Ngā Ūranga ki Pito-One Shared Path

30% Detailed Design

Prepared for Te Ara Tupua Alliance
Prepared by Beca Ltd

5 September 2022

Contents

1 Introduction 1

1.1 Safety Audit Procedure 1
1.2 Safety Audit Team 2
1.3 Report Structure 2
1.4 Scope of Audit 3
1.5 Documents Provided 3
1.6 Disclaimer 4
1.7 Project Description 5

2 Scheme Overview 6

2.1 Background 6

3 Audit Findings 8

3.1 General 8
3.1.1 Tsunami and extreme weather risk Serious 8
3.1.2 Pathway surface patterns and markings Comment 9
3.1.3 Pathway width and Pedestrian / cyclist delineation Moderate 10
3.1.4 Proposed Uranga sites Minor 12
3.1.5 Fishing Access Minor 13
3.1.6 Visibility around landscaped areas Moderate 14
3.1.7 Wayfinding Signage Comment 16
3.1.8 Balustrade and seaward side buffer Moderate 17
3.1.9 Crime Prevention Through Environmental Design (CPTED) 18
3.1.10 and Closed Circuit Television (CCTV) Moderate 18
3.1.11 KiwiRail Traction Station Moderate 19
3.1.12 Maintenance Bays Moderate 20
3.2 Ngā Ūranga / Southern Access Point 22
3.2.1 Path debris and gravel Minor 22
3.2.2 Bridge access ramps Moderate 23
3.2.3 Bridge Width Moderate 23
3.2.4 Bridge Railings Moderate 24
3.2.5 Access from SH2 shoulder Significant 25
3.2.6 Ngauranga access as a destination Moderate 28
3.3 Petone Connection: Rowing Club, Honiana Te Puni Reserve and Hutt Road Tie in 29
3.3.1 Water Supply Service Manholes Minor 29
3.3.2 Shared Path Access to Petone Foreshore Path Minor 30
3.3.3 Crossing Point of Access Lane Moderate 31
3.3.4 Boat Ramp Access Significant 32
3.3.5 Parking around the Boat Club Area Significant 33
3.3.6 Crossing Points around Boat Ramp Access Lane Moderate 34
3.3.7 Cultural Pattern Consistency Moderate 36

3.3.8 Connection Pathway to Honiana Te Puni Moderate 36
3.3.9 Boat Ramp Access Lane Gate Hours Moderate 38
3.3.10 Existing Pedestrian Bridge within Honiana Te Puni Reserve Minor 38
3.3.11 Underpass Environment Significant 40
3.3.12 Underpass Corner Moderate 41
3.3.13 Existing trees at connection point with Melling Shared Path Minor 42
4 Audit Statement 45

Revision History

Revision Nº	Prepared By	Description	Date
A	s 9(2)(a)	For Client Issue	5 September 2022

Document Acceptance

Action	Name	Signed	Date
Prepared by	s 9(2)(a)	s 9(2)(a)	5 September 2022
Approved by	s 9(2)(a)	s 9(2)(a)	5 September 2022
on behalf of			

1 Introduction

1.1 Safety Audit Procedure

A road safety audit is a term used internationally to describe an independent review of a future road project to identify any safety concerns that may affect the safety performance. The audit team considers the safety of all road users and qualitatively reports on road safety issues or opportunities for safety improvement.

A road safety audit is therefore a formal examination of a road project, or any type of project which affects road users (including cyclists, pedestrians, mobility impaired etc), carried out by an independent competent team who identify and document road safety concerns.

A road safety audit is intended to help deliver a safe road system and is not a review of compliance with standards.

The primary objective of a road safety audit is to deliver a project that achieves an outcome consistent with Safer Journeys and the Safe System approach, that is, minimisation of death and serious injury. The road safety audit is a safety review used to identify all areas of a project that are inconsistent with a safe system and bring those concerns to the attention of the client in order that the client can make a value judgement as to appropriate action(s) based on the risk guidance provided by the safety audit team.

The key objective of a road safety audit is summarised as:

To deliver completed projects that contribute towards a safe road system that is increasingly free of death and serious injury by identifying and ranking potential safety concerns for all road users and others affected by a road project.

A road safety audit should desirably be undertaken at project milestones such as:

Concept Stage (part of Business Case);
Scheme or Preliminary Design Stage (part of Pre-Implementation);
Detailed Design Stage (Pre-implementation / Implementation); and
Pre-Opening / Post-Construction Stage (Implementation / Post-Implementation).

A road safety audit is not intended as a technical or financial audit and does not substitute for a design check on standards or guidelines. Any recommended treatment of an identified safety concern is intended to be indicative only, and to focus the designer on the type of improvements that might be appropriate. It is not intended to be prescriptive and other ways of improving the road safety or operational problems identified should also be considered.

In accordance with the procedures set down in the *"NZTA Road Safety Audit Procedures for Projects*, *Interim Release* dated May 2013", the audit report should be submitted to the client who will instruct the designer to respond. The designer should consider the report and comment to the client on each of any concerns identified, including their cost implications where appropriate, and make a recommendation to either accept or reject the audit report recommendation.

For each audit team recommendation that is accepted, the client shall make the final decision and brief the designer to make the necessary changes and/or additions. As a result of this instruction the designer shall action the approved amendments. The client may involve a safety engineer to provide commentary to aid with the decision.

Decision tracking is an important part of the road safety audit process. A decision tracking table is embedded into the report format at the end of each set of recommendations to be completed by the designer, safety engineer and client for each issue documenting the designer response, client decision (and

asset manager's comments in the case where the client and asset manager are not one and the same) and action taken.

A copy of the report including the designer's response to the client and the client's decision on each recommendation shall be given to the road safety audit team leader as part of the important feedback loop. The road safety audit team leader will disseminate this to team members.

1.2 Safety Audit Team

The audit team for the 30% Detailed Design Stage Road Safety Audit were as follows:

s 9(2)(a)	Lead Safety Auditor – Senior Technical Director, Civil Engineering (Beca)
s 9(2)(a)	Associate Designer (Beca)
s 9(2)(a)	Associate Walking and Cycling (Beca)

1.3 Report Structure

The potential road safety problems identified have been ranked as follows:-

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 involved.

Reference to historic crash rates or other research for similar elements of projects, or projects as a whole, have been drawn on where appropriate to assist in understanding the likely crash types, frequency and likely severity that may result from a particular concern.

The frequency and severity ratings are used together to develop a combined qualitative risk ranking for each safety issue using the Risk Assessment Matrix in **Table 1.1** below. The qualitative assessment requires professional judgement and a wide range of experience in projects of all sizes and locations.

Table 1.1: Risk Assessment Matrix

Severity (Likelihood of Death or Serious Injury Consequence)	**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 or nominated project manager 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. As a guide a suggested action for each risk category is given in **Table 1.2** below.

Table 1.2: Risk Categories

RISK	Suggested Action
Serious	A major safety concern that should be addressed and requires changes to avoid serious safety consequence.
Significant	Significant risk that should be addressed and requires changes to avoid injury consequence
Moderate	Moderate risk that should be addressed to improve overall safety
Minor	Minor risk that should be addressed where practical to improve overall 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 audit is a 30% Detailed Design stage Road Safety Audit for the 4.5km Ngā Ūranga ki Pito-One Shared Path between Wellington and the Hutt Valley. This section of the shared path includes the shared path connections at Ngauranga and Petone Beach.

