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Auckland Harbour Bridge Pathway

Proposal for Tolling



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Executive Summary

The recent analysis of the Auckland Harbour Bridge's future traffic loading reveals that the city-side clip-on has ample capacity for a shared walking and cycling pathway. This proposal explores the potential for tolling walkers and cyclists to use the Pathway in order to fund its implementation and operation.

An architecturally designed walking and cycling pathway would fix the most critical gap in the Auckland region's walking and cycling network, whilst providing potentially significant recreational, economic development and tourism opportunities.



Indicative design of the Pathway

The Pathway would provide extra transport capacity for crossing the Waitematā Harbour, equal to approximately half a lane of general traffic in peak time. Considerable environmental benefits will be attained in terms of reduced air pollution and carbon emissions.

The Auckland Harbour Bridge Pathway would be a cornerstone project, acting as a flagship for the ongoing improvement of walking and cycling facilities on both sides of the Bridge. It will encourage greater use of the active transport modes in Auckland.

The net revenue generated by a toll, along with an initial investment from the National Cycleway fund if necessary, could provide sufficient funding for the Pathway to be built, maintained and operated for 25 years before being transferred to NZTA ownership at no cost. This could be achieved under a PPP or BOOT arrangement.

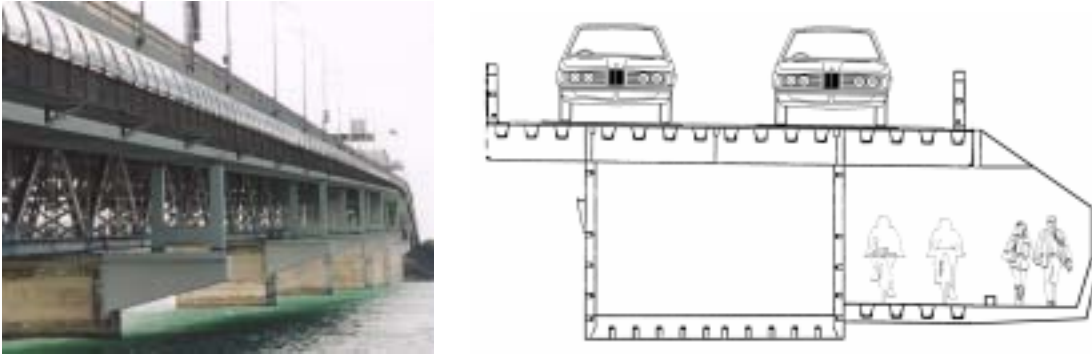
The Auckland Harbour Bridge Pathway could be built in time for the Rugby World Cup (October 2011) if the NZTA undertakes to support this proposal. The Pathway will appeal to all tourists visiting New Zealand, not just cycle tourists. It will be the most popular walking and cycling path in New Zealand, thus it merits consideration for seed funding by the National Cycleway fund.

This proposal has been developed with assistance from Holmes Consulting Group, NextBike, Y&R, BetterWorld, Walk Auckland and Cycle Action Auckland. It now requires NZTA to provide by December 18 an expression of support for the Pathway to be part of the National Cycleway, and ongoing support for the development of this proposal.

The Pathway

The Transport Agency commissioned its bridge consultants, Beca Infrastructure, to provide a capacity analysis of the Auckland Harbour Bridge. The report¹ revealed that the city-side clip-on has ample capacity for a shared walking and cycling path.

The proposed Pathway could be attached under the deck cantilever of the eastern clip-on, as shown in these concept designs:



Such a Pathway has a number of distinct advantages:

- it can serve as a combined pedestrian and cyclist facility, creating significant cost savings in place of the previous option of two separate pathways
- it can be built wide enough (3.2 to 4 metres) to designate separate spaces for both cyclists and pedestrians, thus enhancing safety for all users
- it does not require heavy (concrete) barriers to provide physical separation from vehicle traffic
- it does not require narrowing of the traffic lanes and the associated costs of deck strengthening for new wheel tracks
- it can be designed to not add wind resistance to the existing structure
- it uses the eastern clip-on, which has ample load capacity and allows city views, whilst not obstructing motorists' views of the harbour
- it is sheltered from traffic emissions and weather yet still allows views of the harbour
- it will utilise the components specifically added by NZTA as part of the current clip-on strengthening and future proofing works
- it can be designed to be an aesthetically pleasing "top 10" tourist attraction for the Auckland region
- the gradient of the Pathway is 5 to 6% (3 degrees), which is deemed "easy" by the National Cycleway guidelines
- clearance for ships navigating under the Bridge is unaffected
- the Pathway's connections to the streets north and south are straight forward and cost efficient (see Appendix 2)
- The Pathway provides access for maintenance

¹ Assessment of Effect of Future Traffic Load Growth on Auckland Harbour Bridge by Beca Infrastructure Ltd, prepared for New Zealand Transport Agency, Dated 28 September, 2009.

