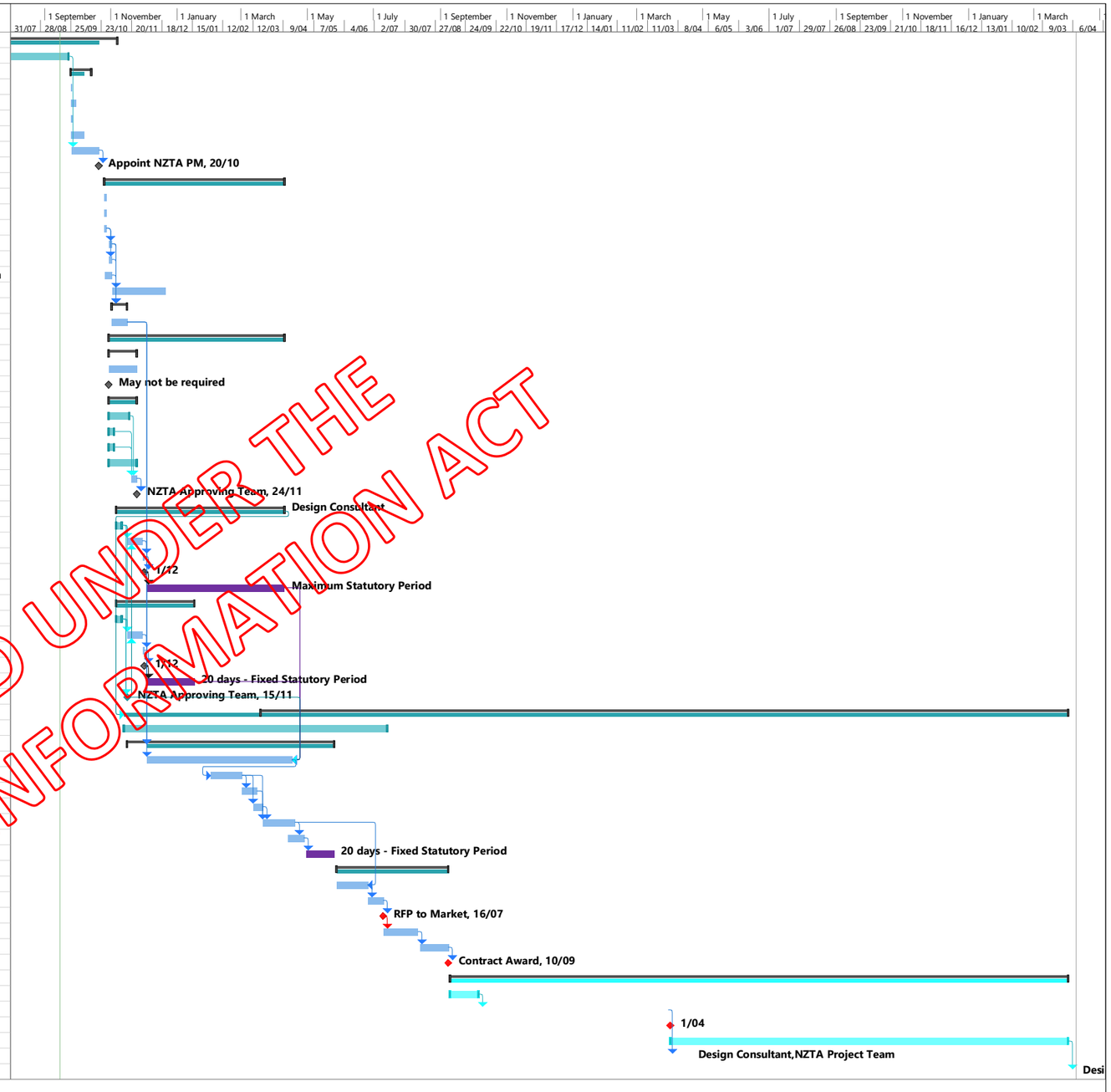
APPENDIX N
Indicative Programme

ID	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Resource Names
1		**PROJECT DEVELOPMENT**	**416 days**	**Fri 1/04/16**	**Mon 6/11/17**		**NZTA Project Team**
2		Business Case Preparation	212 days	Thu 1/12/16	Fri 22/09/17		Design Consultant,NZTA
3		**Consenting _ Initial Liaison**	**15 days**	**Mon 25/09/17**	**Fri 13/10/17**		**Design Consultant**
4		Engage Design Consultant to commence initial liaison with	1 day	Mon 25/09/17	Mon 25/09/17		NZTA Project Team
5		FNDC - Confirm Statutory Application Required (NoR or	5 days	Mon 25/09/17	Fri 29/09/17		Design Consultant
6		Contaminated Land Follow up - Service Station	2 days	Mon 25/09/17	Tue 26/09/17		Design Consultant
7		FNDC / NRC - Contaminated Land Desktop Study (PCS)	10 days	Mon 25/09/17	Fri 6/10/17		Design Consultant
8		Business Case Approval	20 days	Mon 25/09/17	Fri 20/10/17	2	NZTA Approving Team
9		Appoint Project Manager (NZTA)	0 days	Fri 20/10/17	Fri 20/10/17	8	NZTA Project Team
10		**PRE-IMPLMENTATION**	**102 days**	**Thu 26/10/17**	**Mon 9/04/18**		
11		Engage P&I Representative (NZTA)	2 days	Thu 26/10/17	Fri 27/10/17		NZTA Project Manager
12		Engage Regional/National Office (NZTA)	2 days	Thu 26/10/17	Fri 27/10/17		NZTA Project Manager
13		Appoint Consultant: Design & Stakeholder Engagement	2 days	Thu 26/10/17	Fri 27/10/17		NZTA Project Manager
14		Project Charter preparation	3 days	Mon 30/10/17	Wed 1/11/17	13	Design Consultant,NZTA
15		Consultant's Project Quality Plan	3 days	Mon 30/10/17	Wed 1/11/17	13	Design Consultant
16		Update Risk Register	5 days	Thu 26/10/17	Wed 1/11/17		NZTA Project Team,Design
17		Property Acquisition	35 days	Thu 2/11/17	Wed 20/12/17	14	Property Consultant
18		**Preliminary Design**	**10 days**	**Thu 2/11/17**	**Wed 15/11/17**	**14,15,16**	
19		Design Development for applications (NOR, AtD, RC)	10 days	Thu 2/11/17	Wed 15/11/17		
20		**Consenting**	**100 days**	**Mon 30/10/17**	**Mon 9/04/18**		
21		**Contaminated Land Investigation - Orchard**	**20 days**	**Mon 30/10/17**	**Fri 24/11/17**		**Design Consultant**
22		Preliminary Site Investigation	20 days	Mon 30/10/17	Fri 24/11/17		
23		Detailed Site Investigation	0 days	Mon 30/10/17	Mon 30/10/17		
24		**Technical Assessments to Support Statutory Approvals**	**20 days**	**Mon 30/10/17**	**Fri 24/11/17**		
25		Prepare Draft Assessment of Environmental Effects (AEE)	15 days	Mon 30/10/17	Fri 17/11/17		Design Consultant
26		Prepare Draft Consent Conditions	5 days	Mon 30/10/17	Fri 3/11/17		Design Consultant
27		Prepare Draft Environmental and Social Management	5 days	Mon 30/10/17	Fri 3/11/17		Design Consultant
28		Prepare Draft Cultural Impact Assessment (CIA)	20 days	Mon 30/10/17	Fri 24/11/17		Iwi
29		Submit recommendation to Lodge Statutory Applications to	5 days	Mon 20/11/17	Fri 24/11/17	25,26,27	NZTA Project Manager
30		Approval to recommendation to Lodge Statutory	0 days	Fri 24/11/17	Fri 24/11/17	29	NZTA Approving Team
31		**NoR / Alteration to Designation - FNDC**	**95 days**	**Mon 6/11/17**	**Mon 9/04/18**		**Design Consultant**
32		Alteration to Designation - preparation	5 days	Mon 6/11/17	Fri 10/11/17		
33		Pre-Lodgement consultation (PEP)	10 days	Thu 16/11/17	Wed 29/11/17	32,43	
34		Submit and obtain approval to application	2 days	Thu 30/11/17	Fri 1/12/17	33	
35		Lodgement Application	0 days	Fri 1/12/17	Fri 1/12/17	34	
36		Statutory Timeframe for Approval	75 days	Mon 4/12/17	Mon 9/04/18	35	
37		**Resource Consent - NRC**	**40 days**	**Mon 6/11/17**	**Tue 16/01/18**		**Design Consultant**
38		Resource Consent application prep	5 days	Mon 6/11/17	Fri 10/11/17		
39		Pre-Lodgement consultation (PEP)	10 days	Thu 16/11/17	Wed 29/11/17	38,32,43	
40		Submit and obtain approval to application	2 days	Thu 30/11/17	Fri 1/12/17	39	
41		Lodgement - Resource Consent	0 days	Fri 1/12/17	Fri 1/12/17	40	
42		Statutory Timeframe for Approval (Limited Notified)	20 days	Mon 4/12/17	Tue 16/01/18	41	
43		NZTA Reviews / Approvals	3 days	Mon 13/11/17	Wed 15/11/17	32,38	NZTA Approving Team
44		**IMPLEMENTATION**	**517 days**	**Mon 19/03/18**	**Wed 1/04/20**	**31**	
45		Community & Stakeholder Engagement	157 days	Mon 13/11/17	Fri 13/07/18		Design Consultant,NZTA
46		**Detailed Design**	**120 days**	**Thu 16/11/17**	**Fri 25/05/18**	**19**	
47		Detailed Design	80 days	Mon 4/12/17	Mon 16/04/18	19,36FF+5 days,4	
48		Design Review	20 days	Thu 1/02/18	Thu 1/03/18	47FS-90 days	
49		Safety Audit	10 days	Fri 2/03/18	Thu 15/03/18	48	
50		Safety in Design Workshop	7 days	Mon 12/03/18	Tue 20/03/18	48FS+6 days	
51		Design Finalisation	20 days	Wed 21/03/18	Thu 19/04/18	48,49,50	
52		Outline Plan of Works Prep	10 days	Fri 13/04/18	Fri 27/04/18	51FS-5 days	Design Consultant
53		Outline Plan of Works - FNDC	20 days	Mon 30/04/18	Fri 25/05/18	52	
54		**Procurement**	**74 days**	**Mon 28/05/18**	**Fri 7/09/18**		
55		Detailed Design and Specification For Request for Quote (RFQ)	20 days	Mon 28/05/18	Mon 25/06/18	51FF+2 days	Design Consultant
56		RFQ Documents - NZTA Reviews / Approvals	10 days	Tue 26/06/18	Mon 9/07/18	55	
57		RFP to market (competitive tender - price quality)	0 days	Mon 9/07/18	Mon 9/07/18	56	
58		Close of RFP	24 days	Tue 10/07/18	Fri 10/08/18	57	
59		Preferred Respondent announced	20 days	Mon 13/08/18	Fri 7/09/18	58	
60		Contract Award	0 days	Fri 7/09/18	Fri 7/09/18	59	
61		**Physical Works**	**396 days**	**Mon 10/09/18**	**Wed 1/04/20**		**Contractor,Design**
62		Physical Works - enabling works	20 days	Mon 10/09/18	Fri 5/10/18		
63		Physical Works - intersection improvement, Klinac Lane	113 days	Mon 8/10/18	Fri 29/03/19	62	
64		Handover of Capital Project	0 days	Mon 1/04/19	Mon 1/04/19		
65		Defects Liability Period	263 days	Mon 1/04/19	Wed 1/04/20		
66		**POST-PROJECT EVALUATION**	15 days	Mon 1/04/19	Fri 19/04/19	63	Design Consultant,NZTA
67		**PROJECT CLOSE**	5 days	Thu 2/04/20	Wed 8/04/20	65	Design Consultant,NZTA



APPENDIX O
Road Safety Audit Report

NZ TRANSPORT AGENCY
WAKA KOTAHI

NCC consulting engineers

Robinson Transportation Consulting

SH10 / Waipapa Road Intersection Improvements

Road Safety Audit

Scheme/Preliminary Design

July 2017

Robinson Transportation Consulting

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Document Status

Rev No.	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
A	Mike Sullivan	Rae Sullivan	28/07/17	Mike Sullivan		20/07/17
B		Bruce Robinson				24/07/17
C						
D						

Contents

1. Introductory Statement

1.1 Introduction

This report presents the findings of a scheme/preliminary design stage safety audit for the proposed SH10 / Waipapa Road intersection improvements at Waipapa, Far North.

The project provides a new single lane roundabout in place of a priority cross-roads intersection of SH10, Waipapa Road and Waipapa Loop Road. Corridor improvements along SH10 are also proposed, comprising of widening and the marking of a central flush median and a shared path on the eastern side of SH10.

The primary purpose of the project is to improve the efficiency of the SH10 / Waipapa Road intersection.

The proposed preliminary design has been prepared by Opus International Consultants, Whangarei.

1.2 Audit team

The audit team comprised of:

Bruce Robinson (Team Leader)	Pr.Eng. (RSA), M.Eng., B.Sc.Eng. (Civil) Robinson Transportation Consulting, Tauranga
Mike Sullivan	CPEng, BE (Civil), MIPENZ Director NCC – Consulting Engineers, Whangarei.
David Spoonley	BEng, CEng, CIHT MICE Project Manager / Road Safety Engineer NCC – Consulting Engineers, Whangarei

1.3 Previous audits

Mike Sullivan carried out a scheme/preliminary design stage safety audit on a previous roundabout proposal at the site in February 2010. Bruce Robinson also carried out a design review on the 2010 proposal for NZ Transport Agency. The 2017 proposed design is a substantial change from the 2010 proposal and this audit is, therefore, the first audit for the current proposal.

1.4 Project description

The project is located on SH10, Waipapa, from the Kerikeri River Bridge (RP 17/2.02) to the northern urban limit of the township (RP 17/3.50).

The project comprises of:

- A 28 m inscribed diameter four-legged roundabout at the intersection of SH10, Waipapa Road and Waipapa Loop Road;
- Widening of a 1.5 km length of SH10 and the provision of a 2.5 m wide central flush median with right turn bays, 1.5 m wide shoulders and a 2.5 m wide shared path along the eastern side of the SH10 between the Kerikeri River Rest Area and Waipapa Road; and
- The closure of the northern intersection of Waipapa Loop Road with SH10, with a cul-de-sac treatment on the end of Waipapa Loop Road.

