

MINISTERIAL BRIEFING NOTE

Subject	NZ Upgrade Programme – Northern Pathway Options Summary
Date	11 May 2021
Briefing number	BRI-2174
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Contact(s) for telephone discussion (if required)				
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Action taken by Office of the Minister

- Noted
- Seen by Minister
- Agreed
- Feedback provided
- Forwarded to
- Needs change [please specify]
- Withdrawn
- Overtaken by events

11 May 2021

Minister of Transport

Minister of Finance

NORTHERN PATHWAY OPTIONS SUMMARY

Executive Summary

1. This briefing provides you with a summary of the options for progressing the Northern Pathway project, as requested by you in a letter to the Waka Kotahi Board Chair on 3 May 2021.
2. A walking and cycling connection across the Waitematā harbour is a nationally significant project and part of the strategic regional network that has been delivered over the last ten years. It would provide increased multi-modal accessibility across the harbour and deliver mode shift that would reduce vehicle kilometres travelled (Vkt) on the busiest section of the NZ transport system, likely reducing potential emissions.
3. The Northern Pathway walking and cycling path is a critical missing strategic link in the Auckland active modes network. It will provide a walking and cycling link across the Waitematā Harbour, connecting the north shore of Auckland with the central isthmus, linking the extensive walking and cycling investment already made by Waka Kotahi and Auckland Transport (circa \$300-400m) on either side of the harbour.
4. The Northern Pathway project was included in the NZ Upgrade Programme announced by Government in January 2020. The budget allocation for this project set out in the Establishment Report is \$360m.
5. The proposed solution was based on the assumption the walking and cycling facility could be attached to the existing Auckland Harbour Bridge. However, work undertaken to date by Waka Kotahi and the established Northern Pathway Alliance has determined that it is not feasible to continue with the initial solution of a walking and cycling path attached to the existing structure.
6. Several capital and operational solutions have been considered and assessed by Waka Kotahi including construction of a separate structure, a gondola option and operational solutions including a ferry service and a dedicated bus-based solution.
7. Waka Kotahi's baseline estimate for delivering the Northern Pathway as a separate structure is \$760m (P50) - \$830m (P95). It should be noted this figure was estimated before a preferred solution was identified. Waka Kotahi's recommended full height structural bridge option has a slightly lower estimated cost of \$650m (P50) - \$735m (P95), subject to further design decisions.
8. The Ministry of Transport and the Treasury (Officials) note Officials have not received advice from the NZUP Oversight Group's technical advisors on the process used to develop this estimated cost range for the preferred option.
9. Waka Kotahi's advice focuses on the most efficient way of providing a walking and cycling connection across the harbour in the context of the wider strategic approach to the Auckland

transport system. It does not comment on whether this investment is good when compared to other multi-modal investments in either Auckland or around the country.

10. The Ministry of Transport and the Treasury are mindful that the increased costs relative to benefits mean that the preferred option now creates significant opportunity costs. Other investments may result in higher value mode-shift outcomes. As such, Ministers should request further consideration and a better understanding of why this proposed investment is necessary in terms of the wider strategy for the regional network and Waitematā Harbour crossings and revised value for money assessments. Given the amount in question and interdependencies with potential future options, Ministers should be certain this revised option:
 - 10.1. Provides value for money relative to other potential mode-shift investments; and
 - 10.2. Is a critical investment in the strategic context of the wider future Waitematā Harbour Crossing options in terms of trade-offs and co-dependencies.

