SH6 Rocks Road Walk/Cycle Facility Options Update Report

21 March 2016
Executive summary

SH6 Rocks Road is one of Nelson’s key arterial transport corridors and an important link in Nelson’s wider cycleway network. The Rocks Road Walking and Cycling Project (the Project) forms part of Nelson City Council’s (NCC) walk/cycle/schools package to improve the safety and number of people cycling and walking in Nelson City. The Project is being led by the Transport Agency.

SH6 Rocks Road follows the inside of the Nelson harbour (The Haven). It is a regional strategic state highway connecting Tahunanui Beach to Nelson City. At this location, SH6 carries about 22,350 vehicles per day (with 6% of vehicles being freight) and is the main route to Port Nelson. Rocks Road currently has narrow on-road cycle lanes and a variable width footpath located predominately on the seaward side of the road.

This report provides an update on the Project’s option development process for improving walking and cycling along Rocks Road. It also helps inform the Nelson Southern Link Investigation (NSLI) Project as it progresses through its business case development. This Project and the NSLI are linked. The NSLI considers the wider transport network issues for the arterial networks located between the Annesbrook Drive and Haven Road roundabouts, including SH6 Rocks Road. This Project is also considering how to improve walking and cycling facilities along SH6 Rocks Road. It is important that decisions on these two transport projects are informed by one another.

This Project commenced in 2014. In July 2014, the Rocks Road Cycle and Walking Project Investigation Report identified and assessed a long list of 18 potential options for improving walking and cycling facilities along Rocks Road. The long list was then narrowed down to five options which were further developed into three concepts for community engagement: Concept One; a hybrid of improved on-road and off-road facilities, Concept Two; full off-road shared path and Concept Three; a wide off-road facility along with full parking and on-road facilities.

This report summarises the investigation work that has been undertaken since 2014, and in particular the four options now proposed for further consideration.

The four options are as follows:

Option One: Minor safety enhancements: This option includes committed improvements identified by the Transport Agency and NCC, such as resurfacing work to the road and footpath. It also involves incremental improvements to existing on-road facilities and the footpath. There is no widening of the seabed, the existing footpath, or cycle facilities. $4.9 Million (including $150,000 of amenity value).

Option Two: Safety enhancements with reduced lane widths: This includes the improvements outlined in Option 1 above, and creates additional cycle and footpath width through narrowing the traffic lanes to 3m. Please note, this option can only be pursued if the state highway is relocated (i.e. Rocks Rd becomes a local road). $8.2 Million (including $700,000 of amenity value).

Option Three: On-road cycle lanes in both directions, shared path and reduced parking: This option involves widening the on-road cycle lanes in both directions and creating a 2.9m shared walking and cycling path on the seaward side. Parking between Victoria Road and Richardson Street would be removed. There would be significant seawall widening. $21.3 Million (including $1 million of amenity value).

Option Four: On-road cycle lanes and shared path: This option involves widening on-road cycle lanes in both directions and creating a 2.9m shared walking and cycling path on the seaward side as in Option 3 above. Parking between Victoria Road and Richardson Street would be kept.
This will require significant seawall widening. **$25.1 Million** (including $7 million of amenity value).

Option 2 has been added to this report as a consequence of the NSLI Project commencing, and can only be progressed if Rocks Road state highway status is revoked.

Options 3 and 4 are similar to Concept One from the public engagement in July 2014. The peer-reviewed cost estimates have increased due to the inclusion of higher traffic management and contractor overhead costs, underground services cost risk, construction of a new seawall between The Boat Shed Café to Richardson Street and raising of the footpath.

It is also noted that options founded on the 2014 Concept Two have not been progressed because of:

- Safety concerns of removing vehicle manoeuvring space for parking and property access,
- Increased likelihood of pedestrian/cycle conflicts on a relatively narrow shared path should on-road cycle lanes not be provided, and
- Reduced cyclists’ safety on an urban state highway where on-road cycle lanes aren’t provided.

A ‘Do–minimum’ proposal is presented in this report to represent the existing situation plus committed improvements by the Transport Agency and NCC. It will be used to compare with the ‘do–something’ options (i.e. options 1 to 4) when completing the next stage of the Project.

An option based on the 2014 Concept Three was developed further, but has not been progressed as it was not considered to be affordable. It is noted that NCC determined that Concept 3 was not affordable in 2014, and work undertaken since has determine the costs of a revised Concept 3 cannot be sufficiently reduced to progress this option.

Finally, the amenity costs identified above would need to be met from non–National Land Transport Fund sources.