- The Pathway can be partially open or fully enclosed, depending on the final design. It could be designed to be open in the summer with extra enclosures added for winter.

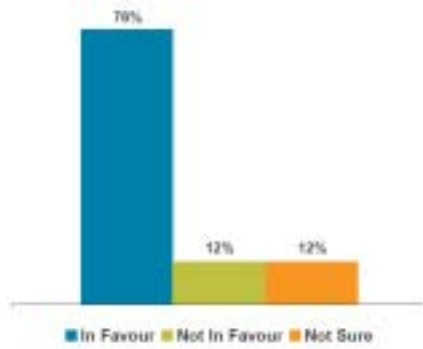
Security can be provided through the use of CCTV's, Intercom, Westhaven Marina security staff, and police from the Traffic Control station on Northcote Point (where the Bridge CCTV's and Intercoms are monitored). Emergency access points to the Pathway can be provided to the road deck above if deemed necessary.

The Pathway would be built of fire-resistant materials. Facilities on the Pathway could include viewing platforms with telescopes and drinking fountains. Toilets are available on the city side at Westhaven Marina.

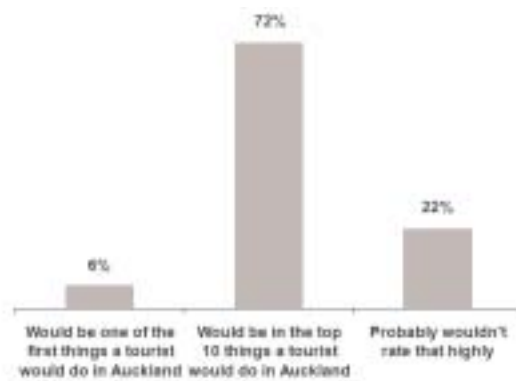
The ferry from Northcote Point to the Auckland CBD provides an attractive option for recreational and tourist visitors who wish to make a scenic tour of the Viaduct, Westhaven, Northcote Point and the Waitematā Harbour.

Recreational, Economic and Tourism Opportunities

Support for the Pathway has very strong support among the public. Market research of Aucklanders² reveals 76% in favour (12% against and 12% unsure).



Intended use of the Pathway is very strong and 78% of respondents regarded the Pathway as a top 10 tourist attraction:



² Y&R's Viewfinder Research: November 2007

The Auckland Harbour Bridge Pathway would be the most popular walking and cycling path in New Zealand. Thus it merits consideration for one-off seed funding by the National Cycleway fund.

A November 2009 survey of the 11,000 GetAcross supporters reveals 95.5% in favour of a toll on users in order to fund the construction of the Pathway.

The wide range of benefits that would arise from the Auckland Harbour Bridge Pathway requires investigation and quantification by an independent expert. It is proposed that this work is carried out with the assistance of the NZTA as part of the Pathway proposal development. It could potentially be funded by the National Cycleway's December 2009 funding round.

Operation

The Pathway is expected to be open 24 x 7 and closed only for maintenance or exceptional circumstances. The toll will be collected using technology similar to "pay & display" parking ticket machines working in conjunction with access barriers.

Approximately 9% of the toll is used to pay for its collection; the rest of the toll goes to debt repayment, maintenance, security, insurance, operations and administration. See Appendix 1 for details.

The tolling system will monitor usage and manage access to ensure there are no extreme loadings (eg too many people) on the Pathway. It would also be able to restrict numbers or close access to the Pathway in the event of emergencies.

The following indicative tolls are proposed:

Public transport/stored value smart card	\$0.95 each way, \$1.90 return
EFT-POS, cash, credit card, TEXTing	\$2.50 each way, \$3.00 return

The toll for children will be approximately half these rates. The price structure has been designed to encourage commuters, who currently pay \$3.50 or more each way to take public transport or have the cost of petrol and car parking, to walk or cycle instead.

