15TH AVENUE CORRIDOR IMPROVEMENTS

PREPARED FOR TAURANGA CITY COUNCIL

23 July 2019

WSP | OPUS Stantec

This document has been prepared for the benefit of Tauranga City Council. No liability is accepted by this company or any employee or sub-consultant of this company with respect to its use by any other person.

This disclaimer shall apply notwithstanding that the report may be made available to other persons for an application for permission or approval to fulfil a legal requirement.

QUALITY STATEMENT

PROJECT MANAGER

[redacted]

PROJECT TECHNICAL LEAD

[redacted]

PREPARED BY

[redacted]

CHECKED BY

Refer to Auditors Statement in Section XXX

REVIEWED BY

APPROVED FOR ISSUE BY

CHRISTCHURCH
Hazeldean Business Park, 6 Hazeldean Road, Addington, Christchurch 8024
PO Box 13-052, Armagh, Christchurch 8141
TEL +64 3 366 7449, FAX +64 3 366 7780

REVISION SCHEDULE

Rev No.	Date	Description	Signature or Typed Name (documentation on file)			
			Prepared by	Checked by	Reviewed by	Approved by
A	29/7/19	For Client Comment	[redacted]	[redacted]		[redacted]

Executive Summary

Overview

Tauranga City Council have recently let a tender for construction for the Stage 1 development of the 15th Avenue Corridor Improvements.

Through a recent review of Major Projects, it was identified that there was a need for a better understand the impacts of the proposed work in the 15th Avenue corridor.

As a guidance to the process, the reader is advised that the SANF Audit is a process of project review that includes the usual elements of a Road Safety Audit but also takes a detailed account of other elements that are not normally considered by a traditional safety audit team and include, Vunerable Road users, impacts on adjacent properties and land uses, and wider network effects including network capacity.

Findings

The following items reflect a summary of the findings of the SANF Audit Team. Full details are provided within the body of the report and should not be read in isolation to the complete report.

The findings are:

- In reviewing the information presented to the audit team, and enquiries undertaken via the Council website, the SANF audit team can only conclude that there is not a clear, consistent and uniform understanding of the projects purpose.
- Based upon the material presented to the audit team we consider that this key messaging may have been lost on the community.
- The audit team comment that at face value, with the experts having confirmed that the proposed design for congestion easing for the PM peak, the project may achieve the improvements to the local area only at this stage.
- The auditors strongly advise that the constraints and congestion effects currently experienced over the Turret Bridge will in all likelihood remain.
- From the material presented, and the discussions undertaken, albeit limited due to time constraints, the team have concerns that the overall purpose of this project on the operation of the greater network is somewhat unknown. Changes proposed through other projects such as the Cameron Road PT Corridor works, the 15th Avenue to Takitimu Drive connection, and indeed the greater network aims and goals will have an impact on the effects on 15th Avenue improvements.
- We do note that the future stages of the project may require the formation of a High Occupancy Vehicle (HOV) lane in the southeast direction (towards Turret Bridge). If a T3 / HOV lane (three or more occupants) is to be formed in the future, this will require extensive engagement with the community to change their travel patterns. The maximum gains for a HOV lane will only be realised if the community shift to shared travel.
- In undertaking this review the audit team has not seen any community communication that gives sufficient indication of the desired change. That is not to say that it has not been undertaken, more it reflects that the information has not been conveyed to the audit team.
- The audit team have concerns that in the absence of detailed sections with known service depths shown, there is a possibility that the new path will either intercept the underground service, requiring a service relocation, result in inadequate cover over essential services, requiring either a high cost capping system (if possible and acceptable to the service providers), or the relocation / deepening of the service to achieve the required cover. If any of the above are not acceptable to the service provider, there runs a serious risk that the construction will be compromised for longitudinal and transverse cross-fall of the new path, which could be a hazard for users on mobility scooters and children.
- The audit team note that locations such as the Scantlebury Street intersection will require extensive cut to achieve a shared path gradient that is acceptable to mobility impaired users.
- The auditors note that the intent of the 15th Avenue / Grace Road design is also to prevent a right turn in movement from the northbound direction along 15th Avenue. The plans detail the inclusion

of "No Entry" signs on the island. At peak times these signs will not be visible to the traffic in the opposing traffic lanes (northbound).

- Given the open nature of the intersection, and the provision of a flush median island in the centre of 15th Avenue, we consider that there remains a risk that the right turn movement / crossing movement could still be undertaken. In this instance and observing normal driver behaviours along 15th Avenue during the site inspection, it seems common that the traffic (when slow moving) opens to allow turn movements.
- Given our current lack of clarity around future staging of the subsequent projects, we believe that all identified safety hazards should be removed from the design in the first instance. The concerns of the auditors are that a vulnerable user could be caused to fall from a longitudinal join, and projected out into the adjacent traffic lane. At times through the day this lane will run at normal operating speed, and hence the risk of serious injury is high.
- We note that a conscious decision has been made to continue with the original proposal for add-on formations to achieve the desired shared path width. In this context, we stress that this decision will require regular and on-going assessment of the formation to ensure that a longitudinal lip does not develop.
- There may be an opportunity to take the shared path along Mayfair Street (a potential shared street design) and linking to the existing path network east to Turret Road as it adjoins the harbour and west to the path network linking to 18th Avenue
- The new signalised crossing proposed at the Burrows Street intersection could assist with cyclists crossing a multi-laned 15th Avenue, however, an improvement to the phasing to allow cyclists crossing movements may increase the ability of drivers to exit from Burrows Street (east) thus negating the considered reduction for the rat-run currently prevailing from 14th Avenue and 13th Avenue. Overall this may result in little nett benefit.
- Through this review, we have identified locations and elements that would enhance the streetscape amenity values of the area. These are discussed further within the report.

More site specific issues are presented within the report.

Abbreviations

SANF	Safety Audit and Network Functionality
CPTED	Crime Prevention Through Engineering Design
RSA	Road Safety Audit

Glossary

Enter Term	Enter Definition

Tauranga City Council

15th Avenue Corridor Improvements

CONTENTS

LIST OF TABLES

No table of figures entries found.

LIST OF FIGURES

APPENDICES

1. Introduction

Tauranga City Council have recently let a tender for construction for the Stage 1 development of the 15th Avenue Corridor Improvements.

Through a recent review of Major Projects, it was identified that there was a need for a better understand of the impacts of the proposed work in the 15th Avenue corridor.

As a guidance to the process, the reader is advised that the SANF Audit is a process of project review that includes the usual elements of a Road Safety Audit but also takes a detailed account of other elements that are not normally considered by a traditional safety audit team and include, Vunerable Road users, impacts on adjacent properties and land uses, and wider network effects including network capacity.

1.1 Purpose of Report

This report details multiple issues that have a high level of inter-relationship within the design. The reader is directed to review the comments in all sections prior to responding to an issue. The Audit Team stress that no single element can be read in isolation.

The report contains elements of a technical nature. The reader is directed to seek advice from technical specialists to understand the nature and implications of an issues presented.

2. SANF Rating System

The team have given each issue a rating in relation to the suitability of the current design or detail within the report for public consultation. The rating is as follows:

GREEN The issue is a comment only by the team, and while additional information or detail may be warranted on the issue in the future the current scope in the scheme report may be adequate for consultation.

ORANGE The issue is of relative significance, it may have already been considered but not detailed within the report and the team believe that additional information or discussion should be input into the report to clarify and correctly analyse design options.

RED The issue is a serious concern and needs to be resolved prior to consultation. RED issues are considered to have a significant impact on the successful execution of a safe and efficient facility that is fit for purpose.

