

**To:** Rowan Schwynn (Vitruvius)  
**From:** Matt Soper, Alan Kerr (Arc Advisory)  
**Project:** Harbour Quays Public Transport Corridor

**Job No:** 24-023  
**Date:** 17 March 2026

**Technical Note 1:** Harbour Quays – Economic Assessment

# Harbour Quays – Proposed Public Transport Corridor Economic Assessment

## 1 Introduction

### 1.1 Overview

This technical memo details the methodology and outputs for the economic appraisal for the proposed “second spine” Harbour Quays Public Transport Corridor. The economic analysis has undergone an independent peer review (Flow Transportation Specialists) and has been accepted as being fit-for-purpose.

### 1.2 Preferred option

The proposed bus corridor would run along Wellington’s waterfront quays between the railway station and the intersection of Cambridge and Kent terraces with Courtenay Place. The key desired outcomes of a second bus corridor through the city centre are<sup>1</sup>:

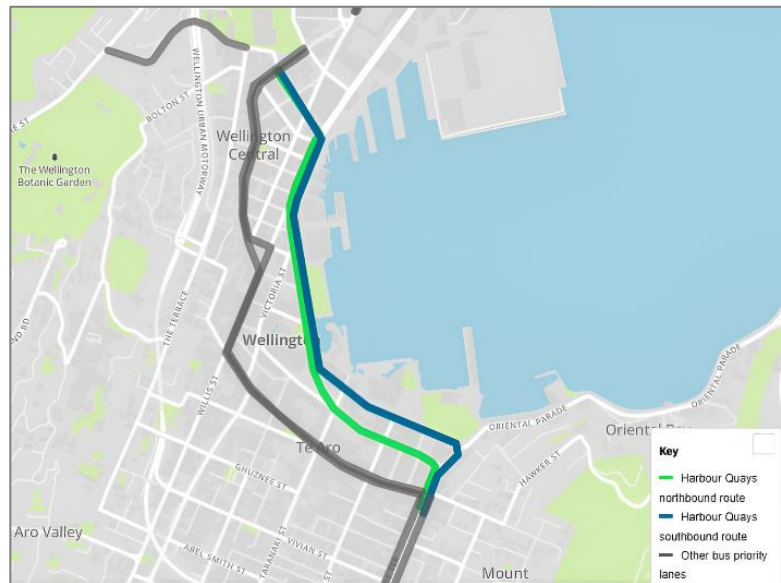
- Provide quicker journey times for bus passengers travelling through the city.
- Provide all-day, 7-days a week access to waterfront attractions.
- Take pressure off the busy Golden Mile route, where buses are often backed up behind one another.

### 1.3 Approach to the assessment

#### 1.3.1 Modelling overview

Transport modelling and demand forecasting has been undertaken by the Wellington Transport Analytics Unit (WTAU) using the emme based Wellington Transport Strategy Model (WTSM). This is the same modelling platform that was used to inform the SH1 Wellington Improvements project, with key outputs including total vehicle kilometres and time travel used to inform the economic appraisal. A range of modelling scenarios have been run to allow the effects of the Harbour Quays scheme to be determined. A summary of the key model findings is as follows:

- The model demonstrates a modest reduction in private vehicle trips (240 trips, mostly entering/exiting the CBD during peak periods) and a shift to public transport.
- A large reduction in traffic is forecast for the waterfront corridor (2,300 trips per day) with trips redistributing to Featherston Street, The Terrace, Golden Mile and State Highway 1.
- A significant reduction in travel time is forecast for bus services that use the Harbour Quays – for example, a 7 minute saving on route 24.
- A more modest reduction in travel time is forecast for bus services that use the Golden Mile – for example, a 2 minute saving on route 2.
- A small increase in general traffic travel time (up to around 80 seconds on average) is forecast on routes into and around the CBD, including along the Harbour Quays corridor.



<sup>1</sup> <https://www.transportprojects.org.nz/current/harbour-quays-bus-priority>

In addition to the WTSM modelling, more granular Aimsun simulation modelling has been undertaken by WTAU. Aimsun provides more information on traffic effects and helps to identify potential traffic disbenefits. At a network wide level, the results between the two tools are very similar. WTAU have analysed the differences in travel time changes and have concluded that both tools show very similar disbenefits. Aimsun demonstrate travel time disbenefits of 1-2 minutes on key routes into the central city and additional traffic on corridors such as The Terrace (100 vehicles in the AM peak), State Highway 1 (400 vehicles in the AM peak) and Taranaki Street (250 vehicles in the AM peak).

