



*Tahunanui Cycle Network Investigations*

# **Investigation of Possible Options Short List of Options Delivery 2**



*Tahunanui Cycle Network Investigations*

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# Investigation of Possible Options

## Short List of Options

### Delivery 2

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 10/7/14  
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# Executive Summary

This report documents Deliverable 2 of the project: Tahunanui Cycle Network Investigations. Opus International Consultants Ltd (Opus) was commissioned to undertake this work by the Nelson City Council (NCC) 7 March, 2014. The brief was aimed at finding a viable option to close the key missing link in the cycle network once the Rocks Rd walking and cycling facility is constructed. Currently there are no cycle facility connections between the southern terminus of the Rocks Rd on-road cycle path, the northern terminus of Railway Reserve and the northern terminus of the Whakatu Drive shared paths at Annesbrook roundabout nor the Richmond-Nelson coastal shared path ending at the Bolt Road/Quarantine Road roundabout.

The objective of this Deliverable 2 stage of the project was to take the Design Teams agreed short list of options and to provide preliminary drawings including cross sections demonstrating the feasibility and constraints of the various options.

In compiling this report the following tasks were undertaken:

- Development of a Design Parameters
- Preliminary Drawing showing the available area on Cross Section Drawings
- Identification of the Feasibility and Constraints of the Options
- Preliminary Rough Order Cost Estimates for the Options

The table below outlines the routes investigated:

Options Investigated		Details	Rough Order Cost Estimate
Option	Route		
Option 1 Tahunanui /Annesbrook Drive	Rocks Rd Walking and Cycling Facility/Tahunanui Dr/Annesbrook Dr	2.1km Road upgrade	\$2,614,000
Option 2 Muritai St / Pascoe St / Whakatu Dr Underpass	Rocks Rd Walking and Cycling Facility /Beach Rd/Waikare St/Muritai St/Parkers Rd/Pascoe St/Merton Place/Blackwood Street (through existing connection via Merton Way)/across Jenkins Creek/around Mitre 10 site (Nelson Junction)/Whakatu Dr Underpass	2.75km with off road section along Beach Road or 2.75km alternative on road section along Beach Road -	\$1,090,000  \$946,000
Option 4 Roto St / Bolt Rd	Rocks Rd Walking and Cycling Facility /Beach Rd/Waikare St/Muritai St/Beavens Way/Roto St/Parkers	2.51km road upgrade	\$763,000

	Rd/Bolt Rd/Airport Cycleway (Trent Drive)		
Option 6 Tourist / Airport Route	Rocks Rd Walking and Cycling Facility /Beach Rd/Golf Rd/Parkers Rd/Awatea Place/around the edge of the golf course/Bolt Rd/Airport Cycleway (Trent Drive)	2.74km off road route through golf course	\$1,905,000
Option 6A Tahunanui / Annesbrook Drive	Variation of 6 above: Instead of using Awatea Place/around the edge of the golf course could use Otterson St and link onto Bolt Rd via Golf Haven Way	2.83km alternative road route to option 6	\$2,070,000
Option 8 - Cross Link Whakatu Dr Underpass / Blackwood ST / Bolt Rd	Whakatu Dr Underpass/ Around Mitre 10/ Across Jenkins Creek/ Blackwood Street (through existing connection via Merton Way)/Merton Pl/Pascoe St/Vivian Pl/new connection through Vaughn Whiting Builders Ltd yard/Rotherham St/Bolt Rd	1.43km road upgrade and off road route through industrial area	\$1,169,000
Option 9 - Cross Link Green Street	Green St (from SH6 through to Golf Rd). This link will need to include connections to and from Tahunanui School via Muratai St upgrades.	0.73km off road cycleway option or 0.73km alternative on road cycleway option	\$528,000  \$1,130,000

Completion of the initial investigation of possible options has confirmed the need for both a network of cycle routes within the study area and links as a continuation of the proposed Rocks Road walking and cycling facility, the Rail Reserve, the Whakatu Drive cycle paths at Annesbrook roundabout and the shared path at Bolt Road and Quarantine Road roundabout.

Further more detailed parking assessment and further cost estimates will be undertaken in the next phase of the project once a single option has been agreed with the Council after community engagement is undertaken.

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# Introduction

This report documents Deliverable 2 of the project: Tahunanui Cycle Network Investigation. Opus International Consultants Ltd (Opus) was commissioned to undertake this work by the Nelson City Council (NCC) 7 March, 2014. The brief was aimed at finding a viable option to close the key missing link in the cycle network once the Rocks Rd walking and cycling facility is constructed. Currently there are no cycle facility connections between the southern terminus of the Rocks Rd on-road cycle path, the northern terminus of Railway Reserve and the northern terminus of the Whakatu Drive shared paths at Annesbrook roundabout nor the Richmond-Nelson coastal shared path ending at the Bolt Road/Quarantine Road roundabout.

