



Cross Valley Link

Long List to Short List

Prepared for

Waka Kotahi – NZ Transport Agency

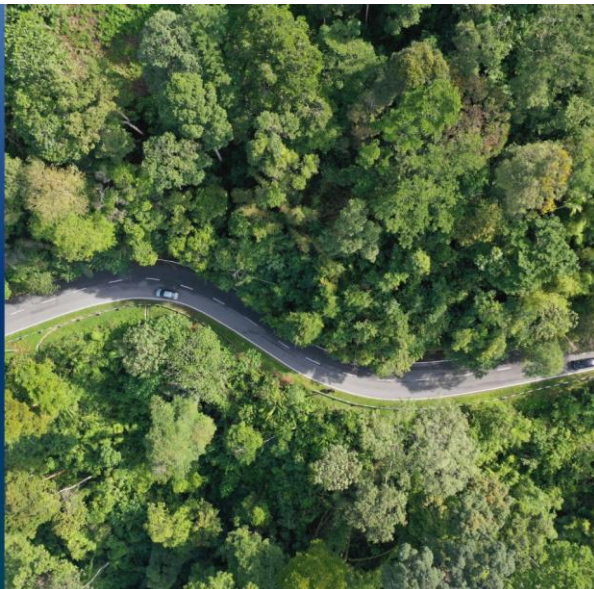
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1 Introduction and Purpose

The Petone to Grenada Link Road (P2G) is a proposed new highway that will connect the economic centres of North Wellington/Porirua and Lower Hutt. It will result in significantly reduced journey times between these cities, facilitating greater movement and increased economic activity, and will help reduce congestion on SH1 and SH2.

The Government Policy Statement on Land Transport (GPS) 2024-34 has identified the Petone to Grenada Link Road and the Cross Valley Link (CVL) as a Road of National Significance (RoNS). They are identified jointly as a RoNS to “unlock housing growth” and will contribute to the primary strategic priority of the GPS, which is to support economic growth and productivity. The National Land Transport Programme 2024-27 (NLTP) includes the P2G and CVL RoNS as a project that will unlock land for housing, improve resilience, and support economic growth.

P2G and CVL are adjacent initiatives. P2G is proposed to provide an east-west corridor between the key urban areas of Lower Hutt (SH2) and North Wellington/Porirua (SH1). CVL is proposed to connect SH2 (and a future P2G corridor) with the Seaview/ Wainuiomata areas via a new/ upgraded corridor. P2G has most recently been examined by NZTA as a state highway, while investigations into CVL have been progressed by Hutt City Council as a local road.

An Investment Case has been progressed for P2G which includes a Feasibility Study for CVL. The focus of the Feasibility Study has been to identify the alignment, form, and function that CVL needs to be to deliver on the project objective.

On completion of the Investment Case, a decision is made whether to fund P2G, and hence progress to further design, route protection, and consenting.

The purpose of this document is to detail the Longlist Options Assessment for Cross Valley Link (CVL) to inform the Feasibility Study.

A workshop was held with subject matter experts (SMEs) on 23 January 2025 to socialise the assessment findings and confirm the emerging shortlist. This report is a summary of the assessment completed by the specialists.

1.1 Previous Analysis

CVL was investigated by Hutt City Council in 2020 via the Cross Valley Connections Programme Business Case (CVC PBC) which considered a multimodal system approach to supporting economic development and improving resilience in Lower Hutt. Included within the proposed suite of interventions is CVL, a new/ upgraded corridor that connects the Seaview/ Gracefield area with the strategic network at SH2.

As the previous work completed is based on a PBC level assessment there is a high level of design uncertainty and additional investigations need to be undertaken to understand options in greater detail.

This Long List assessment therefore re-considers options from the CVC PBC and includes newly identified options. Further detail on this can be found in the Option Commencement Report.