To assist the reader the report utilises a quick reference icon-based system to allow the reader to identify the elements of Road Safety, Functionality and Streetscape that an issue relates to. This identification system is utilised as follows:

 Road Safety

 Functionality

 Streetscape

3. General Comments

3.1 SANF Audit Teams Understanding of the purpose of the Project

From the discussions with the project teams, the SANF audit teams (audit team) understanding of the project is as follows:

- The formation of a T3 lane (bus and vehicles with 3 or more persons) inbound (towards Cameron) for morning peak, between Mayfair Street and Scantlebury Street. This is formed to allow better progression of the bus and HOV in the AM peak.
- The formation of two general traffic lanes outbound in the evening peak, towards the Turret Bridge. This widening will be constructed for the section commencing opposite the Alexander Street intersection, through to opposite the Mayfair Street intersection. The operation of these lanes will require drivers to stop behind a bus in the left-hand most through lane, when the bus is discharging or picking up patrons. During this time, drivers following the bus will be required to stop in their lane until the bus proceeds again down the road. The audit team were supplied data on the frequency of the bus stopping in the lane, and that indicated that there were few buses that would stop within peak times. It is the experience of the audit team that the expected stoppage time would typically be around 15 – 20 seconds. This is formed to offer improvements to the PM peak for traffic leaving the city.
- The closure of the Turret Road intersection is to reduce the conflicts and delays caused due to traffic rat-running through the local residential community. The audit team applaud this action, as it has the potential to return the local streets back to ones of a more residential amenity.
- Associated with the formation of the through lanes, it is further understood that there will be restrictions placed, either physically or through signal phasing, that will control the access from the local side roads, further deterring the rat-run movements through the local streets.
- The operation of the Burrows Street lights is understood to be critical to the overall effect expected to be gained from the road layout change, and the reduction in through traffic on the local side roads. This is typically controlled through the traffic signal "personality", a mechanism that allows the signals to run for specific time phases to achieve the desired outcome.

Failure to apply a restrictive signal personality may result in traffic still utilising 13th Avenue and 14th Avenue as a rat-run to gain access to the Burrows Street signals. In this instance the project may have limited improvement to the residential amenity of the local streets.

The audit team note that the Project Review undertaken (Report: 21 May 2019) recorded that he project managers advice was that the purpose of the project was:-

"The prime purpose of the current project is to reduce travel times in the evening peak for traffic leaving the City via 15th Ave."

3.2 Project Purpose

A review of the Tauranga City Council website has the following details on the purpose (aim) of the current project. The details are:

The challenge of 15th Avenue

- It is an arterial road that functions as the main link between the city and Welcome Bay, Maungatapu, Hairini and Ohauiti
- Morning and evening peak times are busy
- The side roads and intersections cause the biggest disruption to travel times for people who are moving along 15th Avenue.

Short-term plans: Stage 1

Aim:

"We want to get more people moving easily and safely through and across the available travel space. We're planning to do this by widening 15th Avenue and adding new features to it.

This work will fit in with future plans for the larger network, involving plans for Turret Road, Devonport Road and Cameron Road."

Focus:

"The focus of Stage 1 is reducing travel time in the evening peak, and creating a safer path for pedestrians to get along the 15th Avenue network."

Associated to this, the following description is given on the next stage.

Longer term plans – Stage 2

The proposal:

- *Traffic lights at the 13th Avenue/Fraser Street and 17th Avenue/Fraser Street intersections. The improvements to these intersections will occur as a first step of Stage 2. Traffic modelling work is currently being undertaken to determine how the traffic lights will operate and their impact on the wider road network in this area.*
- *Car pooling and bus lanes – to help make bus trips more reliable between the city and Welcome Bay, Maungatapu, Hairini and Ohauiti*
- *Separated shared pathways – to offer a safe bike journey into the city*

Timing: *This will be a lengthy and disruptive piece of work. When we widen the road we'll also need to shift a lot of underground services. We need to time this work carefully so that it doesn't clash with the Baylink project. Having two major construction projects underway at the same time along two major transport routes will create a lot of disruption.*

The information presented in Section 3.1 and Section 3.2 has lead the SANF team to conclude that there is not a clear, consistent and uniform understanding of the projects purpose.

3.3 Project Communications

It is understood that this project has had consultation with the community, and a summary is detailed in the Tauranga City Councils project website. This details the following:

Community feedback

"We asked people for their thoughts about our proposals for 15th Avenue and have since been reviewing the project in light of everyone's feedback. The feedback we received included:"

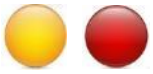
- *General support for closing down the Turret Road access onto 15th Avenue and making Burrows Street a signalised intersection.*
- *Concerns about safety for people using the 13th Avenue/Fraser Street intersection and the need for this to be signalised to improve access for residents.*
- *General support for physical separation of people from other traffic.*
- *Many comments about the Hairini Bridge and Turret Road in regards to potential for 3-lanes or 4-lanes.*
- *A balance of opinion about whether work on Stage 2 should be carried out immediately or whether Council should wait until the Bayfair/Baypark works are completed.*

The audit team have noted that a lot of the communication has been around the purpose of the project, and the changes that are planned for the route under Stage 1. The communication also details how Stage 1 will fit into the bigger picture.

The audit team have concerns that the key messaging that the community require to understand the proposed project, is that there will need to be changes in behaviour to maximise the usage of the HOV lane. In this instance, clear and concise communications should be given to the community on the need for users to collaborate and change their travel by carpooling or shared travel to maximise the congestion reduction achievable through the implementation of high occupancy vehicles lanes.

Based upon the material presented to the audit team we consider that this key messaging may have been lost on the community.

Recommendation(s)



1. Council should undertake a strong messaging program on the expectations of the Council on the community need to change to shared travel arrangement / high occupancy vehicle use.

Designer response	The design team were involved in multiple community engagement exercises with TCC at which we discussed the design and the short / long term project objectives with the public. We provided design plans and diagrams for stage one and longer-term options that were distributed at these events, discussed with the public and provided on the TCC website. We understand TCC hold a record of all of the engagement activities.
Safety Engineer comment	NA
Client decision	Substantial engagement with community has been completed.
Action taken	Regular updates to community and elected members throughout project. Further refinement of comms plan and ongoing review of this plan to take place throughout during of the works to ensure continued improvement is maintained.

3.4 Capacity – Nett Gain Effects

In reviewing the project design, and discussions with the design team and council staff, the audit team was mindful to understand the outcomes that the project was desired to address.

In regard to this, the audit team sought clarity on the modelling undertaken to date, and the nett effects that the project would have. These discussions confirmed that the purpose for the project was to ease the PM peak traffic movement, but it would not eliminate the issue.

The audit team asked questions of the modelling experts on the effect of the inline bus bay operation, given the headway (time between buses), and the anticipated traffic volumes.

The audit team has been reassured that these issues have been included into the model, and that the expected congestion easing is achievable with the design.

The audit team undertook a search on the internet and the links below (not all inclusive) are related to the 15th Avenue project:

https://www.nzherald.co.nz/bay-of-plenty-times/news/article.cfm?c_id=1503343&objectid=11998817

https://www.tauranga.govt.nz/our-future/projects/transportation-projects/15th-avenue-corridor-improvements?utm_source=Media+list&utm_campaign=a44cfdd1c5-EMAIL_CAMPAIGN_2018_05_29_03_14&utm_medium=email&utm_term=0_b789258929-a44cfdd1c5-127535673

The audit team comment that at face value, with the experts having confirmed that the proposed design for congestion easing for the PM peak, the project may achieve the improvements to the local area only at this stage.

The auditors strongly advise that the constraints and congestion effects currently experienced over the Turret Bridge will in all likelihood remain.

The audit team lead has had discussions with the modellers on the effects of the project on the greater network, both with Stage 2 of this project, and with regards to the linkage to the Cameron Road / 15th Avenue intersection, and beyond.

From the material presented, and the discussions undertaken, albeit limited due to time constraints, the team have concerns that the overall purpose of this project on the operation of the greater network is somewhat unknown. Changes proposed through other projects such as the Cameron Road PT Corridor works, the 15th Avenue to Takitimu Drive connection, and indeed the greater network aims and goals will have an impact on the effects on 15th Avenue improvements.

We do note that the future stages of the project may require the formation of a High Occupancy Vehicle (HOV) lane in the southeast direction (towards Turret Bridge). If a T3 / HOV lane (three or more occupants) is to be formed in the future, this will require extensive engagement with the community to change their travel patterns. The maximum gains for a HOV lane will only be realised if the community shift to shared travel.