The Deliverable 1 report of this work recorded the following investigations:

- Existing Environment/Data Collection/Key Stakeholder Workshop
- Identification of Key Issues and Constraints
- Option Development
- Option Evaluation
- Feedback from the NZ Transport Agency
- Option Recommendations

The investigations above were used to determine a long list of route options and then to reduce this down to a shortlist of route options. The short list of options was agreed on with Nelson City Council staff.

The objective of this Deliverable 2 stage of the project was to take the Design Team agreed short list of options and to provide preliminary drawings including cross sections demonstrating the feasibility and constraints of the various options.

In compiling this report the following tasks were undertaken:

- Development of a Design Parameters
- Preliminary Drawing showing the available area on Cross Section Drawings
- Identification of the Feasibility and Constraints of the Options
- Preliminary Rough Order Cost Estimates for the Options

# Summary of the Short Listed Routes

Six routes in total were further investigated in this stage. This six routes included four main routes and two cross route connections as are set out below:

- Option 1: Tahunanui/Annesbrook Drive – Commuter Route (suitable for the following cyclists: strong and fearless, enthused and confident and a small number of interested but concerned<sup>1</sup>)
  - » Route: Rocks Rd Walking and Cycling Facility /Tahunanui Dr/Annesbrook Dr
- Option 2: Muritai St/Pascoe St/Whakatu Dr Underpass – Commuter and School Route (suitable for the following cyclists: strong and fearless, enthused and confident and over half of the interested but concerned)
  - » Rocks Rd Walking and Cycling Facility /Beach Rd/Waikare St/Muritai St/Parkers Rd/Pascoe St/Merton Place/Blackwood Street (through existing connection via Merton Way)/across Jenkins Creek/around Mitre 10 site (Nelson Junction)/Whakatu Dr Underpass
- Option 4: Roto St/Bolt Rd – Commuter/Tourist/Recreational and School Route (suitable for the following cyclists: strong and fearless, enthused and confident and over half of the interested but concerned)
  - » Rocks Rd Walking and Cycling Facility /Beach Rd/Waikare St/Muritai St/Beavans Way/Roto St/Parkers Rd/Bolt Rd/Airport Cycleway (Trent Drive)
- Option 6: Tourist/Airport Route Recreation/Tourist and route suitable for cyclists to gain confidence. (suitable for the following cyclists: strong and fearless, enthused and confident and the interested but concerned)
  - » Rocks Rd Walking and Cycling Facility /Beach Rd/Golf Rd/Parkers Rd/Awatea Place/around the edge of the golf course/Bolt Rd/Airport Cycleway (Trent Drive)
  - » Option 6A: Instead of using Awatea Place/around the edge of the golf course could use Otterson St and link onto Bolt Rd via Golf Haven Way
- Option 8 Cross link: Whakatu Dr Underpass /Blackwood St/Bolt Rd – Access for Commuters to Industrial Area. (suitable for the following cyclists: strong and fearless, enthused and confident and over half of the interested but concerned)
  - » Whakatu Dr Underpass/ Around Mitre 10/ Across Jenkins Creek/ Blackwood Street (through existing connection via Merton Way)/Merton Pl/Pascoe St/Vivian Pl/new connection through Vaughn Whiting Builders Ltd yard/Rotherham St/Bolt Rd

<sup>1</sup> Classifications of the cyclists types is consistent with Gellar's' 2009. See: Investigation of Possible Options Delivery 1 report for further information.

- Option 9 Cross link: Green St – School and Community Cross link (suitable for the following cyclists: strong and fearless, enthused and confident and the interested but concerned)
  - » Green St (from SH6 through to Golf Rd). This link includes connections to and from Tahunanui School via Muratai St upgrades.

These routes are depicted below:

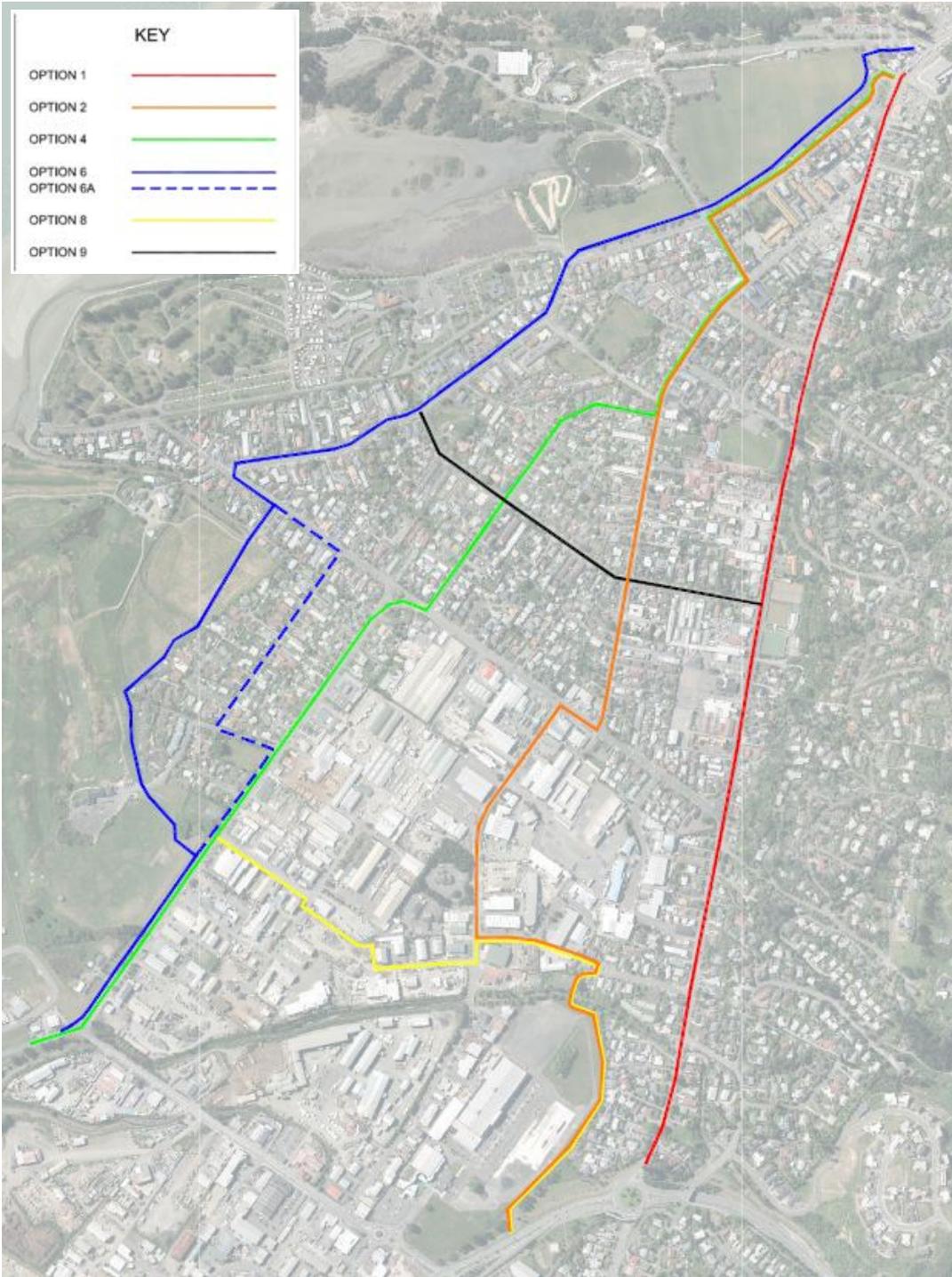


Figure 1: Routes for Further Evaluation

## Design Parameters

To enable further investigation design for each route has been considered using the following design parameters. The design parameters were developed using the Level of Service/type of cyclist criteria developed in the Delivery 1 Report. For further information on the specific design parameters for each Level of Service see Appendix A.

Design Parameters			
Option	Route	Designed for cyclist types	Level of Service
Option 1	Rocks Rd Walking and Cycling Facility/Tahunanui Dr/Annesbrook Dr	<ul style="list-style-type: none"> <li>• Strong and Fearless</li> <li>• Enthused and Confident</li> <li>• A small portion of the Interested but Concerned</li> </ul>	B
Option 2	Muritai St/Pascoe St/Whakatu Dr Underpass	<ul style="list-style-type: none"> <li>• Strong and Fearless</li> <li>• Enthused and Confident</li> <li>• Over half of the Interested but Concerned</li> </ul>	B
Option 4	Roto St/Bolt Rd	<ul style="list-style-type: none"> <li>• Strong and Fearless</li> <li>• Enthused and Confident</li> <li>• Over half of the Interested but Concerned</li> </ul>	A/B
Option 6	Tourist/Airport Route	<ul style="list-style-type: none"> <li>• Strong and Fearless</li> <li>• Enthused and Confident</li> <li>• Interested but Concerned</li> </ul>	A/B
Option 8 Cross Link	Whakatu Dr Underpass /Blackwood St/Bolt Rd	<ul style="list-style-type: none"> <li>• Strong and Fearless</li> <li>• Enthused and Confident</li> <li>• Over half of the Interested but Concerned</li> </ul>	A/B
Option 9 Cross Link	Green St	<ul style="list-style-type: none"> <li>• Strong and Fearless</li> <li>• Enthused and Confident</li> <li>• Over half of the Interested but Concerned</li> </ul>	A

## Option Details

Using the design parameters developed above, aerial photographs overlaid with land boundaries were used to determine the available width along each route. Cross section for each option were then developed that meet the design parameters. A review of each route was then undertaken to determine impacts on the existing road layout, parking and property, to identify any constraints along the route. The tables below provide a summary of the finding for each route. Property Boundaries and Cross Section plans for each of the routes can be found in Appendix B.