1.5 Documents Provided

The documents provided for this Safety Audit have been supplied by Te Ara Tupuwa Alliance

The documents provided were as follows:

Number	Document / Drawing	Rev
Prefix NKP-TAT-000-DRG-CV-TS		
212101	General Arrangement Sheet 1 of 13	A02
212102	General Arrangement Sheet 2 of 13	A01
212103	General Arrangement Sheet 3 of 13	A01
212104	General Arrangement Sheet 4 of 13	A01
212105	General Arrangement Sheet 5 of 13	A01
212106	General Arrangement Sheet 6 of 13	A01
212107	General Arrangement Sheet 7 of 13	A01
212108	General Arrangement Sheet 8 of 13	A01
212109	General Arrangement Sheet 9 of 13	A01
212110	General Arrangement Sheet 10 of 13	A01
212111	General Arrangement Sheet 11 of 13	A01
012112	General Arrangement Plan 12 of 13	A02

Number	Document / Drawing	Rev
012113	General Arrangement Plan 13 of 13	A01
Prefix NKP-TAT-000-DRG-CV-TS		
112501	General Arrangement Plan & Long Section Sheet 1	C01
112502	General Arrangement Plan & Long Section Sheet 2	C01
112503	General Arrangement Plan & Long Section Sheet 3	C01
112504	General Arrangement Plan & Long Section Sheet 4	C01
112505	General Arrangement Plan & Long Section Sheet 5	C01
112506	General Arrangement Plan & Long Section Sheet 6	C01
112507	General Arrangement Plan & Long Section Sheet 7	C01
112508	General Arrangement Plan & Long Section Sheet 8	C01
112509	General Arrangement Plan & Long Section Sheet 9	C01
112510	General Arrangement Plan & Long Section Sheet 10	C01
112511	General Arrangement Plan & Long Section Sheet 11	C01
112512	General Arrangement Plan & Long Section Sheet 12	C01
112513	General Arrangement Plan & Long Section Sheet 13	C01
112514	General Arrangement Plan & Long Section Sheet 14	C01
114001	Typical Section – 5m Wide Separated Path	C01
114002	Typical Section – Bridge - 5m Wide Separated Path	C01
114003	Typical Section – Korokoro Stream Bridge – 2.5m Wide Path	C01
114004	Typical Section – 4m to 5m Wide Shared Path	C01
216001	Cultural Expression & Artwork Details – Shared Path Graphics – CE07	C01
000001	Design Summary Report -DWP-TS-01 Geometrics	001
000002	Design Summary Report – DWP-TS-02 Traffic Services	001

1.6 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, nor an assessment of standards with respect to engineering or planning documents.

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.

1.7 Project Description

The audit has been undertaken by Beca Ltd (Beca) at the request of the Te Ara Tupua Alliance. This report presents the findings of a 30% Detailed Design Stage Road Safety Audit of the proposed shared path on the seaward side of the railway between Ngauranga and Hutt Road in Petone.

Plans of the proposed works as listed in **Section 1.5** have been provided by Te Ara Tupua Alliance Design Consultants. The plans have been reviewed by the Safety Audit Team and safety issues have been considered against current guidelines, safety experience and practice where relevant.

In addition, the Safety Audit Team has completed a field audit of the site. The field audit was carried out during daylight hours in the morning of 16 August 2022.

2 Scheme Overview

2.1 Background

Waka Kotahi NZ Transport Agency (Waka Kotahi) and the Te Ara Tupua Alliance seek to deliver a safe and connected walking and cycling route between Wellington (Ngā Ūranga) and the Hutt Valley (Pito-one). The Ngā Ūranga ki Pito-One path project (the Project) will generally be on the seaward side of the existing road and rail transport corridor.

Ngā Ūranga ki Pito-One is a 4.5km long shared path construction project, being procured via a pure Alliance mechanism. The Te Ara Tupua Alliance, includes HEB, Downer and Tonkin & Taylor Ltd (T+T) supported by Holmes, Isthmus and Boffa Miskell. Waka Kotahi have worked with Taranaki Whānui & Ngāti Toa throughout the concept and consenting development of the Project and have well-established relationships.

The key physical works aspects of the Project which have been audited as part of this RSA include:

- **Shared path:** A 4.5km long shared path formation with a 5m sealed surface width on existing and new reclaimed land and new coastal structures on the seaward side of the Hutt Valley railway line;
- **Ūranga (landings):** 6 **Ūranga** (landings), strategically located at key sites along the shared path's length, providing areas for landscaping, habitat creation, off-path multi-use areas, event use, rest and views.
- **Revetment:** A **combination** of concrete block and natural rock revetment adjoining the shared path and Ūranga;
- **Seawalls:** Approximately 700m of seawall and associated beach groynes and rock scour protection. NgāŪranga ki Pito-One Seawalls are located and designed to avoid shared path encroachment into high valueecological and sensitive gravel beach habitats;
- **Shared path bridge**: A new bridge providing access for shared path users over the railway at the NgāŪranga end of the Project;
- **Offshore habitats:** Provision of offshore habitats for coastal avifauna, constructed of naturalised rockforms located adjacent to key **foreshore** habitat areas;
- **KiwiRail traction station:** KiwiRail has a traction station located at Rocky Point that will be upgraded aspart of the works. This is a key **facility** required for the operation of the existing rail network; and
- **Honiana Te Puni West: Enhancement** of the existing reserve, including permanent Tawharau Pods,landscaping, street lighting and sculptures; and
- **Korokoro Stream Bridge (on-hold):** A new bridge providing access to shared path users over theKorokoro Stream to replace the existing footbridge.

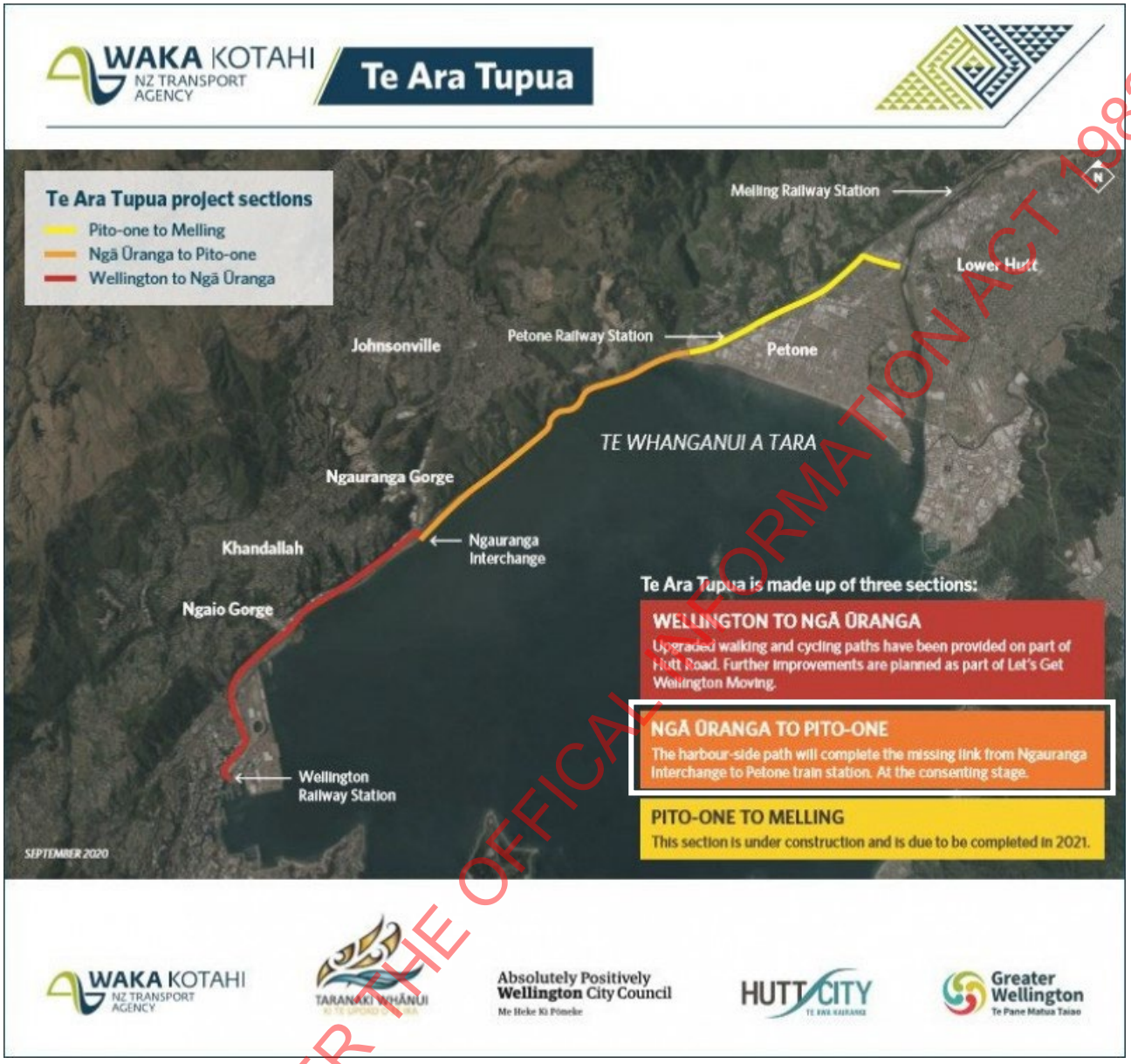

Figure 1: Ngā Ūranga ki Pito-One Shared path extent plan (refer to orange line for RSA extent)

