Before an Expert Panel

Under the Fast-track Approvals Act 2024

And

In the matter of an application for approvals by New Zealand Transport Agency Waka Kotahi (**NZTA**) to develop a rapid transit link, associated infrastructure and connections between Brigham Creek and Auckland City Centre (**NWRT Project**).

Engineering Statement by Steven Rankin on behalf of Stride Holdings Limited in relation to the NWRT Project by NZTA

Dated 26 May 2026

MAY IT PLEASE THE PANEL

INTRODUCTION

1. My full name is Steven Brent Rankin.

2. I am a Director and the Principal Civil Engineer of Chester Consultants Ltd (**Chester**). I have been in the principal civil engineer role since 2008, I became a Chartered Professional Engineer in 2012, and I became a director of Chester in 2014.

3. I am making this statement in support of Stride Holdings Limited (**Stride's**) comments to the expert panel for the NWRT Project. Stride has been invited to comment on the NWRT Project as an affected and adjacent landowner under section 53 of the Fast-track Approvals Act (**Act**).

4. Stride has instructed me to comment on the NWRT Project from an engineering perspective. In doing so, I have reviewed:

   (a) the substantive application lodged by NZTA under the Act;

   (b) options assessment prepared by NZTA in preparing the substantive application;

   (c) NZTA MCA Analysis;

   (d) traffic statement, prepared by Don McKenzie;

EXECUTIVE SUMMARY

5. In my opinion, NZTA's preferred Option 7 is not the optimal solution for NoR 2. Option 3 better achieves the project objectives with significantly less impact on private property (including no impact on Stride land), comparable or better constructability, and superior optimisation of the existing transport corridor.

CODE OF CONDUCT

6. I confirm that I have read the Code of Conduct for Expert Witnesses 2023 contained in the Environment Court Practice Note and that I agree to comply with it. I also confirm that I have considered all the material facts that I am aware of that might alter or detract from the opinions that I express, and that

this statement is within my area of expertise, except where I state that I am relying on the statement of another person.

SCOPE AND STRUCTURE OF THIS STATEMENT

7. This statement addresses the following:

   (a) Outline of the approach taken to assessing options and to identify if there was an option that would (largely) retain the busway within the existing designation area and reduce effects on private property, while maintaining or improving construction methodology and long-term operation for NoR 2;

   (b) A review of the NZTA MCA analysis.

   (c) Discussion of the Stride preferred option and how this compares to the NZTA preferred option;

   (d) Concluding comments.

OUTLINE OF APPROACH

8. Chester was engaged to support Stride to carry out a review of the options proposed by NZTA and identify adjustments or alternatives that should be considered by NZTA whilst achieving the project outcome.

9. The goal being to reduce or remove the impact on the Stride property whilst seeking to maintain or reduce the traffic impacts from the proposed construction.

10. In order to inform my assessment, we produced a model that reflected the NZTA options in detail to understand the design and how it fits within the existing environment and the various constraints.

11. The initial focus was testing the option preferred by NZTA, specifically Option 7 to see if adjustments could be made to reduce the impact on Stride, the changes included the lowering of the underpass and geometrical changes to move the alignment to within the existing road reserve and in doing so reducing or removing the level of encumbrance that results from the

preferred NZTA option. This resulted in a more complex construction while still affecting the Stride property.

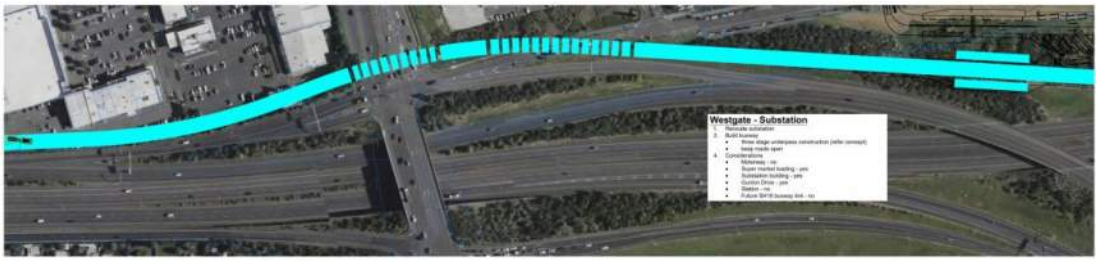

Figure 1: NZTA Option 7 with an underpass below Fred Taylor Road and encroaching into the Stride property.

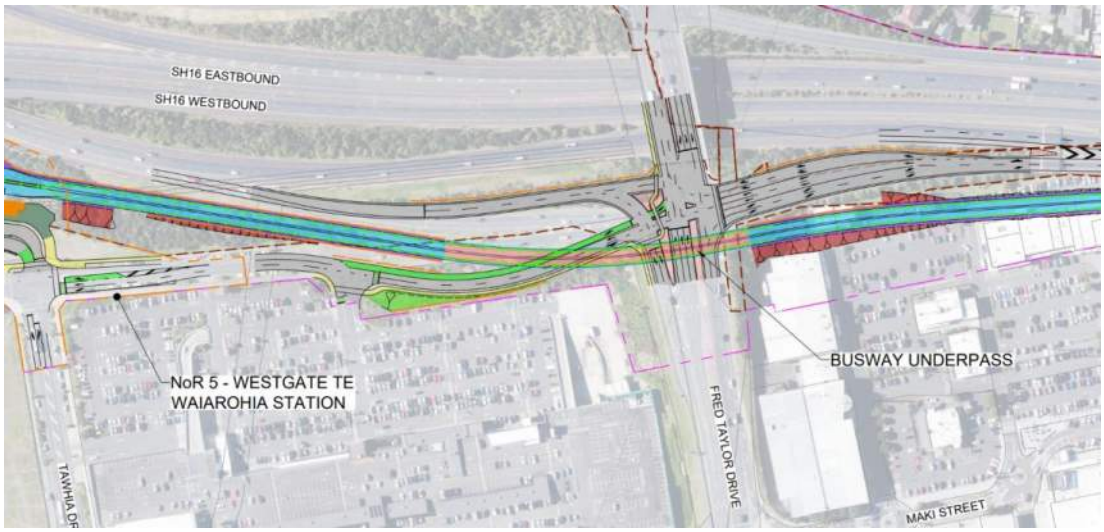

Figure 2: NZTA Option 7 developed concept with the underpass and the realignment of Gunton Drive.

12. I then moved on to review the options that had been considered by NZTA as part of its MCA analysis, with specific focus on Option 7 (the underpass at Fred Taylor Drive, which is NZTA's preferred alignment), Option 13 (an overpass at Fred Taylor Drive), and Option 3 (which largely retains the Busway within the existing designation corridor).

13. Through the MCA process, NZTA scored Option 7 at +4, Option 13 at +5 and Option 3 at +3. The higher the score the better. I understand that Option 7 is NZTA's preferred option compared to Option 13 because it can enable better long-term customer and operational benefits for the project. A copy of NZTA's MCA analysis (which was obtained by Stride under the Official Information Act and is available on NZTA's website) is **attached** as Appendix A.

MCA REVIEW – OPTION 7, OPTION 13 & OPTION 3

14. I then undertook a careful review of NZTA's MCA analysis that has informed Option 7 as the preferred option as well as reviewing Options 13 and 3.