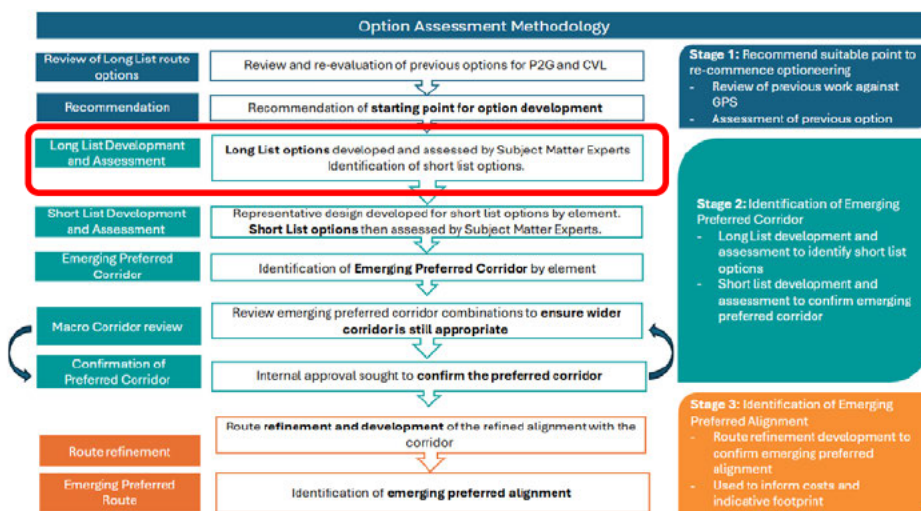
2 Optioneering Approach

For the CVL feasibility study an overarching three-stage option assessment methodology has been used to ensure a consistent approach is taken to establish a short list, and a subsequent emerging preferred option.

This methodology is shown in the process diagram (Figure 1) below. This report is part of Stage 2 and will provide an overview of the longlist options and subsequent assessments to identify the short list options which will be subject to further assessment and refinement.

A review of the previous assessments, and confirmation of any specific options to be included in the long list is documented in the Option Commencement Report.

Figure 1: Option Assessment Methodology



2.1 Assessment Criteria

2.1.1 Investment Objectives

As the investor of CVL has not yet been determined, and as CVL is only subject to a Feasibility Assessment rather than an Investment Case, an Investment Objective has not been developed for CVL. However, a single Investment Objective has been confirmed for P2G. This investment objective is the foundation of the assessment criteria.

The overall objective of the P2G project is:

“To create an efficient transport connection between southern Lower Hutt and North Wellington/Porirua to support economic growth and productivity, and housing development.”

Note: Regional growth and productivity are supported through the agglomeration of economies, efficient access for labour and efficient access to commercial and residential development

The P2G investment objective is largely consistent with the outcomes sought by the CVL corridor, and as such has been applied to the MCA as the investment objective. Further refined criteria applicable to Hutt City Council will be used to inform assessment of the Short List in the next stage.

The provision of an efficient transport connection between Petone and Grenada will increase the pool of customers and potential labour resources at either end of the project. The inclusion of Cross Valley Link extends this connectivity east towards economic hubs in Gracefield and Seaview as well as Wainuiomata and Waterloo.

The investment objective will be assessed with a transport metric that focuses on Efficient and Reliable Journeys. It is acknowledged that regional growth and productivity can also be measured by other wider metrics, however for the purpose of the Long List option assessment for a transport corridor, the Efficient and Reliable Journeys measure is considered to provide an appropriate comparable metric between options.

Further assessment of regional growth and productivity outcomes will be undertaken on the emerging preferred option to quantify the benefits realised by the projects.

2.1.2 Multi-Criteria Assessment

The Option Assessment Framework outlined in this document is based on Multi-Criteria Analysis (MCA) principles. MCA enables a wide range of different aspects to be taken into consideration in evaluating options and provides a systematic framework for working through the merits and disadvantages of each option. It is a tool that assists in decision making, but it does not make the decision. Decision makers may call on other tools and inputs to inform decisions, as required.

The framework is structured to provide an open, traceable, and repeatable process. It enables consideration of a range of criteria which are both qualitative and quantitative. These criteria reflect social, economic, cultural, and environmental characteristics of the outcomes and effects. While not proposed at this initial stage, it can also enable sensitivity testing to a range of different perspectives to add further robustness to the option assessment process.

The long list options were evaluated against a series of criteria by subject matter experts. These have been split into assessments that form part of the investment objectives and critical success factors, and those that form part of the assessment of potential effects and critical issues and constraints.

