bird).

Water quality and the connection between the Tuff Crater and the harbour was raised by mana whenua who expressed a desire for SeaPath to not create another barrier for the water circulation between these two significant features. Forest and Bird also expressed similar values and concerns about potential impacts on coastal processes and the native vegetation and shorebirds, and the importance of avoiding impacts through sensitive design. The Preferred Option proposes a low impact raised boardwalk for the length of Tuff Crater which sits above the estuary and above the motorway level, providing for the free flow of water.

ESMONDE ROAD

The design of the connection point at Esmonde Road and how users cross Esmond Road will be developed in more detail in the next phase. The Devonport-Takapuna Local Board and Bike Auckland raised concerns regarding crossing Esmonde Road. The Transport Agency will work with Auckland Transport, the Local Board, and Bike Auckland on this connection point. The Transport Agency will work with AT, the Local Board, and Bike Auckland on this connection point.
13.5. PREFERRED OPTION ASSESSMENT

Pedestrian and cyclist demand assessment was undertaken on the Preferred Option and has been benchmarked against a future Reference Case that includes all existing cycle infrastructure, in addition to future infrastructure either currently proposed, or expected to be implemented in the future and compared against a Reference Case. The reference case is summarised below:

REFERENCE CASE:

The 2026 Reference Case includes:

• The proposed SkyPath across the Waitemata Harbour. Based on Government comments it is currently expected that SkyPath will not have a toll for users. However a sensitivity test has been included assuming a $1 toll applies per cyclist trip on SkyPath
• The proposed Northcote Safe Routes (a combination of shared use paths and on street cycle facilities on Northcote Road, Lake Road and Queen Street)
• New cycle on-street cycle infrastructure on Princes Street and Alma Street in Northcote Point, connecting the Northcote Safe Routes project to SkyPath
• Completion of the Auckland Urban Cycleways programme, which includes a network of cycle infrastructure within the city centre and inner suburbs, including connections to SkyPath
• The Transport Agency’s proposed cycle infrastructure included in the Northern Corridor Improvements project, which include shared paths parallel to SH1 (Oteha Valley Road to Constellation Drive) and SH18 (SH1 to Albany Highway).

In addition to the 2026 assumptions above, the 2046 Reference Case includes limited future cycle infrastructure projects that while not committed, are considered the ‘bare minimum’ level of ongoing cycle investment over the next 30 years. If no further background investment was assumed, this would unrealistically limit the long-term connectivity of the proposed SeaPath. Infrastructure in the 2046 reference case includes:

• A future shared use path parallel to SH1, from Constellation Drive to Esmonde Road
• Within the west of the North Shore, cycle infrastructure on Glenfield Road, Mokoia Road, Waipa Street and Birkdale Road (either a quality shared path or protected cycle lanes), connecting with the existing shared path on Onewa Road
• Within the east, cycle infrastructure around Lake Pupuke (Kitchener Road, Hurstmere Road and Killarney Street, to the same standard as above), connecting with existing shared paths on Fred Thomas Drive and Esmonde Road
• The Auckland Cycle Network (ACN) long-term network of cycle infrastructure contains significantly more investment than described above, with dedicated cycle infrastructure on all arterial routes and parallel to all motorways and rail corridors. Sensitivity tests were undertaken with the full ACN completed and is discussed further in section 13.6.
PREFERRED OPTION SUMMARY

The Preferred Option performs the best against all Investment Objectives and provides the greatest contribution to the benefits. In summary, the Preferred Option provides:

- The highest forecast average daily users and supports greatest mode shift for trips from private vehicles to more efficient, low cost modes like walking and cycling. This support decongestion benefits on the northern motorway and improves overall transport network capacity and resilience by increasing the capacity and shifting people away from private cars.

- Drives improvements in safety outcomes for all road users, including increased investment in footpaths and cycle ways to support access to, and uptake of, active travel modes and providing grade separation with heavily trafficked roads such as Onewa Road which further supports the safety outcomes in the GPS.

- Improves transport choices for people by providing good quality, safe, fit-for-purpose walking and cycling infrastructure encouraging more people to use active travel modes such as walking and cycling.

- Provides an important link between the proposed SkyPath walking and cycling connection over the Harbour Bridge, and proposed northern corridor cycleway. This will result in a comprehensive active mode walking and cycling network between the city centre and upper North Shore providing further regional network integration. This supports outcome of the Auckland Cycling Programme Business Case.

The tables below provide specific evidence of how the preferred option performs against the Investment Objectives and associated KPI’s.
13.5.1. ASSESSMENT AGAINST INVESTMENT OBJECTIVES AND KPI’S

Increase the total number of commuter and educational walking and cycling trips between Esmonde Road and Auckland Harbour Bridge

<table>
<thead>
<tr>
<th>KPI</th>
<th>ASSESSMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>INCREASE PEOPLE THROUGHPUT USING ACTIVE MODES BETWEEN ESMONDE ROAD AND AUCKLAND HARBOUR BRIDGE</td>
<td>Demand estimates have been determined using the 2026 and 2046 Auckland Cycle Model. Forecast cycle trips from Takapuna to SkyPath are shown in the table below.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FORECAST YEAR</th>
<th>REFERENCE CASE</th>
<th>PREFERRED OPTION</th>
<th>STAGED OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>2026</td>
<td>625</td>
<td>900</td>
<td>715</td>
</tr>
<tr>
<td>2046</td>
<td>1070</td>
<td>1510</td>
<td>1210</td>
</tr>
</tbody>
</table>

The results show that the Preferred Option increases the average daily cyclists by 44% and 41% in 2026 and 2046, respectively against the reference case. The Preferred Option also generates 20% more average daily cyclists than the Staged Option.
The distance and cycle time for trips along the Preferred Option are significantly shorter and faster than the Reference Case and Staged Options.

The Reference case is 1.2km longer distance, >30% slower, and takes over four minutes per trip longer. The Staged Option is 600 metres longer, >20% longer and takes over 3 minutes per trip longer.

<table>
<thead>
<tr>
<th></th>
<th>REFERENCE CASE</th>
<th>PREFERRED OPTION</th>
<th>STAGED OPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel Distance</td>
<td>4.7 km</td>
<td>3.5 km</td>
<td>4.2 km</td>
</tr>
<tr>
<td>Average Speed</td>
<td>20 km/h</td>
<td>25 km/h</td>
<td>22 km/h</td>
</tr>
<tr>
<td></td>
<td>Typical on-street cycling speed for a range of user abilities</td>
<td>Higher speed recognising that entire route will have relatively gentle gradients with no cars of driveways, etc</td>
<td>Higher speed recognising part of the route on separated cycleway and on-street</td>
</tr>
<tr>
<td>Intersection delays</td>
<td>5 minutes</td>
<td>0 minutes</td>
<td>2 minutes</td>
</tr>
<tr>
<td></td>
<td>Based on four signalised intersections/crossings, with an estimated one minute average delay at each. One minute delay estimated for two roundabouts, one priority intersection, one signalised midblock crossing and two zebra crossings.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL TRAVEL TIME</td>
<td>13:20 MINUTES</td>
<td>8:40 MINUTES</td>
<td>11:20 MINUTES</td>
</tr>
</tbody>
</table>
KPI ASSESSMENT

**IMPROVE THE CYCLING QUALITY OF SERVICE BETWEEN ESMONDE ROAD AND AUCKLAND HARBOUR BRIDGE**

The quality of the walking and cycling facility is an important factor in supporting the uptake patronage. International research has found that high levels of cycling are generally supported by the provision of high quality facilities. Attracting large numbers of new cyclists will require new facilities that meet high standards for safety, comfort and directness.

The cycle facility quality of service evaluation tool (QoS tool) has been developed by Auckland Transport and aims to highlight where facilities meet critical minimum standards and will be comfortably used by a broad range of cyclists.

The Assessment of the Reference Case has highlighted a number of safety issues, notably at intersections and interactions with on-street car parking, driveways and bus stops. Treatment of these intersections will be necessary to improve the safety and attractiveness of this route for walking and cycling. This would impact the traffic operation of the intersections as improvements to signalised pedestrian and cycling movements would increase the delay and queuing of general traffic particularly at peak times.

The Staged Option has a number of undesirable issues particularly around the Onewa Road/ Queen Street intersection and the ability to provide safe and appropriate facilities for the expected cycle demand. The route is also less direct and therefore is assessed to have a lower QoS to the Preferred option.

The Preferred Option is almost entirely separated from traffic, appropriate for a wide range of users, offers shallow gradients and is more direct than the Reference Case.

**PREFERRED OPTION:**

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>INFRASTRUCTURE TYPE</th>
<th>SAFE - INFRASTRUCTURE TYPE SUITABLE FOR STREET CONDITIONS</th>
<th>SAFE - APPROPRIATE FACILITY DIMENSIONS</th>
<th>SAFE - POTENTIAL CONFLICTS MINIMISED</th>
<th>DIRECT</th>
<th>COMFORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akoranga - Stafford Rd</td>
<td>Shared Path</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Sulphur Beach Rd - SkyPath</td>
<td>Shared Path</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

1. Evaluating Quality of Service for Auckland Cycling Facilities: A Practitioner’s guide, 2016
<table>
<thead>
<tr>
<th>LOCATION</th>
<th>INFRASTRUCTURE TYPE</th>
<th>SAFE - INFRASTRUCTURE TYPE SUITABLE FOR STREET CONDITIONS</th>
<th>SAFE - APPROPRIATE FACILITY DIMENSIONS</th>
<th>SAFE - POTENTIAL CONFLICTS MINIMISED</th>
<th>DIRECT</th>
<th>COMFORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akoranga Dr</td>
<td>Shared Path</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>College Rd / Akoranga Dr</td>
<td>Signalised Intersection</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>College Rd</td>
<td>Mixed Traffic</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>College Rd</td>
<td>Unsignalised Intersection</td>
<td>2</td>
<td>0</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>College Rd / Exmouth Rd</td>
<td>Unsignalised Intersection</td>
<td>4</td>
<td>0</td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Exmouth Rd / Lake Rd</td>
<td>Roundabout</td>
<td>4</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Lake Rd</td>
<td>Shared Path</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Lake Rd</td>
<td>Unsignalised Intersection</td>
<td>1</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Lake Rd / Onewa Rd</td>
<td>Signalised Intersection</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Queen St ( to Belle Vue)</td>
<td>Shared Path</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Queen St (Belle Vue - Bartley St)</td>
<td>Mixed Traffic</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
# KPI ASSESSMENT

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>INFRASTRUCTURE TYPE</th>
<th>SAFE - INFRASTRUCTURE TYPE SUITABLE FOR STREET CONDITIONS</th>
<th>SAFE - APPROPRIATE FACILITY DIMENSIONS</th>
<th>SAFE - POTENTIAL CONFLICTS MINIMISED</th>
<th>DIRECT</th>
<th>COMFORT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Akoranga Drive / Onewa Road</td>
<td>Shared Path</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Onewa Road</td>
<td>Shared Path</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Onewa / Lake Rd/ Queen</td>
<td>Signalised Intersection</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

## Increase the number of walking and cycling connection points to Onepoto Domain, Tuff Crater and other natural assets in the project extent

**REFERENCE CASE**

Three connection points to the Shoal Bay at Sulphur Beach Road, Tennyson Road and Princess Street.