It is imperative that good communications are sent to the community outlining the purpose, and operation of a HOV lane, along with the need for transfer from single occupant travel to multi-occupant travel to make this work.

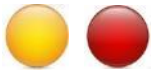
The audit team notes one of the recommendations of the review (Report to the Projects, Services & Operations Committee 25 June 2019 (ID A10212152)) was to – "*Develop an engagement and risk mitigation plan, undertake a SANF.*"

The information on the Councils web site, and the project managers views of the projects purpose are not joined up with the engagement and risk mitigation plan, there is a risk that the project may not deliver the intended outcomes.

In all of the documentation presented to the auditors, we have not seen any reference to a longer term use of the additional lanes as HOV lanes. There seems to be various views and understandings on when / if the additional lanes will be formed as HOV lanes, if at all.

In undertaking this review the audit team has not seen any community communication that gives sufficient indication of the desired change. That is not to say that it has not been undertaken, more it reflects that the information has not been conveyed to the audit team.

Recommendation(s)



1. Careful consideration should be given to the overall benefits that this project will provide, when considering the greater network desires and goals.
2. Council should undertake a strong messaging program on the expectations of Council on the community's need for change to travel habits for this road lane change to work.

Designer response	A separate detailed transport modelling report has been provided to TCC on this topic.
Safety Engineer comment	Agree with the audit findings re managing perceptions of benefits. Project selling should not focus on overall efficiency gains but on network management, e.g. managing rat running and improving facilities for peds cyclists and bus passengers.
Client decision	Key messages have been changed prior to releasing to public
Action taken	Travel movements along 15th ave will be monitored during and post construction.

3.5 Shared Path Design – Underground Services

In reviewing the supplied tender drawings, the audit team note that there are extensive underground services along the road shoulder, in the vicinity of the new shared path.

The audit team noted the typical cross sections as detailed in sheets 3934934-CA-021 to 023 provide generalised cross sections at isolated locations. The auditors requested additional information such as cross sections at say 20m centres to better understand the impact of the shared path design on the existing underground services. The team was advised that further detail was not available.

We therefore make the following comments in a general nature and would seek clarification from the design team as to assumptions made, and confirmation of the proposed designs impact on services.

The audit team note that the isolated cross sections do not indicate the depth to any underground service within the road section. The team also notes that in locations (possibly outside these typical sections) the impact of the new shared path system would have a greater impact on the road shoulder. Our assumption has been based upon the projection of the existing road lane slope, across the shoulder at the same gradient, to meet the new kerb edge.

From that point, the team tried to assess the potential cut required to allow the formation of the new shared path.

The audit team have concerns that in the absence of detailed sections with known service depths shown, there is a possibility that the new path will either intercept the underground service, requiring a service relocation, result in inadequate cover over essential services, requiring either a high cost capping system (if possible and acceptable to the service providers), or the relocation / deepening of the service to achieve the required cover. If any of the above are not acceptable to the service provider, there runs a serious risk

that the construction will be compromised for longitudinal and transverse cross-fall of the new path, which could be a hazard for users on mobility scooters and children.

The audit team note that locations such as the Scantlebury Street intersection will require extensive cut to achieve a shared path gradient that is acceptable to mobility impaired users.

We agree with the previous RSA auditors (p8) that the "constructability of the shared path needs additional detail to accommodate the existing berm topography and existing low walls".

Figure 3-1: Scantlebury Street intersection. Shared path requires flattening to achieve appropriate gradient for mobility impaired users.

Figure 3-2: Large telco pit at Scantlebury Street intersection that has not been identified for lowering. The designed path will not achieve required gradients for all users.

Issues around service location and the proposed design are also discussed in the following site-specific sections. The reader is directed to review the whole report to achieve a full understanding of multiple interrelated issues.

Recommendation(s)

1. The designers should undertake sufficient investigations to service depths, to confirm any actions required to allow the formation of the proposed shared path, and to minimise any expensive service relocations.

Designer response	Services outside the road widening are not expected to be impacted as the design is not significantly changing ground levels. The gas line has been identified as a risk because it is close to the new kerb line and pot holing was completed to check for clashes. It is noted in the contract that service location is to be undertaken on site as an initial stage of the work to confirm service locations. The path at Scantlebury Street is designed to avoid the telco pit. The width of the path may reduce to 2.3-2.4m alongside this structure. The wider path in this area will be an improvement on the existing narrow footpath. TCC could consider rebuilding the full width of the shared path in this area up to the driveway to provide a lower gradient and crossfall, although noting the need to tie into a Scantlebury Street that is sloping away from 15th Ave. Our review of asbuilt service information shows that there are likely none near the surface, therefore regrading of the path is possible. If TCC agree with this approach we can prepare a revised design detail for this section of the path with the objective of making it at least no worse than existing.

Recommendation(s)	 
Safety Engineer comment	Accept designer's response. Recommend further investigating reconstructing the shared path from the first vehicle crossing northwest of Scantlebury St. This 11m length may enable improved grades to be achieved and provide a high quality surface for slowing and manoeuvring. Would be an overall improvement from existing.
Client decision	Agree with designer response.
Action taken	Further investigation during construction may allow for minor gradient improvements, however this cannot be confirmed until works commence.

3.6 Lighting

The auditors note that there was not a site-specific lighting plan supplied. The auditor's comment that a specific lighting assessment should be undertaken (if not already) to ensure that the required illumination levels are achieved on both the traffic lanes, and the shared path system.

Designers response: lighting design has been completed for the Burros St intersection. The design is not significantly changing the road environment. Lighting design has been provided to TCC

4. Site Specific Comments

4.1.1 Cycle Lane Departure onto Off Road Path

Moderate

The proposed cycle crossing from the on-road cycle lane on to shared path (north side) is too direct and requires the cyclist to make too sharp a turn. The more acute the turn the less likely a cyclist will be inclined to use the shared path as intended. The drawings show a high angle of departure for cyclists traversing from the on-road facility to the off-road facility, as shown in Figure 4-1below.

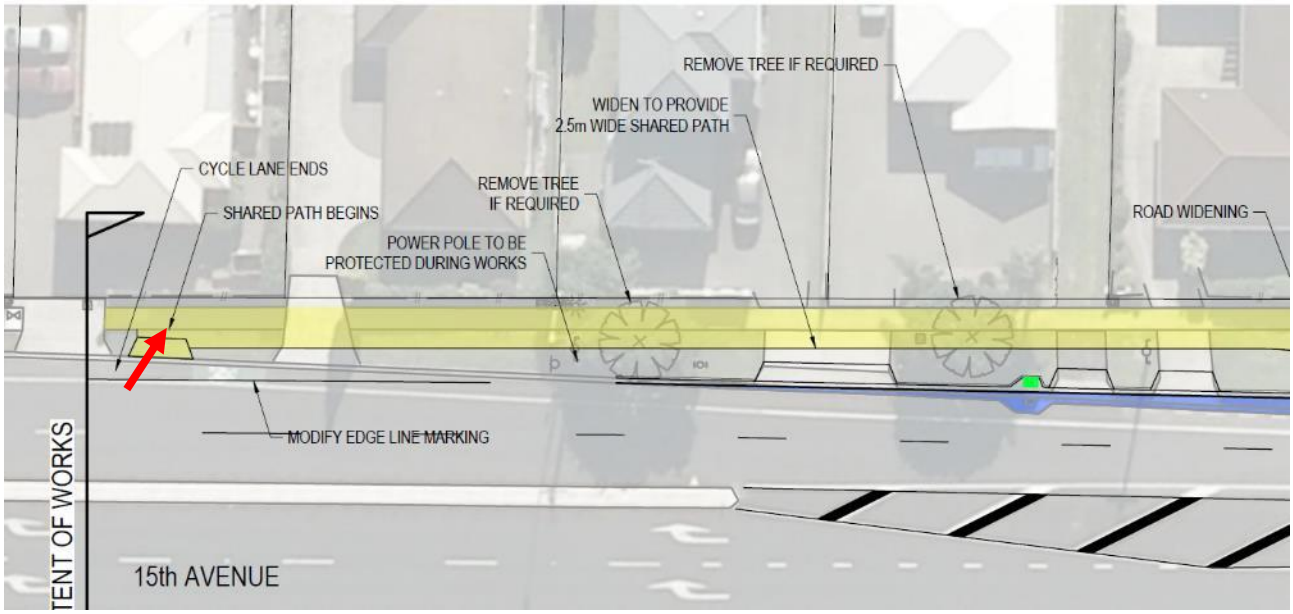


Figure 4-1: Departure angle proposed in design

A high angle departure associated with a low nib at the back of the channel (typically 25mm at a cut down) can result in the wheels of bike being pushed sideways due to the angle of approach. This could result in a cyclist tipping into the adjacent traffic lane.

