Business Plan:

Walking and cycling access
across the Auckland Harbour Bridge

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Executive Summary

The AHB Pathway Trust has developed SkyPath to be a world-class walking and cycling facility on the Auckland Harbour Bridge that will be attractive to commuters, tourists and recreational users.

As custodians of the Auckland Harbour Bridge, NZ Transport Agency (NZTA) has completed in December 2010 a major strengthening project of the clip-on lanes. As part of this work, the AHB Pathway Trust lobbied the NZTA to future the clip-ons for walking and cycling access. As a result, NZTA advises that it: "deliberately sought the necessary funding to ensure that further structural elements will be incorporated into the current strengthening works to future-proof the clip-on lanes and allow for future walking and cycling options"

NZTA Board member/Transit Chair Bryan Jackson, (see letter Appendix 1a).

Whilst subsequent analysis now shows that inadequate strengthening was done on the northbound clip-on, the southbound clip-on has sufficient capacity for a walking and cycling shared use Pathway.

"I am very pleased to note the collaborative way in which the recently formed Technical Steering Group, under the guidance of the new Auckland Council, has worked to identify a feasible engineering solution."

Geoff Dangerfield, NZTA CEO (Email dated August 18, 2011)

By tolling walkers and cyclists to use it, SkyPath’s construction and operation can be financed by the private sector at minimal cost to taxpayers or ratepayers.

SkyPath will be architecturally designed as an attractive and iconic facility that includes viewing platforms, special night lighting and various additional facilities for users. The cost to construct is currently estimated at $28 million, depending on which additional options are chosen.

The net revenue generated by tolling users will repay the Pathway’s construction and annual operational costs. The proposed timeframe of 20 years is within the period before an additional harbour crossing is completed. The SkyPath project is proposed as a Build, Own, Operate, Transfer (BOOT) arrangement between the AHB Pathway Trust, Auckland Council and private funder.

The Pathway will create significant economic benefits for the Auckland region, initially whilst under construction and long-term, as an internationally recognised tourist attraction. It is will be New Zealand’s most popular walking and cycling path as it will appeal to all tourists visiting Auckland, not just cycle tourists.

SkyPath will resolve the most critical gap in the Auckland Region’s active transport network and provide extra transport capacity for crossing the Waitematā Harbour. SkyPath is a cornerstone project for the ongoing improvement of walking and cycling facilities on both sides of the Bridge, thus providing Aucklanders with an improved range of sustainable travel choices.
Background

The lack of a walking and cycling access on the Auckland Harbour Bridge is the most critical gap in the Auckland Region’s walking and cycling network. Previous studies have failed to find a feasible solution for walking and cycling access on the Auckland Harbour Bridge. This has generally been due to technical issues, funding issues and/or a lack of political will.

This report sets out a proposal to fund, build and operate a dedicated walking and cycling pathway (the ‘SkyPath’) on the Auckland Harbour Bridge to gain significant benefits for the Auckland Region and provide travel choice to the people of Auckland.

NZTA support

As part of the strengthening project of the Auckland Harbour Bridge clip-on lanes in 2009 to 2011, NZTA specifically included strengthening works to provide for the future walking and cycling access. :

“The [NZTA] Board deliberately sought the necessary funding to ensure that further structural elements will be incorporated into the current strengthening works to future-proof the clip-on lanes and allow for future walking and cycling options”

NZTA Board member/Transit Chair Bryan Jackson
Appendix 1, letter dated 19 May 2008

The NZ Transport Agency commissioned its bridge consultants, Beca Infrastructure, to provide a capacity analysis of the Auckland Harbour Bridge. The subsequent report revealed that the southbound (city-side) clip-on has capacity for a shared walking and cycling path.

The concept of a toll to pay for its construction and operation has the support of the NZ Transport Agency:

“Current analysis indicates that there is sufficient capacity in the southbound box girder to support a walkway/ cycleway”

“...should a funding source be identified, we would be happy to work with the advocates of the scheme to develop proposals further.”

NZTA’s Tommy Parker
State Highway Manager, Auckland and Northland
Appendix 4, letter dated 7 December, 2009

In February 2013, NZTA advised:

1. SkyPath is NZTA’s preferred option for walking and cycling across the AHB, providing it proceeds on the basis of being a tolled facility (operating with a licence to occupy the Harbour Bridge structure, as do the operators of the AHB bungy jump) and the NZTA is not the underwriter of the toll revenue and patronage risk. The feasible engineering solution for SkyPath was agreed, through a collaborative process, in April 2012.

2. Should SkyPath proceed, there is a greater likelihood that NZTA will commence construction of the northern motorway cycle path to Akoranga sooner.

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3. NZTA have put any planning for walking and cycling on the AHB on hold until they see if SkyPath goes ahead as a tolled facility. If SkyPath does not proceed then NZTA would need to rethink other options.

4. The amount of localised strengthening required to support SkyPath is estimated at circa $3 M range. NZTA is considering funding these works as they were not completed in the clip-ons’ strengthening project, which had previously been agreed to NZTA.

5. NZTA expects the AHB and clip-on lanes to have an indefinite service life (eg: the next 100 years) providing heavy freight movements are transferred to a new crossing at certain load trigger points.

SkyPath will save tax payers and ratepayers the approximately $25 million that would otherwise been required for NZTA’s prior plan (to extend the eastern clip-on’s width by 1.2 metres following completion of the next Harbour Crossing to provide a pathway on the AHB).

More information on NZTA’s position is available here: http://www.skypath.org.nz/project-status/nztas-position/
The SkyPath design

SkyPath is designed to attract tourists, recreational users and commuters. Observation decks will include viewing platforms, exhibits and other potential amenities such as a coffee cart, or bungy jump viewing. SkyPath will be constructed primarily in steel with aluminium extruded mesh which allows airflow but prevents people falling.

A proposed Pathway of 4.0 metres in width has been achieved through the structural design and utilisation of management techniques to ensure safe live loads. These include:

- Using the spare capacity of the southbound extension bridge as its loadings are approximately 68% of the northbound extension bridge
- Using the Pathway’s toll gates to restrict the total number of concurrent users on the Pathway, ie: controlling the maximum live load to avoid extreme crowd loadings
- Security personnel on-site during Pathway operating hours to oversee operations and manage use if required
- CCTV & public announcement systems used by the security personnel and traffic control at Northcote Point
- Constructing the mid-span section of the Pathway (being the most critical span in terms of loadings) in aluminium.
- Semi-transparent screening to restrict viewing opportunities and therefore discourage large groups gathering at inappropriate locations
- NZTA’s Freight Management strategy for the AHB (eg: prevention of illegally overloaded HCVs through WIM station surveillance/reporting) ensure the AHB has sufficient load capacity well into the future, as shown by this NZTA graph:
The 4 metre wide shared path will be attached under the deck cantilever of the eastern (city-side) clip-on, as shown below.

The Pathway will be an architecturally designed facility that will provide a safe and pleasant experience for commuters and attract tourists to visit. The Pathway will include viewing platforms and facilities for users.
Managing the total number of concurrent users on the Pathway

By controlling the numbers of concurrent users allowed on the Pathway, then the Pathway will have no effect on the life of the Bridge. The capacity of the Pathway remains far higher than the expected demand and the maximum number of concurrent users be determined by Health and Safety requirements which is likely to be approximately 1,500\(^2\).

<table>
<thead>
<tr>
<th>Health and Safety maximum number of concurrent users:</th>
<th>Maximum number of concurrent users</th>
<th>...equates to capacity(^3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1,500 people</td>
<td>7,500 people per hour</td>
</tr>
<tr>
<td></td>
<td>500 people</td>
<td>2,500 people per hour</td>
</tr>
</tbody>
</table>

SkyPath dimensions

The minimum clearances described in Austroads (Part 6A, Section 7.7.1) state that the minimum allowable cycleway width is 2.4 metres; being 0.3m lateral outside clearance, 0.4m central lateral clearance (for a speed differential of 40 km/h) and 0.7m envelope for a cyclist in each direction. The speed limit for cyclists will be 15 km/h and a ‘share with care’ environment created through the design. The minimum clearance height is 2.5 metres, in accordance with Austroads (Part 6A, Section 7.7.1).

Shared Path versus dedicated lanes

SkyPath is planned to be a 4 metre wide shared path, with up to three observation decks spaced along the length of the path. Land Transport New Zealand’s Pedestrian Planning and Design Guide recommends a shared path of at least 3.5 metres (Table 14.14: Widths of shared-use paths).

By way of local comparison, Auckland’s Upper Harbour Bridge (the “Greenhithe Bridge”) is the same gradient as the Auckland Harbour Bridge (3 degrees / 1 in 20), 524 metres long, and has

\(\text{\textsuperscript{2}}\) By way of comparison, the maximum number of concurrent users allowed at Auckland’s SkyTower is 850 people.

\(\text{\textsuperscript{3}}\) Assumes one third of SkyPath users are stationary, one third are walking and one third are cycling. This number would be higher when there is a larger portion of cyclists, e.g. at peak commute times.
a shared Pathway on the northern side of 3.3 metres wide. The Central Motorway Junction shared path project will have similar gradients and slightly narrower shared path widths.