The Far North District Council is proposing a new link road (Maritime Way / Klinac Lane) from Waipapa Loop Road to the Waipapa commercial area west of SH10. This forms part of the wider road network plan, but is excluded from the scope of this audit.

1.5 Audit methodology

This audit has been carried out for Sebastian Reed, Transport Planner, NZ Transport Agency.

The audit follows the guidelines contained within the NZ Transport Agency document "Road Safety Audit Procedures for Projects, Guidelines, Interim Release, May 2013" and is complemented by the auditors' experience with other audits.

This audit should not be regarded as a complete "quality check" of the project. It focuses essentially on safety issues that are considered significant regarding the proposed design.

The auditors have identified road safety concerns and have made recommendations about corrective actions. Whilst these recommendations may indicate the nature or direction of a solution, they do not provide specific details of how to address or resolve that concern.

Responsibility for the solution of any safety issue identified in this audit remains with the designer.

1.6 Project documentation

The audit team was provided preliminary design plans that were prepared by Opus International Consultants, Whangarei, in May/June 2017 (drawing numbers 1-11751.00, sheets X01 (B), X03 (E), X20 (C), X21 (C), X25 (C), X30 (A), X31 (A), X33 (A) and X35 (A). Copies of these drawings are contained in Appendix A.

1.7 Briefing meeting

Mike Sullivan and Dave Spoonley held an entry meeting with the Opus Design Manager, Chris Parker, on 3rd July 2017. Opus raised the following issues relating to the status of the proposed design and the scope of the safety audit:

- The level of design is at the concept/preliminary design stage. The next stage of the project will be design and implementation;
- The roundabout is likely to proceed, however, the SH10 corridor improvements are not yet certain;
- The Klinac Lane / Maritime Way connection to the Waipapa commercial area is a Far North District Council project and is not included in the NZ Transport Agency project. It is shown on the plans for completeness of the overall road network, but excluded from the scope of the audit;
- The closure of the northern intersection of Waipapa Loop Road with SH10, with a cul-de-sac treatment on the end of Waipapa Loop Road is proposed. Opus would like the audit team to comment on an option for left turn treatments at this intersection, noting that dairy tankers access a farm on Waipapa Loop Road;
- Skippers Lane is one-way in the northbound direction, with a turnaround north of the northern access point;
- Route lighting is proposed with the corridor improvements;
- The project is not reviewing the existing speed limits, although NZ Transport Agency are proposing a 60 km/h limit through the township as a separate exercise;
- Vehicle turning paths are provided for an 18 m semi-rigid, except for Waipapa Loop Road that is designed for a large rigid truck;
- The project business case is due for completion in July 2017 with detailed design to follow, with construction due to start in October 2018.

1.8 Audit and site visit

The auditors carried out a desk-top audit and site visit on the 5th July. The weather was fine for the site visit.

1.9 Ranking system

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

The probable crash frequency is qualitatively assessed based on expected exposure (how many road users will be exposed to a safety issue) and the probability of a crash resulting from the presence of the issue. The likely severity of a crash outcome is qualitatively assessed based on factors such as expected speeds, type of collision, and type of users 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 ranking for each safety issue using the Concern Assessment Rating Matrix in **Table 1** below. The qualitative assessment requires professional judgement and a wide range of experience in projects of all sizes and locations.

Table 1: Assessment Matrix

Likelihood of Fatality or Serious Injury	Probability of a Crash Occurring			
	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 concern category is given in **Table 2** below.

Table 2: Categories of Concern

CONCERN	Suggested Action
Serious	Serious concern that must be addressed and requires changes to avoid serious safety consequences.
Significant	Significant concern that should be addressed and requires changes to avoid serious safety consequences.
Moderate	Moderate concern that should be addressed to improve safety
Minor	Minor concern that should be addressed where practical to improve safety.

In addition to the ranked safety issues it is appropriate for the safety audit team to provide additional comments with respect to items that may have a safety implication but lie outside the scope of the safety audit. A comment may include items where the safety implications are not yet clear due to insufficient detail for the stage of the 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 the auditors may give suggestions.

1.10 Decision tracking process

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.

1.11 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 audit team. However, it must be recognised that eliminating safety concerns cannot be guaranteed since no road can be regarded as absolutely safe and no warranty is implied that all safety issues have been identified in this report. Safety audits do not constitute a design review or an assessment of standards with respect to engineering or planning documents. 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.

2 Safety Audit Findings and Recommendations

2.1 Speed management

Opus has advised that the project does not include reviewing the existing speed limits, although the NZ Transport Agency are proposing a 60 km/h limit through the township as a separate exercise. The site currently has a 70 km/h speed limit, which the auditors consider is too high for the urban area of Waipapa. Therefore, the auditors support a review of the speed limit and note the need to ensure that any changes to the limit are safe, appropriate and consistent for the road environment. This speed limit review would also help determine the appropriate design speed for the project.

Recommendation

Ensure that any speed limit changes result in a limit that is safe, appropriate and consistent for the road environment.

Overall Rating: **Minor**			
Frequency Rating:	**Occasional**	*Severity Rating:*	**Unlikely**
Designer Response: Agree.			
Safety Engineer:			
Client Decision:			
Action Taken:			

2.2 Intersection form

A 28 m inscribed diameter four-legged roundabout is proposed at the intersection of SH10, Waipapa Road and Waipapa Loop Road (refer to **Figure 1**). No details have been provided regarding other options that have been considered for the form of treatment for the intersection. Other treatments could include reconfiguration of a priority controlled intersection, signalisation, alternative roundabout configurations or an alternative location for the intersection. Therefore, the auditors are unable to comment on whether the form and location of the roundabout is the best solution in terms of a safe system design for this specific location.

The consideration of alternative roundabout configurations is desirable, as the skewed configuration results in faster left turn layouts on the obtuse angled exits. Faster exit speeds increase the likelihood of loss of control type crashes and the potential for higher speed crashes involving pedestrians crossing the road near the exits. An alternative configuration may also be useful in addressing specific safety concerns raised in this audit relating to the proposed design.

The auditors note that in general terms, a well-designed roundabout can provide an appropriate safe system design for intersection conflicts and that a roundabout at the site

may improve safety by reducing driver frustration and poor gap decisions for drivers exiting Waipapa Road.

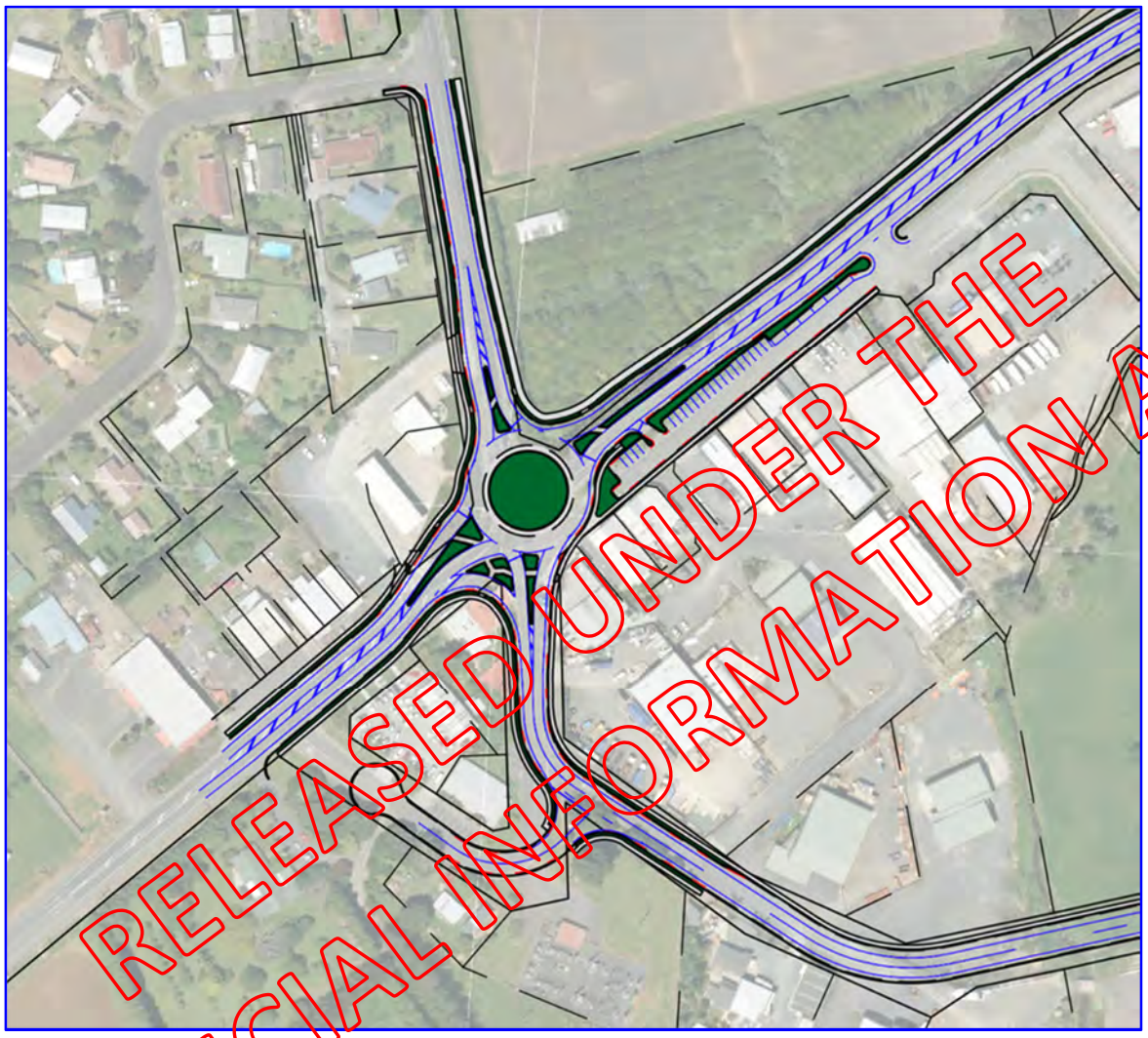

Figure 1: The proposed roundabout at the intersection of SH10, Waipapa Road and Waipapa Loop Road.

Recommendation

Consider alternative roundabout configurations and/or locations, to improve safety performance and to address other specific safety concerns raised in this audit. These alternatives could include increasing the roundabout inscribed diameter or making the roundabout elliptical.

Overall Rating: **Moderate**			
Frequency Rating:	**Occasional**	*Severity Rating:*	**Likely**
Designer Response: Alternative configurations have been considered, including an elliptical roundabout. While it is agreed that it may be possible to design out some of the issues by re-locating the intersection, it has been found that this will have other effects, such as impact on the community, businesses and/or additional cost.			
Safety Engineer:			
Client Decision:			
Action Taken:			

2.3 Corridor central flush median

The project includes the widening of a 1.5 km length of SH10 and the provision of a 2.5 m wide central flush median, 1.5 m wide shoulders and a 2.5 m wide shared path along the eastern side of the road between the Kerikeri River Rest Area and Waipapa Road (refer to **Figures 2 and 3**).

The auditors note that this section of SH10 is a monitored crash reduction study site (CRS Site 36: Kahikatearoa Lane). Crash commonality includes rear end and turning crash movements, attributable to the frequency of high use accesses and an inconsistent road cross section. The proposed widening and provision of a central flush median is an appropriate treatment to address the crash history. Opus has advised that the inclusion of the SH10 corridor improvements in the project are not yet certain. The auditors recommend that these improvements be included in the project to address the crash history and provide a safe and consistent road environment through this length of SH10. Should this work not be included, then the auditors recommend that the median be provided south of the roundabout to the existing right turn bay at the Gull Service Station as a minimum treatment (refer to **Figure 2**).

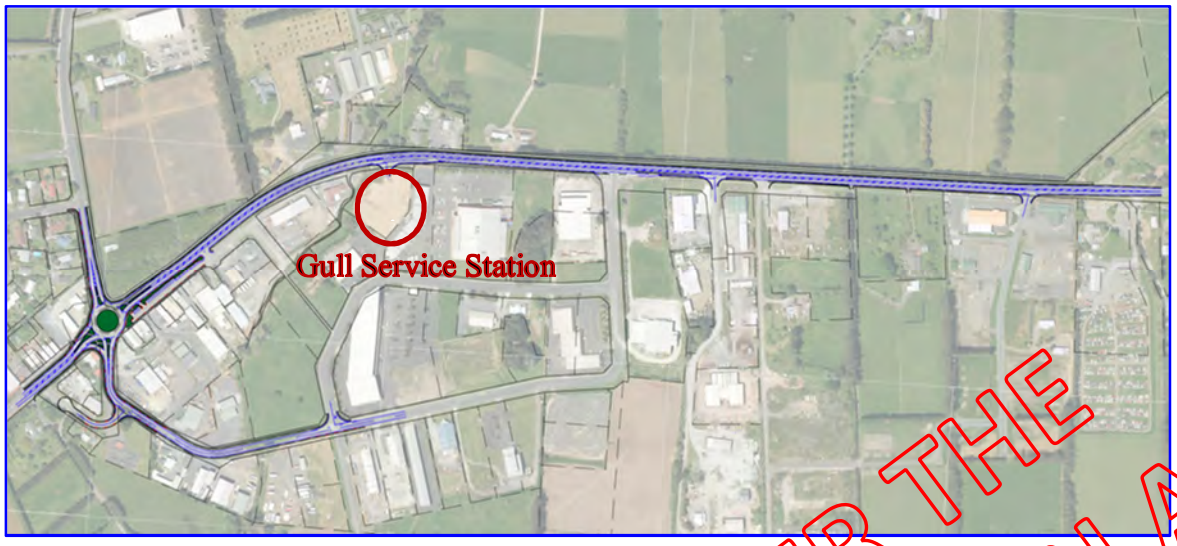

Figure 2: The proposed central flush median corridor treatment.