Table 1: Assessment Criteria

Criteria	Criteria considerations	Expert
Efficient and reliable journeys	- Private vehicle travel time based on journey times - Qualitative analysis based on the route and specialist judgement. - How the option enables enhanced connectivity between key destinations	Alan Kerr
Housing Growth	Qualitative assessment of the impact that the scheme could have on surrounding land uses and the likelihood of urban development occurring in response to the transport investment.	Andrew Beer
Resilience	- Qualitative assessment of the durability of new assets in the event of sea level rise, storm surge, earthquakes and tsunami as well as the operational / Low Impact High Probability (LIHP) resilience. - If/how the new asset improves the overall resilience of the network.	Bruce Symmans

Criteria	Criteria considerations	Expert
Effects on cultural values	- Evaluate indicative physical encroachment into known sites of cultural value (e.g. pa sites, sites of cultural importance or value). - Mana Whenua perspective on effects on local iwi, Te Ao Māori and alignment with Mana Whenua values	Levi Rona
Landscape	Indicative physical impact on landscape values and natural character.	Gavin Lister
Terrestrial Ecology	Indicative physical encroachment into sites of high ecological value and/or into sites denoted as outstanding features.	Josh Markham
Aquatic Ecology	Consider the ability of the impact to be mitigated.	Dean Miller
Property	- Number of sites that would need to be acquired - Quantum of estimated property compensation costs payable - The extent to which land might be more difficult to use/acquire - Land with multiple owners / multiple leases - Māori-owned land (similar to multiple owner issues) and sites of historic status.	Sue-Lyn Chan
Constructability and Overall Proxy Costs	Proxy Cost for each option will be quantified as High, Medium or Low (when compared to other options within the same assessment) considering bulk earthworks, carriageway, and structures	James Wood

Each option was scored by subject matter experts using a five-point scale as shown in Table 2 below.

Table 2: Scoring Approach

Score	Scoring Description
✓✓✓	Substantially positive, factoring in the scale of benefits, the degree of confidence of benefits being realised and how permanent or long term the benefits are likely to be
✓	Positive, factoring in the scale of benefits, the degree of confidence of benefits being realised, and how permanent or long term the benefits are likely to be
Neutral	No Change in benefits No change in benefits, impacts or difficulties from current situation
✗	Negative factoring in implementation difficulties, costs, impacts of resources/values and disbenefits
✗✗	Substantially negative factoring in implementation difficulties, costs, impacts on resources/values and disbenefits

2.1.3 Approach to the Do-Minimum

Regarding the land use in proximity to the proximity the following assumptions will form the basis of the optioneering

- Optioneering will be based on a 2033 future year (consistent with similar projects elsewhere in the country and the basis for model development)
- The level of growth is based on Statistics NZ's medium forecast, and
- The distribution of growth within the TLAs is largely based on work undertaken by Sense Partners on behalf of the Regional Council and TLAs. This has been modified based on an updated understanding of where development is likely to happen.

Regarding the transport network, the network assumptions will be consistent with SH12 Wellington Improvements, and this includes the following assumptions:

- The network is based on the current base year network (2024 Hutt Aimsun model)
- The Riverlink project is assumed to be constructed by 2033 based on the current Partial Clover option
- The Otaki to North of Levin expressway is assumed to be constructed by 2033
- Wellington City Council (WCC) are assumed to have completed their Golden Mile project by 2033 and Greater Wellington Regional Council (GWRC)/ WCC are assumed to have delivered the Harbour Quay bus spine by 2033
- Hutt City Council (HCC) are assumed to have completed local roading changes (mainly intersection related) in the Hutt CBD associated with Riverlink by 2033
- GWRC are assumed to have implemented their Lower North Island rolling stock improvements by 2033, and
- No further changes assumed by 2053.

2.2 Corridor Form and Function

The design philosophy of the optioneering at this stage is based on a minimum viable product, which will have limited "extra" design features. To understand the form and function of CVL – and therefore the minimum viable product - further assessment was completed on via a form and function assessment.

This assessment includes a consideration of the following matters:

- **Number of lanes:** Demand for CVL is influenced by a range of choices, including where the P2G corridor connects to SH2 and subsequently onto CVL, the treatment of the Esplanade (e.g. a detuned corridor there pushes more demand onto CVL), and the form and function of CVL itself (e.g. a higher speed, limited access corridor creates a more attractive environment on CVL). As such, it is considered that further work is needed to confirm the number of lanes on the CVL corridor in the context of the operation of the wider network.