A safer more user-friendly alternative will require a longer transition from on-road to shared path and appropriate channel modifications to reduce the risk of cycle wheels being caught in the crossing cut-down.

Recommendation(s)

1. Realign cycle lane transition from road to shared path to a less acute angle. Provide a construction detail of how the transition kerb cut-down will minimise any potential risk of wheel trap hazard.
2. Redesign the crossing point to a shallower angle, with a full dished channel without the nib typical of a kerb cutdown.
1. Reconsider location of shared path meeting the existing cycle lane – move further east to minimise the need for extra, and narrow, cut down.

Frequency Crashes are likely to be common	Severity Death or serious injury is unlikely	Rating The safety concern is moderate
Designer response	Note on drawing #11 describes a 3m wide crossing to shared path with no lip as per T440 noted in drawing CA-011. We consider the design suitable for cyclists to make a controlled manoeuvre onto the shared path at an appropriate speed.	

Recommendation(s)

Safety Engineer comment	Agree with designer response. 3m wide crossing with no lip is a high standard of facility no change required.
Client decision	Agree with designer response
Action taken	Width can be revised onsite if required, with approval from Engineer.

4.1.2 Existing Citrus Trees - #103 A 15th Avenue

MINOR

Two existing mature grapefruit trees (Citrus x paradisi) are noted on the plans for removal. These existing trees form an important, and unique, part of the streets amenity values on a street otherwise quite sparsely planted with trees of this scale. Given the lack of fruit on the ground under them it can be assumed they are also a local food source for the community.

An existing tree (Gordonia axillaris) on the north side of the street immediately south of the shared path crossing to the south side will potentially needed to be removed if the proposed shared path cuts into the drip-line area of the tree.

These trees are shown on the plans as being "Remove tree if required".

It is the opinion of the auditors that the proposed path behind the trees will be too narrow for the shared path use, especially when considering the proximity immediately adjacent to the boundary fence. Having a shared path this close to a high fence results in a driver coming out of a driveway failing to see a vulnerable road user traversing along the shared path. This includes cyclists and mobility impaired / visually impaired. This could result in a vulnerable road user impacting with a vehicle, with serious injury.

Recommendation(s)

1. Consider the mitigation measures required to address the safety concerns of a vehicle impacting with a vulnerable road user who is traversing along the shared path.
2. Provide an arbourist assessment on the possible damage to the tree by the proposed construction of the shared path. The assessment should include mitigation methods for limiting damage to the trees root zone or if required to be removed the potential for possible relocation.
3. Provide an arborist assessment, on the potential for and value of relocation, to a site ideally within 15th Avenue streetscape.

Frequency Crashes are likely to be occasional	Severity Death or serious injury is unlikely	Rating The safety concern is minor
Designer response	From our observations, the fruit of these trees is left to rot on the ground regularly. Agree TCC could consider relocating the trees. The path in this area is widened toward the road so proximity of footpath to fence is not altered. Shifting the path closer to the road is not possible due to existing power poles. The width of the path allows cyclists to ride on side furthest from the fence when possible. We consider cyclists will be mindful of the five driveways and this risk. Drivers will also be aware of the presence of the path as they will be regular users. TCC could consider an education campaign for residents advising them of the shared path, green marking on the path across driveways, and could also possibly speed bumps on the property side of the shared path in discussion with residents if necessary.	
Safety Engineer comment	From safety perspective removal of the tress is desirable and recommended.	

Recommendation(s)

	Recommend mark shared path across driveways with green paint and consider speed humps across driveways immediately outside property boundary- these could be retro fit if deemed necessary after the path is operational.
Client decision	Agree with tree removal and the use of green or yellow paint on driveways to mark the shared pathway. A campaign to residents and business' along 15th ave regarding shared pathways them is also going to be adopted. If paint and education campaigns prove ineffective, speed bumps may be implemented further down the track.
Action taken	TCC to organise a shared path engagement session with residents and future residents/business' affected.

4.1.3 15th Avenue Pedestrian Crossing Refuge and Shared Path Connection

Moderate

Where the proposed shared path meets the existing footpath at the proposed 3.6m wide kerb crossing point the current plans do not reflect the possible impact of the existing slope up to the existing boundary fence, the possible need for a retaining edge and the impact on the existing service pit levels in this area.

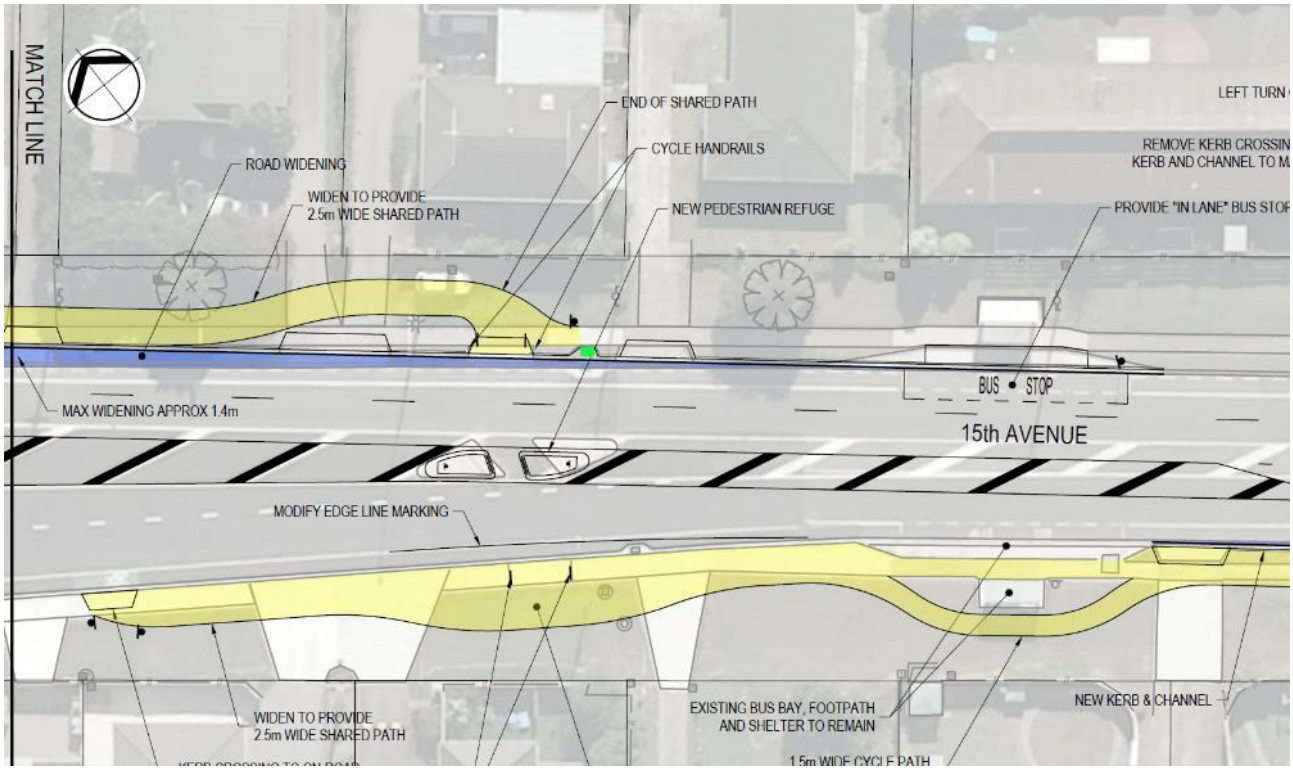


Figure 4-2: Proposed crossing point over 15th Avenue

The design should reflect the actual desire paths of the various user types, and the path adjusted accordingly to reflect these, incorporating any adjustment that is required to maintain effective access to adjacent properties.