### 1.3.2 Modelling assumptions

For the modelling, a range of assumptions have been made. These are summarised as follows:

- Modelling uses the same tools and consistent assumptions with NZTA's Roads of National Significance (RoNS) project.
- The Do Minimum (the receiving environment for the project) represents the current network. The only change represented is the inclusion of the Te Ara Tupua cycleway project (and the consequential demand effect). Mode shift associated with Te Ara Tupua is therefore included in both the do minimum and option models and therefore carries through to the economic assessment. Previous versions of the modelling assumed that the Golden Mile project would be delivered prior to the construction of the Harbour Quays project. The Golden Mile project is currently subject to a review and therefore has not been included as part of the Do Minimum.
- Future year models have been run for 2033 and 2053 (consistent with work undertaken for the SH1 Roads of National Significance project). These models are based on population and employment forecasts derived from Statistics New Zealand medium projections.
- WTSM models have been run for the whole day with results provided for the AM peak (model period, 0600-0900), inter peak, PM peak (model period, 1500-1800) and overnight periods. Aimsun models have been run for AM and PM peak periods.
- The Harbour Quays scheme design is based on Developed Design plans supplied by Vitruvius (dated 08/07/25). For clarity, these plans provided for bus lanes which would be operational during AM (0600-0900) and PM peak (1600-1800) periods only.
- The Harbour Quays servicing profile have been provided by GWRC (26 Feb 2026) and are as follows:

**Service Profile:**

Services Implemented in 2027:

30x, 31x, 32x, 38x, HX, AX, 13, 26, 33, 34, 37, 24

2033

Additional services implemented in 2033:

35, 36, 39, 56, 57, 58, 60e, 81, 83, 84

In 2053 the service profile would change to the following running in the corridor:

2, 4, 13, 14, 24, 30x, 31x, 33, 34, 35, 36, 38x, AX, HX, 60e, 81, 83, 84

2053

- The Harbour Quays bus lanes are assumed to be operational during AM and PM peak periods in both directions. They revert to traffic lanes for other periods.

### 1.3.3 Economics

The economic appraisal methodology is consistent with the guidance outlined in NZTA's Monetised Benefits and Costs Manual (MBCM), updated in May 2025. At a high-level, the project has included the following broad benefit categories in its appraisal:

- Travel time benefits for public transport users – this is quantified from the model as bus passenger travel time savings across the network (the reduction in time passengers spend travelling on buses, converted into a dollar value). The model provides a network wide result, but the majority of the benefits will come from travel time savings on the Harbour Quays and Golden Mile corridors)
- Public transport infrastructure benefit – these are amenity benefits associated with higher quality bus stops. The MBCM indicates that elements such as real time information, improved shelters and signage all deliver a benefit to customers that can be monetised.
- Emissions – quantified in terms of expected carbon dioxide savings (estimated environmental benefits from reduced emissions, assumed to be proportional to vehicle operating costs).
- Walking (health benefits) – additional PT use will result in additional health benefits associated with walking. In addition to this, the model estimates the additional walking trips that are expected to occur as a result of the scheme.

- Vehicle Operating Costs (VOC) - the cumulative travel distance of general traffic in the model, multiplied by operating cost per kilometre (which varies by speed). This reflects savings from reduced fuel use, wear and tear, and maintenance).
- Travel time benefits (or disbenefits) for cars and heavy vehicles – as per public transport benefits, this is quantified from the model through the total change in vehicle hours across the network.

The economic value of the preferred option is based on a comparison against the Do Minimum, where all buses would remain on the Golden Mile and the SH1 Wellington Improvements are either constructed or not constructed. The economic appraisal captures two scenarios – with and without the SH1 Wellington Improvements.

It is acknowledged that there will be other economic benefits of the scheme (for example, bus reliability or safety benefits) – most of which are expected to be relatively minor and therefore haven't been quantified. The exception to this will be decongestion benefits on the Golden Mile. In the interests of being conservative, these have not been included in the core economic analysis, however they have been considered as a separate sensitivity assessment. These benefits arise because fewer buses on the corridor reduce the likelihood of one bus delaying the progress of the bus following behind. The benefit of the "counterfactual" (i.e. if the project does not happen, then extra buses need to use the Golden Mile which means already unreliable journey times along the public transport corridor will worsen, potentially creating wider delays across the bus network). The disbenefit of the counterfactual scenario has been estimated by using boarding numbers (from the WTSM model) at each key stop along the Golden Mile and travel time differences between the "with" and "without" project scenarios.

At this stage, this economic assessment does not consider the relative economic benefits of the Golden Mile scheme, or Council's proposed cycling improvements.