Access to Onepoto Domain, Tuff Crater and Heath Reserve via existing local road network from the west only.

**PREFERRED OPTION**

There are eight connections to the local road network and recreational reserves, and these are across more than 10 access points. These connections provide the connectivity and access to the local communities, which is crucial activating the facility as well improving the resilience of the transport choice for the neighbourhood. The access points are highlighted in FIGURE 27.

**STAGED OPTION**

Three connection points to the Shoal Bay at Sulphur Beach Road, Tennyson Road and Princess Street. Access to Onepoto Domain, Tuff Crater and Heath Reserve via existing local road network from the west only.
KPI

INCREASE THE 30 MINUTE WALKING AND CYCLING CATCHMENT TO EDUCATION FACILITIES, PUBLIC TRANSPORT HUBS AND OTHER COMMUNITY ASSETS WITHIN THE PROJECT EXTENT

REFERENCE CASE:
SkyPath to Onepoto Domain within 3km; SkyPath to Esmonde Road achieved within 6km distance
Takapuna to city centre not achieved within 30 minutes (based on 20 km/h average cycle speed)

STAGED OPTION:
She Staged Option scores similarly to the reference case SkyPath to Onepoto Domain within 3km; SkyPath to Esmonde Road achieved within 6km distance
Takapuna to city centre not achieved within 30 minutes (based on 20 km/h average cycle speed)
PREFERRED OPTION:
SkyPath to Onepoto Domain and Tuff crater within 3km; SkyPath to Takapuna and parts of Hauraki is achieved within 6km distance.

Takapuna to city centre achieved within 30 minutes (based on 20 km/h average cycle speed). Average speed expected to increase along SeaPath and SkyPath due to the flat and direct nature i.e. no at-grade crossing points.
13.6. PREFERRED OPTION – VALUE-FOR-MONEY OUTCOMES

The full economic appraisal of the project is based on the modelled demand assessment and economic benefit evaluation results provided by Flow Transportation specialists, and is in accordance with NZTA Economic Evaluation Manual (EEM) procedures. The Cost-Benefit Appraisal of the scheme is also categorised against the NZTA Planning and Investment Knowledge Base (PIKB) Assessment Framework criteria for the 2018/21 National Land Transport Fund (NLTF).

13.6.1. BASIS OF THE EVALUATION

An economic evaluation of the Project has been undertaken based on NZTA's EEM procedures and values. The purpose of this evaluation is to allow the comparison of the Preferred Option against the Reference Case, and to calculate the Benefit / Cost Ratio (BCR) for the project.

This project is assumed to be submitted for Pre-Implementation funding in the 2018/2019 financial year and therefore all the costs, benefits and revenues has been discounted to the Net Present Value (NPV) of 2018 / 2019.

General assumptions for the economic evaluation of the scheme are as follows:

- Base Date for the evaluation is 1 July 2018
- Time Zero is 1 July 2019
- The base assumption for the discount rate is 6%;
- The evaluation period is 40 years from the start of construction
  - Pre-implementation has been assumed between July 2019 and June 2021

- Construction has been assumed for a two year period between January 2022 and December 2023
- Benefits have been straight line extrapolated between the model years 2026, 2036 and 2046. Benefits beyond 2046 have been extrapolated using the same rate of increase as between the 2036 and 2046 model years
- Benefits have been assumed at 25% of the forecast for the final year of construction, representing a partial completion of the Project. Post opening of Seapath, benefits have been assumed to ramp up linearly over three years to reflect ‘bedding in’ of the new infrastructure, and a gradual change in travel behaviours. This dampening down is also in part a response to the uncertainty in early project benefits, given that there is no opening year model available
- All update factors, base value travel times, congestion relief values, vehicle operating costs, etc. are based on the EEM Amendment 2, 1 July 2018 update, which incorporates the December 2017 update factors.

The implementation of the project has been assessed based on two options:

1. Full delivery of the Preferred Option - a new shared use path parallel to the Northern Motorway, from Akoranga Road to Stafford Road, and from the end of Sulphur Beach Road to SkyPath. New protected on-street cycle lanes are planned on Sulphur Beach Road
2. Staged delivery which same as the Preferred Option, with the construction of the Sulphur Beach Road section between Onewa Road to Northcote Point delayed. This staged option is a fall back if funding for the Preferred Option is not available within the assumed timeframe. Full completion is assumed by 2036 for the purposes of this evaluation.
13.6.2. **CAPITAL COSTS**

**TABLE 21** summarises the ‘expected’ estimates for the scheme, broken down into Pre-Implementation, and Construction categories.

**TABLE 21** Summary of Undiscounted Capital Costs ($m)

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>FULL</th>
<th>STAGE 1</th>
<th>STAGE 2</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Implementation Costs</td>
<td>5.8</td>
<td>2.6</td>
<td>3.4</td>
<td>6.0</td>
</tr>
<tr>
<td>Construction Costs</td>
<td>60.8</td>
<td>27.3</td>
<td>36.8</td>
<td>64.1</td>
</tr>
<tr>
<td><strong>TOTAL CAPITAL COSTS</strong></td>
<td>72.3</td>
<td>32.0</td>
<td>43.9</td>
<td>75.8</td>
</tr>
</tbody>
</table>

The Net Present Value (NPV) capital costs for the four options are shown in **TABLE 22**.

**TABLE 22** Summary of NPV Capital Costs ($m)

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>FULL</th>
<th>2036 STAGED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Implementation Costs</td>
<td>5.5</td>
<td>4.0</td>
</tr>
<tr>
<td>Construction Costs</td>
<td>49.6</td>
<td>36.3</td>
</tr>
<tr>
<td><strong>NPV CAPITAL COSTS</strong></td>
<td>60.1</td>
<td>43.7</td>
</tr>
</tbody>
</table>

**TABLE 21** and **TABLE 22** shows that completing the full scheme has an undiscounted expected estimate of $2.3m, and NPV capital costs of $60.1m. Delaying the completion to 2036 results in an undiscounted estimate of $75.8m, and an NPV capital cost of $43.7m.
13.6.3. MAINTENANCE COSTS

Based on AMA information, annual maintenance of the path is estimated at $16,500 per km per annum for a maintenance level of service of A. The NPV maintenance costs for the options are shown in Table 24.

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>FULL</th>
<th>2036 STAGED</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPV Maintenance Costs</td>
<td>0.76</td>
<td>0.63</td>
</tr>
</tbody>
</table>

Table 23 shows that NPV maintenance costs are relatively minor in comparison to the capital costs. Staged option is less than full delivery, as a result of the later implementation of a section of SeaPath.

13.6.4. BENEFITS

This section outlines the calculation of tangible benefits for each Option, based on the NZTA’s EEM. All base value travel times, congestion relief values, vehicle operating costs and update factors etc. have been based on the Amendment 2, 1 July 2018 update, which incorporates the December 2017 update factors.

The 2026 and 2046 annual benefits summarised in this section were calculated using the Auckland Cycling Model, comparing the Reference Case with the Options, and are presented in Table 7 of the Flow Report, along with a detailed summary of the calculations and assumptions. Subsequent to the issue of this report, discussions with NZTA, QTP and Flow have resulted in a consecutive 40% increase being applied to the health and environmental benefits for cyclists to account for the under-estimate of recreational trips and non-representation of tourist trips.

13.6.5. SOURCE OF BENEFITS

NPV of benefits for the options are shown in Table 24.

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>FULL</th>
<th>2036 STAGED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Travel time savings for cyclists</td>
<td>11.0</td>
<td>7.7</td>
</tr>
<tr>
<td>Health &amp; environment benefits for pedestrians</td>
<td>10.6</td>
<td>7.3</td>
</tr>
<tr>
<td>Health &amp; environment benefits for cyclists</td>
<td>36.7</td>
<td>27.3</td>
</tr>
<tr>
<td>Safety benefits for cyclists</td>
<td>1.3</td>
<td>0.9</td>
</tr>
<tr>
<td>Traffic decongestion benefits</td>
<td>12.4</td>
<td>9.4</td>
</tr>
<tr>
<td>TOTAL BENEFITS</td>
<td>72.1</td>
<td>52.7</td>
</tr>
</tbody>
</table>

Table 24 shows that:

- Full delivery is predicted to have higher benefits than a staged approach, as a result of realising the benefits of the full Preferred Option earlier
- Health and environmental benefits for cyclists comprises approximately half of benefits, followed by traffic decongestion benefits at 17% and travel time savings for cyclists at 15% and health and environmental benefits for pedestrians also at 15%.
- Traffic decongestion benefits make up a significant portion of the overall benefits at approximately 17% of total benefits. SeaPath will provide an alternative to private car travel on the Northern Motorway and Auckland Harbour Bridge. As a result, any mode shift in favour of cycling will reduce existing (or forecast future) congestion on the Northern Motorway.