Purpose

11. On 3 May 2021, you wrote to Waka Kotahi's Board Chair and indicated:
 - 11.1. "given its significant change in scope, we believe [Northern Pathway] requires separate consideration by Cabinet to the remainder of the Programme projects. We would like to put forward to Cabinet for consideration at the earliest opportunity an options paper setting out the key choices for the Government. These should include the preferred option put forward by Waka Kotahi, the option of using existing lanes on the current bridge structure, and the options of bringing forward delivery of an additional harbour crossing that includes a walking and cycling component and an extension of the Northern busway.
12. This briefing provides you with a summary of the options for progressing the Northern Pathway project, as requested by you in a letter to the Waka Kotahi Board Chair on 3 May 2021.
13. In line with your request, Waka Kotahi's advice focuses on the most efficient way of providing a walking and cycling connection across the harbour in the context of the wider strategic approach to the Auckland transport system. It does not comment on whether this investment is prioritised when compared to other multi-modal investments in either Auckland or around the country.
14. This briefing consolidates the advice provided to the Minister in April 2021 (BRI-2118) and summarises the assessment work undertaken to date on the Northern Pathway project. It should be noted that both briefings provide a consolidated perspective arising from multiple transport studies undertaken over the past decade.
15. It also provides a recommendation on Waka Kotahi's preferred solution for a walking and cycling path across the Waitematā Harbour.
16. This briefing responds to your request on behalf of Waka Kotahi, the Ministry for Transport and Treasury. The Ministry and Treasury have had significant input into this paper.

Background

17. A walking and cycling connection across the Waitematā harbour is a nationally significant project, part of the strategic regional network that has been delivered over the last ten years. It would provide increased multi-modal accessibility across the harbour and deliver mode shift that

would reduce vehicle kilometres travelled (Vkt) on the busiest section of the NZ transport system, providing a reduction in carbon.

18. The Northern Pathway walking and cycling path is a critical missing strategic link in the Auckland active modes network. It will provide a walking and cycling link across the Waitematā Harbour, connecting the north shore of Auckland with the central isthmus, linking the extensive walking and cycling investment already made by Waka Kotahi and Auckland Transport (circa \$300-400M) on either side of the harbour. This will provide transport, environmental and user health benefits as well as providing increased access to one of the world's great harbours.
19. Auckland is one of the most car dominated cities in the world with around 70% of all journeys to work made by car, with many of these journeys able to be undertaken by cycling or walking.
20. The National and Regional transport policies are aligned in the need to increase mode choice for users and to increase active mode share, not only to address the overall performance of the transport system, but also for the health benefits of the system users. The latest RLTP is seeking that 70% of new trips are absorbed by PT or active modes.
21. The Northern Pathway project was included in the NZ Upgrade Programme announced by Government in January 2020. The budget allocation for this project set out in the Establishment Report is \$360m.
22. The Additional Waitematā Harbour Crossing Connections joint Auckland Transport/ Auckland Council/ Waka Kotahi business case requires the Northern Pathway to be in place.
23. The proposed scheme was based on the assumption that the proposed walking and cycling facility could be attached to the existing Auckland Harbour Bridge. However, work undertaken to date by Waka Kotahi and the established Northern Pathway Alliance has determined that it is not feasible to continue with this plan.
24. A summary table of the strategic assessment of all options considered by Waka Kotahi is attached as Appendix 1: Northern Pathway Strategic Assessment Table.

Further discounted options

25. Two additional options were explored and have been discounted, namely Sky Path and utilising existing lanes on the bridge for walking and cycling purposes.
26. The SkyPath option does not meet the current loading standards in the bridge manual and would require restrictions to be in place to operate safely.
27. Utilisation of the existing lanes has also been considered. To operate safely, 2 lanes would need to be allocated to walking and cycling resulting in a significant impact on bridge traffic capacity during peak hours (20-40% capacity impact). This impact on capacity would also affect current public transport services. Converting a single lane was also considered, however this is not considered safe given the resultant width and speed differential between users.
28. Removing a lane will increase emissions. Modelling indicates the resultant congestion will encourage general traffic to uptake the alternative longer SH16 route and these emissions will exceed any reductions from users transferring to walking and cycling.