**Next Steps**

Feedback is now being sought on Options 1 – 4. This feedback will contribute to the development of the wider NSLI programme business case and development of the Project. It is important that decisions on these two transport projects are informed by one another. The Transport Agency expects key decisions on the Rocks Road Project will be made following a decision on the recommended approach from the NSLI PBC stage.
1 Background

The Rocks Road Walking and Cycling Investigation Project (the Project) is considering options to improve the existing walking and cycling facilities along Rocks Road, Nelson. Refer Figure 1 below, which shows the Project’s location.

![Rocks Road Project location](image)

**Figure 1** Rocks Road Project location

The Project starts at the Plant and Food building and extends for 2.3km along the waterfront to Tahunanui Beach. Refer to Photograph 1 and Photograph 2.

Rocks Road is a regional strategic highway carrying 22,350\(^1\) vehicles/day, including 6% HCV’s/day. It is a key commuter cycle route with on-road cycle lanes that vary in width from 1m – 2m and caters for a daily cycle volume of 500 cycles/day (2014). Rocks Road also provides an important recreational walking promenade, with 250 pedestrians/day (2014) on the seaward side.

Rocks Roads is an important historic coastal corridor for Nelson City with several features including: a seawall (recorded archaeological site, pre–1900), a Category 1 heritage fence and stanchions (posts), and buildings. Iwi have also identified a number of sites of significance along this route.

The 2011 Arterial Traffic Study\(^2\) recommended improving Nelson’s key commuter walking and cycling facilities, with Rocks Road being identified as a high priority.

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\(^1\) NZTA Site 00600118 [https://www.nzta.govt.nz/assets/resources/state-highway-traffic-volumes/docs/SHTV-2010-2014.pdf](https://www.nzta.govt.nz/assets/resources/state-highway-traffic-volumes/docs/SHTV-2010-2014.pdf)

\(^2\) Heavy commercial vehicles

2 Rocks Road Investigation Report (July 2014)

The 31 July 2014 Rocks Road Investigation Report\(^4\) detailed site information and considered a long list of possible options to improve walking and cycling along Rocks Road. The long list of 18 possible options were narrowed down to five that were investigated by the project team and steering group. They are described below:

1. On-road cycle lanes with a 2.4m footpath
2. Separated cycle lanes both side with a 2.4m footpath
3. Separated cycle lanes and a 2.4m footpath on the seaward side only
4. 4m Shared path on the seaward side only
5. 4m Shared path on the seaward side with a Tahunanui bound on-road cycle lane.

The joint Nelson City Council (NCC) and Transport Agency Project Steering Group further narrowed the options to three for public feedback. The three concepts presented for public feedback in 2014 were:

- Concept 1 – wider on-road cycle lanes and a 2.4m footpath for pedestrians,
- Concept 2 – a 4m wide shared cycling/walking path, and
- Concept 3 – separated 3m cycles lane and 2.4m footpath.

NCC considered the third concept, which provided for what was considered to be an ideal transport and amenity environment for vehicular traffic, on-road cyclists, less confident cyclists, pedestrians, parking, and space for development and leisure. NCC at the time considered Concept 3 to be too expensive to pursue (it was estimated to cost between $33 and $47 million, whereas estimates for concepts one and two ranged from $9 to $14 million). Although it was decided to present the Concept three to the public, only comment on concepts one and two was specifically sought.

The outcome of the public engagement process is summarised in the October 2014 Consultation Summary Report. Feedback was clear that the public wants the Rocks Road area enhanced. There were, however, varying views on how this might be achieved. The public preference was evenly split between the on-road cycle facilities solution and the off-road shared path solution. The Transport Agency concluded there was a desire for both on-

road commuter facilities for confident cyclists and an off-road shared path for less confident users.

There was also widespread support from the public and Heritage New Zealand Pouhere Taonga (HNZPT) to retain the existing historic stanchion and chain fence.

The public also raised the following design issues:

- loss of on-street parking from Victoria Road to Richardson Street,
- restriction of manoeuvre space for safe property access and on-street parking manoeuvres,
- the lack of separation of the shared path from traffic lanes,
- concern about emergency vehicle access with a reduced seal width, and
- conflict on the shared path concept between commuter/sport cyclists and slow cyclists and pedestrians.

3 The Nelson Southern Link Investigation

The Nelson Southern Link Investigation (NSLI) Project forms part of the Government’s Accelerated Regional Roading Package for the state highway.

This report provides an update on the Project’s option development process for improving walking and cycling along Rocks Road. It also helps inform the Nelson Southern Link Investigation (NSLI) Project as it progresses through its business case development. This Project and the NSLI are linked. The NSLI considers the wider transport network issues for the arterial networks located between the Annesbrook Drive and Haven Road roundabouts, including SH6 Rocks Road. This Project is considering how to improve walking and cycling facilities along SH6 Rocks Road. It is important that decisions on these two transport projects are informed by one another.