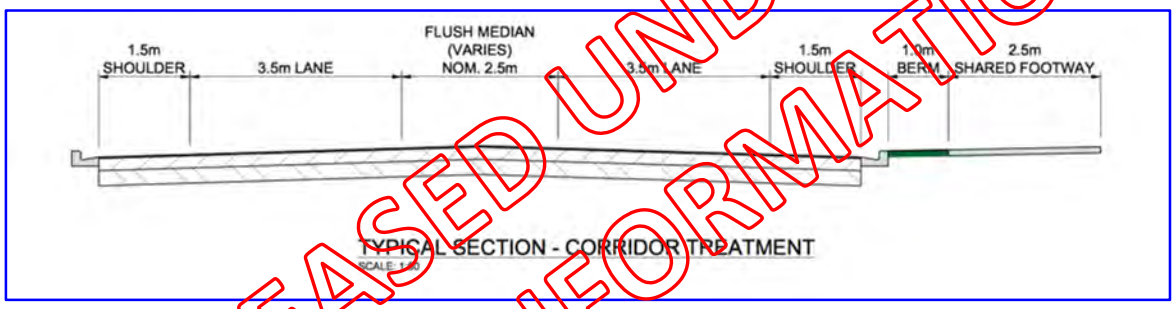

Figure 3: The typical cross section for the proposed central flush median corridor treatment

Recommendation

Include the SH10 corridor improvements in the project implementation. Should this work not proceed, then provide a central flush median south of the roundabout to the existing right turn bay at the Gull Service Station.

Overall Rating: **Significant**			
Frequency Rating:	**Frequent**	*Severity Rating:*	**Unlikely**
Designer Response: Agree. The corridor improvements have been included in the Detailed Business Case, which will form the basis of the funding application.			
Safety Engineer:			
Client Decision:			
Action Taken:			

2.4 Waipapa Loop Road left turn lane to SH10

There is an acute angle left turn free flow lane from Waipapa Loop Road to SH10 (refer to **Figure 4**). This creates an unorthodox layout for vehicles and pedestrians that introduces additional crossing points for pedestrians. This complicates pedestrian wayfinding, increases the number of vehicle versus pedestrian conflicts and increases difficulties for pedestrians to make safe decisions for crossing the road (on occasions the intended route of an approaching vehicle may be unclear until the last moment). These factors increase the likelihood of vehicle versus pedestrian crashes that result in high injury severity and is an unsafe configuration for pedestrians in an urban environment.

The auditors consider that the free flow left turn lane should be removed, with a design similar to the left turn from Waipapa Road to SH10 (south) provided as a safer alternative. This may be able to be achieved by increasing the inscribed diameter of the roundabout or by providing an elliptical central island.

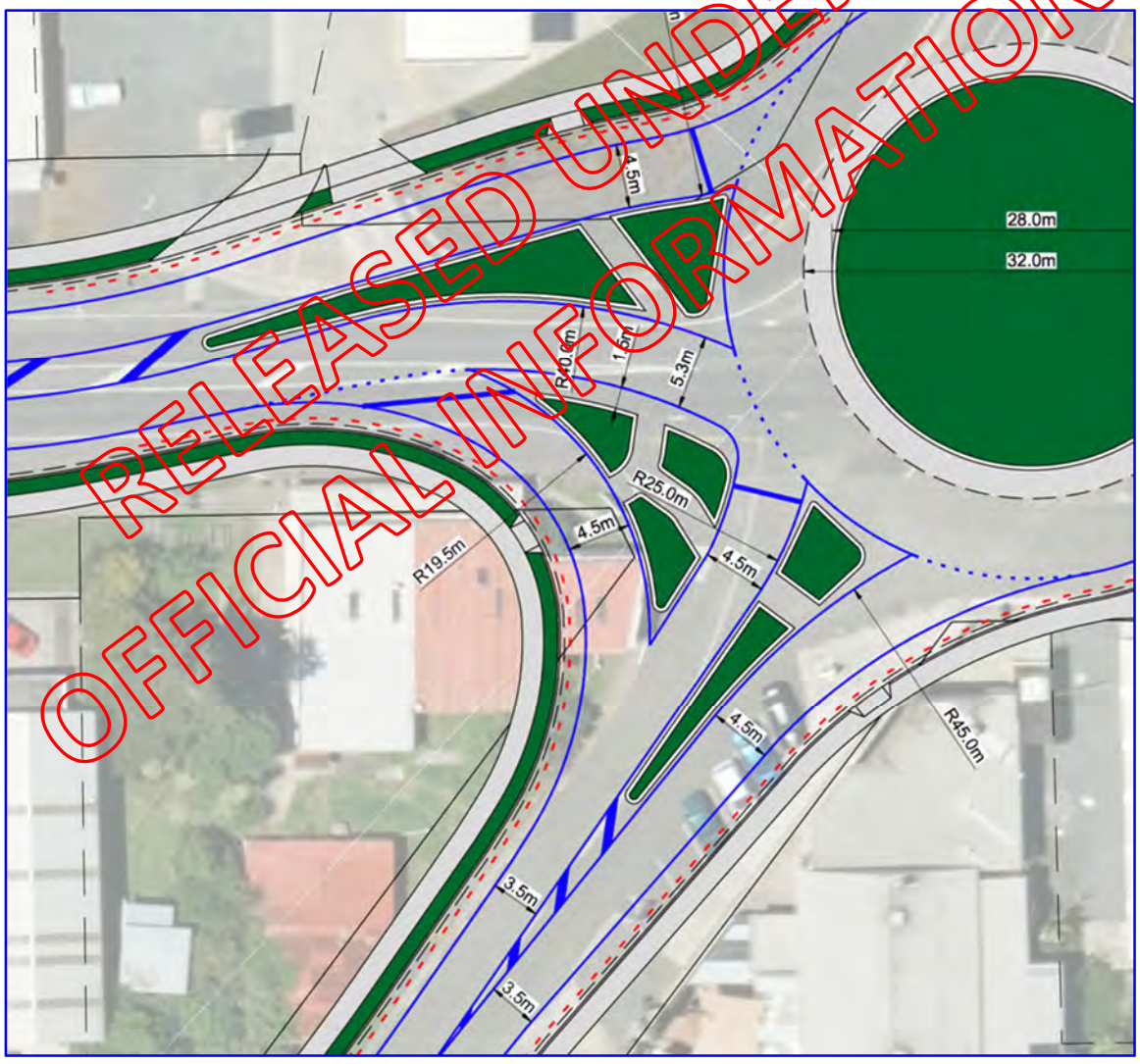

Figure 4: The free flow left turn from Waipapa Loop Road to SH10.

Recommendation

Remove the free flow left turn from Waipapa Loop Road to SH10 and consider alternative geometric configurations for the roundabout to accommodate left turns within the roundabout circulatory roadway.

Overall Rating: **Significant**			
Frequency Rating:	**Common**	*Severity Rating:*	**Likely**
Designer Response: Agree. This will be confirmed during Detailed Design.			
Safety Engineer:			
Client Decision:			
Action Taken:			

2.5 Pedestrian crossing points at roundabout

There are pedestrian crossing points on the splitter islands into the roundabout. On Waipapa Loop Road and SH10 north these are located on the obtuse angled leg of the skewed roundabout (refer to **Figure 4**). The obtuse angle of the left turns could lead to higher vehicle speeds on the left turn and increase the crash severity for pedestrians crossing the road. The crossings are also very close to the departure point of the roundabout, particularly on the SH10 north leg. This could lead to confusion for pedestrians to determine the intended direction of an approaching vehicle or for drivers to not anticipate a pedestrian crossing at the exit of the roundabout. This issue needs to be assessed together with the issues raised in **Section 2.4** above.

For each leg of the roundabout the crossing points within the entry islands are not perpendicular to the opposite crossing point (refer to **Figure 5**). Visually impaired pedestrians will have difficulty in orientating themselves across the road to the kerb ramps and could instead be directed into conflicts with vehicles.

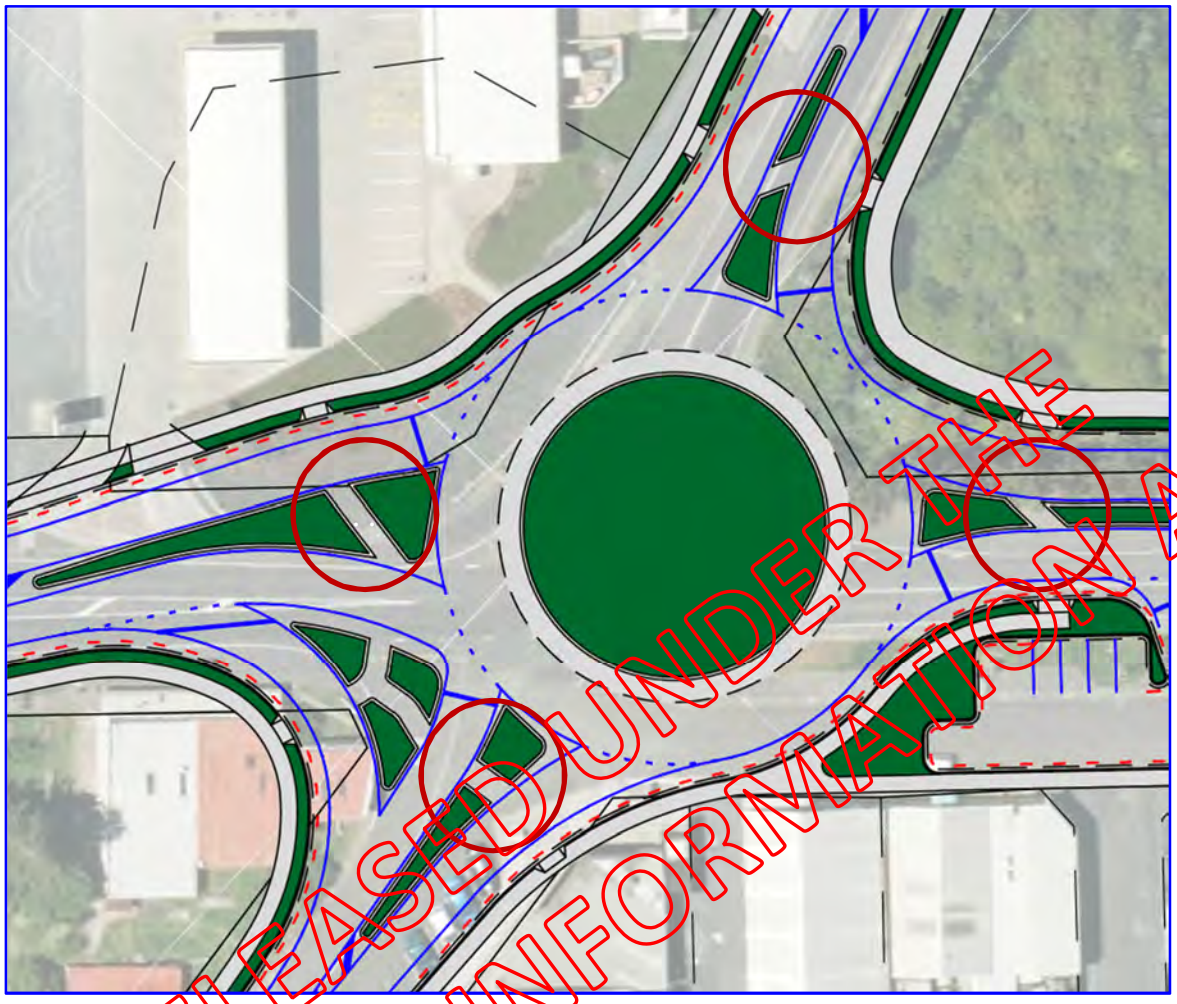

Figure 5: The crossing points within the entry islands are not perpendicular to the opposite crossing points.

Recommendations

a) *Move the pedestrian crossing points on the entry islands further back on the Waipapa Loop Road and SH10 north approaches.*

Overall Rating: **Significant**			
Frequency Rating:	**Common**	*Severity Rating:*	**Likely**
Designer Response: Noted. The location of the pedestrian crossing points will need to balance the issues raised above with the pedestrian desire lines.			
Safety Engineer:			
Client Decision:			
Action Taken:			

b) Orientate the pedestrian crossing points on the entry islands perpendicular to the opposite crossing point.

Overall Rating: **Significant**			
Frequency Rating:	**Common**	*Severity Rating:*	**Likely**
Designer Response: Pedestrian crossing points are angled to encourage pedestrians to face oncoming traffic. Visually impaired pedestrians will be guided by tactile paving, which will be aligned.			
Safety Engineer:			
Client Decision:			
Action Taken:			

2.6 Waipapa Loop Road north / SH10 intersection

The closure of the northern intersection of Waipapa Loop Road with SH10, with a cul-de-sac treatment on the end of Waipapa Loop Road is proposed (refer to **Figure 6**). Opus has asked the audit team to comment on an option for left in/left out treatments at this intersection, noting that dairy tankers access a farm on Waipapa Loop Road. The auditors favour a left in/left out only configuration for the intersection, as:

- This will be beneficial in addressing the safety concerns associated with the acute angle left turn free flow lane from Waipapa Loop Road to SH10, discussed in **Section 2.4** above; and
- Turning movements for dairy tankers will be more easily provided for at this location, rather than the acute angle at the roundabout.

The proposed configuration for the intersection of Waipapa Loop Road with Maritime Way will not provide for the tracking of a dairy tanker and will need to be revised if the proposed cul-de-sac is constructed. The intersection throat is relatively large. The provision of a throat island and pedestrian refuge would be beneficial to reduce vehicle speeds and walking distances through the intersection.