Tourists to Auckland are likely to pay by cash, credit card or TEXT, hence the higher fare to cover the cost of the transaction. Furthermore, tourists are more inclined to travel only to the top and back, hence the higher fare for a one-way trip.

An estimate of the revenue in Year 1 from the proposed toll is calculated in Appendix 1.

The Auckland Harbour Bridge Pathway Trust will employ a general manager and an administration officer who is based nearby. They will be tasked with the efficient operation, maintenance and marketing promotion of the Pathway.

Finances

An estimated cost of the Pathway is calculated as follows:

Pathway's cost per Beca AHB Strengthening Design, June 2007 (excluding contingency of 30 to 40% and funding risk of 15%, which totalled \$37M)		\$23,150,000
Less: Items not required by proposed under-deck option		
Lifts on northern side	\$1,402,750	
Traffic barriers	\$3,061,500	
Bridge deck strengthening	\$3,920,000	
		\$14,765,750
Price for one side only (50%)		\$7,382,875
Add: Cost of tolling equipment	\$320,000	
Additional materials for extra width of Pathway	\$1,750,000	
		\$9,452,875
Contingency @ 30%		\$2,835,863
Estimated Cost to build shared Pathway		<u>\$12,288,738</u>

The above cost estimate should be completely updated once the design parameters of the Pathway have been refined and agreed to by the NZTA.

An estimate of the revenue generated by the toll has been based on Y&R Market research, the October 2008 Maunsell Walking & Cycling Access Study, review of the Tamaki Drive cycle counts, Sydney Harbour Bridge patronage and the report on potential usage by the University of Auckland's Graeme Lindsay. Under a "low usage" scenario, the toll revenue is calculated in Appendix 1.

Projected income and expenses for the Pathway in Year 1 are detailed in Appendix 1:

Total Revenue (Year 1)		\$1,357,379
Expenses (Year 1)		
Salaries, Operations & Marketing	18%	\$245,000
Insurance	4%	\$60,000
Security	9%	\$125,000
Maintenance contribution	18%	\$240,000
Toll collection	9%	\$120,000
Total cost before debt servicing/repayment		\$790,000
Surplus to service/repayment debt (Year 1)	42%	<u>\$567,379</u>

Initially, due to start-up costs and the demand forecast that patronage will grow 5% pa, the Pathway toll will not cover the interest cost until year 7. From Years 8 until 25 the principal and accumulated interest is repaid.

The financial modelling does not include the revenue from carbon credits attributed to commuters' use of the Pathway. These are estimated to be worth \$45,000 per annum on today's market prices, but expected to be of more significant value in the future.

The revenue source from the Pathway toll has been calculated over 25 years to be able to service repay a construction debt of approximately \$10.5 million (using a Net Present Value on the forecast revenues at an interest rate of 10% pa).

Given the estimated cost of the Pathway at approximately \$12.3 million, an application for a one-off investment of \$1.8 million from the National Cycleway fund will be necessary. Consequently, an expression of interest and concept proposal must be submitted in time for the December 18, 2009 National Cycleway funding round.

Funding Sources

Potential funding sources include: private investors, financial institutions, New Zealand Superannuation Fund, public share offering and government funding. Investors would receive a competitive return on their investment; this proposal has used a return of 10%. It is possible that a lower return on investment will apply, thus enabling a larger construction loan to be raised and serviced.

Until the Pathway's design and costings are confirmed, the funding of the construction costs cannot be secured. However, expressions of interest have been received from credible investors.

Investors may also value the naming rights that may be available for the Pathway. This has not been taken into consideration within this proposal.

Governance

The Auckland Harbour Bridge Pathway, as described in this proposal, could be delivered under a PPP or BOOT arrangement and undertaken by an independent organisation with the appropriate expertise and professional experience. This could be a charitable trust which would oversee the Pathway on a not-for-profit basis.

The trust would oversee the funding, design and building of the Auckland Harbour Bridge Pathway in conjunction with the NZTA. It would operate the Auckland Harbour Bridge Pathway for 25 years to repay the funding, after which time the Pathway is transferred to the NZTA at no cost and the trust is wound up.

If the Pathway debt is paid off faster than expected, then the trust may choose to fund other walking and cycling infrastructure projects in the region, or wind up earlier, as agreed with the NZTA.