One of the two NSLI problem statements reinforces the linkage between this study and the NSLI. The problem statement (which was revised in December 2015), weighted 30% is:-

**Substandard infrastructure on Rocks Rd, which is part of the Coastal Path, is constraining the growth in walking and cycling activities.**

The evidence presented in the NSLI Strategic Case confirms the above problem.

As a consequence of the NSLI, an additional option has been developed for this Project that could only be progressed if SH6 was to be relocated and Rocks Road’s state highway status was to be revoked.

4 Urban Cycleway Fund

In 2015 the Government announced the Urban Cycleway Fund⁵ to develop key urban commuter facilities and improve cycle safety. This Project and three projects along the “Nelson Coastal Route” (a link between Nelson City, Tahunanui and the Nelson Airport) have secured funding from the Urban Cycleway Fund. The Fund has allocated $3 million to Nelson Coastal Route projects that will need to be substantially completed by July 2018.

5 Report for Nelson Southern Link Investigation public engagement March / April 2016

6 Project considerations

The following matters were identified prior to the July 2014 public engagement process:

Existing road corridor

The width of the Rocks Road SH6 road corridor is physically constrained on both sides and was first constructed over 100 years ago. It has a sea wall of varying age and condition along most of the northern side. It has a 600m section of sea cliffs on its southern side and areas of residential housing.

The existing seaward footpath and on-road cycle lanes were installed in the early 1990s and vary in width along the length of Rocks Road; see Photograph 3. These existing facilities are below current NCC Land Development Manual standards and cycle guidelines.

Photograph 3: Existing footpath, Cycle Lane and Rocks Rd Chain Fence

The existing road surface is due for renewal and is listed in the Transport Agency forward renewal programme to be undertaken in the next two years.

Rocks Road is located within the urban 50km/hour zone. As such, all the assets outside the kerb line are generally owned and maintained by NCC. This includes the existing stanchion and chain fence, street furniture, water access point, fishing platforms, trees, berms, reserves, and footpath. The exception to this is the sea wall structure, street lighting, and cliff protection bolting and facing which is the responsibility of the Transport Agency.

Heritage

Rocks Road has several important heritage and cultural landscape features. Some of the heritage features are listed in the Nelson Resource Management Plan (Nelson RMP) and are heritage listed structures by HNZPT. Consideration of these historic and cultural heritage features is summarised in the table below.

<table>
<thead>
<tr>
<th>Feature</th>
<th>Consideration</th>
<th>Process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boathouse Heritage structure</td>
<td>Possible access modifications</td>
<td>Building owner discussions required</td>
</tr>
<tr>
<td>Seawall Pre–1900 Archaeological Site</td>
<td>Widening, covering, foundation piles works could occur in the vicinity of Site</td>
<td>Will likely need authority application to HNZPT</td>
</tr>
<tr>
<td>Rocks Road Chain Fence, Heritage Structure and listed</td>
<td>Works may involve changes to this structure, conservation and reuse</td>
<td>Resource consent and consultation</td>
</tr>
</tbody>
</table>

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6 NZ Supplement to the Austroads guide to traffic engineering practice Part 14: Bicycles, Sept 2008, SP/M/025
<table>
<thead>
<tr>
<th>Heritage Feature</th>
<th>Facilities/Activities Required</th>
<th>Consent Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boat Shed, Plant and Food building (Power House), Arthur Wakefield landing stone, Listed heritage features in Nelson RMP</td>
<td>Works may involve moving the boatshed, relocation of the landing stone and changes around the Plant and Crop building</td>
<td>Resource consent required</td>
</tr>
<tr>
<td>Heritage tree, listed tree in Nelson RMP</td>
<td>Minor road widening work likely to be undertaken within the drip line of heritage tree</td>
<td>Resource consent required</td>
</tr>
<tr>
<td>Iwi Fishing Village – Basin Reserve – Iwi site of significance</td>
<td>Possible road widening in this area</td>
<td>Special consultation with Iwi required</td>
</tr>
</tbody>
</table>

**Hydrology and sea level rise**

Rocks Road is a coastal route and is subject to wave action from storm surge. As a consequence of these surges, Rocks Road is closed to all but large vehicles, between one and three times per year due to severe wave action. This closure is usually for one to three hours and during high tide. A wave height study and climate change assessment was undertaken as part of the July 2014 Investigation Report. Climate change and sea level rise forecasts show Rocks Road closures are expected to become more frequent.

**Geotechnical**

A preliminary geotechnical desktop appraisal was undertaken in conjunction with the July 2014 Investigation Report. It concluded that it is possible to widen the existing seawall because there is likely suitable foundation material. Further geotechnical testing will be required at the detailed design phase.

The sea cliffs have had substantial rock stability work completed in early 2016 along the cliff face. However, it will be necessary to provide a catch fence or wall at the base of the cliff to prevent debris from flowing onto the shoulder, which could disrupt on-road cycle lane users.

