

Appendix H

Project Safety Audit

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Wellington to Hutt Valley Walking and Cycling Link

Concept Design Stage Safety Audit

Report prepared for



NZ TRANSPORT AGENCY
WAKA KOTAHĪ

Wellington Office



ViaStrada Ltd

Second draft 28 March 2014

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- Appendix C VicRoads Cycle Note 21: Charts
- Appendix D Cycling Aspects of Austroads: 2011
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- Appendix F New Zealand Cycle Trail Design Guide



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1 Background

1.1 The safety audit team

The Wellington to Hutt Valley Walking and Cycling Link road safety audit was carried out in accordance with the "NZTA Road Safety Audit Procedure for Projects Guidelines - Interim release May 2013", by:

- Warren Lloyd, Safety Audit team leader, ViaStrada Ltd
- Mark Edwards, Safety Audit team member, Opus
- Tim Hughes, Safety Audit observer, NZ Transport Agency

On Tuesday 18 March 2014, the project initiation meeting was held at the AECOM Wellington office at 1:00 pm, to confirm the project objectives, the safety audit scope and any other audit matters. Mark McGavin, (Project Manager for NZ Transport Agency) Warren Lloyd, Mark Edwards, Tim Hughes and Rob Napier (Project Manager AECOM) were in attendance with Matthew Hinton (Project Designer for AECOM) and Dawie Maritz (Transport Planner for AECOM) on speaker phone. This was followed by a site visit from 3:30pm by the safety audit team (SAT).

On Wednesday 19 March 2014, the SAT completed the daytime safety audit between 8:30 am and 4:00pm.

The initiation meeting determined that a night time safety inspection was not required.

The audit debrief meeting was held at the AECOM Office, Wellington at 4:00pm on Wednesday 19 March 2014. Mark McGavin, Warren Lloyd, Mark Edwards, Tim Hughes, Rob Napier were in attendance with Dawie Maritz on speaker phone. This meeting gave the Project Manager and AECOM staff the opportunity to hear the initial feedback and main findings from the safety audit team.

1.2 The safety project team

The safety issues raised in this audit will require responses from the designer and the project safety engineer. The client decision and action taken against the safety issues will also be recorded. The following are the people responsible for these actions:

- Designer response, Dawie Maritz, AECOM
- Safety Engineer, Steve James, NZ Transport Agency
- Client Decision, Mark McGavin NZ Transport Agency
- Action Taken, Mark McGavin NZ Transport Agency

1.3 Report format

The report format is based on the NZ Transport Agency 'Road Safety Audit Procedures tfm9 Guidelines INTERIM RELEASE MAY 2013.

The potential road safety issues identified have been presented and ranked as follows:-

There will be general discussion around a site or area of concern. As many of the safety concerns are interrelated and have varying risks and crash frequencies the level of concern



will be presented for the worst case at the site. There will be specific numbered recommendations made for safety concerns that can be responded to individually.

The expected crash frequency is qualitatively assessed on the basis of expected exposure (how many road users will be exposed to a safety issue) and the likelihood of a crash resulting from the presence of the issue. The severity of a crash outcome is qualitatively assessed on the basis of factors such as expected speeds, type of collision, and type of vehicle/object involved.

Any reference to crashes have been taken from the Opus study report where appropriate, to assist in understanding the likely crash types, frequency and likely severity that may result¹.

The frequency and severity ratings are used together to develop a combined qualitative risk ranking for each safety issue using the Concern Assessment Rating Matrix in Table 1 below. The qualitative assessment requires professional judgement and a wide range of experience in projects of all sizes and locations. Note that the following information given in Table 1 and Table 2 are used to inform severity, frequency of crash events and the risks with suggested actions².

The SAT considers that death or serious injury can be recorded as 'very likely' when the crash is a consequence of a motorised vehicle verses pedestrian or cyclist crash at an impact speed above 30 km/h or if involving a heavy vehicle. For cyclists this can also happen when the cyclist is travelling at speed and collides head on with another cyclist, is flung from the bike, or collides with an obstacle.. This is because active users are vulnerable to injury when involved in a collision with a motorised vehicle and cyclists are vulnerable to head injuries when flung from the bike, and helmets while useful only provide limited protection at lower impact velocities.

The ranking of the frequency of crashes on existing situations is difficult in the absence of reliable estimates of usage, so has primarily been based on personal risk to each user. We have not made assumptions on the amount of use.

¹ Wellington Cycleway Feasibility Study; Ngauranga to CBD' Preliminary Funding Report: March 2013

² Taken from the NZ Transport Agency 'Road Safety Audit Procedures tfm9 Guidelines INTERIM RELEASE MAY 2013



Table 1 Concern assessment rating matrix

Severity (likelihood of death or serious injury)	Frequency (probability of a crash)			
	Frequent	Common	Occasional	Infrequent
Very likely	Serious	Serious	Significant	Moderate
Likely	Serious	Significant	Moderate	Moderate
Unlikely	Significant	Moderate	Minor	Minor
Very unlikely	Moderate	Minor	Minor	Minor

While all safety concerns should be considered for action, the client will make the decision as to what course of action will be adopted based on the guidance given in this ranking process with consideration to factors other than safety alone. The suggested action for each concern category is given in Table 2 below.

Table 2 Concern categories

RISK	SUGGESTED ACTION
Serious	A major safety concern that must be addressed and requires changes to avoid serious safety consequences.
Significant	Significant concern that should be addressed and requires changes to avoid serious safety consequences.
Moderate	Moderate concern that should be addressed to improve safety
Minor	Minor concern that should be addressed where practical to improve safety.

In addition to the ranked safety issues it is appropriate for the safety audit team to provide additional comments with respect to items that may have a safety implication but lie outside the scope of the safety audit. A comment may include items where the safety implications are not yet clear due to insufficient detail for the stage of project, items outside the scope of the audit such as existing issues not impacted by the project or an opportunity for improved safety but not necessarily linked to the project itself. While typically comments do not require a specific recommendation, in some instances suggestions may be given by the auditors.

1.4 Scope of audit

This is a concept design stage safety audit of the Wellington to Hutt Valley walking and cycling link Section 1 to 8 plans produced by AECOM New Zealand Ltd. This audit incorporates the safer journeys guidance provided in the Road Safety Audit Procedures 2013:



1.5 Plans and documents provided

The SAT has been provided with the following documents for this audit:

- The AECOM Wellington to Hutt Valley Cycle and pedestrian Link – Study Area and Option Descriptions (PDF email from Matthew Hinton 11 March 2014)
- The AECOM DRAFT Wellington to Hutt Valley Cycle and Pedestrian Link – Design Philosophy Statement - WORKING DRAFT Dated 17 March 2014.

The SAT has been provided with the following plans for this audit, see Table 3.

Table 3 Number of plans provided for audit

Section	Option 1	Option 3
1	8 plans	0 plans
2	5 plans	0 plans
3	13 plans	13 plans
4	4 plans	4 plans
5	3 plans	5 plans
6	1 plan	3 plans
7	6 plans	6 plans
8	0 plans	0 plans

A plan overview can be found in Appendix A and refer to Appendix B for plan reference numbers. Note: all plans are marked “For Information Only”.

1.6 Project description

The project is for the widening of the existing shared use path and removal of some path obstructions, to improve the opportunity for walking and cycling between Wellington City and Hutt Valley. An overview plan of the cycleway showing all project stages is attached as Appendix A .

The project is broken into eight sections as described in section 1.6³

The figures are taken from the AECOM overview plan attached as Appendix A and text that follows is taken from the AECOM PDF document titled Wellington to Hutt Valley Cycle and Pedestrian Link – Study Area and Option Descriptions

³ Taken from the Aecom PDF document titled: Wellington to Hutt Valley Cycle and Pedestrian Link – Study Area and Option Descriptions



Section 1 – Tinakori Road (Thorndon Quay) to Onslow Road (214 Hutt Road), 2 km

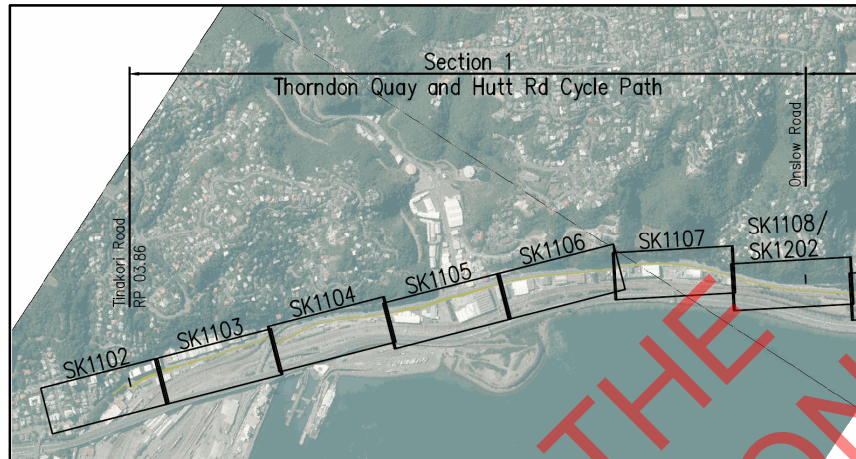


Figure 1 Section 1

AECOM description:

Option 1 and 3: Existing shared path to be upgraded, minor safety improvements.

Section 1 Options A to D were investigated for WCC. Recommended option is known as Section 1 Option D, an inbound clearway option along the Hutt Road.

Section 2 – Onslow Road to Ngauranga Interchange, 1.5 km

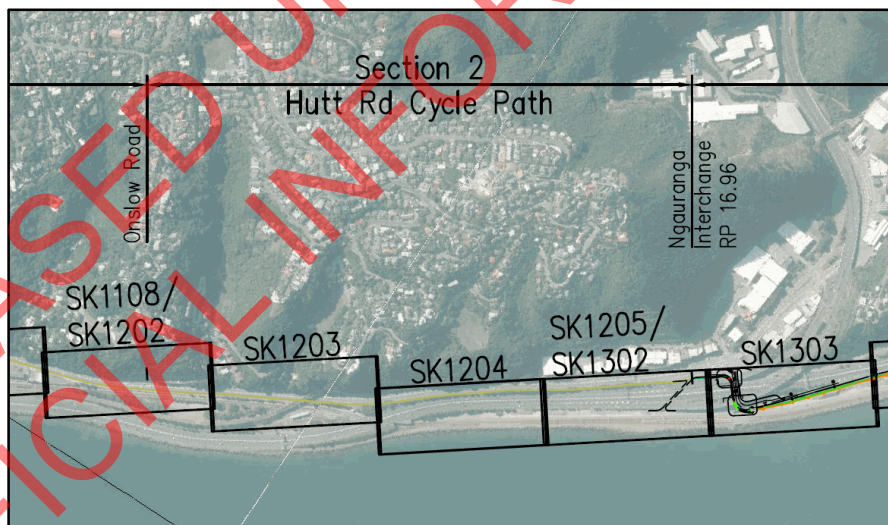


Figure 2 Section 2

AECOM description:

Option 1 and 3: Existing shared path to be upgraded, minor safety improvements.



Section 3 – Ngauranga Interchange to Horokiwi Road, 4 km

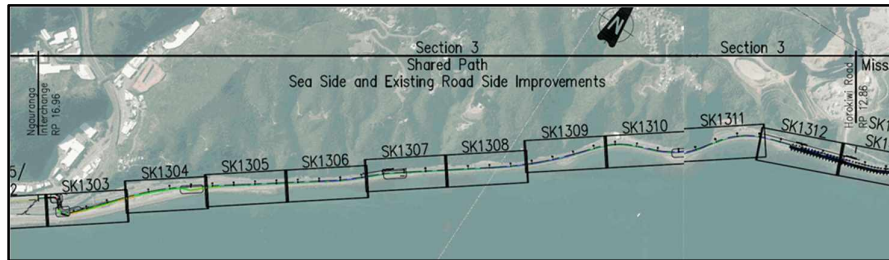


Figure 3: Section 3

AECOM description:

Option 1: Existing shared path to be upgraded. Improved southern end access and removed dog-leg. Widened to 3.0m with pinch-points (2.64m, 1.79m, 1.65m), rail track relocated on reclaimed land to make space for the new 3.0m wide shared path at northern end.

Option 3: Existing shared path on southern end to be upgraded, improved southern end access. At 700m crossing over the railway tracks, new 3.0m shared path on reclaimed land, lighting.

Sections 4, 5 & 6

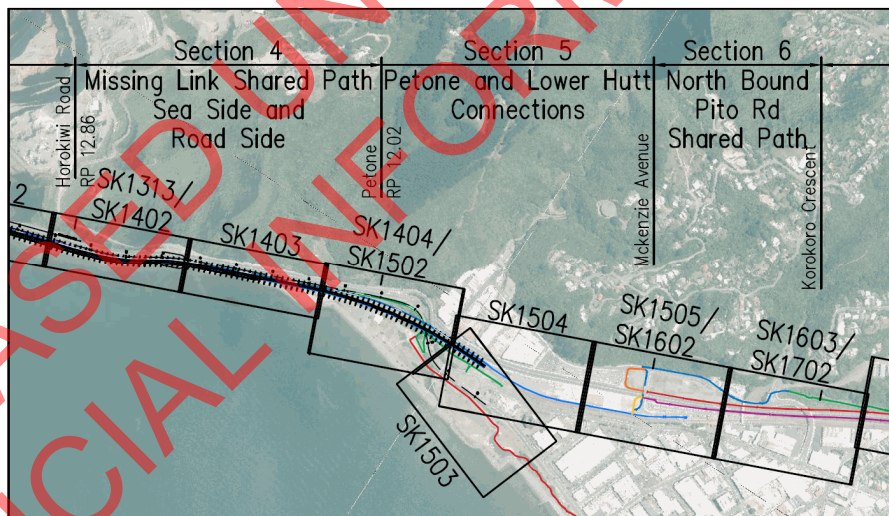


Figure 4: Sections 4, 5 and 6

Section 4 – Horokiwi Road to Petone Interchange, 0.8 km

AECOM description:

Option 1: Continuation from Section 3 of a new 3.0m wide shared path on the western side of rail tracks. At northern end the path splits into the new shared path on the western side of rail tracks and an upgraded existing path on the western side of Hutt Road. There is also a new southbound cycle lane towards the eastern side of The Esplanade and an existing unsealed track along the coast.

Option 3: Existing shared path on southern end to be upgraded, improved southern end access. At 700m crossing over the railway tracks, new 3.0m shared path on reclaimed land, lighting.



Section 5 – Petone Interchange to McKenzie Avenue, 0.7 km

AECOM description:

Option 1: Continuation from Section 4: a new 3.0m wide shared path on the western side of the rail tracks continues, the upgraded existing path on the western side of Hutt Road terminates; the new southbound cycle lane and the unsealed track continue. A short northbound cycle lane appears on the western side of The Esplanade and terminates soon.

Option 3: Existing shared path on southern end to be upgraded, improved southern end access. At 700m crossing over the railway tracks, new 3.0m shared path on reclaimed land, lighting.

Section 6, – McKenzie Avenue to Korokoro Road 0.45 km

AECOM description:

Option 1 and Option 3: Improvements adjoining SH2 being investigated.

Section 7 – Korokoro Road to Dowse Drive 1.0 km

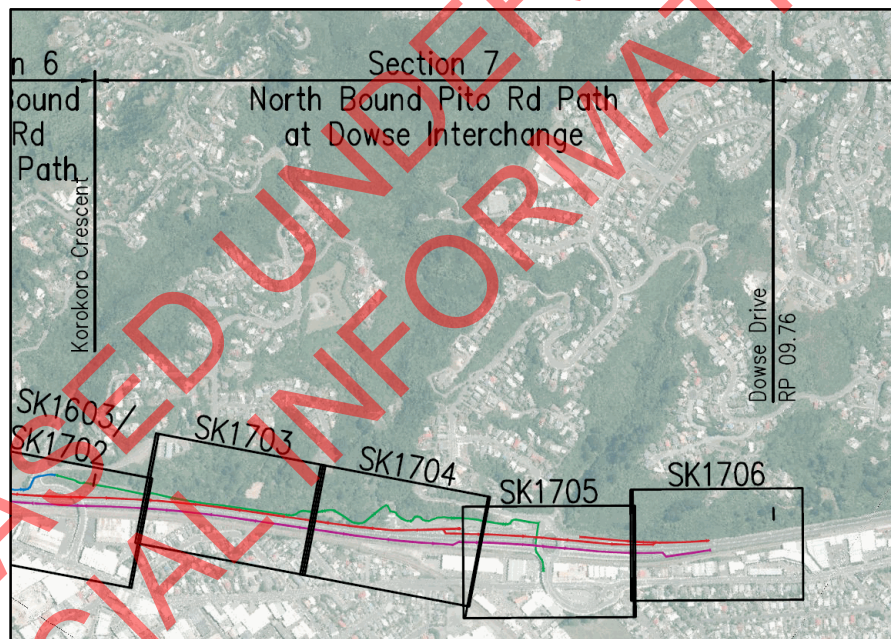


Figure 5: Section 7

Section 8 – Dowse to Melling, 2.4 km (Plans not provided).



1.7 Project objectives

The following list has been provided by AECOM to assist the audit team in ensuring the design will achieve these specific project areas. Their proposed design looks to primarily address the following five main areas;

1. Close the gap between Horokiwi and Petone
2. Provide an improved facility between Horokiwi and Ngauranga
3. Improve legibility and safety along the Hutt Road
4. Improve connections to Petone, and north of Petone
5. Improve connections at the Wellington end

The following project objectives are documented on the NZ Transport Agency website⁴:

6. Improve walking and cycling safety between Lower Hutt and Wellington, particularly between Petone and Ngauranga.
7. Provide a facility that generates more use of the Lower Hutt to Wellington corridor by walkers and cyclists regardless of ability.
8. Separate walking and cycling activities from highway traffic between Petone and Ngauranga.
9. Improve network resilience by providing a walking and cycling facility with better safety standards and capacity.
10. Manage the impacts of the project to its area and communities and choose suitable alignments, designs and conditions that avoid, remedy or mitigate effects as much as is practicable.

The project objectives have been considered by the SAT and an overview response is included in Section 2.1.

1.8 Terminology

This is considered important as the reader should understand the ideas the SAT are conveying. The following terms are used throughout this document and the reader will find the definitions and descriptions applied to these terms below.

Term	Description
Active user	
Dooring	The term car 'dooring' is a used to describe when a driver opens their door and either the cyclist collides with the door or they are knocked or swerve into the live traffic lane. This is the highest risk to cyclists and results in the most fatal and serious cycle injury crashes with fallen cyclists being run over by following vehicles.
Cycle lane	A carriageway bicycle facility delineated from moving traffic with a solid painted lane line. Cycle lanes may be adjacent to the kerb

⁴ <http://nzta.govt.nz/projects/w2hvl/ink/>



	("kerb-side"), adjacent to motor vehicle parking ("car-side"), or between general traffic lanes on the approach to intersections.
Cycle path	A facility physically separated from motor traffic and intended for the exclusive use of cyclists. If in a road corridor, it is at a different level than the carriageway. Legally a cycle path may also be used by pedestrians.
CPTED	Crime Prevention Through Environmental Design. This design principle considers things that make a path more desirable to use, increasing the perception of safety.
Intervisibility	This is a term used to describe the sight lines in two directions. For example between a pedestrian and a driver and the sight line from that same driver back to the pedestrian.
Separated Bicycle Facility	This is a cycle facility that is physically separated from motorised traffic. Separation is typically in the form of sections of concrete kerb or bollards.
'Take the lane'	This is a term used to describe riding in the safest location to negotiate a section of (typically narrow) road. The cyclist rides as if they are a vehicle, i.e. along the centre of the traffic lane. This is sometimes called 'vehicular cycling'.
Types of cyclists⁵	
Strong & Fearless	Will ride on a busy road without cycle lanes and represents just under 1% of the population.
Enthusied & Confident	Will ride on a busy road with conventional cycle lanes and represents 7% of the population.
Interested but Concerned	These riders need separation from traffic and represent around 60% of the population. This is the group to target in any design if you wish to achieve a significant increase in user numbers.
No way no how	Are unlikely to cycle and represent 33% of the population.

1.9 Disclaimer

The findings and recommendations in this report are based on an examination of available relevant plans, the specified road and its environs, and the opinions of the SAT. However, it must be recognised that eliminating safety concerns cannot be guaranteed since no road can be regarded as absolutely safe and no warranty is implied that all safety issues have been identified in this report. Safety audits do not constitute a design review or an assessment of standards with respect to engineering or planning documents.

⁵ See <https://www.portlandoregon.gov/transportation/article/237507>



Readers are urged to seek specific technical advice on matters raised and not rely solely on the report.

While every effort has been made to ensure the accuracy of the report, it is made available on the basis that anyone relying on it does so at their own risk without any liability to the safety audit team or their organisations.

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2 Safety audit team feedback

2.1 Safety audit team response to meeting project objectives


2.1.1 Response to the NZ Transport Agency objectives

Objective	Achieved
<p>Improve walking and cycling safety between Lower Hutt and Wellington, particularly between Petone and Ngauranga:</p>	<p>Option 1: Partial Option 3: Yes</p>
<p>Option 1 provides limited improvement (streetlight relocation) due to the width constraints and path side activity. The single lane width will limit passing opportunities (refer to VicRoads Cycle Note 21 See Appendix C).</p> <p>Option 3 provides a facility that will provide a considerable improvement in walking and cycling safety.</p>	
<p>Provide a facility that generates more use of the Lower Hutt to Wellington corridor by walkers and cyclists regardless of ability:</p>	<p>Option 1: Partial Option 3: Yes</p>
<p>It is assumed by the SAT that this means the provision of a facility suitable for the three groups of cyclists described in the Terminology 'Types of Cyclist'; the Strong & Fearless, the Enthused & Confident and the Interested but Concerned.</p> <p>Option 1 may see a limited increase in use. Width constraints and noise and fumes resulting from the close proximity of the highway may supress some demand.</p> <p>Option 3 should generate a considerable increase in use. The width is generally unconstrained, the NZCT design standards can be achieved and this will be a pleasant riding experience.</p>	
<p>Separate walking and cycling activities from highway traffic between Petone and Ngauranga:</p>	<p>Option 1: Partial Option 3: Yes</p>
<p>The success of Option 1 is limited due to attracting a limited number of cyclists from the high speed highway carriageway.</p>	
<p>Improve network resilience by providing a walking and cycling facility with better safety standards and capacity:</p>	<p>Option 1: Partial Option 3: Yes</p>
<p>Option 1 provides marginally improved network resilience however, the safety standards and capacity are compromised by the width constraints and the proximity of the highway (wire barrier can deflect by 2m across the whole path in a crash for a distance of up to 50 m).</p> <p>Option 3 provides improved network resilience. The safety standards and capacity are greatly increased with the separation from the highway and railway, plus the ability to have sufficient width path with adequate clear zones on both sides.</p>	



<p>Manage the impacts of the project to its area and communities and choose suitable alignments, designs and conditions that avoid, remedy or mitigate effects as much as is practicable:</p>	<p>Option 1: Possible Option 3: Possible</p>
<p>This objective is difficult to quantify and we can only speculate as to the community expectations and the projects ability to avoid, remedy or mitigate effects. The SAT considers that both options meet this objective, however Option 3 is more likely to be favourably received by the community and much broader range of path users.</p>	

2.1.2 Response to the AECOM objectives

Objective	Achieved
<p>Close the gap between Horokiwi and Petone:</p>	<p>Option 1: Yes Option 3: Yes</p>
<p>The gap referred to is the short section of highway with no southbound shoulder for cyclists to use. However the shoulder widths on both sides and along the full length of the highway are insufficient for the adjacent traffic speed and volumes so it is not just the 'gap' that needs attention. Both options provide an off road alternative for cyclists, however the SAT is concerned that Option 1 is considered too narrow for safe 2 way use and may not attract as many of the road users as Option 3, so the 'gap' (or no provision) will remain for these users.</p>  <p style="text-align: center;">Figure 6: shoulder lane width</p>	
<p>Provide an improved facility between Horokiwi and Ngauranga:</p>	<p>Option 1: Partial Option 3: Yes</p>
<p>Option 1 provides limited improvement and many riders may continue to use the highway. Safety and capacity are compromised in this section by the width constraints, with no clear zones provided and the vertical fences and other obstructions on both sides of the edge of the path. This will result in delayed passing, and possibly single file use on the narrow sections of path as cyclists will not want to get their handle bars caught on the fence.</p> <p>Option 3 provides a facility suitable to all path users. Most riders would be expected to migrate from the highway to this facility. The safety and capacity are greatly increased with the separation from the highway and railway, plus the ability to have adequate clear zones on both sides of the path.</p>	



<p>Improve legibility and safety along the Hutt Road: <i>(Assumed to mean for cyclists & pedestrians)</i></p>	<p>Option 1: No Option 3: No</p>
<p>There is sufficient carriageway width to provide for moving traffic only. The flush median is considered important on this route as there are many intersections, business and property accesses, though preventing right turns across the centre would address a significant part of the safety risk.</p> <p>To safely accommodate cyclists on the carriageway, the cycle lane would need to be 1.7 m to 1.9 m wide to avoid car dooring.</p> <p>To safely accommodate cyclists on an off road path, they must be clearly visible to drivers on Hutt Road that wish to cross the path to gain access to businesses along this section of Hutt Road. Even so cyclists remain especially vulnerable to those turning right into driveways across two lanes of traffic. The bi-directional nature of the shared path will mean that motorists exiting driveways may not check for cyclists approaching from their left.</p> <p>The section needs detailed study to mitigate the safety issues inherent in a shared path especially a 2 way path next to multiple lanes and busy accesses. While 2 way paths are popular in the Netherlands and some other European countries, the Dutch CROW guidelines caution against them in situations like the Hutt Road.</p>	

[AECOM Response to Comment](#)

The objective of upgrading cycle facilities along Hutt Road is ultimately to provide fully segregated facilities from traffic, and also separated from pedestrians where there is high pedestrian demand due to adjoining land use.