The question of which is safer, dedicated lanes or shared use by cyclists and pedestrians is not as obvious as might be expected. If well implemented, shared use paths can encourage and support considerate use by all users, whereas dedicated lanes can encourage cyclists to speed thus endangering themselves and other users.

The Sydney Morning Herald carried this report on the Pyrmont Bridge on 30 May 2012 in regards to the debate of dedicated lanes versus shared paths:

"While a dedicated zone or lane for bicycles may seem the obvious solution to the pedestrian/cyclist conflict, there is a high volume of pedestrian traffic on the bridge, many of them international and domestic tourists, who frequently cross from one side of the bridge to the other to enjoy views, sightsee and take photos," a spokeswoman said.

"It is envisaged that there would be a much greater risk of pedestrian and cycle conflict if dedicated lanes were to be installed.

"The bridge is a generous space that can accommodate all users in harmony, operating as a shared zone with a 10km/h speed limit."

A continuous voice message reminding users about the shared zone plays over a sound system during peak periods, backed up by signage put up in 2009, she said.

It is proposed that SkyPath will open as a shared path with no clear delineation for cyclists and pedestrians, however cyclists will be asked to keep to the bridge side, whilst pedestrians kept to the outer edge.

A maximum speed limit of 15 km is proposed along with signage and staff to promote the “share with care” where cyclists must give way to pedestrians.
Security and emergency access

Security is provided by security and customer service staff who are on duty whenever SkyPath is open.

Security patrols will extend in the neighbouring streets and local residents will have a direct phone number to contact SkyPath security should they have any concerns. Security will be available 24 x 7.

Security will be supported by the use of CCTV, intercom/alarms, the existing Westhaven Marina Security, the police station at Tennyson Road, Northcote Point and the Traffic Control operation in Smales Farm (where the existing Bridge traffic CCTVs and intercoms are monitored).

Emergency access from the Pathway to the road deck above is to be provided by fire service vehicle ladders. SkyPath will be built of fire-resistant materials.

Features and facilities

Facilities on the Pathway will include up to three observation decks that provide views across Auckland Harbour towards the city, North Shore and the Hauraki Gulf. These can include seating, drinking fountains, exhibitions, coin-operated binoculars, a coffee cart and access to the Bungy Jump operation.

Toilets are available on the city side at Westhaven Marina, approximately 40 metres from the southern entrance to the Pathway. Toilet facilities are likely to be required on the northern side and it may be appropriate to lace these near the existing ferry terminal.
**Linkages on either side**

SkyPath’s access ramps at each end will be designed to best accommodate the requirements of stakeholders, especially residents, Iwi and affected parties.

Walking and cycling access around the Waitematā Harbour is promoted by Waterfront Auckland as the “Waitematā Harbour Loop”:

The local cycling networks connect directly with the AHB Pathway, as shown by Auckland Transport’s Central Cycle Map (the yellow roads are quiet roads recommended by cyclists, blue is busier but with adequate space for cyclists):
On the northern (North Shore) side, the Pathway can potentially connect to:

1. Northcote Point. The local street network provides access to Northcote, Glenfield, Birkenhead and other North Shore suburbs and facilities (see maps in Appendix 5).
2. The Wharf and bus stop at Queen St, Northcote Point
3. The “SeaPath” walking and cycling connection to Takapuna, AUT University, and the Eastern Bays, see: [http://www.skypath.org.nz/the-seapath/](http://www.skypath.org.nz/the-seapath/)

On the southern (Auckland City) side, the Pathway can potentially connect to:

1. Westhaven Drive, which is part of Auckland City’s existing 50-km cycling circuit, and provides suitable access for commuter cyclists.
2. The new Westhaven walking and cycling Promenade being developed by Waterfront Auckland to connect via Wynyard Quarter to Britomart Transport Interchange and Tamaki Drive
3. Shelley Beach Road
4. the existing walking and cycling path along Curran Street, as photographed here:

Refer to Appendix 5 for photos of the connections described above. As a cycling destination, SkyPath is easily reached and links to regional cycle routes.

Details of the potential connections and the consultation process are available here: [http://www.skypath.org.nz/project-status/consultation/](http://www.skypath.org.nz/project-status/consultation/)
Link to ferries

The ferry from Northcote Point to the Auckland CBD provides an attractive option for recreational and tourist visitors who want to make a scenic tour of the Viaduct, Westhaven, Northcote Point and the Waitematā Harbour. There is an existing pathway (approx 100m) that provides a direct connection to the Northcote ferry terminal shown here:

![Ferry Terminal](image)

Currently the Northcote ferry terminal has poor reliability due to the certain weather and tidal conditions preventing access by ferries. A realignment of the mooring piles will resolve this issue.

Link to bus services

SkyPath will work with Auckland Transport to investigate new bus services to service each end of the bridge. New services on Queen St, Northcote Point and Curran St / Shelly Beach Road, Herne Bay will be considered.

Direct bus access to the southern landing of SkyPath is likely to be important for tourists on package tours.

Car parking and traffic management

SkyPath’s purpose is to improve sustainable transport options in Auckland and support travel behaviour change away from car dependency. Users will be encouraged to access SkyPath by foot, cycle or public transport, as outlined above.

There will be no car parking provided for SkyPath so to prevent users from driving and parking in local streets, it is likely that neighbourhood car parking restrictions will be required (eg: Residents-only parking).

For those users compelled to come by car, parking is available in the CBD’s car parking buildings.

Part of NZ Cycle Trail

SkyPath will be the most popular walking and cycling path in New Zealand. As the Pathway is potentially a critical link in the NZ Cycle Trail for cycle tourists heading north, it will be developed to ensure future accreditation as part of the NZ Cycle Trail (see proposed route in Appendix 5).
Comparable retrofitted pathway

A relevant comparison of a similar pathway in terms of gradient, location and nature of retrofitted path, appears to be the Canada Line Bridge in Vancouver, BC (see photos), where a walking and cycling path was added in August, 2009.

A comparison with the SkyPath:

<table>
<thead>
<tr>
<th></th>
<th>Auckland Harbour Bridge SkyPath</th>
<th>Vancouver’s Canada Line Bridge Pathway</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gradient</strong></td>
<td>5%</td>
<td>6% (some ramps are 8%)</td>
</tr>
<tr>
<td><strong>Total width</strong></td>
<td>4.0 metres</td>
<td>3.5 metres</td>
</tr>
<tr>
<td><strong>Length</strong></td>
<td>1,000 metres</td>
<td>1,000 metres</td>
</tr>
<tr>
<td><strong>Allocation of space</strong></td>
<td>Shared path</td>
<td>Shared path</td>
</tr>
<tr>
<td><strong>Opening hours</strong></td>
<td>Closed at night</td>
<td>24 x 7</td>
</tr>
<tr>
<td><strong>Security</strong></td>
<td>Cameras, intercom and patrols</td>
<td>Patrols, no cameras</td>
</tr>
<tr>
<td><strong>Cost</strong></td>
<td>Costed NZ$28 million</td>
<td>US$10 million</td>
</tr>
</tbody>
</table>

Vancouver’s Transport authority advises that the Canada Line Bridge Pathway has had no documented issues with personal security of users and the facility is open 24 hours. It will only be closed due to extreme conditions or where a safety hazard exists (it has not closed to date).

The Canada Line Bridge shared pathway is steeper and narrower than that proposed for the Auckland Harbour Bridge. No accidents or injuries have been recorded on the Canada Line Bridge to date.

A video of the Canada Line Bridge shared pathway can be viewed at: [http://www.youtube.com/watch?v=i49nxEE4Res](http://www.youtube.com/watch?v=i49nxEE4Res)
Advantages of SkyPath

SkyPath has a number of distinct advantages over previous plans for AHB walking and cycling access options, as it:

- can serve as a combined pedestrian and cyclist facility, creating significant cost savings over previous options which entailed two separate pathways;
- can be built wide enough (4 metres) to provide enough shared space for both cyclists and pedestrians, improving safety for all users;
- does not require heavy (concrete) barriers to provide physical separation from vehicle traffic;
- does not require narrowing of the traffic lanes, nor the associated costs and weight of deck strengthening to realign the traffic wheel track location;
- can be designed to avoid adding wind resistance to the existing structure;
- uses the eastern clip-on, which has ample load capacity to ensure capacity nor service life of the AHB is not detrimentally affected and allows city views, while retaining motorists’ unimpeded views of the harbour;
- is sheltered from traffic emissions and weather, yet still allows views of the harbour;
- will utilize the components specifically added by NZTA as part of the current clip-on strengthening and future-proofing works to enable walking and cycling access (see letter from NZTA, Appendix 3);
- it diverts through the pylons on the northern side to avoid any airspace issues with neighbouring properties, refer Appendix 2. (This is not an issue on the southern side);
- can be designed to be an iconic ‘top 10’ tourist attraction for the Auckland region to attract patronage.