**Property and building alterations**

There are two buildings on Rocks Road within the proposed Project footprint. These are the Boat Shed Café building and the Nelson Yacht club. It is technically feasible to relocate or modify both these buildings to achieve the transport design, but suitable negotiated terms and agreements with the building owners and any lease holders would be required.

**Noise and vibration**

In accordance with New Zealand Standard NZS6806:2010 Acoustics – Road Traffic – New and Altered Roads, noise and vibration effects need to be considered if the existing road layout is to be altered or changed significantly. There are established noise level ranges and noise level changes that the Transport Agency adheres to when considering if noise mitigation is required. Because the volume and traffic alignment is generally unchanged in the proposed options and speeds will remain 50km/h, it is highly unlikely that vibration effects will be relevant for this study. Further assessment will be undertaken, however, in the design phase once the preferred option is determined.

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7 Conservation of the Rocks Road Chain Fence will take into account the NCC Conservation Plan 2002.
Public recreational fishing and public toilet

Rocks Road has a recreational fishing platform known as Connolly’s Quay (see Photograph 4). Recreational anglers often stand or place their fishing rods on the existing footpath, so they can shelter in their adjacent parked vehicle. This creates a conflict with pedestrian movements and potential future cyclists on a shared path. This conflict will require consideration in final design options. A further constraint is the absence of public toilet facilities in this area. NCC has considered some options to improve the facilities, but is awaiting the outcome of this investigation before progressing any proposals.

Photograph 4: Fishing Platform (Connolly’s Quay)

7 Additional considerations

The following matters were raised during the July 2014 public engagement process:

Retention of residential parking: Victoria Road to Richardson Street

Engagement feedback highlighted the importance of retaining residential on-street parking between Victoria Road and Richardson Street. Following this feedback, it was the view of the project steering group that options, which included the retention of parking along this section of the route, be developed further.

Residential access manoeuvre space

On the inland side of Rocks Road there are numerous private residential property accesses. It is a NCC requirement for new properties on an arterial road to have onsite turning, but some older properties do not have sufficient room to provide onsite turning. The safe manoeuvre room for property access and parallel parking access is set out in the Austroads ‘Guide to Road Design’ Part 3: Geometric Design, Page 88 Figure 4.32 and Figure 4.33. The interpretation of this guide has assumed no crossing of centreline, a manoeuvre width of 2.5m and a remaining traffic lane width of at least 2.5m to provide sufficient room for following traffic to safely pass a manoeuvring vehicle. This requires a minimum shoulder width of 1.5m to provide suitable safe manoeuvre room and to reduce rear–end crash risk.

Minimum emergency service vehicle width

The public raised the consideration of emergency access width along the Rocks Road corridor as a key design requirement. It has been determined that a 9m minimum seal width is required, which is to include parallel parking spaces. This width allows for a truck or large vehicle to be parked on one side of the road and a light vehicle on the other, with sufficient remaining width for a fire engine to travel down the centre of the road.

The above matters have been incorporated into the Design Philosophy for the Project as set out below.

8 Activity context

8.1 Economic

Rocks Road is a regional strategic highway and a key transport route between Port Nelson and the wider region most notably Nelson Pine Industries Plant, the industrial areas of Quarantine Road, Stoke, and the greater Tasman District. The state highway therefore forms a critical function that enables and supports the growth of the Nelson and Tasman regional economies, along with the greater New Zealand economy. Nelson’s key exports are horticulture, forestry, seafood, pastoral farming, and tourism.8

Rocks Road is one of only two arterial routes connecting Nelson City to the south and is a key commuter route for the region.

Rocks Road is a key tourism route, with coastal harbour views, along with a restaurant precinct. It provides access to Tahunanui Beach and Tahunanui Camp Ground. The existing on-road parking at the northern end of this project is important to the local restaurants and cafes.

### 8.2 Geographic

Rocks Road follows the shoreline of the Nelson harbour (The Haven) and provides panoramic views of Tasman Bay, the Mt Arthur Range, and Takaka Hill. The road was constructed prior to 1900, is supported by a historic stone/cement block wall, and is an archaeological site.9

The road follows the base of the sea cliffs, which have a history of occasional instability and rock falls. The Transport Agency has undertaken significant rock bolting and cliff face improvements to ensure route security. The latest phase of this work has been recently completed.

At the southern end of Rocks Road is Tahunanui Beach, the primary recreational and tourist beach of Nelson. In 2000, major improvements were undertaken to prevent beach erosion and sand loss. This involved reshaping the existing seawall and redirecting a stormwater outlet. These works have reversed the beach erosion. Any changes to the alignment of the existing sea wall near the beach will require consideration of reflective wave erosion effects.