Viable options considered

29. Several capital and operational solutions have been considered and assessed by Waka Kotahi including construction of a separate structure, a gondola option and operational solutions including a ferry service and a dedicated bus-based solution.
30. Although the operational solutions could be implemented in a relatively short time period (subject to consenting) they are only considered to be an interim solution as they don't provide a seamless walking and cycling connection as part of the wider Auckland active mode network.
31. These options require a transfer for users (onto a bus or ferry to get across the harbour) and would therefore be less attractive, offer less benefits (including health related benefits) and also have operational complexities due to capacity constraints at transfer points. There is also the challenge of accommodating these services within the current fare structures on parallel services. Initial discussions with Auckland Transport on these issues have commenced.
32. A number of structural solutions have been considered by Waka Kotahi including a dedicated walking and cycling bridge or a multi-modal bridge to accommodate walking, cycling and public transport services. The analysis showed that:
 - 32.1. The current 'pinch point' for traffic in the corridor is not the bridge itself, but rather the approaches on either side, which is why dedicated bus lanes are provided either side of the bridge and not on the bridge itself.
 - 32.2. Therefore, providing additional bus lanes across the harbour has reduced economic benefit.
 - 32.3. To fully realise the benefits of additional capacity across the harbour (for public transport) there would need to be an extension of the dedicated busway lanes right up to the bridge on the northern side and the provision of permanent bus lanes on the southern side (from Fanshawe Street to Shelly Beach Road). These two areas are particularly constrained (property, community and environmental impacts) making these works very expensive and the benefits are not likely to justify this level of investment.
 - 32.4. There would still be the need for further investment across the harbour in the future (Additional Waitematā Harbour Crossing Connections), including for public transport (direct rail connection to Wynyard Quarter).
 - 32.5. Therefore, the benefits return period for this additional public transport investment now would be relatively short, as it would become redundant when the new crossing was operational.
33. Several structural forms have also been considered, including a full height bridge to align with the current Auckland Harbour bridge and mid-height options including an opening span in the centre. The mid-height and opening span options would either impact navigational height requirements or affect user experience. The opening span option would also further increase the cost of the project.

Preferred option endorsed by the Waka Kotahi Board

34. The Waka Kotahi Board has endorsed the full height bridge option as a dedicated walking and cycling path only. The Board has also recommended consideration be given to an interim

operational solution for the next circa 5 years, which is the time required to have the separate structure fully operational.

35. This solution does not include a public transport lane, due to the significant additional investment that would be required on either side of the proposed structure to allow for the appropriate connections. Waka Kotahi estimates an additional investment of circa \$1 billion (in addition to the new bridge) would be required for the work on either side of the proposed structure and significant additional public transport investment in the corridor would still be required.
36. The preferred option is strongly aligned with the GPS and the current Waka Kotahi Investment Decision Management Framework (IDMF) due to mode shift, reduced emissions and completion of an established active mode network.

An additional Waitematā Harbour crossing will still be required

37. Another option that was considered was to wait for or accelerate the long term additional Waitematā Harbour crossing elements, with the assumption that once these are in place there would be sufficient 'spare' capacity on the existing bridge to provide for walking and cycling.
38. The challenge with this approach (putting aside the timing delay of 15-20 years) is that with the long-term solution in place, whilst there would theoretically be sufficient spare capacity (2 lanes only just) upon which to provide walking and cycling this would result in the existing bridge having all lanes fully utilised once again.
39. An important driver of the long-term crossing solution is to provide relief to the existing bridge so that the increasingly onerous maintenance requirements can be undertaken whilst maintaining its operation. If all lanes were being utilised this would restrict this maintenance resulting in increased costs and delays to users. Significant disruption is anticipated if this were the case as the scale of required maintenance is not small.
40. The busway also needs to continue to operate on the existing bridge, and again taking flexibility away from the existing bridge from day one to manage the many competing needs after the multi-billion dollar investment that the long term harbour crossing option would be is not ideal.
41. Putting the walking and cycling link in the proposed tunnels was also considered, however this has significant (fatal flaw) user safety challenges and would also not attract the forecast demand due to the poor user experience.
42. It is therefore considered that the current option is compatible with the long-term corridor plans and is considered to be a 'no regrets' investment.

Cost and benefit implications

43. Waka Kotahi's baseline estimate for delivering the Northern Pathway as a separate structure is \$760m (P50) - \$830m (P95). It should be noted this figure was estimated before a preferred solution was identified. Waka Kotahi's recommended full height structural bridge option has a slightly lower estimated cost of \$650m (P50) - \$735m (P95), subject to further design decisions.
44. While this is a significant cost, when considered in the context of the wider investment required for this corridor into the future, i.e. the Additional Waitematā Harbour Crossing (AWHC), which will be circa \$15Bn, this is not the most significant cost.