15. To assist I broke the alignments (Option 7, Option 13 and Option 3) into specific sections (shown in Figure 3) and provide commentary around the works at each section for ease of comparison in Table 1. I address the description of the proposal, construction methodology, impacts and benefits for each section for Options 7, 13 and 3. The 'Chester Comments' column is my comparison of each of the options. The proposed alignment of Options 7, 13 and 3 are **attached** as Appendix B.

Figure 3: Section delineation used to inform Table 1.

Table 1: Option Comparison Across Corridor Sections

Comparison of NZTA preferred option (Option 7), Option 13, and Option 3 across the four key sections of the NoR 2 corridor near the Fred Taylor Drive interchange.

	Option 7 (NZTA Preferred)	Option 13	Option 3	Chester Comments
Alignment	**At grade north of wetland, through substation (relocated), underpasses at Fred Taylor Drive and Gunton Drive**	**Overpass from pedestrian bridge to east of Gunton Drive; realignment of Gunton Drive**	**Over/under option — bridges over narrow point by substation then goes under Fred Taylor Drive**	
Section 1 — SH16 offramp to Westgate				
Description of proposal	The busway alignment remains on the west of the motorway, the Vector substation needs to be relocated, and the works go through the NZRPG land to Section 2. The existing pedestrian footbridge is replaced and the shared path realigned.	The busway alignment remains on the west of the motorway, the bridge started prior to the wetland is continued over the Vector substation and continued to Section 2. The existing pedestrian footbridge is replaced and the shared path realigned.	The busway alignment has a bridge structure from the wetland past the Vector substation and over the SH16 offramp, the bridge transitions to being on and then below grade in the approach to Section 2. The existing pedestrian footbridge is replaced and the shared path realigned.	Option 7 requires substation relocation adding significant programme and cost risk. Options 13 and 3 avoid this by bridging over the substation, though Option 3 also crosses the SH16 offramp which introduces a longer bridge structure.
Construction methodology	Bridge over the wetland prior to the widening of the main corridor with construction on grade from the substation to Section 2.	Bridge construction from the wetland to Section 2.	Bridge construction transitions to on grade construction into Section 2.	All three options require bridge construction in this section. Option 7's at-grade approach through the substation zone requires the most complex sequencing.
Impacts	Vector substation needs to be moved and permanent property acquisition from NZRPG.	Permanent property acquisition from NZRPG.	Minor permanent property acquisition 75m^2. Tight construction area and likely night works associated with bridge beam placement.	Option 7 has the greatest impact — substation relocation is a major undertaking with regulatory, procurement and network continuity implications. Options 13 and 3 have significantly less property impact with Option 3 having the lowest impact of the three options. Refer to Table 2 for more details.
Benefits	Offline working area, and more space available for construction activities.	Reduced property impacts from Option 7 and the Vector Substation not affected.	Significantly reduced property impacts from Option 7 and the Vector Substation not affected.	Options 13 and 3 both avoid substation relocation. Option 7's offline working area is a minor construction benefit that does not justify the substation relocation risk. Option 3 has significantly reduced impacts on private property. Refer to Table 2 for more details.
Section 2 — Fred Taylor Drive / Hobsonville Road crossing				
Description of proposal	Underpass below Fred Taylor Drive.	Bridge structure over the intersection.	Underpass below Hobsonville Road to the east of the Fred Taylor / Hobsonville Road / Gunton Drive intersection.	Option 7 and Option 3 both use underpasses in this section — different locations but comparable methodology. Option 13 uses a bridge, which avoids underpass construction complexity but introduces visual and landscape effects.
Construction methodology	Section 1 on grade construction transition to cut and cover below Fred Taylor Drive.	Bridge.	Section 1 on grade construction transition to cut and cover below Hobsonville Road.	Cut and cover construction for Options 7 and 3 will require temporary traffic management. Option 13's bridge avoids this but requires beam placement works.
Impacts	Traffic disruption and loss of service level on the largest leg of	Traffic disruption for night works associated with bridge beam	Traffic disruption and loss of service level on the Hobsonville	Option 7 has a significant traffic impact in this section — 7 lanes affected across the widest part of the Fred Taylor Drive intersection, and critical routes – off

	Option 7 (NZTA Preferred)	Option 13	Option 3	Chester Comments
	the Fred Taylor Drive leg of the intersection; 7 lanes effected across the widest part of the intersection corridor.	placement and reduced construction room.	Road leg of the intersection; 6 lanes effected.	ramp, Fred Taylor Drive, and Gunton Drive. Option 3 has a lesser impact on access to Westgate as affects 6 lanes on the Hobsonville Road leg (east of the intersection). Option 13 is limited to night works disruption only.
Benefits	The wide corridor with multiple lanes allows the number of movement lanes to be reduced and moved whilst still enabling movement.	The intersection remains in service (excluding night works).	Maintains service for Fred Taylor Drive and access from and into the motorway ramps and Gunton Drive.	Option 13 best preserves intersection service during construction. Option 3 maintains access to Fred Taylor Drive, Gunton Drive and ramps. Option 7's wide corridor provides operational flexibility but at the cost of greatest disruption to access to the Westgate Precinct.
Section 3 — Gunton Drive				
Description of proposal	Gunton Drive is realigned and shifted west into the Stride property and the intersection is changed to accommodate the new alignment.	Gunton Drive is realigned and shifted west into the Stride property and the intersection is changed to accommodate the new alignment.	No change.	Both Options 7 and 13 require Gunton Drive realignment into Stride property. This is a material impact that the MCA attributes to Option 13 (scoring it lower on 'Optimise existing assets') but does not reflect in Option 7's score — a direct inconsistency. Option 3 avoids this entirely.
Construction methodology	On grade typical construction.	On grade typical construction.	NA	Standard construction for Options 7 and 13. Option 3 has no works in this section as the Busway can be accommodated in the existing open space in the existing Designation.
Impacts	Permanent land take from Stride and the disruption of Gunton Drive and the intersection.	Permanent land take from Stride and the disruption of Gunton Drive and the intersection.	NA	Options 7 and 13 have identical impacts in this section — permanent Stride land take and intersection disruption. The MCA's differential scoring between these two options on 'Optimise existing assets' is not justified by the impacts.
Benefits	The works are required to enable the alignment from Section 1 and Section 2.	The works are required to enable the alignment from Section 1 and Section 2.	Retains Gunton Drive without any disruption.	Option 3 retains Gunton Drive in its current form — a clear benefit over Options 7 and 13 which both require permanent realignment – with associated costs of disruption, construction costs, and land take.
Section 4 — SH18 on-ramp				
Description of proposal	The on ramp is realigned east to enable the Gunton Drive realignment and the intersection is changed to accommodate the new alignment.	No change.	Underpass below SH18 onramp.	Option 7 requires SH18 on-ramp realignment as a direct consequence of the Gunton Drive realignment — an additional infrastructure impact not explicitly scored in the MCA. Option 3 underpasses the existing ramp without realignment. Option 13 requires no change in this section.
Construction methodology	Most likely earthworks and on grade construction.	NA	Cut and cover.	Option 7's earthworks and ramp realignment will require live traffic management on SH18. Option 3's cut and cover underpass is a more contained operation. Option 13 has no works in this section.
Impacts	Disruption to the SH18 on ramp and the intersection.	NA	Disruption to the SH18 onramp.	Both Options 7 and 3 disrupt the SH18 on-ramp during construction. Option 7's ramp realignment is a permanent change; Option 3's disruption is temporary construction only.
Benefits	The works are required to enable the alignment from Section 1, Section 2 and Section 3.	Retains the on ramp without any or minimal disruption.	The existing feeding intersection is retained, and the construction period is likely shorter than Option 7.	Option 13 best preserves existing SH18 infrastructure. Option 3 retains the intersection and has a shorter construction programme and cost than Option 7. Option 7's ramp realignment introduces permanent changes to state highway infrastructure.