### 8.3 Environmental

Rocks Road is in the Nelson RMP coastal marine area which is an important environmental zone. Any widening work, or work below the high tide mark, will require resource consents and environmental impact assessments.

### 8.4 Social

The Project area is highly valued as a recreational area, with fishing activities, swimming from the seawall steps and sailing from the Nelson Yacht club. Many walkways connect the wider Port Hills area to Rocks Road. There are also residential dwellings along the inland side of the road and a restaurant precinct at the northern seaward side of the Project area.

The seawall is intentionally stepped opposite Days Track at the Tahunanui end of Rocks Road. This is used as a popular and iconic summer swimming spot and is considered an important social and recreational activity site.

#### 8.4.1 Iwi

At a meeting with Te Ātiawa, Ngāti Koata, Ngāti Kuia, Ngāti Tama, Ngāti Toa, Rangatira and Ngati Rarua on 13 December 2013, local Iwi expressed significant interest in the area, especially the Basin Reserve (the historic location of a fishing village, spring and burial caves). Iwi are generally in support of the Project and would like to see some of their stories told in artwork and/or information panels in any implemented project.

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9 Options generation

9.1 Refining concepts one (on-road cycle facilities) and two (off-road shared path)

Feedback from the public in July 2014 demonstrated a need to further develop Concepts one and two.

The joint NCC/Transport Agency steering group met to consider the issues raised by the public and undertook further meetings with key stakeholders to consider revised options.

In December 2014 the ‘Safer Journeys for People Who Cycle’ document was released by the Transport Agency. This document established a national vision of: “A safe road network with zero fatalities and reduced serious injuries for people who cycle.” Safer Journeys 2014 established 15 high priority recommendations, two of which are considered relevant to the design philosophy for this investigation. These are:–

- Separate cyclists from high speed and high volume or high freight density traffic, and

- Progressively remove parking from arterial roads where it is a safety risk.

In October 2015, NCC adopted an ‘Active travel and Pathway based recreation policy.’ One of the objectives of this policy is to design facilities that channel users to paths and routes suitable for their needs. Meeting expectations such that users of different modes and speeds are separated to minimise conflict is key. The policy recommends the channelling of users to encourage them to use paths and routes suited to their needs and expectations, for example on road facilities for fast, confident cyclists and a slower safer environment such as shared paths for less confident cyclists.

Public feedback and the recommendations and policy directions of the above two documents have been taken into account when developing the Design Philosophy as set out below.

9.2 Design philosophy

The key design considerations are as follows:

Vehicle manoeuvre room

- For all parallel parking and vehicle accesses, allow 1.5m shoulder beside the 3.5m lane for vehicle turning and manoeuvring, where there is no flush medium.

Emergency vehicle width

- A minimum carriageway width of 9m will be provided to allow emergency service vehicles access along Rocks Road with a light vehicle and a truck stationary on either side of the road.

On-road cycle lanes

- Due to the cliff and sea constraints the available width for a shared path is limited. A shared path that accommodates fast cyclists would need to be in excess of 4m wide to provide protection to vulnerable users. Therefore, on-road cycle lanes are necessary to provide a safe space for fast, competent cyclists and a narrower shared path is proposed.
- Plan for 1.5m on-road cycle lanes, including a channel width of 0.3m, where there is no parking, as suggested in the NZ Supplement to Austroads (Sept 2008 Pg8, Table 4–1, of SP/M/25). This may be reduced to the minimum of 1.3m if a parallel off-road facility is provided in the same direction.
- Plan for a 1.8m on-road cycle lane (adjacent parallel parked cars) - note parking turnover is low as users are predominantly restaurant, function centre and café users,
more predominantly in the evening. This could be reduced to the minimum of 1.5m if an off-road facility is provided in the same direction\textsuperscript{10}.

**Shared path width**
- Capacity analysis indicates the shared path width can be between 2.5m and 3m where adjacent on-road facilities are provided for fast, confident cyclists.
- No shared path shy distance\textsuperscript{11} has been provided for isolated pole or tree hazards as these will be kept to absolute minimum. Users can moderate approach speed and spacing to accommodate isolated hazards.
- A 0.6m shy distance has been considered for capacity purposes past The Boathouse, Nelson Yacht Club and Boat Shed Café business frontages.
- No shy distance has been provided for the continuous chain fence as this is consistent and acts as a safety rail.

**Pedestrian crossing points**
Rocks Road has a high traffic volume that creates delays to pedestrians and cyclists who cross the road.

It will be important to provide crossing points for residents and users of the Basin Reserve, to help them cross the road onto the seaward side footpath.