13.6.6. WIDER ECONOMIC BENEFITS

Wider Economic Benefits (WEBs) have not been quantified. These are expected to be significant, and may include:

- Agglomeration benefits brought about by providing a quality cycle route between Takapuna and Auckland’s CBD
- Increased tourism spend on accommodation, food and other activities as a result of tourists staying in Auckland longer to cycle the SkyPath and SeaPath route
- Decreased minimum cost for people to travel between Auckland CBD and Northcote, which is currently a $3.20 cash bus fare per person per trip.

If WEBs were included, these would only increase the BCR, and therefore it is conservative in this regard.
13.6.7. EVALUATION RESULTS
This section summarises the results of the economic evaluation for the SeaPath project.

13.6.8. BENEFIT COST RATIO
The BCR for the options are presented in TABLE 25.

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>FULL</th>
<th>2036 STAGED</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPV Benefits</td>
<td>72.1</td>
<td>52.7</td>
</tr>
<tr>
<td>NPV Costs</td>
<td>60.9</td>
<td>44.3</td>
</tr>
<tr>
<td>Benefit / Cost Ratio</td>
<td>1.18</td>
<td>1.19</td>
</tr>
</tbody>
</table>

TABLE 25 shows that the Preferred Option is forecast to have a BCR of 1.2, and is rated a ‘Low’ (BCR between 1 and 3) against the PIKB Allocation Profile criteria. Delaying construction of Sulphur Beach Road section to 2036 only marginally increases the BCR and therefore this option is not recommended unless funding is not available.

QTP peer reviewer has concluded that the scheme cost and discounting applied within the economic assessment appears reasonable and the assessed benefits are considered appropriate.

13.6.9. FIRST YEAR RATE OF RETURN
The First Year Rate of Return (FYRR) considers only the first year of benefits, and as a result of the assumptions around the ramping up of demand on SeaPath is unrepresentatively low. However if full uptake is achieved in the first year, the FYRR is around 5% for the Preferred option, and 3% for the staged delivery.

13.6.10. INCREMENTAL ANALYSIS
The incremental BCR for full delivery over staged as the least cost option is 1.07. As this is greater than unity, this indicates that full delivery is preferred over staged delivery provided that funding is available to construct the Preferred Option as proposed.

13.6.11. SENSITIVITY TESTING
The sensitivity of the evaluation has been assessed against a large range of key assumptions, most of which are detailed in the Flow Report:
- 4% and 8% discount rate
- Base / 95th percentile cost estimates
- +/- 20% on total benefits
- $1 toll on SkyPath
- No SkyPath
- +/- 20% on demand elasticities
- 1.9/3.0 on daily cyclist factor
- 0.5/1.0 on daily pedestrian factor
- +/- 20% on land use growth
- Development of the full ACN
- High uptake in e-bikes
- Including 20% estimate for WEBs.

The Preferred option BCR of 1.2 has been used as the basis for the sensitivity testing, with the results shown in TABLE 26. QTP stated that these sensitivity tests are considered appropriate in testing the sensitivity of the analysis to a range of key assumptions.
13.6.12. SUMMARY OF COSTS

The overall NPV costs for the options are shown in TABLE 27.

TABLE 27 Summary of NPV Costs ($m)

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>FULL</th>
<th>2036 STAGED</th>
</tr>
</thead>
<tbody>
<tr>
<td>NPV Capital Costs</td>
<td>60.1</td>
<td>43.7</td>
</tr>
<tr>
<td>NPV Maintenance Costs</td>
<td>0.7</td>
<td>0.6</td>
</tr>
<tr>
<td>TOTAL NPV COSTS</td>
<td>60.9</td>
<td>44.3</td>
</tr>
</tbody>
</table>

TABLE 27 shows that NPV cost is $60.9m for the Preferred Option. Delaying the completion of Sulphur Beach Road section to 2036 results in a total NPV cost of $44.3m.
14. PREFERRED WAY FORWARD

14.1. IAF RESULTS ALIGNMENT

The project has been assessed against the Investment Assessment Framework (IAF) 2018/21 and qualifies for a ‘high’ rating under the walking and cycling activity class.

Access to opportunities, enables transport choice and access, and is resilient - liveable cities

High - Targets the completion and promotion of networks in high growth urban areas to enable access to social and economic opportunities

The project is in close proximity to Northcote and Takapuna development areas, which have:

• substantial capacity provided in the Auckland Unitary Plan for housing and business development
• access to a large number of jobs within a reasonable commuting time
• access to centres and the strategic public transport network is within easy walking distance
• major public landholdings with intended or potential redevelopment
• current or planned infrastructure capacity that is likely to enable significant additional growth – for example, the expansion of the strategic transport network that improves connectivity

The preferred option for the project will provide both recreational and commuter bike users with a dedicated off-road cycle facility. This eliminates interactions between high speed traffic and people cycling reducing the likelihood and severity of any incidents.

By providing a safe, efficient and well connected cycle network, will provide users with a viable alternative to the private motor vehicle. Rather than driving, regular commuters can access areas of employment and recreational users can access areas of attraction such as Onepoto Domain during the weekend. Therefore, SeaPath helps enable a modal shift to active modes.

INVESTMENT PROFILE

The Preferred Option has been assessed as having a high strategic fit in accordance with the IAF (2018-2021) with strong policy alignment with the GPS 2018. The Preferred Option is forecast to have a BCR of 1.2, which aligns with a ‘Low’ (BCR between 1 and 3) against the PIKB Allocation Profile rating. Delaying construction of the Sulphur Beach Road section to 2036 only marginally increases the BCR and therefore this option is not recommended over full delivery, unless funding is not available.

This places the project with a results alignment profile of HL Priority 5.

The preferred way forward for the SeaPath project is:

1. Proceed with the detailed design for the 4m shared path facility to the next phase
2. Collaborate with AT regarding connections to the local road network
3. Formalise working relationship with AT for work within the local road network
4. Collaborate with AC regarding the access to reserves and natural features
5. Consider staging the shared path facility by prioritising the northern section between Onewa Road and Esmonde Road. The staged approach would:
   - complement consent, design and construction timing with the future walking and cycling connection over AHB
   - ensure design and construction can commence within the current NLTP funding round

The detailed design for the length of the SeaPath connection from the car park under the Harbour Bridge to Esmonde Road is to be taken to the next phase. This enables the overall network connection to be designed and ready to deliver independent to any external dependencies.

There are a range of connections to the local road networks and reserves. These interfaces require collaboration with the appropriate stakeholders to ensure alignment with current plans and design expectations. The project team is actively working with AT and AC to formalise a set of working principles to enable the development and alignment of these network interfaces.
PART C
IMPLEMENTING THE PREFERRED OPTION
15. COMMERCIAL CASE

The commercial case for implementing the Preferred Option involves commercial and financial analysis considering the capacity demand and attractiveness; accessibility and network linkages; affordability of delivering the option; and the associated implications. The commercial case is underpinned by the implementation, procurement, consenting and strategies for the project.

15.1. IMPLEMENTATION STRATEGY

The implementation strategy sets out the approach to obtain all statutory approvals necessary to enable construction, operation and maintenance of SeaPath. It also considers construction options for the project relative to funding availability, collaboration opportunities and government intent.

It is recommended that there is a robust pre-implementation stage to confirm procurement and the implementation strategy including considering staging options if financial constraints dictate. There is strong motivation, need and support to deliver SeaPath as soon as possible, and the implementation strategy will consider how this can be achieved in the most effective and efficient manner.

Through implementation, the project will need to ensure that it has:

- a high level of ability to align with the GPS and government intent;
- ensure design and construction can commence within the current NLTP funding round (2018/21);
- a strong existing national and local government support and motivation;
- level of connections and interfaces with AT and AC networks and environmental features; and
- complementary consent, design and construction timing with the proposed SkyPath.

The primary activities to be undertaken during in the pre-implementation phase are:

- Engineering design and tender services
- Consents
- Collaboration with AT regarding connections to the local road network
- Collaboration with AC regarding access to reserves and natural features
- Formalise working relationship regarding the proposed work within the local road network.

15.1.1. IMPLEMENTATION OPTIONS CONSIDERED

Two main implementation options have been considered:

1. **Full delivery** of the entire SeaPath from Esmonde Road to Auckland Harbour bridge

2. **Staged delivery** with Northern section from Esmonde Road to Onewa Road constructed first (Stage 1), followed by Onewa Road to the Harbour Bridge connection (Stage 2)

Staged delivery refers to delivering SeaPath in two stages: Stage 1 - Northern Section Onewa Road to Esmonde Road and Stage 2 – Harbour Bridge to Onewa Road. The benefits of a staged approach is that it provides an opportunity to decouple the risks associated with each stage, as delays or issues in one stage would not impact on the other. Stage one is considered to be straightforward and able to be implemented without significant consent requirements, providing opportunity for the stage to be fast tracked to detailed design. This stage also connects to the Northcote Safe Cycle Route enabling SeaPath to be fully operational and connected to SkyPath, prior to completion of the stage two physical works. Stage two in contrast has more complexities associated with consenting, technical constraints and construction timeframe. By staging the project, risks of delay would be contained to only a one section.
By taking a staged delivery approach, the project will be
delivered within different timeframe. By not having detailed
design on both stages completed at the same time, there
is risk that the project may not have the same continuity.
Financially, running two separate stages could also be costly
due to the doubling up of services and materials. As such, a
staged delivery for implementation was not preferred.

It may also be beneficial to integrate SeaPath and SkyPath
due to the projects having close interdependencies. Once
completed, the combined projects will form an important
cycling connection between Takapuna and city centre.
With similar delivery timing aspirations, there is a potential
opportunity for both SkyPath and SeaPath to be combined
and delivered as one cohesive project. Combining the projects
may result in a high level of integration being achieved, as well
as opportunity to distribute risk. Savings could be made on
common project components including project management
costs, insurances and preliminary and general costs.