16. Following that analysis, I prepared a second table to consider the scoring given by NZTA on the key differentiating Sieve 2 and 3 criteria (Optimise use of existing assets; Technically feasible; Value for money; and Property). The Sieve 1 (Transport performance) and remaining Sieve 2 and 3 criteria (Flexible, stageable; and environmental effects) are not differentiators between these options.

17. For each of the differentiating criteria I recorded NZTA's rationale, and provided my own comments to this. Based on my analysis, I then recorded my score and why I reached a different position than NZTA. I also add further comment on areas of difference with NZTA below.

Deliver on Strategic priorities quickly, efficiently and effectively

Optimise use of existing assets

18. It is unclear how this point is scored when Option 7 relies on working outside the existing corridor and requires realignment of Gunton Drive (which is not mentioned for Option 7 in the MCA extract but is noted for Option 13.

1	Realigned shared path, motorway remains as is. Substation to be relocated, footbridge replaced

Figure 4 – Extract NZTA MCA - Option 7 Opimise use of existing assets, Gunton Drive omitted

0	Realigned shared path; realign Gunton Drive. No impact to substation

Figure 5 – Extract NZTA MCA - Option 13 Opimise use of existing assets.

19. In my view, when the realignment of Gunton Drive and the SH18 onramp are properly accounted for, Option 7 should score -1 on this criterion; so worse than Option 13.

Figure 6 – Option 7, showing the realignment of Gunton Drive and the onramp to SH18.

20. If optimisation considered the use of the existing transit corridor as an asset, Option 7 total score could be further reduced.

21. I agree with NZTA's score of +1 for Option 3.

Technically feasible

22. I expect the relocation of the high-voltage substation for Option 7 introduces significant additional complexity and risk that is not fully reflected in the -2 score. In contrast, Option 3 avoids substation relocation entirely.

23. Option 3 has been scored -3 whereas it doesn't impact the substation, however it shares the need for an underpass below Hobsonville Road rather than Fred Taylor Drive.

24. I acknowledge the underpass below Hobsonville Road is more complex than the Fred Taylor option with the working space and the existing structure. I would challenge that Option 7 and Option 3, when the substation is considered, likely present the same level of complexity.

25. Further, I think Option 7 and Option 3 have more technical risk than Option 13 and therefore the scoring should acknowledge a difference. I do not agree with the current scoring where Option 7 and Option 13 has been assigned the same score of -2, I consider that Option 7 reduces from -2 to -3 to align with Option 3.

Value for Money

26. The Value for Money criterion does not appear to adequately consider the full cost of land acquisition, business disruption, or loss of future development potential on private land.

Property

27. I do not think the scoring accurately reflects the severity of the property impacts between each option. All options are scored -2 or -3, a single point of difference seems deficient to quantify the differences between each option.

28. I would expect Option 13 to score better than Option 7, and Option 3 to score better than Option 13 (noting the effects of an overpass on property).

29. Making the adjustments outlined above, in my opinion the relative ranking of the options changes. My revised scoring is shown in Table 2 following. These adjustments suggest that Option 3 performs at least as well as Option 13, and in my view better than Option 7 when property impacts and optimisation of the existing corridor are given appropriate weight.

Table 2: MCA Analysis — NZTA Scoring vs Chester Revised Scoring

Comparison of NZTA MCA scores and Chester's revised scores for key differentiating criteria. NZTA scores and rationale are drawn directly from the D085 MCA document.

Score key: +3 large positive • +2 moderate positive • +1 minor positive • 0 neutral • -1 minor negative • -2 moderate negative • -3 large negative.

	Option 7 (NZTA Preferred)	Option 13	Option 3	Chester Challenge & Rationale
Sieve 2 — Critical Success Factors				
Optimise use of existing assets				
NZTA score	**+1**	**0**	**+1**	Option 7 scores +1 (equal to Option 3) yet requires realignment of Gunton Drive and reconstruction of the SH18 on-ramp — neither mentioned in the MCA rationale for Option 7, despite being explicitly noted for Option 13. This is a material inconsistency. When properly accounted for, Option 7 should score 0 or -1. Chester revised: Option 7 = -1; Option 13 = 0 (unchanged); Option 3 = +1 (unchanged).
NZTA rationale	Realigned shared path, motorway remains as is. No impact to substation, footbridge replaced.	Realigned shared path; realign Gunton Drive. No impact to substation.	Realigned shared path, motorway remains as is. No impact to substation, footbridge replaced.	
Chester revised score	**-1**	**0**	**+1**	
Technically feasible				
NZTA score	**-2**	**-2**	**-3**	Option 3 is rated -3 primarily due to the underpass near the existing bridge abutment. However, Option 7 requires relocation of a high-voltage Vector substation — a significantly complex undertaking involving regulated asset negotiations, long equipment procurement lead times, and live network continuity management. This risk is under-weighted in the -2 score for Option 7. Chester's view: Option 7 carries equal or greater technical risk to Option 3. Chester revised: Option 7 = -3; Option 3 = -3. Option 13 retained at -2.
NZTA rationale	Bridge construction requires temporary closure of ramps. Underpass construction near existing bridge abutment may require entire road closure for extended period. High risk overall.	Bridge design feasible; construction requires working over substation and temporary closure of ramps & arterial road — moderate risk. Vertical alignment exceeds desirable grade. Realignment of Westgate footbridge — moderate complexity. Overall moderate technical difficulty.	Relocating substation & medical centre — moderate risk. Underpass construction at arterial road — moderate risk and difficulty. Overall moderate technical difficulty.	
Chester revised score	**-3**	**-2**	**-3**	
Value for money				
NZTA score	**+1**	**+1**	**+1**	All three options score +1 despite Option 7 requiring significantly greater land acquisition, business displacement (up to 10 businesses), and infrastructure relocation (Vector substation). The full cost of land purchase, compensation, business disruption, and loss of future development potential is not reflected. Option 3 avoids these costs almost entirely while achieving the same transport outcomes. Chester revised: Option 7 = 0; Option 13 = +1 (unchanged); Option 3 = +2.
NZTA rationale	Achieves project benefits well with moderate cost.	Achieves project benefits well with moderate cost.	Achieves project benefits well with moderate cost.	
Chester revised score	**0**	**+1**	**+2**	
Property				
NZTA score	**-3**	**-3**	**-2**	The scoring range of -2 to -3 is too narrow to capture the material differences. Option 7 affects 14 landowners with 8,940m² of permanent purchase and displacement of up to 10 businesses; Option 3 affects 2 landowners with only 75m² of permanent purchase and no business displacement. Critically, Option 3's land impact is predominantly temporary occupation — reversible and
NZTA rationale	14 private landowners impacted. Approx. 15,135m² of land required (6,195m² temp occupation, 8,940m² purchase). Potentially 10 businesses	12 private landowners impacted. Approx. 10,459m² of land required (3,692m² temp occupation, 6,767m² purchase). Potentially 9 businesses	2 private landowners impacted. Approx. 4,550m² of land required (4,475m² temp occupation, 75m² purchase). Vector substation rear	