3 Audit Findings

3.1 General

3.1.1 Tsunami and extreme weather risk — Serious

The pathway is positioned directly adjacent to the coastal edge which presents an exposure risk for pathway users in extreme weather events or if a tsunami was to occur. There is a real risk that large waves will crash over the pathway and cause significant safety issues for pedestrians and cyclists (as has been evidenced in recent storm events). The 4.5km stretch of pathway presents no entry/ exit points between Petone beach and Ngauranga to support safe emergency exits for path users. The safety audit team understand the risks of providing any escape options along the route given the adjacent (frequented) rail corridor and the state highway. However, without an option to escape there is a risk of entrapment that could lead to a death or serious injury.

Recommendation:

Consideration should be made for how users will be able to safely exit the shared path corridor in extreme weather conditions. If no safe escape route options are able to be achieved along the route it is recommended that Intelligent Transport System (ITS) signs or path closure is provided to alert/ exclude people of the risks when weather or tsunami warnings are raised.

Frequency Rating: ***Occasional*** *Severity Rating:* ***Likely***

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.1.2 Pathway surface patterns and markings

Comment

Pathway markings provide a great sense of **place and give the pathway points of interest along the route, however, it is known that some colours, styles of patterns, brightness, location and intensity can be overwhelming for some users. This includes users with brain injuries or people with low vision.**

There is a risk that pathway marking could have negative impacts on some path users. This is particularly relevant with the constant hatching that is provided between the two user zones.

It is recommended that consultation is carried out with the disability sector including CSS Disability Action, Blind Low Vision and Community Connections groups to discuss and confirm appropriateness of pathway pattern and colour choice.

Frequency Rating: ***Occasional*** *Severity Rating:* ***Unlikely***

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.1.3 Pathway width and Pedestrian / cyclist delineation — Moderate

The pathway width is proposed at 4-5m which will accommodate general movements for people walking, cycling, passing and riding/ walking in pairs. The pathway should be able to provide adequate space for peak flow cyclists during the work week. However, at the weekend, users will likely be more sporadic and could typically be groups or families riding together. This creates a need for greater space for passing manoeuvres.

The preliminary drawings identify the pathway will be split with visual cues provided to demarcate separation between people walking and people cycling. During the project briefing the design team highlighted that a delineation strip was being provided to provide the visual separation, however, material choice has not yet been confirmed. It is conceptually shown as a directional tactile paver with painted hatching (or similar) which will provide a colour and texture difference.

The proposed pathway width could present risks of groups of walkers 3-4 abreast overlapping the cyclepath and may cause friction with cyclists as they protrude into the cycle path.

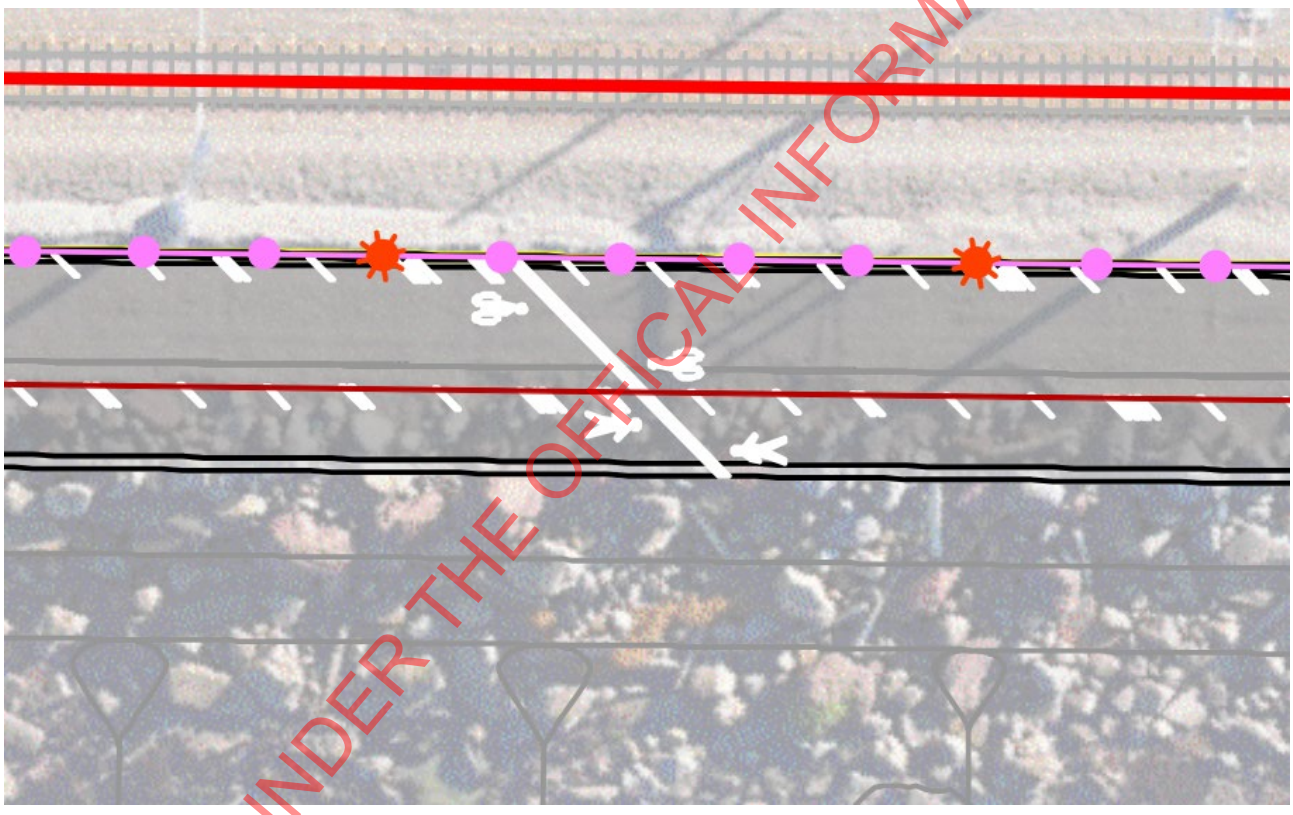

Figure 2: Example of the existing layout with visual delineation demarcating the pedestrian and cycle movements

Recommendation:

It is recommended that an option to provide a full, shared path with no delineation along with behavioural influencing signage and marking to reduce friction between users.

It is also recommended that the disability sector is consulted about the use of tactile pavers along the length of the route.

Frequency Rating: ***Occasional*** *Severity Rating:* ***Likely***

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.1.4 Proposed Uranga sites

Minor

There are 6 proposed Uranga sites spread along the route which provide great amenity for path users. These areas provide seating, lookout and artwork which tell a story of the place. This will enhance the journey experience and enable people to stop, rest and gain knowledge before continuing along the route. Due to the length of the route the safety audit team questioned whether there were opportunities to integrate more secondary pause points (ie. Seating/ small stopping areas) to allow further opportunities for people to stop and rest along the journey. These sites will also be very popular destinations at the weekends for recreational users and require adequate space for movement as well as passive recreation.

Some Uranga sites are larger and have the ability to accommodate a walkway that is separate from the main shared path. This will provide relief from cyclists for pedestrians and enhance the separation of the modes.