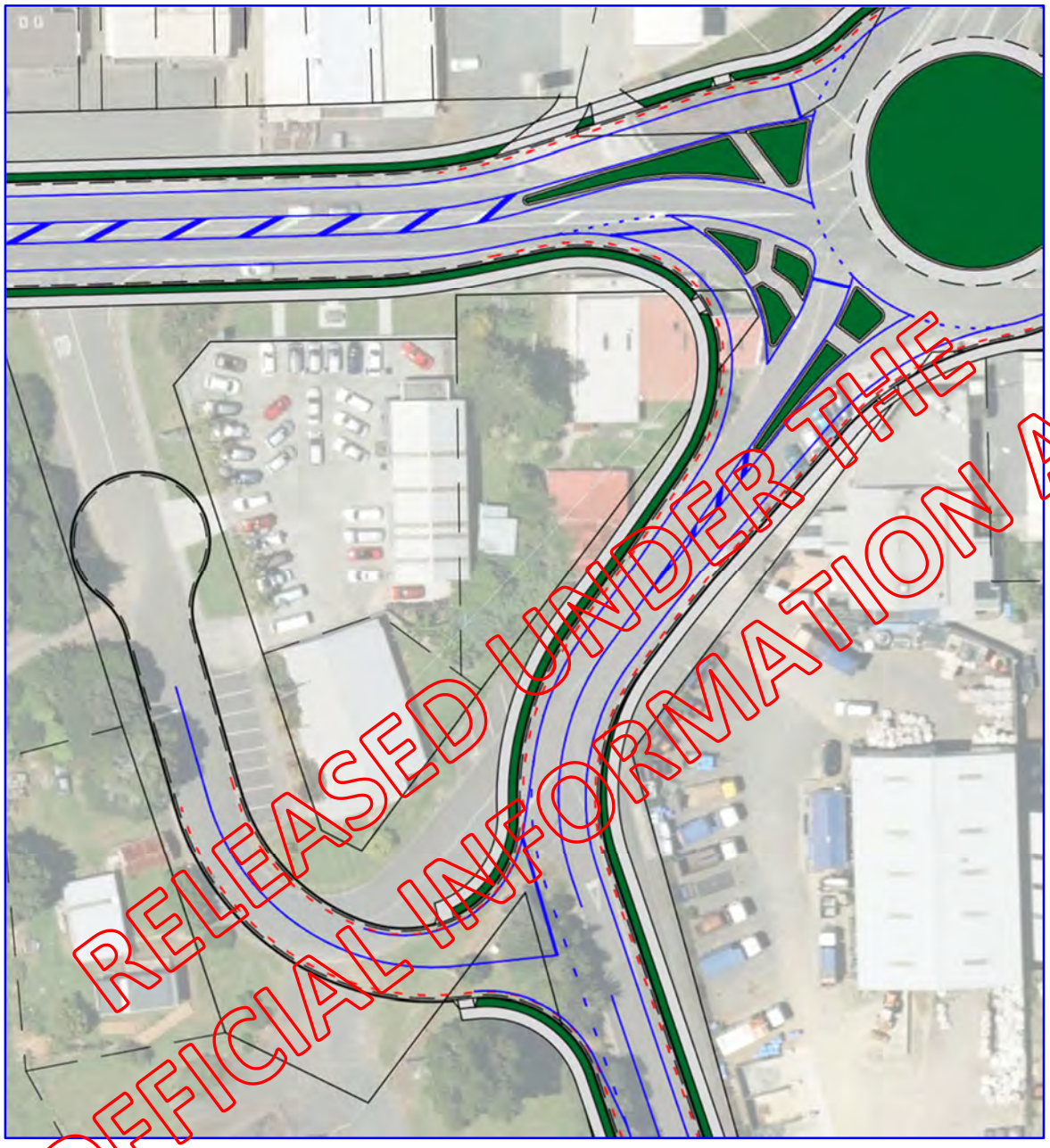

Figure 6: The proposed closure of the northern intersection of Waipapa Loop Road with SH10, with a cul-de-sac treatment.

Recommendations

a) *Provide a left in/left out configuration at the Waipapa Loop Road / SH10 intersection.*

Overall Rating: **Significant**			
Frequency Rating:	**Common**	*Severity Rating:*	**Likely**
Designer Response: Agree in part. May be left out only. To be determined through Detailed Design.			
Safety Engineer:			
Client Decision:			
Action Taken:			

b) *Provide adequate tracking for dairy tankers to access the farm on Waipapa Loop Road.*

Overall Rating: **Moderate**			
Frequency Rating:	**Common**	*Severity Rating:*	**Unlikely**
Designer Response: Agree.			
Safety Engineer:			
Client Decision:			
Action Taken:			

c) *Consider providing a throat island and pedestrian refuge at the intersection of Waipapa Loop Road and Maritime Way.*

Overall Rating: **Moderate**			
Frequency Rating:	**Common**	*Severity Rating:*	**Unlikely**
Designer Response: Agree. To be considered during Detailed Design.			
Safety Engineer:			
Client Decision:			
Action Taken:			

2.7 Speed management through the roundabout

The Waipapa Road and SH10 south entries into the roundabout have relatively low deflection (refer to **Figure 7**). Drivers will be able to enter the roundabout at higher speeds and be forced to slow quickly into the circulatory lane. This could increase the likelihood of loss of control. Best practice is to offset the approach entry paths to the left of the central island to manage entry speeds into the circularly path with the minimum vehicle speed being achieved at the roundabout limit line.

The skewed roundabout configuration results in faster left turn layouts on the obtuse angled exits. Faster exit speeds increase the likelihood of loss of control type crashes and the potential for higher speed crashes involving pedestrians crossing the road near the exits.

The design should include the consideration of the speed path profiles through the roundabout to demonstrate safe speeds, through both the circulatory path and on the higher speed left turns that are on the obtuse angles.

The roundabout central island also includes an apron, although the vehicle tracking plan indicates that the design vehicle does not track the apron (refer to **Figure 8**). A kerb is detailed between the circulatory lane and the apron (refer to **Figure 9**). Kerbs next to roundabout islands can be hazardous for motorcyclists, particularly if the entry path offsets, referred to above, have not been provided. The apron should either be removed if it is not required for vehicle tracking, or the kerb removed to improve safety for motorcyclists.

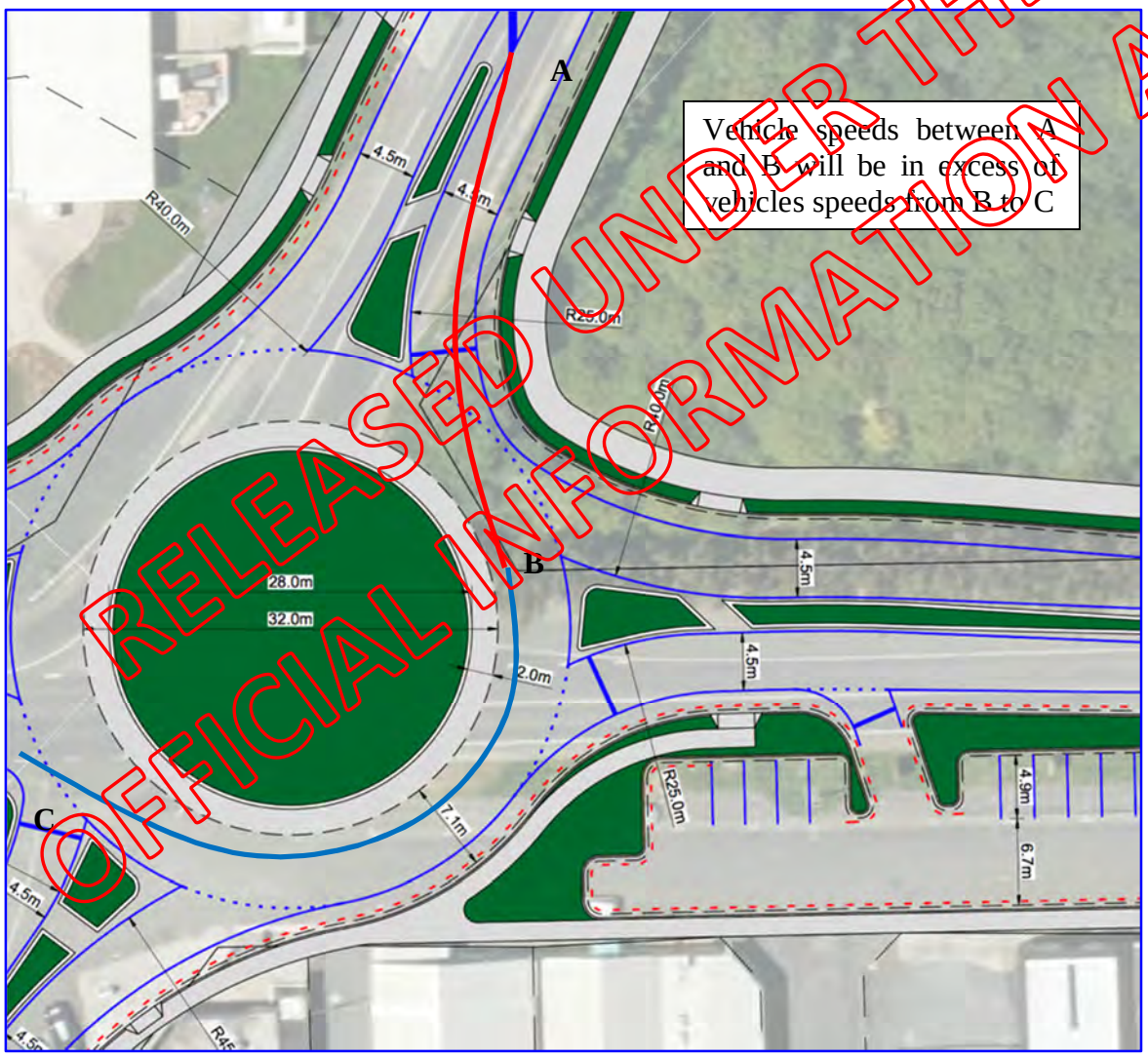

Figure 7: The Waipapa Road and SH10 south entries into the roundabout.

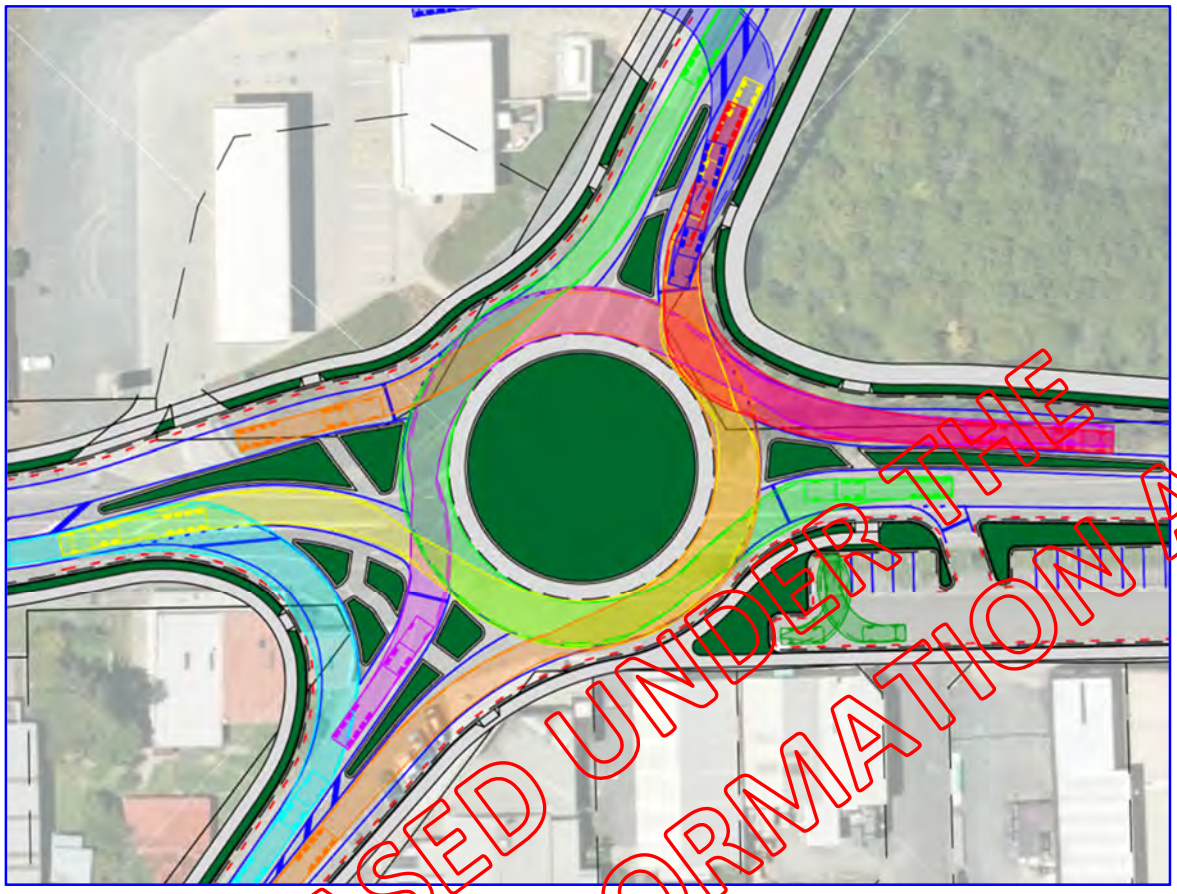

Figure 8: The roundabout vehicle tracking plan.

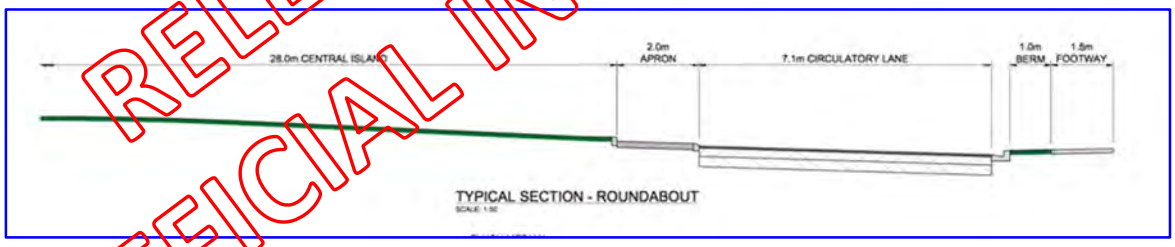

Figure 9: The typical section through the roundabout.

Recommendations

a) *Assess the speed path profiles through the roundabout and provide safe speeds, through both the entry-circulatory path, which should be sufficiently offset from the central island, and on the higher speed left turns that are on the obtuse angles.*

Overall Rating: **Significant**			
Frequency Rating:	**Common**	*Severity Rating:*	**Likely**
Designer Response: Agree. To be addressed at Detailed Design.			
Safety Engineer:			
Client Decision:			
Action Taken:			

b) *Review the need for an apron on the roundabout island. If it is retained, remove the kerb between the circulatory lane and the apron.*

Overall Rating: **Moderate**			
Frequency Rating:	**Occasional**	*Severity Rating:*	**Likely**
Designer Response: Agree. To be reviewed at Detailed Design.			
Safety Engineer:			
Client Decision:			
Action Taken:			

2.8 Pedestrian desire line SH10 east to Skippers Lane

There is a pedestrian desire line from SH10 east to Skippers Lane that is not provided for with a footpath link (refer to **Figure 10**). Consideration should be given to providing a footpath up to the Skippers Lane access and providing a raised platform across Skippers Lane to the existing footpath.