	Option 7 (NZTA Preferred)	Option 13	Option 3	Chester Challenge & Rationale
	affected. Significant impact to Westgate Shopping Centre, Stride's NorthWest Shopping Centre, and full impact to Vector.	affected. Significant impact to Westgate Shopping Centre and Stride's NorthWest Shopping Centre.	land purchase and Westgate Shopping Centre car park temporary occupation only. No impact on NorthWest Shopping Centre.	categorically different from permanent acquisition and does not affect the NorthWest Shopping Centre (by land take or realignment of Gunton Drive). The methodology does not distinguish between temporary and permanent impacts. Chester revised: Option 7 = -3 (unchanged); Option 13 = -2 (smaller footprint, fewer businesses); Option 3 = 0 (minimal permanent impact).
Chester revised score	**-3**	**-2**	**0**	
Overall MCA Score — Full Assessment (incorporating all Sieve 1, 2 and 3 criteria)				
Full MCA aggregate score NZTA total score	**+4**	**+5**	**+3**	NZTA's analysis identified Option 13 as the emerging preferred option, but further review comparing the 'under-pass' and 'over-pass' alignment found that on balance the under-pass (Option 7) was preferred as it can enable better long-term customer and operational benefits.
Chester revised total score	**0**	**+6**	**+6**	On Chester's revised scoring, Options 13 and 3 are on an equal footing with NZTA preferred Option 7 moving from second to third in the rankings. As above Option 3 has clear benefits in respect of reduced land take and disruption to Westgate during construction.

Note: Only the key differentiating Sieve 2 criteria are shown above. Sieve 1 (transport performance) and remaining Sieve 3 (environmental effects) criteria are not differentiators between these options.

STRIDE'S PREFERRED OPTION AND COMPARISON WITH NZTA'S PREFERRED OPTION

30. Stride's preferred option is Option 3 where the works are largely contained within the existing transit corridor and the project does not require Stride land to be purchased or encumbered.

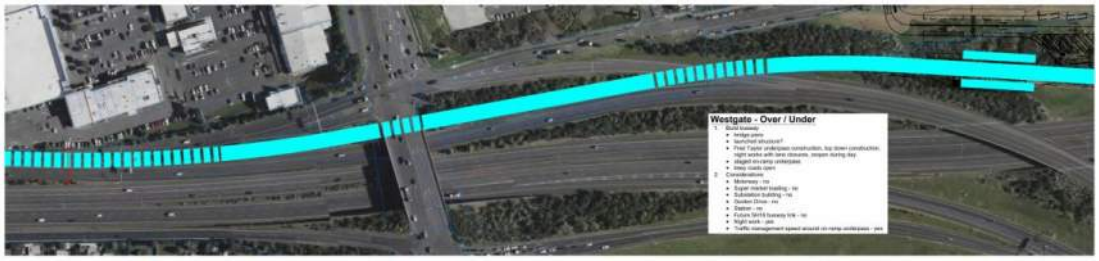

Figure 6: NZTA Option 3 with an underpass at Fred Taylor Drive

31. Further to the interests of Stride's property, it also appears to significantly reduce the impact on the NZRPG site which is also affected by Option 7.

32. The preferred option (Option 7) creates considerable disruption through what I would expect to be a cut and cover construction methodology below Fred Taylor Drive; this disruption is not considered to be dissimilar to the cut and cover operation that would be anticipated in Option 3.

33. The cut and cover methodology in both options is anticipated to mean a reduction in through lanes whilst the works progress across the road corridor with movement lanes switched part way through construction to allow the next section to be constructed prior to completion and a return to normal operation. However, Option 3 requires these works to the east of the Fred Taylor Drive / Hobsonville Road intersection while Option 7 is to the west – which would be more disruptive to traffic coming off SH16 and traveling to Westgate via Gunton Drive or Fred Taylor Drive.

34. The realignment of Gunton Drive is required to achieve Option 7; these realignment works will create significant disruption which are avoided in Option 3.

35. The realignment of the SH18 onramp is required to achieve Option 7, these realignment works will create significant disruption which are avoided in Option 3.

36. While Option 3 has a complex underpass adjacent to an existing bridge abutment, Option 7 involves multiple concurrent disruptions: a longer underpass, Gunton Drive realignment, and SH18 onramp reconstruction. In my experience, the cumulative effect of these works is likely to result in greater overall traffic disruption and a longer construction programme.

37. Option 7 requires a more significant amount of working space in the public realm with more lane shifts, closures and re-directions and a longer construction programme to execute.

CONCLUDING COMMENTS

38. In my opinion, the project objectives for NoR 2 can be achieved with minimal impact on private property, including no impact on land owned by Stride, by adopting Option 3 (or a further refined version of it).

39. Option 3 provides the best overall balance — delivering the least property impact, the highest utilisation of the existing transport corridor, and reduced construction disruption.