In addition:

- the gradient of the Pathway is 5% (3 degrees), which is deemed ‘easy’ by the NZ Cycle Trail guidelines;
- clearance for ships navigating under the Bridge is unaffected;
- the Pathway’s local connections to the streets north and south are already in place and use low-traffic streets (see Appendix 2);
- the Pathway provides access for maintenance
- the Pathway does not inhibit future options for load-sharing between the truss bridge and box girders which will potentially extend the life of the overall bridge, as illustrated over:
The proposed option was explored by Beca in their Feasibility Report as per the cross-section diagram shown here. The pathway is added in the bottom right of the diagram.

This option was disregarded early in the Maunsell Access study in 2007 as “security was found to be a defining issue”, however by tolling SkyPath, a high level of security can be provided to ensure user safety (full-time security staff, CCTV camera, intercom system, etc as described above), and the toll itself has some security benefits, eg: reducing the likelihood of loitering.

This option was assessed in the Alternative Waitemata Harbour Crossing Options for cyclists – Options and Issues Report (SERCO, June 2001) as being among the “more feasible”.

Support from Aucklanders

SkyPath has very strong support across the Auckland Region. Market research\(^4\) of Aucklanders on a $40M walking & cycling facility reveals 76% in favour, 12% against and 12% unsure.

![](image1)

It will be a popular tourist attraction for the Auckland Region: 78% of respondents regarded the Pathway as a ‘top 10’ tourist attraction:

![](image2)

\(^4\) Y&R’s Viewfinder Research: November 2007
Summary of key results from the Horizon Research survey (November 2012):

- 81% of Aucklanders support the SkyPath on the AHB. 88% said they would use SkyPath in the first year.

- Assuming that 20% of people act on their intentions, then over half a million recreational trips across SkyPath would be taken by Aucklanders in the first year.

- 84% said they would take out of town visitors to experience SkyPath.

- 79% thought $1.95 using a HOP card for a direct crossing represented fair or excellent value. 14% thought it was poor value. Many respondents recommended rounding this toll to $2, hence the proposed toll has been changed to reflect this.

- Over 70% thought the $3.50 toll using a HOP card for full access was fair or excellent value.
Benefits of the proposed Pathway

Tourism opportunities
The Auckland Harbour Bridge Pathway will be attractive to the majority of visitors to Auckland. It will potentially be used by domestic and international visitors:
- of all demographic profiles;
- on holiday or business;
- with a wide range of cycling experience, from day trippers to seasoned cycle tourists.

It will be a highly scenic experience that showcases Auckland. It will be marketed as ‘the World’s finest pathway in a city’.

The Auckland Harbour Bridge is a centrally-located landmark; it is relatively close to Auckland International Airport for cycle tourists heading north, as well as inner-city attractions and accommodation. With its location in Auckland, the Pathway will be particularly suitable as the starting or finishing ride for a cycle tourist visiting New Zealand.

Economic benefits
International tourists are likely to increase their average stay in Auckland from the current 1.8 nights\textsuperscript{5} to visit the Pathway. This will boost Auckland’s economy through additional spending on food and accommodation, cycle hire, transport use as well as on other tourism infrastructure in the vicinity of the Pathway and the Auckland waterfront.

Domestic tourists will provide benefits such as spending on food and accommodation (although domestic tourists tend to stay in private homes), cycle hire and transport usage as well as boosting patronage of other tourist attractions.

Businesses that will benefit as a result of this increased tourism include the accommodation sector, food/beverage and hospitality sectors, bike shops, retail sector, and the transport sector for those wishing to access the Pathway (ferries, buses and rail as well as downtown car parking buildings).

Environmental benefits
The Pathway is forecast to be used each week day by at least 1,000 commuters, many of whom would otherwise drive private motor vehicles. This is estimated to result in carbon savings of over 1,800 tonnes per year and significant reductions in air and water pollution caused by vehicle emissions.

Other benefits
Spill-over benefits will include the wider social and health benefits experienced by Aucklanders seeking recreational activities, particularly as SkyPath would be a draw card for family cycle trips, and generally help make Auckland a more attractive place to live.

Taking 1,000 commuter vehicles off the Auckland Harbour Bridge each day will benefit the remaining commuters who drive, as it will reduce congestion and free up car parking in the CBD.

\textsuperscript{5} Average hotel nights by international tourists as advised by Tourism Auckland
Operating the Pathway

Patronage

The following figures are used in the financial modelling by Ernst & Young for Auckland Transport in Nov 2013:

<table>
<thead>
<tr>
<th>Per annum forecasts</th>
<th>Low-use</th>
<th>High-use</th>
<th>Percentage of return trips</th>
<th>Source:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Recreational users</td>
<td>254,508</td>
<td>572,646</td>
<td>67%</td>
<td>Horizon Research</td>
</tr>
<tr>
<td>Tourists</td>
<td>199,000</td>
<td>358,000</td>
<td>25%</td>
<td>ATEED</td>
</tr>
<tr>
<td>Commuters</td>
<td>180,000</td>
<td>312,000</td>
<td>95%</td>
<td>Auckland Transport</td>
</tr>
<tr>
<td>Forecast total pa:</td>
<td>633,508</td>
<td>1,242,646</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimated revenue</td>
<td>$3.25 M</td>
<td>$5.56 M</td>
<td></td>
<td>Ernst and Young</td>
</tr>
</tbody>
</table>

NZTA's market research determined that 318,000 Aucklanders were likely to attend a proposed official walk-across event to commemorate the Bridge’s 50th anniversary. (KeyResearch, October 2008).

Comparisons with other bridges

The above patronage figures for the Auckland Harbour Bridge can be compared to the Golden Gate and Sydney Harbour Bridges:

<table>
<thead>
<tr>
<th>Auckland Harbour Bridge' SkyPath</th>
<th>Estimated at 633,500 to 1,242,600 pa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Golden Gate Bridge</td>
<td>&gt;1,800,000 pa</td>
</tr>
<tr>
<td>Sydney Harbour Bridge</td>
<td>1,488,000(^6) pa</td>
</tr>
</tbody>
</table>

Both the Golden Gate Bridge and Sydney Harbour Bridge are experiencing increases in use by walkers and cyclists. The Golden Gate Bridge authority has reported significant growth in the number of bike rental operators, and the Sydney Harbour Bridge recorded increases of 12% and 27% for walking and cycling respectively in 2009.

As the Wynyard Quarter is developed with high density accommodation and offices, the patronage of the Auckland Harbour Bridge Pathway is likely increase over time.

\(^6\) Roads & Traffic Authority NSW count for 2009
Operation and admission prices

The Auckland Harbour Bridge Pathway is expected to be open seven days a week; (eg: 6am until 11 pm). Additional closures may be required in exceptional circumstances e.g. for maintenance or extreme weather.

A November 2009 survey of the 11,000 GetAcross supporters reveals 95.5% in favour of an admission fare on users to fund the construction of the Pathway. The fare will be collected using technology similar to ‘pay and display’ parking ticket machines working in conjunction with access barriers at each end of the Pathway. Given the level of security and monitoring, the level of toll evasion is expected to be minimal.

A small percentage of the fare will be used to pay for its collection. The rest of the fare will go to debt repayment, maintenance, security, insurance, operations and administration of the Pathway.

The admission system will monitor usage and manage access to ensure there are not too many people on SkyPath at any one time. It will also be able to restrict numbers or close access to the Pathway in the event of emergencies.

The following prices have been used in the financial modelling (GST Inclusive):

<table>
<thead>
<tr>
<th>Proposed prices</th>
<th>HOP card</th>
<th>Cash/ EFT-POS/TEXT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>One way</td>
<td>Return</td>
</tr>
<tr>
<td>Quick crossing (excludes access to observation decks):</td>
<td>$2.00</td>
<td>$4.00</td>
</tr>
<tr>
<td></td>
<td>$3.00</td>
<td>$5.00</td>
</tr>
<tr>
<td>Harbour experience: access to the observation decks and exhibits</td>
<td>$3.50</td>
<td>$5.50</td>
</tr>
<tr>
<td></td>
<td>$6.00</td>
<td>$8.00</td>
</tr>
</tbody>
</table>

The fare for children will be approximately half these rates. The price structure has been designed to encourage commuters (who currently pay a minimum of $3.20 each way to take public transport, or incur the costs of petrol, congestion and car parking).

Tourists to Auckland are likely to pay by cash, credit card or text. The fare for the toll paid in these ways is higher to cover the higher costs of the transaction.

The Auckland Harbour Bridge Pathway Trust will employ a general manager and customer service staff who will be based at the southern access landing. They will be tasked with the efficient operation, maintenance and marketing of the Pathway.

The Pathway operation would operate under a ‘licence to occupy’ agreement with New Zealand Transport Agency, as does the existing Bridge Climb and Bungy operation.

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7 GetAcross is a not-for-profit group dedicated to making it possible for Aucklanders, domestic and international visitors to ‘get across’ the Auckland Harbour Bridge on foot or cycle. It was established in March 2007. See [www.getacross.org.nz](http://www.getacross.org.nz)
Financing the Pathway

“The ability to fund an [Auckland Harbour Bridge] walking and cycling facility will be the real issue for the region to face.”