Opus Consultants had earlier proposed a range of on-road facilities for cyclists that were not preferred by Wellington City Council.

The only remaining option is therefore to provide cycle facilities along one side of Hutt Road and/or and upgrade of the existing facility. The removal of car parking on the footpath provides at minimum 5m width which is considered a good standard for cyclists and pedestrians.

We believe that this facility can be improved further through design responses to improve the visibility of the cyclists and pedestrians on the path such as the provision to increase the length of the parking bays at kerb – the gaps between the parked cars would help drivers to see the movement on the path.



<p>Improve connections to Petone, and north of Petone:</p>	<p>Option 1: Partial Option 3: Partial</p>
<p>The connections to Petone and north of Petone rely on using much of the current built environment which is inadequate for active users, particularly the 'interested but concerned' category of riders. The gradients across McKenzie Ave are too steep for most riders, the pedestrian overpass is too narrow to share, the four lane crossing of Korokoro Road is too wide and has limited intervisibility and the roundabout at Dowse is not active user friendly at all.</p> <p>Both schemes provide an off road shared path along the seaward side of the highway. The design intent is to "widen the existing path [to 3 m] where possible" and this may result in compromised standards and dangerous pinch points. The SAT is concerned that this good intention may not be realised.</p> <p>It is also noted that the shoulder widths on both sides of the highway are insufficient for the adjacent traffic speed and volumes. Neither scheme addresses this serious safety concern as cycle lanes are shown along both sides of the highway.</p> <p>Option 3 could provide a realistic alternate route to the highway as it can connect all the way to SH58, see 2.3.1.</p>	

<p>Improve connections at the Wellington end:</p>	<p>Option 1: No Option 3: No</p>
<p>An NZTA project objective is to design a facility for pedestrians and cyclists regardless of ability. The Interested but Concerned group but these riders are very unlikely to use Thorndon Quay, particularly as it is currently laid out.</p> <p>The proposed connection at the Wellington end suits the Interested but Concerned group, however the predominant riders at the Wellington end are the Strong & Fearless and the Enthused & Confident who will receive little benefit from the proposed connection.</p>	

2.2 Safety audit team response to specific project questions

At the pre audit meeting on 18 March, several specific project questions were asked to get formal feedback from the audit team.

<p>Q1: Are there any alternate options and / or routes to achieve network permeability at Melling?</p>
<p>Yes, the safety team believe there are realistic options for network permeability at Melling based on the excellent unimpeded active user path provision along the Hutt River. See Section 2.3.1</p>



[AECOM Response to Comment](#)

We agree that the Hutt River path could be used to improve facilities within Section 8 – however would be part of a wider project to improve facilities for commuter cyclists [with Hutt Valley](#).

Q2: Is the Petone underpass a realistic option?

This underpass is short, a light colour and is well illuminated. The safety team consider the Petone underpass provides a similar level of service to cyclists as the highway pedestrian overpass at Petone. This means it would suit people who are comfortable walking their bike through the facility i.e. not riding (commuting). The Petone underpass could be made a realistic option if there is sufficient space for widening it and replacing the tight right angle bends with >3 m radius curves with no blind corners.

It is key that CPTED concepts are bought to the provision of underpasses as they are a 'preferred' facility for cycling because (when compared against an overpass) they are short, have generally short ramps, the downhill ramp helps cyclists to travel up the other side more easily, and they are mostly weather proof. Underpasses can be made attractive as evidenced by many train stations around the world.

[AECOM Response to Comment](#)

Agree that the underpass could be used by non-commuter cyclists; however we generally don't agree with the principle of providing underpasses as part of a high quality facility [at this location](#).



Q3: Is the Ngauranga road stock underpass a realistic option?

Unlike the Petone underpass, the Ngauranga stock underpass is long, dark and is not illuminated. The Ngauranga underpass also has the connotation of being a 'stock effluent' facility which adds to its guise. However, the safety team believe it would relatively simple to make this a realistic underpass option for pedestrians and cyclists as per the CPTED discussion in Q2 above. It was also noted that this underpass has potential to provide a better pedestrian link to the Ngauranga Railway Station. This is discussed in more detail in Section 2.3.3

There are several safety and access concerns at the Ngauranga intersection which are discussed fully in 3.3.2

[AECOM Response to Comment](#)

~~The~~ AECOM's view is that the stock effluent disposal underpass is unsuitable for use at this location.

Q4: Is the Ngauranga rail underpass a realistic option for cycling?

The same comments apply as per the Petone underpass with respect to widening and replacing the tight right angle bends with >3 m radius curves with no blind corners. This underpass could be further enhanced by providing more direct access to the Ngauranga road underpass and it could also be extended to the west side of the railway line providing direct access to the seaward shared path.

As per Q3 the safety and access concerns at the Ngauranga intersection are discussed fully in 3.3.2

[AECOM Response to Comment](#)

~~The~~ AECOM's view is that the rail underpass is unsuitable at this location.



Q5: Can the Hutt Road (Petone) be improved for cycling?

The Hutt Road can be improved for cycling BUT... it would require considerable change to the layouts to address the safety concerns.

There is insufficient carriageway width to provide adequate width cycle lanes against the parking while retaining the flush median. The flush median is considered important on this route as there are many intersections, business and property accesses.

A suggested cycle facility is to ban all parking on one side only, and construct a separated bicycle facility (3 m minimum) along the full length of the route. This would require that the flush median is relocated away from the facility to accommodate two traffic lanes and a parking lane in the residual carriageway.

The safety team acknowledges that these facilities still have safety issues with crashes occurring between facility users (generally contra flow cyclists) and vehicles entering and exiting driveways and there are intersection issues that require careful design. However, when these facilities are designed and built well they can accommodate the existing commuter users and attract a lot of new cyclists to a facility.

There are several safety and access concerns along this section of Hutt Road that are discussed in Sections 3.5, 3.6 and 3.9

[AECOM Response to Comment](#)

Agree in principle, however [this is](#) considered out of scope and what is being proposed has the same safety risk as [the Hutt Road – Wellington end](#), which the auditor does not agree with.



Q6: Can the Hutt Road (Thorndon) be improved for cycling?

The Hutt Road (Thorndon) can be improved for cycling BUT... it would also require considerable change to the layouts to address the safety concerns.

There is sufficient carriageway width to provide for moving traffic only. The flush median is considered important on this route as there are many intersections, business and property accesses. To safely accommodate cyclists on the path, they must be clearly visible to drivers on Hutt Road that wish to cross the path to gain access to businesses along this section of Hutt Road. Even so cyclists would be especially vulnerable to those turning right into driveways across two lanes of traffic. The bi-directional nature of the shared path results in the crash risk that many drivers exiting driveways not checking for cyclists approaching from their left.

The section needs detailed study to mitigate the safety issues inherent in a shared path especially a two way path next to multiple lanes and busy accesses. While two way paths are popular in the Netherlands and some other European countries, the Dutch CROW guidelines caution against them in situations like the Hutt Road.

The most desirable cycle facility would see a ban of all parking on the kerb side and building side along the seaward side of Hutt Road. This would allow the provision of a separated bicycle facility (3 m minimum) along the full length of the route and a (2 m minimum footpath against the buildings. This layout described is similar to AECOM options 1C and 1D but the parking must be removed from the kerb side to increase intervisibility between path users and drivers turning onto and across the path.

There are several safety and access concerns along this section of Hutt Road that are discussed in Section 3.1.

[AECOM Response to Comment](#)

Generally agree and some changes to the plans can be made to replace angle parking with parallel parking.



Q7: Are at grade railway line crossings acceptable?

The safety team agrees that at grade railway line crossing chicanes are desirable in some locations. The author is aware of relatively recent at grade chicane crossings in New Plymouth and they are used in high volume pedestrian and cyclist locations in Christchurch associated with the railway cycleway. The main concern the safety team identified was the frequency of train events. The Wellington to Hutt Valley Link project team may consider approaching Kiwi Rail (or rail operator) to ascertain the frequency of train events in New Plymouth and Christchurch (Matai Street) chicane crossings, to determine if they are similar to possible crossing locations on the W2HV line. The safety team are confident this will be the case north of the Petone station on the Melling line.

[AECOM Response to Comment](#)

KiwiRail are against installing any new at grade crossings. The train frequency on the Wellington to Hutt Valley line is much higher than that on the New Plymouth and Christchurch lines referred to by the safety audit team.



2.3 Safety audit team alternate routes and connections

2.3.1 Alternate route SH58 to Petone off ramp overpass

There are many access locations from the residential areas to the Hutt River path from the east side. This river side link could be connected at the following intersections on the west side of SH2, acknowledging an expected requirement for signals optimisation.

Haywards Hill Road (SH58)

Hebden Crescent (south end over bridge)

Major Drive

Tirohanga Road

Harbourview Road

The key to making this riverside path a desirable option for commuters is to make it better or at least as good as the level of service provided by the surface of the state highway.

The team agreed that spending several million dollars on widening the state highway in two or three pinch point locations, would still result in a substandard cycle facility due to insufficient lane width for the 100 km/h environment, whereas spending much less on the geometry and surface of the Hutt Riverside path should result in commuters choosing to use this off road facility and a general increase (mode shift) in the use of this facility by other riders and walkers.

The Hutt Riverside path would ideally link into the proposed shared use path between Petone Station and Esplanade roundabout.

For recreational riders this can be achieved by following the riverside path all the way to (across Waione Street) Marine Parade and then following the (currently substandard) coastal path along the Esplanade.

For commuter cyclists the following option may be acceptable. Follow the riverside path (from SH 58) down to and under the Railway Avenue bridge, cross Victoria Street (requires a facility and could link through the park) into Te Mome Road, cyclists then ride along Moa Street as this gives the option of connecting to the off road shared path across Hutt Road at Hume Street or Beaumont Avenue. Note that the three or four local streets (Te Mome, Moa, Beaumont, Hume) can be made more cycle friendly with bicycle boulevard type treatments. This option would need to be explained and consulted on with Hutt cycle commuters to determine if it would be considered a realistic alternate route to the highway.

[AECOM Response to Comment](#)

The roads noted above are located north of Melling, which is outside the scope of this project. Moreover, the AECOM's view is that the purpose of the Hutt Riverside path is recreational, therefore upgrading it for the use of fast commuter cyclists would defy this purpose of the project objectives.

2.3.2 Alternate connection at Petone

The connections to Petone are considered inadequate for active users. The approach gradients to and across the McKenzie Avenue bridge are too steep for most riders, the pedestrian overpass is too narrow to share, the four lane crossing of Korokoro Road is too wide and has limited intervisibility, the elevated roundabout at Dowse is not active user



friendly at all. For cycling gradient information see guidance give in the NZ Cycle Trail Design Guide in Appendix F

There is an off road shared path along the west side of the highway to the north of Petone and to the south of Petone there is an off road shared path along the east side of the railway line that connects seamlessly with Option 3. These two off road paths should be connected with a purpose built shared facility that also provides access to the Petone Station.

An overpass can be designed with form and function as seen in Figure 7 this photo was taken in Auckland



Figure 7: Example of aesthetic overpass in Auckland NZ

[AECOM Response to Comment](#)

A purpose built overpass is proposed parallel to the McKenzie overbridge. This will connect pedestrians and cyclists west and east of the transport corridor (State Highway and Rail).

2.3.3 Alternate connection at Ngauranga underpass

The proposed shared path option for the Ngauranga underpass relies on KiwiRail relinquishing their need for the contraflow lane under SH1 to allow service vehicle access to the rail corridor. When the contraflow lane is removed the whole carriageway can be shifted north allowing sufficient space for a 3 m wide path. The path should be physically separated with a high solid barrier on the outside of the curve to address errant vehicles and headlight issues. This is a significant project risk as there will be a considerable width constriction if a shared path is fitted within the current space available.

An alternate connection takes a more holistic view to the project and connects the shared path south of the overpass directly to the Option 3 path and the Ngauranga Railway Station. During the site visit we observed constant (but low volume) use of the station by



pedestrians. The current walking route to this narrow underpass is convoluted and tenuous from the west side of the traffic signals.

The suggested alternate connection utilises a considerably revamped Ngauranga stock underpass connecting to the Ngauranga Railway Station underpass and ultimately out to the seaside path. The railway underpass could be revamped to widen the ramps and tunnel plus provide radii on the corners to remove the right angle bends at the bottom of the ramps.

The SAT also suggest that consideration is given to providing a new modern underpass that connects directly with the proposed Ngauranga underpass option (if the contraflow lane is removed) and could provide a great connection to the Railway Station and seaside path.

It is key that CPTED concepts are bought to the provision of underpasses as they are a 'preferred' facility for cycling because (when compared against an overpass) they are short, have generally short ramps, the downhill ramp helps cyclists to travel up the other side more easily, and they are mostly weather proof. Underpasses can be made attractive as evidenced by many train stations around the world.

[AECOM Response to Comment](#)

The AECOM's view is that the stock effluent disposal underpass is unsuitable at this location.

2.3.4 Alternate connection at Tinakori Road

The predominant riders here are currently the Strong & Fearless and the Enthused & Confident and the proposed facility suits the Interested but Concerned. There needs to be two levels of provision here. As Thorndon Quay is reduced to a single lane in both directions there is space available to provide something suitable for all groups of cyclists. This would require that some of the angle parking just south of Tinakori on the west side of Thorndon Quay is removed or made parallel. Note that this angle parking is identified as a serious safety issue in Section 3.1 and it was also noted that the city bound cyclists are channelled into the back of a bus stop.

For the Strong & Fearless and the Enthused & Confident riders, the on road cycle lanes should run parallel to a long flush median so cyclists have the opportunity to cross the road when gaps are available in the traffic flow.

For the Interested but Concerned riders, the proposed island is good but the proposed island is considered too small and the crossing provision is very narrow. However the flush median as discussed above could incorporate a larger median island than currently proposed with a wider provision for crossing use.

[AECOM Response to Comment](#)

The Tinakori Road intersection is outside the scope of this project. AECOM nevertheless made recommendations to Wellington City Council to redesign this intersection to make it more cyclists friendly. However, Drawing changes have been made to show how this could be implemented.



3 Safety Audit Findings

This audit focusses on the off road shared path facilities as the primary project objectives are to:

- Improve walking and cycling safety.
- Provide a facility that generates more use by walkers and cyclists regardless of ability and
- To separate walking and cycling from highway traffic.

There is on road provision proposed for Sections 5, 6, 7 and 8. These on road cycle lane facilities are grouped together at the end of the safety audit findings.

3.1 Safety audit team response to Section 1:

Tinakori Road (Thorndon Quay) to Onslow Road (214 Hutt Road), 2 km

The option 1 and 3 are the same in Section 1 so no option comparison is made.



3.1.1 Tinakori Intersection

Significant

The Tinakori intersection and the Thorndon Quay approaches present some serious safety issues for all road users, not just cyclists and pedestrians. This is a very busy arterial route that accommodates angle parking allowing drivers to access and reverse out of these parking spaces during peak commuting times. The space provided for this angle parking is well below recognised industry standards (AS2890.5). This photo also shows that the angle parking looks to have been recently added with the old parallel markings just visible on the road surface.



Figure 8: Angle parking encroaches traffic lane

The only option northbound cyclists have through this section is to 'take the lane' and have drivers queuing behind them through this narrow section of road. Vehicles reversing out of these spaces cannot see approaching cars or cyclists and have to cross the centre line and encroach the city bound traffic lane. Pedestrians are also compromised in this area by cars overhanging the footpath and also parking meters and utility poles in the path.

There is sufficient carriageway width to provide for moving traffic only, not parking. To safely accommodate cyclists here, they must be clearly visible to drivers and the cycle lane must have clearance to (parallel) parked cars to avoid dooring.

Recommendations:

- 3.1.1.1 Remove the angle parking from the south approach to Tinakori Road. Parallel parking may be suitable if there is also sufficient width for a 1.7 to 1.9 m cycle lane.
- 3.1.1.2 Reduce the city bound traffic lane width to accommodate a wider and longer flush median south of the Tinakori Road intersection. This can accommodate a larger island for crossing Thorndon Quay and allow northbound cyclists to access the shared path over a longer distance when gaps in the traffic allow.
- 3.1.1.3 Increase the size (length and width) of the proposed median island including the waiting area provision as this will be used by waiting cyclists and not just pedestrians. The waiting area kerb should be oriented towards approaching traffic



Frequency Rating:

Crashes are likely to be **Occasional**

Severity Rating:

Death or serious injury is **Very likely**

Designer Response:

~~The Tinakori Road intersection is outside the scope of this project. AECOM nevertheless made recommendations to Wellington City Council to redesign this intersection to make it more cyclists friendly. NB. I don't think this has been clearly stated in the two documents submitted to the safety auditors, although Drawing No SK-1102 clearly shows the works boundary. The Tinakori Road intersection is outside the scope of this project. AECOM nevertheless made recommendations to Wellington City Council to redesign this intersection to make it more cyclists friendly, refer to dwg. 3102 for a schematic proposal.~~

Safety Engineer:

Client Decision:

Action Taken:

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3.1.2 Path widths, access and use, surface and obstructions

Significant

The selected path width of 3.0 m is supported by the SAT. However the SAT are concerned that this width is a target only and it is often reduced for various structures and constrictions. There are constant width constrictions and obstructions along the full length of Section 1 as can be seen below.



Figure 9: Landscape plants



Figure 10: Utility transformer and parking meter

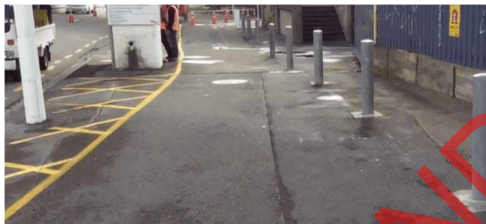


Figure 11: Row of bollards



Figure 12: Vehicles ignoring bollards



Figure 13: Trailers for hire



Figure 14: Pole warning markings



Figure 15: Bus shelter & car in shared lane



Figure 16: Angled cars for sale





Figure 17: Temporary? barrier



Figure 18: Puddles show uneven surface

The shared path width should be 3.0 m (minimum) plus clearances, based on the advice given in VicRoads Cycle Note 21 see Appendix C Austroads 6A see Appendix E and the NZCT Design Guide see Appendix F . This research shows (VicRoads Cycle Note 21: Figure 3) that a 3.0 m width path is acceptable for a commuter facility with relatively high volumes of cyclists and pedestrians moving in generally the same direction at the same time (tidal flow). However this changes markedly if the path becomes more recreational with a 50/50 directional split. This would see (VicRoads Cycle Note 21: Figure 4) the capacity for pedestrians and cyclists reduce significantly. The SAT suggests that volumes and directions of cyclists and pedestrians should be measured to determine the desirable path width as it may require additional width where there is higher pedestrian demand.

Driveways and access ways along the shared path present hazards to pedestrians and cyclists with drivers having to cross the path, often when their visibility is restricted and drivers can make their manoeuvre at a relatively high speed for a path environment. The use of green surfacing with cycle logos and arrows across driveways is supported and all driveways should have this treatment, particularly the busier entrances like the Caltex service station. Some busier driveways also had speed humps to reduce vehicle crossing speed, which reduces crash impact severity. However, cyclists coming from the left side tend to get overlooked by exiting drivers⁶.

The Opus crash report [July 2007 to June 2012] identifies four crashes occurring between right turning traffic and cyclists on the shared path and seven crashes coded as J-Other. This represents eleven of the fifteen crashes occurring along section 1. These crash occurrences are likely to continue or worsen (if Option D is selected) with the proposed Section 1 shared path design as the layout is similar.



Figure 19: Good driveway marking

Due to the land use along Section 1 there are many activities that encroach the shared path and this is likely to continue. There is a need to separate out the commuting space from the passive space to avoid path use conflicts.

⁶ ViaStrada report: Hutt Road / Kaiwharawhara Road (Spotlight Entrance/Exit) Dec 2010





Figure 20: Bus shelter & cafes compete for space

A key 'success factor' to road cyclists choosing to use the shared path in preference to the road will be the surface conditions. The road surface is very smooth and swept clean of general detritus. The site visit showed there are many path obstructions and hazards that can be removed, mitigated or improved. These pavement repairs and utility service lids create different pavement levels and different surface friction which could result in a loss of control crash for shared path users. A slipping hazard is more likely to occur when the surface is wet.



Figure 21: Path surface hazards

It is acknowledged that the area of the footpath to be shared use also has the vehicle cut downs at driveways which will always be a nuisance to path users.



Figure 22: Rough footpath and smooth carriageway

The SAT understands that the street lights are being relocated from the shared path (east side of Hutt Road) to the opposite side of Hutt Road or if that is not achievable, relocated back to the road boundary. This is considered essential for the shared path. The SAT also endorses the warning line markings on the approaches to poles in the path as this



directs users around the poles and is important when riders are bunched and cannot see directly ahead. It was noted that not all of the utility poles had the advance warning line markings.



Figure 23: Pole with markings



Figure 24: Pole without marking

The RCA should be controlling informal access across the shared path. The SAT observed an area where trucks are clearly turning across Hutt Road, over two sections of kerb and channel and across the shared path. Every access way should be formalised and marked appropriately.



Figure 25: Informal access

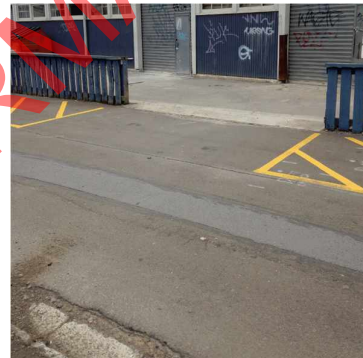


Figure 26: Crosses shared path

Recommendations:

- 3.1.2.1 The shared path width for Section 1 should have 3.0 m as the absolute minimum width with a 1.0 m clear zone to parking or structures, hazards, poles etc....
- 3.1.2.2 Undertake a pedestrian and cyclist count during peak commute times and also over the weekend to determine directional split and mode split to ensure the path width is adequate for current and future growth.
- 3.1.2.3 Continue with the practise of using green surfacing, logos and arrows at driveways and access ways along the shared path. There are some path crossings that need to be retro fitted with the advisory markings.
- 3.1.2.4 That a detailed crash analysis (referencing the crash reports) is undertaken for the Section 1 crashes to determine the nature of the J-Other crashes. Should these crashes show a right turn component, consideration should be given to stopping right turn movements across the shared path on Section 1. The removal of right turns would require a suitable U-Turn facility a



reasonable distance away.

- 3.1.2.5 That the Council are encouraged to control the activities along the Section 1 shared path to remove trading and activity that directly conflicts with this commuter facility.
- 3.1.2.6 For the shared path to have as good or better surface than the road surface, all the surface defects will have to be repaired or removed and the full width of the shared pavement resurfaced and resealed.
- 3.1.2.7 The SAT endorses the relocation of the street light poles from the shared path along the east side of Section 1 and the advance warning markings on the approaches to any residual poles on the shared path. The relocation and advance warning marking also applies to traffic signal poles.

Frequency Rating: <i>Crashes are likely to be</i> Common	Severity Rating: <i>Death or serious injury is</i> Very likely
Designer Response: <u>The proposed design takes into consideration most of the points noted by the safety auditors. Those that have not been incorporated will be added. The exception is the banning of the right turning movements. Provision of the U-turn facility would not be practical and introduce an unnecessary safety hazard. The provisions made in the proposed design to enhance the safety of the shared path users include large gaps between the parked at kerb vehicles to make the cyclists and pedestrians on the path visible to the turning drivers. It has to be noted that the driveways in Hutt Road are infrequent. NB. The details of what we propose to do are discussed in the Business Case Report, but not in the two documents submitted to the SAT. The proposed design takes into consideration most of the points noted by the safety auditors. Those that have not been incorporated will be added. The exception is the banning of the right turning movements. Provision of the U-turn facility would not be practical and introduce an unnecessary safety hazard. The provisions made in the proposed design to enhance the safety of the shared path users include large gaps between the parked at kerb vehicles to make the cyclists and pedestrians on the path visible to the turning drivers. It has to be noted that the driveways in Hutt Road are infrequent.</u>	
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3.1.3 Shared path options A to D

Significant

Four options have been developed for the shared path along Section 1. Option A has a 2.5 m shared path with 2.5 m for parking. As discussed in 3.1.2.5 the option A widths are considered inadequate.