45. The benefit cost ratio (BCR) for the project is currently estimated to be around 0.4-0.6. However, this assessment is based on an old assessment and Waka Kotahi believes it does not consider the full benefits for the scheme. When this is reassessed, we believe the BCR will be more favourable due to the recommended option allowing improved user amenity benefits, greater resilience, increased land use forecasts and therefore demand, changes to how micro-mobility is addressed and improvements to Economic Evaluation Manual (EEM) that lengthen the benefits period.
46. This project has the opportunity to provide a step change in mode shift and carbon emissions reduction in the country's busiest corridor. And whilst this is an expensive scheme, providing this scale of intervention for user needs to be done right to maximise the considerable opportunity to realise the step change in outcomes.
47. Waka Kotahi believes all modes will ultimately need to be provided for across the harbour and this is supported by all the historic studies into the AWHC and aligns with the GPS. We therefore believe this option is the most efficient way to achieve the Walking and Cycling component either now or into the future.

Ministry of Transport and Treasury advice

48. The Ministry and the Treasury consider that the current preferred option, combined with its increased costs, represents a significant change from the case for the Northern Pathway project as initially funded within the NZUP allocation.
49. We note that the revised cost estimates are now nearly twice the initial NZUP allocation for the project, and the benefit-cost ratio is around 0.4 – 0.6. This is based on Waka Kotahi's calculations that considered benefits from a 2019 business case (BRI-2118 refers). We consider that Ministers should expect a revised assessment of the project's benefits and costs, and further advice on how this relates to the strategic importance of the project.
50. As set out in the draft document Hīkina te Kohupara Transport Emissions Pathways to net zero, currently under Cabinet consideration, infrastructure investment choices are an important lever in reducing transport emissions. Officials understand the role that active modes such as cycling play in reducing emissions and are mindful of the importance in this link for enabling active modes in Auckland. However, at this level of cost we are also aware that the preferred option could now represent a significant opportunity cost in terms of other transport investment options that may provide better value in terms of mode shift and emissions reduction, such as in public transport.
51. We consider that the preferred intervention should consider the wider and longer-term strategic context of the surrounding transport network needs for Auckland and any plans for a second harbour crossing. We understand that Waka Kotahi has undertaken significant work regarding the long-term options for the AWHC and are of the view that a walking and cycling link is a critical element in a long-term solution. However, we consider the assumptions that underpin this position should be clearly explored and explained before Ministers commit funding, particularly in terms of timing, cost, trade-offs and efficiencies.
52. We consider that Ministers should consider more explicitly the relationship between the proposed solution and the AWHC business case. This could include exploring the cost at which it becomes more efficient to consider a more substantive structure that includes public transport links, or why this option is not viable.
53. Any decision by Cabinet to invest now should consider:

- what else can be done to address active modes in other cities or regions
 - the short, medium and long-term needs of the transport network in Auckland. For example, can the demand in the short to medium term be resolved by a bus or ferry option that provides an interim service, while a more enduring solution is investigated further.
 - a more substantive case for why the preferred option is a critical component in the long-term strategy for the harbour crossing, and for more detailed advice on the co-dependencies and trade-offs this option now represents given the increased cost.
 - the views of Auckland Council and Auckland Transport on the preferred option for the project, to ensure there is alignment with the strategic direction set out in the Auckland Transport Alignment Project (ATAP).
54. If you agree with this approach, Ministry of Transport and Treasury officials will work closely with Waka Kotahi and other key stakeholders to develop a strategic case for identifying the best intervention, and provide further advice to Joint Ministers, before confirming the appropriate funding and purchase arrangements for the project.
55. This advice would include consideration of a second harbour crossing, the future demands of the surrounding transport network, and alignment with the strategic direction set out in the Auckland Transport Alignment Project (ATAP) as agreed by Cabinet. Additionally, we will advise on the value for money proposition and opportunities to best align and phase investment to support outcomes.
56. If Cabinet agrees to not proceed with investment now and to instead consider a strategic case more closely, we recommend setting aside an allocation for this project to progress with the interim solution proposed by Waka Kotahi. We also recommend ring-fencing the initial NZUP allocation while Ministers consider the strategic case. We note that this will not be sufficient to fund the full cost of the entire project and additional funding (Crown or otherwise) will be required. We can provide you with further advice on this
57. Given the above, we would also recommend that any communications on the Northern Pathway project manage expectations by focusing on the intention to ensure that there is a strategic connection across the harbour, and that there is a strong focus on finding an enduring solution that represents value for money.