The following six locations have been identified as key pedestrian crossing points, although improvements at locations 4 and 5 have not been included in the cost estimations at this time:

1. Northern project start point
2. The Boathouse / Poyneters Crescent
3. Richardson Street
4. Basin reserve and fishing platform
5. Days track walkway
6. Tahunanui beach southern end point

**Seawall widening methods**
Three types of seawall widening construction have been selected as part of the option development and have been used in cost estimates. These are:

- 0 to 1m Cantilever construction,
- 1m to 2m Simply supported concrete slab, and
- 2m and wider a new seawall construction.

Between the Boat Shed and Richardson Street it has been identified that it will be extremely complex and expensive to widen the seawall. The existing footpath and concrete kerb has a structural element that cannot be easily modified to handle vehicle loading because a significant height reduction is required. Therefore it will be necessary to construct a new seawall where parking is retained. As consequence, the costs for Option 3 and 4 are higher than originally anticipated in 2014 for Concepts two and three.

**9.3 The Do–minimum**

Do–minimums are developed in order to compare the other 'do–something' options. The Do–minimum for this project involves retaining the existing Rocks Road on–road cycle lane

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\textsuperscript{10} Application of desirable width, NZ Supplement to Austroads Sept 2008, Pg8, table 4.2 of SP/M/25
\textsuperscript{11} Shy distance is a term referring to a width or buffer distance for a path or walkway that is avoided by users due to a barrier or hazard creating a risk. Typical hazards would be a vertical wall, tree or pole, kerb edge, or risk of car doors opening.
layout and footpath while including NCC and Transport Agency planned work. Key features include:

- Pavement asphaltic concrete resurfacing (includes remarking and traffic control),
- Footpath resurfacing,
- Conservation of existing Rocks Road Chain Fence, and
- Installation of a new toilet facility (by NCC).

The cost estimate for the Do–minimum is $2.6M. The do–minimum activities/costs have been included in each of the following options.

9.4 THE OPTIONS

Following public feedback in 2014, technical analysis, investigations and cost estimate peer reviews, four potential options have been developed. These latest options, including their advantages and disadvantages, are explained in detail below. See Appendix A for additional Option 3 and 4 cross–sections.

**Option One: Minor improvements ($4.9M)**

This option includes committed improvements identified by the Transport Agency and NCC, such as resurfacing work to the road and footpath. It also involves incremental improvements to existing on–road facilities and the footpath. There is no widening of the seabed, the existing footpath, or cycle facilities. The cross section of Option 1 is shown below:

![Option One Cross-Section](image)

**Figure 2: Option One Cross–Section**

In particular, key design features of this option would involve:

- Do–minimum works (as outlined above),
- A debris fence along the cliff section preventing small debris from blocking the shoulder or causing muddy slick areas on the on–road cycle lane,
- Drainage improvements along the entire route with sumps recessed from the existing carriageway, all ponding areas at low points improved with additional sumps and all sections of damaged channel replaced,
- New safety signage targeting improved driver and cycle behaviour,
- Green surfacing installed along the entire route highlighting the on–road cycle lanes – this will highlight this area as a cycle zone,
- Decorative lighting and landscape enhancements to improve amenity, and
- Improved crossing points to improve public access and safety on Rocks Road.
Key advantages and disadvantages of Option 1 are as follows:

**Advantages**
- Provides some safety improvement for commuter cyclists
- Reduces risk associated with debris, channel lip, and sumps
- Improves pedestrian safety with improvements to footpath
- Retains business and amenity parking
- New public toilet to improve amenity and public health
- New landscaping to improve local amenity
- Minimal on-road parking loss
- Can be completed by the end of 2018/2019 financial year (as required by the Urban Cycle Fund)

**Disadvantages**
- No widening of existing narrow cycle lanes
- Footpath will remain narrow and will continue to be difficult to pass in places
- Restaurant congestion area not addressed
- Unlikely to provide for less confident cyclists

The current and predicted user volumes for Option One are shown below in Table 2.

<table>
<thead>
<tr>
<th></th>
<th>Current</th>
<th>Predicted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking</td>
<td>250/day</td>
<td>350/day</td>
</tr>
<tr>
<td>Cycling</td>
<td>500/day</td>
<td>600/day</td>
</tr>
</tbody>
</table>

The cost estimate for this option is $4.9M (which includes the costs of the do-minimum works and a $150,000 amenity cost\(^\text{12}\) for a new toilet and widening of the fishing platform).

The key cost and programme risks with this option include: unknown utility service locations, building consents approvals, public concern of parking removal for crossing points, and traffic management constraints.

\(^{12}\) Amenity costs are those that would need to be met from non-National Land Transport Fund sources.
**Option two: Safety enhancement with reduced lane widths ($8.2m)**

This includes the improvements outlined in Option 1 above, and creates additional cycle and footpath width through narrowing the traffic lanes to 3m. Please note, this option can only be pursued if the state highway is relocated (i.e. Rocks Rd becomes a local road).