For the long list assessment all options are assumed to be four lanes, and further capacity refinement to be considered at future stages,

- **Public transport:** Any future bus route can be provided along the CVL corridor within the road corridor, and separate bus lanes are not recommended, noting the surrounding land uses.

- **Walking and cycling:** Pedestrian and cycle facilities should be provided for within the cross section considering the surrounding urban environment.
- **Median treatment:** A flush median is required to accommodate turning movements onto the adjacent local roads and for safety.
- **Access to local roads:** Road access at grade should be provided for the residential area local road network. Existing direct property access is proposed to be retained.

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Following this assessment, all CVL options have been designed as a four-lane arterial road with the following key design criteria:

- Four lane carriage way with a median to enable turning movements
- Generally, 27m cross section
- Bridge over Hutt River, connecting into Randwick Road, and
- All options terminating at the Seaview Roundabout to enable effective comparison at the long listing stage¹.

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¹ Further assessment on the extents of CVL, particularly the extension to Gracefield, will be completed once emerging preferred is determined. This was considered not to impact on the choice of the preferred option for the east-west element.

3 Long List Assessment

3.1 Long List Options

Based on confirmed investment objectives, refreshed GPS objectives, and the recommendations following the review of previous assessments ²completed several long list options have been developed for Cross Valley Link. These are summarised in Figure 2 and Table 3 below.

Figure 2: Long List Options: Cross Valley Link

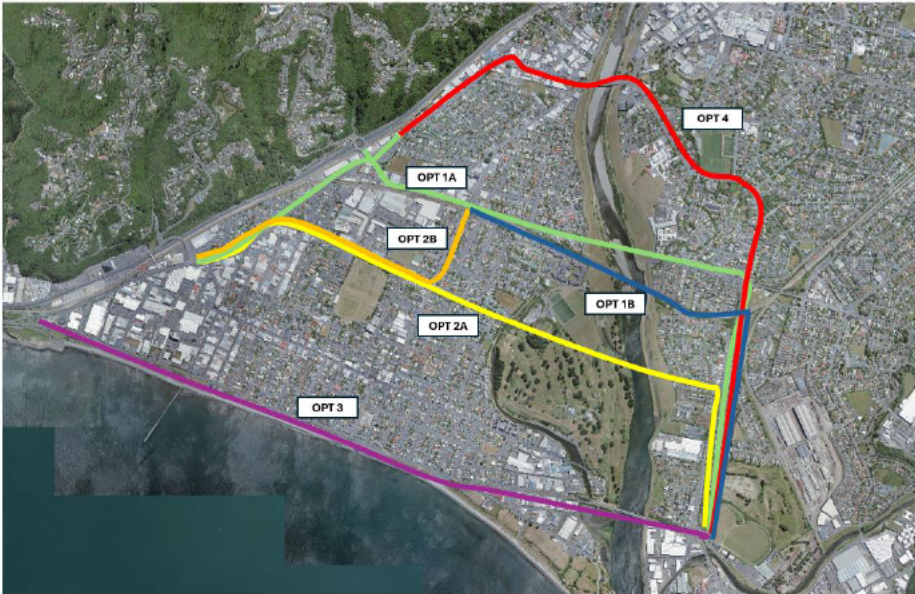


Table 3: Long List Options: Cross Valley Link

Option	Length of Route	Key Assumptions	Structures and Major Assets	Network Connections
Option 1A	4.8km	Four lanes on Randwick Road, White Lines West and Hutt Road, and Wakefield Road.	New 180m bridge over Hutt River New Cuba Street bridge needed to accommodate four laning New two-lane roundabout at Hutt Road	Connects to Randwick Direct connection to Dowse interchange Hutt Road upgrade

² Further information on this assessment can be found in the Option Commencement Report.