The greatest risk to pedestrians and cyclists on the shared path is being hit by vehicles crossing the path. For this reason it is undesirable to permit parking along the kerbside as these cars will obscure pedestrians and cyclists approaching the crossings. There is a higher crash risk for pedestrians and cyclists travelling in a contra flow direction, i.e. northbound. For this reason options B, C and D cannot be supported. The parking would have to be set back such a long way from the driveways, to allow a 20 to 30 km/h cyclist to be seen by drivers turning across the path, that it might as well be removed completely.

Ideally the whole footpath will become the active user shared space and be free of parked vehicles. However, in the meantime, the parallel parking against the buildings (2.0 m wide plus clear zone) is acceptable as parked cars prevent pedestrians and cyclists colliding with opening building doors and other shop front activity, the parking can be set back from driveways and should a 'dooring' crash occur between a cyclist and a parking vehicle, the cyclist is unlikely to end up in the live traffic lane, so the crash severity is reduced.

Recommendations:

- 3.1.3.1 Option A is modified to have a 3.0 m wide shared path, with a 1.0 m clear zone to 2.0 m wide parallel or angle (reverse in only) parking.
- 3.1.3.2 Options B, C and D are not supported for the shared path along section 1 due to the parked vehicles obscuring path users.
- 3.1.3.3 In the long term (Wellington City Cycle Strategy) move to having no parking permitted between the kerb and buildings to allow the whole width for active use. This may be a condition of volumes as per 3.1.2.2.
- 3.1.3.4 To safely accommodate pedestrians and cyclists on an off road shared path, they must be clearly visible to drivers on Hutt Road that wish to cross the path to gain access to businesses along this section of Hutt Road. Even so cyclists are especially vulnerable to those turning right into driveways across two lanes of traffic. The bi-directional nature of the shared path will mean that motorists exiting driveways may not check for cyclists approaching from their left.

The section needs detailed study to mitigate the safety issues inherent in a shared path especially a two way path next to multiple traffic lanes and busy accesses. While two way paths are popular in the Netherlands and some other European countries, the Dutch CROW guidelines caution against them in situations like the Hutt Road.

Frequency Rating:

Crashes are likely to be **Common**

Severity Rating:

Death or serious injury is **Likely**

Designer Response:

The drawings show Option 1D (clearway), which, as assessed is a recommended option, since it aims to provide segregated cyclist facilities. It would provide a width of 5m for cycling and pedestrians. The visibility of the shared path users will be enhanced using a number of design related options including longer parking bays, marked cycle facilities across accessways, and possibly cyclist activated / ITS signs. Infrastructure strips have been included for items such as litter bins, signs or service



manholes.

Safety Engineer:

Client Decision:

Action Taken:

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3.1.4 Bus stops and shelters

Moderate

This section is on a bus route with associated bus stops and shelters. The placement of shelters and the path alignment past bus stops need careful consideration to avoid conflict in these higher use areas.

The city bound bus stop at the Tinakori intersection seen in Figure 27 is located at the cycle exit from the shared path to Thorndon Quay. A stopped bus effectively blocks cyclists and they may elect to ride on the footpath in conflict with pedestrians, ride out on to the road in conflict with moving traffic or stop and be delayed.



Figure 27: Conflict with stopped bus

There is a bus shelter that looks to have been added to the shared path just north of the Westminster Street intersection. Not only does this shelter reduce the available width by about 60% but when a bus is stopped for passengers the path will block completely. This situation is compounded when vehicles are parked on the path close to the shelter and this inconsiderate parking is likely to increase if the popularity of the local café increases, just to the north of this bus stop.



Figure 28: Bus shelter in shared path



Figure 29: Shelter, pole & car in shared path

Westminster Street is just south of this bus stop and shelter and primarily provides access to some businesses, it is not a connecting road. The shared path has steep cut downs between the footpath and Westminster Street, making this crossing uncomfortable for cycling.

Recommendations:

- 3.1.4.1 Give consideration to relocating the southbound bus stop at the shared path exit to Thorndon Quay.
- 3.1.4.2 Give consideration to redesigning the Westminster Street intersection to give priority to the shared path and accommodate the bus stop and shelter. This may include an at grade path surface resulting in a raised platform for vehicles to cross to get in and out of the side street.



3.1.4.3 Check every bus stop and shelter along the shared path side of Hutt Road and improve the interface and usability of both facilities as appropriate.

Frequency Rating:	Severity Rating:
Crashes are likely to be Occasional	Death or serious injury is Likely
Designer Response: There are three issues here. (1) Tinakori Road intersection is outside the scope of this project and should be handled separately. Our drawing SK-1102 attempts to provide a partial answer, but does not address the issues raised by SAT. (2) Accommodation of the bus stop at the Westminster Street would be addressed in the design stage. (3) Accommodation of the bus stops and shelters along the route would be addressed in the design stage. There are three issues here. (1) Tinakori Road intersection is outside the scope of this project and should be handled separately. Our drawing 3102 attempts to provide a partial answer, but does not address the issues raised by SAT. (2) Accommodation of the bus stop at the Westminster Street would be addressed in the design stage. (3) Accommodation of the bus stops and shelters along the route would be addressed in the design stage.	
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Client Decision:	Click here to enter text.
Action Taken:	Click here to enter text.

3.1.5 Aotea Quay overpass **Moderate**

The shared path curves under the very low Aotea Quay off ramp. The path radius is quite large but the available sight distance is insufficient. There are also residual bollards at the south end of the path that are a hazard. The path has been marked with yellow paint and careful placement of the path edge lines could increase sight lines, avoid the lowest section of the overpass and possibly reduce the bollard hazard.



Figure 30: Centre line cuts corner



Figure 31: Centre line leads to hazard

Recommendations:

3.1.5.1 Realign path under the overpass to avoid the lowest part of the overpass structure, remove any bollards within the shared path and provide better forward visibility (sight lines) for all path users.

Frequency Rating:	Severity Rating:
--------------------------	-------------------------



Crashes are likely to be **Occasional** Death or serious injury is **Likely**

Designer Response: ~~These comments should be passed to Wellington City Council for resolution.~~ These comments will be passed to Wellington City Council for resolution and will be dealt with at specimen or detailed design.

Safety Engineer:

Client Decision:

Action Taken:

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3.1.6 Footbridge and Spotlight frontage

Significant

The shared path bridge just south of Spotlight and the two Spotlight access ways require attention due to the width constraints and high crossing activity.



Figure 32: Narrow bridge

The bridge is identified for culvert widening but there are more safety concerns in this location. The services pipes look to be a site constraint and it may be possible to lift the path (boardwalk style) in this location, raising the intervisibility and profile of path users.

There are a plethora of service utility poles along the Spotlight frontage creating a very narrow section of shared path. It is understood that the street lights are being relocated but there are (3) traffic signal poles located in the centre of the path, constricting the width here.

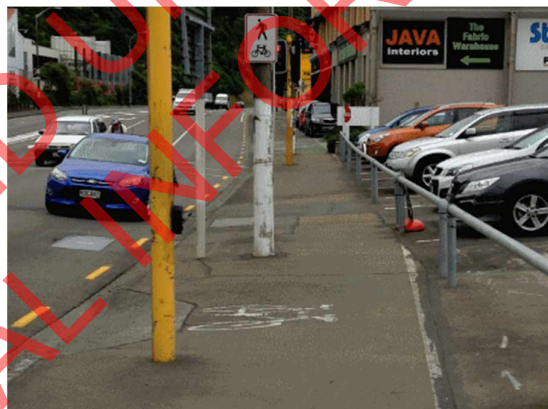


Figure 33: Forest of poles in path

The Spotlight entry only (north end) and entry/exit (south end) are known pedestrian and cyclist hazards⁷. The north entry is on an angle which permits higher speed vehicle entry, and the south exit has restricted visibility to the path because of the poles, signs and services present. Any vehicles waiting here to exit will block the shared path, and exiting could take some time during peak hours and may only be possible with a change in the traffic signals.

Recommendations:

- 3.1.6.1 Consideration is given to creating a higher path over the foot bridge and Spotlight entry/exit (south end) effectively creating a raised speed table. This

⁷ ViaStrada report: Hutt Road / Kaiwharawhara Road (Spotlight Entrance/Exit) Dec 2010



would have to be checked against the path gradients and vehicle break-over angles

3.1.6.2 Consideration is given to changing the angled entry to a perpendicular entry to Spotlight (north end) and raising the path here creating a raised speed table.

3.1.6.3 Include the permanent warning signs recommendations from the ViaStrada report: Hutt Road / Kaiwharawhara Road (Spotlight Entrance / Exit) dated Dec 2010 in this project.

3.1.6.4 Consideration is given to having one entry/exit location for Spotlight. This could be accommodated within the current traffic signals. The SAT recognises that this would require design and modelling to determine safety and capacity optimisation opportunities for road users, Spotlight customers and shared path users.

It may also be possible to have 60 degree angle parking in the Spotlight car park against the road boundary, which would allow the path to be widened here.

Frequency Rating: <i>Crashes are likely to be</i> Occasional	Severity Rating: <i>Death or serious injury is</i> Very likely
Designer Response: We agree with the auditors comments. The objective is to provide a 3m dedicated cycle path; all obstructions at Kaiwharawhara should be relocated to be clear of the path. The culvert widening could be undertaken at grade to clear the services. Further investigation should be undertaken during detailed design for the Spotlight Carpark entrance / exit.	
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3.2 Safety audit team response to Section 2

3.2.1 Path width

Minor

The Section 2 path is generally pleasant to ride along, with trees and grass berm on the railway side and clear visibility to the traffic on Hutt Road on the west side. However, the path is well below the target width of 3.0 m.

Common to sections 1 and 2 are the service utility poles and structures that cause width constrictions along the shared path length.



Figure 34: Service utility structures

There does look to be adequate width on the east side of the wooden fence and KiwiRail may be open to making some land available for a widened shared path.



Figure 35: Potential to widen path here, relocate poles

There are some areas along section 2 where the shared path can be widened without requiring land or relocation of fences, structures, trees etc...as seen in Figure 36.

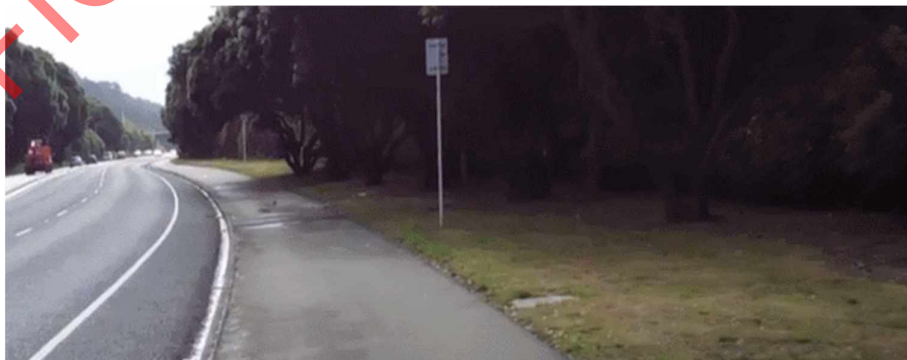


Figure 36: Potential to widen path here



As the path nears the Ngauranga interchange the width is still well below the target 3.0 m from the design philosophy statement.



Figure 37: Path constrained by mature Pohutukawa trees

The section of shared path just north of the Ngauranga interchange bus stop has a very rough gravel surface and has service utility structures protruding the gravel surface. This sections looks to be undesirable for walking or cycling.



Figure 38: Service utility structures protruding the gravel surface

The plan detail SK-1204 indicates that the path is around 4.28 m wide and well within the road boundary, however the site visit revealed that the width is significantly less than 4.28 m. The location of the boundary looks to require negotiation to achieve the target width of 3.0 m.

Recommendations:

- 3.2.1.1 As per 3.1.2.1 the shared path width for Section 2 should have 3.0 m as the absolute minimum width with a 1.0 m clear zone to structures, hazards, poles etc....
- 3.2.1.2 Rebuild and resurface the section of shared path between the bus stop and the Ngauranga interchange. Note that this area may be subject to a redesign as per 3.2.2.1

Frequency Rating:

Crashes are likely to be **Occasional**

Severity Rating:

Death or serious injury is **Unlikely**

Designer Response:

The design drawings have been updated and indicate the existing shared path widths. On average the existing path is 4m wide and exceeds the required 3m in all instance within this section. It is proposed to re-seal the full width within this section.

Safety Engineer: [Click here to enter text.](#)



Client Decision: [Click here to enter text.](#)

Action Taken: [Click here to enter text.](#)

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3.2.2 Bus stop & underpass

Minor

There is an indented bus stop and shelter located just south of the Ngauranga interchange that is accessed by the same access lane as the stock effluent underpass. The indented bus facility creates a width constriction right where additional width is required for the bus passengers to wait, get on and off the bus while the path is used by walking and cycling commuters.



Figure 39: Indented bus facility creates a width constriction

People waiting for the bus should be able to wait somewhere clear from the active users on the shared path and any trucks driving into the effluent disposal facility. It was noted on site there is significant room at this intersection to accommodate separation of some or all of these activities as seen below with the painted median using up surplus road space.



Figure 40: Road space available (north)



Figure 41: Road space available (south)

The SAT understand the Ngauranga interchange intersection may be redesigned under the overpass and if this does eventuate there is real scope to make this layout work safely, efficiently and well for all road users. This is discussed further in 3.3.2.

Recommendations:

- 3.2.2.1 That the bus stop and shelter, the stock effluent underpass access lane and the shared path are designed to work safely, efficiently and well for all road users. This could be incorporated with the Ngauranga intersection redesign (KiwiRail relinquishes their contra flow lane and the approach can be shifted north by up to 3.0 m) or designed independently.

Frequency Rating:

Severity Rating:



Crashes are likely to be **Infrequent**

Death or serious injury is **Unlikely**

Designer Response: [This will be addressed in the detailed design stage.](#) [This will be addressed in the specimen or detailed design stage.](#)

Safety Engineer: [Click here to enter text.](#)

Client Decision: [Click here to enter text.](#)

Action Taken: [Click here to enter text.](#)

3.3 Safety audit team response to Section 3

Section 3 has two different options for the SAT to consider and report on as part of this safety audit.

Option 1 is a shared path that fits between the State Highway and the railway line.

Option 3 is a shared path located on the east side of the railway line and is referred to as the seaside option.

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3.3.1 Section 3 Option 1

3.3.2 Ngauranga interchange

Significant

An alternate shared path option for the Ngauranga interchange is discussed in Section 2.3.3. The bus stop and stock effluent underpass access is discussed previously in Section 3.2.2.

This section of the audit addresses the conceptual safety concerns with the Ngauranga interchange proposal.

A real safety concern here is the footpath width currently available under the over-bridge is too narrow and on the outside of a curve. The plans show it is 2.0 m wide, it looks narrower on site, and this is not sufficient width for a shared path in this location, particularly with the right angle bend on the south approach. This path should have protection from errant vehicles and opposing headlights (cycles and vehicles). Any physical protection will further reduce the available width to path users. It is understood by the SAT that the only additional width that can be achieved is for KiwiRail to relinquish their contra flow lane and the highway approach then be shifted north by this distance.



Figure 42: Narrow path under overpass

As with any underpass facility, it is important to bring the principles of CPTED into the design. This includes removing blind corners (south approach) to maintain good sightlines and open visibility along the underpass and may also include additional features such as video surveillance.

It was also noted that the SH2 left turn slip lane from the underpass turning towards Wellington, is a quasi-give-way facility. Meaning it is not a formal give way, as left turners can make a continuous turn unobstructed, but then drivers are faced with a give-way merge with Hutt Road traffic. It would be more desirable to provide a standard Austroads high entry angle slip lane with a give way control. This would provide considerably more space to provide a CPTED compliant facility in this location. This change in layout would require some capacity analysis, but is expected to work well and be safer for all road users.

Recommendations:

- 3.3.2.1 The SAT encourages the client and designer to explore the alternate shared path option for the Ngauranga interchange as discussed in Section 2.3.3.
- 3.3.2.2 The designer complete discussions with KiwiRail regarding the availability of the contraflow lane, as not having this additional space will compromise the safety and usability of the underpass option.
- 3.3.2.3 The narrow path under the over-bridge must be widened to 3.0 m, ideally with an additional 1.0 m space for guardrail protection from errant vehicles and opposing headlights.
- 3.3.2.4 Bring to the principles of CPTED into the design to this location and any other underpass or over-pass facility on this project



3.3.2.5 Provide a standard Austroads high entry angle slip lane with a give way control on the SH2 left turn into Hutt Road towards Wellington.

Frequency Rating:

Crashes are likely to be **Occasional**

Severity Rating:

Death or serious injury is **Likely**

Designer Response:

The issues raised are responded to as follows: 1) The AECOM's view is that the stock effluent disposal underpass is unsuitable. 2) It is the recommendation of the design team to further negotiate the use of the contra-flow KiwiRail access lane and to then reallocate the available space to ensure a 3m wide shared path can be maintained. 3) A high entry slip lane has not been proposed due the approach speeds and short radius curve towards the intersection. Discussions with KiwiRail resulted in a request to retain the existing entry/exit angles. —The issues raised are responded to as follows: 1) AECOM's view is that the stock effluent disposal underpass is unsuitable at this location. 2) It is the recommendation of the design team to further negotiate the use of the contra-flow KiwiRail access lane and to then reallocate the available space to ensure a 3m wide shared path can be maintained. 3) A high entry slip lane has not been proposed due the approach speeds and short radius curve towards the intersection. Discussions with KiwiRail resulted in a request to retain the existing entry/exit angles.

Safety Engineer:

Client Decision:

Action Taken:

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3.3.3 Path widths, access and use, surface and obstructions

Significant

The selected path width of 3.0 m is supported by the SAT. It is the minimum width in Austroads guidance for a recreational path - which is the likely use on weekends. If the path proves popular on weekends with both pedestrians and cyclists, this width may be inadequate. However all the published guidance on path widths refers to the sealed width of a level riding surface with level traversable shoulders, and specifies further clearances to obstacles. The Austroads guidance recommends a clearance of 1 m per side to obstacles on commuter routes, with an absolute minimum 0.5 m. This results in a recommended width between fences of 5 m. The NZ cycle trail guidelines were also referred to at the briefing. For a two way path, they require a 2.5 m wide sealed surface plus a 1 m clearance per side to continuous obstructions such as fences or retaining walls. This results in a width between fences of 4.5 m. However the design intent for Option 1 shows widths between fences of 1.8 m for at grade situations next to a wire rope barrier, and 2.7 m to 3.0 m metres next to retaining walls. This is a very substandard value to use for design intent. These widths are design intent only and significant sections are below the target width due to both continuous and spot obstructions.

The lack of width is a serious safety concern as the VicRoads Cycle Note 21 was prepared in response to a coroners request for the road controlling authority to determine what path width is safe when shared by pedestrians and cyclists. Any width reduction below those recommended in the published guidance compromise safety. The proposals are so far below minimum recommended widths that if the path was well used the collision frequency would be most likely to be worse than on the highway shoulder. While the severity of injuries may be lower than on the highway, cyclist head on collisions and collisions with unyielding obstacles at commuting speeds are likely to be life threatening. Overall SAT cannot be confident that anyone using the path would be safer than on the road shoulder.

Failure to achieve adequate widths on paths will also compromise delay and enjoyment of the new facility which may continue to suppress demand for active use.

Main width concerns are presented below.

There is a 2.0 m wide path under the Ngauranga overpass which may be widened subject to discussion with KiwiRail, see 3.2.2.1. However, this is a serious width constraint if the space is not made available, particularly on the outside of a curve where there will be shared two way path use and headlight conflicts.



Figure 43: Underpass looking east



Figure 44: Underpass looking west



It is noted that the design shows the shared path being marked as directional for Sections 3 and 4. This layout with all shared path users 'keeping left' is only useful where the path is 3.0 m wide and will be problematic at the many narrower sections identified along Option 1.

The path goes through a series of width variations where the path width is reported to be achieved, but the site visit does not support this in many locations. The following are photos that show a few of the locations where width is compromised by service utility structures, pole infrastructure, bushes and road infrastructure.

The photo Figure 45 is at CH 200



Figure 45: Fence, drainage channel & guardrail

Figure 46 at CH 800 shows that the path is very constrained in this location.



Figure 46: very constrained section of path

The next Figure 47 at CH 1,000 shows a series of service utility structures within the path. The different lids will have differential skid resistance, particularly during rain or frost events, they are all at slightly different levels and will require maintenance access from time to time.



Figure 47: Fence, tree, service lids, kerb, poles and guardrail

The next Figure 48 at CH 1,350 shows that the adjacent road surface is at pedestrian and rider head height. This creates a situation where any detritus from the road surface, spray



during rain events or unsecure loads could fall onto the path or path users.

The SAT also understands there are services within the retaining wall that may make widening the path in these retained locations very difficult and costly.



Figure 48: Road surface at head height

Figure 49 at CH 1,550 shows a section of path designed to be 1.8 m wide, however there may not even be enough space to achieve that unacceptable width.

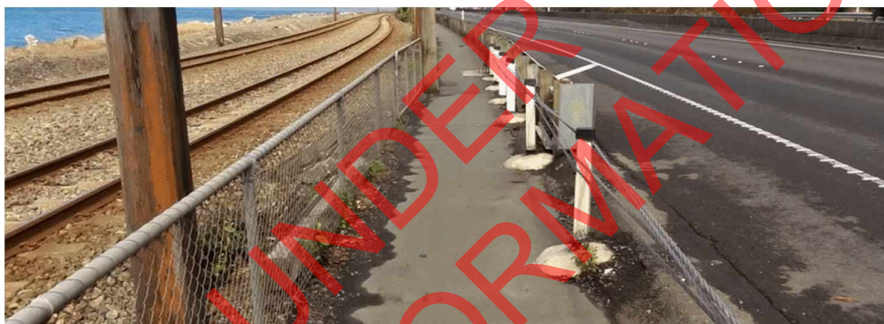


Figure 49: Fence, poles, wire rope & W-Section constraints

The Figure 50 at CH 1,800 shows service utility structures adjacent to the narrow path with a wire rope barrier to protect errant vehicles from colliding with the rail infrastructure or trains.

The SAT recognise that the wire barrier is designed to deflect up to 2.0 m when a vehicle collides with the barrier and the vehicle is deflected back to the traffic lane. The wire rope deflection length can be around 50 m which means any path users are at extreme risk in an errant vehicle crash event.



Figure 50: Fence, poles, service structures and lids, wire rope constraints

Figure 51 at CH 1,920 shows the narrowest section of path, 1.18 m wide as designed to avoid the foundation structure for the highway overhead gantry sign





Figure 51: Narrowest section of new path at 1.18 m wide

Figure 52 at CH 2,300 has similar concerns as CH 1,350 plus the deflecting wire rope issue. The design drawings show the existing path width of 1.8 m will be retained here, but even achieving that narrow width is questioned in this location.



Figure 52: Fence, poles, service lids, retaining wall, trees & deflecting wire rope

Figure 53 at CH 2,920 has similar concerns to CH2,300 and CH 1,350 with the additional concern that the design expects to achieve 3.0 m in this location. Also note the puddles forming that will require disposal, the pole in the retaining wall and the rail structure on the left side of the existing path.



Figure 53: : Fence, poles, retaining wall, trees, deflecting wire rope and road at head height

Figure 54 at CH 3,280 shows the design 1.64 m wide path proposed for this location. This is significantly narrow and has only the wire rope barrier separating the road traffic from path users.



Figure 54: Minimal separation between road and rail

Figure 55 at CH 3,600 is another narrow section where the plans show at CH 3,650 the proposed shared path has two widths, 1.56 m and 3.66 m. The site inspection indicates that the narrower width is more likely to be achieved.



Figure 55: Minimal separation between road and rail with service structures

Figure 56 at CH 3,750 shows the transition point between Sections 3 and 4.



Figure 56: Minimal separation between road and rail with guardrails

Of note along Section 3 (option 1) is the clusters of Pohutukawa trees along both sides of the path. The SAT are concerned that the majority of these trees will have to be removed to achieve option 1.



Recommendations:

- 3.3.3.1 Do not use Option 1 for Section 3 due to width constraints and the associated risks of fitting a facility between two significant road and rail infrastructures.
- 3.3.3.2 If Option 1 is pursued, then the wire rope guard rail should be replaced by TL3 W-Section guardrail that does not deflect so far into the shared path.
- 3.3.3.3 If Option 1 is pursued, widening of the path at retaining wall locations which may involve relocating underground services should be allowed for.
- 3.3.3.4 If Option 1 is pursued, the option of relocating the rail service utility structures to the other side of the railway line should be explored.
- 3.3.3.5 If Option 1 is pursued, the use of wire rope barriers should be assessed to determine the safety of active users on the path during a high speed vehicle crash.
- 3.3.3.6 If Option 1 is pursued, the sections of path with path user head height at the same level as the road surface should have a barrier to stop road detritus, storm water spray and unsecure loads falling onto the path and/or path users.
- 3.3.3.7 If Option 1 is pursued, the designer should determine the noise and fumes pollution the path users are exposed to between the state highway and railway line, to determine if it is an acceptable environment for walking and cycling.
- 3.3.3.8 If Option 1 is pursued, the Pohutukawa trees will have to be removed to provide more space and improve forward visibility.