The cross section of Option 2 is shown below:

![Option Two Cross-Section](image)

**Figure 3: Option Two Cross-Section**

Key design features of Option 2 include:

- Inclusion of all of the Do–minimum and Option 1 activities,
- Existing cycle lanes widened from 1.2m to 1.8m widths,
- Existing footpath widened where width permits to 2.5m,
- Removal of up to 69 on–roads parking (between Victoria Road and Richardson Street) and parking between Tahunanui Beach and Magazine Point to only be on the seaward side of Rocks Road,
- Existing traffic lane widths to be reduced from 3.5m to 3.0m, and
- Relocation of the seaward kerb and channel to widen the footpath.

**Advantages**

- Improves commuter cyclist safety
- Widens footpath
- Reduces risks associated with debris, channel lip, and sumps
- Improves pedestrian safety with improvements to footpath
- Retains business parking
- New public toilet to improve amenity and public health
- New landscaping to improve local amenity
- Addresses restaurant congestion
- Low footpath raised
- Reduced lane width will reduce vehicle speeds and improve overall road safety

**Disadvantages**

- Impacts on users of the existing on–road parking spaces to be removed
- No widening at fishing platform
- Relies on the timing of the NSLI Project and implementation
- Ability to “future proof” for Options 3 or 4 is somewhat limited without major modifications to kerb and channel
SH6 Rocks Road walk/cycle facility options update report

- May not be completed by the end of 2018/2019 financial year (as required by the Urban Cycle Fund)
- Angle parking at Boat Shed Café removed

The current and predicted user volumes for Option Two are shown below in Table 3.

<table>
<thead>
<tr>
<th></th>
<th>Current</th>
<th>Predicted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking</td>
<td>250/day</td>
<td>400/day</td>
</tr>
<tr>
<td>Cycling</td>
<td>500/day</td>
<td>650/day</td>
</tr>
</tbody>
</table>

The cost estimate of this option is $8.2M (which includes the costs of the do–minimum works, Option 1 and a $700,000 amenity cost for a new toilet, widening of the fishing platform and landscaping).

The key cost and programme risks with this option include: the unknown utility service locations, building consents approvals, public concern of wider parking removal uncertain strength of existing seawall and traffic management constraints.

**Option three: On-road cycle lanes in both directions, shared path and reduced parking ($21.3M)**

This option involves widening the on-road cycle lanes in both directions and creating a 2.9m shared walking and cycling path on the seaward side. Parking between Victoria Road and Richardson Street would be removed. There would be significant seawall widening. A cross section of Option 3 is shown below (refer Appendix A for additional cross sections):

![Figure 4: Option Three - TYPICAL CROSS SECTION VICTORIA ROAD TO BASIN RESERVE (725m)](image)

Key design features of Option 3 are as follows:

- Inclusion of all of the Do–minimum and Option 1 activities,
- Up to 100 on–road parking spaces would be removed,
- Green coloured surfacing for the full length of Rocks Road,
- The shared path has been curved inland at both the bottom of Richardson Street and at the Basin Reserve to reduce widening outside the existing seawall. This will require consents to work within the vicinity of heritage trees and remove a number of landscape trees,
- A rock and debris catch fence would be installed along the cliff face and at Magazine Point, and would have a 1m median to improve freight tracking around this corner, and
It is proposed to widen the existing fishing platform to minimise the risk of conflict between recreational anglers and shared path users. A toilet will be provided at the fishing platform.

**Advantages**

- Minimal widening of the carriageway,
- Provides for both commuter and less confident cyclists
- Creates a shared path
- Reduces risks associated with debris, channel lip and sumps
- Improves pedestrian safety with improvements to footpath
- Retains business parking
- New public toilet to improve amenity and public health
- New landscaping to improve local amenity
- Addresses restaurant congestion
- Low footpath raised
- Widens fishing platform

**Disadvantages**

- Limited shy distance in places
- Traffic lanes moved closer to residential properties possibly increasing noise nuisance
- Road widening required over the seabed
- Requires moving of Boat Shed Café and change to Yacht club
- Angle parking at Boat Shed Café removed

The current and predicted user volumes for Option Three are shown below in Table 4.

<table>
<thead>
<tr>
<th></th>
<th>Current</th>
<th>Predicted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Walking</td>
<td>250/day</td>
<td>550/day</td>
</tr>
<tr>
<td>Cycling</td>
<td>500/day</td>
<td>1,070/day</td>
</tr>
</tbody>
</table>

The cost estimate of this option is $21.3M (which includes the costs of the do–minimum works, Option 1 and a $1,000,000 amenity cost for a new toilet, widening of the fishing platform and landscaping).