Option	Length of Route	Key Assumptions	Structures and Major Assets	Network Connections
Option 1B	6.0km	Four lanes on Randwick Road, Hutt Road, and Wakefield Road.	New 180m bridge over Hutt River New Cuba Street bridge needed to accommodate four laning New two-lane roundabout at Hutt Road Relocate Ava Pumping Station	Connects to Randwick Direct connection to Dowse interchange Hutt Road upgrade
Option 2A	4.7km	Four lanes on Udy Street, Hutt Road and Randwick Road	New 180m bridge over Hutt River	Connects to Randwick Utilises Udy Street Connects with Hutt Road
Option 2B	5.4km	Four lanes on Udy Street, Hutt Road and Cuba Street (plus 1A/1B extents)	Assumes connects with 1A or 1B	Utilises existing road network Cuba and Udy Street Connects with Hutt Road
Option 3	3.62km	Four lanes on Esplanade	Assumes replacement of Waione Bridge	Connects to existing SH2 connection Connects to Roundabout No upgrade of Randwick assumed.
Option 4	6.3km	Four lanes on Hutt Road, Woburn Road, Ludian Crescent, and Randwick Road	Upgrade Ewen Bridge	Connects to Hutt Road and Woburn Road – with increase in traffic capacity on local roads

3.2 Assessment Summary

Table 4 below provides an overview of scoring from the Subject Matter Experts, with a summary comment of any key difference or preferences noted by the experts..

Table 4: Summary of Long List Assessment Findings for Cross Valley Link Corridor

Criteria	OPT 1A	OPT 1B	OPT 2A	OPT 2B	OPT 3	OPT 4
Efficient and Reliable Journeys	Options 1A and 1B are similar in terms of alignment and both deliver additional capacity and increased access and connectivity. This increases capacity and connectivity across an east-west line through Lower Hutt, support freight movements across the region, connecting Lower Hutt businesses with SH2, and wider economic hubs.		Increased access and capacity via a new crossing. Similar score to 1A and 1B regarding providing efficient and reliable journeys. Option provides an additional connection, improving local capacity constraints in and around the Esplanade.	Convolutd alignment but assumed to connect into new bridge at Wakefield Street. Scored lower as likely longer travel time, but still positive as option provides additional capacity across the Hutt River, supporting connections from Gracefield/Seaview through to SH2.	Provides additional capacity via widening from two lanes to four lanes and is a direct route along the desire line, but it uses the existing crossing of the Hutt River and does not distribute traffic in the same way as Options 1A, 1B, 2A, and 2B, which provide a different crossing location in addition to capacity improvements.	Does not provide the step change in capacity and puts more pressure on existing local connections and scores 0. It is also furthest away from the east-west desire line. This also utilising existing crossings of the Hutt Rive
						Neutral
Housing Growth	Utilisation of existing road alignments minimises the loss of existing dwellings. Direct connection between Randwick Road and SH2 increases accessibility of south-eastern Hutt Valley and Wainuiomata, increasing the market attractiveness of those areas. Following the existing rail alignment may limit potential impact on amenity for existing communities west of Te Awa Kairangi / Hutt River, and consequentially the attractiveness of this area for development.	Similar benefits to 1A but noted that alignment parallel to the rail line between Ava Station and Randwick Road likely to impact more existing houses (estimated as 50-60 houses). Not significant enough to warrant change in scoring.	Alignment through existing neighbourhoods around Ava and Udy Streets will impact amenity, require removal of significant numbers of existing houses. Less direct connection between Randwick Road and SH2 means improvements in accessibility for south-eastern Hutt Valley and Wainuiomata are less than Options 1A and 1B, so are less likely to increase the market attractiveness of those areas.	Similar to Option 2A. Alignment on existing roads (Cuba and Udy) expected to impact less existing housing, but reductions in amenity remain. Alignment is also less direct than Options 1A and 1B so benefits in accessibility for south-eastern Hutt Valley and Wainuiomata also reduced.	Options 3 and 4 are assessed as being neutral for supporting housing growth. In aligning with existing road corridors these options minimise the loss of existing houses. However, it is assumed these options will not increase accessibility of the south-eastern Hutt Valley and Wainuiomata, as much as other options, so will have less impact on the market attractiveness of these areas compared to other options.	
					Neutral	Neutral
Resilience	Additional high traffic capacity river crossing so scored positively. Lower effects on liquefaction differential settlements and lateral spread. Relies on rail crossing at Randwick Road.	Additional high traffic capacity river crossing so scored positively. Lower effects on liquefaction differential settlements and lateral spread.	Additional high traffic capacity river crossing so scored positively. Lower effects on liquefaction differential settlements and lateral spread. Option 2A while likely to be subject to coastal inundation over the area of the golf course this is assumed to be partially	Additional high traffic capacity river crossing so scored positively. Lower effects on liquefaction differential settlements and lateral spread.	Option 3, low-lying, adjacent to a slowly subsiding shoreline is expected to be prone to regular coastal inundation within the design life of this route.	Option 4 utilises the existing Ewen Bridge, which while more resilience than the Waione Street bridge, the Ewen Street bridge has less freeboard than any new bridge options and so will be slightly more vulnerable to debris damming and consequent flood damage.