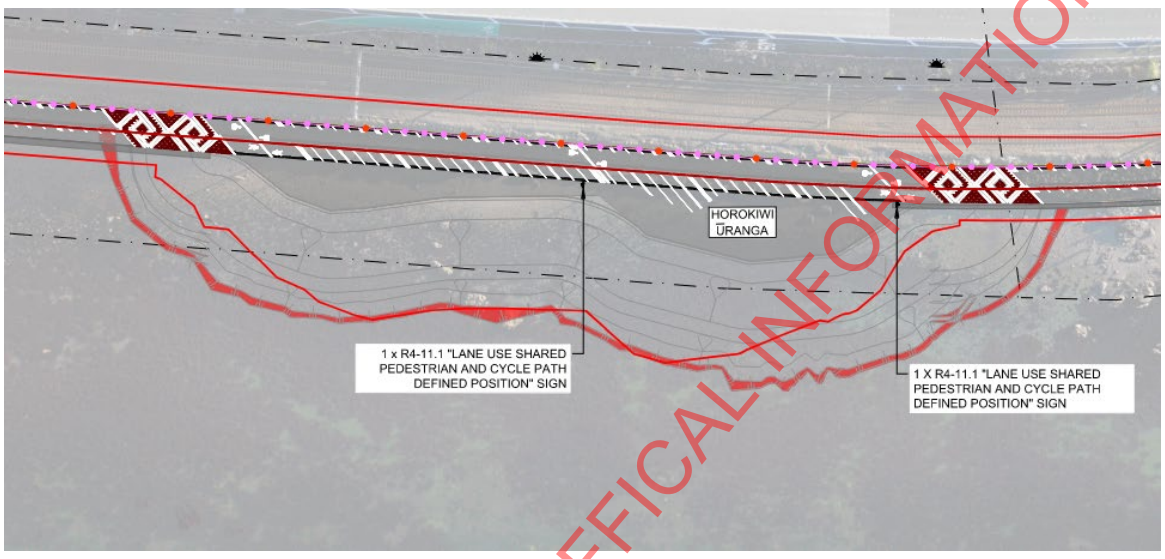

Figure 3 Uranga layout requires further demarcation of movement vs. seating areas

Recommendation:

Proposed Uranga layouts should be considered to ensure people walking and cycling can easily access these rest areas. This includes placing bike racks away from main access points and allowing for a clear differentiation between movement paths and passive zones through the area.

Consider if there are further places to integrate additional street furniture or smaller seating areas along the journey to increase opportunities for people to stop and rest.

Consider opportunities to utilise the larger Uranga sites to create a meandering pedestrian only path that enables people walking to be actually separated from cycle conflicts for some short sections.

Frequency Rating: ***Occasional*** *Severity Rating:* ***Unlikely***

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.1.5 Fishing Access — Minor

The new facility is likely to become a popular fishing destination, especially from the proposed Uranga areas. Fishing can generate mess and unclean spills etc.

Recommendation:

Consider providing taps or wash down facilities at certain locations, in-particular at the Uranga areas.

Frequency Rating: ***Occasional*** *Severity Rating:* ***Unlikely***

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.1.6 Visibility around landscaped areas **Moderate**

There are a number of areas that include landscaping adjacent to the path which could impede on the visibility of other shared path users approaching one another especially in areas where the path curves around obstacles including the underpass bridges and existing planted areas.

There are also existing areas of planting that create hiding opportunities and reduce path width through the existing pathway section adjacent to Hutt Road.

Figure 4 Example of unpruned vegetation inhibiting visibility.

Recommendation:

Plant low level plants in general and locations of any trees on the route are carefully thought out so as not to impede visibility for all path users, particularly between Uranga sites and the main pathway.

All planting adjacent to the pathway should be pruned and limbed to allow for clear sightlines along the pathway and to areas adjacent to the path to reduce CPTED issues.

Frequency Rating: ***Occasional*** *Severity Rating:* ***Likely***

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.1.7 Wayfinding Signage

Comment

There is no wayfinding signage indicated on the plans. Consider providing wayfinding signage, map boards and signs highlighting distance to key destinations. A critical area for wayfinding includes at the Y junction in the shared path to both Hōniana Te Puni Reserve and Hutt Road.

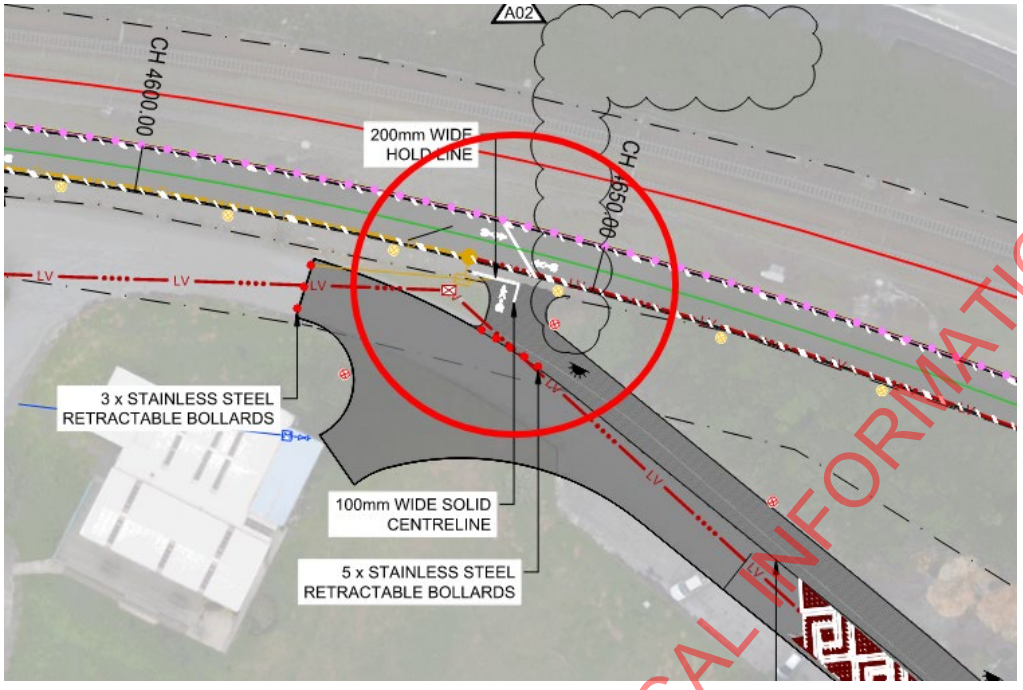

Figure 5 Circled intersection for wayfinding required to enable clear directions for path users

Recommendation:

N/A

Frequency Rating: ***N/A*** *Severity Rating:* ***N/A***

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.1.8 Balustrade and seaward side buffer Moderate

There are a combination of different barriers used along the extent of the coastal edge. This ranges from no protection in areas of rock revetment, concrete screening adjacent to a wildlife area and balustrades where a concrete sea wall is proposed. As this is only 30% design it is unclear whether or not there are any areas that have a risk of a fall where no protection has been provided.

Recommendation:

Review the location of balustrades and seaside buffers and install balustrades in all locations where a fall could result in a serious injury. Consider the heights and width of the top of the rock revetment to ensure that the path is well set back from potential fall risks. There should also be consideration for no rip-rap above ground level that is protruding into or close to the cycleway edge that could cause injury should a cyclist snag and / or fall off into the rip-rap.

Frequency Rating: ***Infrequent*** *Severity Rating:* ***Unlikely***

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.1.9 Crime Prevention Through Environmental Design (CPTED)

3.1.10and Closed Circuit Television (CCTV) Moderate

Trains provide some passive surveillance of the route, however, the route is predominantly unobserved. There are CPTED concerns along the middle section of the route given entry and exit points are approximately 3.9km apart. CCTV is proposed at 900m intervals which will give the path a level of surveillance, however, this is not going to be able to stop any antisocial behaviour as it happens due to distances from services.

Recommendation:

Consider the positioning and signage of CCTV along the route in collaboration with local Police. It is also recommended that panic buttons along the route could assist with enhancing the perception of safety by enabling people to send emergency alerts if they sense danger or witness anti-social behaviours.

Frequency Rating: ***Occasional*** *Severity Rating:* ***Likely***

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.1.11 KiwiRail Traction Station Moderate

The existing KiwiRail Traction station shows a maintenance bay where vehicles are likely to park up during times of maintenance. This may cause conflict with shared path users.