DATED this 26th day of May 2026

Steven Rankin

Appendix A – NZTA MCA Document

Multi-Criteria Analysis

D085 Alignment of busway through Fred Taylor Interchange

Category	Criterion	KPI	Description for assessment	Option 3	Over/under option – bridges over narrow point by substation then goes under Fred Taylor	Option 5	Bridge over SH off ramp, realigned SH18 ramps, underpass at SH on ramp (north of Fred Taylor) to join to similar elevation of Westgate stage 1 .
Sieve 1: Objectives & Benefits	Enable rapid transit between Brigham Creek Road and Auckland City Centre, the provides the following benefits	Improved travel times	Overall travel time savings for people on PT and general traffic	3	Fully segregated	3	Fully segregated
		Increased corridor capacity and throughput	Extent to which it provides capacity to meet 2031 and 2051 full busway demand (across the day)	3	Meets demand	3	Meets demand
		Improves travel reliability	Proportion of segregated/uninterupted running 3 - largely separated, 2 - moderately separated, 1 - minimal separation	3	Not a differentiator - fully segregated	3	Not a differentiator - fully segregated
		Improved user experience	Extent to which it attracts customers	3	Not a differentiator - fully segregated; no difference in station provision	3	Not a differentiator - fully segregated; no difference in station provision
		Increased PT mode share	% mode share of PT (Assumption: based on likely impact on boardings)	2		2	
		Increased PT ridership	N/A for this level of assessment (assessment is same as PT mode share)	N/A		N/A	
		Increased opportunity for residential & employment growth	N/A - More compact urban growth (more efficient investment for all infrastructure and economic connectivity).	N/A		N/A	
Sieve 2: Critical Success Factors	Deliver on strategic priorities quickly, efficiently and effectively	Optimise use of existing assets	Extent to which the option optimises use of existing transport network, connections, services	1	Realigned shared path, motorway remains as is. No impact to substation, footbridge replaced	0	Realigned shared path; busway uses existing link under Hobsonville Road but requires realignment of existing Sh18 link. No impact to substation, footbridge replaced
		Flexible, stageable & focussed on early benefit realisation	Ability to implement sections of the corridor in a staged (and flexible) manner, and realise benefits early.	1	Reduced opportunity for early benefits realisaion due to technical feasibility and construction impacts	-1	Reduced opportunity for early benefits realisaion due to technical feasibility and construction impacts; impacts to SH18 ramp will impact WX1 current operations (and general traffic) temporarily
		Technically feas ble	Extent that physical constraints (e.g., geology and topography), technical complexity, risk and constructability significantly constrain an option.	-3	Bridge construction requires temporary closure of ramps. Underpass construction near existing bridge abutment may require entire road closure for extended period. High risk. Overall high technical difficulty.	-3	Bridge construction requires temporary closure of ramps - moderate risk. Realignment of SH18 ramp - high risk. Overall high technical difficulty.
		Value for money	Level of benefits it achieves compared to the total cost Negative is outside cost envelope	1	Achieves project benefits well with moderate cost.	2	Achieves long term project benefits well with potentially more cost effective solution than other options.
	Property	How does the option impact on property? Can the necessary property rights be obtained? Quantitative assessment of area of land impact, area of land affected by zoning, number of properties and types of acquisition required.		-2	2 private landowners impacted. Approx. 4,550m2 of land required (4,475m2 temp occupation, 75m2 purchase). s 9(2)(b)(ii) [redacted]	-2	2 private landowners impacted. Approx. 4,550m2 of land required (4,475m2 temp occupation, 75m2 purchase). s 9(2)(b)(ii) [redacted]
	Noise	Significance of the effect generated from noise - construction (with mitigation)		-1	Construc ion and excavation adjacent to sensitive receivers s 9(2)(b)(ii) [redacted] works, location and duration unknown. Assume CNVMP including measures in place will mitigate effects.	-1	Construction and excavation adjacent to sensitive receivers s 9(2)(b)(ii) [redacted] CNVMP including measures in place will mitigate effects.
		Significance of the effect generated from noise - operations (with mitigation)		0	Neglible operation noise effects on adjacent sensitive receivers (i.e. residential receivers) due to high background operational noise levels from the existing SH16 and the busway will be separated by the proposed shared pathway directly adjoining the residential receivers. Mitigation measures could include acoustic barriers adjacent to residential receivers if required.	0	Neglible operation noise effects on adjacent sensitive receivers (i.e. residential receivers) due to high background operational noise levels from the existing SH16 and the busway will be separated by the proposed shared pathway directly adjoining the residential receivers. Mitigation measures could include acoustic barriers adjacent to residential receivers if required.
	Vibration	Significance of the effect generated from v bration - construction (with mitigation)		-1	Construc ion and excavation adjacent to sensitive receivers s 9(2)(b)(ii) [redacted] Note a ed on the plan referring to planned night works, location and dura ion unknown. Assume CNVMP including measures in place will	-1	Construction and excavation adjacent to sensitive receivers s 9(2)(b)(ii) [redacted] will mitiga e effects.
		Significance of the effect generated from v bration - operations (with mitigation)		0	Neglible operational v b tion n adjacent sensitive recei ers (i.e. resid ntial receivers) due to high backg ou d operational noise levels from the existing SH16 and the busway will be separ ted y th pr posed shared pathway dire y ad oining the residential receivers. Assu e that he buses will operate along a smooth r d surface.	0	Neglible operational vibration on adjacent sensitive receivers (i.e. residential receivers) due to high background operational noise levels from the existing SH16 and the busway will be separated by the proposed shared pathway directly adjoining the residential receivers. Assume that the buses will operate along a smooth road surface.

KPI	Option 7	At grade north of wetland,through substation (to be relocated), underpasses at Fred Taylor and Gunton Drive	Option 11	Long overpass from pedestrian bridge to east of Gunton Drive, requires split-level Westgate Station.
Improved travel times	3	Fully segregated	3	Fully segregated
Increased corridor capacity and throughput	3	Meets demand	3	Meets demand
Improves travel reliability	3	Not a differentiator - fully segregated	3	Not a differentiator - fully segregated
Improved user experience	3	Not a differentiator - fully segregated; no difference in station provision	3	Not a differentiator - fully segregated; no difference in station provision
Increased PT mode share	2		2	
Increased PT ridership	N/A		N/A	
Increased opportunity for residential & employment growth	N/A		N/A	
Optimise use of existing assets	1	Realigned shared path, motorway remains as is. Substation to be relocated, footbridge replaced	0	Realigned shared path; impacts to current Westgate station layout. No impact to substation, footbridge replaced
Flexible, stageable & focussed on early benefit realisation	1	Reduced opportunity for early benefits realisaion due to technical feasibility and construction impacts	-1	Reduced opportunity for early benefits realisaion due to technical feasibility and construction impacts, and the need for a connection from the raised Westgate RTN sta ion to the local station for buses in a staged situation.
Technically feas ble	-2	Relocating substation & medical centre - moderate risk. Underpass construction at arterial road - moderate risk and difficultly. Overall moderate technical difficulty.	-2	Bridge construction requires temporary closure of ramps - moderate risk. Overall moderate technical difficulty.
Value for money	1	Achieves project benefits well with moderate cost.	1	Achieves project benefits well with moderate cost.
How does the option impact on property? Can the necessary property rights be obtained? Quantitative assessment of area of land impact, area of land affected by zoning, number of properties and types of acquisition required.	-3	14 private landowners impacted. Approx. 15,135m2 of land required (6,195m2 temp occupation, 8,940m2 purchase). Potentially 10 businesses also afected at Westgate. Significant impact to the Westgate Commercial centre with various commercial units to be acquired, plus general impact to the circulation/car park areas. Also a purchase of land from Stride's Northwest shopping centre landscaped area and full impact to Vector.	-3	12 private landowners impacted. Approx. 10,459m2 of land required (3,692m2 temp occupation, 6,767m2 purchase). Potentially 9 businesses also afected at Westgate. s 9(2)(b)(ii) [redacted] a purchase of land from Stride's Northwest shopping centre landscaped area.
Significance of the effect generated from noise - construction (with mitigation)	-1	Construc ion and excavation adjacent to sensitive receivers s 9(2)(b)(ii) [redacted] Assume CNVMP including measures in place will mitigate effects.	-1	Construction and excavation adjacent to sensitive receivers (s 9(2)(b)(ii) [redacted] will mitigate effects.
Significance of the effect generated from noise - operations (with mitigation)	0	Neglible operation noise effects on adjacent sensitive receivers (i.e. residential receivers) due to high background operational noise levels from the existing SH16 and the busway will be separated by the proposed shared pathway directly adjoining the residential receivers. Mitigation measures could include acoustic barriers adjacent to residential receivers if required.	0	Neglible operation noise effects on adjacent sensitive receivers (i.e. residential receivers) due to high background operational noise levels from the existing SH16 and the busway will be separated by the proposed shared pathway directly adjoining the residential receivers. Mitigation measures could include acoustic barriers adjacent to residential receivers if required.
Significance of the effect generated from v bration - construction (with mitigation)	-1	Construc ion and excavation adjacent to sensitive s 9(2)(b)(ii) [redacted] Assume CNVMP including measures in place will mitigate effects.	-1	Neglible operational vibration effects on adjacent sensitive receivers (i.e. residential receivers) due to high background operational noise levels from the existing SH16 and the busway will be separated by the proposed shared pathway directly adjoining the residential receivers. Mitigation measures could include acoustic barriers adjacent to residential receivers if required.
Significance of the effect generated from v bration - operations (with mitigation)	0	Neglible operational vibration on adjacent sensitive receivers (i.e. residential receivers) due to high background operational noise levels from the existing SH16 and the busway will be separated by the proposed shared pathway directly adjoining the residential receivers. Assume that the buses will operate along a smooth road surface.	0	Neglible operational vibration on adjacent sensitive receivers (i.e. residential receivers) due to high background operational noise levels from the existing SH16 and the busway will be separated by the proposed shared pathway directly adjoining the residential receivers. Assume that he buses will operate along a smooth road surface.