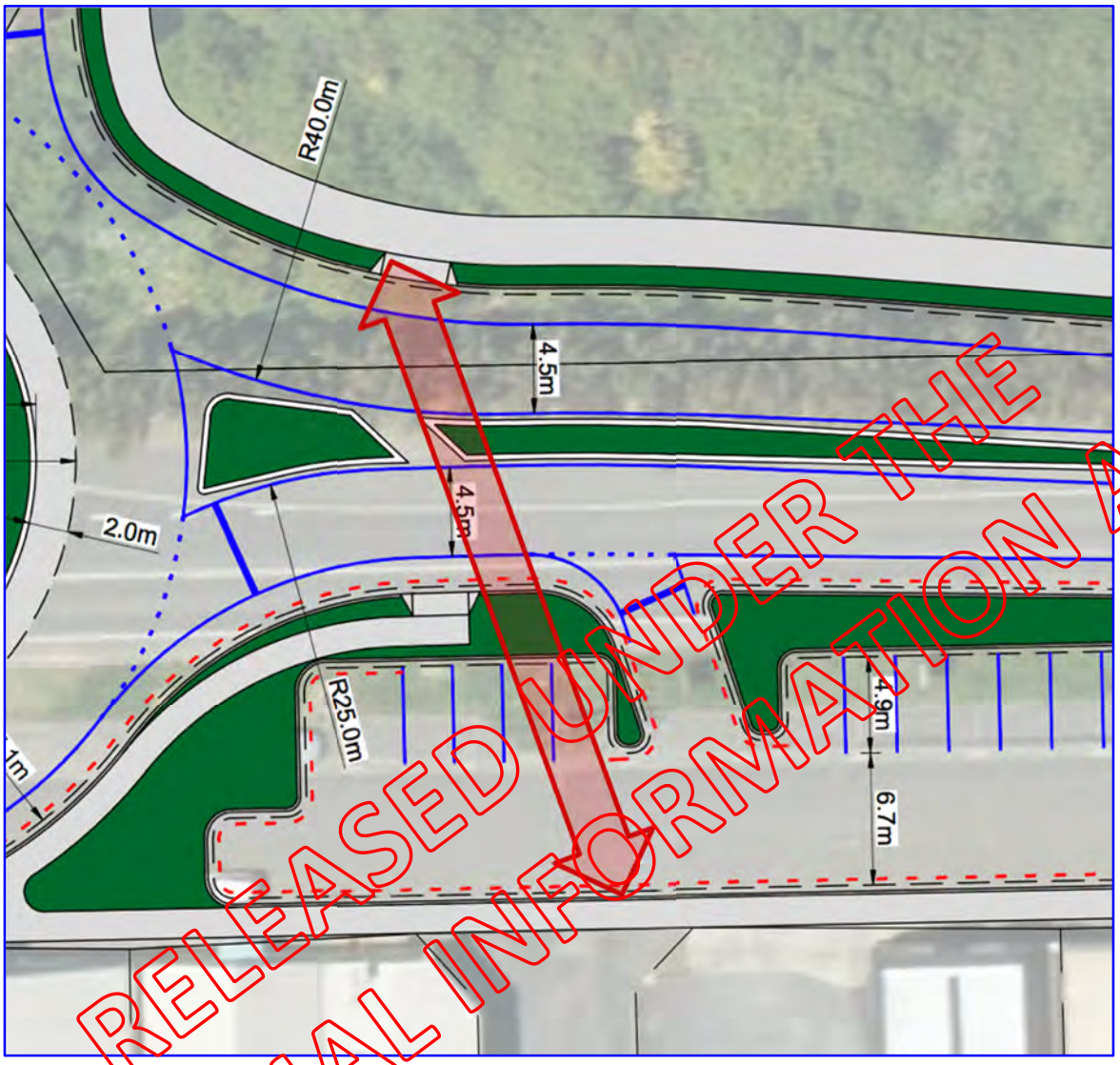

Figure 10: The pedestrian desire line from SH10 to Skippers Lane.

Recommendation

Provide a more direct footpath link from SH10 east to Skippers Lane, possibly with a raised platform across Skippers Lane. Ensure that the path is aligned with the pedestrian desire lane.

Overall Rating: **Moderate**			
Frequency Rating:	**Occasional**	*Severity Rating:*	**Likely**
Designer Response: Agree in part. Pedestrian facilities to be assessed as part of Detailed Design.			
Safety Engineer:			
Client Decision:			
Action Taken:			

2.9 Footpath proximity to the left turn from SH10 to Waipapa Loop Road

The footpath is directly next to the road through the left turn from SH10 into Waipapa Loop Road (refer to **Figure 11**). The obtuse angled exit from the roundabout is likely to increase vehicle speeds turning left and there is the potential for drivers to lose control, or cut the corner", mount the footpath and hit pedestrians. It is desirable to offset the footpath from the road with a grass berm serving as a buffer, as detailed on the other quadrants of the roundabout, to improve pedestrian safety.

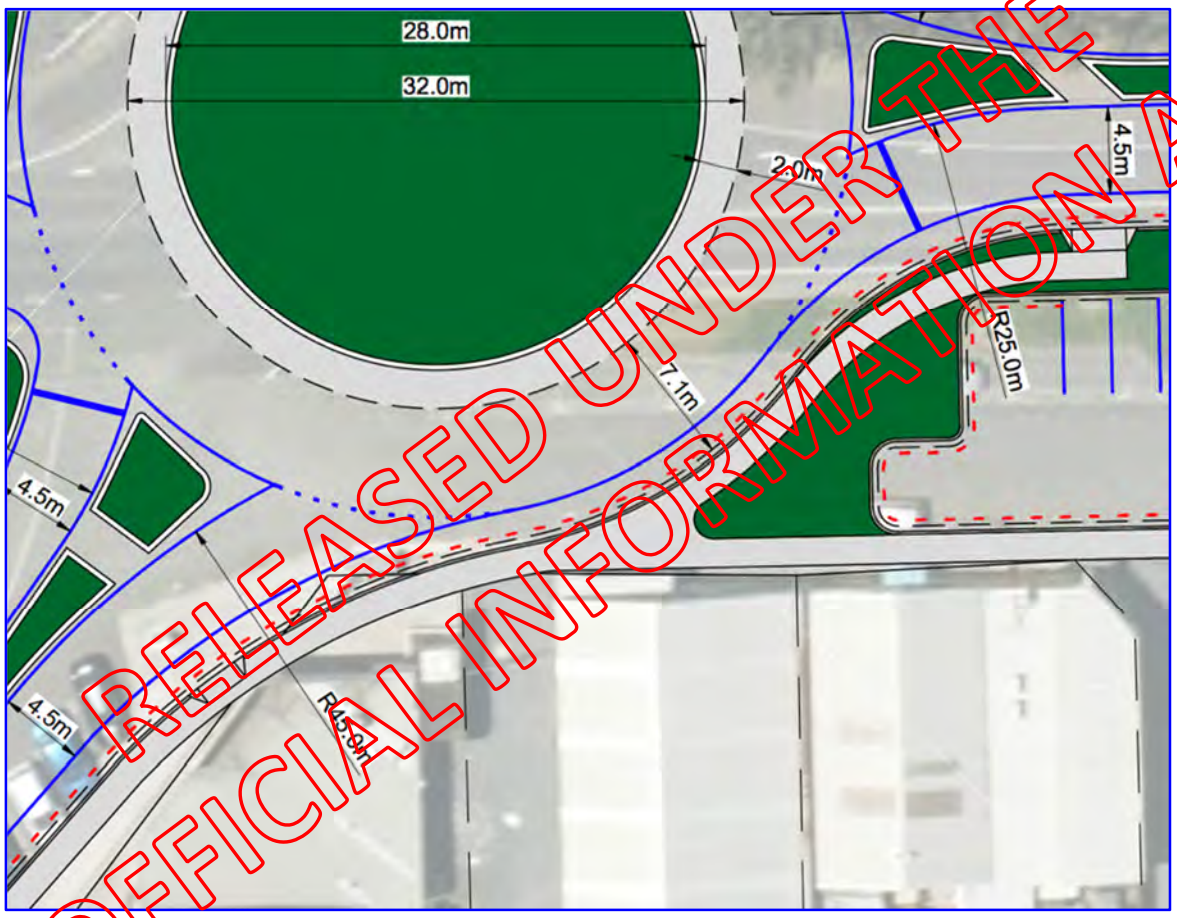

Figure 11: The footpath is next to the road through the left turn from SH10 into Waipapa Loop Road.

Recommendation

Offset the footpath from the road on the left turn from SH10 into Waipapa Loop Road.

Overall Rating: **Moderate**			
Frequency Rating:	**Occasional**	*Severity Rating:*	**Likely**
Designer Response: Agree in part. Need to consider ongoing maintenance of a grass berm in terms of Safety in Design.			
Safety Engineer:			
Client Decision:			
Action Taken:			

2.10 Kerb type

The typical details indicate the use of a vertical kerb profile near the footpath (refer to **Figure 12**). The footpath is next to the road on the left turn from SH10 into Waipapa Loop Road. Vertical kerbs can snag errant vehicles, causing them to mount a footpath and hit pedestrians. Semi-mountable kerbs enable drivers to more easily regain control and avoid mounting the footpath. Vertical kerbs also prevent cyclists mounting the kerb to avoid being hit by vehicles. Semi-mountable kerbs should therefore be use as the preferred safe system treatment.

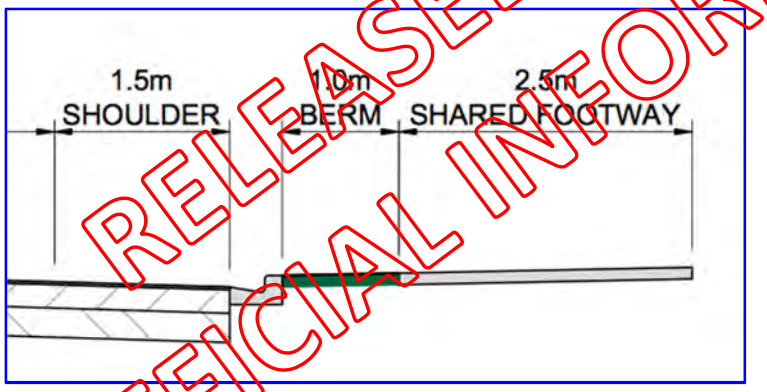

Figure 12: Typical kerb detail near footpath.

Recommendation

Provide semi-mountable kerbs in place of vertical kerbs.

Overall Rating: **Moderate**			
Frequency Rating:	**Occasional**	*Severity Rating:*	**Likely**
Designer Response: Disagree. In an urban environment, at lower speeds, the vertical kerb will redirect errant vehicles, whereas a semi-mountable kerb will make it easier for an errant vehicle to hit a pedestrian. It is also highly unlikely that a cyclist would be aware if they were about to be hit by a car, let alone have time to			

do anything about it. The use of semi-mountable kerbs also encourages driving over, or parking on, the berm/footpath. This is even more likely at this location where on-street parking is being removed. **A possible compromise could be to consider providing semi-mountable kerbs at the pinch-points only, on the apexes of the entry and exit radii.**
Safety Engineer:
Client Decision:
Action Taken:

2.11 Pedestrian connectivity

The auditors support the provision of a 2.5 m shared path on the eastern side of SH10. However, there is no footpath provision on the western side of SH10 with pedestrian access from the northern end of Waipapa to the commercial and retail areas to the south via Skippers Lane and a footpath link to Klinac Lane. The development of the commercial and retail areas to south has been somewhat ad-hoc, and there does not appear to be a planned network of pedestrian connections throughout the area. The provision of additional footpath links as part of this project should be considered as part of a wider strategy for pedestrian connectivity throughout Waipapa. For example, there is a possible pedestrian desire line across SH10 from the southern end of Skippers Lane to the proposed shared path on the eastern side of SH10.

Recommendation

Consider the provision of additional footpath links as part of this project as part of a wider strategy for pedestrian connectivity throughout Waipapa.

Overall Rating: **Moderate**			
Frequency Rating:	**Occasional**	*Severity Rating:*	**Likely**
Designer Response: Agree. To be considered during Detailed Design.			
Safety Engineer:			
Client Decision:			
Action Taken:			

2.12 Left turn treatments at corridor intersections

The project includes the provision of a 2.5 m wide central flush median, 1.5 m wide shoulders and a 2.5 m wide shared path along the eastern side of the road between the Kerikeri River Rest Area and Waipapa Road (refer to **Figures 2 and 3**).

Several accesses and intersections on the western side of SH10 are significant traffic generators. Vehicles turning left will partially block the through lane. Following vehicles may either rear-end the turning vehicle or overtake into the flush median and conflict with opposing vehicles waiting to turn right. Consideration should be given to widening the shoulders to 2.5m for left turning vehicles at high use accesses and intersections.

Recommendation

Consider widening the shoulders to 2.5m for left turning vehicles at high use accesses and intersections.

Overall Rating: **Moderate**			
Frequency Rating:	**Occasional**	*Severity Rating:*	**Likely**
Designer Response: Agree in part. Recommend a detailed analysis is undertaken on the accessway use during Detailed Design.			
Safety Engineer:			
Client Decision:			
Action Taken:			

2.13 Open drains

There are open drains along the western side of SH10, south of Skippers Lane (refer to **Figure 13**). These are a hazard to errant vehicles. It is not clear if these will be replaced with piped drainage as part of the proposed widening.

The Whiriwhiritoa Stream Culvert No.730 is unprotected on the upstream (western) side (refer to **Figure 14**). This is a significant hazard for errant vehicles and should be protected with a roadside barrier.

Figure 13: The open drains along the western side of SH10, south of Skippers Lane.

Figure 14: The Whiriwhiritoa Stream Culvert No.730 that is unprotected on the upstream (western) side.

Recommendations

a) *Replace the open drains along the western side of SH10 south of Skippers Lane with a piped drainage system.*

Overall Rating: **Moderate**			
Frequency Rating:	**Occasional**	*Severity Rating:*	**Likely**
Designer Response: Disagree. Hazard considered to be a low risk, particularly with reduced speed limit. No work is proposed on the western side of SH10, as all the widening will be on the eastern side.			
Safety Engineer:			
Client Decision:			
Action Taken:			

b) *Provide a roadside barrier on the upstream (western) side of the Whiriwhitirtoa Stream Culvert No.730.*

Overall Rating: **Moderate**			
Frequency Rating:	**Occasional**	*Severity Rating:*	**Likely**
Designer Response: Disagree. Hazard is considered to be a low risk, particularly with reduced speed limit. No work is proposed on the western side of SH10, as all the widening will be on the eastern side.			
Safety Engineer:			
Client Decision:			
Action Taken:			

2.14 Power poles

There are power poles along the western side of SH10 (refer to **Figure 15**). These are a hazard to errant vehicles. These will be closer to the edge of SH10 after the proposed widening and more likely to be hit by an errant vehicle, particularly if the drains are replaced with piped drainage, as recommended in **Section 2.13** above. It would be desirable to relocate the power underground through the urban area to remove this hazard.