Risks

58. As set out in the Ministerial advice in April 2021 (BRI-2118 refers), there are challenges associated with the delivery of this project including statutory approvals, the need to effectively engage with stakeholders and Iwi partners and the ongoing risk of material availability in the current COVID-19 environment.
59. Waka Kotahi notes this is a significant project in the Auckland landscape and has strong views and perspectives from partners, stakeholders and the community. If the project is delayed or stopped altogether, there will be negative response.

It is recommended that you:

	Minister of Finance	Minister of Transport
Option 1 (Waka Kotahi preferred approach)		
1. Direct the Ministry of Transport and Treasury to draft a Cabinet paper on behalf of the Ministers of Finance and Transport (Joint Ministers) that is consistent with the following recommendations.	Yes / No	Yes / No
2. Agree Waka Kotahi has effectively outlined the options available within the strategic context of the wider transport network needs and the paper submitted to Cabinet for consideration should reflect this.	Yes / No	Yes / No
3. Agree Waka Kotahi's recommended solution is your preferred solution.	Yes / No	Yes / No
4. Note Waka Kotahi's recommendation to consider an interim operational solution for the next circa 5 years, which is the time required to have the separate structure fully operational.	Noted	Noted
5. Note Waka Kotahi will work with the Ministry and Treasury to ensure they have a thorough understanding of the work done to date and are able to provide Ministers with clear next steps and an Options Paper, with updated benefit and cost information, for submission to Cabinet.	Noted	Noted
Option 2 (Ministry and Treasury preferred approach)		
6. Note that the increased cost of Waka Kotahi's preferred option represents a significant change from the initial project as proposed through NZUP and there may be other investments that deliver better value in terms of mode-shift benefits and outcomes.	Noted	Noted
7. Note that officials consider that further work is required to demonstrate that Waka Kotahi's preferred option is the best in relation to the strategic context of the wider future Alternative Waitematā Harbour Crossing.	Noted	Noted
8. Agree further consideration of the wider and longer-term strategic context of the surrounding transport network needs for Auckland, as well as an updated value for money assessment, is required.	Yes / No	Yes / No
9. Agree to ring-fence an amount within the NZUP Northern Pathway allocation to progress with the selected interim solution proposed by Waka Kotahi and allow further investigation of options	Yes / No	Yes / No

**Minister of
Finance**

**Minister of
Transport**

10. **Agree** Ministry of Transport and Treasury officials will work closely with Waka Kotahi to develop a strategic case for identifying the best intervention, and provide further advice to Joint Ministers, before confirming the appropriate funding and purchase arrangements for the project.

Yes / No

Yes / No



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Brett Gliddon General Manager, Transport Services, Waka Kotahi
Date: 11 May 2021



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Tim Herbert Manager, Investment, Ministry of Transport
Date: 11 May 2021



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David Taylor Manager, National Infrastructure Unit, The Treasury
Date: 11 May 2021

.....
Hon Michael Wood, Minister of Transport
Date:

.....
Hon Grant Robertson, Minister of Finance
Date:

ATTACHMENT 1: NORTHERN PATHWAY— STRATEGIC ASSESSMENT

Criteria	Option 1 – Ferry (operational)	Option 2 – Bike bus (operational)	RECOMMENDED Option 3 – Separate structure – high height	Option 4 – Separate structure – mid height fixed or opening	Option 5 – Separate structure – walking, cycling & public transport	Option 6 - Gondola	Option 7 – use existing bridge lanes
Description	<ul style="list-style-type: none"> Provide a dedicated ferry service, operating from 6am to 12am daily on a 15 min frequency Northcote to Wynyard 	<ul style="list-style-type: none"> Provide a dedicated bus for active mode users, operating 6am to 12am daily on a 10 min frequency Stafford to Westhaven 	<ul style="list-style-type: none"> Dedicated structure at the same navigational clearance of the existing bridge Match height of existing bridge 	<ul style="list-style-type: none"> Dedicated structure at the height of lower truss member of the existing bridge If opening (to allow full height vessels to go through as required) additional piers (to the number of the existing structure) to narrow 'opening' section to approximately 100m. Mid height entire length 	<ul style="list-style-type: none"> Dedicated structure with capacity for walking, cycle and public transport. 	<ul style="list-style-type: none"> Provides a gondola for active mode users from Northcote to Westhaven, operating 6am to 12am daily 	<ul style="list-style-type: none"> Two lanes used to create dedicated walking and cycling space
Achieve Original Project Outcomes	<ul style="list-style-type: none"> Requires transfer for users, providing a lesser user experience Option not available 24/7, impacting user experience 	<ul style="list-style-type: none"> Requires transfer for users, providing a lesser user experience Option not available 24/7, impacting user experience 	<ul style="list-style-type: none"> Consistent with NZUP scope as originally promised Provides a continuous and permanent connections across the harbour 24/7 	<ul style="list-style-type: none"> Consistent with NZUP scope as originally promised Provides a continuous and permanent connections across the harbour 24/7 	<ul style="list-style-type: none"> Consistent with NZUP scope as originally promised Provides a continuous and permanent connections across the harbour 24/7 	<ul style="list-style-type: none"> Requires transfer for users, providing a lesser user experience Option not available 24/7, impacting user experience 	<ul style="list-style-type: none"> Provides a continuous and permanent connection across the harbour 24/7 Would have significant adverse impact on wider transport system
Achieve Broader Outcomes <ul style="list-style-type: none"> Increased Housing Reduced Carbon 	<ul style="list-style-type: none"> Low - This option would provide increased multi-modal accessibility across the harbour and deliver mode shift that would reduce Vkt, on the busiest section of the NZ transport system, providing a reduction in carbon, however there are carbon emissions required to achieve these. 	<ul style="list-style-type: none"> Low - This option would provide increased multi-modal accessibility across the harbour and deliver mode shift that would reduce Vkt, on the busiest section of the NZ transport system, providing a reduction in carbon, however there are carbon emissions required to achieve these. 	<ul style="list-style-type: none"> Medium - This option would provide increased multi-modal accessibility across the harbour and deliver mode shift that would reduce Vkt, on the busiest section of the NZ transport system, providing a reduction in carbon 	<ul style="list-style-type: none"> Medium - This option would provide increased multi-modal accessibility across the harbour and deliver mode shift that would reduce Vkt, on the busiest section of the NZ transport system, providing a reduction in carbon 	<ul style="list-style-type: none"> Medium - This option would provide increased multi-modal accessibility across the harbour and deliver mode shift that would reduce Vkt, on the busiest section of the NZ transport system, providing a reduction in carbon 	<ul style="list-style-type: none"> Low - This option would provide increased multi-modal accessibility across the harbour and deliver mode shift that would reduce Vkt, on the busiest section of the NZ transport system, providing a reduction in carbon, however there are carbon emissions required to achieve these. 	<ul style="list-style-type: none"> Low – This option would provide increased multi-modal accessibility across the harbour and deliver mode shift that would reduce Vkt, on the busiest section of the NZ transport system. However, this would result in an increase in longer distance trips around the harbour for many vehicles, delivering an overall increase carbon