NZTA Board member/Transit Chair Bryan Jackson, see Appendix 1

Cost of construction

The construction cost for the Pathway, including access landings, additional strengthening\(^8\) external night lighting and observation decks has been estimated by WT Partnership at $30.5 million (includes contingency of $4 million).

Funding sources

The AHB Pathway Trust has identified options for funding of the Pathway range from: the Government nominating the Pathway as a ‘Road of National Significance’ and providing 100% funding, to the Pathway being privately funded and operated as a tolled facility as a Public Private Partnership.

The advice from NZTA is that they will not to fund the proposed Pathway, this means an alternate funding solution must be found. The proposed funding solution used the principles of a Public Private Social Partner (PPSP) whereby users of the Pathway pay a toll which, along with the sale of naming rights, is used to fund the construction and operation of the proposed Pathway.

Under the SkyPath proposal, Auckland Council along with a private investment fund and philanthropic organisations could share in the revenue underwrite to support the business case whilst each receives an agreed percentage of any revenue upside, proposed as follows:.

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\(^8\) In regard to the extra strengthening, NZTA has previously advised that it would ensure the bridge was strengthened to future proof for walking and cycling and so it may be that it is willing to absorb this cost. (NZTA board paper 6189)
The AHB Pathway Trust has received a funding offer from the Public Infrastructure Partnership Fund which will provide 100% of the design and construction cost, cover the operating and maintenance costs, and the most risky 25% of the revenue underwrite required under its funding proposal. The least risky 75% of required revenue underwrite would be provided by Council and philanthropic organisations who in return will receive a share of any revenue upside.

The review by Ernst & Young carried out for Auckland Transport advised that the annual revenue forecast ranges from a low patronage case $3.25 million to a high patronage case $5.56 million.

After the tolling period

At the conclusion of the tolling period there will be free access for walkers and cyclists across the SkyPath. However an admission fare could be charged to access the SkyPath observation/exhibition/cafe/bungy-viewing decks.

With an estimated 300,000 tourist/recreational visitors at $10 each (in 2034 prices) this will mean around $3 million in revenue pa in 2034. Allowing for an estimated $2 million in maintenance, security and operations at the end of the tolling period, the AHB Pathway will produce a profit by about $1 million per annum for its owner.

This is a similar arrangement to the Sydney Harbour Bridge. The Sydney Harbour Bridge is free to walk or cycle across but has a tourist facility called the Pylon Lookout which costs $A11 per adult to visit, see: http://www.pylonlookout.com.au/

The AHB Pathway Trust would take ownership of SkyPath after the tolling period.
AHB Pathway Trust costs and intellectual property

The costs for design, engineering, project management and promotion have been incurred by the Trust’s consultant.

The AHB Pathway Trust has agreed to pay its consultants when the project receives the necessary funding. The Trust also has agreements in place for the use of the intellectual property created by its consultants in working on the Pathway project, this includes the design, engineering and operational aspects of the Pathway.
Governance

The Auckland Harbour Bridge Pathway could be delivered under a Social Enterprise Joint Venture as a Build, Own, Operate, Transfer (BOOT) arrangement and undertaken by a joint venture company, to be jointly owned by an Auckland Council CCO or NZTA, the AHB Pathway Trust and a private developer.

Joint Venture Company (JVC)

<table>
<thead>
<tr>
<th>Responsibilities</th>
<th>Benefits</th>
</tr>
</thead>
</table>
| • Legal entity for the PPSP that has delivers the Pathway through its various stages and is owner of the facility | • Uses a contestable process to ensure the best value for project funding and construction  
• Acquires the AHB Pathway Trust’s intellectual property for the work to date on the Pathway’s engineering, design and operation  
• Its shareholders provide existing working relationship with Pathway architects, structural engineers, quantity surveyors and key stakeholders |

The joint venture company will oversee the funding, design and building of the Auckland Harbour Bridge Pathway in conjunction with the NZTA. It will operate the Auckland Harbour Bridge Pathway for 20 years to repay the funding, after which time the Pathway will be transferred to the Auckland Council CCO or NZ Transport Agency at no cost.

A summary of the various responsibilities and benefits is attributed to each party as follows:

Private funder

<table>
<thead>
<tr>
<th>Responsibilities</th>
<th>Benefits</th>
</tr>
</thead>
</table>
| • JVC shareholder, with directors on the JVC board  
• Bring expertise in management, funding, consenting process, construction, facilities operation and marketing | • Receives a percentage of any surplus as a dividend from the JVC |

AHB Pathway Trust

<table>
<thead>
<tr>
<th>Responsibilities</th>
<th>Benefits</th>
</tr>
</thead>
</table>
| • JVC shareholder, with directors on the JVC board  
• Delivers the collective intellectual property for the work done to date on the Pathway’s engineering, design and operation  
• As Charitable Trust with the objective of improving walking and cycling in the Auckland Region, brings expertise in pedestrian and cyclist facility design and operation | • Receives a percentage of any surplus as a dividend from the JVC  
• As a Charitable Trust, its constitution requires all such funds to be directed to other walking and cycling projects. |
### NZTA and/or Auckland Council

<table>
<thead>
<tr>
<th>Responsibilities</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>JVC shareholder, with directors on the JVC board</td>
<td>Receives a percentage of any surplus as a dividend from the JVC</td>
</tr>
<tr>
<td>Underwrites the revenue stream</td>
<td>Enables the project’s significant tourism and amenity benefits for the Auckland region to be unlocked</td>
</tr>
<tr>
<td>Makes an upfront investment at the commencement of the PPSP to cover the social elements of the Pathway (eg: observation deck “blips”)</td>
<td>Low finance rate achieved</td>
</tr>
<tr>
<td></td>
<td>By having a motivated JV managing the Pathway, the risk of having to fulfil the revenue underwrite provision is reduced</td>
</tr>
<tr>
<td></td>
<td>Takes ownership of the Pathway asset (by assuming 100% ownership of the JVC) after the agreed term at a transfer price of $0</td>
</tr>
<tr>
<td></td>
<td>Can continue with tolling of users on the Pathway if it wishes to do so</td>
</tr>
</tbody>
</table>
The way forward

The AHB Pathway Trust’s consultants (the "Pathway Working Group" or “PWG”) meet regularly and its programme of work and minutes are reported on separately.

Details of the AHB Pathway Trust and its consultants are provided in Appendix 6.

A programme of staged work has been identified. The phases of work include: design, detailed costings, funding secured, consent and legal considerations, construction management, marketing and operation.

The AHB Pathway Trust now wishes to engage with Auckland Transport and key stakeholders to advance the project to completion.

For any questions or updates, please contact:

Bevan Woodward, Project Director
Trustee, AHB Pathway Trust
Office 7, 5 Lilburn St, Warkworth
Mob 021 122 6040
E-mail: bevan@skypath.org.nz

Kirsten Shouler
Project Co-ordinator
AHB Pathway Trust
Mob 0272 811 956
E-mail: kirsten@skypath.org.nz

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Frequently Asked Questions

Do the clip-ons have enough strength to support a walking & cycling Pathway?
Yes, the structural engineers from NZTA and the Trust's Pathway Working Group have analysing the various worst case scenarios of heavy truck traffic, crowd loadings on the Pathway, extreme weather and illegally overweight trucks. They have agreed on an engineering solution for a Pathway on the south-bound clip-on that ensures spare capacity even under the most extreme loading scenarios.

What is the life of the clip-ons?
The clip-ons have an indefinite life. What is unknown is the volume of future traffic loadings and the growth in ratio of heavy trucks to motor cars. Under a high growth scenario, this may reach the north-bound clip-ons’ maximum capacity in 20 years. However NZTA has measures in place to extend this period.

What about the next Harbour Crossing?
It is unknown at this time when another harbour crossing will be built and in what form. As a future crossing is at least 20 years away, the opportunity exists for the Auckland Harbour Bridge Pathway to be built in time, funded by a toll paid by users.
SkyPath is fully compatible with the next harbour crossing, because regardless of whether the next crossing is a bridge or a tunnel, walking and cycling access will be provided on the existing Harbour Bridge on completion of the next harbour crossing.

SkyPath could become a pedestrian-only facility when the next Harbour Crossing is completed because a cyclist-only facility can be provided on the AHB's western clip-on deck (by converting a traffic lane).
This is a similar configuration to the Sydney Harbour Bridge.

How long will it take to build the Pathway?
If the project is adopted by Auckland Council, then consultation, consents and final design would be conducted over the next 12 months. Procurement and delivery agreements would require approximately six months.

How will it be funded?
NZTA advises that it is unable to fund the Pathway. Whilst we would of course prefer free access, to fund the Pathway construction, maintenance and operation there will be a toll on its users. Financial contributions may also be available from NZTA, tourism agencies and Auckland Transport.
How do Aucklanders feel about a $2 toll?
The proposed $2 toll for HOP card users compares favourably with the minimum bus fare of $3.40 (Fanshaw St to Onewa Rd) or ferry ticket price of $4.90 (Britomart to Northcote Point). A survey among 11,000 GetAcross supporters shows 85% in support of a toll if NZTA were unable/unwilling to fund the Pathway.