Frequency Rating: <i>Crashes are likely to be</i> Common	Severity Rating: <i>Death or serious injury is</i> Likely
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Designer Response: AECOM's view is that Option 3 should be pursued in preference to Option 1. For Option 1 the minimum width of 2.5m would be sufficient if there are cyclists only, but no pedestrians. Such a width is achievable, with an exception of a few pinchpoints, which would be well signposted. Option 1 would not be attractive for pedestrians, so they are not likely to be on the path. The opportunities to refine Option 1 may be pursued in the event it becomes the recommended option (e.g. if Option 3 is rejected by the Transport Agency).

Safety Engineer:

Client Decision:

Action Taken:



3.3.4 Section 3 Option 3

3.3.5 Preference for option 3 alignment

Minor

The SAT have a strong preference for the seaside Option 3 (Sections 3 and 4) as this would see a purpose built shared facility, designed to the desirable width of 3.0 m plus clearances located away from the state highway traffic and the associated vehicle noise and pollution. The NZ Transport Agency project objectives call for a facility that;

- Improve walking and cycling safety
- Generates more use of the Lower Hutt to Wellington corridor by walkers and cyclists regardless of ability,
- Separate walking and cycling activities from highway traffic,
- provide better safety standards and capacity

Option 3 (Sections 3 and 4) will meet these project objectives and further, the SAT predict that the seaside option is more in line with community expectation.

Further, Option 3 does not have the same safety issues identified with Option 1 such as;

Path width compromised by service utility structures, pole infrastructure, bushes and road infrastructure

Wire rope barriers deflecting across the path in the event of a vehicle crash

No road detritus or unsecure load exposure from the adjacent highway, particularly where the road is at the same level as path user head height.

Differential surface friction with service covers

The Option 3 path will not be closed during maintenance of the utility services found in Option 1

During construction of Option 3, commuters will be able to continue to use the existing road facility or off road facility and migrate to Option 3 the day it is opened.

Option 3 can be considered future proof (see VicRoads Cycle Note 12) as it can accommodate more pedestrians and cyclists by implementing different initial layout or markings. Option 1 will be out of date and inadequate the day it opens.

Recommendations:

3.3.5.1 Construct Option 3 in preference to Option 1 for Sections 3 and 4.

Frequency Rating:

Crashes are likely to be **Infrequent**

Severity Rating:

Death or serious injury is **Unlikely**

Designer Response:

~~This recommendation concurs with the AECOM's view. In addition to the benefits noted by SAT, the sea wall that is a component of Option 3 enhances the resilience of the rail track, plus the tourism potential. This recommendation concurs with AECOM's view. In addition to the benefits, further investigation needs to be undertaken to consider the resilience enhancement potential of the project.~~

Safety Engineer:

Client Decision:

Action Taken:



3.3.6 Cross section SK 3310 Detail [F]

Minor

The 1 m gap to the rail fence is supported, as this should accommodate the 1.0 m clear zone. The path lighting could be custom designed for this type of facility, and not just the standard road provision. The proposed sea wall structure looks to be vertical and within the clear zone. The use of a capped chain link fence is supported as the tops of uncapped fences can be easily damaged by some people.

Recommendations:

- 3.3.6.1 Maintain a 1.0 m clear zone to the sea wall structure and any utility service poles
- 3.3.6.2 Consider putting the seawall on a slight angle away from the path giving more 'handle bar' space to cyclists. As handle bars are wider than the pedals, this would remain a safe barrier. This will also make the path look and feel wider to all path users.

Frequency Rating:

Crashes are likely to be **Infrequent**

Severity Rating:

Death or serious injury is **Unlikely**

Designer Response:

~~The sea wall has not been confirmed for use. However, the tilting of the seawall does not seem to be necessary, as there is a strip of the free draining material between the path and the seawall. This will act as a deterrent for cyclists to ride too close to the wall. The sea wall has not been confirmed for use. However, the tilting of the seawall does not seem to be necessary, as there is a strip of the free draining material between the path and the seawall. This will act as a deterrent for cyclists to ride too close to the wall, nevertheless, this should be considered at specimen or detailed design stage.~~

Safety Engineer:

Client Decision:

Action Taken:



3.3.7 Connection at Ngauranga

Moderate

As per the SAT discussion on 2.3.3, the more direct connection between Section 2 and Section 3 could occur at the Ngauranga Railway Station.

This could see the current underpass widened, including radii on the curves at the bottom of the ramps, and lengthened to provide direct access to Section 3 Option 3.

An alternate option would be to construct a new purpose built underpass that links more directly between Hutt Road and the seaside Option 3 while also connecting with the existing Ngauranga Railway Station.

The Option 3 connection being relocated to the Ngauranga underpass would see the first kilometre of substandard width of Section 3 no longer required, and this would be replaced by the 3.0 m wide shared path.

The proposed overpass (CH580 to CH900) is not considered a particularly desirable facility due to the exposure to the prevailing wind elements down the harbour. It is possible that the overpass could be enclosed to mitigate the weather but this would raise other issues of consents, construction, aesthetics, and costs. It is acknowledged that cyclists prefer the geometry of the underpass as they are shorter and the down ramps provide some momentum to getting up the other side. They can also be a shelter during heavy rainfall events.

Recommendations:

- 3.3.7.1 The SAT encourages the client and designer to explore the alternate shared path option for the Ngauranga interchange as discussed in Section 2.3.3.
- 3.3.7.2 Consider providing a CPTED compliant underpass instead of the overpass facility proposed.

Frequency Rating: <i>Crashes are likely to be</i> Infrequent	Severity Rating: <i>Death or serious injury is</i> Likely
Designer Response: The AECOM's view is that the stock effluent disposal underpass is unsuitable. AECOM's view is that the stock effluent disposal underpass is unsuitable for use at this location.	
Safety Engineer:	<input type="text" value="Click here to enter text."/>
Client Decision:	<input type="text" value="Click here to enter text."/>
Action Taken:	<input type="text" value="Click here to enter text."/>



3.4 Safety audit team response to Section 4

3.4.1 Section 4 Option 1

3.4.2 Path widths

Moderate

The design plans SK 1313/1402 show the first hundred meters of Section 4 Option 1 has a substandard path width. This then transitions into the new shared path from CH 3,850 to the end of Section 4, which has better width but lacks sufficient clearance to fencing and other barriers, plus the path is within wire rope barrier deflection zone. However, as seen in Figure 57 at CH 3,900, the road is super elevated with a retaining wall and there are poles in the proposed path alignment. This may result in the same safety and user issues found in 3.3.3.



Figure 57: New path will have similar constriction issues here as per Section 3 Option 1
Figure 58 shows more of the same safety and user issues at CH 4,100 as per 3.3.3.



Figure 58: New path will have similar safety issues here as per Section 3 Option 1

The area between the state highway and railway line does look to widen out at CH 4,500 where there should be adequate width to provide the 3.0 m wide shared path. See Figure 59 at CH 4,600 showing more separation between the road and rail corridors.



Figure 59: More space is available at CH 4,600

Recommendations:



3.4.2.1 As per Section 3 Option 1 see recommendations 3.3.3.1 to 3.3.3.7

Frequency Rating:

Crashes are likely to be **Occasional**

Severity Rating:

Death or serious injury is **Likely**

Designer Response:

~~The AECOM's view is that Option 3 should be pursued in preference to Option 1.~~ AECOM's view is that Option 3 should be pursued in preference to Option 1 as the preferred option.

Safety Engineer:

Client Decision:

Action Taken:

3.4.3 Section 4 Option 3

Seaside Option 3 is supported in Section 4 as per Section 3, see 3.3.5

It is also noted that Section 3, Seaside Option 3 links seamlessly into the Esplanade path (that will require local upgrading) and connect directly in to the Section 5 path, north of the Petone Off-ramp, between Hutt Road and the rail corridor.

3.4.4 Rowing & Ski Club interaction

Minor

The plans note that the seaside path could be located on the seaward side of the rowing club and incorporated with the new hardstand area. This would require careful consideration of the rowing club use and their access needs. During the site visit we noted use of this area by the ski club too.

Recommendations:

3.4.4.1 **Do not incorporate the shared path into the rowing club hard stand area as this will cause conflict between these two distinctly different user groups.**

3.4.4.2 **Provide direct access from the shared path to the rowing and ski clubs**

Frequency Rating:

Crashes are likely to be **Infrequent**

Severity Rating:

Death or serious injury is **Unlikely**

Designer Response:

The alignment of the path in this area will be discussed with the rowing and water ski clubs during the detailed design stage.

Safety Engineer:

Client Decision:

Action Taken:



3.5 Safety audit team response to Section 5

3.5.1 Section 5 Option 1

The Option 1 alignment continues up the side of the rail corridor, under the Petone Off-ramp and parallel to the rail corridor up to the Petone Station.

3.5.2 Under the Petone Off ramp

Minor

Although the SAT did not get under the Petone off-ramp where the Option 1 shared path alignment is proposed, it is worth mentioning CPTED issues for this location.

The following changes are scaled off the plan from Sections 3 and 4 and applied along the proposed path. Therefore the Chainages are approximate.

Photo CH ≈ 4,780 indicates that there is a physical barrier of unknown structural integrity at the north end of the underpass that may present access issues.



Figure 60: Potential barrier at north side of Petone off ramp

Recommendations:

3.5.2.1 Bring the principles of CPTED into the design to shared path in this location.

3.5.2.2 Designer to investigate the structure at the north end of the underpass to determine the feasibility of getting through or around this structure.

Frequency Rating:

Crashes are likely to be **Infrequent**

Severity Rating:

Death or serious injury is **Unlikely**

Designer Response:

The auditors' recommendations are accepted.

Safety Engineer:

Client Decision:

Action Taken:



3.5.3 Upgraded shared path with contraflow

Minor

Plan SK1404 / SK1502 show an existing shared use path to be upgraded as part of Option 1. This facility will give access from the shared path (Option 1) that runs along parallel to SH2, up the Petone – SH 2 On-ramp (in a contraflow to highway traffic direction), down the off road ramps to either the Esplanade path or under the overpass connecting to the off road path that will connect to the west side of Hutt Road at the Esplanade roundabout.

There are some safety concerns with the off road shared path in the contraflow direction to the southbound Hutt Road traffic. There is no width given for this shared path and a wire rope barrier is proposed to separate active users from motorised users. There will also be the head light issues for pedestrians, cyclists and drivers on this facility.

It was noted that the existing shared path facility under the bridge is mostly good and will require little intervention.

Recommendations:

- 3.5.3.1 This contraflow shared facility is only required for Option 1. If Option 1 is pursued, the shared path should have a solid physical barrier to protect path users from errant vehicles, mitigate opposing head light issues between path users and drivers, and to stop road detritus and unsecure loads falling onto the path and/or path users.
- 3.5.3.2 If Option 1 is pursued, the shared path should be angled away from the overpass abutment on the south end to avoid this blind corner, this is a CPTED principle and is used in the Option 3 proposal for this location.

Frequency Rating: Crashes are likely to be Infrequent	Severity Rating: Death or serious injury is Very likely
Designer Response: <u>The auditors' recommendations are accepted. The AECOM's view is however that Option 3 should be pursued in preference to Option 1. The auditors' recommendations are accepted. AECOM's view is however that Option 3 should be pursued in preference to Option 1.</u>	
Safety Engineer:	Click here to enter text.
Client Decision:	Click here to enter text.
Action Taken:	Click here to enter text.



3.5.4 Path widths and obstructions

Significant

The Figure 61 at CH \approx 4,870 shows there is very limited space between the guardrail and rail corridor and there are quite mature Pohutukawa trees along the proposed shared path alignment



Figure 61: Limited space between guardrail and rail corridor with mature Pohutukawa trees

The photo at CH \approx 4,900 Figure 62 shows there is very limited space between the guardrail and the fence plus there are some service utility structures and poles within the proposed shared path corridor.



Figure 62: Limited space between guardrail and built structure

Recommendations:

- 3.5.4.1 If Option 1 is pursued, relocation of the service utility structures and poles is required.
- 3.5.4.2 If Option 1 is pursued, the shared path should have a barrier to stop road detritus and unsecure loads falling onto the path and/or path users.
- 3.5.4.3 If Option 1 is pursued, the designer should determine the noise and fumes pollution the path users are exposed to adjacent the state highway, to determine if it is an acceptable environment for walking and cycling.
- 3.5.4.4 If Option 1 is pursued, the Pohutukawa trees will have to be removed to provide more space and improve forward visibility and unless the narrow width issue is addressed the crash frequency will be common.

Frequency Rating:

Crashes are likely to be **Common**

Severity Rating:

Death or serious injury is **Likely**

Designer Response:

~~The auditors' recommendations are accepted. The AECOM's view is however that Option 3 should be pursued in preference to Option 1.~~
The auditors' recommendations are accepted. AECOM's view is however that Option 3 should



[be pursued in preference to Option 1.](#)

Safety Engineer: [Click here to enter text.](#)

Client Decision: [Click here to enter text.](#)

Action Taken: [Click here to enter text.](#)

3.5.5 Section 5 Option 3

This section, seaside Option 3 connects seamlessly into Section 4 and the Esplanade path (that will require local upgrading). Section 5 connects directly at grade into the shared path between Hutt Road and the rail corridor under the Petone Off-ramp.



Figure 63: Shared path under the Petone off ramp overpass

The Section 5 (Option 3) shared path extends from under the Petone overpass, north towards Hutt Road via this wooden bridge, which is considered adequate width in the short term.



Figure 64: Shared path over wooden bridge

3.5.6 Existing path link to Petone Station

Significant

Plan SK 3504 shows [green line] the existing shared use path that runs along the west side of Hutt Road to be upgraded. This option is not considered suitable for the safety and users reasons previously discussed in 3.1.2 and 3.1.4.

Recommendations:

- 3.5.6.1 Do not upgrade the [green] shared path that runs along the berm between the kerb and Hutt Road west boundary.

Frequency Rating:

Crashes are likely to be **Occasional**

Severity Rating:

Death or serious injury is **Likely**



Designer Response: AECOM does not propose to alter the path from Hutt Road to the Petone on-ramp. Refer drawing CV-3502 for details.

Safety Engineer: [Click here to enter text.](#)

Client Decision: [Click here to enter text.](#)

Action Taken: [Click here to enter text.](#)

3.5.7 New path link to Petone Station

Minor

Plan SK 3504 shows [blue and grey line] the proposed new shared use path option that runs between Hutt Road and the railway line. This new path could provide a seamless link from Section 3 to Section 6 that can be used by riders of all abilities. The grey line is the ramp and over bridge crossing the railway line and providing access to the Petone Railway Station along the east side of the rail corridor.

This link is favoured as it does not have the access conflicts and constrictions that upgrading existing road side facilities do.

Recommendations:

3.5.7.1 Develop the new shared path as per 2.3.2 that would link the overpass to the new shared path and the Petone Station and the Pito-One Road path on the west side of the highway.

Note that the overpass is likely to be located further north towards the Railway Station, in Section 6.

3.5.7.2 Give consideration to an underpass option (that complies with CPTED principles) that could also link the new shared path to the Petone Railway Station and the Pito-One Road shared path on the west side of the highway.

Frequency Rating:

Crashes are likely to be **Infrequent**

Severity Rating:

Death or serious injury is **Unlikely**

Designer Response: The AECOM's view is that an underpass at this location is unsuitable. A dedicated overpass is proposed parallel to McKenzie Bridges that links the eastern and western ends of the paths.

Safety Engineer: [Click here to enter text.](#)

Client Decision: [Click here to enter text.](#)

Action Taken: [Click here to enter text.](#)

3.6 Safety audit team response to Section 6

Section 6 links the off road shared path of Section 5 to the Petone Railway Station and the Pito-One Road shared path on the west side of the highway at the McKenzie Avenue Bridge via the Petone Railway Station overpass.



3.6.1 McKenzie Avenue Bridge

Moderate

The SAT understands the McKenzie Avenue Bridge has been designed in a manner that does not permit structures to be added to it. This is a modern facility that suffers from being designed as a motorised vehicle use only and is now being considered for walking and cycling modes.

The SAT observed that the McKenzie Avenue Bridge has very steep approach ramps, with 11 degrees measured on the south east approach. Table 3 from the MoT New Zealand Cycle Trail Design Guide shows that 11° equates to 19.5% or 1:5.5 which is rated as grade 5 in the design guide. Grade 5 should only be cycled by expert riders.

A consequence of the steep gradient is that there are limited sight lines across the east end of the bridge (station access) and across the top of the bridge in an east west direction. This means any users on the bridge will have limited intervisibility which is undesirable for multi modal users.

Recommendations:

- 3.6.1.1 As nothing can be attached to the McKenzie Avenue Bridge and if there is no other option to use this location for an overpass then consider providing a parallel overpass facility (CPTED principles) that could link Pito-One Road to the Railway Station and to the Hutt Road shared path.
- 3.6.1.2 If McKenzie Avenue Bridge is the preferred link adopted for this project, serious consideration needs to be given to the expectation that cyclists who are not 'expert' will have to walk their bikes up the steep ramps to traverse this bridge. As there are no walking or cycling facilities on the bridge, people wishing to use the bridge must walk or cycle up the traffic lane. As there will be a speed differential (around 30 km/h) between these road user groups, this activity is considered risky. To improve safety, consider slowing motorised vehicles down to 30 km/h and provide warning signs of pedestrians and cyclists using the bridge.

Frequency Rating: <i>Crashes are likely to be</i> Occasional	Severity Rating: <i>Death or serious injury is</i> Likely
Designer Response: A purpose designed facility, parallel to McKenzie bridge is proposed as the preferred option. The auditor's comments are noted regarding the use of McKenzie bridge.	
Safety Engineer: <input type="text" value="Click here to enter text."/>	
Client Decision: <input type="text" value="Click here to enter text."/>	
Action Taken: <input type="text" value="Click here to enter text."/>	



3.6.2 Petone Station

Moderate

The Petone Station is an important transport centre. Buses, vehicles, pedestrians and cyclists all use this area. As can be expected, there is considerable conflict between modes, particularly at peak commute times.

The overpass is discussed in 3.6.3 and the alternate overpass options are discussed in 2.3.2 and 3.5.7. The only further comment made here is that all of these facilities must link seamlessly together and the proposed shared path will only be as good as the weakest link. This facility may require future planning and be included in a joint Hutt City and NZ Transport Agency 'Walking and Cycling Strategy' or broader 'Multi Modal Transport Strategy'.

It is not desirable that commuter cyclists share the railway platform with rail passengers as shown. There will be obvious conflict between these users and this could have catastrophic consequences when trains are arriving or departing. The photo shows cyclists using the overpass have no option but to cycle along the platform.



Figure 65: Cyclists are directed to the platform

There is an underpass located at the south end of the station and its suitability is discussed in Section 2.2 Questions "Is the Petone underpass a realistic option" It is considered suitable for cyclists that are prepared to walk their bike through the underpass and not ride through it.

The designer acknowledges that cycling through the car park would be more desirable than using the platform, however there are still safety risks associated with cycling behind 90 degree parked vehicles.

During the site visit, a cycle desire line was observed at the south end of the station where cyclists appear to be exiting the car park around the base of the McKenzie Avenue bridge and joining the Hutt highway.

Recommendations:

- 3.6.2.1 That an alternative overpass facility is provided as discussed in 3.5.7.1 that would provide a shared facility, suitable for commuter cyclists and pedestrians wanting to cross the railway or highway.
- 3.6.2.2 That cyclists are not permitted to commute along the railway platform.
- 3.6.2.3 If the underpass at the south end of the station is the only safe crossing facility provided into the station, it requires considerable modification to address CPTED principles and the safety and users concerns including, adequate width, hazard removal, forward sight lines, corners with good radii, signs and markings etc...
- 3.6.2.4 If cyclists are require to cycle through the Petone Railway Station car park the



facility (3.0 m wide) should be provided clear of parked vehicles. Alternately the parking could be rearranged with the cycle route/path alongside parallel parking, i.e. not perpendicular parking.

3.6.2.5 Determine the desire line at the south end of the station to assess if Option 1 or Option 3 shared path alignments would address their intended route.

Frequency Rating:

Crashes are likely to be **Occasional**

Severity Rating:

Death or serious injury is **Likely**

Designer Response:

~~The~~ AECOM's response is as follows: 1) A dedicated, purpose designed facility is proposed parallel to McKenzie Bridge. 2) Cyclists are not permitted to be mounted on the railway platform. 3) The existing underpass adds to the cycling/walking network and ensures connectivity with Hutt Road at this location. SAT comments are noted and further investigation is required during detailed design stage. 4) See note 1 of responses.

Safety Engineer:

Client Decision:

Action Taken:

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3.6.3 Petone Station highway overpass

Moderate

This overpass is already identified by Hutt City Council as a shared path link across the highway and railway line. This is seen in the signs leading to this facility from both directions. This facility suffers from being designed as a pedestrian only facility and is now being used for both walking and cycling modes. The safety and users concerns include, inadequate width, many structural path side hazards, limited forward sight lines, several blind corners with right angle bends, but there are some signs and markings directing pedestrians and cyclists to this facility.



Figure 66: Petone overpass shared use sign

The SAT do not think the overpass is a suitable shared facility for commuter cyclists as the ramps and paths are too narrow and the facility is congested with pedestrians during peak commute times. It really only suits cyclists that are happy to walk their bicycle over the facility.

Recommendations:

- 3.6.3.1 That an alternative overpass facility is provided as discussed in 3.5.7.1 that would provide a shared facility, suitable for commuter cyclists and pedestrians wanting to cross the railway or highway.
- 3.6.3.2 If the overpass is to be retained as the primary shared facility for active users, it needs considerable modifications. The modifications would address CPTED principles and the safety and users concerns such as, adequate width, hazard removal, forward sight lines, corners with good radii, signs and markings etc...

Frequency Rating:

Crashes are likely to be **Occasional**

Severity Rating:

Death or serious injury is **Unlikely**

Designer Response:

The AECOM's response is: 1) A dedicated, purpose designed facility is proposed parallel to McKenzie Bridge. 2) Existing overpass modifications can be assessed during future investigations.

Safety Engineer: [Click here to enter text.](#)

Client Decision: [Click here to enter text.](#)

Action Taken: [Click here to enter text.](#)



3.6.4 Pito-One Road path

Minor

This section of path may not be required depending on the project team accepting the need for an exclusive cycle overpass over the Petone Railway Station and highway. However, if it is required there are some safety and user issues.

The Pito-One Road path has a width constriction where the Petone Railway overpass ramp meets the footpath. This will be a high risk area with pedestrians accessing and exiting the ramp while the shared path is being used by commuters. There is poor intervisibility from the south of the ramp, particularly with pedestrians leaving the ramp and walking south towards the overflow parking. It was also noted that the over pass ramp supports will be within the proposed 3.0 m shared path width.



Figure 67: Restricted path width at overpass ramp

It is proposed to widen the existing concrete path to 3.0 m for the new two way shared path. There are some areas where the existing path is constrained by structures and service utilities as seen in Figure 68.



Figure 68: Retaining wall and pole constraining path width at McKenzie Avenue



Figure 69: Service utilities adjacent to formal overflow parking area

The path in Figure 70 shows signs of being parked over as it is located relatively close to the Petone Railway Station and is subject to informal overflow parking demand.





Figure 70: Signs of overflow parking demand

The section of path shown in Figure 71 between the formal overflow parking area and McKenzie Bridge is subject to constant parking demand. Dooring is a particular concern here.



Figure 71: Informal overflow parking on the shared path

Recommendations:

- 3.6.4.1 Subject to the development of a new over bridge being constructed from Hutt Road over the railway line, connecting to the station and linking to Pito-One Road path as discussed in 3.5.7.1 the path widening may not be required over the full length.
- 3.6.4.2 Consideration be given to relocating structures and utilities to avoid path width constraints.
- 3.6.4.3 Provide some form of physical barrier to prevent cars from parking on or 'hanging' their vehicles over the path.
- 3.6.4.4 Modify the ramp structure or kerb alignment at the ramp connection to the path to increase the intervisibility and separation between path users.

Frequency Rating:

Crashes are likely to be **Infrequent**

Severity Rating:

Death or serious injury is **Unlikely**

Designer Response:

The AECOM's response is: 1) A dedicated, purpose designed facility is proposed parallel to McKenzie bridge. 2) It is proposed to widen the existing path to 3m where this can be achieved. Where it cannot, appropriate signage is proposed. 3) This is proposed to be investigated during future specimen or detailed design -stages. 4) It is not practical to widen the path at the overpass ramp. Although this requires further investigation, it could be managed with appropriate signage.



Safety Engineer: [Click here to enter text.](#)

Client Decision: [Click here to enter text.](#)

Action Taken: [Click here to enter text.](#)

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3.6.5 Korokoro Road

Moderate

The Korokoro intersection provides an important link between Pito-One Road and the off road shared path that connects to the Percy Scenic Reserve. However the intersection is not safe or user friendly for active users.

There is limited visibility from the proposed shared path crossing locations on both sides of Korokoro Road. In both locations, visibility is restricted by vegetation and will require continual maintenance.



Figure 72: Limited intervisibility on south side



Figure 73: Limited intervisibility on north side

There is a very small island proposed to be constructed on the approach to the current splitter island on Korokoro Road. This island 'nose' is intended to provide protection to active users on the median island.