Figure 15: The existing power poles on the western side of SH10 at the southern access to Skidders Lane.

Recommendation

Consider relocating power underground through the urban area.

Overall Rating: **Moderate**			
Frequency Rating:	**Occasional**	*Severity Rating:*	**Likely**
Designer Response: Disagree. Hazard is considered to be a low risk, particularly with reduced speed limit. No work is proposed on the western side of SH10, as all the widening will be on the eastern side.			
Safety Engineer:			
Client Decision:			
Action Taken:			

2.15 Skippers Lane southern access

The southern access to Skippers Lane requires a difficult 180-degree left turn from SH10 south to the southern end of Skippers Lane (refer to **Figures 15 and 16**). These create conflicts with other vehicles accessing properties off Skippers Lane. Moving the access

about 70 m southwards to align with the 90 degree turn on Skippers Lane would improve accessibility and safety.

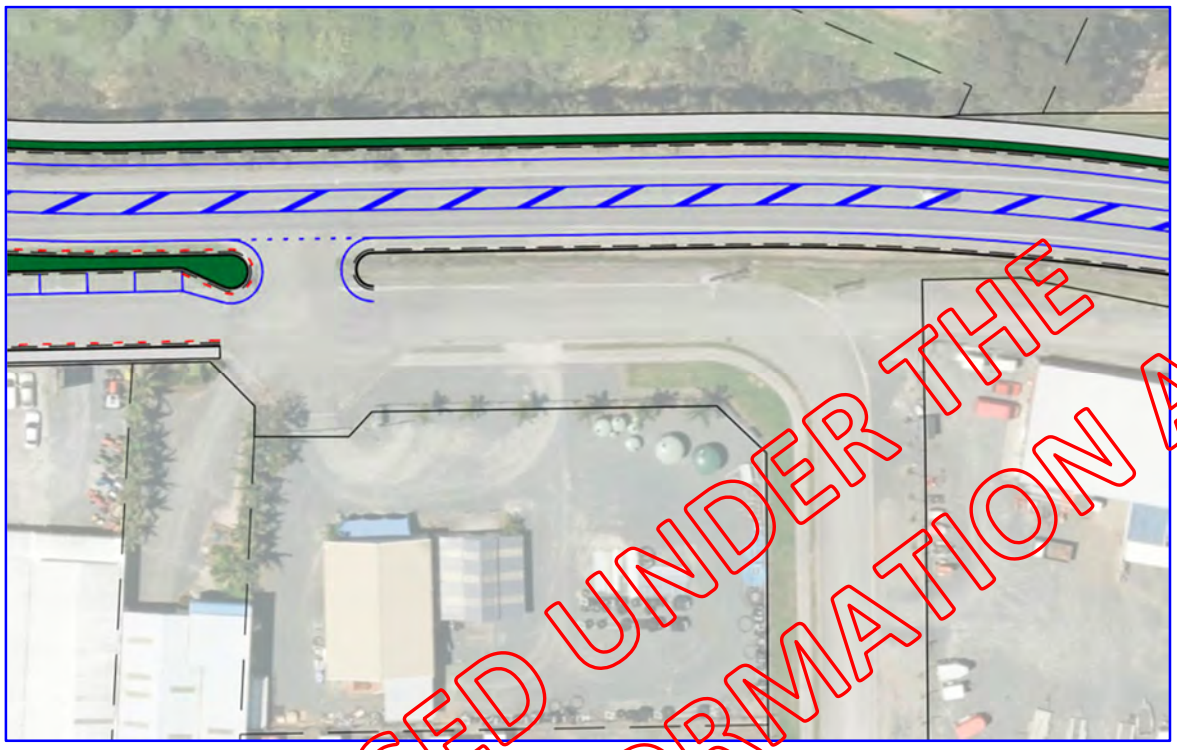

Figure 16: The southern access to Skippers Lane.

Recommendation

Consider relocating the southern access to Skippers Lane southwards by around 70 m.

Overall Rating: **Minor**			
Frequency Rating:	**Occasional**	*Severity Rating:*	**Unlikely**
Designer Response: Agree. To be considered during Detailed Design.			
Safety Engineer:			
Client Decision:			
Action Taken:			

2.16 SH10 north approach to the roundabout

The SH10 north approach to the roundabout ties in to the existing central flush median treatment (refer to **Figures 17, 18 and 19**). Approach speeds in this direction are reasonably high due to rural speed limit and road environment to the north. Speed management measures should be considered to reduce speeds approaching the roundabout.

There are many vehicles turning to access retail and commercial activities in this area and on the approach to the proposed roundabout. There are also frequent pedestrian movements across the road between shops and parked vehicles. These factors result in many existing conflict points approaching the proposed roundabout that should be mitigated.

The auditors consider that the use of additional raised central islands on the north approach to the roundabout would be beneficial in:

- Creating additional side friction to reduce vehicle speeds;
- Providing better definition and control of access to and from SH10; and
- Enabling the provision of refuge areas for pedestrians crossing SH10.

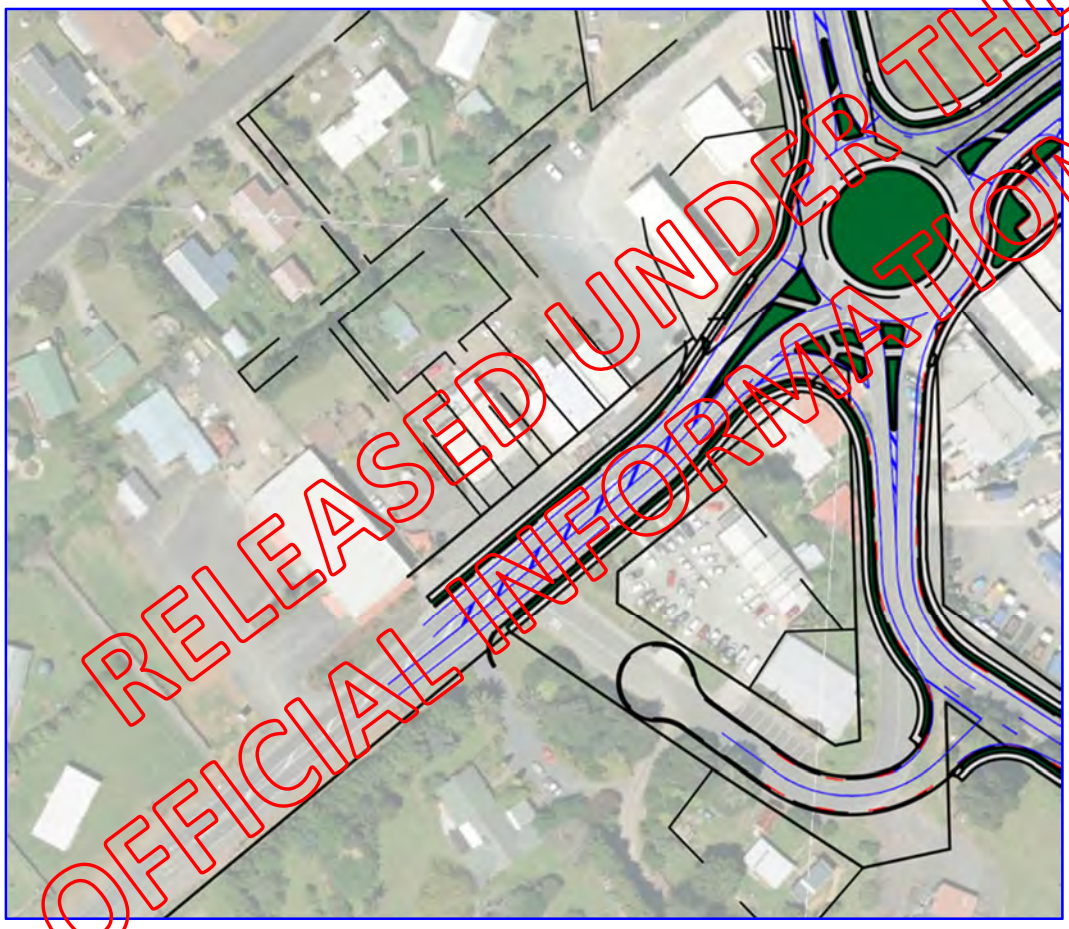

Figure 17: The SH10 north approach to the roundabout tie-ins to the existing central flush median treatment.

Figure 18: The SH10 north approach, 150 m in advance of the roundabout.

Figure 19: The SH10 north approach, 70 m in advance of the roundabout.

Recommendation

Provide additional raised central islands on the SH10 north approach to the roundabout.

Overall Rating: **Significant**			
Frequency Rating:	**Common**	*Severity Rating:*	**Likely**
Designer Response: Agree. To be assessed during Detailed Design.			
Safety Engineer:			
Client Decision:			
Action Taken:			

3 Audit Statement

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

Signed:

Mike Sullivan, BE (Civil), MIPENZ Date: 20/07/2017
Director, NCC Consulting Engineers, Whangarei

Signed:

David Spoonley BEng, CEng, CIHT MICE Date: 20/07/2017
Project Manager / Road Safety Engineer
NCC – Consulting Engineers, Whangarei

Signed:..... Date: 26/07/2017

Bruce Robinson, Pr.Eng. (RSA), M.Eng., B.Sc.Eng. (Civil)
Robinson Transportation Consulting, Tauranga

Designer:	Name.....	Position:……..
	Signature.....	Date:……
Safety Engineer:	Name.....	Position:……..
	Signature.....	Date:……
Project Manager:	Name.....	Position:……..
	Signature.....	Date:……
Action Completed:	Name.....	Position:……..
	Signature.....	Date:……

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

Date:.....

Appendix A: Drawings

APPENDIX P
Stakeholder Consultation and Engagement

Stakeholder Consultation and Engagement

Alteration to the SH10 Waipapa Road intersection has been long in the community's sights to implement, primarily for reasons of safety and efficiency. Stakeholder consultation and community engagement was undertaken as part of the development of the business case to understand people's needs, behaviours and attitudes to the SH10 Waipapa Road intersection. This involved consultation and involvement of key stakeholders to identify a preferred treatment option followed by community engagement and consultation on the preferred design.

The outcomes of the consultation and engagement demonstrates that the community and key stakeholders believe that investment is needed to improve the SH10 Waipapa Road intersection and that they are for the most part committed to achieving the outcome of improving safety, efficiency and network resilience.

The following sections provide a detailed description of the consultation and engagement approach and the views expressed by those consulted.

1. CONSULTATION AND COMMUNICATION APPROACH

The following principles, developed by the Transport Agency, were implemented through the High-level Communications Plan (CP) attached as Appendix B of the Supporting Waipapa Growth: Detailed Business Case, October 2017.

- We know why we are engaging and we communicate this clearly.
- We know who to engage.
- We know the history and background.
- We begin early.
- We are genuine.
- We support and encourage best practice.

The CP summarises the history of the SH10 Waipapa Road intersection, identifies the purpose and goals for the SBC engagement and specifies the level of influence that stakeholder and public participation would have on the SBC. Collateral, Appendix A, was developed to tell the story and inform the public of key milestone information such as public open days, likely consenting phases and preferred construction start.

2. ENGAGEMENT PROCESS

The consultation and communications approach in the CP was designed to deliver the following engagement objectives for both FNDC and the Transport Agency;

- Gain stakeholder support by communicating the preferred option for improving the intersection to key stakeholders, iwi and road users;

- Inform affected parties and communities in order to achieve understanding of the proposed works and their effects;
- Minimise the number of public queries by being proactive in our approach and concise in our publications;
- Gather knowledge from the community and understand others viewpoints; and
- Fulfil the requirements of the Resource Management Act 1991, Land Transport Management Act 2003 and Local Government Act 2002.

To achieve these objectives, a structured sequence of events was implemented to ensure that key stakeholders were consulted on changes, landowners were informed of the preferred option before it became public knowledge and enabling the community to participate in consultation in an accessible manner.

The following provides further information on the delivery of the CP which was prepared and implemented for the purposes of the SBC.

2.1 Key Stakeholders Involved

In partnership with FNDC, NZTA directly engaged with the Ministry of Education, Local Business Association, Bay of Islands-Whangaroa Community Board, Iwi and members of the Northland Transport Alliance on the strategic case to improve the SH10 Waipapa Road intersection. Identifying the need to narrow the focus of the transport needs of the community in relation to the SH10 Waipapa Road intersection, a Waipapa Project Steering Group was set up consisting of representatives from NZTA, Northland Transport Alliance and FNDC's infrastructure and assets group and local community board member Ann Court.

The Ministry of Education (MoE) administers a number of established educational facilities in the area that utilise the intersection. Through early engagement with MoE it was identified that development of a vacant lot along Waipapa Road is planned and that an improvement to the intersection would be beneficial for an education facility at this site in particular but also for the other education centres around the township. MoE did not raise any concerns as part of this initial consultation.

The Local Business Association have been lobbying for a number of years for improvement to be made to the SH10 Waipapa Road intersection. Their only concern was that improvements being investigated would not continue through to the next stages.

The BOI-Whangaroa Community Board were presented with the preferred option on 22nd May 2017 at a closed meeting. Numerous questions were asked by the Board at the time of the meeting and these questions were answered satisfactorily by the Project team members. The Board had similar sentiment as the Local Business Association in that it would be a disappointment for the community if the options for improvement did not continue to the next stages.

Waipapa is within the rohe of Ngâpuhi iwi with Ngâti Rêhia holding mana whenua of this area. Sebastian Reed, Keith Kent and Rewi Spraggon, NZTA Maori Liaison Co-ordinator met with kuia Nora Tawhi Rameka to inform of progress with the business case, discuss project development and the approach to delivering this information back to mana whenua. Neither Iwi nor the hâpu raised any particular concerns with the decision to proceed with an engineering solution to the traffic issues at the intersection. However, it is their aspiration to be involved in the planning and construction phases, particularly to manage any accidental discoveries of heritage or waahi

tapu or taonga artefacts. A cultural value assessment has been requested as part of the detailed design phase.