KPI	Option 12	Bridge across SH to east side , bridge back to west side after Hobsonville Rd, requires split level Westgate Station	Option 13	Overpass from pedestrian bridge to east of Gunton Drive, realignment of Gunton Drive
Improved travel times	3	Fully segregated	3	Fully segregated
Increased corridor capacity and throughput	3	Meets demand	3	Meets demand
Improves travel reliability	3	Not a differentiator - fully segregated	3	Not a differentiator - fully segregated
Improved user experience	3	Not a differentiator - fully segregated; no difference in station provision	3	Not a differentiator - fully segregated; no difference in station provision
Increased PT mode share	2		2	
Increased PT ridership	N/A		N/A	
Increased opportunity for residential & employment growth	N/A		N/A	
Optimise use of existing assets	0	Realigned shared path; impacts to current Westgate station layout No impact to substa ion, footbridge replaced	0	Realigned shared path; realign Gunton Drive. No impact to substation
Flexible, stageable & focussed on early benefit realisation	-1	Reduced opportunity for early benefits realisaion due to technical feasibility and construction impacts, and the need for a connec ion from the raised Westgate RTN station to the local station for buses in a staged situation.	1	Reduced opportunity for early benefits realisaion due to technical feasibility and construction impacts
Technically feas ble	-2	Bridge construction requires temporary closure of ramps - moderate risk. Overall moderate technical difficulty.	-2	Bridge design feasible, construction requires working over substation and temporary closure of ramps & arterial road - moderate risk. Vertical alignment exceeds desirable grade but less than maximum grade - moderate risk. Realignment of Westgate footbridge and approaches moderate complexity but feasible. Overall moderate technical difficulty.
Value for money	1	Achieves project benefits well with moderate cost.	1	Achieves project benefits well with moderate cost.
How does the option impact on property? Can the necessary property rights be obtained? Quantitative assessment of area of land impact, area of land affected by zoning, number of properties and types of acquisition required.	-2	13 private landowners impacted (residential full purchases). Plus Manutewhau Walk recreation reserve. Approx. 9,664m2 of land required for purchase, plus working assumption is that the council land (Manutewhau Walk) is for temporary occupation purposes only to install a new footbridge which will have mitigation planting works etc. This option requires removal of 14 dwellings (one being a home+minor dwelling).	-3	12 private landowners impacted. Approx. 10,459m2 of land required (3,692m2 temp occupation, 6,767m2 purchase). Potentially 9 businesses also afected at Westgate. Significant impact to the s 9(2)(b)(ii) [redacted] Also a purchase of land from Stride's Northwest shopping centre landscaped area.
Significance of the effect generated from noise - construction (with mitigation)	-2	Construc ion and excavation works are required for the busway corridor/structures within residential land on the east side of SH16 (i.e. on Oreil Avenue) and in proximity to other sensitive residential receivers on the east side of SH16 . Assume that for the section of the busway corridor located within/above the residential land on the eastern side of SH16 (i.e. corner of SH16/Hobsonville Road/Oreil Avenue) will be purchased. For he remaining of the	-1	Construction and excavation adjacent to sensitive receivers s 9(2)(b)(ii) [redacted] place will mitigate effects.
Significance of the effect generated from noise - operations (with mitigation)	-1	Majority of the busway is proposed to be bridged with a 'launched structure' over SH16 corridor (towards the east of SH16) which will be located directly within and over residential land. The extent of the 'launched structure' crosses over SH16 towards the east of SH16 and proposed to be elevated structures over and in proximity to residential areas. Assume that for the section of the busway corridor located within the	0	Neglible operation noise effects on adjacent sensitive receivers (i.e. residential receivers) due to high background operational noise levels from the existing SH16 and the busway will be separated by the proposed shared pathway directly adjoining the residential receivers. Mitigation measures could include acoustic barriers adjacent to residential receivers if required.
Significance of the effect generated from v bration - construction (with mitigation)	-2	Construc ion and excavation works are required for the busway corridor/structures within residential land on the east side of SH16 (i.e. on Oreil Avenue) and in proximity to other sensitive residential receivers on the east side of SH16 . Assume that for the section of the busway corridor located within/above the residential land on the eastern side of SH16 (i.e. corner of SH16/Hobsonville Road/Oreil Avenue) will be	-1	Neglible operational vibra ion effects on adjacent sensitive receivers (i.e. residential receivers) due to high background operational noise levels from the existing SH16 and the busway will be separated by the proposed shared pa hway direc ly adjoining the residential receivers. Mitigation measures could include acoustic barriers adjacent to residential receivers if required.
Significance of the effect generated from v bration - operations (with mitigation)	-1	Majority of the busway is proposed to be bridged with a 'launched structure' over SH16 corridor (towards the east of SH16) which will be located directly within and over residential land. The extent of the 'launched structure' crosses over SH16 towards the east of SH16 and proposed to be elevated structures over and in proximity to residential areas. Assume that for the section of [illegible]	0	Neglible operational vibra ion on adjacent sensitive receivers (i.e. residential receivers) due to high background operational noise levels from the existing SH16 and the busway will be separated by the proposed shared pathway directly adjoining the residential receivers. Assume that the buses will operate along a smooth road surface.