COMMERCIAL IN CONFIDENCE

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Confidence delivering within budget allocation	<ul style="list-style-type: none"> Capital investment of \$58m for terminal upgrades and ferries \$6m OPEX per annum 	<ul style="list-style-type: none"> Capital investment of \$30m for terminal upgrades and buses required \$6m OPEX per annum 	<ul style="list-style-type: none"> The NZUP Baseline activity has a revised cost estimate of \$760m - \$830m Current estimates indicate capital investment of \$650-\$735m will be required for this option Capital cost is in the order of twice the current Establishment Report budget for the project 	<ul style="list-style-type: none"> The NZUP Baseline activity has a revised cost estimate of \$760m - \$830m Current estimates indicate capital investment of \$650-\$730m (fixed) or \$750-\$830 (opening) will be required for these options Capital cost is in the order of twice the current Establishment Report budget for the project 	<ul style="list-style-type: none"> Increase of at least 10% over and above walking/cycling only separate structures Would also require circa \$1B further investment for work on either side of structure. Would also require further PT investment in the corridor 	<ul style="list-style-type: none"> Capital investment similar to the bridge options is required, along with OPEX of approximately \$5m per annum Capital cost is in the order of twice the current Establishment Report budget for the project 	<ul style="list-style-type: none"> The costs would likely fit within the allocated budget, however wider network changes would be likely that could be significant and are as yet undefined.
Deliverability	<ul style="list-style-type: none"> Makes use of existing infrastructure Implementation is forecast to take approximately 24 months Operational challenges in providing sufficient capacity (berthing) for forecast demand Operational complexity with running in parallel with existing (paid) ferry service Some capital works required at Northcote wharf to accommodate additional ferries 	<ul style="list-style-type: none"> Makes use of existing infrastructure Implementation is forecast to take approximately 12 months Operational challenges in providing sufficient capacity (city end bus stop capacity) for forecast demand Operational complexity with running in parallel with existing (paid) bus service Some capital works required at Northcote wharf to accommodate additional ferries 	<ul style="list-style-type: none"> Implementation forecast to take approximately 5 years from approvals to implementation 	<ul style="list-style-type: none"> Implementation forecast to take approximately 5 years from approvals to implementation 	<ul style="list-style-type: none"> Implementation for the bridge structure would be similar to Options 3 and 4. An estimate for the timeframe of the further work has not been undertaken. Given the impact on Westhaven Marina to the south and the coastal marine area to the north, it is anticipated this option would take the longest to implement and carry statutory approvals risk 	<ul style="list-style-type: none"> Implementation is forecast to take approximately 3 years to complete Operational complexity with running in parallel with existing (paid ferry service) Statutory approvals carry risk with scale of landings at either end of the option. 	<ul style="list-style-type: none"> Using present day volumes, taking the required two lanes out to provide for walking and cycling across the harbour (2 lanes needed to provide active modes safely) the current demand would exceed the available capacity (3 lanes in each direction) from 5am to 8pm on an average weekday This excludes any allowance for growth (which is forecast)

COMMERCIAL IN CONFIDENCE

Criteria	Option 1 – Ferry (operational)	Option 2 – Bike bus (operational)	RECOMMENDED Option 3 – Separate structure – high height	Option 4 – Separate structure – mid height fixed or opening	Option 5 – Separate structure – walking, cycling & public transport	Option 6 - Gondola	Option 7 – use existing bridge lanes
Supporting investment		<ul style="list-style-type: none"> Increase in OPEX and bus services would be required Land purchase would be required in the city Centre to enable a bus termination point. 			<ul style="list-style-type: none"> Widening of SH1 for bus priority to both the North and south of the Harbour bridge would be required a part of the core scope. Additional upgrades would be required to a number of bus way stations to be able to accommodate higher frequency of services Increased PT services 		<p>Enhancements to wider transport network</p> <ul style="list-style-type: none"> PT services
Other implications	<ul style="list-style-type: none"> Scalable to meet demand as it changes (increases) over time 	<ul style="list-style-type: none"> Scalable to meet demand as it changes (increases) over time Makes use of existing infrastructure 		<ul style="list-style-type: none"> Lower height provides enhanced user experience (reduced gradients) Lower height restricts current type of vessels that can go under the bridge If opening, two additional piers required into the harbour (compared to other structure options) 	<ul style="list-style-type: none"> Provides increased PT accessibility and segregation along entire trip length 	<ul style="list-style-type: none"> Scalable to meet demand as it changes (increases) over time High capacity Opportunity for increased tourist trips Less intrusion into the seabed compared to bridge options 	<ul style="list-style-type: none"> By 2046+ when the additional cross harbour capacity (through a tunnel) is provided, even then the removal of 2 lanes would mean there was no spare capacity/resilience during peak periods (which was part of the rationale for the tunnel, be provide increased