Why do the total number of concurrent users need to be managed?
First, for health and safety reasons, we cannot allow thousands of people to converge on the Pathway. Second, if over the next 20 years, there is high traffic growth then numbers of people of the Pathway can be managed to control the overall loadings on the bridge. If this were to happen, it would affect the peak period of 3 to 4pm weekdays when a lesser number of concurrent users would be allowed on the Pathway.

Will the Pathway be part of NZ’s Cycle Trail?
We applied to be part of the NZ Cycle Trail in 2009 but unfortunately were declined as the priority was for multi-day, wilderness trails. There may be an opportunity to become a key link in the NZ Cycle Trail in future given its recently announced network expansion.

Are Aucklanders in support of walking and cycling across the AHB?
Yes. In November 2007 Y&R commissioned market research to gauge the level of support among Aucklanders for the walkway and cycleway. Very strong support was revealed, with 76% in support, 12% against and 12% unsure.

What official support does the Pathway have?
The Auckland Council’s transport committee has voted to officially recognise the pathway as a strategically important project and has agreed to write to NZ Transport Agency asking it to consider funding support for the project. In addition, the committee has asked Auckland Transport to identify appropriate resourcing and budget for an Auckland Council contribution for consideration in the half yearly review and the next long term plan. In May, the council’s committee gave clear and strong support for walking and cycling access on the bridge which has enabled the project to quickly move forward. Since then we have been meeting weekly with the NZTA and its bridge consultants and have agreed on a design.

How much of the toll be consumed by collection costs?
About 6% of the toll will be used to pay for its collection. The rest of the toll will go to debt repayment, maintenance, security, insurance, operations and administration. The tolling system will be based on technology for collecting public transport fares. It will provide users with a wide range of payment options while minimising the transaction cost.
Why should walkers and cyclists pay when motorists don’t?
Ideally there would be no toll for walking and cycling access, but the reality is the Pathway is highly unlikely to happen within the next 20 to 30 years without such a toll because NZTA does not regard it as a funding priority. Motorists paid a toll to use the Auckland Harbour Bridge for 25 years, from 1959 until 1984.

Has the option for a Pathway under the deck been considered previously?
Yes, the option was explored by Beca in its Feasibility Report (see the cross-section diagram below) and in the Maunsell Access study in 2007, but was disregarded early as “security was found to be a defining issue”.

However, by tolling the Pathway a high level of security patrols will be provided to ensure user safety and the toll itself has some security benefits (e.g. it will reduce the likelihood of loitering).

Is it a priority for the region?
Yes, the walk / cycleway not only fixes the most significant gap in Auckland’s walking and cycling network, it is also a cornerstone project for improving walking and cycling in the Auckland Region (much as Britomart Station was the cornerstone project for reviving Auckland’s rail passenger service).
Auckland has the reputation for being one of the worst cities in the world for walking (page 28, ARTA’s Sustainable Transport Plan 2006-16) and only 1% of Aucklanders regard cycling as ‘always safe’ (ARC’s Community Perceptions Report 2007). The AHB Pathway will be a catalyst for delivery of safe cycling and walking across the Auckland region.

Aren’t the clip-ons too unstable for a Pathway?
The clip-ons have undergone a major strengthening, which included the addition of 900 tonnes of steel at an estimated cost of $86 million. The strengthening reduced movement of the clip-ons and specifically provides for walking and cycling access:

“Through innovative thinking, further structural elements have been incorporated into the current strengthening works at relatively low cost to future proof for future walking and cycling options on the box girders [clip-ons].”

May 2008 Board Transit Paper 6189

Isn’t it too steep to walk or cycle over the Auckland Harbour Bridge?
The gradient of the Bridge is 3 degrees. This is considered a gentle grade and rated ‘Easy’ by the NZ Cycle Trail guidelines.

Will SkyPath affect the flow of traffic across the Bridge?
No, the shared Pathway is under the traffic deck, out of view and does not affect the service life, capacity or configuration of traffic lanes in any way.

Why not provide bike racks on the front of buses or stick with the ferry service?
Cyclists enjoy cycling for fitness and convenience and don’t want the delays and financial cost of taking a bus or ferry. As a bus fitted with a rack can carry a maximum of 3 bicycles at a time, this option is not appropriate for the estimated demand of 1,580 cyclists per day (Opus ‘Auckland Harbour Bridge Cycle Demand Estimation’ study, July 2008).

Cyclists currently use ferries to cross the harbour. However, with the demand exceeding capacity at peak times, Fullers Ferries supports walking and cycling access on the Auckland Harbour Bridge (see Appendix 7).
Furthermore, buses and ferries do not address the lack of walking access across the Auckland Harbour Bridge.

**Will the Pathway detract from the existing Bridge Climb and Bungy Jump operation on the Auckland Harbour Bridge?**

No, we have been in discussion with Auckland Bridge Climb and Bungy, which expects the Pathway to introduce and encourage more people to take the Bridge Climb or Bungy Jump experience.

**Does the walkway/cycleway have the support of the local councils and stakeholders?**

Yes, Auckland Council’s Transport Committee passed the following resolutions on August 15, 2011:

- That the Transport Committee recognises that providing walking and cycling on the Auckland Harbour Bridge as a strategically important project.
- That the Transport Committee recognises the work of the Auckland Harbour Bridge Pathway Technical Steering Group, particularly New Zealand Transport Agency, for the engineering investigation of options for the pathway proposal.
- That the Transport Committee requests Auckland Transport to:
  - identify appropriate resourcing and budget for a financial contribution for further investigation to an Auckland Harbour Bridge Pathway project, for consideration in the half-yearly review and the next Long Term Plan;
  - conduct more detailed investigations with New Zealand Transport Agency into design, procurement and financial arrangements, including an assessment of risks, in relation to the proposed Auckland Harbour Bridge Pathway;
  - write to the Board of New Zealand Transport Agency to consider funding support to continue investigations into an Auckland Harbour Bridge Pathway;
  - write to the Board of New Zealand Transport Agency to consider funding support for an Auckland Harbour Bridge Pathway project from the state highway fund, to reflect New Zealand Transport Agency’s responsibilities to provide for walking and cycling alongside state highways; and
  - ensure costings are subject to a competitive price process.
- That Auckland Transport’s further investigations into the Auckland Harbour Bridge Pathway be reported back to the appropriate Council Committee for consideration as part of the draft Long Term Plan process.
- That the Transport Committee support Council’s ongoing role in coordinating the Auckland Harbour Bridge Technical Steering Group

**Previous councils have also been in support:**

ARC’s Transport and Urban Development Committee (Dec 5, 2007)

“That the Committee support provision for cycling and pedestrians on the Auckland Harbour Bridge in conjunction with the strengthening work on the clip ons.”

North Shore City Council (Dec 4, 2007)

“That this Council supports the appropriate modifications to the Auckland Harbour Bridge to
support a cycleway and walkway and the costs and feasibility of cycleway/walkway links to the Harbour Bridge be investigated and a report be brought back to this Committee."

Auckland City Council’s Transport Committee (Dec 13, 2007):
“That the Chairman of Transport Committee write to Transit New Zealand advocating for a walkway and cycleway across the Auckland Harbour Bridge."

From the minutes of Te Araroa Trust’s February 2008 meeting:

Te Araroa Trust supports Cycle Action Auckland’s plan for cycling and pedestrian lanes on the Auckland Harbour Bridge. When these lanes are in place they will provide an alternative route which the trust would vigorously promote as part of its New Zealand-long walkway. Cycle Action Auckland’s plan is consistent with Te Araroa Trust’s philosophy of promoting walking.
Appendices

Appendix 1: Transit (now NZTA) advice re: Future-proofing

19 May 2008

Cr Christine Rose
Chair, Transport and Urban Development Committee
Auckland Regional Council
Private Bag 92012
AUCKLAND

Dear Christine

AUCKLAND HARBOUR BRIDGE WALKING AND CYCLING FACILITIES

I refer to your letter of 16 April 2008 in which you express the Auckland Regional Council Transport and Urban Development Committee’s concern that the provision of walking and cycling facilities may not be included in the Auckland Harbour Bridge strengthening work, which is due to start in July 2008.

As you may be aware, the purpose of the structural upgrade of the clip-on lanes is to ensure they stay in good condition for the next 20 to 30 years. I assure you that these works do not preclude the addition of a walking and cycling facility. The Board deliberately sought the necessary funding to ensure that further structural elements will be incorporated into the current strengthening works to future-proof the clip-on lanes and allow for future walking and cycling options on the box girders. The strengthening works would need to be well advanced to provide the structural integrity necessary to support works associated with walking and cycling facilities, while addressing the existing structural capacity operational risks of the box girders.