The Transport Agency has signified that both SeaPath and
SkyPath will be two standalone projects. Each project has
different forms of construction and whilst SkyPath and
SeaPath will complement each other, the reputational risk is
too high if one project should be delayed as a result of the
other. As such, an integrated delivery for implementation was
not preferred.

The preferred implementation strategy is a full delivery of
SeaPath in its entirety from Esmonde Road to Auckland
Harbour Bridge on the basis that:

- The option delivers strongly on the project issues and
  objectives;
- It is expressed as the community and local board
  preference;
- It best meets the strategic intent of the government; and
- A full delivery model will allow for bulk purchase of
  services and materials providing overall cost savings

Whilst a staged delivery was not preferred, the full delivery
of SeaPath will be based on phased planning and effective
project management of interdependencies and opportunities.
Phasing the delivery will be critical to ensure smooth delivery
of the full route as this will prevent time and cost delays. An
important consideration for phasing will be ensuring minimal
network, traffic and local environment disruption. At the same
time, consideration of the full costs needs to be taken into
consideration particularly if the phased process requires two
project teams rather than one.

It is noted however that should funding constraints be
experienced, the delivery of SeaPath could revert to a staged
delivery.

It is envisaged that a single professional design, engineering
and consents services supplier would be utilised for the entire
route. Physical works may require to be split along the route
to cater for the specialist related works at the Harbour Bridge
connection and concrete viaduct clip-on.

Engineering design and tender services would have
duration in the order of 12 months from award and will be
required to provide design information to the statutory
applications. Either a specimen or detailed design and tender
documentation would be required for the implementation
phase.

The proposed implementation strategy has been developed
by considering the critical path elements to enable a
construction of SeaPath as soon as practicable. It is estimated
that SeaPath will have a construction period of 24 months due
to its constrained build environment.

<table>
<thead>
<tr>
<th>TIME FRAME</th>
<th>DELIVERY PHASE</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018/19</td>
<td>Seek Board Approval</td>
</tr>
<tr>
<td>2019/20</td>
<td>Detailed design</td>
</tr>
<tr>
<td></td>
<td>Documentation to support statutory applications for the entire project.</td>
</tr>
<tr>
<td></td>
<td>Collaboration with AT regarding connections to the local road network.</td>
</tr>
<tr>
<td></td>
<td>Collaboration with AC regarding access to reserves and natural features.</td>
</tr>
<tr>
<td></td>
<td>Formalise working relationship regarding the proposed work within the local road network</td>
</tr>
<tr>
<td>2020/21</td>
<td>Start construction</td>
</tr>
<tr>
<td>2023/24</td>
<td>Complete SeaPath</td>
</tr>
</tbody>
</table>
15.2. PROCUREMENT STRATEGY

15.2.1. PRE-IMPLEMENTATION PROCUREMENT OPTIONS

The Transport Agency’s procurement manual contains the following supplier selection methods for the procurement of professional services:

- Direct appointment
- Lowest price conforming
- Purchaser nominated price
- Price quality
- Quality based

The key attributes for consideration are as follows:

- Scale and complexity of the project - the majority of the risks are associated with planning, design and stakeholder/political influences. The estimated construction cost is in the order of $73m.
- Timeframe - there is pressure to deliver walking and cycling initiatives to support better transport outcomes and Government intent. This is coupled with high public and political expectation.
- Market competition - use of standard Transport Agency procurement for professional services is likely to provide the best value-for-money, and help to sustain competition in the professional services industry.

It is recommended that the Transport Agency procures its professional services provider for the pre-implementation phase through its standard procurement processes. In this case this would be using a Transport Agency approved procurement Price Quality Model approach. Given the nature of the key risks; particularly those relating to stakeholders and the public and political profile of SeaPath, it is recommended that a high weighting is placed on quality to manage price/quality trade-offs and attract the right suppliers to the project.

If the need to accelerate the project is required there is the option of progressing elements of pre-Implementation using the Direct Appointment approach.

The implementation phase will be guided by decisions made during the pre-implementation phase.

15.2.2. IMPLEMENTATION PROCUREMENT OPTIONS

The Land Transport Management Act 2003 Section 25 requires that procurement procedures used by approved organisations are designed to obtain the best value for money spent. A critical aspect of this is ensuring the procurement method is appropriate to manage the project scale, time frames, complexity innovation potential, risk, and supplier market.

The objective of the procurement procedure design is to select a delivery model for the procurement and the delivery of the project. This will maximise the potential for obtaining the greatest economic, social and environmental benefits possible, for the lowest overall whole-of-life cost.

15.2.3. DELIVERY MODEL

The Transport Agency has four delivery models for the procurement of infrastructure project contracts:

- Staged - Traditional
- Design and build
- Shared risk
- Supplier panel

The appropriateness of the delivery model is determined by the defining characteristics of the procurement activity including complexity, scale, timing, innovation potential, risk and supplier market. FIGURE 40 illustrates the suitability of each delivery model based on the scale and risk association.
SeaPath’s defining characteristics and market appeal is due to a number of factors, including:

- The scale of SeaPath is estimated to be approximately $73m
- Options for staged delivery if funding constraints arise
- Despite a constrained built and natural environment, the project involves relatively low construction complexity and should be attractive to the market for suitable qualified contractors either individually or partnered
- Estimated 24 month construction period
- Works can be well defined although there is benefit in obtaining contractor involvement in the design and pricing phases of the project
- The majority of the risks are associated with planning, design and stakeholder/political influences which will continue to be owned by the Transport Agency.
- The project has relatively well defined engineering challenges with the exception of environmental considerations and traffic management during construction to keep the network operating effectively

15.2.4. DELIVERY MODEL SUITABILITY FOR SEAPATH

An assessment of SeaPath’s relevant project factors has been undertaken in TABLE 29 to determine the most appropriate delivery model for SeaPath.

A shared risk delivery approach such as an alliance adopts collective ownership and equitable sharing of all project risks making it most suitable for large scale projects involving a high degree of innovation and cost. This approach has been discounted for SeaPath as a standalone project as the level of design innovation is limited due to the project constraints, while the urgency to deliver is high. The evaluation therefore considers a staged/traditional or design and build approach as suitable options for SeaPath.

15.2.5. RECOMMENDED PROCUREMENT APPROACH

The recommended delivery model for procuring SeaPath is a Staged/Traditional approach. This method is appropriate as the project complexity, uncertainty, innovation and risk is low. It will allow the project to come to the market in a timely manner as well as be delivered within the anticipated timeline. It also allows for a high level of involvement and control of the project by the Transport Agency. If possible it would be beneficial to engage and obtain involvement from contractors to inform the design process and iteratively compile the design and construction components and quantities before releasing to the market.

It is recommended that one design company is engaged for pre-implementation and one contractor for delivery. There is however the possibility of the need to separate out specialist sections (southern section attaching to the Harbour Bridge) for both design and construction in order to meet the different technical requirements and achieve the best design, quality and price outcomes for the project.

It is understood that there is the capability and capacity for the market to deliver, however the procurement methodology will need to attract the right type of contractors. There is opportunity to attract a range of contractors to deliver SeaPath, including those from Tier 2. This will however require awareness of ensuring the right weighting of price, quality and timing aspirations are achieved to avoid additional risk to the project.

15.2.6. INTERDEPENDENCIES AND RISKS

SeaPath and SkyPath are currently two individual projects that once fully delivered will connect with each. Whilst the projects are closely linked, current thinking is that they will be procured and delivered as two separate projects. This enables neither project to experience unnecessary delays as a result of the other.

Both projects share similar investment objectives; specifically to improve walking and cycling facilities, connections, and accessibility for a range of customers, and improve the transport system capacity. There will be common stakeholders for both SeaPath and SkyPath, and their delivery timeframes are similar too. Whilst both projects will be delivered independently, there are significant opportunities and benefits for the project teams to collaborate to share information, ideas, learnings and expertise. Subject to confirmation of delivery timing for SkyPath there may be advantages in reviewing the form and physical extent of implementation models and scopes to seek optimisation and collaboration between projects.

SeaPath also has a number of interdependencies with the wider local cycling network and local environment.
15.2.7. **RISK ALLOCATION AND TRANSFER**

In the pre-implementation phase, it is expected that the majority of the technical risks associated with obtaining statutory approvals will be transferred to the professional service providers on award with the exception of the risks discussed further in the Management Case. The transfer of risk for detailed design and implementation phases will be determined in the project planning and the finalised in the Procurement Strategy. Risk Management is further discussed in the Management and Financial Cases.

15.2.8. **COMMUNICATION**

The recommended procurement strategy for the project needs to be communicated to the supplier market. This will aid with obtaining early involvement of contractors both into the early design requirements as well as enabling them to plan adequately to resource the delivery.

15.2.9. **PAYMENT MECHANISMS**

The basis of payment shall be in accordance with the Transport Agency’s standard bases of payment. There are no specific milestone or bonus payments for the delivery under a traditional project delivery for this contract. Should the Project be fast-tracked, then the potential for bonus payments and liquidated damages for non-delivery should be considered in the pre-implementation stage of the Project.