<b>Option 1: Tahunanui/Annesbrook Drive</b>			
<b>Designed for</b>	Route to cater for: Confident commuter, sport and recreational cyclists moving within Tahunanui and/or connecting with either Rocks Rd/Whakatu Drive/Railway Reserve		
<b>Key Advantages of the Route</b>	<ul style="list-style-type: none"> <li>• Potential to reduce the crash rate on this road (note: this section of road has the highest cycle crash rate within the study area)</li> <li>• Provides a direct connection for commuter cyclists. It will appeal to commuters even if other routes are provided. For this reason this route has been designed as an on-road direct route.</li> <li>• Potential to improve consistency along the route for all road users as well as opportunity for landscaping and “softening” of the road corridor to promote a safer environment.</li> <li>• Would not require resource consent unless significant earthworks are required around the Winns Lane / Tosswill Rd area (landward side). Initial investigations suggest that this would not be needed.</li> </ul>		
<b>Key Constraints of the Route</b>	<ul style="list-style-type: none"> <li>• Highest traffic volume road within the study area (due to being SH6), HPMV route and high level of heavy vehicles (8.1% Class 4+ and up).</li> <li>• Cyclists will still have to contend with poor visibility of some access ways</li> <li>• Will require removal of some on-road parking outside some business and homes which could be contentious</li> </ul>		
<b>Impact on road layout</b>	<b>Impact on parking</b>	<b>Impact on Property</b>	<b>Gradient Issues</b>
<p>The existing road layout varies along the route and has no consistent cycle facilities along the route.</p> <p>The proposed changes will provide greater lane width consistency along the route. This will include at a minimum:</p> <ul style="list-style-type: none"> <li>• 3.5m wide road lanes</li> <li>• 1.8m wide cycle lanes past parking</li> <li>• 1.5m wide single cycle lanes</li> <li>• 1.5m wide footpaths</li> <li>• 2.5m right turn bays</li> <li>• 2m wide parking bays</li> </ul>	<p>Full road widening: This option has parking on both sides. There will be a loss of some parking along the route to accommodate right-turn bays at existing pinch points.</p> <p>Markings only upgrade: Parking will be provided on one side of the route (the side can vary). This will require a loss of parking along the route. There may also be some loss of some parking along the route to accommodate right-turn bays at existing pinch points.</p>	<p>There is no impact to the legal boundary along this route, however there are instances of encroachment into the road reserve from adjacent properties owners. A survey would be required to confirm the legal boundaries in the detailed design phase. This is likely to affect some properties in the area between Rui St and Green St on SH6 and also between Parkers Road and the Annesbrook Roundabout.</p>	<p>Route connection to Whakatu Dr southbound requires cyclists to detour over SH6 making this direction less direct (commuter cyclists have been observed using the Annesbrook Roundabout) (may be addressed by better signage and design).</p>

Option 2: Muritai St/Pascoe St/Whakatu Dr Underpass			
<b>Designed for</b>	Route to cater for: Confident sport, commuter and recreational cyclists. Also suitable for confident children and older cyclists. Connecting the Rocks Rd area with the Whakatu Dr underpass.		
<b>Key Advantages of the Route</b>	<ul style="list-style-type: none"> <li>• Uses existing cycle facility along Muritai St</li> <li>• Good connectivity for Stoke schools (connects with the railway reserve)</li> <li>• Reduces use of Pascoe St for cyclist (which has a high percentage of heavy vehicles)</li> <li>• Provides access into Nelson Junction development and to the industrial area</li> </ul>		
<b>Key Disadvantages of the Route</b>	<ul style="list-style-type: none"> <li>• Need to provide crossing points on Parkers Rd</li> <li>• Requires a bridge over Jenkins Creek (cost disadvantage)</li> <li>• Resource consent would most likely be required to build a bridge over Jenkins Creek, however no major issues are anticipated</li> <li>• Requires approval from Nelson Junction development, however this could be seen in a positive light as it would provide a safe way for staff and customers to cycle to and from the site</li> <li>• High bus volume and concentrated number of bus stops (which result in conflicts across the cycle lane)</li> <li>• Uses Pascoe St which has limited sight distances due to the road alignment, is an HPMV route and has a high proportion of turning vehicles</li> </ul>		
Impact on road layout	Impact on parking	Impact on Property	Gradient Issues
<p>The existing road layout varies along the route.</p> <p>The proposed layout varies along the route with the first part from Tahunanui Drive/Beach Rd to Merton Place is on road cycle-lanes (an alternate option is off road following Beach Rd). This is within the existing legal road reserve. The proposed changes will meet the NZTA/NCC guidelines of</p> <ul style="list-style-type: none"> <li>• 3.5m wide road lanes</li> <li>• 1.8m wide cycle lanes past parking</li> <li>• 1.5m wide single cycle lanes</li> <li>• 1.5m footpath</li> <li>• 2m wide parking bays</li> </ul>	<p>Existing parallel parking will be lost a long Beach Road unless the alternative option is used.</p> <p>Existing parking remains in all other places except Pascoe St where parking is restricted to one side only between Parkers Rd and Merton Place.</p> <p>Merton Place does not have designated parking, but parking space will be lost.</p> <p>Where there is designated parking it will be 2m minimum.</p>	<p>There is no impact to the legal boundary along this route, however some areas land has been occupied by adjacent property owners and survey would be required to confirm the legal boundaries in the detailed design phase. This is likely to affect some properties on Pascoe St.</p> <p>Needs approval from land owner (around Mitre 10).</p>	<p>There may be small gradient issues with implementing a bridge across Jenkins Creek.</p>