The Way Forward

The following key actions will be undertaken:

- The 11,000 GetAcross supporters will be surveyed to gauge their support for a toll in order to provide the Pathway (This action has been carried out.)
- This proposal will be presented to NZTA for their support and input, specifically for NZTA to:
 - Assist in the development of this Pathway proposal, with the objective of completion by the Rugby World Cup (October 2011)
 - Assist with the refinement of the Pathway design and costings
 - Provide an expression of support for the Pathway as part of the National Cycleway (due 18 December, 2009), if required to fund any incremental Pathway cost (ie: if the construction cost exceeds the maximum borrowing that can be serviced by the toll's net revenue stream)
 - Request Via Strada to correct the flaw in their demand review
- GetAcross will investigate options for funding
- A concept proposal will be lodged with the Ministry of Tourism for the December, 2009 National Cycleway funding round. This could include a request for feasibility study and business case funding.



The above image and vision is taken from NZTA's home page on the internet. The proposed Auckland Harbour Bridge Pathway will assist NZTA to achieve its vision.

Frequently Asked Questions

Will the majority of the toll be consumed by collection costs?

No, only about 9% of the toll is used to pay for its collection, the rest of the toll goes to debt repayment, maintenance, security, insurance, operations and administration.

The tolling system is based on public transport fare collection technology that provides patrons with a wide range of payment options whilst minimizing the transaction cost.

Why should walkers and cyclists pay when motorists don't?

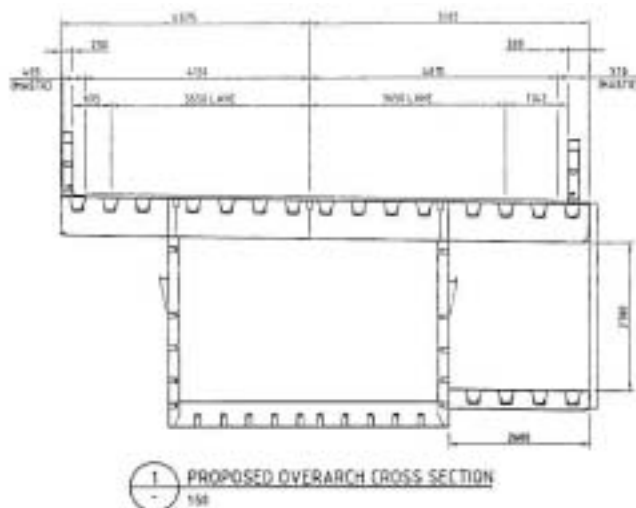
Ideally there would be no toll for walking and cycling access, but the reality is that the Pathway is highly unlikely to happen within the next 25 years without a toll. Motorists paid a toll to use the Auckland Harbour Bridge for 25 years, from 1959 until 1984.

What about the clip-on's ability to carry the loading?

The eastern (south-bound) clip-on has ample capacity, as detailed by Beca's September 2009 analysis. The tolling system's control gates can be used to monitor the number of people using the Bridge to ensure extreme live loads cannot occur.

Has this option for a Pathway under the deck been considered previously?

Yes, this option was explored by Beca in their Feasibility Report (see diagram below) and in the Maunsell access study, but was disregarded early as "Security was found to be a defining issue". However, by tolling the Pathway, a high level of security is funded to ensure user safety, and the toll itself has some security benefits (reducing the likelihood of loitering).



Is it a priority for the region?

Yes, the walk/cycle way not only fixes most the most significant gap in Auckland's walking and cycling network, it is a cornerstone project for improving walking and cycling in the Auckland region - similar to Britomart Station being the cornerstone project for the revival of Auckland's once dreadful rail passenger service.

Currently Auckland has the reputation of being one of the worst cities in the world for walking (pg 28, ARTA's *Sustainable Transport Plan 2006-16*) and only 1% of Aucklanders regard cycling as "always safe" (ARC's *Community Perceptions Report 2007*).

Do Aucklanders want it?

Yes, in November 2007 Y&R commissioned market research to gauge the level of support amongst Aucklanders for the walkway and cycleway. Very strong support was revealed, with 76% in support, 12% against and 12% unsure. See the survey results at: www.caa.org.nz/AHB/Support/MarketResearch.pdf

Aren't the clip-ons too unstable for a walkway and cycleway?

The clip-ons are currently undergoing major strengthening, which includes the addition of 700 tonnes of steel at an estimated cost of \$45 million. This strengthening will reduce movement, making the walk/cycleway safe and comfortable:

"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
www.caa.org.nz/AHB/Comms/TransitBdPaper6189.pdf

Isn't it too steep to walk or cycle over the Auckland Harbour Bridge?