The following key assumptions have been made in the economic analysis:

- Construction starts 2027.
- Construction duration 1 year.
- First year of full benefits: 2028.
- Update factors sourced from July 2023 update to MBCM.
- Cost estimate is based on the P95.
- No Aimsun uplift factor has been applied (consistent with SH1 Wellington improvements).
- No growth in benefits are assumed beyond 2053.
- Annualisation factor of 245 applied<sup>2</sup>.
- Discount rates – 2% for the first 30 years, 1.5% thereafter.
- 40 evaluation period (this is different to the 60-year evaluation period applied to the RoNS projects reflecting the scale of the intervention, a 60-year evaluation period has been tested as a sensitivity test. This approach has been endorsed by the peer reviewer).

---

<sup>2</sup> An annualisation factor of 245 implies that the bus lanes operate for 245 days per year (weekdays only, excluding weekends and public holidays)

## 2 Economic Assessment

### 2.1 Cost Estimates

The P95 cost estimates for the project were provided by WCC on 4<sup>th</sup> March 2026 and are summarised in Table 1. The following lifetime costs have also been assumed:

- Annual Maintenance (GWRC and WCC) = \$118,500
- 5 Year Renewal Cycle (Green Paint) - \$221,000
- 10 Year Renewal Cycle (Digital signage, CCTV) - \$395,000
- 25 Year Renewal Cycle (Shelters) - \$474,000
- 40 Year Renewal Cycle (RTI Poles) - \$70,000

The P95 cost estimates have been used for the “headline BCR” as a means of providing added assurance that the BCR is > 1.0.

**Table 1: Cost Estimates (P95)**

Costs		Undiscounted (2026)	Year Applied	Present value <sup>3</sup> (40 Year NPV)
Development costs <sup>4</sup>	Project development	\$1,997,000	2024-26	\$11,490,000
	Pre-implementation	\$302,000	2026-27	
	Implementation	\$9,383,000	2027-28	
	<b>TOTAL CAPEX</b>	<b>\$11,682,000</b>	-	
<b>Lifetime Costs<sup>5</sup></b>				<b>\$5,210,000</b>
<b>TOTAL</b>				<b>\$16,700,000</b>

### 2.2 Without the SH1 improvements (Core Scenario)

Table 1 provides the Benefit Cost Ratio (BCR) for the core scenario, where only the Harbour Quays preferred option is completed. The first year of benefits is assumed to be 2028.

**Table 2: Harbour Quays Only – Economic Assessment**

		40 Years	60 Years	
Benefits	Travel Time	Public Transport	\$114,450,000	\$157,920,000
		Car	-\$103,980,000	-\$135,820,000
		Heavy vehicles	-\$6,630,000	-\$9,300,000
	Walking		\$2,190,000	\$3,340,000
	VOC		\$6,300,000	\$7,180,000
	CO2		\$210,000	-\$350,000
	Emissions		\$20,000	-\$1,090,000
	PT Infrastructure		\$6,650,000	\$10,390,000
	<b>TOTAL</b>		<b>\$19,210,000</b>	<b>\$32,270,000</b>
	Costs	Development costs		\$11,490,000
Lifetime costs		\$5,210,000	\$7,130,000	
<b>TOTAL</b>		<b>\$16,700,000</b>	<b>\$18,620,000</b>	
<b>BCR</b>		<b>1.2</b>	<b>1.7</b>	

In summary, the project delivers strong public transport benefits that offset the car and heavy vehicle disbenefits. In other words, although car and heavy vehicle travel times will deteriorate (by an estimated 80

<sup>3</sup> 2% (yr 1-30) / 1.5% (yr 31-60)

<sup>4</sup> Development Costs = Operational and Capital Expenditure associated with the development of the project, including the business case, design and construction

<sup>5</sup> Lifecycle Costs = Operational expenditure associated with ongoing maintenance and capital expenditure associated with asset renewals.

seconds during peak periods), this will be more than offset by the improvements to bus user travel times (which may improve by up to 7 minutes, depending on the route).

**The baseline BCR (40 years / P95) for the project is 1.2.**

### Bus decongestion benefits on the Golden Mile

Decongestion benefits on the Golden Mile have not been included in the core economic analysis to remain conservative; however, they have been considered in a separate sensitivity assessment. These benefits arise because fewer buses on the corridor reduce the likelihood of one bus delaying the next. In the “counterfactual” scenario (if the project does not proceed), additional buses would use the Golden Mile, worsening already unreliable journey times and potentially creating wider delays across the bus network.

The disbenefit of the counterfactual has been estimated using boarding numbers from WTSM at key stops and travel time differences between the “with” and “without” project scenarios. The additional decongestion benefit, reflecting improved bus reliability along the Golden Mile, is estimated at around \$43 million over 40 years. This estimate only accounts for passengers boarding along the Golden Mile and excludes benefits to passengers already onboard, making it conservative.