<b>Option 4: Roto St/Bolt Rd</b>			
<b>Designed for</b>	Confident sport, commuter and recreational cyclists. Also suitable for confident children and older cyclists. Connecting the Rocks Rd area with the Airport/Whakatu Drive Shared Path		
<b>Key Advantages of the Route</b>	<ul style="list-style-type: none"> <li>• Increased safety as are mostly using lower volume roads</li> <li>• Direct route into the Industrial area off Bolt Rd</li> <li>• Direct route from Rocks Rd to the airport</li> <li>• Uses existing cycle facility along Bolt Rd</li> </ul>		
<b>Key Disadvantages of the Route</b>	<ul style="list-style-type: none"> <li>• Bolt Rd is an HPMV route and contains a high percentage of heavy vehicles.</li> <li>• Need to navigate the Parkers Rd/Bolt Rd roundabout</li> <li>• Beavens Way is very narrow in part, therefore land acquisition would most likely be required</li> <li>• Link between Beavans Way and Roto St is owned by Housing New Zealand Limited, and the existing easement is a 'right of way on foot', therefore further land acquisition or alteration of the easement would be required</li> <li>• Should some parking need to be removed, consultation with affected parties may be required</li> <li>• High bus volume and concentrated number of bus stops (which result in conflicts across the cycle lane)</li> </ul>		
<b>Impact on road layout</b>	<b>Impact on parking</b>	<b>Impact on Property</b>	<b>Gradient Issues</b>
<p>The existing road layout varies along the route.</p> <p>The proposed changes will meet the NZTA/NCC guidelines of</p> <ul style="list-style-type: none"> <li>• 3.5m wide road lanes</li> <li>• 1.8m wide cycle lanes past parking</li> <li>• 1.5m wide single cycle lanes</li> <li>• 1.5m footpath</li> <li>• 2m wide parking bays</li> </ul>	<p>Existing parallel parking will be lost a long Beach Road unless the alternative option is used.</p> <p>Existing parking remains in all other places.</p>	<p>The width in Bevan's way is not ideal and may need to be upgraded in the future which would impact the council flats.</p>	<p>No gradient issues have been identified along this route.</p>

<b>Option 6: Tourist/Airport Route</b>			
<b>Designed for</b>	Generally caters for all users both confident sport and commuter cyclists, along with children, elderly and recreational users		
<b>Key Advantages of the Route</b>	<ul style="list-style-type: none"> <li>• Increased safety as are mostly using lower volume roads</li> <li>• Connects the Tahunanui Campground and multiple tourist accommodations to the network</li> <li>• Avoids the heavy use areas of Parkers Rd</li> <li>• Avoids the area of Bolt Rd that doesn't easily allow for an off-road cycle path to be created</li> <li>• Avoids the Bolt Rd/Quarantine Rd Roundabout</li> <li>• Connects local pre-schools on Parkers Rd</li> <li>• Direct route into the Industrial area off Bolt Rd</li> <li>• Includes an off road section (along edge of golf course)</li> </ul>		
<b>Key Disadvantages of the Route</b>	<ul style="list-style-type: none"> <li>• Not a direct route</li> <li>• Requires removal of parking along the route</li> <li>• Need to cross Parkers Rd southbound</li> <li>• An easement would be required over Nelson Airport land in order to get from Awatea Place to Nelson Golf Club land.</li> <li>• Resource consent may be required to construct a cycleway on Golf Club land. Subject to Council classification of the activity (e.g. if Council consider this to be an 'informal recreation activity' within the Open Space Recreation Zone then it would be a permitted activity and no consent would be required)</li> </ul>		
<b>Impact on road layout</b>	<b>Impact on parking</b>	<b>Impact on Property</b>	<b>Gradient Issues</b>
<p>The proposed changes will provide greater lane width consistency along the route. This will include at a minimum:</p> <ul style="list-style-type: none"> <li>• 3.5m wide road lanes</li> <li>• 1.8m wide cycle lanes past parking</li> <li>• 1.5m wide single cycle lanes</li> <li>• 1.5m footpath</li> <li>• 2m wide parking bays</li> </ul>	<p>Golf Rd –removing right hand side parallel parking, moving existing left hand side kerb closer to the property boundary to create designated parking.</p> <p>Reducing the width along Parkers Rd, narrowing to two lanes only, creating a separated on-road cycleway and loss of parking on both sides</p> <p>Reducing the width along Awatea Place, narrowing to two lanes only, creating a separated on-road cycleway and loss of parking on both sides</p>	<p>An easement would be required over Nelson Airport land in order to get from Awatea Place to Nelson Golf Club land.</p> <p>Resource consent may be required to construct a cycleway on Golf Club land. Subject to Council classification of the activity (e.g. if Council consider this to be an 'informal recreation activity' within the Open Space Recreation Zone then it would be a permitted activity and no consent would be required)</p>	No gradient issues were identified with this route