Criteria	OPT 1A	OPT 1B	OPT 2A	OPT 2B	OPT 3	OPT 4
			mitigated by constructing on a slightly elevated embankment.			
					Neutral	
Effects on Cultural Values	Option 1A and 1B have been scored as having a greater effect on mana whenua values due to the proposed works around the Dowse Interchange which is likely to have an impact on Te Tatau o te Po Marae. Te Awa Kairangi/ Hutt River is a site of significance.		Te Awa Kairangi/ Hutt River is a site of significance.	Te Awa Kairangi/ Hutt River is a site of significance	Greater effect on mana whenua values due to possible impacts with accessibility along the Esplanade and coastal environment and its proximity to Hikoikoi Reserve. Te Awa Kairangi/ Hutt River is a site of significance.	Te Awa Kairangi/ Hutt River is a site of significance.
Landscape and Visual	Preferred option from an urban landscape perspective. It would have a good fit with the existing urban form and street pattern.	Less preferred than Option 1A. It would not have as close a fit with the existing urban form: it follows the railway rather than the road pattern and consequently requires an awkward intersection with Randwick Road. It	Second preferred option from a landscape perspective. It would be square with the grid-like street pattern but does not coincide with existing streets for the whole route	While it would have low effects (apart from those relating to upgrading and/or widening existing arterial roads which is common to all options). It would also have few landscape benefits. The zig zag route would be less straightforward and legible compared to simply using Hutt Road between Udy Street and Wakefield Street.	Not preferred from a landscape perspective. While The Esplanade is likely to remain an important and natural link, a complementary alternative route is preferred for both resilience and the values associated with the beachfront (natural character, cultural values, recreation, scenic and amenity values, sense of place).	Not preferred from a landscape perspective. It would have limited benefits as a CVL. It is north of the straightforward grid pattern of the southern part of the Hutt Valley – rather it overlaps with the street pattern around the city centre. Consequently, it is circuitous and has poor legibility as an east west link. It is too far north to provide an alternative to The Esplanade
			Neutral			
Ecology	Crossing Te Awa Kairangi, within an urban area with limited open green spaces. No specific differentiation.	Crossing Te Awa Kairangi, within an urban area with limited open green spaces. No specific differentiation.	Crossing Te Awa Kairangi, within an urban area with limited open green spaces. No specific differentiation.	Crossing Te Awa Kairangi, within an urban area with limited open green spaces. No specific differentiation.	Crossing Te Awa Kairangi, within an urban area with limited open green spaces. No specific differentiation.	Crossing Te Awa Kairangi, within an urban area with limited open green spaces. No specific differentiation.
Property	High density residential area Industrial areas Retirement Village Kiwirail Properties	Industrial area High density residential areas Reserve (recreational space)	Industrial area. High density residential area. School. Reserve and recreation area. Golf course.	Industrial area. High density residential area. Reserve and recreation area.	High density residential area. Petone commercial area. Industrial area.	High density residential area. Industrial area.

Criteria	OPT 1A	OPT 1B	OPT 2A	OPT 2B	OPT 3	OPT 4
				Neutral		
Proxy Costs	3	3	2	2	1	1

4 Overall Short List Recommendation

The following tables provide a condensed summary of the option scoring from specialists, and the recommendation of progressing the option to the short list or discounting for further investigation.

Table 5: Summary of Specialist Scoring Cross Valley Link Corridor

Criteria	OPT 1A	OPT 1B	OPT 2A	OPT 2B	OPT 3	OPT 4
Efficient and Reliable Journeys						Neutral
Resilience					Neutral	Neutral
Housing Growth					Neutral	
Manawhenua Values						
Landscape and Visual			Neutral			
Ecology						
Property				Neutral		
Proxy Costs	3	3	2	2	1	1
Decision	Progress	Progress	Progress	Discount	Progress	Discount

Based on the specialist scores provided above, an overall comparison of the options was carried out during the Long List Workshop. This review aimed to identify which options should be progressed to the Short List for further investigation and which should be discounted at this stage.