Including this benefit would raise the preferred option without the SH1 Tunnels RoNS Project’s BCR to 3.7. Following discussion with the peer reviewer, it was agreed that the core BCR should exclude these decongestion benefits for the following reasons:

- It is a more conservative approach (thereby providing more confidence that the investment provides value for money);
- The estimate was produced using the outputs from an Aimsun model tested for a single point in time (2033). This makes it more difficult to extrapolate over the entire evaluation period and would then be inconsistent with the WTSM based approach; and
- There is a lack of certainty regarding the status of the Golden Mile project. While the benefits calculated reflect the decongestion benefits provided by the Harbour Quays project, the nature of the Golden Mile scheme will have an impact on them.

## 2.3 With the SH1 improvements

Table 3 provides the BCR for a scenario which includes both the improvements to Harbour Quays and the SH1 Wellington Improvements (Road of National Significance). This shows higher benefits because the SH1 project would attract further traffic away from Harbour Quays and further improve travel time reliability along this second public transport corridor.

**Table 3: Harbour Quays Only – Economic Assessment**

			40 Years	60 Years
<b>Benefits</b>	Travel Time	Public Transport	\$150,680,000	\$211,850,000
		Car	-\$32,940,000	-\$40,170,000
		Heavy vehicles	-\$2,300,000	-\$3,120,000
	Walking		-\$23,790,000	-\$31,100,000
	VOC		\$2,940,000	\$3,240,000
	CO2		\$260,000	-\$140,000
	Emissions		\$210,000	-\$680,000
	PT Infrastructure		\$6,650,000	\$10,390,000
	<b>TOTAL</b>		<b>\$101,710,000</b>	<b>\$150,270,000</b>
	<b>Costs</b>	Development costs		\$11,490,000
Lifetime costs		\$5,210,000	\$7,130,000	
<b>TOTAL</b>		<b>\$16,700,000</b>	<b>\$18,620,000</b>	
<b>BCR</b>			<b>6.1</b>	<b>8.1</b>

The potential decongestion benefit identified above would also apply in this scenario. The negative walking values indicated in the table above are a consequence of the modelling approach rather than reflective of a walking disbenefit. The WTSM regional model uses a fixed assumption for the number of trip productions

and attractions for each zone. With the combination of the SH1 project and the Harbour Quays project, the model assumes that demand will shift to car and PT. As the productions and attractions for each zone remain the same, the number of walking trips need to reduce. This is unlikely to happen in reality and the increase in car and PT trips will occur as “induced demand” without suppressing pedestrian numbers.

## 2.4 Sensitivity Analysis

The following sensitivity tests have been undertaken for the core (with Harbour Quays only) scenario:

1. Increase project capital costs to \$13.0m<sup>6</sup>. No additional benefits have been allowed for.
2. Increasing project capital costs to \$19.0m. This cost increase would reflect additional scope items (not defined) and would add further benefit; however, this has not been allowed for.
3. Discount rates of 4% and 8%.

Table 4 provides a summary of the sensitivity analysis.

**Table 4: Sensitivity Analysis (Harbour Quays Only)**

		40 Years	60 Years
<b>Project costs</b>	Base (\$11.0m)	1.2	1.7
	\$13.0m	1.1	1.6
	\$19.0m	0.8	1.3
<b>Discount rate</b>	Base (Mixed <sup>7</sup> )	1.2	1.7
	4%	0.8	1.1
	8%	0.5	0.5

<sup>6</sup> This represents the pre-value-engineered stop design, which includes full-length Kassel kerbs, enhanced shelter and lighting provision, and potential improvements at Te Papa. These all remain options for consideration.

<sup>7</sup> 2% for the first 40 years, 1.5% thereafter

### 3 Summary

The economic analysis establishes that the Harbour Quays preferred option is likely to present good value for money, with a BCR greater than 1.0 for the base scenario, even with very conservative assumptions. Although the project will result in some traffic disbenefits (in the form of increased delay due to reduced network capacity), these are more than offset by benefits to public transport users.

The assessment identifies that the project makes economic sense without the SH1 Wellington Improvements project, however the benefits increase significantly after the SH1 upgrade is implemented. The main reason for this is the reduced traffic disbenefits enabled by the capacity improvements along the State Highway.

Several sensitivity tests have been undertaken. While most of these indicate a relatively modest (and predictable) response in terms of BCR, the addition of bus decongestion benefits along the Golden Mile has the potential to increase overall benefits significantly.