D085 Alignment of busway through Fred Taylor Interchange

Category	Criterion	KPI	Description for assessment	Option 3		Option 5		Option 7		Option 11		Option 12		Option 13	
				Over/under option – bridges over narrow point by substation then goes under Fred Taylor		Bridge over SH off ramp, realigned SH18 ramps, underpass at SH on ramp (north of Fred Taylor) to join to similar elevation of Westgate stage 1 .		At grade north of wetland,through substation (to be relocated), underpasses at Fred Taylor and Gunton Drive		Long overpass from pedestrian bridge to east of Gunton Drive, requires split-level Westgate Station.		Bridge across SH to east side , bridge back to west side after Hobsonville Rd, requires split level Westgate Station		Overpass from pedestrian bridge to east of Gunton Drive, realignment of Gunton Drive	
Sieve 3: Effects	Landscape and Visual	Comparative effect on landscape and visual impacts operations (with mitigation)		-1	New busway bridge is proposed over existing SH Ramp which is immediately adjacent to Westgate Centre (business zone). The extent of the busway bridge has the potential to be visible from residential receivers south of Town centre and on the other side of the SH16 corridor (i.e. the north of SH16). Eleva ions, height and viewpoints of the busway from residential areas are unknown. Potential moderate adverse visual amenity and landscape effects, but existing environment is already highly modified by the existing SH16 corridor and existing SH16 provides separation distance. The new busway/realigned shared pathway will also be adjacent to residential receivers along SH16 corridor and assume mitigation measures such as planting, fencing, acoustic barriers.	-1	New busway bridge is proposed over existing SH Ramp which is immediately adjacent to Westgate Centre (business zone). The extent of the busway bridge has the potential to be visible from residential receivers south of Town centre and on he other side of the SH16 corridor (i.e. the north of SH16). Elevations, height and viewpoints of the busway from residential areas are unknown. Potential moderate adverse visual amenity and landscape effects, but existing environment is already highly modified by the existing SH16 corridor and existing SH16 provides separation distance. The new busway/realigned shared pathway will also be adjacent to residential receivers along SH16 corridor and assume mitigation measures such as planting, fencing, acoustic barriers.	0	New busway bridge is of limited length i.e. above the SW wetland. Negligible adverse visual amenity and landscape effects in rela ion to the highly modified urban landscape of the existing SH16 corridor. At grade alignment adjacent residential receivers reduces potential impacts on these areas. Assumes mi igation measures such as planting, fencing, acoustic barriers.	-1	Majority of the busway is proposed to be bridged, 'super T structure' over SH Ramp, Gunton Drive, Fred Taylor Drive/Hobsonville Road, and elevated bus station immediately adjacent to Westgate Centre (business zone). The section of the busway near the existing pedestrian footbridge over the SH16 corridor is proposed on an elevated structures (i.e. above existing SH16 structures) and has the potential to be visible from residential areas to the south of Town centre and on the other side of the SH16 corridor (i.e. the north of SH16). Elevations, height and viewpoints of the busway from residential receivers are unknown. Potential moderate adverse visual amenity and landscape effects, but existing environment is already highly modified by the existing SH16 corridor and existing SH16 provides separation distance. The new busway will also be adjacent to residential receivers along SH16 corridor and assume mitigation measures such as planting, fencing, acoustic barriers.	-2	Majority of the busway is proposed to be bridged with a 'launched structure' over SH16 corridor (towards the east of SH16) which will be located directly within and over residential land. Proposed elevated bus station immediately adjacent to Westgate Centre (business zone).The extent of the 'launched structure' crosses over SH16 towards the east of SH16 which is within and visible from residential areas with the potential for moderate adverse visual amenity and landscape effects. Elevations, height and viewpoints of the busway from residential areas are unknown. Assume that busway corridor located within the residential land on the eastern side of SH16 (i.e. corner of SH16/Hobsonville Road/Oreil Avenue) will be purchased. For busway/realigned shared pathway adjacent to residential area/SH16, assume mitigation measures such as planting, fencing, acoustic barriers.	-1	Bridge over ramps and existing roads within or adjacent to the SH16 corridor.
	Ecology - Terrestrial	Impacts on terrestrial ecology - construction (with mitigation)		-2	Native vegetation loss and Bats are known to be present in the area. Impacts on constructed wetlands which may provide habitat for wetland species.	-2	Native vegetation loss and Bats are known to be present in the area. Impacts on constructed wetlands which may provide habitat for wetland species.	-2	Native vegetation loss and Bats are known to be present in the area. Impacts on constructed wetlands which may provide habitat for wetland species.	-2	Native vegetation loss and Bats are known to be present in the area. Impacts on constructed wetlands which may provide habitat for wetland species.	-2	Native vegetation loss and Bats are known to be present in the area. Impacts on constructed wetlands which may provide habitat for wetland species.	-1	Loss of some native (planted) vegetation (likely planting from former SH16 works). Potential for impacts to fauna (birds & bats) that may use the Manutewhau riparian corridor and adjacent SW wetland.
		Impacts on terrestrial ecology - operations (with mitigation)		-1	Shading of the busway bridge over the SW constructed wetland (?) between Westgate Centre and residential area alongside SH16. Realigned cycleway adjacent to the SH16 may require works within SW constructed wetland (?) and potential stream channel clearancebetween the two residential areas along SH16 which may limit opportunities for areas of replacement/mitigation planting.	-1	Shading of the busway bridge over the SW constructed wetland (?) between Westgate Centre and residential area alongside SH16. Realigned cycleway adjacent to the SH16 may be located within SW constructed wetland (?) and requiring stream channel between the two residential areas along SH16 which may limit opportunities for areas of replacement/mitigation planting.	-1	Shading of the busway bridge over he SW constructed wetland (?) between Westgate Centre and residential area alongside SH16. Realigned cycleway adjacent to the SH16 may require works within SW constructed wetland (?) and potential stream channel clearancebetween the two residential areas along SH16 which may limit opportunities for areas of replacement/mitigation planting.	-1	Shading of the busway bridge over the SW constructed wetland (?) between Westgate Centre and residential area alongside SH16. Realigned cycleway adjacent to the SH16 may require works within SW constructed wetland (?) and potential stream channel clearancebetween the two residential areas along SH16 which may limit opportunities for areas of replacement/mitigation planting.	-1	Shading of the busway bridge over he SW constructed wetland (?) between Westgate Centre and residential area alongside SH16. Realigned cycleway adjacent to the SH16 may require works within SW constructed wetland (?) and potential stream channel clearancebetween the two residential areas along SH16 which may limit opportuni ies for areas of replacement/mitigation planting.	-1	Prescence of busway likely to increase noise and light effects. Shading over SW we land and riparian habitat. Operation noise and shading may impact potential faunal usage (birds and bats).