<b>Option 6A: Tourist/ On road Route</b>			
<b>Designed for</b>	Generally caters for all users both confident sport and commuter cyclists, along with children, elderly and recreational users.		
<b>Key Advantages of the Route</b>	<ul style="list-style-type: none"> <li>• Increased safety as are mostly using lower volume roads</li> <li>• Connects the Tahunanui Campground and multiple tourist accommodations to the network</li> <li>• Avoids the heavy use areas of Parkers Rd</li> <li>• Avoids the area of Bolt Rd that doesn't easily allow for an off-road cycle path to be created</li> <li>• Avoids the Bolt Rd/Quarantine Rd Roundabout</li> <li>• Connects local pre-schools on Parkers Rd</li> <li>• Direct route into the Industrial area off Bolt Rd</li> <li>• Includes an off road section (along edge of golf course)</li> </ul>		
<b>Key Disadvantages of the Route</b>	<ul style="list-style-type: none"> <li>• Not a direct route</li> <li>• Requires removal of parking along the route</li> <li>• Need to cross Parkers Rd southbound</li> <li>• An easement would be required for cycling access along the Golf Club boundary connecting with Bolt Rd. Involves negotiating with the Golf Club</li> <li>• Golf Haven Way consists of three separate land parcels owned by the Nelson Golf Club, and multiple individuals. The existing easement is a 'right of way on foot' so may need to be altered to include provision for cyclists.</li> </ul>		
<b>Impact on road layout</b>	<b>Impact on parking</b>	<b>Impact on Property</b>	<b>Gradient Issues</b>
<p>There is no consistent existing cycle facilities along this route.</p> <p>The new option is on-road.</p> <p>Reducing the width along Parkers Rd, narrowing to two lanes only, creating a separated on-road cycleway and loss of parking in areas</p> <p>The proposed changes will provide greater lane width consistency along the route. This will include at a minimum:</p> <ul style="list-style-type: none"> <li>• 3.5m wide road lanes</li> <li>• 1.8m wide cycle lanes past parking</li> <li>• 1.5m wide single cycle lanes</li> <li>• 3m minimum shared spaces</li> <li>• 1.5m footpath</li> <li>• 2m wide parking bays</li> </ul>	Parking will be lost along Parkers Rd, mostly down the right hand side	<p>An easement would be required for cycling access along the Golf Club boundary connecting with Bolt Rd. Involves negotiating with the Golf Club.</p> <p>Golf Haven Way consists of three separate land parcels owned by the Nelson Golf Club, and multiple individuals. The existing easement is a 'right of way on foot' so may need to be altered to include provision for cyclists.</p>	No gradient issues were identified with this route

<b>Option 8 Cross Link: Whakatu Dr Underpass/Blackwood ST/Bolt Rd</b>			
<b>Designed for</b>	Generally caters for all users both confident sport and commuter cyclists, along with children, elderly and recreational users.		
<b>Key Advantages of the Route</b>	<ul style="list-style-type: none"> <li>• Provides a key link through the industrial area between SH6 and Bolt Rd</li> <li>• Provides a direct route for workers from the railway reserve</li> <li>• Increased safety through upgrades and providing cyclists with a cycling space</li> <li>• Off road route suitable for all cyclist levels</li> </ul>		
<b>Key Disadvantages of the Route</b>	<ul style="list-style-type: none"> <li>• Potential decreased personal safety as the route will not be in an area where users can be seen*</li> <li>• Permission would need to be sought by the owners of the Industrial land (all three land parcels are owned by Whiting, Fitchett and Millar), and an easement for public access would be required.</li> <li>• Goes through heavy vehicle high use area of Pascoe St, Vivian Pl and Rotherham St (However, any route that goes through the industrial area will encounter similar constraints)</li> <li>• Should some parking need to be removed, consultation with affected parties may be required</li> </ul>		
<b>Impact on road layout</b>	<b>Impact on parking</b>	<b>Impact on Property</b>	<b>Gradient Issues</b>
<p>The existing road is unmarked. It caters for heavy vehicles around the Industrial Area. There are areas where new links will be required to complete this route.</p> <p>The proposed changes will provide greater lane width consistency along the route. This will include at a minimum:</p> <ul style="list-style-type: none"> <li>• 3.5m wide road lanes</li> <li>• 3m minimum shared space in off road sections</li> <li>• 4m shared space where adjacent to roads</li> <li>• 2m wide parking bays</li> </ul>	<p>Providing new road markings along the route will result in the road being upgraded which will result in a loss of parking in the following places:</p> <ul style="list-style-type: none"> <li>• Parking will be lost along Rotherham St along the right hand side.</li> <li>• Vivian Place it will be lost along the left hand side.</li> <li>• Merton Place parking will be lost on both sides for the length of the route.</li> </ul>	<p>Permission would need to be sought by the owners of the Industrial land (Whiting, Fitchett and Millar), and Nelson Junction and an easement for public access would be required.</p>	<p>There may be small gradient issues with implementing a bridge across Jenkins Creek.</p>