15.2.10. **CONTRACT MANAGEMENT**

The contracts for pre-implementation and implementation shall be managed in accordance with the Transport Agency’s minimum standards and special conditions will be included in the contract documents.
<table>
<thead>
<tr>
<th>SEAPATH CHARACTERISTICS</th>
<th>STAGED - TRADITIONAL</th>
<th>DESIGN AND BUILD</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Scale</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td></td>
<td></td>
</tr>
<tr>
<td>$60-$70m (full delivery)</td>
<td>+</td>
<td>++</td>
</tr>
<tr>
<td>Ability to stage delivery</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Complexity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Definitive work - board walks, bridge structures, traffic management</td>
<td>++</td>
<td>-</td>
</tr>
<tr>
<td>Constrained corridor</td>
<td>++</td>
<td>-</td>
</tr>
<tr>
<td>High level of agreement with many stakeholders already AT/AC/HPT/Forest &amp; Bird (F&amp;B)/AMA/Bike Auckland (BA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Innovation potential</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Limited opportunity other than construction methodology</td>
<td>++</td>
<td>-</td>
</tr>
<tr>
<td>Minimal innovation in structures as agreed form with Iwi and pier locations with AMA</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Timing and urgency of the activity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urgent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-implementation needed to be awarded promptly so detailed consent phase and s9(2)(J) can be progressed.</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td>Construction may have a programme delivery constraint of 2021.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alignment to SkyPath construction</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Supplier market conditions</strong></td>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>TI consultants will also need a strong planning team</td>
<td>++</td>
<td>-</td>
</tr>
<tr>
<td><strong>Risk profile</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Geotechnical risk especially through CMA/environmental control</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>Design of the clip on structure to AHB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High risk level of traffic management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storm water management through CMA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SEAPATH CHARACTERISTICS</td>
<td>STAGED - TRADITIONAL</td>
<td>DESIGN AND BUILD</td>
</tr>
<tr>
<td>-----------------------------------------------------------</td>
<td>----------------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Stakeholder involvement and customer requirements</td>
<td>Ongoing consultation with stakeholders &lt;br&gt;Engagement with Iwi, affected utility providers, AT, AC, F&amp;B, BA, HPT, AHB, AMA, and local boards &lt;br&gt;Few opportunities in the design to integrate with AT/AC needs to be addressed</td>
<td>+</td>
</tr>
<tr>
<td>Level of client involvement</td>
<td>NZTA to retain control through design and consenting process &lt;br&gt;Confirm scope of activities and ratify with NZTA guidelines and requirements &lt;br&gt;Members of SD&amp;D, CJS, I&amp;F need to be closely involved for success</td>
<td>++</td>
</tr>
<tr>
<td>Focus on non-cost areas</td>
<td>Value non-cost success - especially social and environmental due to the environmental sensitive area of the project. &lt;br&gt;IIC and Iwi involvement and influence &lt;br&gt;Urban design and social value of amenity to community CPTED</td>
<td>++</td>
</tr>
<tr>
<td>Tangible demonstration of value for money</td>
<td>Competitive tender process will give value for money</td>
<td>++</td>
</tr>
<tr>
<td>Flexibility to deal with change</td>
<td>Minimal flexibility in project scope once board approval obtained.</td>
<td>-</td>
</tr>
</tbody>
</table>
15.3. CONSENT STRATEGY

A consent strategy has been prepared in accordance with the ‘New Zealand Transport Agency Consent Strategy Approvals and Pathways Guide’, July 2013.

Key features of the preferred route requiring specific consideration in the consent strategy options are summarised below and provided in Appendix H:

- Proximity to the SkyPath route and the conditions of the existing SkyPath consent decision.
- The extent of works within the Coastal Marine Area (CMA). Specifically where the alignment connects to the Harbour Bridge and where it also passes through the Tank Farm Volcano (Outstanding natural Feature No.203) and Onepoto Explosion Crater (Outstanding natural Feature No.142) and Onewa Road portions of the CMA.
- Effects on significant marine ecological area including wading bird habitats, shoal bay intertidal area, shell banks, mangroves and salt marshes within the Tank Farm Explosion Crater.
- Stormwater management, specifically management of storm water flow and discharge of flow from the Harbour Bridge clip-ons.
- Mana whenua values, particularly protection of the existing retaining wall at the base of the Sylvan Ave cliff, significance of the natural landform at the cliff face to iwi and the need to avoid any disturbance.
- The location and use of AC Parks land along the full alignment.

- The interface with AT network corridors at:
  - Onewa Road/Queen St intersection;
  - Onewa Road/Sylvan Park Ave intersection; and
  - Sulphur Beach Road.
- The notable trees and outstanding natural feature along the cliff base below Sylvan Park Ave (including the large pohutakawa tree directly in line of the pathway).

It is recommended that ‘Pathway 4 – Land use and Regional Consents’ is considered as the preferred pathway for obtaining all necessary statutory approvals. This allows the Transport Agency to simply seek land use and regional consents for the full package of works through the lodgement of a single consent package. This approach still provides delivery flexibility.

However, it is acknowledged that the consents could be lodged in two packages either concurrently or independently for Stages 1 and 2. Subject to delivery timing and funding there may be advantages to lodging Stage 1 early. We recommend a review of the consent strategy options and recommendations, once the timing of SkyPath is confirmed. The consent strategy recommendations are subject to potential changes should SkyPath be delivered concurrently or in advance of SeaPath.

A consent strategy has been prepared in accordance with the ‘New Zealand Transport Agency Consent Strategy Approvals and Pathways Guide’, July 2013.
16. **FINANCIAL CASE**

**TABLE 30  Assumptions for Cost Estimate**

<table>
<thead>
<tr>
<th>ITEM</th>
<th>ASSUMPTIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PRE-IMPLEMENTATION</strong></td>
<td></td>
</tr>
<tr>
<td>Preliminary/Specimen Design, Detailed Designs Contract Documentation and AEE</td>
<td>8% of the base estimate for construction elements. Due to the size of the project and our considerations of other similar projects. This is consistent with ACENZ / IPENZ guidelines for design and project documentation.</td>
</tr>
<tr>
<td>Consenting and Notices of Requirement Costs</td>
<td>Costs for the consenting phase have been estimated and provided by NZTA.</td>
</tr>
<tr>
<td>NZTA Managed Costs</td>
<td>Managed costs for pre-implementation were supplied by NZTA.</td>
</tr>
<tr>
<td><strong>IMPLEMENTATION</strong></td>
<td></td>
</tr>
<tr>
<td>24(2)(j)</td>
<td></td>
</tr>
<tr>
<td>Construction Costs</td>
<td>24 months construction period estimated for the Preferred Option. Linear allocation per year, which should be refined in Pre-Implementation</td>
</tr>
<tr>
<td>MSQA</td>
<td>4 FTE @ $200 per hour for 24 months.</td>
</tr>
<tr>
<td>NZTA Managed Costs</td>
<td>Managed costs for implementation were supplied by NZTA.</td>
</tr>
<tr>
<td><strong>MAINTENANCE AND OPERATIONS</strong></td>
<td></td>
</tr>
<tr>
<td>Maintenance period</td>
<td>2023 Q3 to 2061 Q2 to reflect the balance of a 40 year evaluation period post two years of construction in 2022 and 2023.</td>
</tr>
<tr>
<td>Pavement Maintenance</td>
<td>The concrete pavement will not require significant maintenance under walking and cycling loadings. Based on Auckland Motorway Alliance information, a $2k/km allowance for sweeping and pavement maintenance has been assumed.</td>
</tr>
<tr>
<td>Pavement Rehabilitation</td>
<td>Not accounted for. It is assumed that the concrete pavement and sub-base will outlast the evaluation period of the DBC.</td>
</tr>
<tr>
<td>Other Maintenance</td>
<td>Based on AMA information, a $14k/km allowance has been assumed. This covers general inspections, vegetation control, graffiti management, stormwater maintenance and structures.</td>
</tr>
<tr>
<td>Operating Costs (ITS, Lighting etc)</td>
<td>Based on AMA information, a $500/km allowance has been made for lighting.</td>
</tr>
</tbody>
</table>

The financial case for the Preferred Option has been based on implementation of the full SeaPath route as outlined in the Commercial Case, using a bottom up approach in accordance with the Transport Agency’s Cost Estimation Manual (SM014).

**16.1. PROJECT DELIVERY COSTS**

**16.1.1. ASSUMPTIONS**

The whole-of-life base cost estimate is based on the assumptions outlined in **TABLE 30**. These were derived using 2018 Q3 prices.
16.1.2. WHOLE-OF-LIFE COSTS

TABLE 31 shows the source and scale of capital, operation and maintenance costs over the life of the Project. These are in base year values, and do not account for inflation, nor discounting.

16.2. PARALLEL ESTIMATE

BondCM were engaged by the Agency to undertake a parallel estimate using the bill of quantities and concept design drawings produced by AECOM. The difference between post-reconciliation base estimates for the physical works was approximately 2% which provides a high degree of confidence in the base estimate.

<table>
<thead>
<tr>
<th>COST SOURCE</th>
<th>DO MINIMUM</th>
<th>TOTAL EXPECTED PROJECT COST</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRE-IMPLEMENTATION (ACTIVITY CLASS 13)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preliminary/Specimen Design, Detailed Designs Contract Documentation and AEE</td>
<td>Nil</td>
<td>3.6</td>
</tr>
<tr>
<td>Consenting and Notices of Requirement Costs</td>
<td>Nil</td>
<td>0.6</td>
</tr>
<tr>
<td>NZTA Managed Costs</td>
<td>Nil</td>
<td>1.6</td>
</tr>
<tr>
<td>TOTAL EXPECTED PRE-IMPLEMENTATION COSTS</td>
<td>NIL</td>
<td>5.8</td>
</tr>
<tr>
<td>IMPLEMENTATION (ACTIVITY CLASS 13)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>BondCM</td>
<td>Nil</td>
<td>5.7</td>
</tr>
<tr>
<td>Construction Cost</td>
<td>Nil</td>
<td>56.0</td>
</tr>
<tr>
<td>MSQA</td>
<td>Nil</td>
<td>2.3</td>
</tr>
<tr>
<td>NZTA Managed Costs</td>
<td>Nil</td>
<td>1.6</td>
</tr>
<tr>
<td>Total Expected Implementation Costs</td>
<td>Nil</td>
<td>60.8</td>
</tr>
<tr>
<td>TOTAL EXPECTED CAPITAL COSTS</td>
<td>NIL</td>
<td>72.3</td>
</tr>
<tr>
<td>MAINTENANCE AND OPERATIONS (ACTIVITY CLASS 13)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pavement Resurfacing (Periodic Maintenance Costs)</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>Other Maintenance Costs (Various Categories)</td>
<td>Nil</td>
<td>0.6</td>
</tr>
<tr>
<td>TOTAL EXPECTED MAINTENANCE COSTS</td>
<td></td>
<td>0.6</td>
</tr>
<tr>
<td>TOTAL EXPECTED PROJECT COSTS (UNINFLATED)</td>
<td></td>
<td>72.9</td>
</tr>
</tbody>
</table>
16.3. THIRD PARTY CONTRIBUTIONS AND PROJECT REVENUE

There are no identified revenue streams that are directly attributable to this project. There are potential minor contributions to the Project as outlined in TABLE 32.