There are two entry lanes, for left and right turning vehicles. This makes the crossing width very wide for active users and it is difficult to look in both directions with limited intervisibility. The two entry lanes were observed to create uncertainty as to who had right of way between entering vehicles as the two lanes merge further along Korokoro Road.

There are also two exit lanes and this configuration causes sight line issues at the limit line with vehicles edging forward and blocking the adjacent vehicle's sight line.

For cyclists heading north from Pito-One Road there are no signs or markings indication that you can continue along the off road shared path to Dowse Drive (Section 7)

Recommendations:

- 3.6.5.1 Reconsider the locations of the shared path crossing over Korokoro Road to maximise crossing intervisibility.
- 3.6.5.2 Reduce Korokoro Road to one entry lane to clarify priority and this will provide space to relocate and better accommodate the south crossing location. This will



reduce the active user crossing distance and improve crossing intervisibility.

- 3.6.5.3 Consider increasing the width and length of the whole Korokoro Road median island to accommodate active users safely. Provide a cut through in the median island in the best location for intervisibility and as close to the active desire line as practical.
- 3.6.5.4 Reduce Korokoro Road to one exit lane to improve exiting vehicle sight lines and provide space to relocate and better accommodate the north side crossing location. This will also reduce the active user crossing distance and improve crossing intervisibility.
- 3.6.5.5 If recommendations 3.6.5.2 and 3.6.5.4 are implemented there will be a great opportunity to provide a visual connection between Pito-One Road and the off road shared path to Dowse Drive.

Frequency Rating: <i>Crashes are likely to be</i> Occasional	Severity Rating: <i>Death or serious injury is</i> Likely
Designer Response: The Korokoro Road intersection is outside the scope of this project. The SAT comments are noted and recorded. Further investigation is required to ensure the crossing is at the appropriate location.	
Safety Engineer:	<input type="text" value="Click here to enter text."/>
Client Decision:	<input type="text" value="Click here to enter text."/>
Action Taken:	<input type="text" value="Click here to enter text."/>

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3.7 Safety audit team response to Section 7

3.7.1 Korokoro Road to Dowse Drive

Minor

The existing shared path is to be widened to 3.0 m this is supported by the SAT on the understanding side clearances are also provided. This will require some repositioning of the entry bollards, embankment and other structures along this path to create a safe clear zone.



Figure 74: Bollards at path entry

Figure 75 shows there is also a short vertical curve with a steep embankment and a retaining wall with a hand rail along the top where this path comes close to the highway. This hand rail is unlikely to comply with the Building Code or Austroads Part 6A.



Figure 75: Steep embankment and retaining wall

The path has a tight bend with low bollards where a narrow section of concrete path is used to connect to the Percy Reserve. There is also an unformed drain along the west side of the path.



Figure 76: Tight bend with low bollards and drain

In Percy Reserve there is a meandering section of path that can be considered a more passive section of path, it has tight curves, with low overhanging trees and picnic tables for public use. This path includes a boardwalk section that can get slippery when wet. A



suggested bypass alignment is shown on photo with a red dotted line.



Figure 77: Possible boardwalk bypass route

There is a picturesque water wheel and wooden bridge that will form part of this path, as people are likely to stop and view (photograph) this area, the bridge is considered too narrow.



Figure 78: Water wheel and bridge

The Percy Reserve connects to a short cul-de-sac that links to Dowse Drive. The connection at the cul-de-sac head looks good for the shared path.



Figure 79: Percy Reserve cul-de-sac connection

The cul-de-sac is basically a parking area for the Percy Reserve. The SAT consider that traffic speed and volumes in this location may be low enough to not require a separated facility for walking and cycling.





Figure 80: Percy Reserve parking

There is good intervisibility to the right when exiting the Percy Reserve cul-de-sac, but limited intervisibility to the left.



Figure 81: Limited visibility to the left

It was noted that the Percy Reserve has no vehicle access from Dusk until Dawn and there is a barrier gate that keeps vehicles out. Therefore any shared path will have to allow walking and cycling access afterhours.

Recommendations:

- 3.7.1.1 Relocate the bollards (if required) as the entry may be controlled as part of the suggested redesign discussed in 3.6.5.4. If not redesigned, then relocate the bollards to a location for the wider path.
- 3.7.1.2 Consider the clear zone requirements when widening this path to ensure the new path is safe and useable.
- 3.7.1.3 Consider building a new path, bypassing the boardwalk section to avoid this passive section of path with tight curves, low trees and picnic tables.
- 3.7.1.4 The bridge at the water wheel will require widening to accommodate passive and active use.
- 3.7.1.5 Contact Hutt City Council to determine if they have traffic use data for the Percy Reserve Cul-de-sac as this may inform the use of the cul-de-sac road or the need for an off road shared path.
- 3.7.1.6 Consider implementing yellow no parking lines on the left hand side of the Percy Cul-de-sac intersection to improve intervisibility.
- 3.7.1.7 Provide walking and cycling access after hours.

Frequency Rating:

Severity Rating:



Crashes are likely to be **Infrequent**

Death or serious injury is **Unlikely**

Designer Response: The detailed specifications of the path at this location is outside the scope of this project. The SAT comments are noted and recorded. Further investigation is required to ensure the path meets the standards expected by HCC.

Safety Engineer:

Client Decision:

Action Taken:

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3.7.2 Dowse Drive Roundabout

Serious

The Dowse Drive roundabout is an elevated facility above the highway and rail corridor. The proposal is to have the existing shared path upgraded across the south leg of the Dowse Drive roundabout between the Percy Reserve (Dowse Drive) and the Hutt Road.

As this is a roundabout and the connection at Hutt Road is a roundabout, this facility is really only suitable for the very experienced riders, not the Interested but Concerned. The large entry and exit radii creates two hazards for active road users, firstly the traffic speeds can be very high and secondly the active user can have limited intervisibility with approaching vehicles.

Another safety concern is that the distances to be crossed at the roundabout entry and exit are too wide to be safely crossed with the available visibility. This roundabout may be over designed for the volume of traffic using it. There are two lanes on all approach and departure legs and there is space available for two circulating lanes (although only the north approach has two). This means the roundabout is very large and subsequently it takes active users longer to cross, and queued drivers have limited stop line visibility.

With two lane approaches to a roundabout, having the limit lines on an angle can provide better visibility to the right. The current (south approach) layout means vehicles in the left lane can't see past the vehicle queued to their right and cyclists and pedestrians have to cross through slow or stationary queues of traffic that may be looking the other way. The audit team found it personally quite difficult to cross here safely, and this was not during the peak traffic period.

The way the paths have been designed means that pedestrians cannot cross directly between queued vehicles, instead having to walk along the road, ahead or behind queued vehicles.



Figure 82: Crossing through queued vehicles

When a pedestrian or cyclist wishes to cross either of the south departure lanes, their intervisibility is limited due to the large entry radii. This makes the crossing very risky as pedestrians heading across the southbound exit lanes can't see approaching left turning vehicles and also have to consider vehicles exiting from the circulating lane.



Figure 83: Limited crossing intervisibility



The wide Dowse Drive exit lane towards the Percy Reserve entry may accommodate a separated bicycle facility. The proposal is to utilise the existing concrete footpath, but the path width is very narrow for shared use.



Figure 84: Very wide exit lane

Recommendations:

- 3.7.2.1 If this is to be a shared path for riders of all ability, consideration will have to be given to redesigning the roundabout to suit active users too. This may be as simple as reducing the roundabout to single lane approaches and departures and reducing the entry and exit widths and radii. This will have to be modelled to ensure the capacity is acceptable and the roundabout does not queue back to the highway. It may also be acceptable to introduce vertical deflection to reduce the entry and exit speed. However while such would provide a significant improvement over the existing situation, it would still not be suitable for inexperienced users i.e. the Interested but Concerned.
- 3.7.2.2 If two approach and departure lanes are retained, consider having the limit lines angled to improve stop line visibility. Alternately, the left lane limit line could be pulled forward of the pedestrian crossing location.
- 3.7.2.3 Consideration is given to providing a physically separated bicycle facility on the Dowse Drive exit lane towards Percy Reserve. This will be considerably cheaper than relocating the kerb to widening the existing footpath.

<p>Frequency Rating: <i>Crashes are likely to be</i> Common</p>	<p>Severity Rating: <i>Death or serious injury is</i> Very likely</p>
<p>Designer Response: It is not within the scope of this project or stage to consider re-designing the Dowse Drive roundabout. However the SAT comments are noted and needs to be considered in future designs.</p>	
<p>Safety Engineer: <input type="text" value="Click here to enter text."/></p>	
<p>Client Decision: <input type="text" value="Click here to enter text."/></p>	
<p>Action Taken: <input type="text" value="Click here to enter text."/></p>	



3.8 Safety audit team response to Section 8

Section 8 extends from the Dowse Drive intersection to the Melling intersection. There are no off road shared path facilities proposed for this section. However, the SAT have proposed an alternate concept route that could provide for Interested and Concerned users who may consider a safe and relatively direct off road option.

The alternate concept route is described in 2.3.1 and it is a very high level piece of initial thinking from the SAT as this is a task not usually undertaken during a safety audit site inspection.

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3.9 Safety audit team response to proposed On Road cycle facilities

This section looks at the on road cycle facility provision included in the AECOM design against the guidance given from Austroads G88 Table 4,1. See 0

The ratings in this section for using the highway shoulders as cycle lanes and their lack of are correctly rated as severity "very likely" - but frequency is very low only because so few cyclists are on the road. Their personal risk must be very high. The result is that no serious rating is achieved for low frequency events when this is a serious deficiency.

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3.9.1 Section 5 on road cycle provision

3.9.1.1 On road cycle provision

Significant

Section 5 shows on road cycle lanes provided from the SH2 northbound lane, exiting over the Petone off ramp and continuing east through the roundabout along the Esplanade. In the opposite direction, on road cycle lanes are provided along the Esplanade and up the on ramp to the shared facility discussed in 3.5.3.

The SAT observed the use the facility for crossing the Petone off ramp to continue north on SH2. The team observed regular cyclists following the continuity line to make this risky manoeuvre. One who tried to use the formal waiting area crossing point provided gave up and continued to ride over the off ramp. The exit lane configuration and limited visibility from the provided crossing point means cyclists have to wait for the through lane and left turn exit lane to clear before they can cross.

The Cycling aspects of Austroads guides shows that on road cycle lanes where a 100 km/h speed limit exists, should desirably be 2.5 m wide with an acceptable width range of 2.0 m to 3.0 m. Any width less than this amount should not be considered suitable for on road cycle provision in this speed environment.

North bound cyclists are provided with a kerbside on road facility as they approach the Esplanade roundabout and they are expected to stop and wait for a gap, cross the through traffic lane and wait in the median island for a gap in the right turn lane around the roundabout. The cyclist is then expected to follow the outside of the roundabout and exit to the Esplanade. This manoeuvre is time consuming and more risky than taking the lane, further we did not observe any cyclists using this route during the site visit. There is limited visibility from the kerbside lane and the outside of the circulating lane is the most risky cycling position within a roundabout⁸.



Figure 85: Limited visibility from the kerbside lane

The crossing facility proposed to be used is an existing facility that looks (based on the direction of cycle logo) as if it may be intended for cyclists travelling from the Esplanade to Hutt Road. This facility is not sufficient for two way flow and means east bound cyclists must enter the roundabout from a stand still when circulating traffic are travelling much faster. The speed differential in a roundabout is another risk to all road users.

⁸ AUSTRROADS RESEARCH REPORT: Assessment of the Effectiveness of On-road Bicycle Lanes at Roundabouts in Australia and New Zealand





Figure 86: Active crossing facility between roundabout approach lanes

For west bound cyclists, the on road cycle lanes provided along the Esplanade continue up the on ramp to the shared facility. The current on road cycle lane provision is considered inadequate as it starts at 200 mm wide as seen in Figure 87.



Figure 87: Current under width cycle provision

The site visit also showed that the current road shoulder width on the SH2 southbound lane just south of the Petone off ramp is effectively zero (0 m). It is acknowledged that on road cycle provision must include widening here if the off road facilities are not adequate to attract road riders off the state highway.



Figure 88: SH2 road shoulder width

Recommendations:

- 3.9.1.2 The acceptable on road cycle lane width range is (60 km/h 1.5 m to 2.5 m) (80 km/h 1.8 m to 2.7 m) (100 km/h 2.0 m to 3.0 m). Any width less than this should not be considered suitable for on road cycle provision in the speed



environment.

- 3.9.1.3 Reconsider how on road cyclists will negotiate this intersection. If the kerb side waiting area is pursued, then the trees to the approaching traffic will need to be trimmed back.
- 3.9.1.4 If the kerb side waiting area is pursued, consider the size, location and operation of the median waiting area on the roundabout approach lanes.
- 3.9.1.5 If there is sufficient width for on road cycle lanes on the on ramp, provide and include appropriate lane marking and colour surfacing.
- 3.9.1.6 If on road cycle lanes are to be provided along SH2, then this shoulder will require widening by up to 2.0 m

Frequency Rating: Crashes are likely to be **Occasional** **Severity Rating:** Death or serious injury is **Very likely**

Designer Response: ~~The auditors' recommendations are accepted. The AECOM's view is however that Option 3 should be pursued in preference to Option 1~~
The auditors' recommendations are accepted. AECOM's view is however that Option 3 should be pursued in preference to Option 1

Safety Engineer:

Client Decision:

Action Taken:

3.9.2 Section 6 on road cycle provision

There are on road cycle lanes proposed for both sides of SH2 in Section 6. As previously stated, the Cycling aspects of Austroads guide shows that on road cycle lanes where a 100 km/h speed limit exists, should desirably be 2.5 m wide with an acceptable width range of 2.0 m to 3.0 m. Any width less than this amount should not be considered suitable for on road cycle provision in this speed environment.

3.9.2.1 On road cycle provision

Moderate

Apart for the road shoulder widths, the only specific concern to this section is the high speed diverge lane into the Petone Railway Station car park. This type of diverge is problematic for cyclists as it can result in the cyclist riding at ≈30 km/h between two vehicles travelling at 100 km/h.

Recommendations:

3.9.2.2 The acceptable on road cycle lane width range for 100 km/h is 2.0 m to 3.0 m. Any width less than this should not be considered suitable for on road cycle provision in the speed environment.

3.9.2.3 If the road controlling authority cannot provide a minimum design on road cycle facility along the full length of SH2 cycling zone, it is considered better to provide shoulder markings only.

Frequency Rating: **Severity Rating:**



Crashes are likely to be **Infrequent** Death or serious injury is **Very likely**

Designer Response: ~~SAT comments noted. A site specific survey is required to establish the available shoulders widths align the SH. Re-allocation of the road space to achieve a shoulder of at least 2m should be investigated. If 2m cannot be achieved, shoulder markings should be considered instead of cycle lane markings.~~ SAT comments are noted and recorded. A site specific survey is required to establish the available shoulders widths align the SH. Re-allocation of the road space to achieve a shoulder of at least 2m should be investigated. If 2m cannot be achieved, shoulder markings should be considered instead of cycle lane markings.

Safety Engineer:

Client Decision:

Action Taken:

3.9.3 Section 7 on road cycle provision

3.9.3.1 On road cycle provision

Moderate

There are on road cycle lanes proposed for both sides of SH2 in Section 7. As previously stated, the Cycling aspects of Austroads guide shows that on road cycle lanes where a 100 km/h speed limit exists, should desirably be 2.5 m wide with an acceptable width range of 2.0 m to 3.0 m. Any width less than this amount should not be considered suitable for on road cycle provision in this speed environment.

Recommendations:

3.9.3.2 The acceptable on road cycle lane width range for 100 km/h is 2.0 m to 3.0 m. Any width less than this should not be considered suitable for on road cycle provision in the speed environment.

3.9.3.3 If the road controlling authority cannot provide a minimum design on road cycle facility along the full length of SH2 cycling zone, it is considered better to provide shoulder markings only.

Frequency Rating:

Crashes are likely to be **Infrequent**

Severity Rating:

Death or serious injury is **Very likely**

Designer Response: ~~SAT comments noted. A site specific survey is required to establish the available shoulders widths align the SH. Re-allocation of the road space to achieve a shoulder of at least 2m should be investigated. If 2m cannot be achieved, shoulder markings should be considered instead of cycle lane markings.~~ SAT comments noted and recorded. A site specific survey is required to establish the available shoulders widths align the SH. Re-allocation of the road space to achieve a shoulder of at least 2m should be investigated. If 2m cannot be achieved, shoulder markings should be considered instead of cycle lane markings.

Safety Engineer:

Client Decision:

Action Taken:



3.9.4 Section 8 on road cycle provision

As previously stated, the Cycling aspects of Austroads guide shows that on road cycle lanes where a 100 km/h speed limit exists, should desirably be 2.5 m wide with an acceptable width range of 2.0 m to 3.0 m. Any width less than this amount should not be considered suitable for on road cycle provision in this speed environment.

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3.9.4.1 Southbound on road cycle provision

Serious

At Melling there is an additional through lane developed to the left of the main SH2 through lane with a high speed diverge left turn lane into Block Road. This type of diverge is problematic for cyclists as it can result in the cyclist riding at ≈ 30 km/h between a vehicle travelling at 100 km/h on their right and a vehicle slowing from 100 km/h to make the left turn on their left.

There is no shoulder on the approach to the Block Road intersection. There is no shoulder width available for on road cycling between the Block Road intersection and the Melling Link intersection. Cyclists may choose to 'take the left turn lane' into the Melling Link intersection or they may elect the kerb side position which could result in being trapped by left turning vehicles, both options are risky for all road users.

There is no shoulder width available for on road cycling on the departure from the Melling Link intersection. The shoulder width does slowly develop over several hundred metres, but it looks well short of the Austroads guidance width for on road cycle lanes in this speed environment.



Figure 89: No southbound shoulder at the Melling Link intersection

There is a high speed diverge lane on the approach to the Dowse Drive exit, with no deceleration component. This type of diverge is most problematic for cyclists as there is no on road cycle facility and it can result in the cyclist riding along the lane line at ≈ 30 km/h between two vehicles travelling at 100 km/h.



Figure 90: High speed diverge at Dowse Drive exit

It was noted there are green cycle lanes with cycle logos along the exit lane and through lane on the approach to the roundabout overpass.





Figure 91: Green on road cycle lane marking

Recommendations:

- 3.9.4.2 The acceptable on road cycle lane width range for 100 km/h is 2.0 m to 3.0 m. Any width less than this should not be considered suitable for on road cycle provision in the speed environment.
- 3.9.4.3 If the road controlling authority cannot provide a minimum design on road cycle facility along the full length of SH2 cycling zone, it is considered better to provide shoulder markings only.

<p>Frequency Rating: Crashes are likely to be Infrequent</p>	<p>Severity Rating: Death or serious injury is Very likely</p>
<p>Designer Response: Block Road is located north of Melling, which is outside the scope of this project.</p>	
<p>Safety Engineer: Click here to enter text.</p>	
<p>Client Decision: Click here to enter text.</p>	
<p>Action Taken: Click here to enter text.</p>	

3.9.4.4 Northbound on road cycle provision **Serious**

There is no shoulder lane provided along Section 8.

Recommendations:

- 3.9.4.5 The acceptable on road cycle lane width range for 100 km/h is 2.0 m to 3.0 m. Any width less than this should not be considered suitable for on road cycle provision in the speed environment.
- 3.9.4.6 If the road controlling authority cannot provide a minimum design on road cycle facility along the full length of SH2 cycling zone, it is considered better to provide shoulder markings only.

<p>Frequency Rating: Crashes are likely to be Infrequent</p>	<p>Severity Rating: Death or serious injury is Very likely</p>
<p>Designer Response: Owing to a very low number of cyclists in this area, the benefits of the improvements would be too low to justify the economic efficiency of the</p>	



works. No upgrading was therefore proposed.

Safety Engineer:

Client Decision:

Action Taken:

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4 Audit Statement

We certify that we have used the available plans, and have examined the specified roads and their environment, to identify features of the project we have been asked to look at that could be changed, removed or modified in order to improve safety. The problems identified have been noted in this report.

Signed:

Date: 28 March 2014

Warren Lloyd

Director, ViaStrada

Signed:

Date: 28 March 2014

Mark Edwards,

Technical Principle - Highways, Opus

Signed:

Date: 28 March 2014

Tim Hughes,

National Traffic and Safety Engineer, NZ Transport Agency

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Designer: Name..... Position.....

Signature..... Date.....

Safety Engineer: Name..... Position.....

Signature..... Date.....

Project Manager: Name..... Position.....

Signature..... Date.....

Action Completed: Name..... Position.....

Signature..... Date.....

Project Manager to distribute audit report incorporating decision to designer, Safety Audit Team Leader, Safety Engineer and project file.

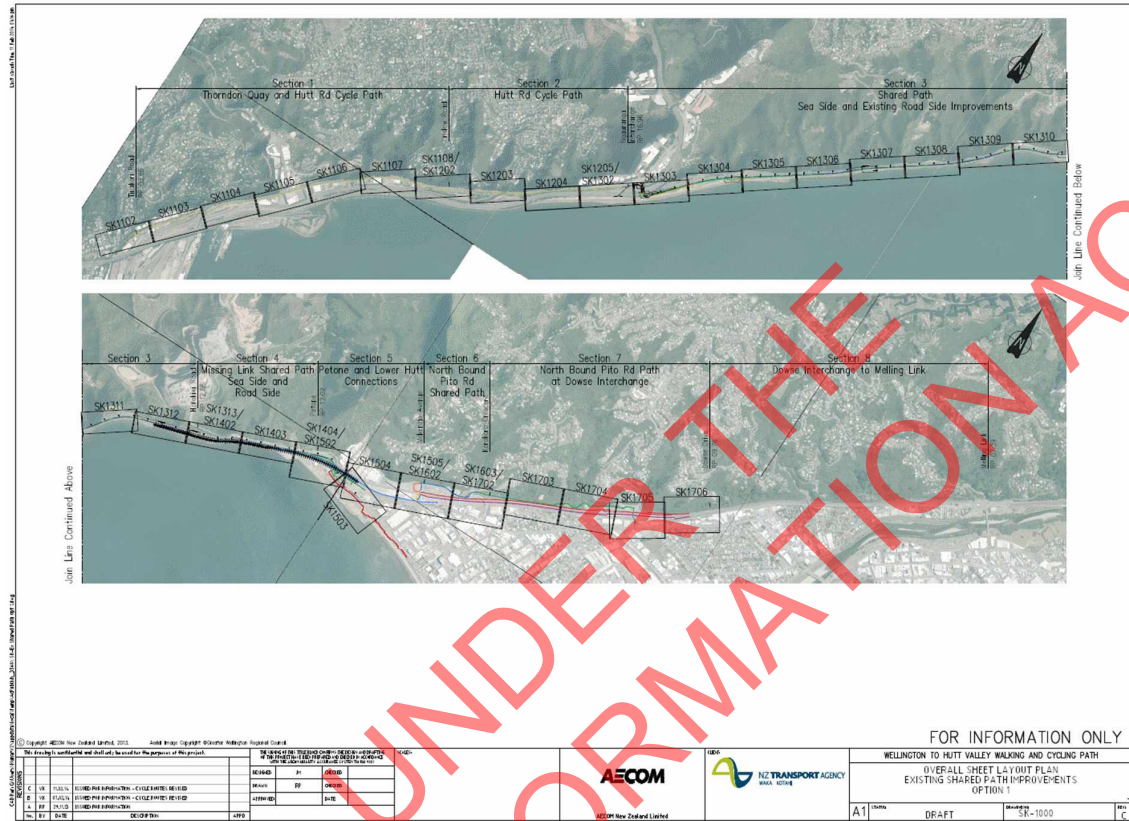
Date:

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Appendix A W2HV Overview Plan



REVISIONS		DATE	BY	CHKD
1	ISSUED FOR CONSTRUCTION - CIVILS AND ELECTRICAL			
2	ISSUED FOR CONSTRUCTION - CIVILS AND ELECTRICAL			
3	ISSUED FOR CONSTRUCTION - CIVILS AND ELECTRICAL			
4	ISSUED FOR CONSTRUCTION - CIVILS AND ELECTRICAL			
5	ISSUED FOR CONSTRUCTION - CIVILS AND ELECTRICAL			



FOR INFORMATION ONLY		
WELLINGTON TO HUTT VALLEY WALKING AND CYCLING PATH		
OVERALL SHEET LAYOUT PLAN		
EXISTING SHARED PATH IMPROVEMENTS		
OPTION 1		
A1	DRAFT	SR-1000



Appendix B Reviewed Plans

The audit is based on these AECOM concept design stage plans, 'For Information Only':

Section	Option 1	Rev	Option 3 - Seaside	Rev
	SK 1000 Coversheet	D	SK 3000 Coversheet	D
1	SK 1101, SK1102, SK1103, SK1104, SK1105, SK1106, SK1107 & SK1108 / SK 1202	D		
2	SK 1201, SK 1108 / SK1202, SK1203, SK1204 & SK1205 / SK 1302	D		
3	SK 1301, SK 1205 / SK1302, SK1303, SK1304, SK1305, SK1306, SK1307, SK1308, SK1309, SK1310, SK1311, SK1312 & SK1313 / SK 1402	D	SK 3301, SK 1205 / SK 3302, SK 3303, SK 3304, SK 3305, SK 3306, SK 3307, SK 3308, SK 3309, SK 3310, SK 3311, SK 3312 & SK 3313 / SK 3402	D
4	K 1401, SK 1313 / SK1402, SK1403 & SK1404 / SK 1502	D	SK 3401, SK 3313 / SK 3402, SK 3403, & SK 3404 / SK 3502	D
5	SK1503, SK1504 & SK1505 / SK 1602	D	SK 3501, SK 3404 / SK 3502, SK 3503, SK 3504 & SK 3505 / SK 3602	D
6	SK 1603 / SK 1702	D	SK 3601, SK 3505 / SK 3602 & SK 3603 / SK 3702	D
7	SK 1701, SK 1603 / SK1702, SK1703, SK1704, SK1705 & SK1706		SK 3071, SK 3702, SK 3703, SK 3704, SK 3705 & SK 3706	D
8	No plans provided		No plans provided	



Appendix C VicRoads Cycle Note 21: Charts



NO. 21 - JUNE 2010

Cycle Notes

Widths of Off-Road Shared Use Paths

Commuter Path – Directional Split – 90/10

Example – Main Yarra Trail (north bank) at Morell Bridge

This path is 3.0 metres wide. It carries 550 cyclists and 80 pedestrians during the AM peak period. The "directional split" is 90/10.