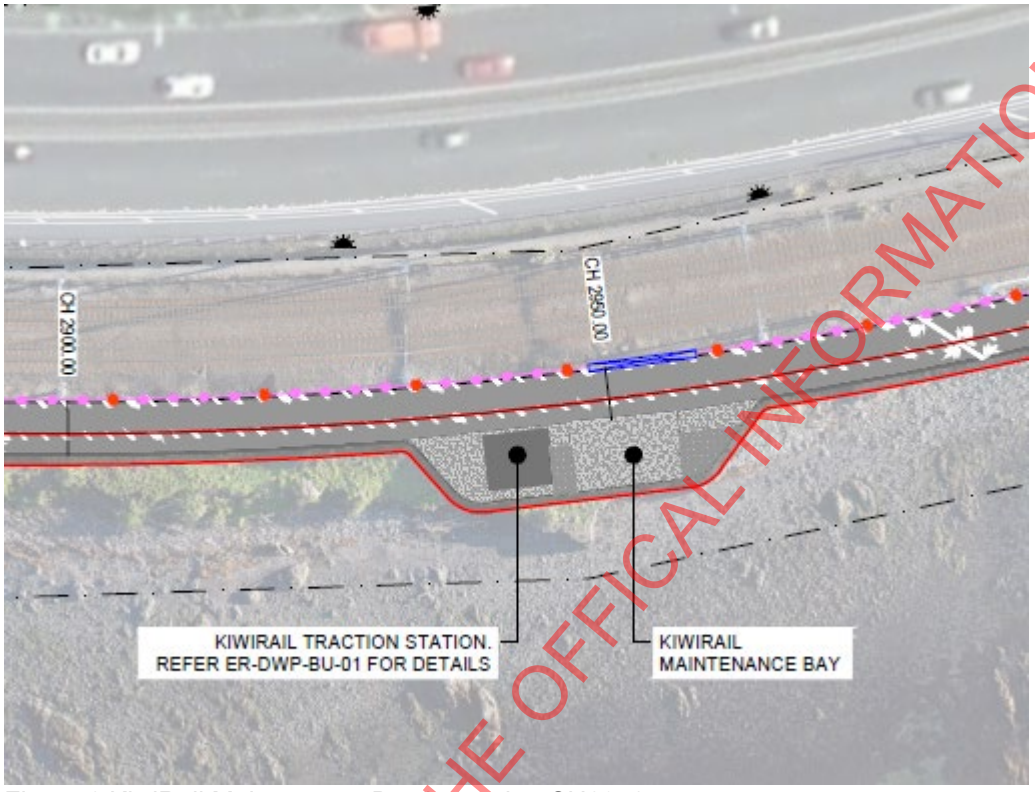

Figure 6 KiwiRail Maintenance Bay located at CH2950m

Recommendation:

Install appropriate warning signage and markings for both shared path users and KiwiRail staff. Implement a Health and Safety protocol for all KiwiRail Staff the entire length of the shared path for maintenance purposes. The adjacent KiwiRail access gate should remain locked at all times and regularly checked that it is so.

Frequency Rating: ***Occasional*** *Severity Rating:* ***Likely***

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.1.12 Maintenance Bays Moderate

There are a number of maintenance bays for maintenance vehicles to park along the route. These areas have the potential to cause conflicts between vehicles and shared path users

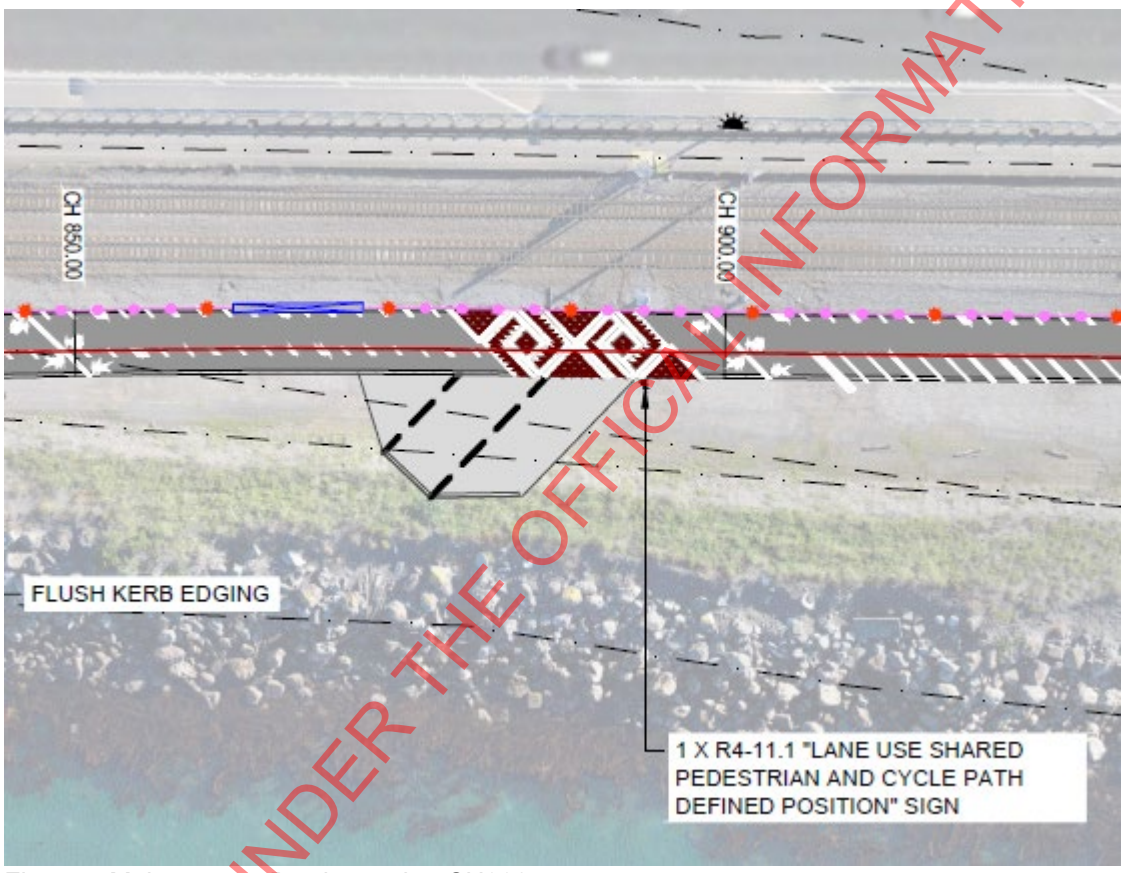

Figure 7 Maintenance Bay located at CH880m

Recommendation:

Install appropriate warning signage and markings for both shared path users and maintenance bay users. Implement a Health and Safety protocol for all maintenance crews for the entire length of the shared path for maintenance purposes. The adjacent KiwiRail access gate should remain locked at all times and regularly checked that it is so. This should be the case for all KiwiRail access gates along the route.

Frequency Rating: ***Occasional*** *Severity Rating:* ***Likely***

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.2 Ngā Ūranga / Southern Access Point

3.2.1 Path debris and gravel Minor

The existing path near Ngauranga Station shows evidence that gravel and construction debris have been spread across the pavement adjacent to the vehicle access within the KiwiRail yard. This causes a risk to cyclists getting punctures or sliding, particularly at corners. There is no evidence that sweeping had taken place recently to remove gravel.

Figure 8: Gravel and debris creeps on existing path near Kiwrail access track

Recommendation:

Include appropriate mitigation to reduce the amount of gravel and debris that enters the shared path area from adjacent KiwiRail yard access roads. Consideration should be made for the maintenance and sweeping regime that is required to keep the pathway clear of debris and gravel. Or, better still, to seal the adjacent access lane which will remove the hazard completely or alternatively, construction a concrete nib to limit the amount of gravel.