<table>
<thead>
<tr>
<th>THIRD PARTY</th>
<th>SCOPE</th>
<th>POTENTIAL CONTRIBUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auckland Transport</td>
<td>Improved walking and cycling connections to existing infrastructure and wider networks</td>
<td>Further consideration of potential funding opportunities should be explored at interfaces with the following local roads including: Sulphur Beach Road, Stafford Road, Esmonde Road intersection and Sylvan Avenue</td>
</tr>
<tr>
<td>Auckland Council</td>
<td>Improved connection to Council park facilities</td>
<td>Further consideration of potential funding opportunities should be explored with AC Parks regarding the interface with Tuff Crater boardwalk</td>
</tr>
</tbody>
</table>

16.3.1. MAINTENANCE COST

Maintenance of SeaPath is to be undertaken by Auckland Transport, Auckland Council and AMA. The respective organisations will be responsible for different elements of maintenance over the life of the project as shown in TABLE 33. The scope and responsibility of works for each organisation will be confirmed during in the next stage of design.

<table>
<thead>
<tr>
<th>THIRD PARTY</th>
<th>MAINTENANCE RESPONSIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auckland Transport</td>
<td>Running surface of the path including items such as leaf fall and broken bottles</td>
</tr>
<tr>
<td>Auckland Council</td>
<td>All items excluding structures and surface maintenance - Vegetation maintenance, loose litter clean up, illegal dumping graffiti removal</td>
</tr>
<tr>
<td>AMA</td>
<td>Inspection and maintenance of structures and motorway assets i.e. stormwater infrastructure within the NZTA designation</td>
</tr>
</tbody>
</table>
16.4. FUNDING OPTIONS

The Project has been included in the National Land Transport Programme (NLTP) 2018-21. **TABLE 34** outlines the proposed investment allocation to SeaPath.

**TABLE 34** shows that the funding available from the NLTP is far less than what is required for the Preferred Option by some $41m. There are two options available: to apply for further funding to complete the Preferred Option in this or the next NLTP period, or to stage the investment with construction of the northern section between Onewa Road and Esmonde Road plus local road improvements first. The P50 expected estimate for constructing the staged option in isolation is approximately $32m, which is similar to the NLTP allocation of $31.4m, and therefore this is a viable strategy if more funding cannot be secured.

The NLTP allocation is indicated for the 2018-21 period. The DBC envisages that construction of SeaPath is more likely to start in late 2021 / early 2022 for a two year period to late 2023. Therefore aside from **Table 32** showing that more funding is required, the construction portion of the allocation needs to be deferred to better match the Project programme.

The current intention is for this project will be funded from the National Land Transport Fund through the Transport Agency with a 100% Funding Assistance Rate for Walking and Cycling activities. Alternative funding sources, such as public/private partnerships (PPP), are not being considered as part of this DBC phase.

<table>
<thead>
<tr>
<th>PROJECT PHASE</th>
<th>NLTP ALLOCATION ($M)</th>
<th>PREFERRED OPTION P50 ($M)</th>
<th>DIFFERENCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-implementation</td>
<td>1.1</td>
<td>5.8</td>
<td>+4.7</td>
</tr>
<tr>
<td>Implementation</td>
<td>30.3</td>
<td>60.8</td>
<td>+30.5</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>31.4</strong></td>
<td><strong>72.3</strong></td>
<td><strong>+40.9</strong></td>
</tr>
</tbody>
</table>

16.5. FUNDING & COST RISK

Quantitative Risk Analysis (QRA) modelling has been undertaken to inform the Project of their potential risk exposure and potential required contingency levels.

The following QRA’s have been be conducted:

- Contingent Risks which considered discrete risk events
- Inherent Risks which consider estimating uncertain

**TABLE 35** is a summary of the results following reconciliation through the parallel cost estimate process.

<table>
<thead>
<tr>
<th>ITEMS</th>
<th>PREFERRED OPTION</th>
<th>STAGED OPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base Estimate (A)</td>
<td>$61.5m</td>
<td>$ 64.2m</td>
</tr>
<tr>
<td>Contingency (P50) (B)</td>
<td>$10.7m</td>
<td>$11.1m</td>
</tr>
<tr>
<td>Project Estimate (P50) (A+B)</td>
<td>$72.3m</td>
<td>$75.4m</td>
</tr>
<tr>
<td>Funding Risk (D)</td>
<td>$12.4m</td>
<td>$12.9m</td>
</tr>
<tr>
<td>Project Funding Estimate (P95) (A+B+D)</td>
<td>$84.7m</td>
<td>$88.3m</td>
</tr>
</tbody>
</table>
Once the initial identification, assessment and prioritisation of risks had been completed, a Quantitative Cost Risk Analysis (QCRA) was run on the project risk register. Understanding the potential cost risk exposure to the project will help inform a suitable contingency allowance for the project as well as driving proactive risk mitigation on those risks with high cost impacts.

The QCRA process used the risk’s probability as a percentage and potential cost impacts in terms of minimum, most likely and maximum impacts. This information is inputted into the QCRA model to identify the likely project outturn cost of risk. The outputs from the QCRA produce P50 and P95 values.

Sensitivity analysis was also undertaken to identify the most influential risks. These are detailed in the table below.

<table>
<thead>
<tr>
<th>RANK</th>
<th>NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25 - There is a threat sufficient time or budget is allocated for unknown ground conditions throughout the project area</td>
</tr>
<tr>
<td>2</td>
<td>43 - There is a threat that the proposed option for SeaPath may damage/ impact performance of the AHB</td>
</tr>
<tr>
<td>3</td>
<td>58 - There is a threat proposed staging connections from SeaPath to the existing AT network require significant upgrades i.e. Northcote Safe Cycle Route (NSCR)</td>
</tr>
<tr>
<td>4</td>
<td>67 - There is a threat that the consenting process is delayed due to opposition from the public, council and private organisations</td>
</tr>
<tr>
<td>5</td>
<td>66 - There is a threat that the project delivery is delayed due to opposition for SeaPath from the community and/or stakeholders</td>
</tr>
<tr>
<td>6</td>
<td>74 - There is a threat that the project is required to upgrade existing motorway infrastructure within the project extent</td>
</tr>
<tr>
<td>7</td>
<td>11 - There is a threat that there will be adverse effects on cultural values both tangible and intangible. This includes the Onepoto cliffs, the Waitemata Harbour and Tuff Crater.</td>
</tr>
<tr>
<td>8</td>
<td>31 - There is a threat the proposed alignment potentially disturbs the habitat of endangered bird species</td>
</tr>
<tr>
<td>9</td>
<td>73 - There is a threat that expected productivity during construction is not achieved due to the presence of unforeseen underground utilities and services and the consequent impacts on working hours and traffic management</td>
</tr>
<tr>
<td>10</td>
<td>32 - There is a threat of programme delays due to the uncertainty of the interface between SkyPath and SeaPath underneath the Harbour Bridge</td>
</tr>
</tbody>
</table>

The full results from this analysis are provided in Appendix J and the risk register is provided in Appendix L.
16.6. CHANGES SINCE THE INDICATIVE BUSINESS CASE

The Indicative Business Case included a project base estimate prepared in 2016 for a new shared path between Esmonde Road and Northcote Point.

16.6.1. PROJECT BASE COST ESTIMATE

TABLE 37 shows the difference between the IBC and the final DBC cost estimate which do not include contingency and funding risk.

The reasons for the main differences between the IBC and DBC cost estimate are highlighted as follows:

<table>
<thead>
<tr>
<th>TABLE 37</th>
<th>Cost Estimate Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>BUSINESS CASE</strong></td>
<td><strong>ESTIMATE</strong></td>
</tr>
<tr>
<td>Indicative Business Case cost estimate, 2016</td>
<td>$30.3m</td>
</tr>
<tr>
<td>Final DBC cost estimate preferred option, 2018</td>
<td>$61.5m</td>
</tr>
<tr>
<td>Final DBC cost estimate staged option, 2018</td>
<td>$64.2m</td>
</tr>
</tbody>
</table>

MSQA

The IBC allowed for $1.32m for MSQA cost. In the DBC phase, the identified MSQA total is in the order of $4.2m. This item includes the following:
- Consultancy fees
- The NZTA managed cost
- Consenting phase costs

ENVIRONMENTAL COMPLIANCE

The DBC cost estimate provides $100,000 for each significant route across the project area. A separate line item for environmental compliance was not included in the IBC cost estimate.

The DBC estimates a rough order cost of $0.8m for environmental compliance. This cost is associated with construction practice to adhere to consent requirements and minimising adverse construction impacts.

TEMPORARY TRAFFIC MANAGEMENT

Traffic management is included as an individual item within the DBC whereas in the IBC it is costed on a square metre basis using a combined rate. The IBC cost does not provide an estimated cost for individual items that relate to traffic services that may result from working along the motorway corridor.

475 days of traffic management is assumed for the DBC cost estimate (based on 6 day work week for a period of 18 months). The total cost of temporary traffic management is $1.4m for a 18 month construction period including 6 months of night works.

BARRIERS

Indicative costs of $400 and $120 per linear metre for concrete and W-beam barriers respectively have been used in the DBC cost estimate. An approximate value of $0.6m is allocated for barrier upgrades, end terminals and installation.
ELEVATED STRUCTURES
The IBC allowed for a total of $19.4m for boardwalks and footbridges. In the DBC phase, the identified elevated structures cost total is in the order of $26.5m which includes bridges, clip-ons, boardwalk and urban design element for these structures.