The plans indicate that the central pedestrian refuge is to be narrowed (both in length and in width) from that currently installed. The auditors are concerned that the new facility will have insufficient room for a parent with a pram to wait, at an angle that will allow then to view approaching traffic. This could also affect cyclists' available space. Both these situations could result in the user overhanging the edge of the facility, exposed to the oncoming traffic.

Recommendation(s)

1. Review queuing space requirements for bikes waiting to cross 15th Ave at this new crossing point and the impact of bikes waiting to cross the road relative to the space required for pedestrians moving east along footpath.
2. Provide a detailed cross section through this crossing point to show that the proposed path can be constructed to the alignment as shown without additional retaining structures or requiring moving of light pole or services.
3. Review the width of the central pedestrian refuge to ensure that a user can safely wait mid crossing. Special consideration should be given to the use of the crossing by bi-directional cycle movement, parents with prams, and mobility scooter users.

Frequency Crashes are likely to be occasional	Severity Death or serious injury is likely	Rating The safety concern is moderate
Designer response	Agree we can widen the shared path on the north side to provide more space for pedestrians walking around cyclists waiting to cross the road. We acknowledge the possible impact on service pit, this may need to be lowered slightly during construction to suit. We do not consider a retaining wall is likely to be necessary as the height difference is in the order of 300mm across 2m of ground. The refuge is per typical TCC detail at present. We agree widening the through passage so two cyclists can comfortably pass, e.g. 2.5 – 3m width, would be beneficial. We can amend the design in this area to suit.	
Safety Engineer comment	Agree with designer's response. Recommend an increased taper to the end of the path on the northern side of 15th Avenue to create more space behind the hold rails. Recommend increasing the separation of median refuge islands from 2.0m to 2.5m wide.	
Client decision	Agree to wider the refuge to 2.5m width and widen shared path crossing onsite with approval from Engineer.	
Action taken	BECA to amend the design and approve construction onsite.	

4.1.4 Bus Shelter – 15th Avenue (north end)

Moderate

The proposed 1.5m wide cycle path (two way) behind the existing bus stop at #84 15th Avenue is considered to be too narrow and its alignment too extreme for a bi-directional cycleway. Where a poor alignment is formed, a user may continue on a more direct path, in this case in front of the bus shelter. This exposes the bus patrons to the potential for high speed cycle impacts with pedestrians.

Figure 4-3: Existing Bus Shelter. Shared path to traverse to left

Figure 4-4: Ad graphic obstructing intervisibility between users.

The bus shelter is formed with ads on the side panels, eliminating the capacity of a bus patron to observe a cyclist approaching along the front path. The resultant impact, especially if it is an elderly person, could result in serious injuries. It is well known that the elderly have poor capacity to recover from significant injury, with secondary complications often resulting in a more serious outcome.

Recommendation(s)

1. Widen the cycle path width to 2.5m and extend length of curvature around the bus stop to encourage a more intuitive and safer cycle route. The extra length and width recommended for the cycle path needs to reduce the potential that the current alignment has for encouraging cyclists to cycle along a straight line between bus stop and kerb.

Frequency Crashes are likely to be	Severity Death or serious injury is	Rating The safety concern is
Designer response	Agree with the recommendation.	
Safety Engineer comment	Agree with SAT and designer's response.	
Client decision	Agree with recommendation	
Action taken	BECA to amend design as per above.	

4.1.5 Grace Road Intersection – South west side

Significant

The proposal for the shared path extension on the corner of 15th Ave and Grace Road, south side, lacks detail around how the proposed shared path is to be constructed when considering the space around existing service covers, along with the alignment up and across the existing steep gradient.

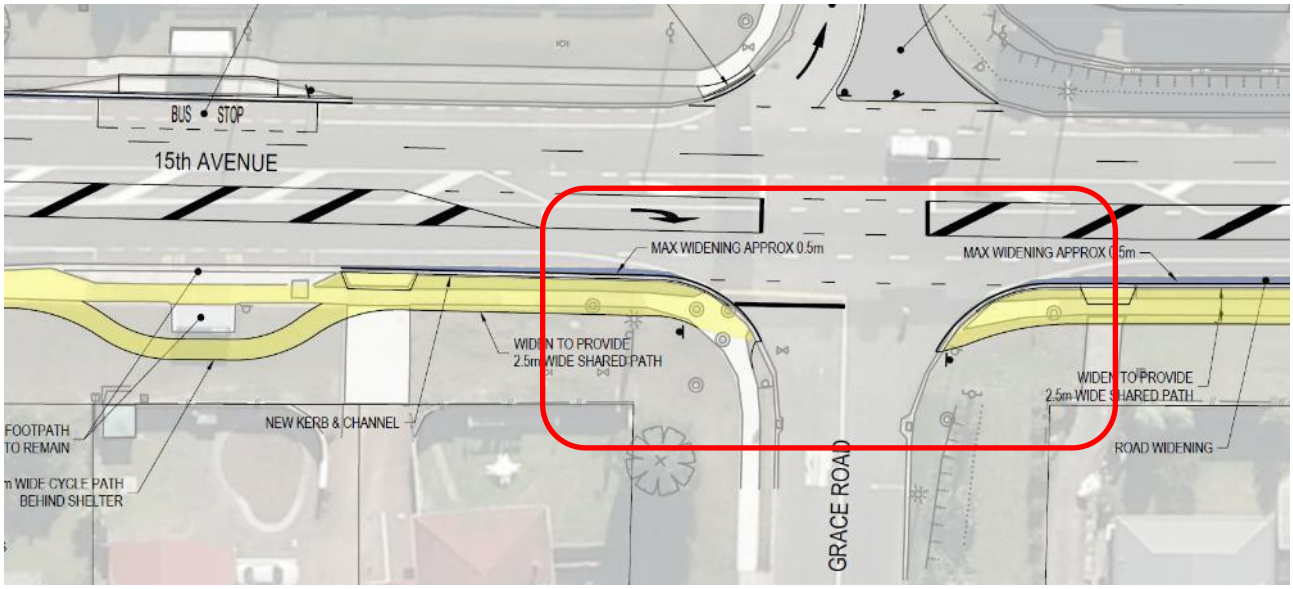


Figure 4-5: Grace Road (West) intersection. Proposed design.

In addition to this – it is best practice to have the crossing cut-down locations over Grace Road formed such that a visually impaired / mobility impaired user crosses the cutdown at as close to a 90-degree angle as possible. In this instance it may require the crossing point to be further down the side road, but final placement needs to be aware of the sight lines required at the crossing location.

Figure 4-6: Grace Road intersection approach. Note vertical curve to be considered to achieve appropriate gradient for mobility impaired users.

Figure 4-7: Grace Road intersection. Crossing points to be as close to square to road as possible for visually impaired users.

Poor guidance for the visually impaired can result in them taking their direction cues from the kerb channel alignment. In the instance as shown in Figure 4-7 above, this would lead the visually impaired out into the adjacent traffic lane. Sight lines are limited at this location due to the cresting vertical curve.

Recommendation(s)

2. Provide detailed sections from east to west side of Grace Road, south side, showing how levels, services and existing signage and light poles will be accommodated.
3. Ensure that the correct guidance is given for the visually and mobility impaired user.