Frequency Rating: ***Occasional*** *Severity Rating:* ***Unlikely***

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.2.2 Bridge access ramps — Moderate

The proposed bridge presents ramps up to 90m in length. It is understood the design team have fairly assumed that the majority of users will be cyclists and able-bodied pedestrians due to the remote location of the bridge. However, with only one landing point at the mid-way point this is a long length for pedestrians and a number of users including children on bikes, parents pushing prams and people using recumbent / modified bicycles. This has the potential for those with less ability to not be able to rest and possibly cause runaway users on / with their bikes / prams.

Recommendation:

Consideration should be made for additional landing areas on the ramps which will enable users of all abilities to access the over bridge.

Frequency Rating: ***Occasional*** *Severity Rating:* ***Unlikely***

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.2.3 Bridge Width — Moderate

The proposed bridge width indicates a 5m wide shared path throughout the entire length. The additional landing space that provides a pull over area for looking out is a great feature which will reduce conflicts between sightseers and the movement path of other cyclists. However, there is an S-bend as well as a vertical difference up and over as the bridge traverses the rail-line. These geometric features limit the visibility and could cause conflict between shared path users especially given that it will be a good vantage

point for views out across the harbour and therefore users, maybe sight-seeing rather than concentrating on the path ahead.

Recommendation:

Consideration should be made for additional width through the S-bend length of the path on the bridge to lessen the chance of collision between shared path users

Frequency Rating: ***Occasional*** *Severity Rating:* ***Likely***

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.2.4 Bridge Railings — Moderate

While the shared path intends to be delineated, it is expected pedestrians and cyclists could at any time be using any part of the shared path, therefore rail heights on the bridge should be designed for cyclists on both sides of the path. The bridge railing drawing indicates that the railing on the pedestrian side is lower than that of the cyclist's side which is therefore less safe from a fall perspective.

Recommendation:

Consideration should be made for additional height to prevent a chance of a pedestrian climbing up the barrier and falling from the bridge

Frequency Rating: ***Infrequent*** *Severity Rating:* ***Very Likely***

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.2.5 Access from SH2 shoulder — Significant

The access from the SH2 shows a formal cycleway with green markings which crosses the KiwiRail access lane. This may tend to encourage cyclists (especially the high speed cyclists) not to use the new shared path and to use the SH2 shoulder all the way from Petone to Ngauranga. We believe that this access should be a last resort only cyclepath and only if cyclists find themselves on SH2 and need to exit.

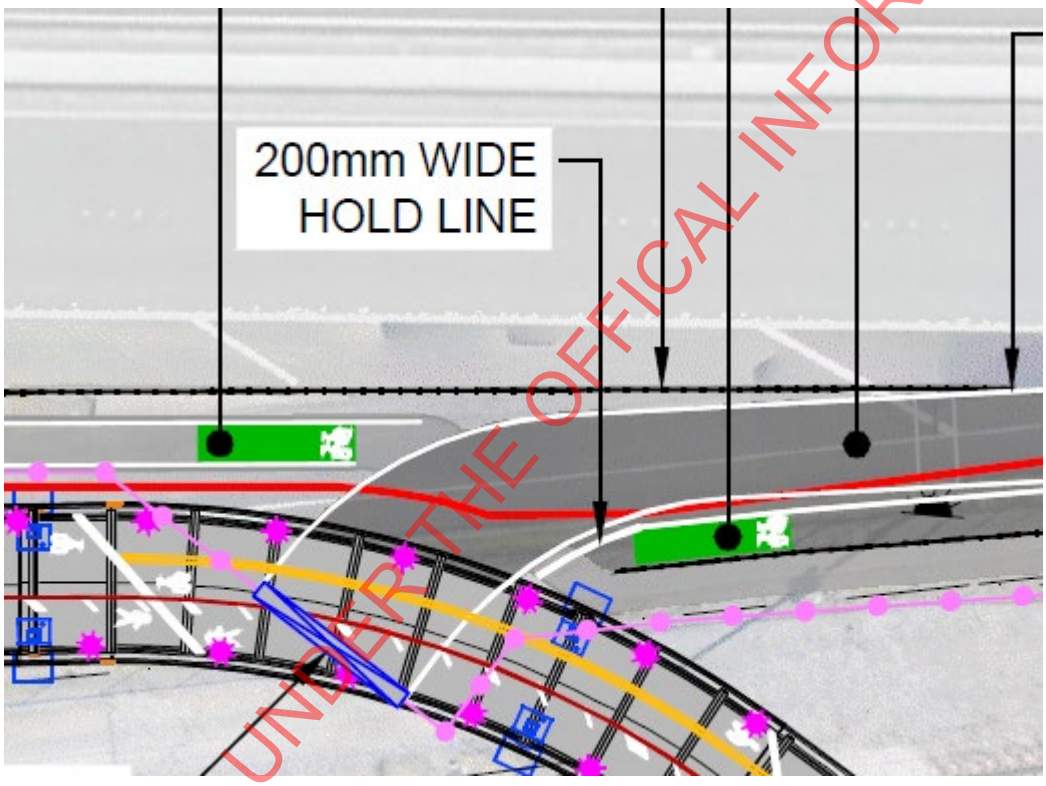

Figure 9: Cyclepath crossing over KiwiRail Access Lane.

Figure 10: Example of bicycle crossing at off ramp at 90degrees to the movement

Recommendation:

We recommend the following:

- that this access from the shoulder be a subtle (i.e. last resort) exit.
- Include appropriate signage installed at the Northern end of SH2 that encourages all cyclists to use the shared path and not SH2 as well as appropriate signage to indicate to any cyclists on SH2 that they must exit at this location before going onto the Thorndon Quay raised motorway.
- Include appropriate design elements to avoid conflict between KiwiRail users and cyclists such as giveway and warning signage and markings.
- It is recommended that the movement path for cyclists across the access lane should be at 90 degrees to the vehicle movements. An example of this layout is shown in Figure 9.

Frequency Rating: ***Occasional*** *Severity Rating:* ***Likely***

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.2.6 Ngauranga access as a destination **Moderate**

The pathway is likely to become a destination starting point for recreational cyclists/ pedestrians from Wellington City and Johnsonville, particularly at the weekends. It is assumed that families may want to drive to Ngauranga and start the cycle journey to Petone and return. There are no allocated parking spaces on the railway side of the highway and an effluent disposal site on the highway which requires access to be retained at all times. Parking in this location could cause congestion as well as blocking access or egress to and from the effluent disposal site located adjacent to the rail line.

Recommendation:

Include both no parking signs on the railway side of the highway and include alternative parking signage and education about appropriate parking locations at Ngauranga on the hillside of SH1 to deter parking adjacent to rail corridor and possibly at Jardine Mile which should have less use of parking during the weekends as it is mainly a business area.

Frequency Rating: ***Occasional*** *Severity Rating:* ***Likely***

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.3 Petone Connection: Rowing Club, Honiana Te Puni Reserve and Hutt Road Tie in

3.3.1 Water Supply Service Manholes Minor

There are a number of water supply valve access manholes located at CH4370m. The current design does not indicate any formal access to these manholes. This is a potential conflict area during times of maintenance for the water supply service manholes and therefore specific formal access should be implemented.

Figure 11: Gravel and debris creeps on existing path near KiwRail access track

Recommendation:

Provide suitable warning hatching, markings and signage as well as implementing a suitable Health and Safety protocol for all maintenance crews accessing these services.

Frequency Rating: ***Occasional*** *Severity Rating:* ***Likely***

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.3.2 Shared Path Access to Petone Foreshore Path — Minor

The shared path has been designed hard against the Access Road to the Water Ski club in the area to the west of the Korokoro bridge and South of the Water Ski Club Buildings. However, there is opportunity here to fully separate the shared path from the access road by creating a meandering path through the large currently grassed open space between the access road and the shore.