TRAFFIC SERVICES
An appropriate cost for alterations to the motorway corridor for the relocation or protection of existing services and installation of a broad range of new traffic management systems has been included in the DBC cost estimate. Additionally other items such as the cost of replacing motorway lighting that will be affected by the new barriers and the installation of CCTV to monitor the shared path have been included. The total cost of traffic services is estimated at $2.51m & $2.57m for the preferred and staged option which have been included in the DBC cost estimate.

16.6.2. CONTINGENCY & FUNDING RISK
The IBC project base estimate is $30.3M the project expected estimate (50th percentile) which includes the contingency is $33.4M and no 95th percentile project estimate was provided. This means that no value for the funding risk contingency was reported in the IBC cost estimate, and 10% was used for the contingency value.

In the DBC cost estimate, an allowance of 17% contingency (80th percentile) has been included to derive the project expected estimate. A funding risk of 15% is also applied to obtain the 95th percentile project cost estimate. These percentages used are based on the Monte Carlo analysis recommendation and taking into consideration of the completeness of design at DBC stage.

16.7. AFFORDABILITY AND CASH FLOW
To understand the potential cash flow implications on the Project, the expected estimates have been inflated by 2% and 4% to cover potential inflationary pressures on the market.
17. MANAGEMENT CASE

This project will be developed and delivered by the Transport Agency. The Transport Agency has rigorous policies, plans and processes for delivering transport infrastructure projects in New Zealand, which are to be followed unless otherwise specified in this Management Case.

17.1. GOVERNANCE STRUCTURE

Project implementation will be led by the Transport Agency as the project sponsor, and design and construction will be undertaken by their contractors and partners.

17.2. PROJECT ROLES

TABLE 38 outlines the key roles in the pre-implementation and implementation phases of a Transport Agency led project. For all decision making, the Transport Agency’s significance policy (and associated delegations) apply. The pre-implementation and implementation stages will need to align with the Agency’s Team of Teams approach and ensure that all relevant teams have been engaged and have provided feedback on the proposals for their respective fields.

<table>
<thead>
<tr>
<th>ROLE</th>
<th>DELEGATED AUTHORITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project sponsor</td>
<td>Paul Glucina</td>
</tr>
<tr>
<td>Project Director</td>
<td>Rebekah Pokura-Ward</td>
</tr>
<tr>
<td>Project Manager</td>
<td>Rosy Kurera</td>
</tr>
<tr>
<td>Investment Assurance – approves Business Case(s) to proceed to delegated Authority for approval.</td>
<td>Todd Webb</td>
</tr>
<tr>
<td>Procurement Manager</td>
<td>Darren Cash</td>
</tr>
<tr>
<td>Project Board – Development (Sponsor)</td>
<td>Paul Glucina</td>
</tr>
<tr>
<td>Project Board – Delivery</td>
<td>Kevin Reid</td>
</tr>
<tr>
<td>Project Team – Development Manager (SD&amp;D)</td>
<td>Prasad Tala</td>
</tr>
<tr>
<td>Project Team – Delivery Manager (SD&amp;D)</td>
<td>Robert Strong</td>
</tr>
<tr>
<td>Iwi Liaison</td>
<td>Rebekah Pokura-Ward</td>
</tr>
<tr>
<td>Stakeholder Manager</td>
<td>Connie Rowe</td>
</tr>
<tr>
<td>Planning and Consenting Lead</td>
<td>Rebekah Pokura Ward</td>
</tr>
<tr>
<td>Multi modal specialists</td>
<td>Simon Kennet</td>
</tr>
<tr>
<td>Legal</td>
<td>NZTA internal</td>
</tr>
<tr>
<td>System Optimisation</td>
<td>Graham O’Connell</td>
</tr>
<tr>
<td>Road Safety</td>
<td>Murray Parker</td>
</tr>
<tr>
<td>Network Performance</td>
<td>Rua Pani – Transport Operations Centre Manager</td>
</tr>
<tr>
<td>Traffic Management and Construction Staging</td>
<td>Duncan Edgar – Auckland Motorway Alliance</td>
</tr>
<tr>
<td>Environment and Urban Design</td>
<td>Sam Bourne/Rebekah Pokura-Ward</td>
</tr>
<tr>
<td>System Optimisation</td>
<td>Graham O’Connell</td>
</tr>
<tr>
<td>Maintenance and Operations</td>
<td>AMA (Karl Burt) / AHB Alliance (Alex Ingram)</td>
</tr>
<tr>
<td>Traffic Management and Construction Staging</td>
<td>Duncan Edgar – Auckland Motorway Alliance</td>
</tr>
</tbody>
</table>
17.3. IMPLEMENTATION PROGRAMME

The anticipated programme to implement the preferred option is outlined in TABLE 39 below:

**TABLE 39  Project Programme**

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>COMPLETION DATE</th>
</tr>
</thead>
<tbody>
<tr>
<td>NZTA Board Approval of Detailed Business Case</td>
<td>December 2018</td>
</tr>
<tr>
<td>Procurement: Pre-implementation Tender Complete</td>
<td>April 2019</td>
</tr>
<tr>
<td>Procurement: Pre-implementation Tender Evaluation Complete</td>
<td>May 2019</td>
</tr>
<tr>
<td>Pre Implementation Complete (design &amp; consents)</td>
<td>May 2021</td>
</tr>
<tr>
<td>Implementation Complete (to practical completion)</td>
<td>November 2023</td>
</tr>
<tr>
<td>Implementation Phase Complete (including Defects Liability Period 1yr)</td>
<td>November 2024</td>
</tr>
</tbody>
</table>
17.4. ONGOING ENGAGEMENT

The existing Communications and Engagement Plan will form the starting point for ongoing engagement summarised below and is documented in greater detail in Appendix N.

MANA WHENUA

Mana whenua hold strong cultural associations with the project area and have been active participants in identifying areas of cultural significance and informing design development.

Mana whenua engagement is ongoing, mainly through the Transport Agency’s monthly hui, workshops, site visits and project days. Cultural recognition throughout the development of the project, including naming, is sought and will be explored in more detail during the next phase.

KEY STAKEHOLDERS

In addition to the stakeholders engaged in development of the DBC, as the design progresses in more detail, additional stakeholders are likely to become more actively involved in the project. Specific issues raised by stakeholders to date will be explored in more detail.

Formalisation of the relationship and obligations between the Transport Agency and both Auckland Transport and Auckland Council are currently being explored. The Transport Agency’s legal Counsel is currently engaging with Auckland Transport to develop a Memorandum of Understanding (MOU) to outline both the financial and operational responsibilities of both parties.

It is intended that the delivery of a range of complimentary walking and cycling improvements on the local road network will be delivered by Auckland Transport under this MOU. Concept design of this work is currently on hold, awaiting the MOU to be finalised. On completion of the MOU with Auckland Transport, a similar agreement will be formalised with Auckland Council.

WIDER COMMUNITY

The announcement of the Transport Agency as the organisation to deliver SkyPath, along with SeaPath’s expected utilisation of the local cycle network, means there will be renewed interest in the interface between the two projects and links into the community.

To date, the narrative around SeaPath has been disjointed, due to design challenges and the uncertainty around SkyPath. An opportunity exists to tell the SeaPath story; how it compliments but exists independently of SkyPath, how stakeholder engagement has shaped the project, and how this approach will continue in later design phases.
17.5. **ASSURANCE AND ACCEPTANCE**

Alongside the processes for the investment assurance gateways, a number of discreet activities have been identified to improve the confidence of the Project, at this stage or later, to deliver on its stated benefits as outlined below in **TABLE 40**.

**TABLE 40   Proposed Reviews for Project Assurance**

<table>
<thead>
<tr>
<th>ITEM – ALL TO BE ARRANGED BY NZTA</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Safety Audit (External)</td>
<td>Preliminary Design Audit to be completed and issues resolved prior to submitting any required consenting and NOR documentation for Approval. Detailed Design Audit to be completed and issues resolved. Additional audits will be required if tenderers are required to submit designs with their tender. Post-Construction Safety Audit to be completed following completion of each stage of the Project.</td>
</tr>
<tr>
<td>System Optimisation Review (NZTA Internal)</td>
<td>Preliminary Design and Detailed Design review to ensure that the design does not introduce significant or severe operational risks which could undermine the stated benefits of the project. Additional audits will be required if tenderers are required to submit designs with their tender.</td>
</tr>
<tr>
<td>Cost Estimate Peer Review/Parallel Estimate</td>
<td>Independent review by NZTA appointed specialist from the Independent Professional Advisers Panel.</td>
</tr>
<tr>
<td>Transport Modelling and Economics Peer Review</td>
<td>Independent review by NZTA appointed specialist from the Independent Professional Advisers Panel.</td>
</tr>
<tr>
<td>Construction Staging Review and Impact Assessment</td>
<td>Independent review to examine staging and potential traffic impacts during construction (Auckland Motorway Alliance – Network Performance Team)</td>
</tr>
<tr>
<td>Legal and Planning Review (external)</td>
<td>Testing the robustness of the consenting strategy and the assessments in an RMA context to identify if there are any key weaknesses that would affect the ability to gain consents for the Project.</td>
</tr>
</tbody>
</table>

17.6. **CONTRACT MANAGEMENT**

Contract Management will be undertaken in accordance with the obligations set out in the relevant Contracts. These are to be in line with the terms and conditions in SM030 for Professional Services Contracts in the pre-implementation and implementation phases and SM031 for Construction Contracts in the implementation phases.