Frequency	Severity	Rating
Crashes are likely to be occasional	Death or serious injury is very likely	The safety concern is significant

Designer response	The gradient of the path is not modified in this area. The design is also not changing the height of the manholes. One additional manhole will be in the new shared path. Additional survey would be required to prepare detailed cross sections. The design largely retains the current ground levels, underground services are not impacted, and above ground services are avoided so we consider there would be little benefit in producing detailed sections. The crossing angle appears to be an existing issue that is not modified by the design. TCC could consider reviewing the corner radii to tighten the entry to Grace if this improves the crossing alignment.
Safety Engineer comment	Agree with designer's response. The issues for visually impaired are not being made worse by the proposal and this not a high demand area for these users. Taking the path too far off the desire line for cyclists and other pedestrians may result in them not using the provided facility. Recommend Investigate tightening the kerb radii. Consider the provision of warning and directional tactile pavers.
Client decision	Agree to investigate tightening the kerb radii.
Action taken	BECA to revise design and come back to TCC for comment/approval. Hold point during forming of kerb to allow for site visit with Engineer and TCC Road Safety Engineer to determine kerb radius.

4.1.6 Grace Road Intersection – Vehicle Movements

Moderate

The audit team note that Grace Road, north side, is to be altered to a left turn in only from 15th Avenue. The team acknowledge that the proposed concrete island will form a lane closure preventing drivers from undertaking a left turn exit on to 15th Avenue.

It is noted that the island is up to 10M wide and 15M long and does not reflect the high amenity streetscape values (wide grassed berms and tree planting) of Grace Road, nor does it add any aesthetic or amenity value to 15th Avenue itself.

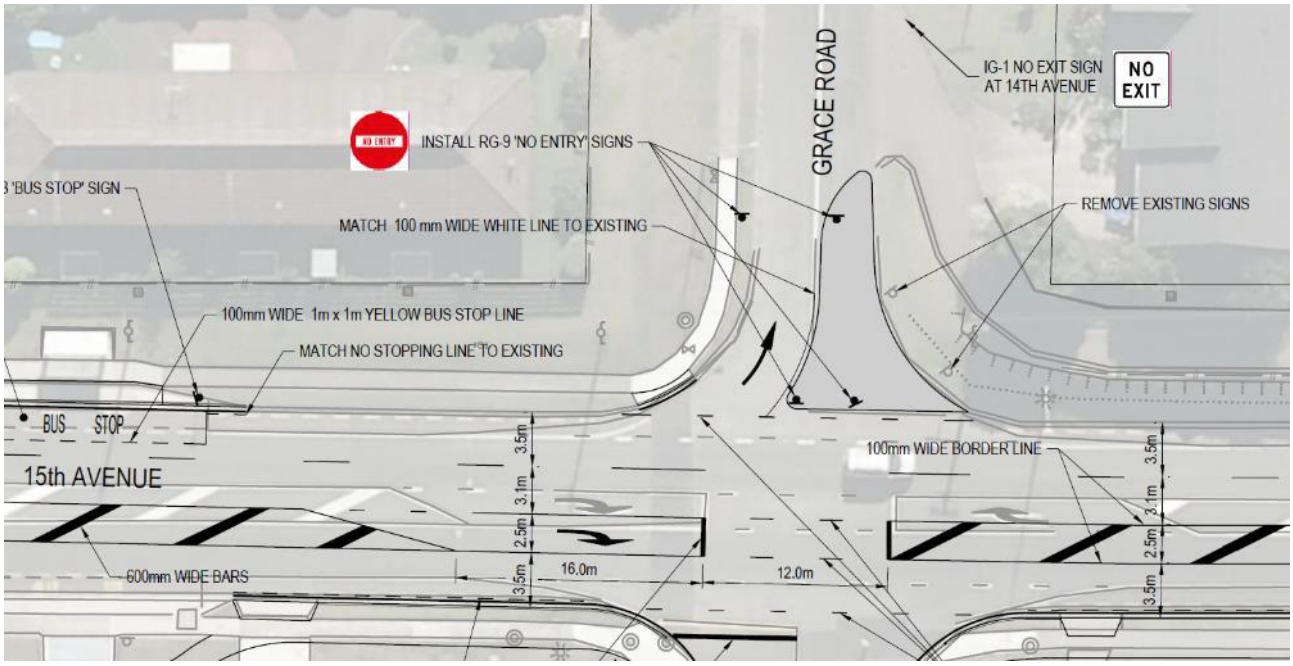


Figure 4-8: Grace Road (east) Intersection. Proposed design.

The team consider that the amenity value of the street could be enhanced with the provision of suitable planting or landscaping.

The auditors note that the intent of the design is also to prevent a right turn in movement from the northbound direction along 15th Avenue. The plans detail the inclusion of "No Entry" signs on the island. At peak times these signs will not be visible to the traffic in the opposing traffic lanes (northbound).

Given the open nature of the intersection, and the provision of a flush median island in the centre of 15th Avenue, we consider that there remains a risk that the right turn movement / crossing movement could still be undertaken. In this instance and observing normal driver behaviours along 15th Avenue during the site inspection, it seems common that the traffic (when slow moving) opens to allow turn movements.

A driver undertaking a right turn in movement from the flush median, and the traffic stream opening a small gap, could result in a turn movement over any cyclist traversing legitimately along the lane on the southbound side. This is known to result in high severity injury crashes for the cyclists.

Recommendation(s)

1. Replace proposed concrete with a combination of planting, trees, and grass.
2. Review the design to incorporate suitable restrictions for the right turn in movement, along with the crossing movement on Grace Road.

Frequency Crashes are likely to be occasional	Severity Death or serious injury is likely	Rating The safety concern is moderate
Designer response	TCC could consider planting or grass in the island however this could create a safety in design risk for maintenance contractors to be mindful of. Alternatively, a cobblestone or other treatment could be considered by TCC. Traffic counts indicate around 10 vehicles per hour turn right from 15th Ave northbound to Grace Road in the peak periods, fewer cross from Grace road south. The design removes the right turn arrow, includes no right turn signage and no entry signs. Most significantly the design provides a protected right turn facility at the Burrows Street signalised intersection that will make it easer to enter the road network north of 15th Ave and should mitigate the need to turn right at Grace Road.	
Safety Engineer comment	Accept designer's response. Monitor operation of intersection post construction and consider further signage if needed.	
Client decision	Agree with response and staged approach to signage post construction	
Action taken	Monitor vehicle movements post construction.	

4.1.7 Shared Path Width

Moderate

The auditors note that for the majority of the project length from travelling northwest from Scantlebury Street, the proposed design requires the existing footpath to be widened (both sides) to achieve the final shared path width of 2.5m. The current proposal is to add typically 300mm wide concrete strips to either side of existing path to create 2.5M wide shared path.

The auditors note that the issue of longitudinal joints, and the potential hazard that they create (especially to cyclists and mobility impaired), has been raised in the previous Road Safety Audit. We concur with the finding of the previous RSA.

We note that the designer response to this issue states that future plans intend to remove this path so a full width path would be "wasted cost".

Given our current lack of clarity around future staging of the subsequent projects, we believe that all identified safety hazards should be removed from the design in the first instance. The concerns of the auditors are that a vulnerable user could be caused to fall from a longitudinal join and projected out into

the adjacent traffic lane. At times through the day this lane will run at normal operating speed, and hence the risk of serious injury is high.

We note that a conscious decision has been made to continue with the original proposal for add-on formations to achieve the desired shared path width. In this context, we stress that this decision will require regular and on-going assessment of the formation to ensure that a longitudinal lip does not develop.

Recommendation(s)

1. If the project team are to proceed with the current proposal for construction, we would stress that a regular and effective assessment of the shared path be undertaken to identify early any changes in level of the longitudinal joints, and a remedial plan undertaken with urgency to address the issue. This could require the removal of isolated sections and replace with new.

Frequency Crashes are likely to be occasional	Severity Death or serious injury is likely	Rating The safety concern is moderate
Designer response	Agree with the recommendation to monitor the path levels. We could also review the join detail to reduce the likelihood of differential settlement.	
Safety Engineer comment	Agree with the designer's response. Detail to reduce differential settlement should be implemented along with ongoing monitoring.	
Client decision	Agree to review the longitudinal join detail and amend where improvements can be made	
Action taken	BECA to amend path design detail to improve longitudinal joint strength	

4.1.8 Commercial Frontage – North Side (Burrows Street to Turret Road)

Moderate

The previous RSA expressed concern that the shared path (between Burrows Street and Turret Road) was to be constructed immediately behind the proposed kerb line. The recommendation of the RSA was that a separation strip of at least 1M (p8) be formed. We concur with that assessment.