<b>Option 9 Cross Link: Green Street</b>			
<b>Designed for</b>	Route to cater for: All users both confident sport and commuter cyclists, along with children, elderly and recreational users. Provides a connection between SH6 and Golf Rd and into Tahunui School.		
<b>Key Advantages of the Route</b>	<ul style="list-style-type: none"> <li>• Provides a key link through Tahunui and connects Tahunui school through Muratai street upgrades</li> <li>• Increased safety through upgrades and providing cyclists with a cycling space</li> <li>• Uses existing local roads</li> <li>• Provides a safer space for cyclists along the existing road</li> <li>• Provides formalised parking areas for residents</li> </ul>		
<b>Key Disadvantages of the Route</b>	<ul style="list-style-type: none"> <li>• Should some parking need to be removed, consultation with affected parties may be required</li> </ul>		
<b>Impact on road layout</b>	<b>Impact on parking</b>	<b>Impact on Property</b>	<b>Gradient Issues</b>
<p>The existing road layout varies along the route with no consistent cycle facilities.</p> <p>The proposed changes will provide greater lane width consistency along the route. This will include at a minimum:</p> <ul style="list-style-type: none"> <li>• 3.5m wide road lanes</li> <li>• 1.8m wide cycle lanes past parking</li> <li>• 1.5m wide single cycle lanes</li> <li>• 1.5m footpath</li> <li>• 2m wide parking bays</li> </ul>	<p>Formalised parking along this route will be implemented which will result in a small loss of informal parking.</p>	<p>There is no impact to the legal boundary along this route, but reduced berm space will be required.</p>	<p>There are no gradient issues along this route.</p>

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## Rough Order Cost Estimates

Using the information above a summary of rough order estimates is provided below. A breakdown of the estimates is in the appendices.

These estimates are based on aerial plans without accurate survey or consideration of ground, service issues or lighting upgrades. In addition consideration will need to be given to the movement of the vehicle wheel tracks and for differential pavement settlement and future ongoing maintenance issues associated with this.

### **Option 1: Tahunanui /Annesbrook Drive**

2.1km Road upgrade - \$2,614,000

### **Option 2: Muritai St / Pascoe St / Whakatu Dr Underpass**

2.75km with off road section along Beach Road - \$1,090,000

2.75km alternative on road section along Beach Road - \$946,000

### **Option 4: Roto St / Bolt Rd**

2.51km road upgrade - \$763,000

### **Option 6: Tourist / Airport Route**

2.74km off road route through golf course - \$1,905,000

### **Option 6A: Tourist / On Road Route**

2.83km alternative road route to option 6 - \$2,070,000

### **Option 8 Cross Link: Whakatu Dr Underpass / Blackwood ST / Bolt Rd**

1.43km road upgrade and off road route through industrial area - \$1,169,000

### **Option 9 Cross Link: Green Street**

0.73km off road cycleway option - \$528,000

0.73km alternative on road cycleway option - \$1,130,000

## Conclusion

Completion of the initial investigation of possible options has confirmed the need for both a network of cycle routes within the study area and links as a continuation of the proposed Rocks Road walking and cycling facility, the Rail Reserve, the Whakatu Drive cycle paths at Annesbrook roundabout and the shared path at Bolt Road and Quarantine Road roundabout.

This report takes the short listed options identified in the Opus Report: Investigation of Possible Options Delivery 1 and further investigates these routes in terms of design constraints, rough order estimates, and impacts on land, road lane width and preliminary parking comments. A detailed parking assessment and further cost estimates is best completed at the detailed design stage where accurate survey and design cross sections can be prepared.

The results of these investigations is provided for the Council to review to determine a final option for further investigation in Stage 3 of this work, where a single option draft report will be completed, capturing any changes required on developed short listed option following community engagement and NCC review.