The gradient of the Bridge is 3 degrees (5%). This is considered a gentle grade and rated "easy" by the National Cycleway guidelines.

Will the Pathway affect the flow of traffic across the Bridge?

No, the shared Pathway is under the traffic deck and does not affect the configuration of traffic lanes in any way.



7,500 Marathon runners run over the Auckland Harbour Bridge in November each year

Why not wait until the next harbour crossing, or use racks on the front of buses to carry bikes?

The Transport Agency's Waitematā *Next Harbour Crossing Study 2008* determined the next harbour crossing shall be a tunnel for vehicles, with walking and cycling access to be provided on the existing Auckland Harbour Bridge. However, waiting for the harbour road tunnel to be built means waiting 25 years or more for walking and cycling access across the harbour.

Putting bikes on buses to cross the Bridge is not a satisfactory option, as cyclists enjoy cycling for fitness and convenience, and don't want the delays and financial cost of taking a bus. A bus fitted with a rack can carry a maximum of 3 bicycles at time, thus it is not appropriate for the estimated demand of 600 to 1,500 cyclists per day.

Cyclists currently use ferries to cross the harbour; however the demand is now exceeding capacity at peak times, hence Fullers Ferries support walking and cycling access on the Auckland Harbour Bridge.

What about the “ANZAC” Bridge?

The ANZAC Bridge has been suggested to replace the existing Auckland Harbour Bridge and do away with the need for a tunnel. It would run through the Wynyard Quarter development across the harbour to the Onewa Rd/SH1 interchange.

Whilst it has some merit, it will not proceed, as its impact on the Wynyard Quarter waterfront is too severe. Furthermore, the existing Auckland Harbour Bridge has a long economic life expectancy, and the demand for future roading capacity across the Waitemata Harbour can be met with the proposed commuter rail tunnel and the transfer of road freight to coastal shipping and rail freight services.

Appendices

Appendix 1: Auckland Harbour Bridge Pathway Projected Revenue ("Low usage" scenario)

		Fare		Mon	Tue	Wed	Thu	Fri	Sat	Sun	Weekly Total	One way only %	Return trip %	TOTALS	
		One Way	Return												
Off-peak (May - Sept)		21.7 weeks per year										60%	40%		
Walking	Casual	Adults	\$2.50	\$3.00	75	75	75	75	350	425	1,150	\$1,725.00	\$1,380.00		
		Children	\$1.00	\$1.50	0	0	0	0	140	170	310	\$186.00	\$186.00		
Cycling	Casual	Adults	\$2.50	\$3.00	40	40	40	40	300	400	900	\$1,012.50	\$1,485.00		
		Children	\$1.00	\$1.50	0	0	0	0	120	160	280	\$126.00	\$231.00		
Walking	Commuter	Adults	\$0.95	\$1.90	200	200	200	200	200	200	1,400	20%	80%	\$266.00	\$2,128.00
Cycling	Commuter	Adults	\$0.95	\$1.90	850	850	850	850	500	600	5,350	\$1,016.50	\$8,132.00		
				1,165	1,165	1,165	1,165	1,165	1,610	1,955	9,390	\$4,332.65	\$13,543.35	\$387,313	
Shoulder (Mar-Apr & Oct-Dec)		21.7 weeks per year										55%	45%		
Walking	Casual	Adults	\$2.50	\$3.00	150	150	150	150	450	550	1,750	\$2,406.25	\$2,362.50		
		Children	\$1.00	\$1.50	0	0	0	0	180	220	400	\$220.00	\$270.00		
Cycling	Casual	Adults	\$2.50	\$3.00	150	150	150	150	550	550	1,850	40%	60%	\$2,081.25	\$3,052.50
		Children	\$1.00	\$1.50	0	0	0	0	220	220	440	\$198.00	\$363.00		
Walking	Commuter	Adults	\$0.95	\$1.90	220	220	220	220	400	400	1,900	20%	80%	\$361.00	\$2,888.00
Cycling	Commuter	Adults	\$0.95	\$1.90	1,100	1,100	1,100	1,100	1,000	900	7,400	\$1,406.00	\$11,248.00		
				1,620	1,620	1,620	1,620	1,620	2,800	2,840	13,740	\$6,673.10	\$20,185.40	\$581,934	
Peak (Jan-Feb)		8.7 weeks per year										50%	50%		
Walking	Casual	Adults	\$2.50	\$3.00	450	450	450	450	1,400	1,600	5,250	\$6,562.50	\$7,875.00		
		Children	\$1.00	\$1.50	180	180	180	180	560	640	2,100	\$1,050.00	\$1,575.00		
Cycling	Casual	Adults	\$2.50	\$3.00	350	350	350	350	650	650	3,050	35%	65%	\$2,668.75	\$5,947.50
		Children	\$1.00	\$1.50	140	140	140	140	260	260	1,220	\$427.00	\$1,189.50		
Walking	Commuter	Adults	\$0.95	\$1.90	250	250	250	250	600	600	2,450	15%	85%	\$349.13	\$3,956.75
Cycling	Commuter	Adults	\$0.95	\$1.90	1,100	1,100	1,100	1,100	1,000	1,000	7,500	\$1,068.75	\$12,112.50		
				2,470	2,470	2,470	2,470	2,470	4,470	4,750	21,570	\$12,126.63	\$32,657.75	\$388,131	