2.2 Affected Parties Informed

With the assistance of FNDC, the following landowners were identified as being directly affected by the preferred intersection alteration and/or the extension to Klinac Lane either as adjacent landowners or as owners where land is to be acquired.

Legal Description	Proprietors	Potential Acquisition Required? (☒)
Lot 1 DP 203534	Adrian Richard Manning, Richard Patrick Wallace	☐
Lot 1 DP 490482	Elsdon Properties Limited	☐
Lot 2 DP 490482	Waipapa Storage Limited	☐
Pt Lot 2 DP 22952	Top Energy Limited	☒
Lot 2 DP 153648	Waipapa Garage Northland Limited	☒
Lot 2 DP 208329	Jennifer Kathleen Mark, John Charles Mark	☐
Lots 1- 6 DP 429319	Wiroa Properties Limited	☒
Lot 1 DP 153739	Linita Holdings Limited	☒
Lot 2 DP 490482	Waipapa Storage Limited	☐
Sec 3 SO 438821	WBC Developers Ltd	☐
Sec 4 SO 438821	Ross Auld, Judith Auld, David Gibson	☐
Lot 1 DP 193119	Deborah Elaine Bartlett, Denise Raeleen Welsh, Gaeleen Muriel Turner, Keith Bryce Turner	☐
Lot 2 DP 72659	Edward Martin Wilberforce Lock, Robin Wilberforce Lock	☒

Landowners whose property may need to be acquired for the preferred roundabout design have been generally receptive of acquisition by agreement. However, tenants of two properties have not been as receptive as their landlords with the roundabout option, but not necessarily against the idea, their concerns are discussed as follows.

The Pioneer Bar resides on Lot 5 DP 429319 (owned by Wiroa Properties) and while the preferred option is to avoid the land and the building, parking on the roadside in front of The Pioneer will be removed to accommodate a roundabout option at the intersection. The owner and operator of The Pioneer is concerned about the impact the loss of car parks would have on the business.

They are awaiting the outcome of the business case and would like to be involved in detailed design.

Land where the Pricecutter is located (Lot 2 DP 72659) is in a state of conditional purchase by the shop owner and acquisition discussions have been transferred to the new owner (Mr and Mrs Patel). The new owners anticipate that they will be able to continue to operate a smaller Pricecutter under the preferred roundabout option however, this may not be the case and ongoing discussions are being had with Mr Patel, the NZTA project manager and Crown Properties. On street parking in the immediate vicinity of the property is understood to be critical to the viability of business, given its 'convenience store' function. However, parking on SH10 in front of the shop will very likely be lost to ensure the safe and efficient operation of the intersection.

On the opposite side of SH10, the land is vacant but the owner has development aspirations, he is willing to work with NZTA and FNDC to accommodate the intersection upgrade, which he views as a benefit to any onsite business.

A realignment of Waipapa Loop Road would impact a portion of a property owned by Top Energy. Top Energy has indicated no essential services are located on the subject portion and they are happy, in principle, to negotiate land purchase.

In concluding, compulsory land acquisitions are not expected due to the relationships that have been developed through early consultation with the potentially affected land owners. However, effects on tenant businesses have been identified as a concern, potentially requiring these parties to be involved more so during detailed design.

2.3 Public Participation

The Transport Agency in partnership with the FNDC held a Public Open Day on 1 June 2017. The Open Day gave the Transport Agency and FNDC valuable feedback that there is a high level of community support for a roundabout at the intersection of SH10 and Waipapa Road and for the extension of Klinac Lane to provide a simple connection between the eastern and western extents of the town. In total, over 100 people came along to the open day held at the local Waipapa Community Hall.

The feedback received from stakeholders and the community was consistently in favour of improving the intersection to enable safer and more efficient journeys. Appendix B provides a summary of the feedback received which has informed a number of elements in the SBC.

APPENDIX A: COLLATERAL

SH10 WAIPAPA IMPROVEMENTS

CONNECTING COMMUNITIES

TRANSPORT NETWORK

The SH10 Waipapa intersection is a key point for road transport connections for tourism, primary industries, local workforces and the community.

As a result of the development of the town around the old roading infrastructure, the town is split across both sides of SH10. Although provisions were made to connect the township via Waipapa Loop Road, the link has not been built. Subsequently, no direct connections exist between the east and west of the township.

Changes to the intersection will improve the transport network:

- Providing more direct links within the Waipapa township, reducing travel times and journey lengths;
- Creating resilience in the immediate and wider transport system in the area by providing additional route choices through the construction of the local road extension (Klinac Lane) and improving journey time reliability;
- Including options to take alternative modes of transport such as cycling or walking throughout the township through integrated design;
- Removing travel constraints on the Twin Coast Discovery route at this site;
- Providing a long-term transport solution for the future as the region's population grows and tourist numbers increase.

WAIPAPA

WALKING AND CYCLING

Although footpaths are provided for short sections in the town centre, no facilities are provided to assist in crossing SH10. Speed on SH10 is also a barrier to safe pedestrian movement across the state highway.

The existing intersection layout creates safety risks for cyclists due to on street parking, as well as the risk taking behaviours of queuing drivers.

The roundabout will assist in slowing State Highway traffic through the Waipapa township, making the road safer and more appealing for pedestrians and cyclists.

New footpaths and safer crossing points will promote and support active modes of transport around the township.

These improvements will add to the existing quality pedestrian and cyclist facilities on Waipapa Road, promoting active transport connections with Kerikeri.

The location of footpaths and crossing points will provide safer connections for Waipapa businesses and community on either side of SH10.

KERIKERI

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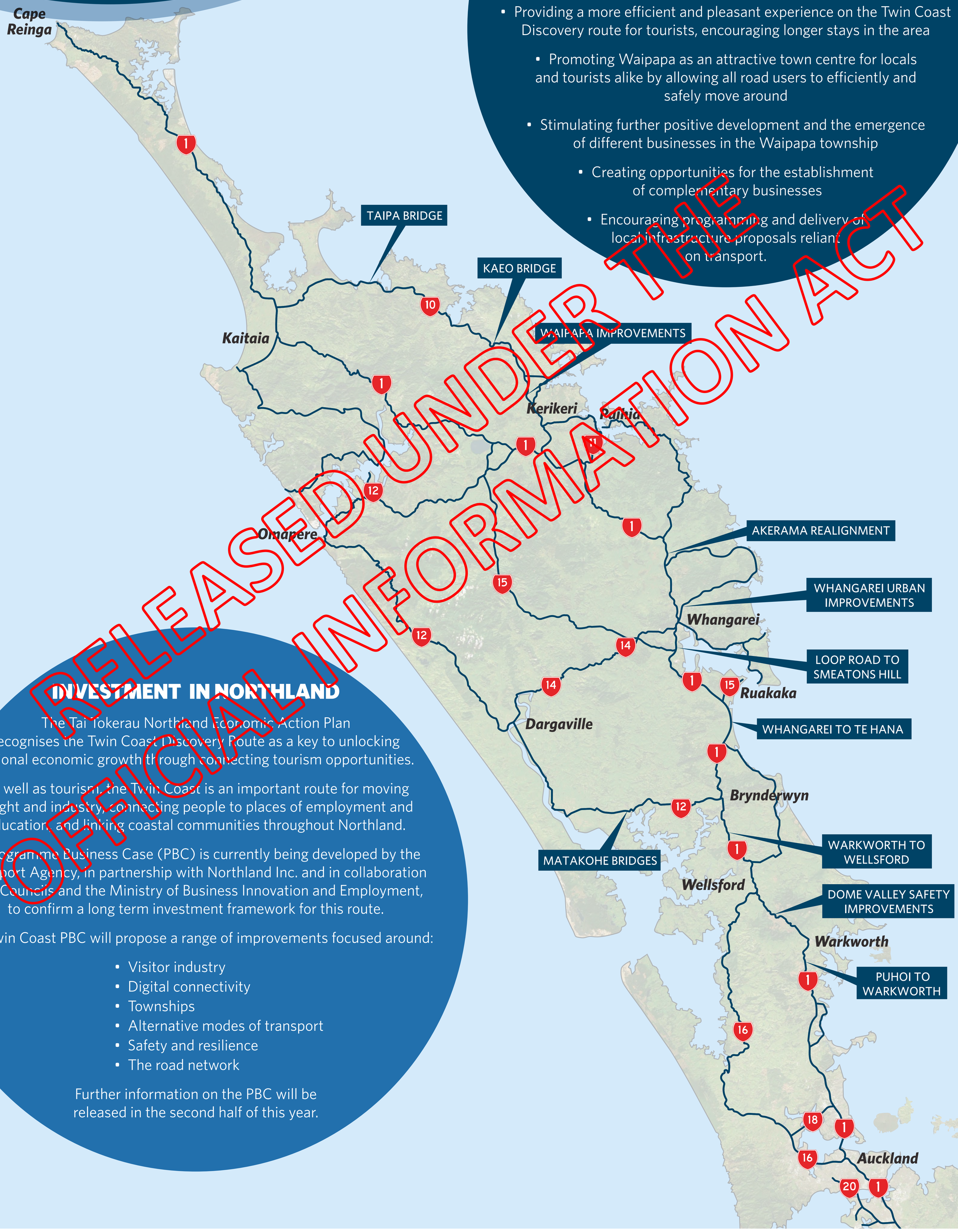
CONNECTING NORTHLAND

SH10 WAIPAPA IMPROVEMENTS



ECONOMIC GROWTH

Improvements to the SH10 Waipapa intersection in conjunction with the Far North District Plan review will enable economic opportunities for Waipapa, Kerikeri and the Far North, by:

- Creating a safe, simple gateway to Waipapa and Kerikeri townships and businesses along connected local roads, particularly the proposed extension of Klinac Lane
- Providing a more efficient and pleasant experience on the Twin Coast Discovery route for tourists, encouraging longer stays in the area
- Promoting Waipapa as an attractive town centre for locals and tourists alike by allowing all road users to efficiently and safely move around
- Stimulating further positive development and the emergence of different businesses in the Waipapa township
- Creating opportunities for the establishment of complementary businesses
- Encouraging programming and delivery of local infrastructure proposals reliant on transport.

INVESTMENT IN NORTHLAND

The Tai Tokerau Northland Economic Action Plan recognises the Twin Coast Discovery Route as a key to unlocking regional economic growth through connecting tourism opportunities.

As well as tourism, the Twin Coast is an important route for moving freight and industry, connecting people to places of employment and education, and linking coastal communities throughout Northland.

A Programme Business Case (PBC) is currently being developed by the Transport Agency, in partnership with Northland Inc. and in collaboration with Councils and the Ministry of Business Innovation and Employment, to confirm a long term investment framework for this route.

The Twin Coast PBC will propose a range of improvements focused around:

- Visitor industry
- Digital connectivity
- Townships
- Alternative modes of transport
- Safety and resilience
- The road network

Further information on the PBC will be released in the second half of this year.

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New Zealand Government

SH10 WAIPAPA IMPROVEMENTS

SH10 is part of the Twin Coast Discovery Route providing access to significant tourist destinations including popular swimming beaches to the north, Kerikeri township to the east, Puketi Forest walks to the west and the Bay of Islands and Waitangi to the southeast.

The SH10 Waipapa intersection experiences an average of 13,000 vehicle movements per day and the intersection is a key transport connection for tourism, primary industries, local workforces and the communities of Waipapa and Kerikeri.

THE CASE FOR CHANGE

Growth in Waipapa and Kerikeri means improvements to the transport network at Waipapa are needed to improve safety, reduce congestion and support continued growth.

The current cross roads intersection is of substandard design, lacking road width to allow traffic to flow onto and off of the State Highway efficiently and safely, with right-turn movements particularly challenging at peak times. There have been seven reported crashes between 2011 and 2016 at or near the intersection.

There is a lack of space for cyclists to travel safely through the intersection. The posted speed limit of 70 km/hr and the absence of safe crossing places, also makes the area unappealing for pedestrians.

Traffic congestion and travel delays during seasonal peaks contributes to accidents, often due to driver frustration and risk taking behaviours.

WAIPAPA

10

WAIPAPA LOOP ROAD

WAIPAPA ROAD

KLINAC LANE EXTENSION

10

10

FEEDBACK SOUGHT ON POSSIBLE CLOSURE OF WAIPAPA LOOP RD (NORTH) INTERSECTION

PROPOSED IMPROVEMENTS

A single lane roundabout is proposed at the intersection of SH1 and Waipapa Road. Improvements to the intersection include new footpaths and crossing points for pedestrians and traffic islands at the approaches to the intersection.

An extension of Klinac Lane is also proposed to provide additional route options in Waipapa.

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Far North District Council

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SH10 WAIPAPA IMPROVEMENTS

THE PREFERRED SOLUTION

The preferred option for the SH10 Waipapa Road intersection is a single-lane roundabout and an extension to Klinac Lane.

Installing a roundabout reduces peak time congestion and vehicle queuing and makes it easier and safer for vehicles to turn right from SH10 and right out of the side roads (Waipapa Road and Waipapa Loop Road).

The proposed roundabout design and speed limit review will assist in slightly slowing State Highway traffic through the Waipapa township, making it safer and more appealing for pedestrians and cyclists.

Further improvements to the intersection can be included to promote and support active modes of transport and improve connectivity between Waipapa businesses and community on either side of SH10 and the local roads either side, whilst ensuring that SH10 remains an efficient through route.

The roundabout option will help integrate the transportation network with activities in the township, facilitating the economic growth and improving connectivity for the Waipapa and Kerikeri communities.

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SH10 WAIPAPA INTERSECTION IMPROVEMENTS

The NZ Transport Agency, on behalf of the NZ Government, in partnership with the Far North District Council have developed a preferred solution to improve the transport network in Waipapa.

Come along to our public information day to see what changes are proposed to the intersection of SH10 and Waipapa Road, talk to the project team and have your questions answered.