Option 4 was ultimately discounted, as it performed poorly in comparison to the other options in terms of *Efficient and Reliable Journeys*—a critical outcome for achieving the project's overall Investment Objective. This weaker performance was primarily due to its location further north of the main desire line from the eastern areas to State Highway 2. This option was a less direct option for businesses located in the primary economic area of Seaview and Gracefield – this reduces the attractiveness of this route for freight movements.

In contrast, Option 3, which provides the most direct route, performed well in terms of efficient and reliable travel. It didn't score as well as Option 1A/1B/2A as it doesn't provide four lanes of additional capacity and an additional route across the Hutt River, and as such improved network reliability to a lesser extent. It was also identified as a more cost-effective solution compared to Options 1A, 1B, 2A, and 2B. As a result, Option 3 was retained for inclusion in the Short List for further analysis.



Option 2B was discounted because it scored lower than Options 1A, 1B, and 2A in terms of travel efficiency and reliability. This lower scoring was a result of following a more convoluted alignment and therefore reducing the effectiveness of the route to provide for efficient movements through the Hutt Valley. Therefore, the other options were considered to better meet the project's Investment Objectives.

Option 2A performed well overall and was viewed as a more economical choice than Options 1A and 1B, largely due to requiring fewer structural elements. This made it a potentially strong value-for-money option and justified its inclusion in the Short List.

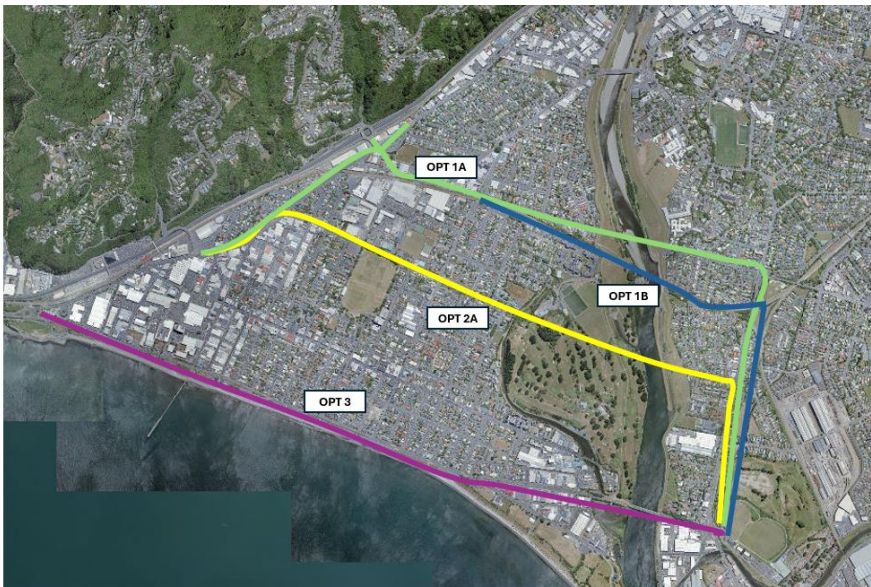
There was minimal differentiation between Options 1A and 1B, so both were retained for further investigation as part of the Short List Assessment.

5 Conclusions

Based on the specialist assessments and an overall consideration of the outcomes and effects of each Long List option, the following options were recommended to progress through for further investigation as part of the short list:

- Option 1A
- Option 1B
- Option 2A
- Option 3

Figure 3: Cross Valley Link Short-list options



5.1.1 Areas for further consideration at Short List

Through the workshop process and the specialist assessment reports several areas of refinement were identified for options that have been progressed through to the short list:

- The Long List option design assumptions provided for four traffic lanes in all options. The workshop group agreed the Short List should consider a range of sub options for each option that looked at lower capacity options. By considering the outcomes and effects of both two lane and four lane options for the short list, this enables a greater understanding of the trade-offs between cost and outcomes, and value for money.
- Further investigation on the feasibility of access arrangements to properties on the Esplanade to be provided as part of the Short List consideration for Option 3.
- All specialists to consider the impact of flood resilient design on their scoring.

Further information on these refinements can be found in the Short List to Emerging Preferred Report.



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APPENDIX A: Specialist Reports

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APPENDIX B: CVL Form and Function