As shown the intersection of the two lines is within the zone for a 3.0m shared path.

As a result it could be concluded that the capacity of this path exceeds its demand.

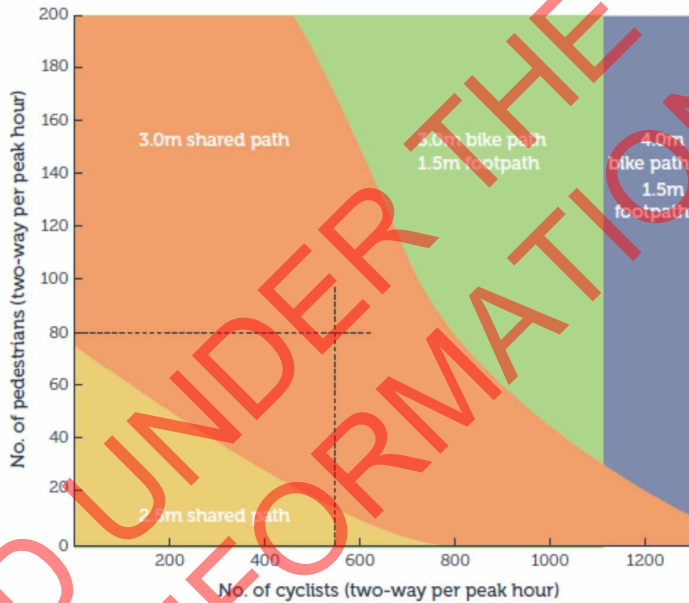


Figure 3 - Path capacity for paths with 90/10 directional split.

Recreational Path – Directional Split – 50/50

Example – Bay Trail, St Kilda

This path consists of a 2.5 metre wide bicycle path and a 1.5 metre wide footpath.

It carries 200 cyclists and 100 pedestrians during the weekend peak hour. The "directional split" is 50/50.

As shown the intersection of the two lines is just outside the zone for a 3.0m shared path and just inside the zone for a separated path.

As a result it could be concluded that the capacity of this path also exceeds its demand at this location.

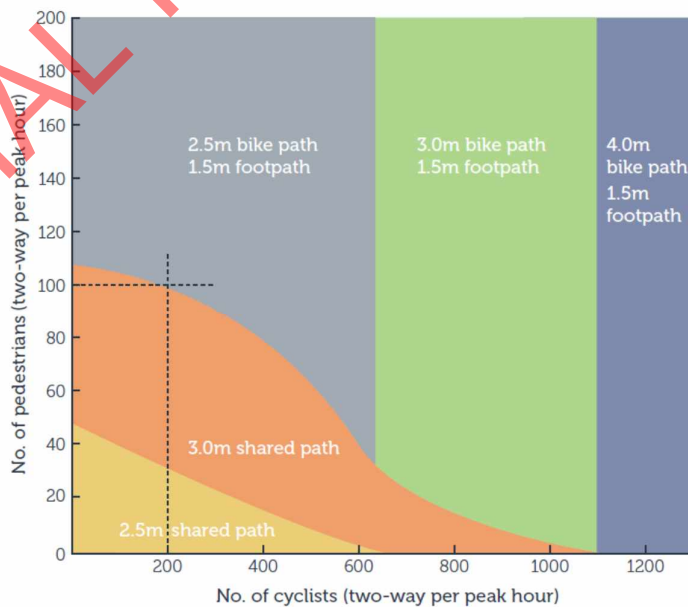


Figure 4 - Path capacity for paths with 50/50 directional.



Appendix D Cycling Aspects of Austroads: 2011

The following table from AP G88-11 is used in this audit

Table 4.1: Exclusive bicycle lane dimensions in urban areas

Road posted speed limit (km/h) ⁽¹⁾	Lane width ^{(2),(3)} (m)		
	60	80	100
Desirable	1.5	2.0	2.5
Acceptable range	1.2 – 2.5	1.8 – 2.7	2.0 – 3.0

1 The posted or general speed limit is used, unless 85th percentile speed is known and is significantly higher.

2 Interpolation for different speed limits is acceptable.

3 The width of the lane is normally measured from the face of the adjacent left-hand kerb. The width of road gutters/channels (comprising a different surface medium) should be less than 0.4 m where minimum dimensions are used. The figures in the table presume that surface conditions are to be of the highest standard. Where there are poor surface conditions (see Austroads *Guide to Road Design – Part 6A, Appendix B* (Austroads 2009m)) over a section of road adjacent to the gutter, then the width of the exclusive bicycle lane should be measured from the outside edge of that section.

Source: Table 4.17 Austroads (2010g).



Appendix E Austroads Part 6A Pedestrian & Cyclist paths

7.5.3 Shared Paths

Table 7.4 shows desirable widths and acceptable ranges of width for shared use paths. As for bicycle paths, the upper limit of the acceptable range in the table should not discourage designers from providing a greater width where it is needed (e.g. very high demand that may also result in overtaking in both directions).

Table 7.4: Shared path widths

	Path width (m)		
	Local access path	Commuter path	Recreational path
Desirable minimum width	2.5	3.0	3.5
Minimum width – typical maximum	2.5 ¹ – 3.0 ²	2.5 ¹ – 4.0 ²	3.0 ¹ – 4.0 ²

1. A lesser width should only be adopted where cyclist volumes and operational speeds will remain low.
2. A greater width may be required where the numbers of cyclists and pedestrians are very high or there is a high probability of conflict between users (e.g. people walking dogs, roller bladders and skaters etc.).

7.7 Clearances, Batters and Need for Fences

7.7.1 Clearances

It is important for safe operation that adequate clearance is provided between bicycle operating spaces for cyclists travelling in opposite directions and between the cyclist operating spaces and potential hazards beside paths (e.g. fixed objects, vertical drops, steep batters).

The clearance between cyclist operating spaces varies according to the type of use and operating speeds as follows:

- on paths designed for commuting and major recreational activity a minimum lateral clearance of 1.0 m is required between opposing bicycle operating spaces because of the high relative speed which exists when cyclists approach one another from opposite directions at speeds of 30 km/h or more (i.e. closing speed of 60 km/h)
- on recreational paths where the speeds of cyclists are not likely to exceed 20 km/h a minimum lateral clearance of 0.4 m is necessary between opposing bicycle operating spaces.



Appendix F New Zealand Cycle Trail Design Guide

3.5 Horizontal Clearances

Figure 16 shows the operating space required for cyclists. An important aspect of the operating space is the angle between the pedals and handlebars; the handlebars protrude further than the pedals and are more likely to catch on adjacent objects. This is why banks should be "battered" (i.e. sloped not vertical) and fences should ideally slope away from the path.

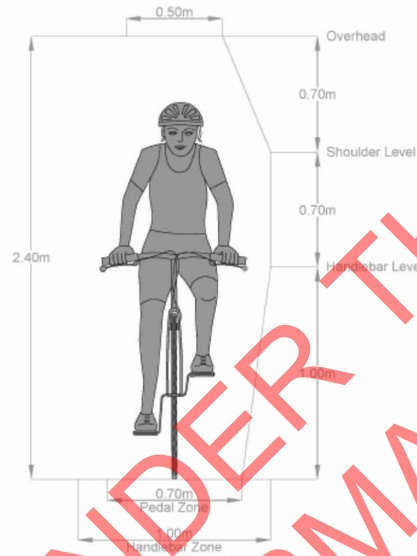


Figure 16: Bicycle operating space

Table 3: Relationship between off-road grade, degrees, percent and slope

Off-Road Grade	Degrees	Percent	Slope
Grade 1	1°	1.7%	1:57
Grade 2	2°	3.5%	1:29
Grade 3	3°	5.2%	1:19
Grade 4	4°	7.0%	1:14
Grade 5	5°	8.7%	1:11
	6°	10.5%	1:10
	7°	12%	1:8
	8°	14%	1:7
	9°	16%	1:6
	10°	18%	1:6
	12°	21%	1:5
	15°	27%	1:4
	20°	36%	1:3



Appendix I

Consenting Strategy

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New Zealand Transport Agency

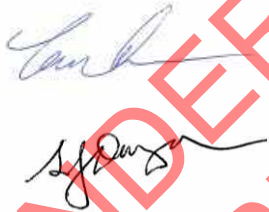

Wellington to Hutt Valley Walking and Cycling Link

Consenting Strategy

XX February 2015



Quality Control

Title	Wellington to Hutt Valley Walking and Cycling Link – Consenting Strategy
Client	New Zealand Transport Agency
Version	V1
Date	XX February 2015
File Reference	Z:\PROJECTS\Aecom\Aecom 0003 Petone to Ngauranga\Consenting Strategy
Prepared by	Lindsay Daysh/Tom Anderson
Signature	
Reviewed by	Lindsay Daysh
Signature	

Limitations:

The report has been prepared for the New Zealand Transport Agency, according to their instructions, as part of their Wellington to Hutt Valley Walking and Cycling Project. This report has been prepared on the basis of information provided by the New Zealand Transport Agency. Incite has not independently verified the information provided and has relied upon it being accurate and sufficient for use by Incite in preparing the report. Incite accepts no responsibility for errors or omissions in the provided information.

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Appendix A: Confirmed estimates

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1. Introduction

Incite has been appointed by the New Zealand Transport Agency (the Transport Agency) to develop an RMA consenting strategy to progress the project known as the Wellington to Hutt Valley Walking and Cycling Link Project (W2HV Link).

1.1 Background

The Wellington to Hutt Valley transport corridor is a key strategic transport corridor for the Wellington region. It provides vital links for users of the road network, including SH1 and SH2, the rail network (Hutt Valley Rail Line) as well as for cyclists and pedestrians.

In particular, facilities for cyclists and pedestrians between Ngauranga and Petone are sub-standard. As a result existing cyclists and pedestrians are putting themselves and motorists at risk, and the current retrofitted facilities do little to increase the perception of safety nor offer a level of attraction for future users.

The Wellington to Hutt Valley Walking and Cycling Link Project (W2HV Link) is therefore a proposed upgrade of the existing walking and cycling infrastructure between Thorndon Quay in Wellington City and Melling in Hutt City. The primary focus is on the route between Ngauranga in Wellington City and Petone in the Hutt Valley. Therefore the emphasis of the consenting strategy is to develop a recommended pathway to secure consents under the Resource Management Act 1991(RMA) that will provide a dedicated facility for cyclists and pedestrians between Ngauranga and Petone.

However consideration has also been made of consent requirements to provide wider connections north towards Melling and south to Thorndon Quay. Consideration of the north and south connections are important in order to ensure a new cyclist and pedestrian path has safe and efficient links to and from the sole transport corridor between Ngauranga and Petone. North and south connections include either linking into existing cyclist and pedestrian routes, indicative improvements to the existing or new indicative links.

The project has been formulated by, and led by the New Zealand Transport Agency (the Transport Agency). However, it is a multi-agency project, with Wellington City Council (WCC) and Hutt City Council (HCC), as well as KiwiRail and Greater Wellington Regional Council (GW), also being involved in key parts of the project. Together representatives of these agencies comprise a Steering Group that has guided the initial phases of the Project to date.

The project has now been through a detailed investigation phase, which included analysis of the costs, risks and benefits of improving cycle and pedestrian facilities within the defined area. There has also been an analysis of alternatives for the limited range of options that could feasibly achieve the agreed project objectives.

A Detailed Business Case¹ was then developed and put forward with a recommended option for a dedicated facility for cyclists and pedestrians to be located on the seaward side of the existing KiwiRail

¹ Error! Unknown document property name. - Error! Unknown document property name. December 2014 AECOM NZ Ltd.

corridor between the Petone Interchange and the Ngauranga Interchange. This requires reclaiming part of Wellington Harbour due to the significant limitations on width to provide for the transport requirements of State Highway 2 (SH2), the Wellington – Wairarapa Railway Line which includes the Hutt Valley Metro Services as well as safe and accessible walking and cycling facilities.

The project is now proceeding to a refinement stage, to determine the form and function of a seaward based walking and cycling link. This has also been expanded to consider the consenting implications if a wider platform to provide for possible future transport improvements on the Wellington to Hutt Valley strategic corridor in this location. Therefore as part of this refinement, a strategy for planning and resource consent requirements is required to be developed.

1.2 Consultation to date²

A number of studies have been done into options for a walking and cycling link from Petone to Ngauranga (refer to section 1.2 for more detail). Each has included some level of targeted consultation, and a formal public consultation phase was held from November 2013 to the end of March 2014.

Members of the public, walking and cycling interest groups, potentially affected land owners and tenants were all invited to participate. Key stakeholders such as Greater Wellington Regional Council, Wellington City Council, Hutt City Council and KiwiRail were also consulted as options were developed, ensuring that potential issues and constraints would be considered throughout the process. The main forum for consulting with stakeholders in the latter group has been through the formation of a Steering Group, individual meetings as required, and briefings to both Hutt and Wellington City Councils.

Workshops and meetings were also held with a project-specific walking and cycling reference group and key stakeholders such as Cycle Aware Wellington, Hutt Cycling Network and the Great Harbour Way Coalition.

Potentially affected land owners and lease occupiers have also been consulted and they are, and this consultation will continue into the next stages of the project. Relevant iwi groups have been consulted throughout the development of the short list of options.

In February 2014, a public information day was held jointly with the Petone to Grenada project. Feedback could be provided using a paper form on the day, by filling out the form online, or by email or phone.

Public consultation was split into two phases. The first was a survey seeking feedback on the existing problems and opportunities along the SH2 corridor between Petone and Ngauranga, the northern connections into Lower Hutt and the southern connections into Wellington along the Hutt Road. This feedback was analysed and a short list of options was developed.

The second phase of consultation sought feedback on which of the identified options was preferred. In this phase, submitters were also asked whether improved walking and cycling links would encourage them to walk or cycle between Wellington and Lower Hutt at least one day a week.

² From Community and Stakeholder Consultation Report - September 2014 AECOM NZ Ltd.

1.3 Scope of Report

This framework will:

- Briefly consider the project background including alternatives;
- Assess the legislative and policy context;
- Identify the key regional matters that will require consent, primarily reclamation within the Coastal Marine Area;
- Address the issues surrounding designations within the Wellington and Hutt City District Plans and requiring authority status;
- Consider the relevant sections of the Resource Management Act 1991 (RMA), the NZ Coastal Policy Statement, the Regional Policy Statement, and the current Regional and District Plans;
- Comment on the status of the current Regional Plan review particularly the provisions relating to the Coastal Marine Area;
- Discuss the benefits and disbenefits of the conventional two stage consent path against the national consenting process;
- Consider what actions are required to phase the consenting activities of the project from strategy formulation to eventual lodgement;
- Consider what resources are required to bring the project information and assessments up to a level that would withstand scrutiny through the Resource Management Act 1991;
- Consider indicative timeframes; and
- Consider resourcing required.

1.4 Key Inputs

The key project documents which have informed the development of this consent framework are:

- The Transport Agency's Detailed Business Case developed by AECOM NZ
- The Ecological Baseline Report from Boffa Miskell Ltd.
- The draft Regional Land Transport Plan from Greater Wellington Regional Council.
- Landscape and Urban Design input from Isthmus Ltd.

1.5 Critical Success Factors

The critical success factors for delivery of the successful statutory and consenting process are considered to be:

- Accurate identification, and management of key environmental considerations and outcomes sought by the project;
- A robust analysis of alternative sites routes and methods for achieving the objectives of the W2HV Link;

- Engagement from the relevant statutory authorities Greater Wellington Regional Council (GW), and if necessary the Environmental Protection Authority (EPA), as well as the ongoing involvement of Kiwi Rail, Wellington City Council (WCC) and Hutt City Council (HCC);
- Sound future community engagement processes that reflect best practice and are robust in terms of established consultation principles;
- Efficient delivery of technical documentation/reports and evidence sufficient for the process;
- Comprehensiveness of the consent applications to the consent authorities be it either GW and WCC/HCC, or if the national consenting process is preferred, the EPA;
- Successful delivery of project through a local authority hearing process, or if necessary a Board of Inquiry (BOI) or direct referral to the Environment Court; and
- Statutory approvals secured for a construction start including consideration of potential staging and the relationship with the Petone to Grenada project.

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2. The Project

Before considering the detail as to how the necessary authorisations will be gained it is useful to consider some of the project details. In simple terms, it is proposed to reclaim land along the edge of Wellington Harbour, immediately to the east of the KiwiRail - Wairarapa Line. For the purposes of this consenting strategy the preferred option for the walking and cycling facility is on top of a platform of up to 20 metres width for a walking and cycling lane to be formed.

In addition options are in the process of being developed to enhance the Wellington City network south of Ngauranga along the Hutt Road to Thorndon Quay and on both the SH2 highway and Hutt City networks north and east of the Petone.

2.1 Problem Definition

The transport corridor between Ngauranga and Petone comprises SH2, a four-lane high volume strategic route with a posted speed of 100km/h, and the KiwiRail corridor running both freight and a Tranz Metro passenger service³.

Facilities for cyclists and pedestrians between Ngauranga and Petone are deficient. As a result existing cyclists and pedestrians are putting themselves and motorists at risk, and the current retrofitted facilities do little to increase the perception of safety nor offer a level of attraction for future users.

The current facilities can generally be described as a combination of shoulder running together with a separated southbound shared path.

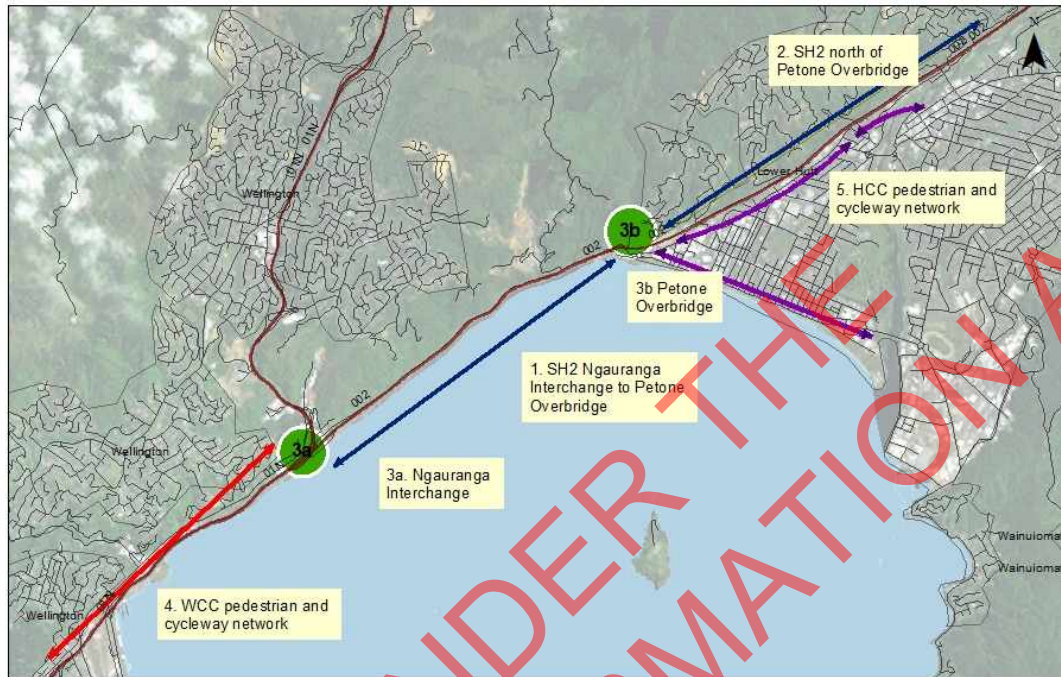
- Shoulder running occurs both north and southbound between Ngauranga and Petone – whereby cyclists and pedestrians use the SH2 shoulder.
- Use of a separated path occurs southbound between Ngauranga and Horokiwi. However the separated path provides a poor level of service for users, with variable widths between 1.3m and 3.6m, unmaintained surfaces, poor drainage, flooding and obstructions. As a result the existing path is not used by the majority of cyclists, with existing cyclists choosing to use the SH2 north and southbound shoulders instead.

A number of studies have been undertaken which looked to improve conditions for cyclists and pedestrians between Ngauranga and Petone, however the studies generally resulted in localised safety improvements such as pavement markings and warning signage and did not result in more significant upgrade with the potential to attract a greater number of users.

The Project Area can be shown in the following graphic from the Detailed Business case.

³ From Detailed Business Case p1.

Figure 1 Project Study Area



2.2 Project Objectives

At the outset of the study Project Objectives were developed, debated, reviewed and then subsequently approved by the project steering group. They were subsequently utilised as a basis for the development of feasible options and for the assessment of alternatives. These Project Objective are as follows:

- 1) *To provide walking and cycling infrastructure linking Wellington and Hutt Valley that improves safety for pedestrians and cyclists, and that is a catalyst for increased use of walking and cycling between these destinations*
- 2) *To improve the connections and integration of walking and cycling infrastructure between Petone and Ngauranga and the strategic cycling and walking planning of Hutt City and Wellington City*
- 3) *To consider transport resilience in providing a walking and cycling facility*
- 4) *To manage the social, cultural, land use and other environmental impacts of the project in the project area and its communities by so far as practicable avoiding, remedying or mitigating any such effects through route and alignment selection, design and conditions*

2.3 Preferred Option

Since the consultation phase was completed the Detailed Business Case has been developed with the preferred option in that report being a seaward side walking and cycling facility (known as Option 3) for the key section between Petone and Ngauranga. The narrative of why this was preferred is replicated from the Detailed Business Case Report⁴.

⁴ Detailed Business Case Executive Summary Page K.

On the balance of qualitative and quantitative analysis the recommended option is Option 3 (seaside option).

Option 3 provides an opportunity for a high quality seaside shared facility that will realise a wide range of benefits for cyclists and pedestrians and for all types of users from commuters to recreational users and tourists.

Option 3 provides the opportunity to contribute more directly to the regional economy through resilience and tourism benefits.

Support may be required from other funding agencies in the region, potentially WCC, HCC and GWRC.

Financial Case

The project Benefit Cost Ratio is 2.5. This BCR however can be improved by two considerations: project staging and acquiring the fill material for land reclamation from the Petone to Grenada project. Project staging would be based on the stage sequence where the stages with the high benefits and low costs would be constructed first, before the cost intensive stages returning low benefits. The BCR could potentially increase to 3.1.

Obtaining the fill from the Petone to Grenada project could save up to \$7M in the project costs. If this could be realised, the BCR would increase to 3.1. If both project staging and the fill from the Petone to Grenada project (representing a cost saving) could be obtained, the project BCR might increase to above 3.5.

Social and Environmental

Option 3 has a potentially negative environmental impact largely due to the reclamation. This extent of the impact on the harbour edge anecdotally affects largely modified land. Areas of particular ecological, terrestrial or landscape sensitivity have not been fully investigated; however it is considered that the negative impacts can largely be mitigated. An ecological assessment will be provided as an addendum to this report.

Option 3 will ultimately provide increased opportunities for multimodal access to and across the State highway network, will increase cycling and pedestrian demand along the Wellington foreshore and reduce greenhouse gas emissions.

Overall impacts of Option 3 are considered to be positive.

Urban Design

Option 3 provides the opportunity to enhance to the corridor from an urban design perspective and positively impact on the existing coastal environment. The significant urban design opportunity is recognised through the potential to provide a positive coastal experience for all potential users.

2.3.1 Future Proofing

Therefore this Consenting Strategy has been based on this option (option 3) being developed. It should be stressed that if the Project partners wish to proceed with a wider platform and therefore a wider

reclamation to future proof possible other improvements to the transport corridor such as additional highway or rail track capacity then this option has also been considered.