Thursday 1 June
3pm - 6.30pm

Waipapa Hall
Loop Road, Waipapa

For more information please visit
https://www.nzta.govt.nz/twin-coast-discovery-route/waipapa-growth/
or email **connecting-northland@nzta.govt.nz**

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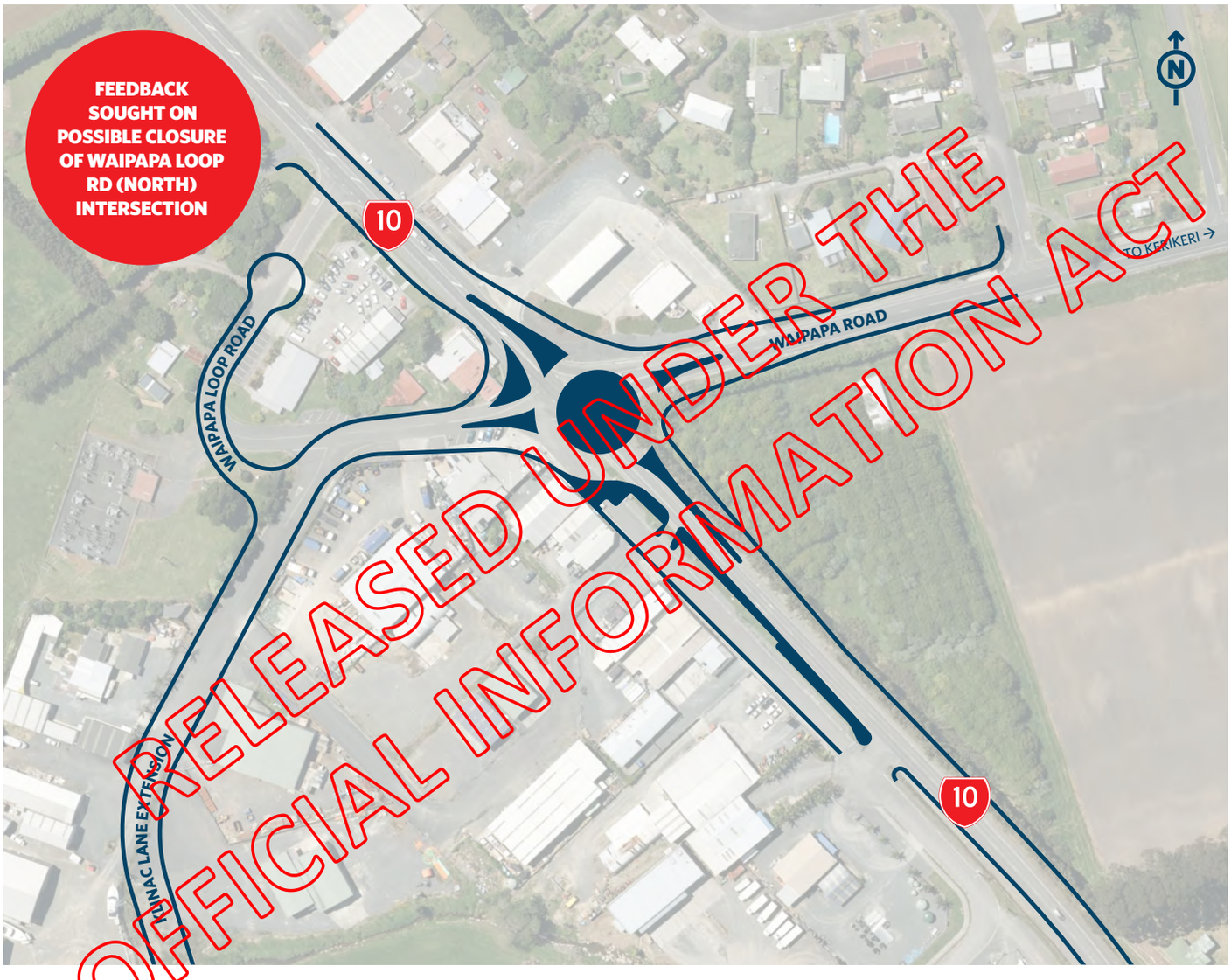
SH10 Waipapa Improvements
FACT SHEET JUNE 2017

The NZ Transport Agency, on behalf of the NZ Government and in partnership with the Far North District Council, is planning improvements to the transport network in Waipapa.



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The SH10 Waipapa intersection experiences an average of 13,000 vehicle movements per day and the intersection is a key transport connection for tourism, primary industries, local workforces and the communities of Waipapa and Kerikeri.

Growth in Waipapa and Kerikeri means improvements to the transport network at Waipapa are needed to improve safety, reduce congestion and support continued growth.

Traffic congestion and travel delays during seasonal peaks contributes to accidents, often due to driver frustration and risk taking behaviours.

PROPOSED IMPROVEMENTS

A single-lane roundabout is proposed at the intersection of State Highway 10 and Waipapa Road. Installing a roundabout will reduce peak time congestion and make it easier and safer for vehicles to connect with businesses and community on either side of SH10.

The preferred roundabout design will improve safety by

- Slowing traffic
- Reducing the frequency of higher-speed crashes and this location by provide safer turning movements onto and off the State Highway
- Reducing peak time congestion and vehicle queuing

In conjunction with the intersection changes, the Far North District Council will be extending Klinac Lane, which will provide an alternate and route to and from the Waipapa township.

ECONOMIC GROWTH

Improvements to the SH10 Waipapa intersection in conjunction with the Far North District Plan review will enable economic opportunities for Waipapa, Kerikeri and the Far North, by

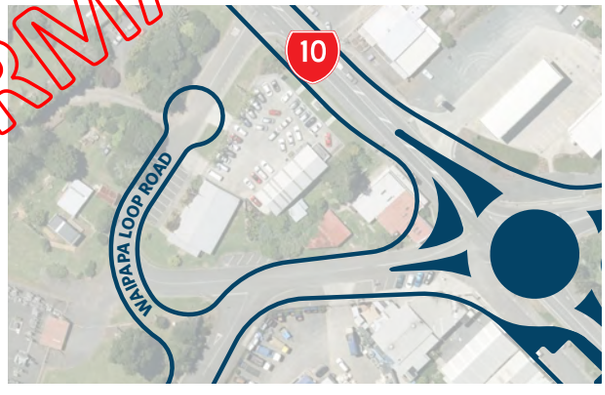
- Creating a safe, simple gateway to Waipapa and Kerikeri townships and businesses along connected local roads, particularly the proposed extension of Klinac Lane
- Providing a more efficient and pleasant experience on the Twin Coast Discovery route for tourists, encouraging longer stays in the area
- Promoting Waipapa as an attractive town centre for locals and tourists alike by allowing all road users to efficiently and safely move around
- Stimulating further positive development and the emergence of different businesses in the Waipapa township
- Creating opportunities for the establishment of complementary businesses
- Encouraging programming and delivery of local infrastructure proposals reliant on transport.

TRANSPORT NETWORK

The SH10 Waipapa intersection is a key point for road transport connections for tourism, primary industries, local workforces and the community.

Changes to the intersection will improve the transport network:

- Providing more direct links within the Waipapa township, reducing travel times and journey lengths;
- Creating resilience in the immediate and wider transport system in the area by providing additional route choices through the construction of the local road extension (Klinac Lane) and improving journey time reliability;
- Including options to take alternative modes of transport such as cycling or walking throughout the township through integrated design;
- Removing travel constraints on the Twin Coast Discovery route at this site;
- Providing a long-term transport solution for the future as the region's population grows and tourist numbers increase.



FEEDBACK SOUGHT

As part of the intersection improvements, stopping vehicle access to and from the State Highway at Waipapa Loop Road (north) is proposed. This will improve safety on SH10 by removing turning traffic in proximity to the roundabout which will also help the intersection function more efficiently. We invite feedback on this proposed closure via email to: northlandproject@nzta.govt.nz

CONTACT US

If you have any questions on the SH10 Waipapa Improvements, please contact:

Sebastian.reed@nzta.govt.nz or Keith.kent@fndc.govt.nz

NZ Transport Agency 0800 44 44 49

Far North District Council 0800 920 029

More information can be found at www.nzta.govt.nz/twin-coast-discovery-route/waipapa-growth

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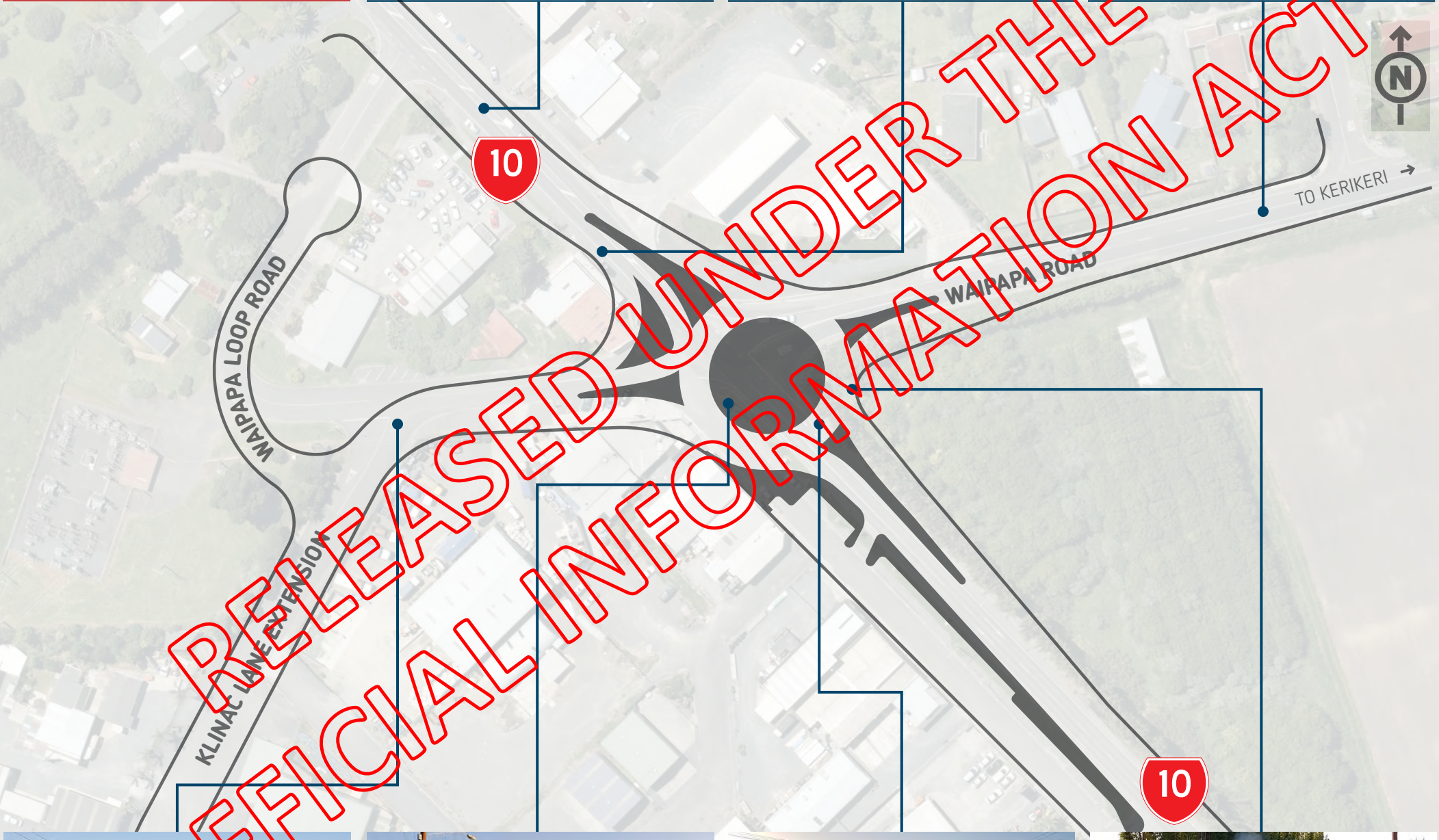
APPENDIX B: PUBLIC OPEN DAY FEEDBACK

FEEDBACK RECEIVED ON ROUNDABOUT OPTION AT SH10 WAIPAPA ROAD INTERSECTION

- Access and parking are important to business and impact should be avoided or minimised.
- People described many ways that road users accessed local shops and cafes.
- The places where people park were not necessarily where you would think they would park.

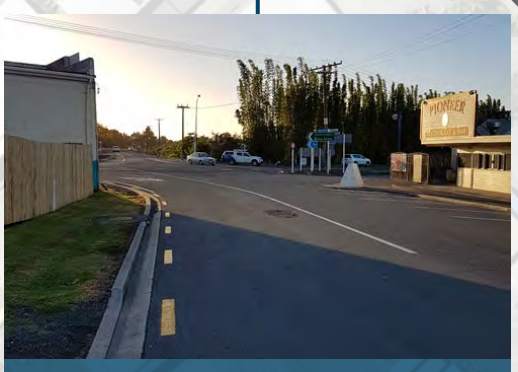
- Footpaths could be improved.
- Pedestrian crossings would be good to have to cross safely.
- A cycleway which links up to the Heritage Bypass cycleway would be logical.

- The speed limit/operating speed is too high and has implications on safety and pedestrian access across the State Highway.
- People realised that actual speeds would naturally reduce as a result of a roundabout at this location.

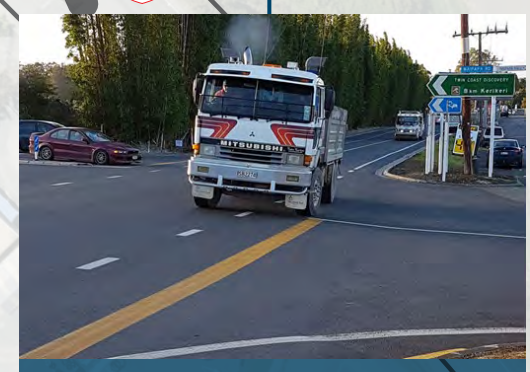


- People currently used Waipapa Loop Road (North) as a way of avoiding the challenges of the Waipapa Road intersection with the State Highway.
- A high number of people supported full closure of Waipapa Loop Road (North).
- Closure of Waipapa Loop Road (North) should only take place if the roundabout is constructed.

- A roundabout would reduce peak time congestion and vehicle queuing.
- Safer turning movements onto and off of the State Highway.
- Concerned that exit/ entry point to the BP Petrol Station would be compromised on Waipapa Road.



- People were unsure whether a single-lane roundabout would have sufficient capacity, a left-turn slip lane was suggested by many.
- Closing off top of Skippers Lane was agreeable, so long as other accessways to these businesses were maintained.



- Unsafe vehicle manoeuvring under current road layout is very concerning to the community and road users.
- Signage to the commercial area on Klinac Lane should be integrated with existing signage.
- There are a high number of accidents (i.e., nose-to-tail) at this intersection.