Transit shares your committee’s views on the urgency of reaching a regional agreement on a walking and cycling strategy. We support the aims of the study to be completed in June, which will allow the region to reach consensus on a preferred solution as quickly as possible.

The Transit Board is receiving an update on progress with the Study at its meeting on 7 May 2008. I have also agreed to invite Bevan Woodward, representing Cycle Action Auckland, to present their views.
I hope this letter will allay your committee’s concerns. I trust that your committee understands the necessity of the structural upgrade works in their own right and that opportunities to add a facility in future will not be lost. The ability to fund an additional walking and cycling facility will be the real issue for region to face.

Yours sincerely,

[Signature]

Bryan Jackson
Acting Chair
Appendix 2: NZTA's intention re partnership

26 November 2009
Bevan Woodward
5 Lilburn Street
WARKWORTH 0910

Dear Bevan

Pathway Proposal
Thank you for your proposal for the Pathway which I have reviewed with interest. I have received specific comments from other members of NZTA on the various aspects of your proposal, which I have attached. These comments should be taken as initial comments only, but are meant to provide positive feedback to assist you in developing your proposals further. I am happy to provide general feedback and on your specific request to NZTA.

Your proposal involves the introduction of private finance to fund the proposal for a single walkway/cycleway, built to an agreed specification, with the debt paid off through toll collection. As I have indicated to you before, this is a concept that the NZTA would be prepared to consider further provided the source of funding being introduced was from a credible and reliable provider. You have indicated in your proposal that you are having discussions with potential funders and I look forward to hearing the outcome of these discussions.

With regard to your first two requests to oversee the development of the proposal and the design and costing, as I have stated above, should the proposals receive positive funding, the NZTA would be happy to work in partnership with Getacross to ensure that the scheme is developed to meet a required specification. This is not without precedent, there are existing examples where NZTA infrastructure has been funded by a third party and we have worked collaboratively to specify the requirements, facilitate delivery and provide technical advice. As we have discussed, we do not have the budget to engage external resource but could utilise the extensive knowledge of our internal staff in this matter.

Your third request is for NZTA to support the Pathway proposal as part of the National Cycleway. I understand that discussions on the National Cycleway proposals are ongoing and there is a meeting this Friday (27 November) to discuss options in the Auckland region. I would suggest that we wait for the conclusion of these discussions before seeing how the Pathway proposal fits into this project.

Your final request relates to the revision of the Via Strada demand review. As we know, we have had long discussions in the past over forecast levels of demand. From the NZTA point of view if the funding is being provided by a private financier, then the forecast demand becomes less significant as the risk is passed to the funder. I therefore do not see an advantage in revisiting these forecasts at this stage. I am however happy to discuss this further when we meet.

Yours sincerely,

Tommy Parker
State Highways Manager, Auckland and Northland
Appendix 3: Update on technical feasibility of Pathway

AHB PATHWAY PROJECT UPDATE

We have recently agreed upon the structural feasibility of the AHB Pathway and completed the concept design report, in conjunction with Beca, NZTA, and the Pathway Working Group.

We are confident that the people numbers that define the maximum live load limits for the Pathway can be significantly increased through further design innovations, including:

- A lighter aluminium pathway deck structure for span 2
- Refinement of the appropriate second lane load factor
- A reduction of the applicable load factors to British Standard EN 1990
- Elimination of the dampers currently included for spans 1, 2 and 3.

It is likely that the maximum people numbers over the next 15 years will ultimately be determined by operational factors such as health and safety requirements, not by the loadings of traffic and people on the AHB. Regular WiIM traffic load measurements (i.e., every 2 years) will allow for the adjustment of the people number limits if deemed necessary.

Effects of an Aluminium Pathway

Reducing the Pathway’s dead load on all spans is probably the most effective option for increasing people numbers on the Pathway. However, as span 2 (the main Navigation span) is significantly more critical than the other spans, there may be a greater benefit in using aluminium for the span 2 deck and steel for the others, in order to maximise the counterbalance effect that the heavier spans create.

Although the use of aluminium is moderately more expensive than steel, it has additional benefits in terms of reduced maintenance over time, particularly in a marine environment. The net benefits in terms of costs and people numbers will be assessed in order to optimise the Pathway user numbers.

Second Lane Load Factor

The 0.5 second lane factor adopted for extension bridge traffic loadings appears to have been a convenient figure historically. However the 2011 Traffic Load Study indicates significantly lower second lane factors of less than 0.4 (Table 2, pg. 19) that are based on actual recorded data. This is reiterated in Section 2.2 of the Hyder review (pg. 2). We see no reason why the lower second lane load factors indicated cannot be used.
Our calculations based on the above show that in 2026, using a second lane factor of 0.395, the loaded length can be the full length of span 2 with a code-derived people number count of about 925 people at any given time.

Additionally, the 2026 figure will be based on more and more recorded load data as time goes on and the proposed two-yearly traffic studies are conducted, so that the numbers will be monitored taking into account load fluctuations as necessary (refer to note above).

Probability Analysis (British Standard EN 1990)

Currently, the people numbers for the Pathway have been calculated assuming worse case scenarios for all known possibilities and these have been applied simultaneously, e.g. the 3-4pm peak loading period that defines the stated people number limits includes the following worst-case scenarios all occurring at the same time:

- peak differential temperature effect for the entire year at this time of day, and

- peak Pathway user numbers are all pedestrians (i.e. no cyclists whom are naturally more spread out) located on the critical span as a concentrated group at the centre of that span and

- a stationary peak traffic queue due to an incident that includes the highest daily % of HCVs, with a significant single HCV at the same (centre of span) location.

Given that the engineering calculations provide significant factors of safety (approximately 34% overall) using a probability analysis tool such as provided for in EN1990\(^1\) it is likely that the people numbers can be increased.

Damper Weights

Allowance has been made for the installation of dampers on spans 1, 2 and 3 to limit the potential for dynamic response due to the movement of Pathway users. A more detailed evaluation of dynamic response is likely to not require the installation of these dampers. The combined weight of the proposed dampers is currently 20.1 Tonnes.

We will work through the above matters in the next stage of the project, along with the detailed design work described in the recently completed concept design report.

\(^1\) EN 1990 establishes principles and requirements for the safety, serviceability and durability of structures, describes the basis for their design and verification and gives guidelines for related aspects of structural reliability. The current (latest) version of the British Standard is EN 1990:2002+A1:2005
Appendix 4: Technical confirmation from NZTA

7 December 2009

Last week, the NZTA released a report updating the forecast future loadings on the Auckland Harbour Bridge. The report confirmed earlier analysis that if left unrestricted to all traffic, the Northbound box girder (clip on) could need to be replaced in approximately 20 years. In order to reassure the public and stakeholders, the NZTA has confirmed that planning for a future additional harbour crossing is on going and that it is expected that planning and design for this crossing will be undertaken in the next 10 years with construction not expected to start before 2020. This crossing, whether bridge or tunnel, will complement the existing bridge and between them, will provide for all transport modes.

In the interim the NZTA will develop their Asset Management Strategy for the existing bridge to continue to manage the structure to meet the current demands for its safe and efficient operation.

At the same time the NZTA is committed to investigating all possible options to extend the life of the bridge and any of its component parts. There are a number of possible innovations to pursue in this regard.

With respect to the Pathway proposal for a Walking and Cycling link on the existing Harbour Bridge advocated by Getacross, I can confirm that the NZTA’s position remains unchanged. Current analysis indicates that there is sufficient capacity in the southbound box girder to support a walkway/cycleway and that should a funding source be identified, we would be happy to work with the advocates of the scheme to develop proposals further.

Tommy Parker
State Highway Manager, Auckland and Northland
Appendix 4A: NZTA’s future-proofing of AHB for the Pathway

21 October 2008

Bevan Woodward
Deputy Chair
Cycle Action Auckland
PO Box 91-301
AUCKLAND

Dear Bevan,

I refer to your email of 9 October 2008 to the reference “Structural elements have been incorporated into the current strengthening works to future-proof for walking and cycling facilities on the box girders”. I presume this is from the letter written by Rick van Barneveld to the Hon Judith Tizard on 14 May 2008. You have asked for details of what these structural elements are.

The strengthening of the box girders requires additional deck cross girders and internal web stiffeners.

The cross girders fit up under the deck and go the full width of the box girders. As part of the design these girders were increased in size to allow for the torsional effect of the additional cycleway/walkway.

The internal web stiffeners are plates of steel welded at right angles to the sides of the box girder to stiffen the sides. Again these were increased in size to allow for the torsional effects mentioned above.

This work was done as a prudent measure as it would have been very difficult to carry this out at a later date, should the cycleway/walkway be added.

Yours sincerely,

Roly Frost
General Manager Network Operations
Appendix 5: Connections to the north and south

The connecting routes to the Pathway provide a route from Auckland’s CBD to the north. The proposed NZ Cycle Trail is shown in green (— — —), overlaid on ARTA’s Regional Cycle Network:
Southern side

From the CBD, this cycling and walking path provides access through the eastern side of the Auckland Viaduct.

Cycling and walking path through the western side of Auckland Viaduct.