2.4 Alternatives

The process for the analysis is detailed in the Detailed Business Case⁵. It is not the purpose of this consent strategy to explain that process but in our view in terms of option identification and assessment that has been carried out to date has been robust. This view is based on the following:

1. There has been several previous studies that have investigated options for transport corridor widening including consideration of reclamation;
2. Each of those studies recognised that significant improvements are required for walking and cycling;
3. The options available are highly constrained due to the Petone to Ngauranga transport corridor being “wedged” between a coastal escarpment and the sea in an area of significant past seismic activity;
4. The Project Objectives were established and agreed by the Working Group at the outset of the investigations and prior to the Assessment of Alternatives. These Project Objectives consider the following relevant factors being:
 - Safe Walkway/cycleway provision between Thorndon and Melling for all levels of ability
 - Provision of a safe walkway/ cycleway should be a catalyst for increased usage by active modes. The Project can therefore be seen as lead infrastructure.
 - The project must specifically consider the connections and integration of the Petone to Ngauranga section of the infrastructure with the strategic cycling and walking planning of Hutt and Wellington Cities.
 - Resilience to natural disasters with provision for sea level rise.
 - To specifically seek to manage the social, cultural, land use and other environmental impacts.
5. The process to date was informed by a consultation process including several opportunities for engagement with transport users and in particular walkers and cyclists;
6. Notably there has also been consultation with Iwi;
7. The preferred options were developed from a much longer list of options a number of which can be readily discounted for various reasons;
8. Of the options feasibly available one was between the existing State Highway and the other was on the seaward side. Both were considered in some detail and assessed including the relevant advantages and disadvantages through a simplified Multi Criteria Analysis;
9. The preferred option recognises that there is already reclamation along the majority of the coastal edge from Petone to Ngauranga and there is very limited public access for safety reasons to the due to the proximity to live rail lines. It also recognises the integration with other Projects including the Great Harbour Way and the Petone to Grenada Link Road.

⁵ At pages 40 to 46.

It is considered that a robust process has been carried out in accordance with best practice and appropriate to the stage of the investigations to consider which options or sites should be taken forward for further more detailed examination. From a Resource Management Act perspective this is important as there is a necessity to consider alternative sites, routes or methods particularly if coastal reclamations and/or the designation tool is to be utilised.

2.4.1 A Wider Corridor

Should the scope of the Project be expanded to potentially include future proofing for other transport improvements it is considered to be necessary to firstly consult on those options as the project would then change from a walking and cycling Project to a fully multi-modal transport corridor Project. This would need also to be backed up by wider transportation assessment and a further analysis of the transportation and any additional environmental alternatives.

In addition the consultation and the analysis to date has focused on the walking and cycling component and there are a greater number of effects to consider for a wider corridor of say 20 metres instead of average 7.5metres . However the same physical effects but to a greater extent remain and can be considered in terms of the principle of a reclamation from Petone to Ngauranga. This Consenting Strategy is therefore on the basis of a maximum 20 metre coastal reclamation.

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3. Legislative and Policy Context

This section considers the Resource Management Act 1991 and the relevant statutory and draft RMA documents that apply to the Project.

3.1 Resource Management Act 1991

The Resource Management Act 1991 (RMA) is the principal statutory framework for consideration of the consent requirements prior to implementation of the W2HV Link. It provides the framework under which statutory development can occur.

3.1.1 RMA Part 2

Part 2 of the RMA sets out the statutes “sustainable management” purpose (s5), various matters of “national importance” which decision makers must recognise and provide for (s6), other matters which decision makers must give “particular regard to” (s7) and Treaty principles which decision makers are required to take into account (s8). Essentially Part 2 defines the central policy drivers of the RMA. All decisions on projects (whether by way of consent applications, notices of requirement or plan changes) must be scrutinised by reference to these Part 2 matters.

In relation to this Project the s6 and s7 matters are relevant.

s6 Matters of national importance

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall recognise and provide for the following matters of national importance:

- (a) the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development:*
- (b) the protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development:*
- (c) the protection of areas of significant indigenous vegetation and significant habitats of Indigenous fauna:*
- (d) the maintenance and enhancement of public access to and along the coastal marine area, lakes, and rivers:*
- (e) the relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga:*
- (f) the protection of historic heritage from inappropriate subdivision, use, and development:*
- (g) the protection of protected customary rights.*

With the exception of s6(f) all other s6 matters shall ‘be recognised and provided for’ within this Project. Parts of s7 which must be given ‘particular regard to’ are.

s7 - Other matters

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall have particular regard to—

(a) kaitiakitanga:

(aa) the ethic of stewardship:

(b) the efficient use and development of natural and physical resources:

(ba) the efficiency of the end use of energy:

(c) the maintenance and enhancement of amenity values:

(d) intrinsic values of ecosystems:

(e) [Repealed]

(f) maintenance and enhancement of the quality of the environment:

(g) any finite characteristics of natural and physical resources:

(h) the protection of the habitat of trout and salmon:

(i) the effects of climate change:

(j) the benefits to be derived from the use and development of renewable energy.

As with s6 matters much of s7 is directly applicable to the Project with particular regard needing to be given to 8 of the 11 "other matters" within the Act.

s8 - Treaty of Waitangi

In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi).

As with all coastal projects the principles of the Treaty need to be taken account of through the development of the Project.

3.1.2 Council Jurisdictions

Part 4 of the RMA also sets out the jurisdiction of regional and territorial local authorities. For the purposes of the W2HV Link preferred option, the reclamation is primarily within the 'Coastal Marine Area' (defined as the seaward side of mean high water springs) which is an area within the jurisdiction of the relevant regional council (in this instance, (GW)). Any part of the project on the landward side of mean high water springs is within the jurisdiction of the relevant territorial local authority (in this instance, Wellington City Council (WCC) and Hutt City Council (HCC)).

Each Council is responsible for deciding or resource consents for work within their jurisdictional areas. Through their plans and statutory documents, the three Council's also set the objectives and policy frameworks under which projects are to be considered.

As the reclamation options involve works below mean high water springs the Minister of Conservation also has a role in the monitoring of the effect and implementation of New Zealand coastal policy statements and coastal permits for restricted coastal activities.

3.1.3 Designations

“Designations” sought by a notice of requirement (NOR) are typically the preferred choice of territorial local authority RMA approval for network utilities such as roads, rail, high voltage electricity transmission and for the distribution of water for supply including irrigation. These activities can be carried out by a “requiring authority” which is a term utilised for an organisation with financial responsibility for the public work or utility activity involved. A requiring authority means:

- a. A Minister of the Crown; or
- b. A local authority; or
- c. A network utility operator approved as a requiring authority under s 167 of the Act.

Designations mean that the requiring authority who has the designation can develop it as stated in the NOR, and the need for territorial local authority resource consent is not required. However, regional resource consent is still necessary for any regional issues that may be a part of the proposed works within or potentially beyond the designation. There is also a strong linkage between designations and land interest acquisition processes particularly the ability to utilise the provisions of the Public Works Act if that is considered necessary.

More specifically a designation is a provision in a district plan which provides notice to the community that a requiring authority intends to use land in the future for a particular work or project.

Once a site is designated for a particular purpose, the requiring authority is able to:

- proceed with the specific work on the site as if it was permitted by the district plan
- control activities that occur on the site, to prevent the landowner doing anything that would compromise the future work (this is the case even if the requiring authority does not own the site)
- apply to the Minister of Lands to compulsorily purchase or lease all or part of the land under the Public Works Act 1981
- enter private land to undertake investigations.

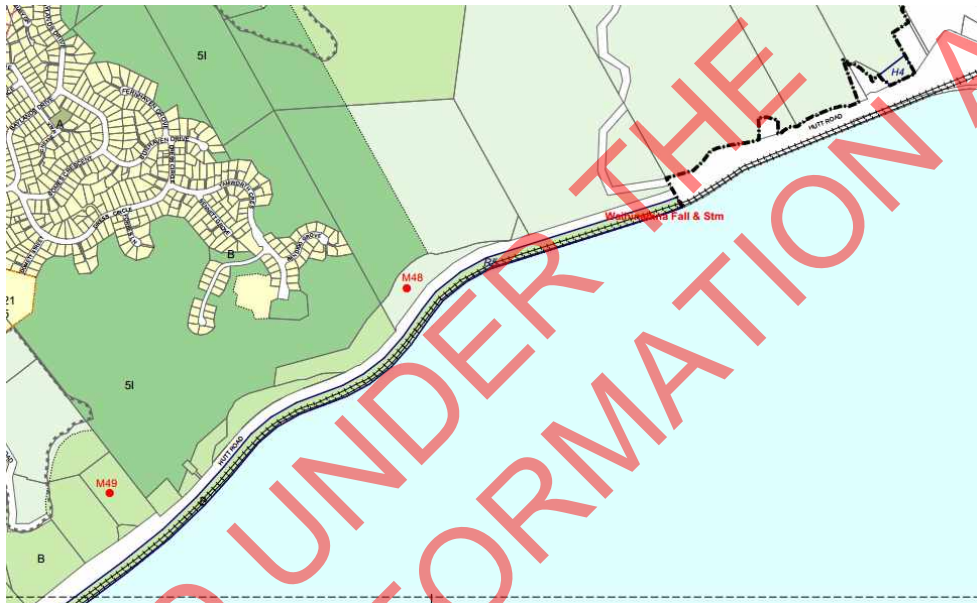
As a designation can restrict the use of the land, in the event that the requiring authority does not own the site, the landowner also has certain rights. Where land is subject to a designation the landowner may apply for an order obliging the requiring authority to purchase or lease all or part of the land. In general terms, this is done where the owner is unable to sell the land at a market value, or the owner cannot reasonably use the land.

While a designation gives a requiring authority 'permission' under the district plan, the requiring authority must still address all the relevant matters under the regional plans – including discharges to air and water and land, and earthworks in some instances. This can include obtaining regional resource consents⁶.

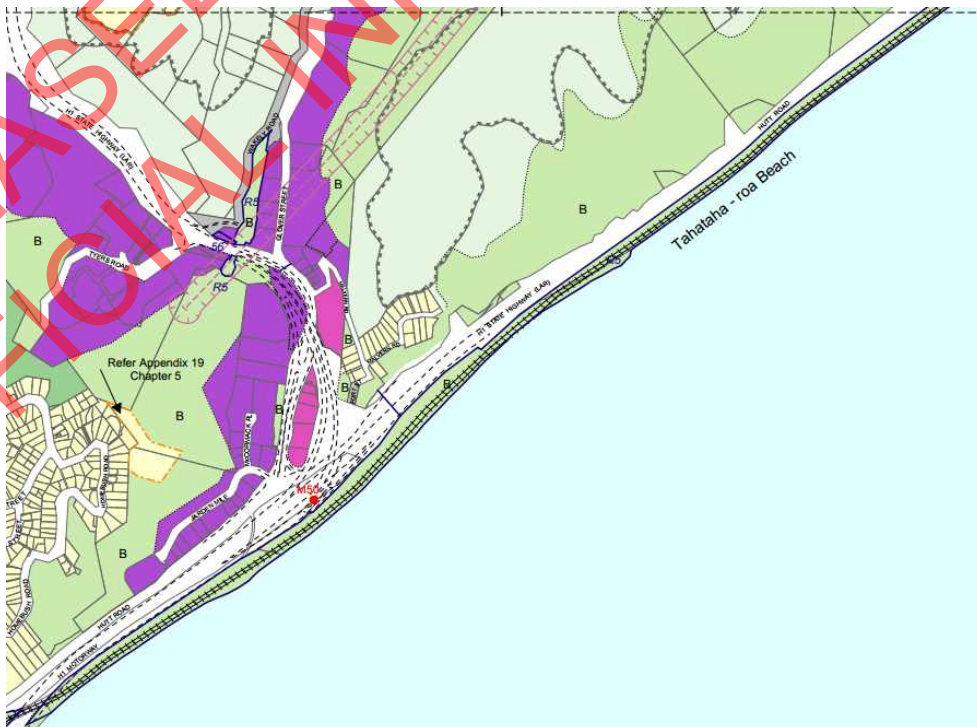
⁶ <http://www.mfe.govt.nz/rma/central/designations/>

It should be noted that designations within the Project Area include, in the Wellington City District Plan:

- NZTA State Highway's 1 and 2: Designation H1;
- NZTA Proposed Road; Designation H4 in the vicinity of Petone; and
- KiwiRail - Rail Purposes: Designation R5 including the Wairarapa line from Kaiwharawhara to the city boundary at Horokiwi WCC District Plan.



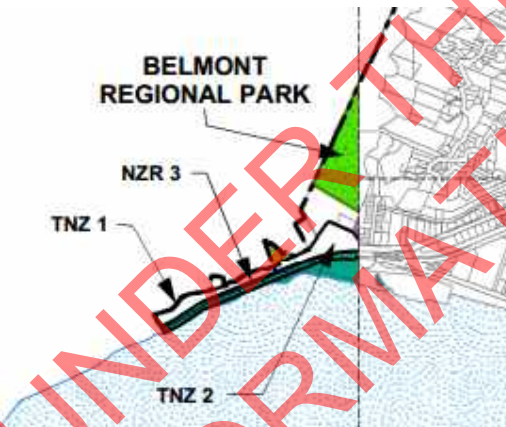
WCC District Plan Map 24



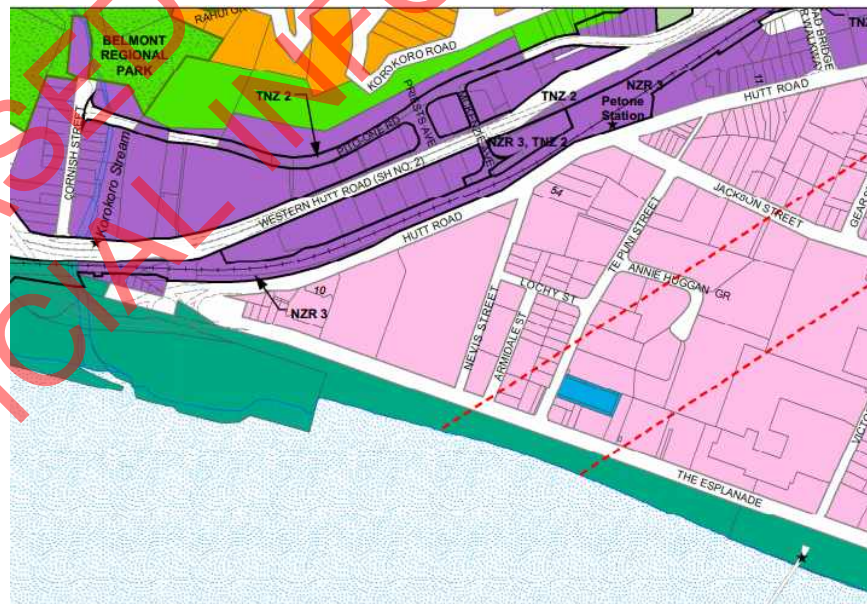
WCC District Plan Map 22

While in the In Hutt City District Plan.

- NZTA – Designation TNZ 1 Motorway/State Highway Purposes relating to State Highway 2
- NZTA – Designation TNZ 2 State Highway Purposes the Dowse to Petone Project.
- KiwiRail – Designation NZR1; Railway Purposes – Melling Line
- KiwiRail – Designation NZR3; Railway Purposes – Wairarapa Line.



HCC District Plan Map R3



HCC Planning Map A5

3.2 New Zealand Coastal Policy Statement

The Resource Management Act 1991 established a coastal management regime based on a partnership between the Crown and the community through their regional and local authorities.

The Act requires a New Zealand Coastal Policy Statement (NZCPS) to guide local authorities in their day to day management of the coastal environment. Local authorities must give effect to relevant provisions of the NZCPS in planning documents and resource consent authorities must have regard to relevant provisions when considering consent applications.

The Minister of Conservation is responsible for preparing the NZCPS, which is to promote the sustainable management of the natural and physical resources of the coastal environment, including coastal land, foreshore and seabed, and coastal waters from the high tide mark to the 12 nautical mile limit.

The first NZCPS was issued in 1994. A new statement took effect on 3 December 2010 when the NZCPS 1994 was revoked.⁷

The NZCPS contains seven objectives and 29 policies. Of relevance to the proposed W2HV Link are:

- Objectives 1 to 6;
- Policies 1 to 4, 6, 10 and 11, 13 to 15, 18 to 20, and 22 to 26.

Policy 10 is of particular relevance, as it considers reclamation. The policy is as follows:

Policy 10 Reclamation and de-reclamation

- (1) *Avoid reclamation of land in the coastal marine area, unless:*
 - (a) *land outside the coastal marine area is not available for the proposed activity;*
 - (b) *the activity which requires reclamation can only occur in or adjacent to the coastal marine area;*
 - (c) *there are no practicable alternative methods of providing the activity; and*
 - (d) *the reclamation will provide significant regional or national benefit.*
- (2) *Where a reclamation is considered to be a suitable use of the coastal marine area, in considering its form and design have particular regard to:*
 - (a) *the potential effects on the site of climate change, including sea level rise, over no less than 100 years;*
 - (b) *the shape of the reclamation, and, where appropriate, whether the materials used are visually and aesthetically compatible with the adjoining coast;*
 - (c) *the use of materials in the reclamation, including avoiding the use of contaminated materials that could significantly adversely affect water quality, aquatic ecosystems and indigenous biodiversity in the coastal marine area;*
 - (d) *providing public access, including providing access to and along the coastal marine area at high tide where practicable, unless a restriction on public access is appropriate as provided for in policy 19;*
 - (e) *the ability to remedy or mitigate adverse effects on the coastal environment;*

⁷ From <http://www.doc.govt.nz/conservation/marine-and-coastal/coastal-management/nz-coastal-policy-statement/>

- (f) *whether the proposed activity will affect cultural landscapes and sites of significance to tangata whenua; and*
- (g) *the ability to avoid consequential erosion and accretion, and other natural hazards.*
- (3) *In considering proposed reclamations, have particular regard to the extent to which the reclamation and intended purpose would provide for the efficient operation of infrastructure, including ports, airports, coastal roads, pipelines, electricity transmission, railways and ferry terminals, and of marinas and electricity generation.*
- (4) *De-reclamation of redundant reclaimed land is encouraged where it would:*
 - (a) *restore the natural character and resources of the coastal marine area; and*
 - (b) *provide for more public open space.*

The NZCPS is a powerful document that sets at the apex of National Policy Statements and Plans. It is considered that the Project fits within the exclusions to avoid reclamation in the coastal marine area in Policy 10(1) for the following reasons.

- The Ngauranga to Petone corridor is constrained for width between the coastal escarpment and the already reclaimed foreshore.
- Alternatives for transport corridor widening that involve excavations into the coastal escarpment are seen to be very risky from a geotechnical engineering perspective and have been able to be discounted.
- As a consequence of the safe widths and the requirements for highway, rail and cycling and walking facilities on a strategic transport corridor with no feasible alternative, reclamation is therefore required.

3.3 Regional Statutory Documents

Regional Statutory Documents under the RMA include the Regional Policy Statement and Operative Regional Plans which, for the W2HV Link, are written and implemented by Greater Wellington Regional Council (GW).

3.3.1 Regional Policy Statement for the Wellington Region

The Regional Policy Statement for the Wellington Region (RPS) is described as "*an integral document in helping the Wellington Regional Council and the region's city and district councils support the achievement of this region's community outcomes*". It is at the top level of the statutory plans in the region as both District and Regional Plans need to give effect to the RPS. The RPS must give effect to the NZCPS

The RPS outlines Objectives and Policies which are designed to achieve 10 Community Outcomes. In terms of the management of the coastal environment, Section 3.2 RPS outlines the following which is relevant to reclamation in Wellington Harbour.

As well as its cultural importance, the coastal environment is important to the regional community for recreation and general enjoyment. It is also the location of many activities and structures that require a coastal location. Significant infrastructure – such as CentrePort, the Cook Strait cable and other transmission infrastructure, and several state highway and rail corridors – is located in the

coastal environment. This infrastructure is essential to the community's economic and social wellbeing. This region's coastal environment also has significant wind and marine energy resources. There are also other commercial activities that may be appropriate in highly modified coastal areas.

...

The maintenance and enhancement of public access to and along the coastal marine area is another matter of national importance in the Resource Management Act. Where land is publicly owned, public access can be enhanced by providing walking tracks and recreational areas. Where land is privately owned, city and district councils can take esplanade reserves or strips as part of subdivisions. On private land that is not proposed to be subdivided, however, public access is at the discretion and with the permission of the landowner. To date, there has been no region-wide strategic planning in the region that has identified where public access should be enhanced. Where esplanade reserves and strips have been taken for public access, city and district councils sometimes struggle to maintain them. Even where there is legal access, it is not always aligned with access that is physically possible. There are circumstances where public access to the coastal marine area, lakes and rivers may not be desirable – such as to provide security for regional infrastructure, allow for farming activities and prevent harm to the public.

...

Seawalls, vehicle use in the coastal environment and earthworks are examples of activities that modify dunes, foreshores and the seabed. They cause adverse effects on the natural, physical and ecological processes that underpin the proper functioning of the coastal environment, including the coastal marine area. In some circumstances, some interference may be appropriate, for example extraction of sand or gravel to reduce flood risk, or planting of coastal vegetation as part of dune building programmes.

The implications of sea-level rise on the coastal environment also need to be considered when looking at the potential effects of new subdivisions, use and development.

The regionally significant issues and the issues of significance to the Wellington region's iwi authorities for the coastal environment are:

1. *Adverse effects on the natural character of the coastal environment*
The natural character of the region's coastal environment has been, and continues to be, adversely affected by activities such as large-scale earthworks for housing developments and roads, changes in land use and the placement of structures.
2. *Coastal water quality and ecosystems*
Discharges of stormwater, sewage, sediment and other contaminants to the coast are adversely affecting the health of coastal ecosystems, the suitability of coastal water for recreation and shellfish gathering, mauri and amenity.
3. *Human activities interfere with natural coastal processes*
Human activities have modified and continue to interfere with natural physical and ecological coastal processes. For example:
 - (a) *Seawalls alter sediment movement along beaches and estuaries and can cause erosion problems in some areas and deposition problems in others.*
 - (b) *Sand dunes and dune vegetation can be significantly affected by inappropriate development, vehicles, and trampling by people and animals.*

(c) *Some land uses and earthworks can cause increased rates of sedimentation in low energy receiving environments, smothering aquatic life, for example in Porirua Harbour.*

4. *Public access to and along the coastal marine area, lakes and rivers*

There have been inconsistent approaches to the taking of access strips or esplanade reserves as part of subdivisions. This has meant that public access to and along the coastal marine area, lakes and rivers is not always provided, or has been provided in places where people can not take advantage of it. Even where physical access is available, it is not always possible if access ways are not well maintained.

The RPS also contains a number of objectives and policies which are relevant to the proposed W2HV Link, including:

- Objectives 3, 4, 5, 6, 7, 8; and
- Policies 5, 35, 36, 38, 53

Objective 8 (*Public access to and along the coastal marine area, lakes and rivers is enhanced (objective 8 is shared for the coastal environment and fresh water)*, and related Policy 53 are of particular relevance, as they consider public access to and along the coast.

3.3.2 Regional Coastal Plan for the Wellington Region

The Regional Coastal Plan for the Wellington Region (RCP) contains objectives, policies and rules governing all types of activities that use the Coastal Marine Area including:

- Reclamation and Draining of the Foreshore and Seabed;
- Structures;
- Destruction, Damage or Disturbance of the Foreshore or Seabed;
- Deposition of Substances on the Foreshore or Seabed;
- Exotic or Introduced Plants;
- Discharges to Land and Water;
- Discharges to Air;
- Taking, Use, Damming or Diversion of Water; and
- Surface Water and Foreshore Activities.

The RCP is a critical document for the W2HV Link but is document and is in the process of being replaced. In the context of the proposed seaward reclamation option the most important provisions relate to reclamation and draining of the foreshore and seabed. An outline of likely consent provisions and rules is included in later sections of this report. The relevant objectives and policies are as follows:

General Objectives and Policies

- Objectives 4.1.1 to 4.1.21, 4.1.23 and 4.1.25; and
- Policies 4.2.1 to 4.2.11, 4.2.15 to 4.2.29, 4.2.31, 4.2.33 to 4.2.39, and 4.2.42

Of Particular Relevance is Policy 4.2.16

Subject to Policy 4.2.17, support any initiatives which might arise to improve public access along and within the coastal marine area, and to take appropriate opportunities arising from new use and development to improve public access, particularly in those places where it has been identified as desirable to enhance public access.