17.7. **COST MANAGEMENT**

The financial management shall be undertaken in accordance with the relevant Transport Agency procedures. As a minimum the consultant/contractor shall provide the following information in each month of the respective contract(s) for the Transport Agency Project Manager to update SAP and to support their claims:

- Budgeted cashflow (baseline and risk adjusted baseline)
- Value of work completed in the preceding month and contract to date (including rates and quantities for all items within the contract)
- Forecast value of work completed and revised cashflow through to project completion
- Exception reports outlining the reasons for not meeting any financial targets

The proposed target performance measure on a monthly basis is that the claim should be within +/- 5% from the previous month’s forecast, and within the boundary of the cash flow set in the risk adjusted baseline programme.
17.8. RISK MANAGEMENT

Risk management is a dynamic process throughout the life of the project. The key to managing risks lies in the assessment of the impact and level of disruption the risk will impose on the project. Following a risk workshop with key project partners on 28 August 2018 the key outstanding risks associated with the management and delivery of this project at this time is outlined in Table 41. It is evident that there are a huge number of unknowns that could impact on project design and cost, and the magnitude of these is unknown at this point.

### Table 41: Key Risks & Issues to be Addressed

<table>
<thead>
<tr>
<th>RISK TYPE</th>
<th>RISK</th>
<th>OWNER AND TREATMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Political</td>
<td>Breakdown in stakeholder relationships, uncertainty of objections and opposition of residents and community.</td>
<td><strong>Shared risk:</strong> Mitigated as per Stakeholder Management Plan. The key risk currently is the impact on local residents regarding safety, rough sleepers and a mismatch of design not meeting expectations. Continued targeted engagement required through the pre-implementation to mitigate this risk.</td>
</tr>
<tr>
<td>Political</td>
<td>Change in Government within the next 3 years</td>
<td><strong>Transport Agency:</strong> Change in Government or government priorities could place this project as a lower priority in the investment programme. Treatment: Continue to make the case for the value of walking and cycling infrastructure to maximise strategic intent and value-for-money outcomes.</td>
</tr>
<tr>
<td>Political</td>
<td>Change in Local Council within the next year</td>
<td><strong>Shared risk:</strong> Key relationships have been build and this project has a high level of support within the Local Councils. Key risk is a change in representation may mean compromised support. Treatment: Continue to show value and benefit for the community and positively engage with a wide range of representatives.</td>
</tr>
<tr>
<td>Consents</td>
<td>Opposition and objection leads to delay and cost increase</td>
<td><strong>Transport Agency:</strong> Management through early stakeholder engagement.</td>
</tr>
<tr>
<td>RISK TYPE</td>
<td>RISK</td>
<td>OWNER AND TREATMENT</td>
</tr>
<tr>
<td>-----------</td>
<td>-----------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Design</td>
<td>Access to existing assets.</td>
<td><strong>Transport Agency:</strong> Issue that the proposed design impacts access to existing motorway assets and ongoing maintenance operations. Treatment: Management through early stakeholder engagement with asset owners and designers. Should be able to be mitigated through design.</td>
</tr>
<tr>
<td>Design</td>
<td>Consenting conditions and demands.</td>
<td><strong>Transport Agency:</strong> Key issue is the unknown consenting conditions and demands that may be imposed by the community. Agreement to resolution could be costly. Treatment: Engagement and agreements formed as early as possible.</td>
</tr>
<tr>
<td>Design</td>
<td>Misalignment of design expectations.</td>
<td><strong>Transport Agency:</strong> Key issue is that the proposed design does not align with the level of service expected by Stakeholders and the community. Treatment: Ad hoc engagement throughout the design process.</td>
</tr>
<tr>
<td>Design</td>
<td>Form of Interchanges</td>
<td><strong>Shared Risk:</strong> Perceived safety issues at Esmonde Rd intersection as well as other intersections and pinch points. Treatment: The form and operation of the interchanges need to be reviewed during the design and consenting phases to prove functionality, performance and accessibility targets are met.</td>
</tr>
<tr>
<td>Design</td>
<td>Misalignment with wider walking and cycling network infrastructure</td>
<td><strong>Transport Agency:</strong> Key issue is that SeaPath delivery does not align with SkyPath and other wider walking and cycling network infrastructure. Treatment: Continue SeaPath design and delivery independent of walking and cycling projects in the wider network</td>
</tr>
</tbody>
</table>

17.9. **CHANGE CONTROL & ISSUE MANAGEMENT**

The change control and issues register shall operate as an extension to the risk register and track issues as they arise. It is anticipated that a change control and issues management process will be included in the contract documents for the project.

Change control and issues management will be undertaken in accordance with:

- Transport Agency’s Significance Policy
- Transport Agency’s Corporate Risk Management Policies
- Conditions of contract for project specific issues

Each issue shall be logged in an issues register which includes the following information:

- Title and description of the issue
- Date raised
- Status (open, escalated, transferred to risk register, resolved)
- Primary impact area for the issue (project, personnel, health and safety, corporate risk, stakeholder management etc.)
- Delegated authority for closing out the issue (in accordance with the project management structure)
- Whether the issue is a project specific issue or other issues
- Level of significance (in accordance with the Transport Agency’s Significance Policy)
- Whether the issue requires transferring to the project Risk Register
- Remedial action proposed to address the issue.
- Date that the issue has been resolved
17.10. HEALTHY AND SAFETY

The Transport Agency has a commitment to “Zero Harm” for all its employees and service providers. To champion this throughout the industry all providers should meet the requirements of the Transport Agency’s Health and Safety Policy (December 2013) and their own organisation’s Health and Safety Policies – whichever has the higher standards in the relevant areas.

17.11. SAFETY IN DESIGN

Safety in Design (SiD) is an important part of the design process and attempts to integrate hazard identification and risk assessment methods into the initial stages of the design process. SiD enables the design teams to consider how to eliminate, isolate or minimise the potential risks of death and serious injury outcomes throughout the entire lifecycle of the project.

Two Safety in Design workshops have been conducted with project partners and key personnel in the design team to understand and accommodate best practice Safety-in-Design methods for the construction and maintenance phases of the Project.

The workshops were held on:

- 28 August 2018 – with Transport Agency’s project team and one of Auckland Motorway Alliance (AMA) representative.

By following this process, safety, accessibility and sustainably are integrated with the natural environment to obtain value for investment within the local and national transportation networks as well as land use activities. In this way, SiD will enable the SeaPath project to meet its objectives.

A SiD register including proposed controls can be found in the Preliminary Design Philosophy Statement (PDPS) (Appendix D). These considerations will need to be developed further and incorporated as part of the detailed design stage. This is to be undertaken in accordance to NZTA’s “Safety in Design Minimum Standard for Road Projects” October 2014.

Further to SiD elements, AMA has also provided design comments via e-mails as well as during the SiD workshops. These comments are included in Appendix D with AECOM’s initial comments and The Transport Agency’s response. These comments are included to ensure that it is incorporated or considered in the next design stage without re-litigating the whole design review process with AMA again as the design progresses.
<table>
<thead>
<tr>
<th>BENEFIT</th>
<th>INVESTMENT OBJECTIVE</th>
<th>PROJECT GOALS</th>
<th>BASELINE</th>
<th>EXPECTED OUTCOME</th>
<th>POTENTIAL MONITORING REGIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMPROVED TRANSPORT SYSTEM CAPACITY</td>
<td>INCREASE THE TOTAL NUMBER OF COMMUTER AND EDUCATIONAL WALKING AND CYCLING TRIPS BETWEEN ESMONDE ROAD AND AUCKLAND HARBOUR BRIDGE</td>
<td>Increase people throughput using active modes between Esmonde Road and Auckland Harbour Bridge</td>
<td>526 expected average daily cycle trips between Takapuna and SkyPath, by 2026 (from via Akoranga Drive, College Road, Lake Road, Queen Street and Princes Street)</td>
<td>900 daily cycle trips between Takapuna and SkyPath, by 2026 1,510 daily cycle trips between Takapuna and SkyPath, by 2046</td>
<td>Cycle tube counts as part of AT’s annual cycle trip reporting</td>
</tr>
<tr>
<td>IMPROVED ACCESS TO COMMUNITY ASSETS AND THE NATURAL AND BUILT ENVIRONMENT</td>
<td>INCREASE THE NUMBER OF HOUSEHOLDS WITHIN 15 MINUTES ACCESS TO THE NATURAL ENVIRONMENT AND COMMUNITY ASSETS BETWEEN ESMONDE ROAD AND AUCKLAND HARBOUR BRIDGE BY ACTIVE MODES</td>
<td>Improve the cycling Quality of Service between Esmonde Road and Auckland Harbour Bridge</td>
<td>Existing cycle route from Esmonde Road to AHB is via Akoranga Drive, College Road, Lake Road, Queen Street and Princes Street. The current Quality of Service is a 3 or 4.</td>
<td>Average Quality of Service of 1 for SeaPath facility</td>
<td>Assessment of the cycle facility as part of AT’s Quality of Service tool</td>
</tr>
<tr>
<td></td>
<td>Increase the number of walking and cycling connections to Onepoto Domain, Tuff Crater and other natural assets within the project extent</td>
<td>Reduce the cycling time between Esmonde Road and Auckland Harbour Bridge</td>
<td>Distance: 4.7 km Via Akoranga Drive, College Road, Lake Road, Queen Street and Princes Street Speed: 25 km/h. Based on the average mean speed from five cycle tube counts located on Lake Road and Queen Street in 2016. Directional mean speeds ranged from 17 to 33 km/hr Total travel time: 13:20 (net speed 21 km/h)</td>
<td>Distance: 3.5 km Via SeaPath (excluding 300m section along Onewa Road on-ramp) Speed: 30 km/h. Higher speed recognising that entire route will have relatively gentle gradients Total Travel time: 9:00 (~4:20) (net speed 23 km/h)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Increase the 30 minute Walking and Cycling catchment to education facilities, Public Transport Hubs and other community assets within the project extent</td>
<td>Three connection points</td>
<td>Eight connection points and 10 access points</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
17.12. BENEFITS REALISATION & PERFORMANCE MONITORING

TABLE 42 sets out a potential monitoring regime to assess the benefits of the Project. It is anticipated that this will be refined in the pre-implementation stages when developing the Assessment of Effects prior to completing statutory approvals.

17.13. LESSONS LEARNED

Lessons learned reviews will be undertaken at agreed times throughout the respective Contracts and as part of the close-out reports for the project. It will be the responsibility of the Transport Agency project managers to complete these reviews with the respective suppliers.