Cycling and walking path through the western side of Auckland Viaduct.
Westhaven Drive provides a safe (30 km/h with traffic calming) cycling environment to the start of the Auckland Harbour Bridge Pathway.

Waterfront Auckland propose a promenade for recreational walking and cycling access.

Access from Ponsonby/Herne Bay is provided by this shared path.

SkyPath interfaces with Westhaven to provide access to the CBD and into Ponsonby via Shelley Beach Road or Curran Street.

The details and design of the southern landing will be determined in consultation with key stakeholders.
**Northern side**

The details and design of the northern landing will be determined in consultation with key stakeholders.

A walkway leads directly to Northcote Point ferry terminal, a distance of approximate 120 metres.

The ferry terminal at Northcote Point is approximately 120 metres from the proposed Auckland Harbour Bridge Pathway. This terminal is served by a number of bus services providing connections to the North Shore.
View of ferry departing Northcote Point. This will be a pleasant option for many tourists (both cycling and walking) to make the return trip back to the CBD.

Queen St in Northcote Point provides good walking, cycling and public transport access between the proposed Pathway and North Shore suburbs.

The historic Northcote Tavern and Garden Bar, located within 400 metres of easy cycling from the Auckland Harbour Bridge Pathway.
Example of North Shore local craft shop within close proximity of the Pathway.

The Pathway will support the growth of walking and cycling tourism and recreational trails.
Cycle routes from Northcote Point (AHB Pathway access) to Takapuna

This document outlines the cycle routes from the AHB Pathway at Northcote Pt to Takapuna, in terms of:

1. Most direct existing cycle route on roads considered safe by competent cyclists (6 km)
2. Most direct existing cycle route, using quiet / safer streets (6.8 km)
3. Future option for direct and safe route (4.8 km)
4. Future option for direct and off-road route to Takapuna (4.2 km)

NZTA advises that the Northern Motorway Cycleway project with a budgeted cost of $5.5M is included in their 2012-2015 National Land Transport Programme, as shown:

Prepared by:

Bevan Woodward  |  PGCertEng (Transportation)
Transport Planner
bevan@betterworldnz.com
1) Most direct cycle route (6 km)

Leaving the Pathway’s access ramp, cycle north along Princes St, turn left into King St and right into Queen St. Cycle 1.25 km north to Onewa Road.

At the intersection with Onewa Rd, use the footpath to cycle 50 metres west along Onewa Road until the signalised lights at the intersection with Lake Road. Use the pedestrian crossing phase to access Lake Road and cycle 1 km north and turn right at the roundabout into Exmouth Rd.

Take the first left into College Road and cycle 1 km to the intersection with Akoranga Drive. Turn right using the shared path to cycle past the AUT campus and across the motorway into Takapuna. This becomes a cycle lane on Esmonde Road. Turn left into Burns Ave for Takapuna Central, or right at the signalised intersection with Eldon St to head for Devonport.

This route has been overlaid Auckland Transport’s North Shore Cycle Map in red:

Statistics for this route can be viewed online at [http://www.mapmyride.com/routes/view/45967716/](http://www.mapmyride.com/routes/view/45967716/)
2) Cycle route using quiet / safer streets (6.8km)

Leaving the Pathway’s access ramp, cycle north along Princes St, turn left into King St and right into Queen St. Cycle 1.25 km north to Onewa Road.

At the intersection with Onewa Rd, use the shared footpath to cycle 400 metres east along Onewa Road to Onepoto Cycleway. Turn left into Sylvan Ave, then first left into Tarahanga St and cycle to the northern end where a walkway links to Howard Rd. Cycle north along Howard Rd to the intersection with Exmouth Rd and turn left.

Take the first right into College Road and cycle 1 km to the intersection with Akoranga Drive. Turn right using the shared path to cycle past the AUT campus and across the motorway into Takapuna. This becomes a cycle lane on Esmonde Road. Turn left into Burns Ave for Takapuna Central, or right at the signalised intersection with Eldon St to head for Devonport.

This route has been overlaid Auckland Transport's North Shore Cycle Map in red:

Statistics for this route can be viewed online at: http://www.mapmyride.com/routes/view/45969080/
3) Future option for safe and direct route (4.8 km)

Leaving the Pathway’s access ramp, cycle north along Princes St, which becomes Alfred St, to access Stafford Park.

From Strafford Park a new walking and cycling path could provide direct access to the intersection of Onewa Road and Sylvan Ave. Signalised crossing here provides safe access to Sylvan Ave.

Cycle along Sylvan Ave and turn right into Heath St and access Heath Reserve. A new walking and cycling path across Heath Reserve would provide access to the existing footbridge across the motorway (see photo’s on next page).

From here a new walking and cycling path along the eastern side of the motorway links to Esmonde Road and at the signalised intersection with Thomas Drive, cyclists join the existing shared path/cycle lanes on Esmonde Rd.

This route has been overlaid Auckland Transport’s North Shore Cycle Map in red:

Statistics for this route can be viewed online at [http://www.mapmyride.com/routes/view/45972978/](http://www.mapmyride.com/routes/view/45972978/)
### Access to and from Heath Reserve Footbridge (currently redundant)

<table>
<thead>
<tr>
<th>Description</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public access from northern end of Heath Avenue, Northcote to Heath Reserve. This would need to be upgraded to provide a higher lever of service.</td>
<td><img src="image1.jpg" alt="Image" /></td>
</tr>
<tr>
<td>Footbridge at Heath Reserve over SH1 motorway</td>
<td><img src="image2.jpg" alt="Image" /></td>
</tr>
<tr>
<td>Footbridge at Heath Reserve over SH1 motorway</td>
<td><img src="image3.jpg" alt="Image" /></td>
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</tbody>
</table>
| Looking north from Heath Reserve footbridge.  
  Suggest provision of walking and cycling path on eastern side of motorway to provide direct connection to Takapuna (seen in the distance). | ![Image](image4.jpg)                                                  |
4) Future option for direct and off-road route to Takapuna (4.2 km)

A shared path is attached to the Eastern side of the motorway to connect 9 Princes St (owned by NZTA) to Shoal Bay and the existing path and pedestrian tunnel at Tennyson Road.

From here a new walking and cycling path along the eastern side of the motorway links to Esmonde Road and at the signalised intersection with Thomas Drive, cyclists join the existing shared path/cycle lanes on Esmonde Rd.

This route has been overlaid Auckland Transport’s North Shore Cycle Map in red:
Appendix 6: Trustee details and Project Management

The AHB Pathway project has been commissioned by the AHB Pathway Trust. The trustees are:

- Bevan Woodward, Transport Planning Consultant
- Alex Swney, CEO, Heart of the City
- Andy Smith, President of Walk Auckland
- Christine Rose, ex-ARC Chair of Transport committee

The AHB Pathway Trust utilises its “Pathway Working Group” to oversee the development of the project. This group comprises of the AHB Pathway trustees along with the following advisors:

- Kirsten Shouler, Project Co-ordinator
- Roger Twiname, Structural engineering consultant, Airey Consultants
- Barry Copeland, Design consultant: Copeland Associates Architects
- Ed Willis, Legal advice
- Craig Wilson, Tourism Marketing

Additional contributors:

Engineering Advisors
- Saia Thomas, Airey Consultants
- Michael Newby, Holmes Consulting Group

Graphic Design
- Luke Williamson, Halcyon Design
- Isla Osbourne

Communications
- Audrey Van Ryn

Legal Advice
- Michael Lloyd, Barrister
- HGM Legal
- Russell McVeagh

Demand Forecasting
- Dr Graeme Lindsay, University of Auckland
- Andrew Stevenson, Tasman Research

Web site Management
- Philip Allfrey

Market Research
- Y&R
- Horizon Research
Appendix 7: Letter of support from Fullers Ferries

To whom it may concern:

Fullers Group Limited is the largest operator of passenger ferries on Auckland’s Hauraki Gulf; transporting over four million passengers each year to a number of island destinations as well as on a network of ferry services across the Auckland Harbour. Around forty percent of all trips are made by Auckland residents travelling for recreational reasons or by people from outside Auckland travelling as tourists.

Fullers’ interest in supporting Cycle Action Auckland’s initiative to create a network of cycleways throughout the Auckland City region is for the potential it offers Aucklanders and tourists to use existing ferry services for recreation and tourist experiences. Fullers sees this as a growth area that would generate new revenue for the ferry industry that would be applied to improving existing services, underwrite to some extent the commuter fare price and be the catalyst for starting new ferry services.

Fullers’ ferries are capable of carrying cycles and some of the cycleways proposed by Cycle Action Auckland would have an attractive feature of a ferry ride to enhance the recreational value for the cyclist.

The proposed cycleway incorporating the Harbour Bridge is a particularly important one. It would without doubt be the iconic cycleway in New Zealand and give Auckland the tourist boost it so desperately needs. A base from which a wider network can grow – combined with the enthusiasm Cycle Action Auckland.

We urge you to support this important visionary initiative, we unreservedly support it ourselves.