## Appendix A – Level of Service Table

Road Length Level Of Service						
LOS/Caters for	Arterial and Principal Roads 10,000 plus vehicles/day		Collector Roads/Industrial 2,000 to 10,000 vehicles/day		Local Road	
<b>A</b> Caters for <ul style="list-style-type: none"> <li>Strong and Fearless,</li> <li>Enthusied and Confident</li> <li>Interested but Concerned (majority)</li> </ul>		Off road cycle path or shared facility parallel to arterial route, well signed suitable to all users. Provides facility attractive to both commuters and vulnerable users.  Or  Separated Bicycle Facility with wide grade separation or barrier separation from traffic		Off road cycle path or shared facility parallel to arterial route, well signed suitable to all users. Provides facility attractive to both commuters and vulnerable users.  Or  Separated Bicycle Facility with wide grade separation or barrier separation from traffic		Low volume local road with traffic calming and reduced speed zone at 30km/hour, low HCVs
<b>B</b> Caters for <ul style="list-style-type: none"> <li>Strong and Fearless,</li> <li>Enthusied and Confident</li> <li>A portion (~60%) of the Interested but Concerned</li> </ul>		On-road cycle lanes, meeting current guidelines standards of 1.5m width or 1.8m width past parked cars. Supplemented with conflict green paint. Signalised intersections have cycle boxes or cycle lanes.		On-road cycle lanes, meeting current guidelines minimum standards of 1.2m width or 1.5m width past parallel parking..		Low volume local road with easy gradient, wide traffic lanes, low HCVs and low levels of on-street parking, with street to street community connections well signed.
<b>C</b> Caters for <ul style="list-style-type: none"> <li>Strong and Fearless,</li> <li>Enthusied and Confident</li> <li>A portion (~30%) of the Interested but Concerned</li> </ul>		On-road cycle lanes, meeting current guidelines minimum standards of 1.2m width or 1.5m width past parallel parking		Wide traffic lanes, modest levels of parking, moderate traffic, cycle warning signs, low HCVs		Local roads with 6m lane widths or 40km/h speed restriction and/or some form of direct traffic calming like speed humps or tables.
<b>D</b> Caters for <ul style="list-style-type: none"> <li>Strong and Fearless,</li> <li>Enthusied and Confident</li> </ul>		Wide traffic lanes, modest levels of parking, moderate traffic, cycle warning signs		Narrow lanes, Heavy Parking, high traffic volume. High HCVs		Narrow lane widths moderate on-street parking, limited driveway visibility, low traffic volume
<b>E</b> Caters for <ul style="list-style-type: none"> <li>Strong and Fearless</li> </ul>		No facility, narrow traffic lanes, heavy parking, high speeds		Narrow traffic lanes heavy parking frequent turn over		Narrow lane widths heavy on-street parking, limited driveway visibility, high speeds.

**Intersection Level Of Service**

This assessment of the attractiveness of the Level of Service is based on Opus Cycle Design Experts Judgement, this could be better refined through user-perception surveys of Nelson cyclists.

Data	Arterial and Principal Roads 10,000 plus vehicles/day		Collector Roads 2,000 to 10,000 vehicles/day		Local Road	
<p>A</p> <p>Caters for</p> <ul style="list-style-type: none"> <li>• Strong and Fearless,</li> <li>• Enthused and Confident</li> <li>• Interested but Concerned (majority)</li> </ul>		<p>Pelican or traditional signalised crossing point. Or Grade separated crossing facility like an over bridge or underpass.</p>		<p>Zebra crossing point with hold bars with width for cyclists or Pelican or traditional signalised crossing point. Or Grade separated crossing facility like an over bridge or underpass.</p>		<p>Give way priority crossing points on tables as per railway reserve stoke.</p>
<p>B</p> <p>Caters for</p> <ul style="list-style-type: none"> <li>• Strong and Fearless,</li> <li>• Enthused and Confident</li> <li>• A portion (~60%) of the Interested but Concerned</li> </ul>		<p>Zebra crossing point with hold bars with width for cyclists</p>		<p>At grade crossing facility with refuge island, advance warning signs, enlarged median Island and Cycle hold bars.</p>		<p>Slow speed zone table crossing points</p>
<p>C</p> <p>Caters for</p> <ul style="list-style-type: none"> <li>• Strong and Fearless,</li> <li>• Enthused and Confident</li> <li>• A portion (~30%) of the Interested but Concerned</li> </ul>		<p>At grade crossing facility with refuge island, advance warning signs, enlarged median Island and Cycle hold bars.</p>		<p>Ramps hold Bars</p>		<p>Shared space zones with shared priority of different modes</p>
<p>D</p> <p>Caters for</p> <ul style="list-style-type: none"> <li>• Strong and Fearless,</li> <li>• Enthused and Confident</li> </ul>		<p>Ramps &amp; hold Bars , warning signs</p>		<p>Ramps &amp; warning signs</p>		<p>Ramps, hold bars &amp; warning signs</p>
<p>E</p> <ul style="list-style-type: none"> <li>• Strong and Fearless</li> </ul>		<p>Warning Signs or nothing</p>	<p>No Facility</p>	<p>No Facility</p>	<p>No Facility</p>	<p>No Facility</p>