See next page for list of key assumptions

Annual Toll Revenue		\$1,357,379
Salaries, Operations & Marketing	18%	\$245,000
Insurance	4%	\$60,000
Security	9%	\$125,000
Maintenance	18%	\$240,000
Toll collection	9%	\$120,000
Total cost before debt servicing/repayment:		\$790,000
Surplus to service/repayment debt:	42%	\$567,379
Investment able to be serviced by Pathway NPV @ 10%		\$10,542,345

Appendix 1 (continued)

Key assumptions made in preparing the Auckland Harbour Bridge Pathway Projected Revenue:

1. The usage is forecast to grow at 5% each year; the long-term growth rate for cycling in Auckland City is 5.2% (LTNZ Research Report No.340).
2. The forecast growth of 5% is supported by the Maunsell Access Study (October 2008) which advised "Long-term increases could also result if the facility was targeted as a tourist destination".
3. The weekday walking commuter numbers are based Maunsell's analysis, determining an average demand of about 280 pedestrians per day but which could be expected to be far greater if the Pathway is promoted as a tourist attraction (which the Pathway will be, using some of the tolling revenue). Maunsell further advises: "The initial demand is likely to far exceed the numbers estimated, especially during weekends and holiday periods".
4. The daily weekday cycle numbers are based on the Opus "Auckland Harbour Bridge Cycle Demand Estimation" (July 2008) study which determined an initial demand of 1,580 users.
5. Forecasting of use excludes any major events or special occasions that could attract large numbers (eg yacht racing, cruise ship). NZTA's market research determined that 318,000 Aucklanders were likely to attend an official walk-across event to commemorate its 50th anniversary. (KeyResearch, Oct 2008).
6. The demand estimate excludes the potential for commuters to take the bus to the northern side and commute into the CBD by foot. It is presumed that car parking restrictions on Northcote Point will prevent commuters driving to the northern side and walking or cycling from there. However, the potential for a "park & cycle" facility is worthy of further investigation.
7. The demand estimate excludes the potential for enhanced public transport connections (such as bus services equipped with bike racks) at the northern and southern sides to encourage commuters to walk or cycle over the Pathway.
8. Toll increases by no more than CPI.
9. 40% of casual cyclists will have children with them; there are no commuter children.
10. CCTV surveillance will be provided by Police Control.
11. Local council will over time enhance the local walking and cycling connections.
12. Maintenance is based on a 25-year warranty period.
13. The Pathway operational costs increase at an average of 2% pa.

Appendix 2 Pathway connections to the streets north and south

Northern side

At the end of the box girder construction, the proposed Pathway comes down in between the pylons, as indicated by the orange arrow.



The Pathway connects to North Shore's Princes Street, providing access to Northcote, AUT University, Glenfield, Birkenhead, Takapuna, etc.



A walkway leads directly from the proposed Auckland Harbour Bridge Pathway to Northcote Point ferry terminal and bus stop, 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.



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



Southern side

The Pathway comes into Westhaven and directly connects to Auckland City's 50-km cycling circuit, which provides access to the CBD via Westhaven Drive and into Ponsonby via Shelley Beach Road or Curran Street. The "Link" bus service through Ponsonby provides a frequent and direct service into the CBD and Britomart.