Yours sincerely

[Signature]

Michael Fitchett
General Manager – Support Services
## Appendix 8: Summary of key reports and documents

Prepared by Bevan Woodward, 10 May 2011

<table>
<thead>
<tr>
<th>Report</th>
<th>Summary</th>
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<tbody>
<tr>
<td>1. Alternative Waitemata Harbour Crossing Options for Cyclists</td>
<td>Investigation of options for cyclists to cross the Waitemata Harbour, it considered: cycle facility on or under the AHB, bike racks on buses, a cycle shuttle service, and improved services for cyclists using the ferries. &lt;br&gt; <strong>Key findings:</strong> &lt;br&gt; “A cycleway on or under the AHB is clearly the most favourable option from a cyclist’s point of view” <em>Pg 36</em> &lt;br&gt; “In general, the ‘under the bridge’ options are more feasible as the issues mentioned previously are not significant.” <em>Pg 36</em></td>
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<tr>
<td>Serco for Auckland City Council, dated June 2001</td>
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<tr>
<td>2. AHB Cycleway – Feasibility Study (Stage 1)</td>
<td>This study looked into the operational feasibility of a cycleway/walkway on the AHB. Considered the design issues of bridge strength, wind, vibration, barriers, and access in relation to a cycleway/walkway. &lt;br&gt; <strong>Key findings:</strong> &lt;br&gt; “Thus, a cycleway/walkway would need to be carried via the extension bridges [ie: the clip-ons], either at deck level or under the outer deck cantilever.” <em>Pg 4</em> &lt;br&gt; “The study has confirmed the operational feasibility of a cycleway/walkway on the AHB subject to Transit and the users’ acceptance [for the deck level facility] of the compromises to standards that will be required” <em>Pg 1</em> &lt;br&gt; “This study has concluded that the [pathway] facility should be carried on the outside of the box girders extension bridge [ie: the clip-ons] and that it needs to cater for both cyclists and pedestrians” <em>Pg 1</em> &lt;br&gt; The study dismissed the under deck option (see diagram below) due to safety and personal security concerns: “It was generally considered at the project workshop that such an option was unacceptable and should not be further developed.” <em>Pg 8</em></td>
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<tr>
<td>Beca Infrastructure Ltd for Transit NZ, dated 13 July 2006</td>
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<tr>
<td>3. AHB Box Girder Strengthening Concept Design Report</td>
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<tr>
<td>Beca Infrastructure Ltd for Transit NZ, dated June 2007</td>
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<tr>
<td>This study developed the design of the strengthening project for the clip-ons (which was completed late last year at a cost of $86 million):</td>
<td></td>
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<tr>
<td>“For the design elements directly supporting the footway [a] crowd loading of 5 kPa has been applied. It has been assumed that pedestrian loading could be applied to either extension and no distinction has been made between cycleway or walkway loads.” Pg 7</td>
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<tr>
<th>4. NZTA Board member/Transit’s Acting Chair Bryan Jackson</th>
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<tr>
<td>letter to ARC’s Christine Rose, dated 19 May 2008</td>
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<tr>
<td>Advice from NZTA:</td>
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<tr>
<td>“The [NZTA] Board deliberately sought the necessary funding to ensure that further structural elements will be incorporated into the current strengthening works to future-proof the clip-on lanes and allow for future walking and cycling options”</td>
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<tr>
<td>“The ability to fund an additional walking and cycling facility will be the real issue for the region to face.”</td>
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<tr>
<th>5. Auckland Waitemata Harbour Cyclist and Pedestrian Access Study</th>
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<tr>
<td>Maunsell</td>
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<tr>
<td>Study overseen by NZTA, ACC, NSCC, ARTA &amp; ARC to evaluate dedicated cyclists and pedestrian facilities on the AHB, and consider ferry and bus services. Key findings:</td>
</tr>
<tr>
<td>The recommended option for an on-deck cyclist facility on the western side and an on-deck facility on the eastern side should proceed for further investigation. (Pg iii)</td>
</tr>
<tr>
<td>The under-deck option was assessed as having “unacceptable” personal security and hence did not rank highly in the study's evaluation matrix (Attachment A).</td>
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<tr>
<th>6. Assessment of Effect of Future Traffic Load Growth on AHB</th>
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<tr>
<td>Beca Infrastructure for NZTA, dated 31 August 2009</td>
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<tr>
<td>Assessment of the effects of the future growth of traffic loading compared to the load capacity of the AHB. Key findings:</td>
</tr>
<tr>
<td>“there is a low risk of fatigue becoming the limiting factor [of the AHB clip-on’s service life] in the next 40 years.” Pg 17</td>
</tr>
<tr>
<td>Assuming a high-growth rate of 150% of the 2000 - 2007 actual growth rate (Pg 7), without any traffic management measures in place, the northbound clip-on will reach load capacity in 10 to 20 years. (Pg 19)</td>
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<tr>
<th>7. Review of Beca’s “Assessment of Effect of Future Traffic Load Growth on AHB”</th>
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<tr>
<td>Holmes Consulting Group for NZTA, dated 25 November 2009</td>
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<tr>
<td>Key findings:</td>
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<tr>
<td>“The [Beca] report appears weighted to the effects of the worst case scenario for Lane 2 [northbound]. It is considered the effects from the extrapolation of future traffic growth are likely to be over-estimated and at the higher end of the probable range.” (Pg 1)</td>
</tr>
<tr>
<td>“There is sufficient existing capacity of the southbound extension [clip-on] to support a walkway/cycleway lane up to 3m in width, for a period of at least 40 years.” (Pg 1)</td>
</tr>
</tbody>
</table>
8. NZTA Auckland HNO Manager Tommy
letter dated 7 Dec 2009
“Current analysis indicates that there is sufficient capacity in the southbound box girder to support a walkway/ cycleway”

9. NZTA’s AHB Freight Management Strategy
NZTA, completed late 2010
Key points:
NZTA’s active monitoring and surveillance of trucks will significantly reduce the numbers of illegally overloaded trucks (ie: those over 44 tonnes).
This will extend the Northbound clip-on’s service life (and therefore the AHB’s life) considerably beyond 2029, as shown:

10. Airey Consultants Technical Report for AHB Pathway
submitted to NZTA in January 2011
Technical report addressing the local and global effects on the AHB of a 4 metre wide shared path on the southbound clip-on, as shown:
The tolling system and on-site security address previous issues of crowd loading, funding and personal security.
This option has a number of distinct advantages over all other options in previous studies, as it:
- will serve as a combined pedestrian and cyclist facility, creating
<table>
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<th>Significant cost savings over previous options which entailed two separate pathways;</th>
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<tr>
<td>- does not require an extension to the clip-on deck or heavy (concrete) barriers to provide physical separation from vehicle traffic;</td>
</tr>
<tr>
<td>- does not require narrowing of the traffic lanes, nor the associated costs and weight of deck strengthening to realign the traffic wheel track location;</td>
</tr>
<tr>
<td>- can be designed to avoid adding wind resistance to the existing clip-on structure;</td>
</tr>
<tr>
<td>- uses the southbound clip-on, which has sufficient load capacity to ensure the service life of the AHB is not detrimentally affected</td>
</tr>
<tr>
<td>- retains motorists’ unimpeded views of the harbour;</td>
</tr>
<tr>
<td>- shelters pedestrians and cyclists from motorway noise, emissions, and the weather, yet allows excellent views of the harbour;</td>
</tr>
<tr>
<td>- will utilize the components specifically added by NZTA, as part of the current clip-on strengthening and future-proofing works, to enable walking and cycling access;</td>
</tr>
<tr>
<td>- diverts in between the pylons on the northern side to avoid any potential airspace issues with neighbouring properties. (not an issue on the southern side);</td>
</tr>
<tr>
<td>- allows the tolling the users, hence the pathway is a viable Public Private Partnership project, requiring minimal up front investment from NZTA or Auckland Transport;</td>
</tr>
<tr>
<td>- utilises some of the toll revenue to pay for marketing, on-site security, surveillance, administration, cleaning, ongoing maintenance, etc.;</td>
</tr>
<tr>
<td>- will be designed to be an iconic ‘top 10’ tourist attraction, encouraging visitors to spend an extra night in Auckland.</td>
</tr>
</tbody>
</table>

The technical report was delivered as per step 2 of the following process mutually agreed to by NZTA and the Pathway Working Group late in 2010:

- The contact persons are Corrie Keyser and Tommy Parker exclusively (subsequently changed to Bevan Woodward and Steve Mutton/Stephen Town as key contacts)
- The Pathway Group will provide NZTA with a technical report *(delivered in Jan 2011)*
- NZTA undertakes to contract Beca to review this technical report and reply thereto in writing *(Brief e-mail received from Beca, not a formal review as expected)*
- Once NZTA receives this report from NZTA & PWG will meet to discuss the findings and, after review with our respective interested parties, formulate the strategy going forward *(currently in progress)*
- Should both parties agree with the findings, they will formulate the way forward. However, should they disagree, NZTA will employ a 3rd party expert to give an independent opinion.