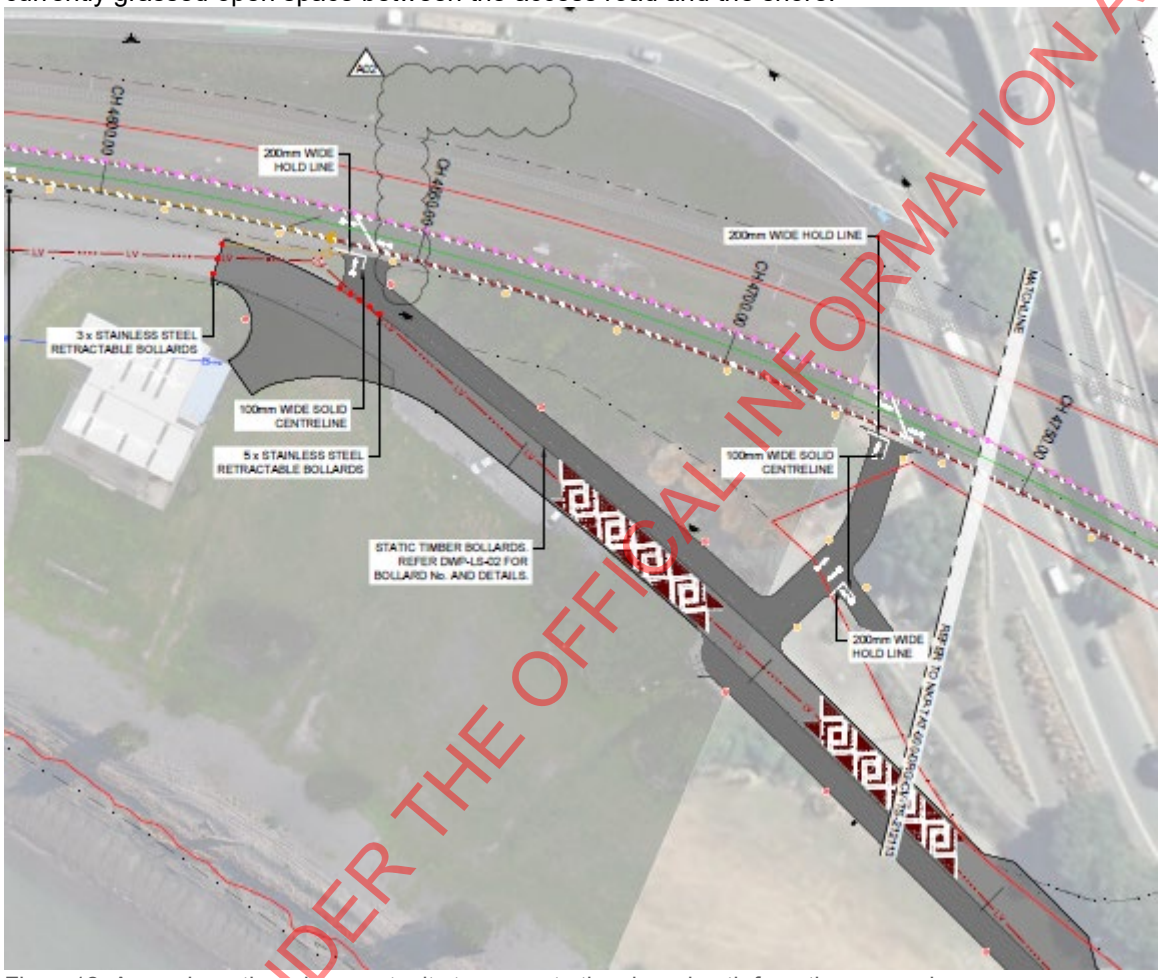

Figure12: Area where there is opportunity to separate the shared path from the access lane.

Recommendation:

Separate the shared path from the access lane through this large open space area. There is also an opportunity in this area to separate the cyclists from the pedestrians. Possibly consider a separate bridge for the shared path users also to further increase safety measures.

Frequency Rating: ***Occasional*** *Severity Rating:* ***Likely***

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.3.3 Crossing Point of Access Lane **Moderate**

The shared path crosses the existing access lane in order to access the Petone foreshore path. This is a conflict point between vehicles using the access lane and shared path users. It is not clear in this design who has priority therefore will create confusion for users and thereby increasing the risk of collision between users.

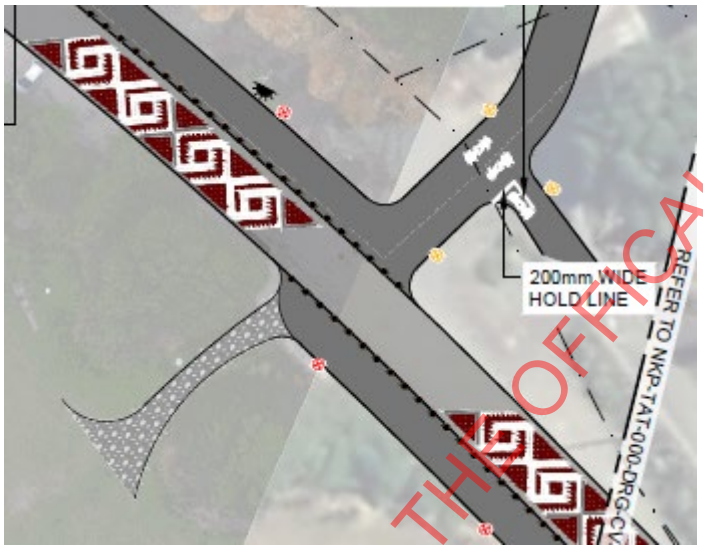

Figure 13: Crossing point of Access lane by shared path

Recommendation:

Consider making this a raised platform crossing with shared path user priority and all vehicles must give way.

Frequency Rating: ***Occasional*** *Severity Rating:* ***Likely***

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.3.4 Boat Ramp Access

Significant

The proposed boat ramp access appears to have limited area for car and trailers to make turning and reversing manoeuvres. Vehicles with boat trailers (especially rowing skiffs) require large amounts of turning space to access the boat ramp. Providing a reduced area for manoeuvring could create issues with conflict with other vehicles and shared path users.

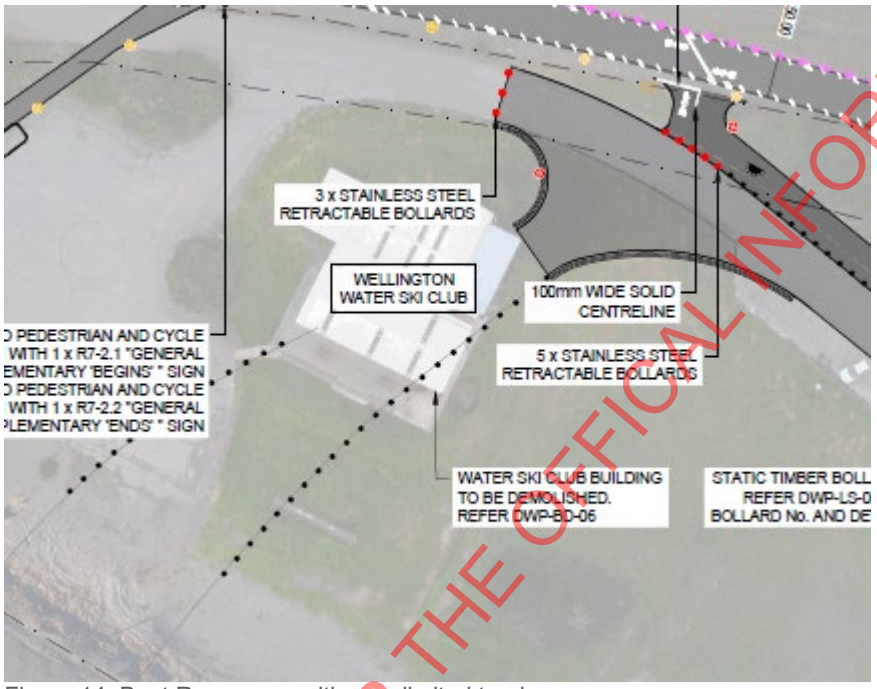

Figure 14: Boat Ramp area with very limited turning space.

Recommendation:

Consider the design and layout of the boat ramp access and provide sufficient turning areas for vehicles and boat trailers / staging areas. Consider long skiff trailers when designing the area.

Frequency Rating: ***Common*** *Severity Rating:* ***Likely***

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.3.5 Parking around the Boat Club Area — Significant

It was evident during our site visit that the Boat Club and Water Ski Club area is a popular destination for people walking their dogs and is likely to become even more popular for people accessing the new pathway. There is limited provision for parking in the reserve area which could result in parking non-compliance.