The Designers Response alludes to "property impacts" and a possible painted solution on the kerbside to "direct cyclists to ride more centrally". The proposed solution we believe does not address the safety concerns expressed in the RSA.

Further to this, there are safety concerns raised with the operation of the hire company at the intersection of 15th Avenue and Burrows Street. We agree with the RSA (p12) regarding the need to eliminate or re-design the entry to the retail activity on the corner north-west corner of Burrows Street intersection.

During the site visit it was noted that there were multiple items of large machinery stored outside the fence line, or immediately along the fence line.

Figure 4-9: Burrows Street Intersection – Kennards Hire. Note large machinery within the road reserve.

Figure 4-10: Kennards Hire. Note the large machinery obstructing intervisibility to footpath (shared path) users.

The presence of the large machinery impedes the available sight lines for a driver exiting from the commercial business. With the relocation of cyclists onto the shared path in this area, and given the fact that a driver will have to progress out onto the shared path before they achieve a suitable sight line, there is a risk that a large vehicle will traverse directly into the path of a vulnerable user.

The auditors consider that the current design does not address the underlying vulnerable user safety issues to the level required in a busy commercial area that has a high level of larger vehicles.

Recommendation(s)

1. Undertake a detailed re-design for a suitable treatment that maximises the safety of vulnerable road users along this road section.
2. Provide detailed drawings showing where the paint and / or small speed bumps will be used to mitigate potential risk to cyclists and pedestrians using the shared path through this area.
3. Consider the use of solid coloured surfacing with symbols installed at high conflict crossing to business.

Frequency Crashes are likely to be occasional	Severity Death or serious injury is likely	Rating The safety concern is moderate
Designer response	The shared path in this area (outside #56) could be provided as a footpath only from the signalised intersection onward, as this area is not intended as a cycle route (the cycle route is via Burrows and the south side of 15th ave). The footpath would then be approx. 1m from the kerb. The new footpath will improve the existing situation of no pedestrian facility in this area. The edges of the footpath will be painted, alternatively the full footpath could be surfaced or painted to delineate it as a footpath.	
Safety Engineer comment	Agree with designer's response. The design represents an improvement over the existing situation. The section south of the intersection will all only be footpath and not shared path. Slower speed of peds relative to cyclists reduces user risks.	
Client decision	Agree to paint the path to delineate it.	
Action taken	TCC to engage with business' to discuss existing encroachments into road reserve. Further long term solution to be developed.	

4.1.9 Commercial Frontage – South Side (Burrows Street to Mayfair Street)

Moderate

As with the north side issues identified in Section 4.1.8 above, the auditors note that the design has exiting drivers positioning their vehicles over the shared paths. This would conflict with vulnerable road users along the shared path. We concur with the commentary raised in the previous RSA (refer to Item 2.6; page 11 – designers response version).

The designer's response states that the shared path through the commercial area on the south side of 15th Avenue is to be defined using paint and small speed bumps. While at a conceptual level this is an improvement, the indicated imagery presented by the designer lacks context or awareness of the environment it traverses through. On the south side there is an access to high use commercial business such as service stations etc, along with side roads that have moderate turning volumes, or the use of HCV.

Figure 4-11: Mayfair Street with Service Station access down the side road.

Figure 4-12: Service Station exit / entry onto 15th Avenue. High vehicle movement over proposed shared path.

In this location, the driver will be concentrating on their departure from the traffic lane, often with haste due to the pressure of the following traffic. This results in a high conflict with shared path users, especially cyclists who would be traversing from behind on the drivers rear-left view. Often this view is the weakest to have a driver identify an approaching cyclist due to the B and C pillars of the vehicle, along with the need for a body / neck rotation of the driver. This rotation movement is known as being difficult for the elderly due to a loss of rotational mobility.

The auditors are of the opinion that where the shared path crosses a major access, the resulting conflict zone should be fully coloured, with symbols, to indicate the nature of the users that could be encountered on the shared path, along with the guidance that shared path users could be approaching from both directions.

The supplied drawings have a lack of detail in the drawings with respect to the proposed identification of the desired treatment.

Recommendation(s)

1. Undertake a detailed re-design for a suitable treatment that maximises the safety of vulnerable road users along this road section.
2. Provide detailed drawings showing where suitable painted surfacing (including symbols) and small speed bumps will be used to mitigate potential risk to cyclists and pedestrians using the shared path through this area.
3. Consider the use of solid coloured surfacing with symbols installed at high conflict crossing to business.

Frequency	Severity	Rating

Crashes are likely to be common	Death or serious injury is unlikely	The safety concern is moderate
In the instance of a visually impaired / elderly / mobility impaired / school child being struck, the rating could be SIGNIFICANT		
Designer response	Agree to fully colour the shared path across busy driveways as recommended and install speed treatments on the approach side of the shared path at driveways. We can prepare a design detail for this area if it would clarify the design for contractors.	
Safety Engineer comment	Agree with designer's response	
Client decision	Agree to fully paint the path and begin consultation with the residents/business' in the area regarding speed treatments.	
Action taken	BECA to add full painted path to plans and detailed design drawings. BECA to also organise consultation with the residents/business' Ongoing monitoring post construction to assess potential effects to road users.	

4.1.10 Existing Road Reserve Parking

Moderate

From Burrows Street east – south side – the existing parking in the road reserve is intended to be removed and the shared path delineated with line marking. As discussed in Section 4.1.8 and 4.1.9 above, the auditors observe that on site little care or concern is currently given to parking over footpaths and roadside spaces.

The auditors have reservations that the treatment proposed will fail to eliminate the current practice. This places a vulnerable road user ate risk, with them having to weave in and around the parked vehicles. This is especially problematic for the visually and mobility impaired.

While the pictures below are of a specific location, observations along the road suggest that this is indicative of the general use outside businesses.

From Burrows Street east – north side - existing parking in the road reserve is intended to be removed and the footpath zone delineated with line marking (SAR p14). The auditors note that there is no detail on the width for the proposed footpath indicated on plans.

Immediately southeast of this location a new 1.5M wide footpath is proposed to be constructed to link to the proposed cul-de-sac in Turret Road. Currently the proposal is for the new footpath to be aligned along the back of kerb. This places users in close proximity to dense traffic movements, and the potential for a user to fall into a nearside traffic lane should they lose control, especially mobility impaired, visually impaired or school children on bikes.

Observations on site would indicate that there is suitable space between the existing kerb and the property boundary for this road section to have a vegetated space between the traffic lane and the shared path, also allowing some amenity value to be created along this section.

Figure 4-13: Common vehicle use of footpath.

Figure 4-14: Common vehicle use of footpath.

The auditors also comment that few opportunities have been explored to improve the amenity values along the street, aiding and increase the visual distinction between shared path and private properties, and improve comfort levels for pedestrians and cyclists.

Recommendation(s)

1. Undertake a redesign of the area incorporating forms of deterrence that provide Council with the powers of enforcement,
2. Undertake a consultation with adjacent business on the messaging to go to staff and clients when visiting the premises,
3. Confirm, through cross sections and drawings, that the potential to increase streetscape amenity values (through means such as the introduction of street tree planting and extending the existing grassed berm areas) in this proposed reconfigured road reserve has been investigated.
4. Consider an alternative siting of the proposed path along the centre of the berm area so that opportunities can be provided for street tree planting, which in turn will limit the opportunities for parking on the berm as currently occurs.
5. Explore further opportunities to introduce new street tree planting and extend the grassed berm areas in this reconfigured road reserve to improve amenity values along the street, increase the visual distinction between shared path and private properties, and improve comfort levels for pedestrians and cyclists?
6. Consider providing an alternative footpath alignment option along the western side of the new cul-de-sac on Turret Road.