The key cost and programme risks with this option include: unknown utility service locations, building consents approvals, public concern of wider parking removal and proximity trafficked lanes adjacent to residential properties, uncertain strength of existing seawall and traffic management constraints.
**Option four: On-road cycle lanes and shared path ($25.1M)**

This option involves widening on-road cycle lanes in both directions and creating a 2.9m shared walking and cycling path on the seaward side as in Option 3 above. Parking between Victoria Road and Richardson Street would be kept. This will require significant seawall widening. A cross section of Option 4 is shown below (refer Appendix A for additional cross sections):

![Diagram of Option Four](image)

Figure 5: Option Four - Typical Cross Section

BOAT SHED TO RICHARDSON STREET (470m)

Other key design features of Option 4 include:

- Inclusion of all of the Do–minimum and Option 1 activities,
- The parking between the Boat Shed Café and Richardson Street would be retained,
- This option ensures the minimum seal width of 9m for emergency access,
- To minimise the cost the shared path would be curved inland at both the bottom of Richardson Street and at the Basin Reserve to reduce widening outside the existing seawall. This will necessitate consents to work within the vicinity of heritage trees and remove a number of landscape trees,
- Up to 69 on-road parking spaces to be removed,
- Green coloured surfacing along the full length of Rocks Road,
- A rock and debris catch fence would be installed along the cliff face and at Magazine Point, and would have a 1m median to improve freight tracking around this corner, and
- Widen the existing fishing platform to minimise the risk of conflict between recreational anglers and shared path users. A toilet will also be provided at the fishing platform.

**Advantages**

- Provides for both commuter and less confident cyclists
- Creates shared path
- Improves pedestrian safety with improvements to footpath
- Retains business parking
- New public toilet to improve amenity and public health
- New landscaping to improve local amenity
- Improves amenity and public health with toilet
- Improves amenity with landscaping
- Restaurant congestion addressed
- Low footpath raised
- Widens fishing platform

**Disadvantages**

- Large amount of seawall widening
- Reduced effective width on shared path in places when considering shy distance
• Road widening over the seabed required
• Requires moving/relocation of Boat Shed Café and change to Yacht club
• Angle parking at Boat Shed Café removed
• Moving traffic lanes closer to residential dwellings near Richardson Street may require consideration of noise and vibration effects

The current and predicted user volumes for Option Four are shown below in Table 5.

<table>
<thead>
<tr>
<th>Walking</th>
<th>Current</th>
<th>Predicted</th>
</tr>
</thead>
<tbody>
<tr>
<td>250/day</td>
<td></td>
<td>550/day</td>
</tr>
<tr>
<td>Cycling</td>
<td>500/day</td>
<td>1,070/day</td>
</tr>
</tbody>
</table>

The cost estimate of this option is $25.1M (which includes the costs of the do–minimum works, Option 1 a $7,000,000 amenity cost for a new toilet, widening of the fishing platform, landscaping and additional widening to retain some car parking).

The key cost and programme risks with this option include: unknown utility service locations, building consents approvals, public concern of wider parking removal and proximity of trafficked lanes adjacent to residential properties, uncertain strength of existing seawall and traffic management constraints.

9.5 Economic efficiency of the options

Economic efficiency considers how well the proposed solution maximises the value of what is produced from the resources used and the timeliness of intervention.

The benefit cost ratio is the primary measure of economic efficiency. It is calculated using the Transport Agency economic evaluation manual\textsuperscript{13} process. A higher benefit cost ratio means the net present benefit is higher than the net present cost over a 40–year period. The benefit cost ratios for each of the options is summarised in Table 6.

<table>
<thead>
<tr>
<th>Option</th>
<th>Capital value</th>
<th>Low 1 to 3</th>
<th>Medium 3 to 5</th>
<th>High 5+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Option One Low Cost</td>
<td>$4.9 M</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Option Two Revoked SH6</td>
<td>$8.2 M</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Option Three On–road and Shared Path no parking</td>
<td>$21.3 M</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Option Four On–road and Shared Path</td>
<td>$25.1 M</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10 Next steps

Feedback is now being sought on Options 1 – 4. This feedback will contribute to the development of the wider NSLI programme business case, and development of the Project. It is important that decisions on these two transport projects are informed by one another. The Transport Agency expects key decisions on the Rocks Road Project will be made following a decision on the recommended approach from the NSLI PBC stage.

\textsuperscript{13} Available at \url{http://www.nzta.govt.nz/resources/economic-evaluation-manual}
APPENDICES

Appendix A – Cross sections for options three and four
ROCKS ROAD - OPTION 3
ON ROAD CYCLE LANES, SHARED PATH AND REDUCED PARKING
ROCKS ROAD - OPTION 4
ON ROAD CYCLE LANES AND SHARED PATH