Figure 15: Foreshore Area around Boat Club is currently a popular location for public to park and walk.

Recommendation:

Provide sufficient parking for both park and ride as well as park and walk users within this area of the shared path.

Frequency Rating: ***Common*** *Severity Rating:* ***Likely***

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.3.6 Crossing Points around Boat Ramp Access Lane — Moderate

This area is a conflict zone with the different users including vehicles on the access lane, cyclists and walkers on the hazard path and other users within the park area itself. This area has potential to cause collisions between all the users.

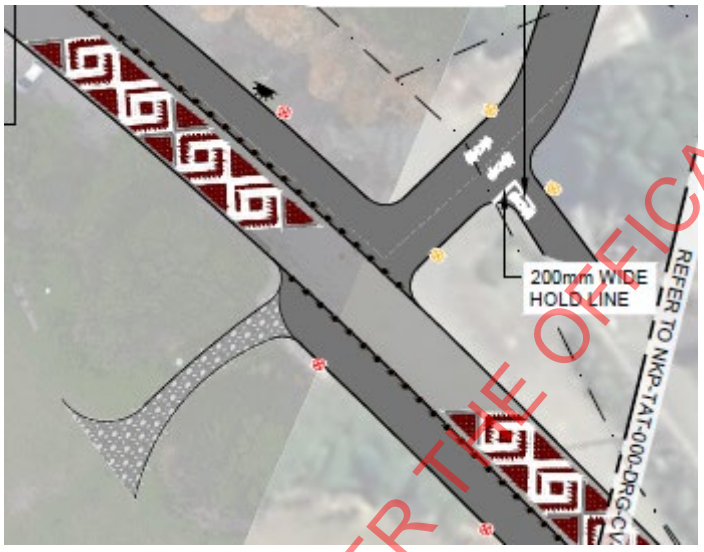

Figure 16: Shared path crossing at boat access road

Recommendation:

Provide traffic calming measures and bollard placement to enable a seamless journey for both pedestrians and cyclists. It is recommended that the option is explored to include a raised platform across the access road to retain the shared path at one level. A raised platform will also encourage slower speeds by car drivers.

Frequency Rating: ***Common*** *Severity Rating:* ***Likely***

Designers Comment:

Safety Engineer:

Decision: ***Client***

Action Taken:

3.3.7 Cultural Pattern Consistency

Moderate

The cultural pattern on the boat ramp access lane is the same pattern that is used throughout the shared path route. This creates confusion for the users and could cause shared path users to think that they are on the shared path when in fact they are on the access road.

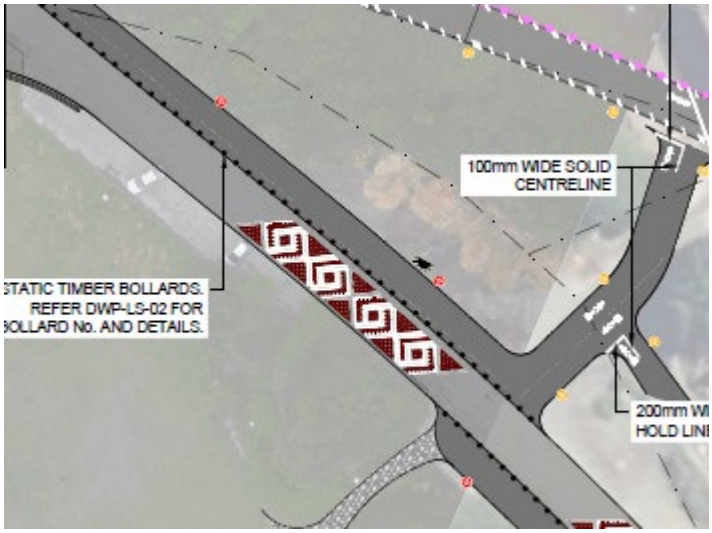

Figure 17: Cultural Marking on Access Lane (also used on shared path)

Recommendation:

Ensure that there is clear differentiation of the surfacing texture and patterns between the shared path and vehicle access lanes.

Frequency Rating: ***Common*** *Severity Rating: Likely*

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.3.8 Connection Pathway to Honiana Te Puni

Moderate

The connection pathway between Honiana Te Puni Reserve and the Hutt Road connection also provides a link to the Pito-One off ramp overbridge. There is a risk of people descending the ramp and approaching the pathway intersection at speed and crashing with other users.

Figure 18: Ramp from connecting pathway to Hutt Road with potential speed issue.

Recommendation:

Suitable markings and signage should be installed to mitigate the above described risk. Consider the use of centrelines at the intersection to provide visual cues to users to keep left.

Frequency Rating: ***Common*** *Severity Rating: Likely*

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.3.9 Boat Ramp Access Lane Gate Hours — Moderate

The boat ramp access lane gate hours are identified on the gate which will provide access to the shared path. However, the shared path will be available 24 hours a day.

Recommendation:

Ensure that the gated area will be changed to allow for 24 hour access for people walking and cycling.

Frequency Rating: ***Common*** *Severity Rating: Unlikely*

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.3.10 Existing Pedestrian Bridge within Honiana Te Puni Reserve — Comment

The safety audit team support the replacement and widening of the existing 2.1m wide bridge in Honiana Te Puni Reserve. While the existing bridge is in reasonably good condition, it is narrow and could cause conflict issues between users as the demand along the route increases.

Figure 19: Existing pedestrian bridge within Honiana Te Puni reserve

Frequency Rating: ***N/A*** *Severity Rating: N/A*

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.3.11 Underpass Environment **Significant**

The existing path within the Honiana Te Puni reserve is an isolated area which has no passive surveillance, no lighting, no readily available escape routes, is a high noise area from nearby trains and traffic, has graffiti and torn posters, which all combine to create an intimidating environment for users, particularly after dark.

Figure 20: Existing intimidating environment below underpass

Recommendation:

We recommend that there is design intervention through this area to provide a non-intimidating and well-lit environment.

Frequency Rating: ***Occasional*** *Severity Rating: Unlikely*

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.3.12Underpass Corner Moderate

There is an existing tight corner with very limited visibility to oncoming path users. This has the potential to cause collisions between path users particularly with fast moving cyclists and other cyclists or pedestrians.

Figure 21: Existing tight corner below underpass

Recommendation:

Improve sight distance through path realignment, include low planting as well as integrating surface markings and signage to provide visual cues for direction of travel and amount of separation.

Frequency Rating: ***Occasional*** *Severity Rating: Unlikely*

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

3.3.13 Existing trees at connection point with Melling Shared Path — Minor

The existing trees near the connection point with the Melling Shared path (currently under construction) have caused an uneven path surface along the existing shared path adjacent to Hutt Road.

Figure 22: Existing uneven path adjacent to Hutt Road.

Recommendation:

Consider widening the path towards the railway line and retain the trees within a garden strip to prevent further unevenness.

Frequency Rating: ***Occasional*** *Severity Rating: Unlikely*

Designers Comment:

Safety Engineer:

Client Decision:

Action Taken:

4 Audit Statement

We certify that in carrying out this audit we have inspected the site and used the drawings and documents listed in **Section 1.4**. We have endeavoured to identify features that could be modified or removed in order to improve safety, although it must be recognised that safety cannot be guaranteed since no road can be regarded as absolutely safe.
The problems identified have been noted in this report together with recommendations that should be studied for implementation. Readers are urged to seek further specific technical advice on matters raised and not rely solely on the report. Where recommended actions are not taken, this should be reported in writing, providing the reasons for that decision.

Signed s 9(2)(a) ..... Date: 5 September 2022
s 9(2)(a), Senior Technical Director, Civil Engineering (Beca)
Beca, Christchurch

Signed: s 9(2)(a) ..... Date: 5 September 2022
s 9(2)(a) Associate Landscape Architect (Beca)
Beca, Christchurch

Signed: s 9(2)(a) ..... Date: 5 September 2022
s 9(2)(a) Associate Civil Designer
Beca, Wellington

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 incorporation decision to Designer, Safety Audit Team Leader, Safety Engineer and project file ***Date:*** Click here to enter a date.

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