	Ecology - Freshwater	Impacts on freshwater ecology - construction (with mitigation)		-2	Construc ion works (i.e. earthworks and vegetation removal) for the new busway bridge over the SW constructed wetland (?), busway corridor and realigned cycleway adjacent to SH16 are likely within permanent streams/creeks (including riparian margin) such as Totara Creek (large stream and wetland complex), Manutewhau Stream and other stream channels. Potential potential stream loss required. Moderate freshwater ecology effects.	-2	Construction works (i.e. earthworks and vegetation removal) for the new busway bridge over the SW constructed wetland (?), busway corridor and realigned cycleway adjacent to SH16 are likely within permanent streams/creeks (including riparian margin) such as Totara Creek (large stream and wetland complex), Manutewhau Stream and other stream channels. Potential potential stream loss required. Moderate freshwater ecology effects.	-2	Construc ion works (i.e. earthworks and vegetation removal) for the new busway bridge over the SW constructed wetland (?), busway corridor and realigned cycleway adjacent to SH16 are likely within permanent streams/creeks (including riparian margin) such as Totara Creek (large stream and wetland complex), Manutewhau Stream and other stream channels. Potential potential stream loss required. Moderate freshwater ecology effects.	-2	Construction works (i.e. earthworks and vegetation removal) for the new busway bridge over the SW constructed wetland (?), busway corridor and realigned cycleway adjacent to SH16 are likely within permanent streams/creeks (including riparian margin) such as Totara Creek (large stream and wetland complex), Manutewhau Stream and other stream channels. Potential potential stream loss required. Moderate freshwater ecology effects.	-2	Construc ion works (i.e. earthworks and vegetation removal) for the new busway bridge over the SW constructed wetland (?), busway corridor and realigned cycleway adjacent to SH16 are likely within permanent streams/creeks (including riparian margin) such as Totara Creek (large stream and wetland complex), Manutewhau Stream and other stream channels. Potential potential stream loss required. Moderate freshwater ecology effects.	0	Score is based on the understanding that the Manutewhau Creek will be bridged and there will be no loss of stream. Possibly some works within riparian margins (Assume no works / bridge abuments located within the stream channel).
		Impacts on freshwater ecology - operations (with mitigation)		-1	Busway is proposed to be bridged over SW constructed wetland (?). The realigned cycleway adjacent to SH16 may be within the Totara Creek/Streams. Potential for permanent stream loss (?) associated with busway corridor (i.e. piping of stream), but assume can be mitigated (or offset). Potential permanent shading over the Creek/stream from the busway structures and assume that no piers associated with the busway bridge are installed within the Creek/Stream. Potential minor stormwater discharge effects are mitigated through effective stormwater controls.	-1	Busway is proposed to be bridged over SW constructed wetland (?). The realigned cycleway adjacent to SH16 may be within the Totara Creek/Streams. Potential for permanent stream loss (?) associated with busway corridor (i.e. piping of stream), but assume can be mitigated (or offset). Poten ial permanent shading over the Creek/stream from he busway structures and assume that no piers/structures associated with the busway bridge are installed within the Creek/Stream/wetlands. Potential minor stormwater discharge effects are mitigated through effective stormwater controls.	-1	Busway is proposed to be bridged over SW constructed wetland (?). The realigned cycleway adjacent to SH16 may be within the Totara Creek/Streams. Potential for permanent stream loss (?) associated with busway corridor (i.e. piping of stream), but assume can be mitigated (or offset). Potential permanent shading over the Creek/stream from the busway structures and assume that no piers/structures associated with the busway bridge are installed within the Creek/Stream/wetland. Potential minor stormwater discharge effects are mitigated through effective stormwater controls.	-1	Majority of the corridor is proposed to be bridged over the Totara Creek/Streams and SW constructed wetland, assume that no piers are installed within the Creek/Stream/wetlands. The realigned cycleway adjacent to SH16 may be within the Totara Creek/Streams, but assume can be mitigated (or offset). Potential permanent shading over the Creek/stream from the busway structures. Potential minor stormwater discharge effects are mitigated through effective stormwater controls.	-1	Majority of the corridor is proposed to be bridged over the Totara Creek/Streams and SW constructed wetland, assume that no piers are installed within the Creek/Stream/wetlands. The realigned cycleway adjacent to SH16 may be within the Totara Creek/Streams, but assume can be mitigated (or offset). Potential permanent shading over the Creek/stream from the busway structures. Potential minor stormwater discharge effects are mitigated through effective stormwater controls.	-1	Bridge over Manutewhau Creek and SW wetland. Poten ial for some shading of the Manutewhau Creek. Unlikely to be a sufficient enough neg/positive effect.
	Ecology - Marine and coastal avifauna	Impacts on marine ecology and coastal avifauna - construction (with mitigation)		N/A	N/A. Zone 5 is not located near to the CMA or on the coastal edge	N/A	N/A. Not located near to the CMA or on the coastal edge	N/A	N/A. Not located near to the CMA or on the coastal edge	N/A	N/A. Not located near to the CMA or on the coastal edge	N/A	N/A. Not located near to the CMA or on the coastal edge	N/A	N/A. Not located near to the CMA or on the coastal edge
		Impacts on marine ecology and coastal avifauna - operations (with mitigation)		N/A	N/A. Zone 5 is not located near to the CMA or on the coastal edge.	N/A	N/A. Not located near to the CMA or on the coastal edge	N/A	N/A. Not located near to the CMA or on the coastal edge	N/A	N/A. Not located near to the CMA or on the coastal edge	N/A	N/A. Not located near to the CMA or on the coastal edge	N/A	N/A. Not located near to the CMA or on the coastal edge
	Arboriculture	Impact on trees (and which trees)-operations (with mitigation)		0	Corridor likely to require removal of vegetation/trees. Assume replacement planting as mitigation.	0	Corridor likely to require removal of vegetation/trees. Assume replaceme t p an ing as mitigation.	0	Corridor likely to require removal of vegetation/trees. Assume replacement planting as mitigation.	0	Corridor likely to require removal of vegetation/trees. Assume replacement plan ing as mitigation.	0	Corridor likely to require removal of vegetation/trees. Assume replacement planting as mitigation.	0	Corridor likely to require removal of vegetation/trees. Assume replacement planting as mitigation.
	Archaeology and Built Heritage	Impact on European heritage and/or archaeology - construction (with mitigation)		0	Previous assessment notes that due to the proximity to Creeks and other tributaries, there is the possiblty of previously unrecorded pre-European Māori archaeology and historic heritage in the vicinity. Further research would be required with mitigation measures.	0	Previous assessment notes that d e to th proximity to Creeks and other tributa es, the e is the possiblty of previously unrecorded e-European Māori archaeology and historic heritage in he vicinity. Further research would be required with mit g on measures.	0	Previous assessment notes that due to the proximity to Creeks and other tributaries, here is the possiblty of previously unrecorded pre-European Māori archaeology and historic heritage in the vicinity. Further research would be required with mitigation measures.	0	Previous assessment notes that due to the proximity to Creeks and other tributaries, there is the possiblty of previously unrecorded pre-European Māori archaeology and historic heritage in the vicinity. Further research would be required with mitigation measures.	0	Previous assessment notes that due to the proximity to Creeks and other tributaries, here is the possiblty of previously unrecorded pre-European Māori archaeology and historic heritage in the vicinity. Further research would be required with mitigation measures.	0	Previous assessment notes hat due to the proximity to Creeks and other tributaries, there is the possiblty of previously unrecorded pre-European Māori archaeology and historic heritage in the vicinity. Further research would be required with mitigation measures.
	Social - Open Space and recreation	Impact on identified open space and recreational facilities/values - operations (with mitigation)		0	Impacts two areas of land zoned open space under the AUP:OP, but these are located entirely within existing NZTA designation for the SH16 Corridor.	0	Impacts two reas land zoned open space under the AUP P, but these are located entirely w thin exis ng NZTA designation for the SH16 Cor dor.	0	Impacts two areas of land zoned open space under the AUP:OP, but these are located entirely within existing NZTA designation for the SH16 Corridor.	0	Impacts two areas of land zoned open space under the AUP:OP, but these are located entirely within existing NZTA designa ion for the SH16 Corridor.	0	Impacts two areas of land zoned open space under the AUP:OP, but hese are located entirely within existing NZTA designation for he SH16 Corridor.	0	Impacts two areas of land zoned open space under the AUP:OP, but these are located entirely within existing NZTA designation for the SH16 Corridor. Need to confirm if any works are required to the existing footbridge within Manutewhau Walk Reserve which is zoned open space.The current plan includes the Manutewhau Walk Reserve within the project boundary which public open space and will impacted (i.e. removes open space land). Works are unknown.

Appendix B – NZTA Alignment Options 3, 7 & 13