Frequency Crashes are likely to be	Severity Death or serious injury is	Rating The safety concern is
Designer response	TCC could consider formalising parking spaces in the area to define locations where business vehicles should park to avoid the footpath and engage with the businesses to encourage them to park appropriately. Ultimately this parking is on road reserve and a ban on all parking could be enforced by TCC, but working with businesses to a mutually suitable outcome is likely to be a better approach. The footpath will be delineated with line marking, pedestrian symbols on the path could be considered in areas where there is a risk of cars parking on the footpath. The new 1.5m wide footpath is described on the plans twice. There are some restrictions on locating footpath, e.g. light poles, however the path could shift nominally a small distance from kerb if TCC consider this to be an issue. We support TCC considering streetscape opportunities. The proposed footpath connects to existing footpath on east side of the cul-de-sac.	

Safety Engineer comment	Accept designer's response. Recommend that the footpath is well delineated and all local businesses are engaged with to educate about the path and their obligations. Consider marking parking spaces for the businesses that are clear of the footpath Monitoring will be required.
Client decision	Agree with designer and safety engineer recommendations.
Action taken	TCC to further engage and consult with business' to reach a long term outcome for removal of existing encroachments in the road reserve.

4.1.11 Mayfair Street – Alternate Cycle Connection to Turret Bridge

Moderate

The site inspection revealed that a number of cyclists were already utilising Mayfair Street to move to and from the Turret Road Bridge. The auditors see an opportunity through this project to reinforce this alternate linkage to Welcome Bay, thus taking some of the cyclists out of the 15th Avenue traffic stream. A similar option appears to exists for the west side of Burrows Street.

There may be an opportunity to take the shared path along Mayfair Street (a potential shared street design) and linking to the existing path network east to Turret Road as it adjoins the harbour and west to the path network linking to 18th Avenue

The new signalised crossing proposed at the Burrows Street intersection could assist with cyclists crossing a multi-laned 15th Avenue, however, an improvement to the phasing to allow cyclists crossing movements may increase the ability of drivers to exit from Burrows Street (east) thus negating the considered reduction for the rat-run currently prevailing from 14th Avenue and 13th Avenue.

Overall this may result in little nett benefit.

Recommendation(s)

1. Investigate the opportunity for and benefits of, extending the shared path along Mayfair Street (or Burrows Street – west) through to its intersection with Turret Road.
2. Investigate the level of service that the traffic signals will provide for cyclists to cross 15th Avenue, whilst having an awareness of the potential for opening the left turn out traffic movement with a more frequent signal phase, thus potentially re-forming the rat-run along the residential side streets.

Frequency Crashes are likely to be occasional	Severity Death or serious injury is likely	Rating The safety concern is moderate
Designer response	The shared path routes along Mayfair Street as existing. A separate transport modelling report has been provided to TCC with advice on the phasing of the signals for TTOC to consider in operating the traffic lights. This achieves effective control of the side road access and prioritises the 15th Ave through movement while including a phase for cycle crossings of 15th.	
Safety Engineer comment	Shared path on Mayfair is already installed. Recommend confirming that it is adequately signed and improve if required. SCATS will provide significant ability to manipulate traffic flows from Burrows into 15th Avenue.	
Client decision	Agree with designers response, Mayfair street shared path is adequately signed.	
Action taken	No Action	

4.1.12 Turret Road closure

Moderate

The auditors have considered the proposed design for the closure of the Turret Road intersection with 15th Avenue. The auditors commend the closure of this intersection, and the re-establishment of some amenity value for the residential street.

The closure of Turret Street and removal of the existing pavement allows for the consideration to reinforcing/strengthening the amenity value of this area through low level planting and/or tree planting that would still allow views through to the harbour but more strongly visually and physically define the corner and provide a greater degree of separation between pedestrian and vehicles.

This area may also be a possible site for the re-siting of the grapefruit trees identified at the Fraser Street end of the project.

Recommendation(s)

1. Investigate opportunities for tree and underplanting in the extended road reserve area once Turret Road has been closed.

Frequency Crashes are likely to be	Severity Death or serious injury is	Rating The safety concern is
Designer response	We support TCC considering additional streetscape opportunities.	
Safety Engineer comment	NA	
Client decision	Not include in the current stage 1 scope.	
Action taken	TCC to investigate streetscape opportunities in future stages of development	

4.1.13 Turret Road Pedestrian Link – 15th Avenue Pedestrian Refuge

Moderate

We note that an opportunity has been lost with the failure to connect Turret Road to the existing 15th Avenue pedestrian refuge.

Figure 4-15: Existing pedestrian desire line – Turret Road

Figure 4-16: Existing pedestrian desire line – Turret Road

The team noted that there was an already well-worn path from Turret Road to this facility. The closure of Turret Road would enhance this route for cyclists, providing a viable alternative for movement from the city central area towards the Welcome Bay area. The existing crossing point could be enhanced to offer users a higher level of protection for crossing 15th Avenue.

Recommendation(s)

1. Consideration should be given to a path link from the Turret Road cul-de-sac footpath to the existing pedestrian median crossing south of the existing toilet block. An additional constructed path should also link to the toilet block along the harbour edge.

Frequency Crashes are likely to be	Severity Death or serious injury is	Rating The safety concern is
Designer response	TCC could consider this path as part of the wider cycle network programme or future stages of this project. We note this would require a boardwalk over tree roots of the protected Pohutukawa and the removal or relocation of the existing road safety signage shown in the photos. There may also be a risk of placing users in close proximity to dense traffic movements.	
Safety Engineer comment	Agree that a formed path is desirable, but is currently outside scope of the project. Not installing does not worsen existing situation.	
Client decision	Outside of the scope of the project and would require further consultation/engagement with residents	
Action taken	TCC to investigate streetscape opportunities in future stages of development	

4.1.14 Turret Road car park

Moderate

The existing small informal gravel car park at the southern end of Turret Road near the proposed cul-de-sac is inefficiently laid out and poorly surfaced.

Figure 4-17: Existing car park in poor condition

Figure 4-18: Poor access onto Turret Road

Given the closure of Turret Road with the cul-de-sac consideration should be given to either closing the car park or formalising it to make it more efficient and sympathetic to the harbour edge and existing trees

Recommendation(s)

1. Investigate whether the existing car park on Turret Road should be reconfigured, sealed and formalised as part of the road closure to make parking more efficient and accessible, or alternatively closed, a new footpath formed and area re-grassed.

Frequency Crashes are likely to be	Severity Death or serious injury is	Rating The safety concern is
Designer response	This area is not within the extent of the Stage 1 works.	
Safety Engineer comment	Agree with designer's response.	
Client decision	Agree with designer's response	
Action taken	TCC to investigate streetscape opportunities in future stages of development	

4.1.15 Turret Road streetscape

Moderate

With the closure of Turret Road the potential exists for reconfiguration and enhancement of the streetscape along the harbour edge length. Such enhancement opportunities could include creating a narrower, 'slow' or 'green' street where cyclists and vehicles share the road, and improvements to the foreshore edge

Recommendation(s)

1. Consideration should be given to planning for the long term reconfiguration of the closed section of Turret Road and realising the potential for it as a slow shared street or greenway.

Frequency Crashes are likely to be	Severity Death or serious injury is	Rating The safety concern is
Designer response	We support TCC considering opportunities to improve the streetscape and amenity in this area which is currently outside the extent of stage 1, possibly as part of the cycle plan or future stages of this project.	
Safety Engineer comment	NA	
Client decision	This is outside of current stage 1 scope.	
Action taken	TCC to investigate streetscape opportunities in future stages of development	

Appendices

Appendix A Supplied Plans

Christchurch
Hazeldean Business Park, 6 Hazeldean Road
Addington, Christchurch 8024
PO Box 13-052, Armagh
Christchurch 8141
Tel +64 3 366 7449
Fax +64 3 366 7780

Please visit **www.stantec.com** to learn more about how Stantec design with community in mind.

Stantec