Reclamation and Draining of Foreshore and Seabed Objectives and Policies

Objectives:

- 5.1.1 *The area of foreshore and seabed reclaimed from the coastal marine area is minimised;*
- 5.1.2 *All reclamations are fully justified having regard to available alternatives, properly designed, use appropriate material, and are constructed only for activities consistent with the sustainable management of natural and physical resources;*
- 5.1.3 *Areas of foreshore or seabed with particularly high conservation values are not reclaimed. These include but are not limited to:*
 - *areas containing sensitive, rare, or unusual habitats, natural and physical resources, and ecosystems;*
 - *areas possessing particularly high cultural, or spiritual or historic values or features; and*
 - *all those areas identified by this Plan as an Area of Significant Conservation Value or an Area of Important Conservation Value*
- 5.1.4 *All proposals for reclamations, other than small reclamations likely to cause only minor adverse effects, are subject to input from the public and from territorial authorities.*

Policies:

- 5.2.1 *To recognise that all reclamation and draining of the coastal marine area will, by removing foreshore, seabed, and water from the coastal marine area, have adverse effects. These effects, and the extent to which they can be mitigated or remedied, must be balanced against any possible positive effects from the reclamation;*
- 5.2.2 *To not allow reclamation or draining of foreshore or seabed if the primary purpose of the reclamation or draining is to dispose of material, including the disposal of septic tank sludge, toxic wastes, and any other domestic or industrial refuse.*
- 5.2.3 *To not allow reclamation or draining of any foreshore or seabed if there are practicable alternatives, either within or outside of the coastal marine area, which, on balance, have less significant adverse effects on the environment.*
- 5.2.4 *Subject to Policy 5.2.3, to allow reclamation of the foreshore or seabed only if the reclamation is required for one or more of the following purposes:*
 - *an activity which must be located immediately adjacent to the coastal marine area;*
 - *airport or seaport purposes;*
 - *river management;*
 - *enhancement of public access to or along the coastal marine area;*
 - *restoration or enhancement of amenity values;*
 - *the provision of a road or rail transport link; and*

- *an activity carried out on land in the coastal marine area where the title is not held by the Crown provided that the net beneficial effects to the environment can be demonstrated; unless the circumstances are exceptional.*
- *5.2.5 To not allow reclamations which will have significant adverse effects on the values of any Area of Significant Conservation Value, Area of Important Conservation Value, reef or significant habitats or ecosystems.*
- *5.2.6 To ensure that all reclamations are no larger than the minimum necessary to provide for the activity for which the reclamation is to be used.*
- *5.2.7 To ensure that the external appearance of a proposed reclamation has regard to the existing character of an area, and is designed to minimise adverse effects on ecological and physical processes.*
- *5.2.8 To ensure that adequate allowance is made for the following factors when designing any reclamation which is to be used for major public works:*
 - *rising sea levels as a result of climate change, using the best current estimate scenario of the International Panel on Climate Change (IPCC);*
 - *waves and currents;*
 - *storm surge; and*
 - *major earthquake events.*
- *5.2.9 To ensure that reclamations are designed to prevent the subsequent leaching of any contaminants into the coastal marine area.*
- *5.2.10 Subject to Policy 4.2.17, to ensure that esplanade reserves are created on all new reclamations; and to provide for esplanade strips where these are necessary to enhance or maintain access to the coastal marine area.*
- *5.2.11 To ensure that public input is sought for all proposals for reclamation or draining of foreshore or seabed, other than for small reclamations likely to cause only minor adverse effects.*

The policies cover the usual range of protection of significant values while recognising that some modification could be appropriate.

3.3.3 Second Generation Regional Plans

GW is in the process of preparing a combined Regional Plan (currently known as *The Draft Natural Resources Plan*) which will replace the five current Operative Plans. The Draft Natural Resources Plan includes a number of similar Objectives and Policies as the Operative RCP. GW's current timeframe estimates for the implementation of the Natural Resources Plan includes formal submissions on the proposed plan in mid to late 2015, after which would be a series of hearings prior to it being made operative and replacing the currently operative RCP.

We have reviewed the Plan and consider that the draft provisions, with some modifications, could be seen a workable and appropriate Objectives and Policy framework going forward.

3.4 Wellington City and Hutt City District Plans

The Wellington City District Plan covers the area above Mean High Water Springs from Ngauranga to approximately 700m south of the Petone Interchange, and the Hutt City District Plan covers the land area from this point north. District Plans set out the objectives, policies, rules and other methods adopted by City/District Councils to promote the sustainable management of the natural and physical resources of their territories.

The underlying zoning of the corridor in the Wellington City jurisdiction is 'Open Space B' and the land is also designated by KiwiRail Holdings Limited for 'Railway Purposes' and by the Transport Agency for Highway Purposes. In terms of the Hutt City area, the lands is zoned 'Special Recreation' and again is designated by KiwiRail Holdings Limited for 'Railway Purposes' and by the Transport Agency for Highway Purposes.

Works will be subject to the zone and earthworks objectives and policies of each plan.

3.4.1 South of Ngauranga

The Detailed Business case outlines this area that

Wellington City Council has tendered this section as a standalone investigation including improvements through Aotea Quay ramps to Thorndon Quay. The Wellington City Council investigation will also consider a potential seaside option south of Ngauranga, with a potential connection at Kaiwharawhara (along the stream from the seaside option to Hutt Road).

The current and favoured south of Ngauranga follows the Hutt Road then onto Thorndon Quay. Again it is anticipated that the preferred Hutt Road design to be implemented will all be contained within existing road reserve. On that basis no specific consents will be required under the RMA but WCC in particular would need to carry out community engagement on the details. Seaward side options south have not been investigated to anything like the detail of north of Ngauranga.

3.4.2 North of Petone.

The preferred option north of Petone is described below.

Section 6 McKenzie to Korokoro

Sections 6 provides options both along the SH2 shoulders or alternatively along the rail corridor. However, it is unlikely the rail corridor could provide for two-way cyclists, both in terms of an acceptable path width or connectivity.

Section 7 Korokoro to Dowse

Sections 7 provides options both along the SH2 shoulders or alternatively along the rail corridor. The main safety risk for cyclists on SH2 is the on-ramps and off-ramps at Dowse. For southbound cyclists the ramps could be avoided if sufficient space within the rail corridor was available. Discussions are on-going with KiwiRail to confirm potential arrangements.

Section 8 Dowse to Melling

Section 8 benefits for cyclists along SH2 reduce to being almost negligible throughout this section due to the lower number of new cyclists being attracted to this facility and the lack of connections throughout. Further opportunities to develop off-line routes either along the Hutt River (and continuing north of Melling) or along the rail corridor, however these would be best considered as part of the Hutt City cycle network.

In terms of planning the anticipated works will either be part of existing rail or road reserve. Therefore they are either within a transport designation or on a public road administered by Hutt City Council. As such actual consents may not be required although that would need to be confirmed.

3.5 Other Legislation

Apart from the RMA other legislation may apply. The most significant of these is the Historic Place Act 1993 while there may be an implication on statutory reserves gazetted under the Reserves Act 1997.

The purpose of Historic Places Act is to promote the identification, protection, preservation, and conservation of the historical and cultural heritage of New Zealand. The Historic Places Trust administers the functions of the Act and a list of historic places is produced by HPT. None of these identified places are in any of the sites identified. In any event and regardless of any sites of cultural or historical significance being identified in the, general authorisation will need to be sought under the Historic Places Act for destruction or modification of any sites, in addition to consultation with iwi on cultural matters.

The Reserves Act has three main functions. These are:

- To provide for the preservation and management, for the benefit and enjoyment of the public, areas possessing some special feature or values such as recreational use, wildlife, landscape amenity or scenic value. For example, the reserve may have value for recreation, education, as wildlife habitat or as an interesting landscape.
- To ensure, as far as practicable, the preservation of representative natural ecosystems or landscapes and the survival of indigenous species of flora and fauna, both rare and commonplace.
- To ensure, as far as practicable, the preservation of access for the public to the coastline, islands, lakeshore and riverbanks and to encourage the protection and preservation of the natural character of these areas.

It appears that no statutory reserves are included in the identified sites. However the project requires access across Honiana Te Puni Reserve in Petone which is owned by the Port Nicholson Settlement Trust and is an important site historically although physical changes are small. If the reclamation requires works within statutory reserve land this will be a relevant consideration to be followed by a specific consent under the Act from the Minister of Conservation.

4. Anticipated Authorisations Required

This consent framework is a reasonably high level overview of the regional and district plan rules which will need to be addressed in any resource consent applications for the P2N project. It has been assumed that the P2N will require a significant amount of reclamation, as well as the formation of the pathway itself. As such coastal permits, designations and land use consents have been considered during the analysis of the relevant plans.

It should be stressed that this is the current situation and will change prior to the lodgement of any applications. This is in respect to GW's Draft Natural Resources Plan which is likely to contain the 'second generation' Regional Coastal Plan provisions.

4.1 Regional Coastal Plan for the Wellington Region

The reclamation and draining of the foreshore and seabed is as a general guide a Discretionary Activity, although in some areas, it is considered to be a Non-Complying Activity.

The rules are also delineated between activities which are within and outside of the Commercial Port Area, and also within and outside of Areas of Significant Conservation Value (as defined in the RCP). The proposed works will be outside of the Commercial Port Area and Areas of Significant Conservation Value.

As such, there is only one relevant rule, which provides for the proposed reclamation works as a Discretionary Activity, as follows:

Rule 1 Large reclamations outside the Commercial Port Area

Any activity reclaiming foreshore or seabed outside the Commercial Port Area which:

- (1) equals or exceeds 1 hectare; or*
- (2) extends 100 or more metres in any direction; or*
- (3) is an incremental reclamation connected to or part of another reclamation which:

 - was commenced or received a resource consent after 5 May 1994; and*
 - the sum of the existing and proposed reclamations are equal to or exceed the dimensions in (1) and (2); and**
- (4) is proposed for an area of the coastal marine area outside any Area of Significant Conservation Value;*

is a Discretionary Activity and shall comply with the terms below.

Terms

The Hydrographer of the Royal New Zealand Navy shall be notified of the reclamation at the time consent is granted, at commencement of the work, and when the reclamation is completed.

4.2 Draft Natural Resources Plan

The Draft Natural Resources Plan has been considered as it could be operative and replace the RCP rule above when the resource consent application to GW is made. However it must be noted that the rule's within the plan are subject to change between now and such time that the plan is made operative, and as such this assessment is a guide only.

Reclamation in the Draft Natural Resources Plan is considered to be a Discretionary Activity under Rule CM.R218 if the reclamation is for regionally significant infrastructure and is outside of sites of significance. The definition of regionally significant infrastructure includes *the Strategic Transport Network, as defined in the Regional Land Transport Plan*. It is considered that the W2HV Link fits within this definition. The reclamation is not within a site of significance.

4.3 District Plans

It is anticipated that the designation process as previously discussed will be utilised instead of seeking resource consents under the Wellington and Hutt City District Plans

4.4 Consenting Options

At this point there is an obvious consenting option – Coastal Permits for reclamation, other regional Consents plus amending the Designation to reflect the land reclamation status upon completion.

This is the usually implemented option due to the RMA linkages to property acquisition, the fact that the requiring authority is the decision maker during a two stage process and the ability for the requiring authority to set its own objectives. This is important as s171(1)(c) (whether the work or project is reasonably necessary for achieving the objectives of the requiring authority for which the designation is sought) is a matter that a decision maker must have particular regard to. Regional consents will still be required for works within the Coastal Marine Area.

4.5 Designation

Designations are a useful mechanism for both RMA purposes and in terms of property acquisition. They signal intent by a public body (such as a Minister of the Crown or Council) or a network utility operator to utilise land for the purposes of a public work. In the case of the W2HV Link, even though it appears the majority of the work is within the CMA, the land created by the reclamation will, at the conclusion of the works, be above Mean High Water Springs, and therefore subject to Territorial Local Authority planning considerations (District Plans).

The Agency is a requiring authority. To be the requiring authority for the W2HV Link, The Agency would need to take financial responsibility for the public work. If The Agency is unable or unwilling to take financial responsibility for the work then the alternative is for the body with financial responsibility to ensure they are considered to be a requiring authority (Councils are considered to be such authorities).

There are significant advantages to utilising the designation process in conjunction with lodging the regional resource consent and coastal permit application. However as the majority of the land above mean high water mark is designated for road or rail or in other public ownership altering the designations should be a more administrative task to reflect the changing functions within the transport corridor.

5. Consenting Process

To reach the successful lodging of the application, and progress through the consenting process, there are considered to be five main phases associated with the statutory process delivery for the W2HV Link, these are:

1. Strategy and Formulation (the stage the Project is in currently although the thinking about Stage 2 is well advanced.).
2. Environmental Investigation and Assessment.
3. Drafting of Technical Reporting and Assessment of Environmental Effects (AEE);
4. Technical reviews and completion of the AEE; and
5. Lodgement of Statutory Authorisation Applications.

This document provides a strategy which will need to be transferred to a more comprehensive consenting plan. This is because of the need to establish a robust method for managing the project including the submission of a notice or notices of requirement for the required designation(s) and lodging the applications for resource consents with the either the EPA or Councils. This consenting strategy is therefore intended to set the parameters for capturing the following information in one clear, central document to enable easy access and comprehension by all parties involved.

In particular the more fully populated consenting plan will define:

- The pre-lodgement programme and milestones;
- The confirmation of key stakeholders involved in the statutory process and their roles and responsibilities;
- The communication between the project's various groups and external parties involved in the process;
- The identification of project documentation required for the statutory process;
- The purpose, process and timeframes for the development and review of project documentation to meet the needs of the statutory process;
- The responsibilities of the various individuals within the project's work streams;
- Throughout the process a key objective is that the development and review of reports and documents will ultimately be of high quality and fit for purpose.

The consenting plan shall become an agreed and approved document to be used as a guideline for the consideration, management and control of the statutory components of the W2HV Link. It is anticipated that this document will be subject to review and updating on perhaps a bi-monthly basis.

The five phases are described below. Throughout the five phases, it should be noted that engagement with the EPA and/or Councils is critical to the success to the authorisations process.

5.1 Phase One - Strategy and Formulation

RMA Strategy Formulation - Determine the strategy to best obtain the statutory authorisations (designation(s) and resource consents) via the two stage, EPA/ Board of Inquiry, or direct referral process. This includes:

- Confirming the project team and roles;
- Confirming Requiring Authority status;
- Confirming preferred consent pathway;
- Formulating and more fully populating a Consenting Plan and seeking feedback;
- Ensuring the Consenting Plan is aligned with the Stakeholder Engagement Plan formulated for the project;
- Identifying and initially scoping the detailed consenting and designation requirements (including inputting more site specific detail as it comes to hand);
- Identifying all potential environmental effects and key consultants to assist through the process;
- Engaging legal assistance to advise on RMA legal matters;
- Undertaking further Issues and Opportunities workshop(s) with key stakeholders to further identify issues, opportunities, project risks, constraints and other matters relating to the project;
- Undertaking early engagement with WCC and HCC, (individually or collectively) GW DoC and the EPA to discuss expectations and outline the anticipated statutory process;
- Confirming and reviewing the process carried out to date so that options and alternatives are adequately considered;
- Formulating Process / Review Control Plan for appropriate verification and review of documents;
- Identification of other statutory approvals required for the project not covered by the RMA;
- Assessing timeframe requirements for approval process and implications for the two stage, BOI or direct referral process; and
- Formulating strategy for other approvals and acquisition processes to meet construction programme and to minimise potential issues at the statutory hearing phase.

5.2 Phase Two – Environmental Investigation and Assessment

Environmental Investigation and Assessment – Scope and undertake environmental assessment reporting and documentation to support the statutory authorisation applications and the statutory process. This includes:

- Confirming the environmental assessments required;
- Confirming environmental inputs into more detailed options analysis;
- Confirming the technical reporting structure;
- Confirming the scope of further environmental investigations and templates for reports;

- Liaising with the design team to identify opportunities for further detailed design work to inform environmental reporting requirements;
- Preparing templates and glossary/ index of reports;
- Preparing technical reports, review reports and respond to comments;
- Seeking confirmation of any proposed changes to the project scope and mitigation register.

5.3 Phase Three - Drafting of Technical Reporting and Assessment of Environmental Effects (AEE)

Drafting of Technical Reporting and AEE – Finalising the documentation process and preparing the draft AEE. This includes:

- Confirming the documentation process for each environmental discipline with the EPA and/or consent authorities;
- Commencement of GAP analysis after feedback from the EPA and/or Councils is received;
- Formulation of a draft AEE.
- Upon receipt of client comments this is the point in which the project will go through formal gap analyses to identify whether additional reporting or investigation may be required.

5.4 Phase Four - Technical reviews and completion of the AEE

Technical reviews and completion of the AEE – Finalising the documentation process and finalising the draft AEE. This includes:

- Working with the project design team to complete any further design to inform the final environmental and technical reporting;
- Completing the GAP analysis of the proposal in preparation of the statutory authorisations application being lodged;
- Final pre-lodgement meetings with the EPA and/or Councils and completing any further technical reviews;
- Finalise the technical reporting and inclusion into the AEE and statutory application;
- Preparation of a Construction Environmental Management Plan and associated Management Plans such as ecological, landscape, erosion and sediment control etc;
- Preparation of proposed conditions of consent; and
- Ensuring all statutory approvals (designations and resource consents) are included in the application.

5.5 Phase five - Lodgement of Statutory Authorisation Applications

Lodgement of Statutory Authorisations Application – Formal submission of the Statutory application and process through the Councils or through the EPA. This includes:

- Completion of the Assessment of Environmental Effects and statutory application to the required standard;
- Lodging the application with the EPA or Councils;
- Liaising with the EPA (if that process is being followed) with respect to lodgement and protocols required for recommendation to the Minister for the Environment; and
- Working with the EPA throughout the recommendation process, submission period and board of inquiry process.
- It is expected that the detailed process of evidence preparation, reviews, rebuttal evidence will be outlined once the gap analysis has been completed and the Assessment of Environmental Effects has been internally reviewed by the Project Team.

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6. Consent Pathways

Assuming that the Agency takes on financial responsibility for the works, it is appropriate to consider the benefits and disbenefits of the two stage consent process against a single entity process.

Under the two stage process, the regional resource consent application would be made to GW and a Notice of Requirement lodged with Hutt City and Wellington City Councils. These entities would make a decision which are open to appeal. This would mean the resource consent application and Notice of Requirement would be considered by the Environment Court.

Under the single entity process, a Board of Inquiry could consider the application under the national consenting process (the Environmental Protection Authority (EPA)) or the project could be considered for direct referral to the Environment Court.

For the purposes of this framework it has been assumed that the project is of sufficient scale to be considered a proposal of national significance. The three possible pathways for proposals of national significance are outlined in the attached figure reproduced from the Environmental Protection Authority website.⁸

⁸ <http://www.epa.govt.nz/Publications/epa-02-applying-to-the-epa.pdf>

Figure 2: EPA - Resource Consent Applications for Proposals of National Significance



6.1 Two stage process

The two stage or conventional process means that all RMA applications for resource consent and/ or designations are lodged with the relevant local authority and GW at the same time and bundled together as they are interrelated and there is an expectation in the RMA that all matters are considered concurrently.

It must be assumed that due to the scale of the project that public notification will be required as the Project is unlikely to have adverse effects that are minor and the written consent of all parties potentially affected have been secured.

After a hearing and the decision is made any party including the applicant can appeal the decision to the Environment Court. Further appeals can only be made to the High Court on points of law.

6.2 Board of Inquiry

Applying to the EPA, instead of to the relevant council, is to obtain a more streamlined decision-making process. The Minister for the Environment can only direct a matter be referred to a board of inquiry or the Environment Court that is, or is part of, a proposal of national significance.

The Minister can consider any relevant factor when deciding whether the matter is, or is part of, a proposal of national significance, including whether the matter:

- a. has aroused widespread public concern or interest regarding its actual or likely effect on the environment (including the global environment), or
- b. involves or is likely to involve significant use of natural and physical resources, or
- c. affects or is likely to affect a structure, feature, place, or area of national significance, or
- d. affects or is likely to affect or is relevant to New Zealand's international obligations to the global environment, or
- e. results or is likely to result in or contribute to significant or irreversible changes to the environment (including the global environment), or
- f. involves or is likely to involve technology, processes, or methods that are new to New Zealand and that may affect its environment, or
- g. is or is likely to be significant in terms of section 8, or
- h. will assist the Crown in fulfilling its public health, welfare, security, or safety obligations or functions, or
- i. affects or is likely to affect more than one region or district, or
- j. relates to a network utility operation that extends or is proposed to extend to more than one district or region⁹.

In terms of what is known about the W2HVWC Link to date it is considered that the Project would meet those categories highlighted in bold above.

Once the Minister has determined that a proposal is one of national significance he or she will either refer it to a Board of Inquiry or to the Environment Court. A Board of Inquiry is usually constituted of a Judge of the Environment Court or a retired High Court Judge accompanied by a number of panellists. It is not a court per se but has powers of inquiry. The biggest differentiator between a Board of Inquiry and other methods is that there is a nine month period from calling for submissions to the release of the Board's decision.

⁹ <http://www.epa.govt.nz/Publications/epa-02-applying-to-the-epa.pdf>

6.3 Direct Referral

This option is available on application to the Minister that the hearing would be held before a fully constituted division of the Environment Court. The same decision-making criteria which applies to the board of inquiry will apply to the Environment Court and a decision by the Environment Court can also only be appealed on a point(s) of law.

Finally, the Environment Court will determine its own procedure and has all its usual powers in this respect, which includes no timeframe for a decision to be made.

6.4 Comparison of Consenting Pathways

Issue	Two Stage	Board of Inquiry	Direct Referral
Timeliness	If appealed to the Environment Court the process can take a significant period of time from lodgement to final Court decision. There are many historical examples of processes taking three years from the original notification of the application through to final Court decision.	Nine months from notification to the Boards decision	No timeframes specified but from notification to decision can take over a year depending on complexity.
Pre application	A conventional process of application preparation is carried out. However if there are appeals the applicant can concentrate on issues of contention.	Significant work is required pre application to ensure that all social, cultural and environmental considerations are appropriately addressed.	Significant work is required pre application to ensure that all social, cultural and environmental considerations are appropriately addressed.
Cost	While it will depend on the context and complexity of the application two stage processes are usually less expensive as the appeal stage can focus on issues of contention.	From knowledge of recent NZTA projects the upfront costs of Bol processes are very significant. This includes the preparation of matters such as draft Management Plans and a large degree of design detail which with a two stage process is often left to conditions of consent.	There have been very few direct referrals to the Environment Court. However it is assumed that the costs of the consenting process are similar to a Bol
Risk	Less risk than other processes as the applicant gets an opportunity to address any issues and	Higher risk than two stage as the applicant only has one opportunity to address all matters. If declined the	Similar to Bol.

	negotiate between the Council decision and the commencement of Environment Court proceedings	applicant needs to restart the process.	
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7. Timeframes

Some thought has gone into the timing of the process. It is however somewhat difficult to determine with any degree of accuracy particularly as there may be financial and management issues to be resolved and political decisions to be made, but the following gives an indication of possible consent process timings.

1. Decision to progress consideration of consenting framework options. Assume **DATE**.
2. Preparing adequate information to lodge consents and Notice of Requirement including building in comprehensive further consultation with key parties and those that have an interest greater than the public generally. Assume 12 months.
3. Lodge preliminary documents with councils or EPA, respond to any requests for further information, then proceed towards public notification. Assume an additional 3 to 5 months.

For a two stage process:

4. Call for submissions, respond to any issues raised in submissions, prepare evidence, and hold hearings. Assume 4 to 6 months to consent authority decisions or recommendations the Requiring Authority and the decision made.
5. If appeals are received then it could easily be up to 12 months in order to mediate the appeals and if unsuccessful hold a hearing of the Environment Court.
6. Environment Court decision could be 6 months after that time.

For a BoI process

7. Statutory timeframe from notification to decision is 9 months.

For a direct referral process

8. No statutory timeframe from notification to decision. Assume 12 months.

Therefore at best it is considered that it could be as much as 24 months to 40 months to get the necessary consents if first round decisions are appealed for a two stage process. A single Board of Inquiry or direct referral to the Environment Court may reduce the timeframes by 12 to 16 months.

8. Resources

The following is an estimate of the resources required to consent the Project. Some assumptions have been made:

1. This is up to the time of lodgement of the applications with the consent authority;
2. That the emphasis is on the Petone to Ngauranga sections with minimal RMA consents required for the southern (WCC) or Northern (HCC) sections due to anticipated solutions being either on transport land or on road reserve.
3. All figures are exclusive of GST and disbursements

8.1 Technical Disciplines

	Tasks	Estimate
Civil Engineering	Develop designs to a level suitable for consenting purposes, confirm required operational width. Provide engineering philosophy statement including measures to enhance safety. Work with Landscape Architect on any geotechnical/ or civil engineering issues.	\$50,000
Coastal Processes	Provide input into design and effects assessments.	\$20,000
Landscape and Urban Design	See detailed breakdown from Isthmus. Work with engineers and planners Consider urban design enhancements. Lead design team.	\$97,500
CPTED	Consider project options and requirements in relation to personal safety.	\$50,000
Transportation Engineering	Will be a significant task if transport corridor rather than cycle/ walkway task.	
Ecology	Baseline study provided. Input into mitigation and design.	\$30,000
Construction Management	Advice on construction methodology Provide draft Construction Environmental Management Plan	\$30,000
Contamination	Preliminary Contamination, conditions, advice on mitigation	\$10,000
Noise	CNVMP comment on other noise effects	\$10,000

Air Quality	CAQMP	\$5000
Heritage/ Archaeology	Report	\$5000
Cultural Impact Assessments	Tenths/Port Nic Ngati Toa	\$40,000 for two.
Consultation	Assume two further rounds of consultation	
Planning	Provide Assessment of Alternatives. Provide Assessment of Environmental Effects Development of conditions of consent. Project Management	
Legal		

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Appendix A
Confirmed estimates

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Appendix J

Property Strategy and Land Requirement Plans

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Appendix K

Procurement Strategy

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